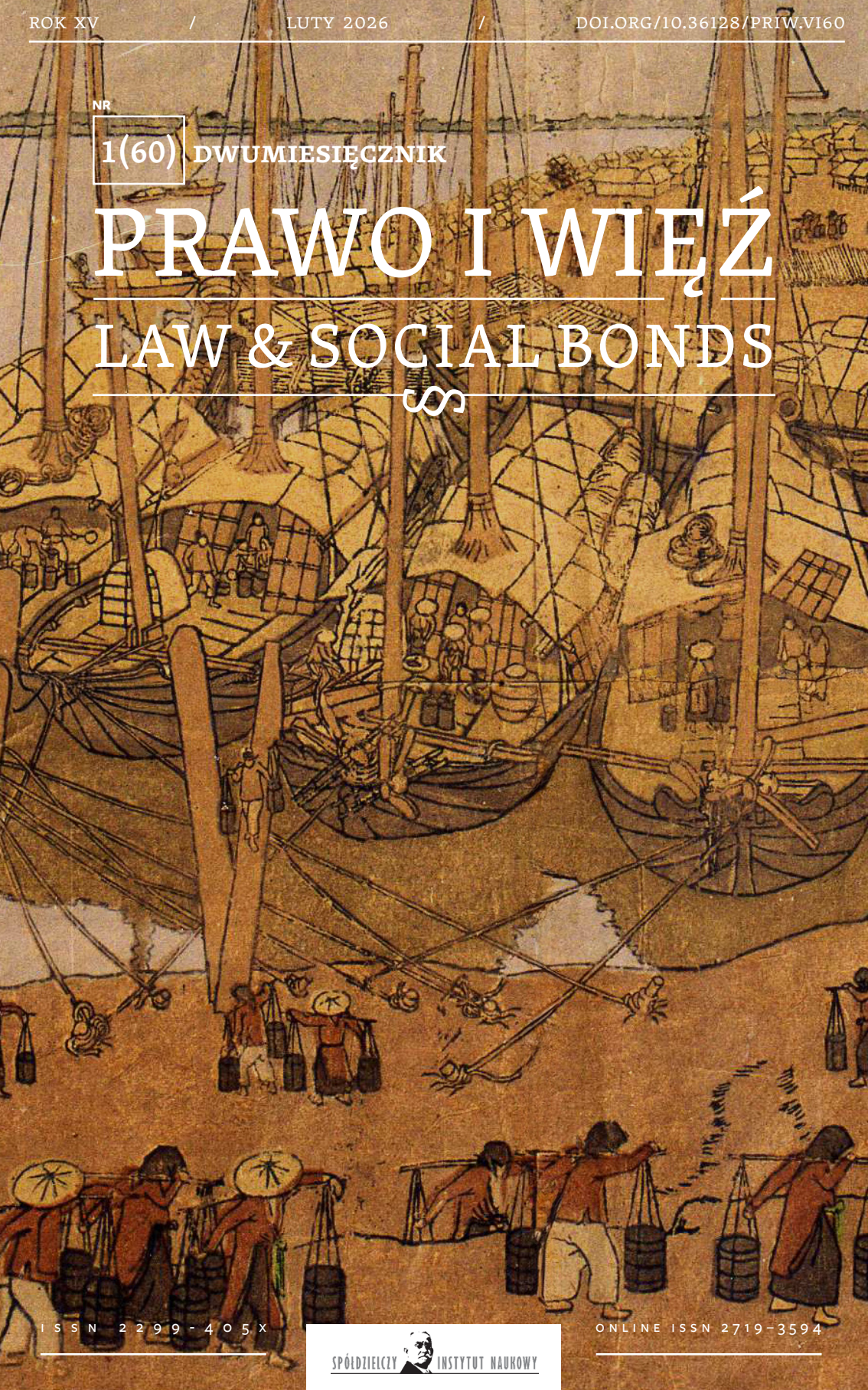


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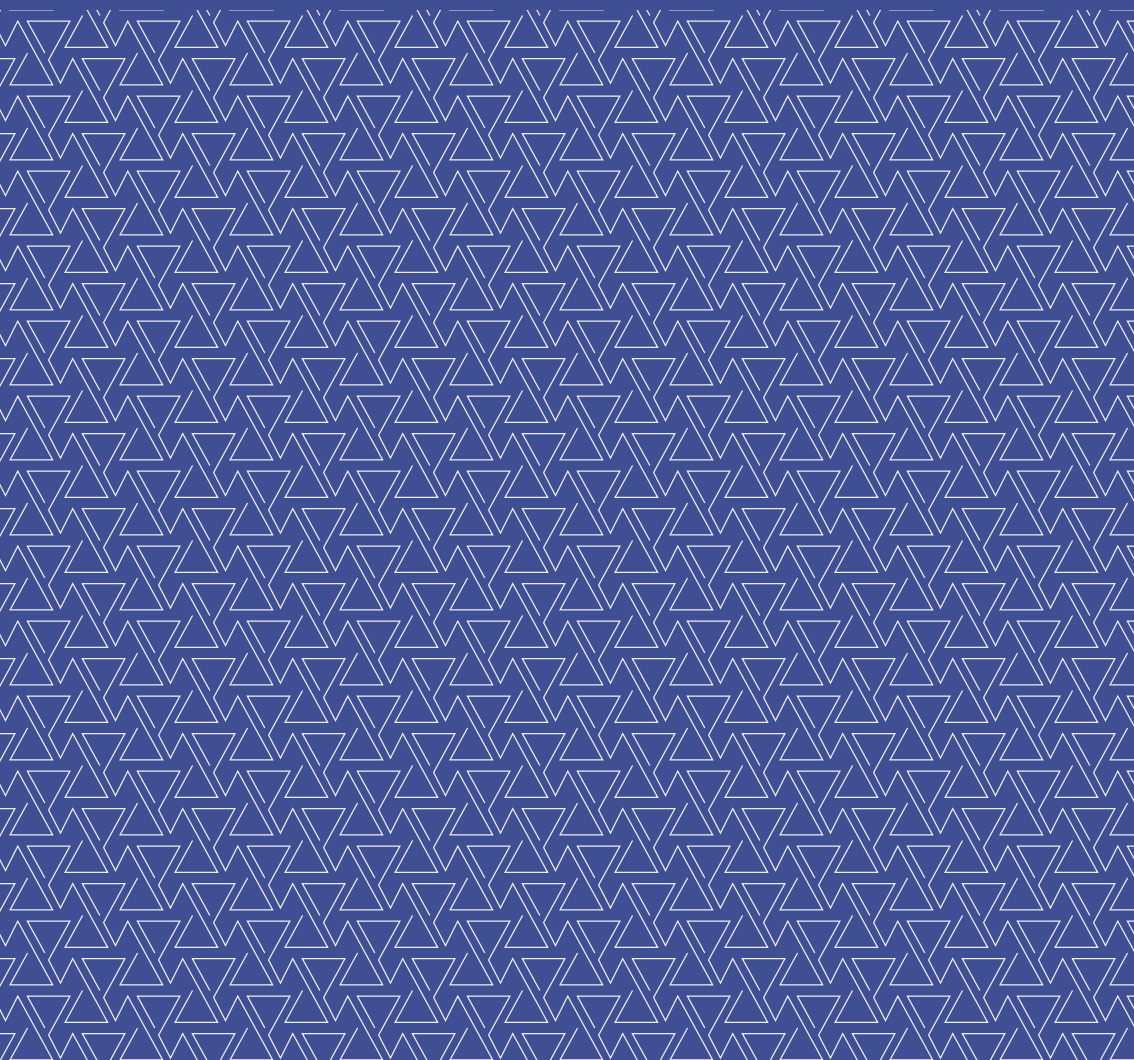
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China's Legal Framework for Sustainable Innovation and Green Growth, and Lessons for Vietnam

Abstract

In the global context of shifting towards sustainable development, establishing an effective legal framework has become an imperative for all nations. This paper focuses on analyzing China's legal system for promoting sustainable innovation and green growth, a model that has garnered significant attention. Employing comparative law, policy analysis, and synthesis methodologies, the study elucidates China's core legal mechanisms, including green finance, intellectual property for clean technologies, and environmental standards. The paper identifies the successes and practical challenges of this framework, drawing profound lessons on developing integrated policies, investment incentives, and enforcement mechanisms. Finally, the study proposes specific recommendations to offer valuable insights for Vietnam as it continues to refine its own legal framework.

KEYWORDS: green growth, sustainable innovation, legal framework, China, comparative law

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1 | Introduction

Entering the 21st century, humanity is confronted with numerous severe challenges, among which climate change, environmental degradation, and the depletion of natural resources have emerged as existential threats to the sustainable development of nations. Reports from the United Nations Environment Programme (UNEP) have repeatedly warned of these “planetary crises,” emphasizing that the traditional growth model based on resource exploitation and carbon-intensive emissions is no longer viable^[1]. In this context, the United Nations’ 2030 Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change have become global frameworks, calling for a profound transformation of development models.^[2]

The concept of “green growth” has emerged as a central approach to realizing this transformation. According to the OECD, green growth means “fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.”^[3] It is not a trade-off between growth and the environment but rather a strategy that creates co-benefits, whereby environmental policies serve as drivers of innovation, the creation of new markets, and job opportunities.

After more than three decades of rapid growth, China has become the “world’s factory,” but this has come at the cost of serious environmental problems. Since 2012, the country has undertaken a historic strategic shift toward building an “ecological civilization” and a comprehensive legal framework to promote sustainable innovation and green growth. Given its geopolitical, institutional, and developmental characteristics, China’s experience provides particularly valuable lessons for Vietnam – a country facing similar environmental pressures and committed to achieving net-zero emissions by 2050.^[4] This commitment underscores the urgent

¹ Criticism of Global Climate Management in the Last Half Century. <https://sgkplanet.com/en/criticism-of-global-climate-management-in-the-last-half-century/>. [accessed: 21.6.2025].

² 17 Sustainable Development Goals (17 SDGs) of the United Nations. <https://www.pace.edu.vn/tin-kho-tri-thuc/muc-tieu-phat-trien-ben-vung>. [accessed: 21.6.2025].

³ Definition of Green Growth of Some Countries and International Organizations. <https://moit.gov.vn/phat-trien-ben-vung/dinh-nghia-ve-tang-truong-xanh-cua-mot-so-quoc-gia-to-chuc-quoc-te.html>. [accessed: 21.6.2025].

⁴ Understanding China’s Belt and Road Initiative. <https://www.lowyinstitute.org/publications/understanding-china-s-belt-road-initiative>. [accessed: 21.6.2025].

need to improve institutions, especially the legal framework, to guide and support the green transition process.

Although there have been many domestic and international studies on green growth, most focus either on general environmental policy analysis or on specific instruments such as green finance or carbon markets. The research gap lies in the lack of in-depth comparative studies between China's legal experience and Vietnam's practice, from which systematic lessons can be drawn and directly applied to the current demand for perfecting Vietnam's legal framework.

To fill these gaps, this paper employs the comparative law method, combined with policy analysis and literature synthesis. On this basis, the study clarifies the core legal architecture of China regarding sustainable innovation and green growth, while juxtaposing it with Vietnam's legal framework. This approach makes it possible not only to identify differences in orientation and system maturity but also to derive practical lessons for application.

The structure of the paper is designed as follows:

- Section 1: Theoretical foundation and high-level strategies in China's green legal framework;
- Section 2: Specialized laws, green finance, and green technology policies;
- Section 3: Assessment of Vietnam's legal framework for sustainable innovation and green growth;
- Section 4: Comparative analysis of the two legal systems, highlighting fundamental differences and underlying causes;
- Section 5: Lessons learned and recommendations for Vietnam;
- Section 6: Conclusion.

2 | China's Legal Framework for Sustainable Innovation and Green Growth

China's legal framework for green growth is a diverse architecture, institutionalized into law and operated through economic, financial, and technological instruments.

2.1. Theoretical Foundation and High-Level Strategic Orientation

From “Ecological Civilization” to “Dual Carbon” Goals: The ideological foundation for China’s entire green legal framework is the concept of “Ecological Civilization.” Unlike the Western concepts of “sustainable development” or “green economy,” “Ecological Civilization” carries a deeper philosophical and political connotation in the Chinese context, considered a higher stage of human social development where humans and nature coexist in harmony.^[5] This concept was first incorporated into the Party’s Constitution and later the national Constitution, reflecting the highest political will. It positions environmental protection not as a cost of development, but as an inseparable part of high-quality development and the foundation for China’s rejuvenation.

To realize this vision, China has set specific and binding targets in its Five-Year Plans. The 13th (2016-2020) and 14th (2021-2025) Five-Year Plans both set hard targets to reduce CO₂ emission intensity by 18% and energy consumption intensity per unit of GDP by 15%, while increasing the share of non-fossil energy to 20% by 2025.^[6] The pinnacle of this commitment was the 2020 announcement of the “dual carbon” goals (peaking carbon emissions before 2030 and achieving carbon neutrality before 2060), setting China on a new development trajectory and reshaping the country’s entire industrial, energy, and consumption structure.

“Latecomer Advantage” Theory^[7]: Economically, China’s green policy also reflects a strategy of leveraging the “latecomer advantage.” Instead of competing directly in traditional industries, China focuses resources on developing in fields of the new industrial revolution, such as new energy vehicles (NEVs), renewable energy, and artificial intelligence. Strict environmental regulations are not only aimed at tackling pollution but also serve as a tool to eliminate outdated production capacity, creating space for green, high-tech industries to develop.

⁵ Yao Wang, Chi-hui Guo, Xi-jie Chen, Li-qiong Jia, Xiao-na Guo, Rui-shan Chen, *Carbon Peak and Carbon Neutrality in China: Goals, Implementation Path and Prospects*. <https://www.sciencedirect.com/science/article/pii/S2096519222000131>. [accessed: 21.6.2025].

⁶ M. Linster, C. Yang, “China’s Progress Towards Green Growth: an international perspective” *OECD Green Growth Papers*, No. 5 (2018): 29.

⁷ *Effectiveness of Investment Attraction in China’s Economic Transformation*. <https://www.vietnamplus.vn/hieu-qua-thu-hut-dau-tu-trong-chuyen-doi-kinh-te-trung-quoc-post843294.vn>. [accessed: 21.6.2025].

2.2. A Tightly Regulated System of Specialized Laws

To create a highly manageable legal environment, China has carried out a “revolution” in its environmental laws, specifically:

First, Environmental Protection Law (amended in 2014, effective 2015): This law fundamentally changed the approach to environmental management, key points include^[8]:

- Daily cumulative fines mechanism: Instead of a one-time fine, continuously violating enterprises are fined daily until they rectify the issue, creating significant financial pressure.
- Expansion of subjects for environmental litigation: Qualified non-governmental organizations (NGOs) are allowed to sue polluting companies on behalf of the public, creating an effective channel for social supervision.
- Accountability of leaders: Government officials can be demoted or dismissed if they fail to fulfill their environmental protection duties in their jurisdiction.
- Enhanced information transparency: Heavily polluting enterprises are required to disclose real-time emissions data. This law spurred a wave of green technology innovation among businesses, as the cost of compliance (investing in new technology) became cheaper than the cost of non-compliance (being fined).^[9]

Second, other specialized laws:

- Air Pollution Prevention and Control Law (2015)^[10]: Focuses on controlling total emissions for key regions and establishing inter-regional coordination mechanisms.

⁸ Huaxing Wang, Tianzi Li, Junfan Zhu, *China's New Environmental Protection Law: Implications for Mineral Resource Policy, Environmental Precaution and Green Finance*. <https://www.sciencedirect.com/science/article/abs/pii/S0301420723007560>. [accessed: 21.6.2025].

⁹ Wen Chen, Ying Wu, “China's New Environmental Protection Law and Green Innovation: Evidence from Prefecture-Level Cities” *Hindawi Complexity*, No. 1 (2021): 3.

¹⁰ <http://en.cciced.net/NEWSCENTER/LatestEnvironmentalandDevelopment-News/201509/P020160908584777560703.pdf>. [accessed: 21.6.2025].

- Water Pollution Prevention and Control Law (2017)^[11]: Government officials from provincial to township levels are held personally responsible for the water quality of a specific river or lake section.
- Environmental Protection Tax Law (2018): Replaced discharge fees with a tax, a more powerful economic tool, where tax rates can be adjusted higher by local authorities to suit their specific situations.^[12]

2.3. Green Finance Pillar: Using Capital to Reshape the Economy

Recognizing the enormous capital demand for the green transition (estimated at trillions of Yuan annually) that the state budget cannot meet, China has identified green finance as a strategic tool.

First, foundational Documents and Standards: The “Guidelines for Establishing the Green Financial System” (2016) was the foundational document for this market. A key differentiator for China was the rapid development of standards. The “Green Bond Endorsed Project Catalogue” is issued and regularly updated, clearly defining which projects are considered “green,” creating a common language for the market and minimizing the risk of “greenwashing.”^[13]

Second, key Green Finance Instruments:

- Green Credit: This constitutes the largest share of green finance. Commercial banks, especially large, state-owned ones, have played a pioneering role in integrating Environmental, Social, and Governance (ESG) factors into their credit assessment processes. China’s outstanding green credit has grown exponentially, becoming the most important source of capital for green industries.
- Green Bonds: China has quickly become one of the world’s largest issuers of green bonds. Issuances come not only from corporations but also from policy banks and local governments.

¹¹ https://english.mee.gov.cn/Resources/laws/environmental_laws/202012/t20201211_812662.shtml. [accessed: 21.6.2025].

¹² Juqiu Deng, Jiayu Yang, Zhenyu Liu, Qingyang Tan, *Environmental Protection Tax and Green Innovation of Heavily Polluting Enterprises: A Quasi-Natural Experiment Based on the Implementation of China’s Environmental Protection Tax Law*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10270568/>. [accessed: 21.6.2025].

¹³ Chengwei Zhang, “The Significance of Improving China’s Green Finance Legal Framework from the Perspective of the «Dual Carbon» Goals” *Journal of Applied Economics and Policy Studies*, Vol. XIV (2024): 1.

- **Emissions Trading Scheme (ETS):** After years of piloting in 7 provinces and cities, China officially launched its national carbon market in 2021, starting with the power sector (the largest source of emissions). It is the world's largest carbon market in terms of emissions covered, using an intensity-based mechanism (tons of CO₂/MWh), rather than an absolute cap, which is suitable for a still-growing economy.

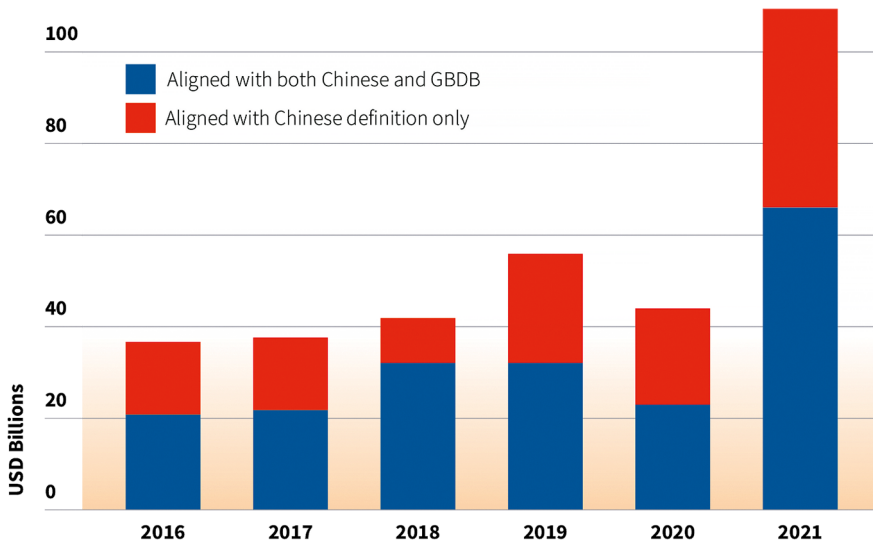


Chart 1: Scale of China's Green Bond Issuance (billion USD)^[14].

2.4. Policies to Promote Green Technology Innovation

China views green technology autonomy as a matter of national security, and an opportunity to lead the future global economy. Strategy and Planning: “Made in China 2025” identifies green technology sectors as top priorities, including energy-saving equipment and new energy vehicles, power equipment, and new materials. National R&D plans allocate large budgets to research projects on carbon capture, utilization, and storage (CCUS), energy storage batteries, and hydrogen energy. This investment has yielded impressive results. China now dominates the global supply chains for solar energy and electric vehicle batteries. The number of environment-related

¹⁴ <https://www.climatebonds.net/files/documents/publications/China-Green-Bond-Market-Report-2021.pdf>. [accessed: 21.6.2025].

patents in the country has exploded, surpassing that of developed nations.^[15] The rapid growth of tech companies like CATL (batteries), BYD (electric vehicles), and Longi (solar energy) testify to the success of this strategy.

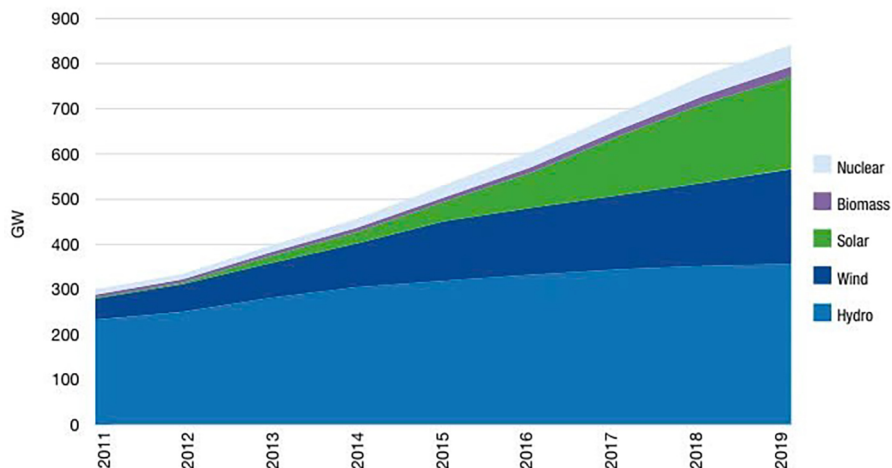


Chart 2: Installed capacity of renewable energy^[16]

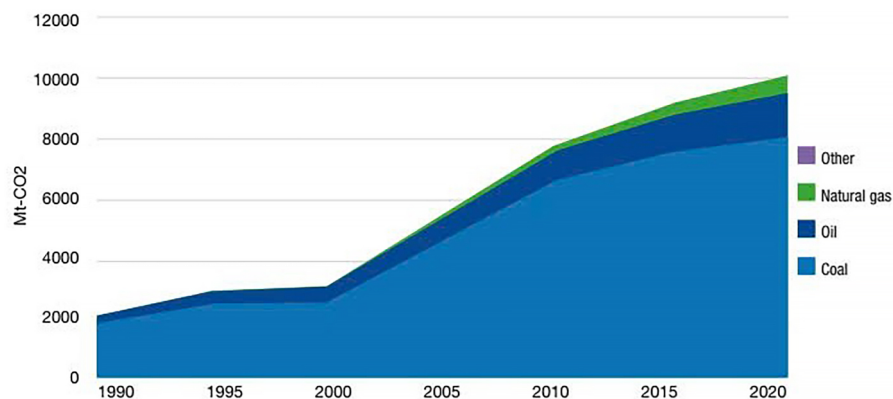


Chart 3: CO2 emission in China and carbon intensity, 1990-2020^[17]

¹⁵ Feng Hao, Yuan Zang, Bokai Fan, Yuan Zhang, *Environmental Regulation Promotes Green Development in China: from the Perspective of Technological Innovation*, <https://www.frontiersin.org/journals/energy-research/articles/10.3389/ferg.2023.1209650/full>. [accessed: 21.6.2025].

¹⁶ Linster, Yang, "China's Progress Towards Green Growth."

¹⁷ Ibidem.

3 | Vietnam's Legal Framework for Sustainable Innovation and Green Growth

3.1. Strategies and High-Level Policy Orientations

Over the past decade, Vietnam has promulgated several important strategies and orientations to promote green growth and sustainable development. The central document is the National Green Growth Strategy for the period 2021–2030, with a vision to 2050, approved by the Prime Minister under Decision No. 1658/QĐ-TTg dated October 1, 2021.^[18] This strategy sets out four key objectives: (i) reducing greenhouse gas emission intensity per unit of GDP; (ii) greening economic sectors; (iii) greening lifestyles and promoting sustainable consumption; and (iv) ensuring a transition that is just, inclusive, and resilient.

Particularly at COP26 in 2021, the Prime Minister pledged that Vietnam would achieve net-zero emissions by 2050. This historic commitment has provided a powerful impetus for reshaping the country's energy, industrial, and environmental policies. Based on this, the Government issued the National Action Plan on Green Growth for the period 2021–2030, along with various sectoral action plans, such as the plan to reduce methane emissions by 2030, and the roadmap for implementing COP26 commitments.^[19]

Achievements: These strategies have provided a clear orientation framework, raised social awareness, and attracted attention from the international community and investors. Vietnam is recognized as one of the leading countries in the region in linking development goals with global climate responsibility.^[20]

Limitations: However, policies remain fragmented; some goals are contradictory, such as maintaining energy security based on coal, while strongly committing to greenhouse gas reductions. Moreover, coordination

¹⁸ Dao Trong Duc, "Strategic Thinking and Breakthrough Vision in Promoting Green Transformation in Vietnam" *Environment Magazine*, No. 1 (2024): 30.

¹⁹ Nguyen Viet Binh, "Financial Policy for Green Growth, Towards Vietnam's Commitment at COP26 to Reduce Net Emissions to Zero" *Journal of Financial and Accounting Research*, No. 263 (2024): 66.

²⁰ MPI Vietnam & BCG, *Green Growth: Breakthrough Opportunity and Direction for Vietnam*. [accessed: 10.2023].

mechanisms among ministries, sectors, and localities have not been effective, leading to overlaps or gaps in implementation.^[21]

3.2. System of Specialized Laws

The Law on Environmental Protection 2020 marks a significant milestone, introducing fundamental innovations:

- Integrated environmental permits, consolidating multiple previous permits to reduce administrative procedures and strengthen cross-checking;
- Domestic carbon market, institutionalized with a roadmap for operation by 2028;
- Extended Producer Responsibility (EPR), requiring enterprises to recycle and collect discarded products and packaging;
- Classification of investment projects by environmental risk level, serving as a basis for applying appropriate Environmental Impact Assessment (EIA) procedures.

In addition, other laws, such as the Land Law, Investment Law, Construction Law, and Electricity Law, are directly related to green growth. However, the lack of coherence between these laws and the Law on Environmental Protection 2020 has led to conflicts. For example, land-use provisions for renewable energy projects under the Land Law are not aligned with the requirements of clean energy development, causing bottlenecks for many projects.

Another major limitation is the slow issuance of sub-law documents (decrees, circulars). To date, official criteria for “green projects” or a national green taxonomy have not been published, creating difficulties for financial institutions in appraising green credit.

Achievements: Vietnam has begun to establish a modern legal framework aligned with international standards, especially with new mechanisms such as the carbon market and EPR.^[22]

²¹ Nguyen An Dinh, Gang Chen, “Green Growth in Vietnam: Policies and Challenges” *E3S Web Conferences*, 164 (2020): 11010.

²² Vo Tuan Nhan, “Developing Green, Low-Waste, Low-Carbon and Circular Economic Models to Achieve Sustainable Development Goals” *Environment Magazine*, No. 11 (2023): 12.

Limitations: The legal system remains fragmented, with inconsistent provisions across sectors; delays in sub-law documents have created legal gaps, leading to difficulties in implementation for both enterprises and regulatory authorities.

3.3. Supportive Instruments and Practical Implementation

3.3.1. Green Finance

Vietnam has started to lay the foundation for a green finance market, through policies on green credit, green bonds, and sustainable investment funds. Several major commercial banks have provided preferential loans for renewable energy projects, while the Ministry of Finance has piloted the issuance of green bonds. In addition, green FDI inflows – particularly in offshore wind power and renewable energy equipment manufacturing – have increased.^[23]

Achievements: Vietnam has attracted billions of USD in green FDI into clean energy, while initially establishing a legal basis for green credit and green bonds.

Limitations: The green finance market remains small-scale and lacks transparency, particularly in the absence of a national green taxonomy as a classification standard, which increases the risk of “greenwashing.”

3.3.2. Green Technology and Innovation

The government has issued policies to encourage R&D and the application of green technologies and the circular economy. From 2018 to 2021, thanks to the feed-in tariff (FIT) mechanism, Vietnam witnessed a boom in solar and wind power, with installed capacity leading Southeast Asia.^[24]

Achievements: Rapid growth in renewable energy, particularly wind and solar power; greater awareness of green innovation among society and businesses.

²³ Le Ngoc Hai Long, “Attracting green FDI in Vietnam” *Journal of Financial and Accounting Research*, No. 259 (2024): 16.

²⁴ Trang Nguyen Thi Minh, Long Nguyen Hoang, Tam Le Thi Thanh, “Mechanism of Buying and Selling Solar and Wind Power in the Competitive Electricity Market in Vietnam” *Ho Chi Minh City Open University Journal of Science – Social Sciences*, No. 1 (2024): 50.

Limitations: Most technologies still depend on imports; domestic R&D capacity is weak; small and medium-sized enterprises face challenges in accessing advanced technologies and capital.

3.3.3. Enforcement and Monitoring Mechanisms

Vietnam has strengthened institutional arrangements and inspection capacities in the environmental sector. Some localities have adopted automatic monitoring systems and publicly disclosed environmental data.

Achievements: Improved transparency of environmental information and increased community oversight.

Limitations: Enforcement capacity remains limited; penalties are not sufficiently deterrent; monitoring systems are not yet comprehensive or standardized; inter-sectoral coordination in supervision remains overlapping.

3.4. General Assessment

From the above analysis, it is clear that Vietnam has made significant progress in building its legal and policy framework for sustainable innovation and green growth. The National Green Growth Strategy, the Net Zero 2050 commitment, and the Law on Environmental Protection 2020 have laid down a modern institutional foundation and affirmed strong political will. Instruments such as green credit, green bonds, and EPR have been initially implemented, contributing to investment attraction and raising public awareness.

However, there remain fundamental limitations: lack of coherence between the Law on Environmental Protection and other sectoral laws; delays in sub-law documents leading to legal gaps; a small-scale and underdeveloped green finance market without a national taxonomy; weak enforcement and monitoring capacity; and ineffective inter-sectoral coordination, resulting in contradictions between economic development and environmental objectives.

Overall, Vietnam has established an important legal and policy foundation for the green transition, but further improvements are needed toward greater coherence, effectiveness, and alignment with international practices.

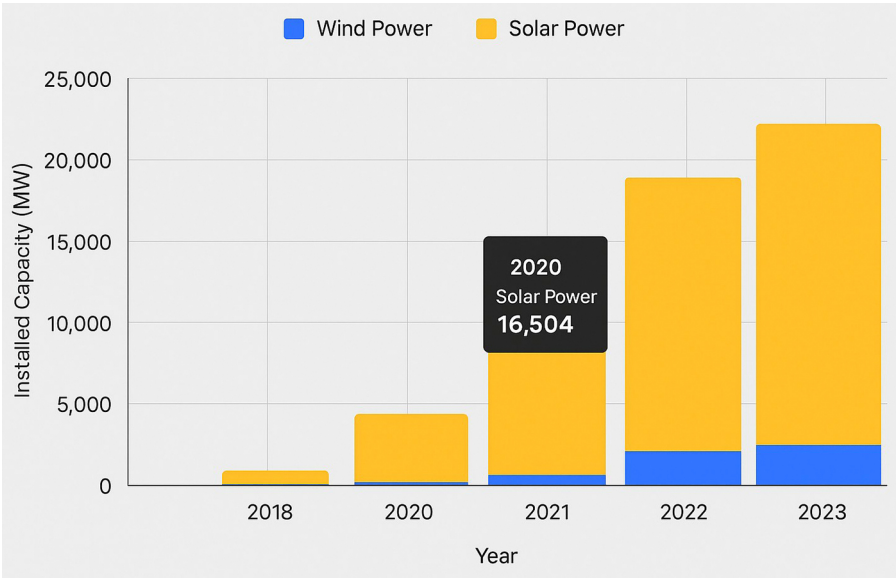


Chart 4: Growth of Solar and Wind Power Capacity in Vietnam (MW)^[25]

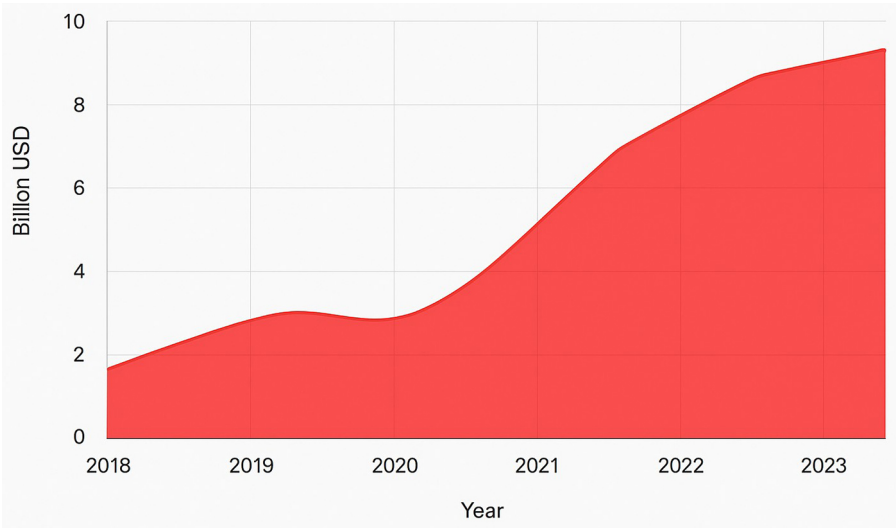


Chart 5: Estimated FDI in Green Sectors in Vietnam (billion USD)^[26]

²⁵ Some General Figures on National Power Sources in 2023. <https://www.evn.com.vn/d6/news/Mot-so-so-lieu-tong-quan-ve-nguon-dien-toan-quoc-nam-2023-66-142-124707.aspx>. [accessed: 23.6.2025].

²⁶ Le Quynh Anh, *Solutions to Effectively Attract Green FDI Capital into Vietnam Today*. <https://www.quanlynhanuoc.vn/2025/05/20/giai-phap-thu-hut-hieu-qua-von-dau-tu-truc-tiep-fdi-xanh-vao-viet-nam-hien-nay/>. [accessed: 23.6.2025].

4 | Comparison of the Legal Frameworks of China and Vietnam and Recommendations for Vietnam

4.1. Strategies and High-Level Policy Orientations

At the strategic level, China has elevated the concept of “ecological civilization” to a constitutional principle, institutionalized consistently throughout its Five-Year Plans and national development documents. As a result, China’s orientation toward green growth carries strong legal and political binding force, ensuring consistency in implementation. Vietnam, meanwhile, has promulgated the National Green Growth Strategy for 2021-2030 with a vision to 2050 and pledged to achieve net-zero emissions by 2050. However, these documents largely serve as policy orientations and lack coercive mechanisms to enforce accountability among ministries and local governments. From this difference, it is evident that Vietnam should move toward codifying the principle of green growth and the Net Zero 2050 commitment into higher-level legal instruments, while at the same time establishing an inter-sectoral monitoring mechanism to overcome the situation where policies are abundant but implementation remains limited.

4.2. Specialized Legal Frameworks

A key difference is that China has developed a relatively comprehensive system of specialized legislation, including the Environmental Protection Law, the Renewable Energy Law, the Circular Economy Law, and the Energy Conservation Law. Together, these form a coherent and interlinked legal network. Vietnam, in contrast, only has the Law on Environmental Protection 2020, alongside a set of fragmented provisions scattered across related laws such as the Land Law, the Investment Law, the Electricity Law, and the Construction Law. This lack of consistency has not only created conflicts in implementation but also obstructed many projects, most notably renewable energy projects hindered by land use regulations. From this comparison, it can be recommended that Vietnam urgently enact additional specialized laws such as a Renewable Energy Law and a Circular Economy Law, while also amending and supplementing existing laws to eliminate conflicts with the Environmental Protection Law. Furthermore, the early issuance of a national Green Taxonomy is essential to provide a unified legal basis for the development of the green finance market.

4.3. Supporting Instruments

4.3.1. Green Finance

China developed a green taxonomy at an early stage, thereby fostering the world's largest green bond market, strongly supported by policy banks. This mechanism has generated substantial financial momentum for green growth. Vietnam, though having taken initial steps with green credit, green bonds, and the attraction of green FDI, still has a market that is small, fragmented, and lacking transparency, particularly in the absence of a national Green Taxonomy as a classification standard. To address this, Vietnam needs to promptly issue a national taxonomy, combine it with tax and credit incentives, and establish an independent auditing mechanism to prevent "greenwashing."

4.3.2. Green Technology and Innovation

In the field of technology, China has adopted decisive policies to encourage research, development, and localization of green technologies, while forming industrial clusters and green innovation hubs. This approach has gradually reduced dependence on imported technologies and strengthened domestic competitiveness. Vietnam, by contrast, remains largely reliant on imported technologies, with weak domestic R&D capacity, and small- and medium-sized enterprises facing difficulties in accessing capital and advanced technology. The lesson from China suggests that Vietnam should establish a Green Technology Innovation Fund, adopt tax incentives for enterprises investing in R&D, and develop green industrial and technology clusters in key localities to promote endogenous innovation.

4.3.3. Enforcement and Monitoring Mechanisms

China stands out for its strict environmental monitoring system, application of digital technologies, and stringent sanctions, thereby significantly enhancing deterrence and management effectiveness. Vietnam, although it has strengthened inspection and introduced automatic monitoring systems in some localities, generally maintains light penalties, limited enforcement capacity, and overlapping inter-agency coordination. This indicates that Vietnam should increase the level of administrative sanctions, supplement criminal liability for serious pollution acts, expand automatic monitoring

systems nationwide, and strengthen capacity building for enforcement officials to improve regulatory effectiveness.

The analysis shows that China has established a comprehensive, coherent, and strongly enforceable legal framework, which provides powerful momentum for green transition. Vietnam, while having made important strides, is still at a foundational stage, lacking systemic consistency and specialized legal instruments. The key lesson is that Vietnam must undertake reforms simultaneously at multiple levels: elevating strategies and codifying green development principles, enacting additional specialized laws, promptly establishing a national taxonomy, enhancing support for green technologies, and strengthening enforcement capacity. Only through the combined implementation of these measures can Vietnam's green transition proceed in a coherent, substantive, and internationally aligned manner.

5 | Conclusion

Studying the experience of China, a country leading this transition with unprecedented scale and speed, offers profound insights and lessons. China has succeeded in building a relatively comprehensive and systematic policy and legal framework. The strength of this framework comes from the combination of four core elements: (1) Consistent political will and strategic orientation from the highest level with the philosophy of "Ecological Civilization"; (2) An increasingly strict environmental legal system with sufficient deterrent sanctions; (3) The strategic leverage role of a well-planned and developed green finance system; and (4) A focus on innovation and autonomy in green technology as a new growth driver. Although there are still challenges in implementation and a need for continuous improvement, this approach has created positive changes in China's economic and environmental structure, while providing a valuable reference model.

For Vietnam, the determination towards green growth and the net-zero emissions target is very clear. The 2020 Law on Environmental Protection is a significant legal step forward. However, the current situation shows that Vietnam's legal system still has gaps, especially a lack of synchronization between laws, ineffective enforcement mechanisms, and a dependence on external technology. Therefore, Vietnam must not merely enact individual laws, but must build a synchronized and effectively operating

policy ecosystem. This requires a foundational National Green Taxonomy, a transparent green finance market, a strict law enforcement mechanism with clear accountability, and most importantly, the seamless integration of environmental goals and national industrial development strategy.

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Green Blindness in the Digital Age: Towards a Regulatory Agenda for Digital Environmental Justice*

Abstract

The twin transitions of green and digital transformation are redefining sustainable development agendas, yet current digital innovation often suffers from “green blindness,” the neglect of environmental externalities and justice concerns. This oversight can lead to significant environmental harm and exacerbate inequalities, as recent analyses have warned, highlighting that environmental issues are being sidelined in favor of digital growth. This study examines the legal aspects of this issue, situating the discussion within a global context and employing a comparative lens on developing countries. In Vietnam, for example, a booming digital economy coupled with pressing environmental challenges highlights the need for integrated governance to avoid high resource consumption and other sustainability risks. The paper introduces the concept of digital environmental justice, to ensure that the benefits and burdens of digital transformation are distributed equitably, and ecological impacts are mitigated. It examines how emerging technologies, including artificial intelligence, blockchain, and big data systems, intersect with climate and environmental goals, identifying gaps where regulatory frameworks lag behind technological advancements. By bridging digital rights and environmental law, the paper argues for a more equitable, inclusive, and sustainable digital age, guiding the twin transitions toward both green and just outcomes.

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KEYWORDS: digital environmental justice, green blindness, twin transition, environmental law, sustainable digital governance

1 | Introduction

The “twin transition” of digital transformation and green transition is now a central narrative in sustainable development policy.^[1] Governments increasingly treat digitalization, through artificial intelligence (AI), big data, cloud services, and digital platforms, as an enabler of climate mitigation, environmental monitoring, and resource efficiency. However, this optimistic framing often obscures a structural risk, since digital innovation can fall prey to “green blindness,” advancing rapidly while its environmental externalities and distributional impacts are under-regulated and under-accounted for. In practice, the digital economy relies on material infrastructures, data centers, networks, devices, and global supply chains that consume energy and water at scale, extract critical minerals, and generate escalating streams of electronic waste.^[2] When these burdens are displaced onto particular communities (often poorer, peripheral, or less politically empowered), digital growth can reproduce and intensify environmental injustice rather than reduce it. This paper responds to that problem by developing and operationalizing the concept of Digital Environmental Justice (DEJ). DEJ sits at the intersection of digital justice (access, rights, and fair participation in digital society) and environmental justice (fair distribution of environmental benefits and burdens). It reframes the digital transition not only as a question of innovation or economic competitiveness, but also as one of legal obligations, rights-based governance, and institutional accountability. The central claim is straightforward that

¹ Aude-Solveig Epstein, “EU Environmental Law in the Digital Age: A Critical Outlook on the Twin Transition’s Legal Structure” *European Journal of Risk Regulation*, 28 July (2025): 1-17. Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, Jean Langlois-Berthelot, “Creating Resilient Artificial Intelligence Systems. A Responsible Approach to Cybersecurity Risks” *Prawo i Więź*, No. 5 (2025): 131-149.

² Md. Abdus Shabur, “Analyzing the Challenges and Opportunities in Developing a Sustainable Digital Economy” *Discover Applied Science*, No. 12 (2024): 667.

a sustainable digital future requires law to make environmental costs visible, governable, and fairly allocated, rather than treated as collateral damage or a problem for later mitigation.

Methodologically, the paper adopts a doctrinal and comparative orientation. It situates DEJ within contemporary environmental law principles and examines how emerging legal frameworks are beginning to address digital externalities. To avoid purely abstract theorizing, the paper also uses Vietnam as an illustrative developing-country exemplar, where ambitious digital growth objectives operate alongside significant environmental pressures. The paper proceeds in four moves. First, it clarifies the nature of green blindness within the digital ecosystem and explains why the twin transition is not automatic but must be actively governed. Second, it proposes DEJ as a normative and legal framework, grounded in environmental rights and the “right to know” the footprint of digital services and products. Third, it introduces evaluative criteria to assess whether legal systems are genuinely integrating environmental concerns into digital governance, updating environmental laws to address ICT risks, ensuring participation and fairness, and establishing credible enforcement and transparency mechanisms. Fourth, building on that diagnosis, the paper sets out a regulatory agenda that can steer digital transformation toward both sustainability and equity. By reframing digital governance through environmental justice and operational legal tools, this study helps bridge two domains that are too often treated separately. It argues that the twin transition will remain fragile unless legal systems make environmental impacts a core constraint and design parameter of the digital economy, rather than a peripheral afterthought.

2 | Integrating Digital and Green Transitions: A Conceptual and Normative Framework

2.1. The Twin Transition and “Green Blindness”

The term “twin transition” refers to the simultaneous pursuit of digital transformation and ecological sustainability. Policymakers, especially in the EU, herald this twin transition as a synergistic strategy: digital innovation is expected to drive environmental protection (through better

monitoring, efficiency, etc.), while green policies can guide technology towards sustainable ends.^[3] However, this optimistic narrative often suffers from “green blindness,” a failure to see or address the environmental externalities of digitalization. In practice, many digital policies and tech initiatives overlook the environmental costs of digital tech, including massive energy and water use, intensive resource extraction, and growing electronic waste.^[4]

The twin transition rhetoric often assumes digitalization will automatically advance sustainability, whereas in reality, there is nothing automatic about it. Indeed, experts caution that digital and green goals can conflict, and that achieving both sustainability and technological progress requires deliberate effort rather than technocratic optimism.^[5] Green blindness manifests in digital strategies that focus on growth and innovation, while ignoring externalities such as carbon footprints, e-waste, and pollution.^[6] This oversight is evident in the rebound effect: efficiency gains from new tech are often offset by increased demand and consumption. To concretize the environmental externalities that green blindness obscures, one can consider a matrix of three impact vectors in the digital ecosystem: (i) artificial intelligence (AI) and data centers; (ii) blockchain and fintech; (iii) user devices, the Internet of Things (IoT), and global supply chains.

2.1.1. AI and Data Centers

The AI revolution and explosion of data are driving a steep increase in energy demand. Training and running large AI models require power-hungry data centers and server farms, which in turn consume vast amounts

³ For example, the European Commission asserts that “Europe’s digital transition goes hand in hand with the European Green Deal.” In Vietnam as well, leaders emphasize that digital transformation and green transition are twin pillars of sustainable growth. See Epstein, “EU Environmental Law in the Digital Age”; OpenGov Asia, “Vietnam: Smart, Green and Digital Development in Action – OpenGov Asia” *OpenGov Asia*, 17 December 2025. <https://opengovasia.com>.

⁴ Epstein, “EU Environmental Law in the Digital Age.”

⁵ Antonio Aloisi, “A Green, Digital and Just Transition? The Not-So-Bizarre EU Policy Love Triangle | IE Insights” *Ie.Edu*, 13 March 13, 2025.

⁶ For instance, EU law and policy widely promote digital tools for climate solutions but have historically overlooked the rising energy consumption, GHG emissions, and mining of critical minerals tied to digitalization. See Epstein, “EU Environmental Law in the Digital Age.”

of electricity (and often water for cooling).^[7] Globally, data centers already account for a significant share of electricity use and carbon emissions.^[8] However, digital policies seldom impose hard environmental constraints on data centers or AI development. This is a paradigmatic case of green blindness: AI advancement is pursued with little regard for its carbon cost.^[9] Without stronger measures (such as efficiency standards or requirements to use renewable energy), the AI and cloud computing boom could undermine climate goals.

2.1.2. Blockchain and Fintech

The rise of blockchain technologies, especially cryptocurrencies like Bitcoin, illustrates another digital sector with an outsized environmental impact. A single Bitcoin transaction has been estimated to use as much electricity as one typical person's consumption over several years.^[10] Fintech data centers and high-frequency trading infrastructure also contribute to energy demand, though cryptocurrencies are the clearest example of digital finance colliding with climate concerns. Although, some positive developments are emerging,^[11] the overall fintech sector reveals how digital innovation can carry hidden environmental costs. Policymakers are only

⁷ Studies have found that training a single cutting-edge AI model can emit ~626,000 pounds of CO₂ (over 280 metric tons), roughly five times the lifetime emissions of an average car. See Packt, "Carbon Footprint of AI and Deep Learning" *Learning Tree*, 31 July 2019. www.learningtree.com.

⁸ By 2022, data centers (and crypto mining, discussed next) consumed about 2% of the world's electricity and nearly 1% of global CO₂ emissions. This footprint is projected to grow to 3.5% of electricity by 2025, equivalent to the power use of a country like Japan. See Shafik Hebous, Nate Vernon-Lin, "Carbon Emissions from AI and Crypto Are Surging and Tax Policy Can Help" *IMF*, August 15, 2024, www.imf.org.

⁹ The EU's proposed AI Act, for example, largely treats sustainability as an afterthought, as its only environmental provision is a reporting duty. See Epstein, "EU Environmental Law in the Digital Age."

¹⁰ By some measures, the Bitcoin network's annual electricity consumption exceeds 140 TWh (terawatt-hours), comparable to that of a mid-size country. This translates into tens of millions of tons of CO₂ emissions per year. In the U.S. alone, cryptocurrency mining was estimated to emit 25-50 million tons of CO₂ annually. See Samuel Asumadu Sarkodie et al., "Assessment of Bitcoin Carbon Footprint" *Sustainable Horizons* 7 (2023): 100060; Samuel Huestis, "Cryptocurrency's Energy Consumption Problem" *RMI*, 30 January 2023. <https://rmi.org>.

¹¹ For instance, Ethereum's switch to a "proof-of-stake" algorithm in 2022 drastically cut its energy use. See Huestis, "Cryptocurrency's Energy Consumption Problem."

starting to react; proposals include carbon taxes or electricity excise taxes on crypto mining,^[12] but legal frameworks have yet to fully internalize the climate externalities of blockchain.

2.1.3. Devices, IoT, and Supply Chains

The third vector concerns the physical footprint of our digital devices, from smartphones and laptops to the expanding Internet of Things (smart appliances, wearables, sensors in infrastructure, etc.). Manufacturing these devices requires significant energy and raw materials, including critical minerals (rare earths, lithium, cobalt, etc.), often extracted at high environmental and social cost.^[13] Toxic substances (lead, mercury, dioxins, etc.) leach into soil and water from rudimentary e-waste processing, causing severe health and environmental harms.^[14] This global flow of e-waste disproportionately burdens poorer communities, demonstrating an apparent digital environmental injustice. However, until recently, legal systems paid scant attention to e-waste and device life-cycles.

2.2. Digital Environmental Justice

In response to the inequities highlighted above, scholars and policymakers are developing the notion of Digital Environmental Justice (DEJ). This concept lies at the intersection of two established frameworks: digital justice (equitable access and rights in the digital sphere) and environmental justice (fair distribution of environmental benefits and burdens).^[15]

¹² Ibidem.

¹³ For example, mining of cobalt for batteries or rare earths for electronics is linked to habitat destruction, pollution, and labor abuses in parts of Africa and Asia. These upstream impacts are often invisible to end-users – a classic externality. At the downstream end, electronic waste (e-waste) is among the fastest-growing waste streams globally. As devices become obsolete at a rapid pace, mountains of e-waste are generated each year. In 2022, the world produced an estimated 62 million tonnes of e-waste, but only 22% of it was formally collected or recycled. See World Health Organization, *Electronic Waste (e-Waste)*, 1 October 2024. www.who.int.

¹⁴ Ibidem.

¹⁵ Kristina Lyons, Marilyn Howarth, “The Importance of Hemispheric Perspectives for the Environmental Humanities: Reflections on Bilingual Digital Environmental Justice Storytelling” *Tapuya: Latin American Science, Technology and Society*, 31 December 2022, www.tandfonline.com/doi/abs/10.1080.

It insists that technological progress must not come at the expense of environmental health or social equity, especially for those least able to bear the consequences.^[16] DEJ takes the core demand of environmental justice that no group or generation shoulders disproportionate environmental harm and extends this logic from its traditional contexts (like polluted or resource-extracted communities) to the realm of digital technology.^[17] It shines a light on how the entire life-cycle of digital products, from the mines extracting rare minerals, to energy-guzzling data centers, to e-waste dumps, may impose environmental burdens on specific populations.^[18] DEJ encompasses specific rights and obligations that can be recognized by law. These include:

1. The Right to a Healthy (or Clean) Environment. This right has gained international momentum, with the UN General Assembly in 2022 affirming a universal human right to a clean, healthy, and sustainable environment. Over 100 countries already recognize some form of this right in their constitutions or legislation.^[19] While traditionally aimed at pollution and ecosystem health, this right is fully applicable to digital-era environmental harms. Likewise, the right implies a government obligation to ensure environmental quality even as it pursues digital economic growth. Recognizing this right pushes the twin transition toward a rights-based approach, where environmental quality is not just a policy preference but a legal entitlement that must be balanced against (or integrated with) digital development objectives.
2. The Right to Information and Digital Transparency. Access to information is fundamental for environmental justice. In legal terms, this has meant robust freedom of information laws, pollutant release registers, and corporate disclosure requirements in environmental

¹⁶ Sustainability Directory, *Digital Environmental Justice*, 7 December 2025. <https://energy.sustainability-directory.com>.

¹⁷ Ibidem.

¹⁸ For instance, communities in the Global South engaged in informal e-waste recycling, or living near lithium mines, may face health risks so that consumers in wealthy markets can have the latest gadgets. DEJ calls for remedying these imbalances through law and policy, ensuring inclusivity and equity in the digital transition).

¹⁹ Vietnam, for example, explicitly states in its Constitution that “everyone has the right to live in a clean environment and has the duty to protect the environment.”

matters. For the ICT sector, one can analogously argue for a “right to know” the environmental footprint of digital products and services. Consumers and citizens should have access to data such as the energy efficiency of devices, the source of electricity for cloud services, the recyclability of gadgets, and the emissions from data processing.^[20] The law can enforce transparency by requiring digital tech firms to conduct life-cycle assessments and publish results.^[21] Thus, even trade secrets may yield when it comes to revealing what pollutants or greenhouse gases are released by a technology.

3. “Sustainability by Design” Obligations. Just as data protection law introduced the concept of “privacy by design,” there is a growing call for sustainability (or ecology) by design in technology laws. This would impose a duty on designers and manufacturers to systematically integrate environmental criteria in product development.^[22] A legal framework embracing sustainability-by-design might require software engineers to optimize code for energy efficiency, or mandate that cloud services dynamically shift loads to times/places of renewable energy availability. The underlying obligation is proactive: rather than fixing problems later (e.g., trying to recycle difficult materials), avoid creating the problem by smart design (e.g., using modular components that can be easily swapped and upgraded). Legislators and regulators would thus treat unsustainable design as a form of negligence or non-compliance.^[23]
4. Extended Producer Responsibility (EPR). EPR is a regulatory approach that holds producers responsible for the post-consumer stage of their products. Under EPR, manufacturers must either take back

²⁰ The EU’s Corporate Sustainability Reporting Directive requires standardized disclosure of sustainability data, including scope 1-3 emissions, which would cover ICT operations. See Epstein, “EU Environmental Law in the Digital Age.”

²¹ Ibidem.

²² For example, the EU’s recent Ecodesign for Sustainable Products Regulation (2024) will require that a wide range of products, including electronics, meet criteria for energy efficiency, durability, repairability, and recyclability – effectively ensuring sustainability is built into the design phase. Another example is the concept of digital product passports, where each product carries a digital record of its material composition and environmental impact to facilitate responsible end-of-life handling. See ibidem.

²³ Hedda Roberts et al., “Product Destruction: Exploring Unsustainable Production-Consumption Systems and Appropriate Policy Responses” *Sustainable Production and Consumption* 35 (2023): 300-312.

used products for recycling or disposal or pay fees to cover the costs municipalities or third parties incur to do so. This creates an incentive for producers to design products that are easier to recycle and that last longer.^[24] Coupled with consumer awareness (right to information) and design mandates, EPR is part of a toolkit that makes the digital sector more accountable for its environmental footprint.

2.3. Criteria for Evaluating the Legal Framework

Drawing from the above analysis, this section proposes four criteria to evaluate a legal framework's response to the twin transition. These criteria serve as diagnostic questions to "measure" where legal systems may be falling short.

Criterion 1: Integration of Environmental Concerns into Digital Laws. A key sign of green blindness is when a nation's digital transformation strategy or ICT regulatory acts completely ignore sustainability issues (energy usage, e-waste, etc.). Conversely, a forward-looking legal framework will mainstream environmental considerations into its digital governance regime. This could take various forms: requiring digital industries to adhere to climate targets, mandating green procurement for IT equipment in the public sector, or including environmental criteria in the licensing of telecom or data center operations.^[25] Evaluating this criterion involves checking: Do the laws governing digital infrastructures and services

²⁴ Vietnam's recent EPR regulations (effective 2022) are a case in point: producers and importers of electronic equipment must register recycling plans or contribute financially to a recycling fund. Non-compliance can lead to penalties, and there are targets set for recycling rates. Such laws ensure that developing countries like Vietnam, often on the receiving end of global e-waste, strengthen their capacity to manage it and share responsibility with multinational firms. See Yen Vu, "Vietnam Extended Producer Responsibility (EPR) Regulations" *ChemLinked*, 25 December 2023. <http://sustainability.chemlinked.com>.

²⁵ For example, the European Union has started moving in this direction by acknowledging the need for climate-neutral and energy-efficient data centers by 2030 as part of its Digital Decade goals. Some proposed EU digital regulations (like those on AI or cloud services) have begun to include sustainability clauses – albeit often limited to reporting obligations. See Jessica Commings, Kristina Irion, "Towards Planet Proof Computing: Law and Policy of Data Centre Sustainability in the European Union" *Technology and Regulation 2025* (2025): 1-36.

contain substantive environmental standards or references? Are there cross-references between digital law and environmental law? If environmental impact assessments (EIAs) are mandated for large ICT projects, or if data protection laws allow use of personal data for environmental oversight, these would be positive signs.

Criterion 2: Updating Environmental Laws for ICT Risks. Classic environmental laws (pollution control, waste management, conservation, etc.) were often drafted in a pre-digital era, targeting smokestack industries and traditional pollutants. Thus, a legal framework demonstrates integration if it has expanded or adapted environmental regulations to encompass ICT-related externalities, such as emissions from data centers, electronic waste streams, or the environmental implications of global supply chains for tech components. The presence of EPR laws for electronics (as discussed) is a strong positive sign, it shows the environmental law recognizes and governs the end-of-life of digital products. Another example is integrating greenhouse gas emissions from ICT operations into national climate accounting and requiring mitigation (e.g., adding data center emissions into emissions trading schemes or carbon tax regimes).^[26]

Criterion 3: Fairness and Public Participation. Key elements to examine this criterion include public participation rights, access to environmental information related to digital projects, and mechanisms to protect vulnerable groups.^[27] Fairness also involves intergenerational justice, whether long-term impacts are weighted, and global justice, in the sense of recognizing cross-border effects (for instance, exporting e-waste to poorer countries or heavy resource extraction abroad to fuel domestic tech).^[28] Additionally, this criterion also require the just transition ensuring that workers and communities reliant on old, unsustainable tech industries

²⁶ The EU's experience is telling while it has directives on e-waste (WEEE) and energy use of appliances, critics point out that EU environmental law still struggles with indirect and diffuse emissions from digital tech (like the CO₂ from electricity used by IT, or the life-cycle impacts in supply chains). See Epstein, "EU Environmental Law in the Digital Age."

²⁷ For example, if a government is creating a policy for national digital transformation, are environmental stakeholders and community representatives at the table? When environmental impact assessments are conducted for new tech infrastructure (like a semiconductor plant or an undersea internet cable), does the law mandate community consultations and consider social impacts (perhaps on local fishing grounds, etc.)?

²⁸ Nicholas Theis, "The Global Trade in E-Waste: A Network Approach" *Environmental Sociology*, No. 1 (2021): 76-89.

(e.g., those in electronics manufacturing with hazardous processes) are not left behind as we shift to greener practices.^[29]

Criterion 4: Enforcement and Transparency Mechanisms. This criterion checks whether there are robust institutions and tools in place to ensure compliance with both digital and environmental requirements, and whether information flows enable oversight.^[30] If a legal framework leans excessively on self-regulation (e.g., expecting tech companies to police themselves via codes of conduct) and “paper” transparency (disclosures without consequence), it may fall short on enforcement. A failure here would be a situation where laws exist on paper, but violations (like illegal dumping of e-waste or data centers running on coal power in breach of pledges) go unchecked due to weak governance.

3 | Global Diagnosis with Vietnam Exemplar

3.1. Global Frameworks and National Comparisons

3.1.1. International Environmental Frameworks

3.1.1.1. INTERNATIONAL TREATIES

The 2015 Paris Agreement provides an overarching climate framework (with most nations pledging net-zero emissions by mid-century), but does not explicitly address the ICT sector. In the waste realm, the 1989 Basel Convention controls transboundary movements of hazardous wastes, including certain e-waste. Over 180 countries have ratified Basel, imposing prior informed consent for hazardous e-waste exports but a notable gap is the United States, which has signed but not ratified Basel.^[31] Such exclusions highlight regulatory fragmentation; for example, illegal e-waste

²⁹ J. Mijin Cha, *A Just Transition for All: Workers and Communities for a Carbon-Free Future* (Cambridge: MIT Press, 2024).

³⁰ Anton Shevchenko, “Do Financial Penalties for Environmental Violations Facilitate Improvements in Corporate Environmental Performance? An Empirical Investigation” *Business Strategy and the Environment*, No. 4 (2021): 1723-1734.

³¹ Zhang Hui, Aftab Haider, Asif Khan, “International Trade and Plastic Waste in Oceans: Legal and Policy Challenges” *Frontiers in Marine Science*, 12 August 2025. www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2025.1627829.

exports from the U.S. still find pathways to developing countries through this loophole. On public participation, the 1998 Aarhus Convention champions access to environmental information and justice, including in decisions about technology infrastructure. However, Aarhus's principles (e.g., community consultation rights) are not global norms; many countries, especially in the developing world, lack equivalent legal guarantees.^[32]

3.1.1.2. "SOFT" STANDARDS AND FRAGMENTATION

Outside of binding treaties, a variety of voluntary guidelines and coalitions address sustainable ICT, though in a fragmented way.^[33] Multi-stakeholder initiatives, such as the Coalition for Digital Environmental Sustainability (CODES), launched by the UN in 2021, aim to align digital transformation with the Sustainable Development Goals. There are also industry-led pledges, such as the Climate Neutral Data Centre Pact in Europe.^[34] However, these efforts are disparate and non-binding. This institutional fragmentation means progress relies on piecemeal adoption of standards, and the risk of "forum shopping" remains.^[35]

3.1.2. EU and the U.S.

The European Union has explicitly embraced a "twin transition," seeking to harmonize digital innovation with green goals. The EU's Digital Strategy is meant to complement the European Green Deal, with initiatives such as circular-economy action plans for electronics and energy-efficiency rules.^[36]

³² Carolyn Abbot, Maria Lee, "NGOs Shaping Public Participation Through Law: The Aarhus Convention and Legal Mobilisation" *Journal of Environmental Law*, No. 1 (2024): 85-106.

³³ For instance, the ITU (a UN agency for ICT) has developed technical standards for green ICT (e.g., criteria for ICT product eco-design and methodologies for assessing ICT's environmental impact). See Paul Keng Fai Wan, Shanshan Jiang, "Enabling a Dynamic Information Flow in Digital Product Passports during Product Use Phase: A Literature Review and Proposed Framework" *Sustainable Production and Consumption*, 54 (2025): 362-374.

³⁴ UNEP, *Digitalization for Sustainability*, 14 November 2023, www.unep.org.

³⁵ This term refers to the phenomenon of companies relocating activities to jurisdictions with weaker regulatory frameworks.

³⁶ Purva Mhatre et al., "A Systematic Literature Review on the Circular Economy Initiatives in the European Union" *Sustainable Production and Consumption*, 26 (2021): 187-202.

The EU has even pledged that all data centers will be “climate-neutral, highly energy-efficient and sustainable by 2030.” In practice, however, blind spots exist. EU policies thus far focus on hardware efficiency and e-waste collection, leaving gaps in software optimization, data-driven emissions, and frivolous energy use such as crypto mining.^[37] On e-waste, the EU’s WEEE Directive and Circular Economy policies are advanced, but enforcement is uneven; a lot of Europe’s discarded electronics still end up in countries with weaker protections.^[38]

By contrast, the United States lacks an integrated approach linking digital regulation with environmental policy; digital and green laws primarily operate in silos. The U.S. tech policy centers on data privacy, competition, etc., while climate policy (e.g., the Inflation Reduction Act) focuses on power and transport sectors, not the ICT industry specifically. The U.S. has no federal e-waste law; e-waste management is governed by a patchwork of state laws. The U.S. also stands alone among developed economies in not ratifying the Basel Convention, which hampers a coordinated response to e-waste exports.^[39] Similarly, energy-intensive crypto mining in the U.S. is not federally regulated for environmental impact, any measures (such as New York State’s 2022 two-year moratorium on certain fossil-fueled crypto mining) are local. The absence of national standards means high-energy tech industries can relocate to jurisdictions with cheap, carbon-heavy power, undermining overall climate efforts.^[40] The U.S. approach remains *ad-hoc*, as incentives for tech growth on one hand, and separate efforts to green the power sector on the other, without formally linking the two.

³⁷ For example, the energy demand of data centers (especially for AI) is soaring, EU data centers already consume ~4% of EU electricity, and could reach 150 TWh by 2026. See Bart Brouwers, “AI’s Hidden Energy Bill: Europe Grapples with Digital Growth” *IO+*, 5 October 2025. <https://ioplus.nl>.

³⁸ *Ibidem*.

³⁹ Paul Hagen, Ryan Carra, “The Expanding Regulation of Used and End-of-Life Electronic Products” *Beveridge & Diamond PC*, 1 September 2014. www.bdlaw.com. [accessed: 28.12.2025].

⁴⁰ Hebous, Vernon-Lin, “Carbon Emissions from AI and Crypto Are Surging and Tax Policy Can Help.”

3.1.3. Developing Countries

Many developing countries are experiencing a *déjà vu* of environmental risks as they pursue digital growth, echoing the pitfalls of earlier industrialization. Key patterns include:

3.1.3.1. CARBON-INTENSIVE DIGITAL INFRASTRUCTURE

Fossil fuels often power the digital boom in emerging economies. Data centers, telecom networks, and crypto mining operations are frequently plugged into coal-heavy or oil-based grids.^[41] For example, both China and India have seen a surge in energy-hungry server farms and Bitcoin mining rigs tapping cheap coal power, causing local spikes in emissions. Without intervention, the AI and crypto waves could significantly worsen the carbon footprints of developing countries.^[42] The lack of green energy mandates or efficiency standards in these jurisdictions creates a classic regulatory vacuum: digital industries expand with little requirement to use renewables or curb energy use.

3.1.3.2. E-WASTE IMPORT AND INFORMAL RECYCLING

Developing nations also bear the brunt of the world's e-waste tsunami. Higher-income countries routinely ship used electronics to lower-income regions, where enforcement of import bans is often lax.^[43] This has made

⁴¹ Globally, about 56% of electricity consumed by data centers comes from coal and natural gas combined. In regions like Asia and Africa, this share can be even higher due to reliance on coal-fired power and diesel generators for backup. The International Energy Agency projects that until 2030, over 40% of new data center electricity demand will be met by coal and gas if current trends continue. See International Energy Agency, *Energy and AI*, World Energy Outlook Special Report (April 2025). www.iea.org.

⁴² Indeed, one IMF analysis estimates that by 2027, data centers and crypto mining combined could generate ~450 million tons CO₂ annually (about 1.2% of global emissions), much of that growth in countries with fossil-based grids. See Hebous, Vernon-Lin, "Carbon Emissions from AI and Crypto Are Surging and Tax Policy Can Help."

⁴³ An estimated 5.1 million tonnes of e-waste were traded across borders in 2022, and about 65% of those shipments flowed from high-income to middle- and low-income countries via uncontrolled channels. See United Nations Institute for Training and Research, *Global E-Waste Monitor 2024: Electronic Waste Rising Five Times Faster than Documented E-Waste Recycling*, 20 March 2024. <https://unitar.org>.

places like Ghana's Agbogbloshie or Nigeria's Alaba market dumping grounds for the globe's discarded gadgets. Southeast Asia faces similar pressures that despite national laws, containers of old computers and phones have entered countries like Cambodia and Malaysia for unsupervised recycling. Once imported (legally or illegally), e-waste in developing countries is usually processed by a vast informal sector, street recyclers, backyard smelters, and salvage yards, using primitive methods.^[44] Workers (including children) often burn cables in open air, use acid baths to extract gold, and dump residual toxins. The result is severe environmental injustice: local communities suffer contamination of air, soil, and water by heavy metals and dioxins, with dire health impacts.^[45]

3.1.3.3. GAPS IN IMPACT ASSESSMENT AND PLANNING

A common issue is that Environmental Impact Assessment (EIA) regimes in developing countries have not fully caught up with the digital infrastructure boom. Traditional EIA regulations often do not explicitly list data centers, large server farms, or crypto-mining facilities as projects requiring assessment. Even when EIAs are conducted, they may overlook digital-specific issues (such as high water use for cooling or the climate resilience of network infrastructure). For example, in Kazakhstan and Iran, surges of informal crypto mining strained electric grids and caused blackouts, yet such operations were largely unregulated at first.^[46] Developing states often lack policies on the books to evaluate and mitigate the cumulative impact of digitization, such as increased electricity demand, electronic waste generation, and land use for server facilities.

3.1.3.4. LIMITED ENFORCEMENT CAPACITY

Even when laws exist, and many developing countries are enacting e-waste rules or energy efficiency standards on paper, enforcement is the Achilles' heel. Regulatory agencies in these countries are frequently under-resourced, and technical expertise in fast-evolving tech fields is thin.^[47]

⁴⁴ Ibidem.

⁴⁵ Ibidem.

⁴⁶ Shawn Tully, "Kazakhstan Internet Shutdown Sheds Light on a Big Bitcoin Mining Mystery" *Fortune*, 5 January 2022. <https://fortune.com>.

⁴⁷ The Global E-waste Monitor notes that while 81 countries have some e-waste legislation, "enforcement [...] remains a genuine challenge globally," and only

In lower-income regions, environmental authorities struggle to monitor illegal scrap imports or informal recycling operations hidden in urban slums. Environmental police units exist but often lack the equipment and workforce to monitor hundreds of small-scale recyclers or to audit the energy usage of dispersed IT facilities.^[48] Corruption and the prioritization of economic growth can further undermine strict enforcement.

3.2. Vietnam – a Case in Point

Vietnam is aggressively pursuing digital transformation as a driver of economic growth while simultaneously committing to sustainability goals, such as achieving net-zero carbon by 2050.^[49] This dual aspiration makes Vietnam a telling case of the digital-environment nexus in the developing world. Vietnam's government has placed digital development at the heart of its strategy. The National Digital Transformation Programme (Decision 749/QĐ-TTg 2020) sets targets for a digital economy comprising 20% of GDP by 2025 and 30% by 2030.^[50] The country is rapidly expanding e-government, digital services, and ICT infrastructure (broadband now reaches >99% of villages). In parallel, Vietnam made a landmark pledge at COP26 in 2021 to achieve carbon neutrality by 2050. It has since enshrined climate goals in domestic policy, issuing a National Climate Change Strategy to 2050 and integrating climate considerations into sectoral plans (e.g., Power Development Plan VIII emphasizes shifting to renewables).^[51] Thus, Vietnam recognizes that unchecked ICT emissions or pollution could undermine its climate and environmental objectives.

Vietnam's legal landscape regarding digital and environmental issues includes strong elements, but also significant gaps. The 2020 Law on Environmental Protection (LEP) is Vietnam's umbrella environmental law.

42 countries have explicit collection or recycling targets. See United Nations Institute for Training and Research, *Global E-Waste Monitor* (2024).

⁴⁸ Kathirvel Brindhadevi et al., "E-Waste Management, Treatment Options and the Impact of Heavy Metal Extraction from e-Waste on Human Health: Scenario in Vietnam and Other Countries" *Environmental Research*, 217 (2023): 114926.

⁴⁹ Minh Hanh, *Fulfilling Climate Commitments at COP26: Vietnam's Comprehensive, Cross-Sector, and Whole-of-Society Action*, Ministry of Agriculture and Environment, 30 September 2025. <https://en.mae.gov.vn:443>.

⁵⁰ VNA, *National Digital Transformation – New Driver for Sustainable Development*, 10 October 2025, sec. Sci-Tech. <https://en.vietnamplus.vn>.

⁵¹ Minh Hanh, "Fulfilling Climate Commitments at COP26."

It introduced a comprehensive climate change chapter and the principle of Extended Producer Responsibility (EPR). Under the LEP 2020 and its implementing Decree 08/2022, producers/importers of certain products must take responsibility for recycling and waste treatment. Notably, electrical and electronic products will be subject to mandatory recycling obligations from January 1, 2025.^[52] This means tech manufacturers in Vietnam must either organize take-back and recycling of e-waste or contribute to a state recycling fund. The LEP also generally bans the import of waste (including e-waste) and requires EIAs for projects likely to affect the environment. However, the LEP and its detailed regulations do not yet specifically regulate emerging digital industries such as data centers or crypto as they are not explicitly named in any annexes or standards.

The National Digital Transformation Programme focuses on the digital government, economy, and society pillars, with objectives such as expanding broadband and e-commerce.^[53] Until recently, concepts such as green IT and energy-efficient tech were absent from such strategies. However, policy awareness is growing. In late 2024, the Politburo issued Resolution 57-NQ/TW, which, for the first time, called for sustainable, green digital infrastructure development. Vietnam is even drafting a Law on Digital Transformation, which reportedly will classify digital infrastructure as national strategic assets and emphasize that they must be “modern, secure, sustainable, and green.”^[54] This is a positive signal that “green-by-design” principles may soon be embedded in Vietnam’s digital regulations, though the law is still in draft.

On climate and energy, Vietnam’s Power Development Plan (PDP VIII) (approved in 2023) and other strategies aim to dramatically increase renewable energy, which could benefit the ICT sector’s carbon footprint. Vietnam is exploring Direct Power Purchase Agreements (DPPAs) to allow large power consumers (such as data centers) to buy electricity directly from renewable generators. Indeed, a recent government Decision 2161/QĐ-TTg in 2025 set ambitious targets for digital infrastructure by 2030, including 50% of national data center capacity to be supplied by green data centers.^[55]

⁵² “Vietnam: Extended Producer Responsibility–Latest Legislative Development” Baker & McKenzie, 19 January 2023. <https://insightplus.bakermckenzie.com>.

⁵³ VNA, *National Digital Transformation – New Driver for Sustainable Development*.

⁵⁴ Ibidem.

⁵⁵ David Harrison et al., “Vietnam Embraces Digital Infrastructure, Green Data Centers, and AI” *Www.Hoganlovells.Com*, 21 October 2025. www.hoganlovells.com.

The same decision explicitly links data center expansion with renewable energy supply via DPPAs.

Despite these developments, regulatory gaps remain, as follows:

1. **Lack of “Green-by-Design” in Digital Regulations.** Vietnam’s digital legal instruments thus far have not systematically incorporated environmental requirements. The Law on Information Technology, telecom regulations, or strategies such as “Made in Vietnam 4.0” mostly ignore issues such as energy-efficiency standards for ICT equipment, e-waste minimization in device manufacturing, and lifecycle assessments for new tech projects. For instance, until the recent Decision 2161, a data center investor faced no legal obligation to use renewable energy or reuse waste heat. Likewise, telecom operators are not yet mandated to power cellular towers with clean energy. The concept of “green ICT” is just starting to enter policy discourse in Vietnam. As noted, the draft Digital Transformation Law’s mention of “green digital infrastructure” is promising. However, it will need concrete provisions (e.g., incentives for energy-efficient cloud computing, requirements for public agencies to procure green IT equipment, etc.) to avoid being merely aspirational. In short, Vietnam is still building out its digital infrastructure largely on conventional lines, energy and environmental design considerations are not front-loaded in project planning or licensing.
2. **Environmental Law Not Targeting ICT-specific Risks.** Vietnam’s environmental regulations have yet to catch up with the novel impacts of the ICT sector. EIA rules in Vietnam (under Decree 08/2022 and related guidance) enumerate the types of projects that require assessment, including thermal power plants, factories, and waste treatment facilities. However, data centers are not explicitly listed; only massive construction projects or power-consuming facilities might trigger an EIA by general criteria. Thus, a new data center could avoid a rigorous EIA if it is interpreted as a service facility. There are no standards or guidelines specific to data centers’ environmental performance (e.g., on allowable power usage effectiveness, or backup generator emissions). Similarly, cryptocurrency mining operates in a grey zone when Vietnam’s government has discouraged crypto use in finance, but mining *per se* is not clearly regulated. As of mid-2025, Vietnam’s Law on Digital Technology Industry recognizes

digital assets and is piloting exchanges,^[56] yet it says nothing about the energy or carbon footprint of mining rigs. In fact, Vietnam's cheap electricity has made it a hotspot for underground crypto farms, which could undermine local energy conservation efforts. Also, Vietnam does not currently regulate the import or manufacture of smart devices from an eco-design perspective, beyond general chemical safety regulations. The Environmental Protection Law's EPR scheme will target e-waste broadly, but it does not single out high-risk ICT product categories, such as batteries in gadgets or solar panels, which could pose future waste challenges. In summary, Vietnam's green laws cover traditional pollution sources well but miss emerging ICT-centric issues such as significant data center emissions, crypto energy use, and new waste streams.

3. **Limited Community Consultation in Digital Infrastructure.** Rooted in Confucian traditions that emphasize social harmony, Vietnamese society has historically placed less emphasis on litigation as a means of resolving conflicts than Western nations do.^[57] This cultural context, coupled with a firm reliance on governmental authority, shapes public engagement in environmental matters. While legal frameworks, such as the Environmental Impact Assessment (EIA) process, mandate community consultation and the public disclosure of reports, their implementation often faces challenges. In practice, these consultations can become formalities. A contributing factor is a certain public passivity; until a tangible problem emerges, environmental issues are frequently perceived as falling within the state's sole purview. This mindset, combined with sometimes ineffective official communication channels,^[58] means that citizens often have little influence over decisions about digital infrastructure, whether fiber-optic cable routes, cell tower locations, or data center construction.^[59]

⁵⁶ Evan Hultman, "The Financial and Regulatory Risks of Energy-Intensive Crypto Mining in Emerging Markets" *Ainvest*, 24 November 2025.

⁵⁷ Minh Trang Nguyen, Hung Tran, "The Conflict Between Individual Freedom and Social Order in Vietnam Traditional Communities" *IJSSER*, No. 05 (2025): 170-1720.

⁵⁸ Simon Lockrey et al., "Recycling the Construction and Demolition Waste in Vietnam: Opportunities and Challenges in Practice" *Journal of Cleaner Production*, 133 (2016): 757-766.

⁵⁹ For instance, residents might learn of a new peri-urban data center only after construction begins, with limited avenues for input.

4 | A Regulatory Agenda for Digital Environmental Justice

The rise of the digital economy must be steered in tandem with environmental sustainability to avoid the “green blindness” seen in many current tech initiatives. A robust regulatory agenda for Digital Environmental Justice (DEJ) should ensure that digital transformation policies explicitly incorporate environmental objectives and that environmental laws are updated to address digital-era challenges.

4.1. Integrate Environmental Objectives into Digital Governance

To overcome green blindness, policymakers should mainstream environmental sustainability into digital strategies and regulations. Thus, every national digital transformation plan, ICT law, or tech industry policy must include clear environmental standards and climate targets. For example, governments can require data centers, telecom networks, and other digital infrastructures to meet carbon-reduction goals aligned with national climate commitments.^[60] Public procurement in the tech sector should prioritize energy-efficient and eco-friendly equipment. Licensing requirements for digital services can impose conditions on environmental performance, such as mandating that telecom operators or cloud data centers use a portion of renewable energy or implement e-waste reduction programs. In short, digital governance should embed green criteria by design. Just as privacy-by-design became a norm in data protection, sustainability by design should be a guiding legal principle in technology development.^[61] Software and hardware designers would then be obliged to consider energy use, resource efficiency, and recyclability at every stage.

⁶⁰ Abhiram Reddy Bommareddy, “Towards Sustainable Federal Financial IT: Green Computing Practices In Data Centers And Cloud Platforms” *International Journal of Environmental Sciences*, No. 24 (2025).

⁶¹ Leonie Reins and Julia Wijns, “The ‘Safe and Sustainable by Design’ Concept – A Regulatory Approach for a More Sustainable Circular Economy in the European Union?” *European Journal of Risk Regulation*, No. 1 (2025): 96-113.

4.2. Update Environmental Regulation for the Digital Era

Environmental laws and standards must be modernized to cover digital industries and their externalities. Traditional environmental regulations, often written with factories and pollution in mind, should be expanded to address issues like data center emissions, cryptocurrency mining, and electronic waste. For instance, data centers and large server farms should be explicitly included in Environmental Impact Assessment (EIA) regimes and subject to efficiency and cooling standards. If a country has a carbon trading or tax program, it should account for substantial greenhouse gas emissions from ICT operations (e.g., by including data center CO₂ output in national carbon budgets).

Likewise, electronic waste (e-waste) laws need strengthening; governments should enforce and broaden Extended Producer Responsibility (EPR) programs for electronics, requiring tech manufacturers to take back and recycle devices at the end of their life. Strong EPR not only shifts the burden of disposal off communities, but also incentivizes companies to design products that last longer and are easier to repair or recycle.^[62] Additionally, environmental regulations should anticipate new digital technologies, for example, setting guidelines for safe battery disposal from electric vehicles and gadgets, or rules for sustainable sourcing of rare minerals used in high-tech devices.

4.3. Ensure Equity and Public Participation in Tech Development

Fairness and inclusivity are central to digital environmental justice. A key agenda item is to empower communities and stakeholders to participate in decisions about digital infrastructure and to protect vulnerable groups from disproportionate harms.^[63] Public consultation and information disclosure should be mandatory for projects like data centers, 5G towers, or innovative city systems, just as they are for highways or power plants. This involves strengthening communities' legal rights to access environmental

⁶² Stéphanie H. Leclerc, Madhav G. Badami, "Extended Producer Responsibility for E-Waste Management: Policy Drivers and Challenges" *Journal of Cleaner Production*, 251 (2020): 119657.

⁶³ Roksana Jahan Tumpa, Leila Naeni, "Improving Decision-Making and Stakeholder Engagement at Project Governance Using Digital Technology for Sustainable Infrastructure Projects" *SASBE*, No. 4 (2025): 1292-1329.

information related to digital projects and to voice concerns early in the planning process.

Laws should ensure that the benefits and burdens of digitalization are fairly distributed across society and future generations. This could mean investing in green jobs training for workers in polluting tech industries (ensuring a just transition as those industries transform). Globally, equity demands that wealthy digital economies not simply export their environmental costs. Regulations should prohibit the dumping of e-waste in developing countries and enforce due diligence on supply chains to avoid toxic “pollution havens.” In practice, this might involve tighter controls on transboundary e-waste shipments (implementing treaties like the Basel Convention) and requiring tech companies to source minerals in ways that minimize environmental damage in producer countries.

4.4. Strengthen Enforcement and Transparency Mechanisms

Even the best laws mean little without vigorous enforcement. Regulators must therefore bolster oversight institutions and transparency tools to hold the tech sector accountable.^[64] This agenda calls for well-resourced environmental agencies that can monitor digital industries, for example, tracking energy consumption of data centers, auditing companies’ e-waste management practices, and inspecting crypto-mining facilities for compliance with emissions rules. Governments should facilitate real-time reporting and open data on key indicators (energy use, emissions, waste), leveraging digital technology to improve transparency. A robust “right to know” the environmental footprint of digital services can be enacted so that consumers and citizens have access to information on data centers’ energy sources, device manufacturing impacts, and more. Importantly, companies must face consequences for violations: fines or permit revocations for data centers running on coal power despite green pledges, or penalties for illegal electronic waste dumping, as examples.

⁶⁴ Gaurav Agrawal, “Accountability, Trust, and Transparency in AI Systems From the Perspective of Public Policy: Elevating Ethical Standards,” [in:] *AI Healthcare Applications and Security, Ethical, and Legal Considerations* (IGI Global Scientific Publishing, 2024), 148-1462.

Additionally, enforcement bodies in the environmental and digital realms should work in tandem.^[65] This could mean joint task forces between ICT regulators and environmental inspectors to address cross-cutting issues (such as air pollution from diesel backup generators at server farms or the climate impacts of blockchain operations). International cooperation is also vital for enforcement: countries should share data and best practices to prevent regulatory arbitrage where polluting digital businesses migrate to laxer jurisdictions.

5 | Conclusion

The promise of the twin transition is real: digital technologies can support environmental monitoring, optimize resource use, and accelerate climate solutions. However, the analysis in this paper shows that digitalization is not environmentally neutral, and sustainability outcomes are not automatic. When digital strategies prioritize growth while overlooking energy demand, resource extraction, and e-waste, they institutionalize “green blindness.” This blindness is not merely a technical oversight; it is a governance failure with justice consequences because the material burdens of digital life tend to concentrate on particular communities and jurisdictions least able to resist or remediate harm. To address this gap, the paper advances Digital Environmental Justice (DEJ) as a framework that integrates environmental law’s distributive and procedural commitments into the digital sphere. The paper’s regulatory proposals emphasize that DEJ requires a toolbox, not a single statute. Effective governance must combine institutional coordination (to overcome siloed regulation), corporate accountability (to internalize lifecycle harms through disclosure, due diligence, and extended producer responsibility), and economic instruments (to correct price signals and incentivize green digital infrastructure).

Ultimately, the twin transition will be judged not by how quickly societies digitize, but by whether digital growth produces net environmental gains and whether burdens are distributed fairly. This paper argues that

⁶⁵ Jorge Stürmer, Maurício Serva, “Environmental Governance That Emerges from Action: Pragmatist Studies in Protected Areas” *Revista de Administração Contemporânea*, 28 (2024): e240105.

the appropriate response is neither technocratic optimism nor blanket resistance to digital innovation, but a legal and institutional settlement that makes sustainability and justice core design constraints of the digital economy. Future research can deepen this agenda by refining metrics for algorithmic and infrastructure resource accounting, exploring legal remedies and standing for communities affected by digital externalities, and assessing how international cooperation, through standards, trade, and environmental treaties, can reduce regulatory arbitrage and strengthen accountability across borders. For now, the key implication is clear: without DEJ-oriented law and governance, the digital age risks reproducing environmental harms under a new technological guise; with DEJ, the twin transition can be redirected toward outcomes that are both green and just.

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MICHELE DILENCE

Green Leases in Germany: Towards a New Standard in Commercial Real Estate

Abstract

This study examines the transformation of Green Leases in German commercial real estate from voluntary market initiatives to regulatory compliance necessities. The research investigates how EU and national regulatory frameworks – EU Taxonomy, SFDR, CSRD, and Germany’s GEG – drive contractual innovation in sustainable property management. Using qualitative methodology, this study conducts comprehensive document analysis of academic literature, legal documentation, and industry guidelines (2015-2025), examining regulatory impact mechanisms through thematic content analysis. The findings reveal a fundamental paradigm shift where regulatory requirements have become the primary driver of Green Lease adoption. The study identifies a systematic “regulatory cascade effect” whereby EU-level regulations translate into fund-level compliance requirements, subsequently driving property-level contractual obligations. The EU Taxonomy’s “Do No Significant Harm” principle creates continuous compliance obligations requiring contractual mechanisms. This study contributes to academic discourse by systematically documenting the transition from voluntary to regulatorily-driven sustainability. The identified regulatory cascade effect provides a framework for understanding similar transformations in other European markets, establishing Green Leases as essential instruments in the emerging regulatory compliance architecture for sustainable real estate management.

KEYWORDS: Green Lease, environmental certification, ESG regulatory, lease agreements, CSRD

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1 | Introduction

A general, let alone legal definition of what characterizes Green Leases as such, and a uniform Green Lease does not yet exist.

1.1. Definition

The requirements placed on sustainability in general and particularly on sustainable regulations in lease agreements have very different backgrounds and qualities. Against the background of dynamic developments in this area, they will also have to make a forecast decision about the development of the respective requirements in the future. In view of societal and political sustainability goals, it can be expected that requirements will continue to increase.^[1]

However, Green Leases in practice are increasingly focusing on sustainable management by the landlord and sustainable use by the tenant. Following the principles issued by the ZIA,^[2] Green Leases should each contain at least one regulation from the following areas:

- sustainable use and management of the rental property during ongoing operation,
- reduction of waste, consumption and emissions, and
- ecologically harmless implementation of maintenance, modernization and other construction measures

Green Leases are therefore ultimately any form of substantial/serious regulations in lease agreements that are related to promoting sustainable (i) building substance and/or (ii) management and use of real estate.^[3]

¹ Silvio Sittner, „§ 24 Green Leases – Der grüne Mietvertrag,“ [in:] *Handbuch Geschäftsraummiets*, ed. Jan Lindner-Figura, Frank Oprée, Frank Stellmann. 5th ed. (Munich: Verlag C.H. Beck, 2023), § 24. Para. 42

² Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0 – Vom grünen Mietvertrag zum ESG Lease* (2024).

³ Sittner, „§ 24 Green Leases – Der grüne Mietvertrag,“ § 24. Para. 6.

1.2. Definition of Terms in Germany

In the academic engagement with Green Leases and the concept of sustainability, there is still a lack of uniform definitions at national, international, and particularly European legal levels. Unlike countries such as Great Britain, Canada, Australia, and the USA, where Green Leases are widespread, they represent an exception in Germany. The restricted design freedom in German rental law makes it difficult to transfer proven foreign structures to the German market.^[4]

To deepen understanding of a Green Lease, the following definition by Freshfields Bruckhaus Deringer LLP serves:

A Green Lease is a sustainability-oriented lease agreement that, through its special design – possibly flanked by the requirements of any existing certification of a property – is intended to encourage the tenant to use the property as sustainably as possible and the landlord to manage the property as sustainably as possible.^[5]

To close this gap, an interdisciplinary project group of leading market players under the leadership of the law firm Freshfields Bruckhaus Deringer LLP developed a catalog of 50 recommendations for designing Green Leases for commercial spaces in 2012.^[6] A clause work published by ZIA serves as the main orientation aid for contractual design of sustainability-related rental relationships in Germany. The current version from 2024 with the title “Green Lease 2.0 – From Green Lease Agreement to ESG Lease” integrates the latest developments and legal requirements for sustainability and promotes the integration of ESG criteria.^[7]

While corresponding discussions about Green Leases in the international arena began around the turn of the millennium, more concrete

⁴ BMWBSB (Federal Ministry for Housing), *Urban Development and Building, Das Gebäudeenergiegesetz*, 2025.

⁵ Freshfields Bruckhaus Deringer LLP, *ESG und Real Estate Auswirkungen der Offenlegungs- und Taxonomieverordnung auf die Immobilienwirtschaft* (2021), 6.

⁶ *Zivilrecht im Wandel: Festschrift für Peter Derleder zum 75. Geburtstag*, ed. Kai-Oliver Knops, Heinz Georg Bamberger, Gerrit Hölzle (Berlin-Heidelberg: Springer, 2015), 457.

⁷ Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0 – Vom grünen Mietvertrag zum ESG Lease* (2024), 5.

considerations in Germany seem to have been conducted only since 2012.^[8] Green Leases are also on the rise in other legal systems.^[9]

1.3. The Significance of Environmental Certifications

The certification of real estate is becoming increasingly important as it not only serves as a quality feature for sustainability and energy efficiency, but also promotes the economic attractiveness and value preservation of buildings.^[10]

Real estate contributes to promoting sustainable development as it can significantly contribute to reducing CO₂ emissions and to the careful use of resources and energy. However, there is no internationally uniform standard, so various certification systems exist alongside each other. This impairs the comparability of evaluated properties.^[11] In the German real estate market, besides the national DGNB certification system, the US-American LEED is widely distributed. BREEAM is also represented in Germany.

The ESG lease goes beyond this. ESG stands for Environmental, Social, Governance. The background of such agreements are European legal requirements for observing ESG factors that affect fund companies as owners of real estate.^[12]

⁸ E.g. *ibidem*.

⁹ Cf. Jie Ouyang, "Unleashing the Green Principle in the Chinese Civil Code – Embedding Private Law into the Green Transition" *Journal of European Consumer and Market Law*, 5 (2023): 203-208.

¹⁰ „Drei Standards sollen Orientierung geben – Zertifikate für Gebäude“ *SBZ* (2014).

¹¹ Günter Vornholz, *Entwicklungen und Megatrends der Immobilienwirtschaft* (Oldenbourg: De Gruyter, 2017.), 221.

¹² Such as Disclosure Regulation 2019/2088, Official Journal of the European Union L 317/1.

2 | Legal Regulation in Europe and Germany

The integration of sustainability in the real estate industry is significantly driven by regulatory requirements at international, European, and national levels. These establish binding framework conditions to promote sustainable investments, reduce greenhouse gas emissions, and increase energy efficiency in the building sector.

2.1. International Level

At the international level, Agenda 2030 and the Paris Climate Agreement serve as central guidelines for sustainable development and climate protection measures. The United Nations' Sustainable Development Goals (SDGs) function as a fundamental benchmark for determining quantifiable sustainability goals. With its 17 overarching goals, Agenda 2030 provides a strategic framework for sustainable development, adopted in 2015 with a duration until 2030.^[13] Although the SDGs do not have binding regulatory character, they serve companies as an important guide for aligning strategies with global environmental and climate goals.^[14]

The 195 contracting parties of the United Nations Framework Convention on Climate Change (UNFCCC) agreed on the Paris Climate Agreement in 2015 during COP 21. This internationally legally binding agreement aims to limit global temperature rise compared to pre-industrial levels to below 2 degrees Celsius, with an aspired reduction to 1.5 degrees Celsius.^[15] The agreement entered into force on 4 November 2016, and was ratified by 176 states by 2018.^[16] National contributions (Nationally Determined Contributions, NDCs) are reviewed every five years and regularly tightened from 2025 onwards (Federal Ministry for Economic Affairs and Climate Action, 2025).

¹³ Klaus Rainer Kirchhoff, Sönke Niefünd, Julian A. von Pressentin, *ESG: Nachhaltigkeit als strategischer Erfolgsfaktor* (Wiesbaden: Springer Fachmedien, 2024), 42.

¹⁴ Ibidem, 42.

¹⁵ *ESG in der Immobilienwirtschaft: Praxishandbuch für den gesamten Immobilien- und Investitionszyklus*, ed., Thomas Veith, Christine Conrads, Florian Hackelberg. (Feiburg: Haufe-Lexware, 2021), 30.

¹⁶ Ibidem, 31.

2.2. European Union

The European Green Deal forms the strategic framework for achieving climate neutrality of the 27 EU member states by 2050. Greenhouse gas emissions are to be reduced by at least 55% compared to 1990 by 2030 (Federal Statistical Office, 2023). The “Fit for 55” package includes both revision of existing and new regulatory provisions to align all EU measures with climate goals (Federal Statistical Office, 2023). This creates a regulatory framework with specific ESG directives and binding sustainability reporting requirements, serving as reference for national legislation.^[17]

2.2.1. EU Taxonomy Regulation

Regulation (EU) 2020/852, the EU Taxonomy Regulation, was adopted in July 2020 (Federal Financial Supervisory Authority, n.d.). This regulation defines a classification system determining under which conditions economic activities are considered ecologically sustainable. It primarily affects large companies with more than 500 employees, including real estate funds and institutional investors in the German office real estate market (BNP Paribas Real Estate, 2023).

An economic activity is classified as ecologically sustainable if it makes a substantial contribution to at least one of six environmental objectives: climate protection, climate change adaptation, sustainable use of water resources, protection of biodiversity, avoidance of environmental pollution, and transition to a circular economy. The “Do No Significant Harm” (DNSH) principle ensures no significant impairment of remaining environmental objectives.^[18] Technical assessment criteria defined in delegated legal acts establish specific requirements for sectors contributing to sustainability.^[19] Social minimum standards must be maintained, and companies must

¹⁷ Heiko Achilles, *Stadtentwicklung mit einem Developer Mindset: Innovation, Wachstum und Wettbewerbsfähigkeit in kritischen Zeiten* (Wiesbaden: Springer Fachmedien, 2024), 112.

¹⁸ Michaela Gebetsroither, Meliha Honic, Iva Kovacic, Christoph Löffler, Klemens Marx, Rainer Pamminger, Steffen Robbi, Christian Sustr, Stefan Schützenhofer, Gundula Weber, *Paradigmenwechsel in Bau- und Immobilienwirtschaft: Mit Kreislaufwirtschaft und Digitalisierung die Zukunft gestalten* (Berlin, Heidelberg: Springer, 2024), 9.

¹⁹ *Rating von Industrieimmobilien*, ed. Olivier Everling, Peter Salostowitz (Wiesbaden: Springer Fachmedien, 2023), 170.

implement procedures considering OECD Guidelines for Multinational Enterprises and the United Nations Charter of Human Rights.^[20] These requirements influence Green Leases design in the commercial sector, ensuring long-term use of properties remains taxonomy-compliant.^[21]

2.2.2. EU Disclosure Regulation

The EU Disclosure Regulation (SFDR) complements the EU Taxonomy Regulation. Since March 2021, Regulation (EU) 2019/2088 obligates financial market participants to disclose sustainability-related information at company and product levels.^[22] These obligations particularly affect real estate fund companies, pension funds, AIF managers, project developers, asset managers, and property managers.^[23]

The SFDR requires disclosure of comprehensive sustainability information, including pre-contractual information, regular reports, and relevant data on company websites.^[24] Companies must explain how they integrate sustainability risks into investment decisions and consider Principal Adverse Impacts (PAIs), such as CO₂ emissions.^[25]

The SFDR distinguishes financial products into three categories^[26]:

- Article 6 Products: Financial products with minimal consideration of sustainability risks, subject to simplest disclosure obligations.
- Article 8 Products: Products with ecological and/or social characteristics, partially investing in sustainable investments, but not

²⁰ Ibidem, 170.

²¹ Gebetsroither, Honic, Kovacic, Löffler, Marx, Pamminer, Robbi, Sustr, Schützenhofer, Weber, *Paradigmenwechsel in Bau- und Immobilienwirtschaft: Mit Kreislaufwirtschaft und Digitalisierung die Zukunft gestalten*, 10.

²² Benjamin Ruppert, *Impact Investing: Regulierung, Methoden und Erfolgsmessung*, 1st ed. (Stuttgart: Schäffer-Poeschel, 2021), 67.

²³ Freshfields Bruckhaus Deringer LLP, *ESG und Real Estate Auswirkungen der Offenlegungs- und Taxonomieverordnung auf die Immobilienwirtschaft* (2021), 2.

²⁴ Standpunkte – Beiträge renommierter Persönlichkeiten der Versicherungswirtschaft, in *Leipziger Seminaren: Themen: Nachhaltigkeit & ESG in d. Rückvers. Anti-Financial Crime-Compliance, DDI, Renteneintritt der Babyboomer, Open Data & LLM, Regulatorische Rahmenbed. Im Kontext der Nachhaltigkeit, Kraftfahrzeug-Kaskovers. mit Zeitwertentschädigung*. ed. Fred Wagner (Karlsruhe: Verlag Versicherungswirtschaft, 2024), 142

²⁵ Ibidem.

²⁶ Ruppert, *Impact Investing*, 69.

pursuing dedicated sustainability objectives, referred to as “light green” products.

- Article 9 Products: Financial products with sustainable investment objectives, considered “dark green” products, subject to strictest disclosure obligations as they pursue impact investing approaches.

The SFDR creates uniform classification of sustainable financial products to avoid greenwashing and provide investor guidance, increasing demand for energy-efficient, taxonomy-compliant commercial real estate.

2.2.3. Corporate Sustainability Reporting Directive

Since 2017, capital market-oriented companies, banks, and insurance companies in Germany must publish non-financial statements. The previous CSR Directive (2014/95/EU) was expanded in 2022 by the Corporate Sustainability Reporting Directive (CSRD) (Directive (EU) 2022/2464), significantly extending reporting obligations (Federal Environment Agency, n.d.).

The CSRD introduces expanded and standardized disclosure obligations. Companies must disclose sustainability-related information uniformly and measurably, with the European Financial Reporting Advisory Group (EFRAG) developing corresponding reporting standards (Federal Ministry of Labour and Social Affairs, n.d.). The directive anchors the principle of double materiality, encompassing both company-side impacts on environment and society and financial risks through sustainability (Federal Ministry of Labour and Social Affairs, n.d.).

The introduction occurs in stages: From 2024, expanded reporting obligations apply to companies under the Non-Financial Reporting Directive (NFRD), including capital market-oriented companies and financial institutions with more than 500 employees.^[27] From 2025, large limited liability companies meeting at least two criteria (balance sheet total exceeding 20 million euros, revenue exceeding 40 million euros, or more than 250 employees) are affected.^[28] From 2026, obligations extend to listed SMEs exceeding two of three threshold values.^[29]

²⁷ Meike Lerner, *Einfluss der EU-Taxonomie auf den Mittelstand: Was KMU über die neuen Anforderungen zum Nachhaltigkeitsreporting wissen müssen* (Wiesbaden: Springer Fachmedien, 2023), 63.

²⁸ Ibidem.

²⁹ Ibidem.

2.3. Germany

The Building Energy Act (GEG) has consolidated regulations of the Energy Conservation Act, Energy Conservation Ordinance, and Renewable Energy Heat Act since 1 November 2020. With the 1 January 2023 amendment, permissible annual primary energy demand for new buildings was reduced to 55 percent of the reference building. Since 1 January 2024, installation of heating systems with at least 65 percent renewable energy is mandatory (Federal Ministry for Housing, Urban Development and Building, 2025). The GEG aims to reduce energy consumption in non-residential buildings and support climate neutrality by 2045.^[30]

Since 2024, the obligation to install heating systems with at least 65% renewable energy applies to new buildings within designated development areas.^[31] Outside these areas, the requirement only applies when municipal heat planning is available. Cities with over 100,000 inhabitants must submit plans by mid-2026, smaller municipalities by 2028. Conventional heating systems remain permissible until then, but must show gradually increasing renewable energy shares: 15% from 2029, 30% from 2035, and 60% from 2040.^[32]

For commercial real estate, Section 71a GEG requires non-residential buildings with heating, ventilation, or air conditioning systems over 290 kW to be equipped with building automation by end of 2024 (Bergische Chamber of Commerce and Industry Wuppertal-Solingen-Remscheid, n.d.). Companies must introduce digital energy monitoring and designate a responsible person with continuous data access (Bergische Chamber of Commerce and Industry Wuppertal-Solingen-Remscheid, n.d.).

The GEG forms a central legal foundation for Green Leases in the commercial rental sector, enabling direct integration of legal requirements into rental relationships through sustainable contract design.

³⁰ Peter Schmidt, *Das novellierte Gebäudeenergiegesetz (GEG 2024): Grundlagen. Anwendung in der Praxis, Beispiele* (Wiesbaden: Springer Fachmedien, 2025), 3.

³¹ Rudolf Stürzer (with Michael Koch), *Vermieter-Lexikon*, 18th ed. (Freiburg: Haufe-Lexware, 2023), 435.

³² Stürzer, *Vermieter-Lexikon*, 435.

2.4. Regulatory Impact on Green Lease Design

The regulatory framework established by EU Taxonomy, SFDR, CSRD, and GEG creates direct imperatives for Green Lease design in German commercial real estate. The EU Taxonomy Regulation specifically drives landlords to incorporate sustainability criteria into lease agreements to ensure properties remain taxonomy-compliant throughout their use phase. This regulatory pressure translates into contractual obligations for tenants regarding energy consumption reporting, sustainable procurement practices, and compliance with building certification requirements.

The SFDR's classification system (Articles 6, 8, and 9) directly influences lease negotiations, as real estate funds categorized as "Article 8" or "Article 9" products require demonstrable ESG performance from their assets. This regulatory categorization creates a cascade effect where fund managers demand Green Lease provisions from property managers, who in turn integrate these requirements into tenant agreements.

CSRD's double materiality principle mandates comprehensive sustainability reporting, making data collection clauses in Green Leases not merely voluntary best practices but regulatory necessities. The directive's standardized reporting requirements under EFRAG standards directly shape the specific data points that must be collected from tenants, influencing the technical specifications of Green Lease clauses.

The GEG's building automation requirements (Section 71a) and renewable energy mandates create direct legal obligations that must be reflected in lease agreements. These technical requirements translate into specific tenant obligations regarding system operation, data provision, and cooperation with energy efficiency measures.

3 | Existing Certification Systems in Germany

The following analyzes the differences and similarities of the three certification systems DGNB, LEED, and BREEAM.^[33]

³³ Jones Lang LaSalle Incorporated, *Nachhaltigkeitszertifikat als Werttreiber? Empirische Erhebung und Szenarien zum Werteinfluss bei Bürogebäuden* (2021), 8.

3.1. DGNB (German Sustainable Building Council)

The DGNB certificate was established in 2007 by the German Sustainable Building Council e.V. The first certificates were already awarded in 2009.^[34] According to the annual report, 10,161 certificates were awarded in 2022. For the past fiscal year, 1,424 awards were given to sustainable buildings and districts. Berlin is the leading city in Germany for 2021 regarding certified buildings and districts with a total of 65 projects.^[35]

The DGNB certification system is characterized by a holistic approach that considers ecological, economic, and sociocultural aspects, as well as technical, process-oriented, and site-specific criteria. The awards are classified as Bronze, Silver, and Gold. For new buildings, the Bronze level is not relevant; instead, there is the possibility of obtaining Platinum certification.^[36]

The DGNB evaluation system considers six thematic fields that equally represent all three dimensions of sustainability.^[37] Despite its relative newness compared to international systems like LEED and BREEAM, the DGNB system is very comprehensive. The system continuously develops and gains increasing importance at national and international levels.^[38] The evaluation system is applicable to different types of use and differentiates between certifications for new buildings, renovations, existing buildings, and building demolition.^[39]

The certification process for a DGNB certificate is conducted by trained and tested DGNB auditors.^[40] The submitted documents are examined by DGNB experts as part of a conformity check for compliance with established criteria.^[41]

³⁴ DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen), *Über das DGNB system der „Global Benchmark for Sustainability“ unter den Zertifizierungssystemen für nachhaltige Gebäude und Quartiere* (2024).

³⁵ Tamira Bethke, *Neuer Jahresreport veröffentlicht: DGNB-Zertifizierungen 2022*. DGNB Blog, 2023. <https://blog.dgnb.de/dgnb-zertifizierungen-2022/>.

³⁶ Vornholz, *Entwicklungen und Megatrends der Immobilienwirtschaft*, 221.

³⁷ DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen), *Über das DGNB system*.

³⁸ Andreas Moring, Christin Inholte, *Nachhaltigkeit und Digitalisierung in der Immobilienwirtschaft: Real Sustainability* (Wiesbaden Springer Fachmedien, 2022), 106.

³⁹ Moring, Inholte, *Nachhaltigkeit und Digitalisierung in der Immobilienwirtschaft*, 104.

⁴⁰ DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen), *Über das DGNB system*.

⁴¹ Ibidem.

The DGNB evaluation system checks the overall performance of a building using 37 criteria for new building certification with a maximum score of 100 points and 30 possible bonus points. The highest award is the Platinum certificate, which is awarded with a minimum fulfillment level of 65 percent.^[42]

3.2. LEED (Leadership in Energy and Environmental Design)

LEED certification was initiated in 1993 by the charitable organization U.S. Green Building Council and has since established itself as the world's leading certification system for real estate.^[43] The certification process differs depending on the chosen system. For new building projects, LEED certification offers the possibility of obtaining a pre-certificate.^[44]

The LEED certification process is based on a point system that includes nine categories. The maximum achievable score is 110 points. LEED awards Silver, Gold, and Platinum certificates. A Silver certificate is awarded from a score of 50 points, while the Gold certificate is awarded from 60 to 79 points, and the Platinum certificate is awarded from at least 80 points.^[45]

3.3. BREEAM (Building Research Establishment Environmental Assessment Method)

BREEAM certification, developed in the late 1980s, is the oldest existing certification system for sustainable building worldwide.^[46] The BREEAM certification system shows high versatility in application due to its numerous variants. The largest selection of evaluation options is available in Great Britain.^[47] For example, the TÜV Süd building was realized and received

⁴² Ibidem.

⁴³ Moring, Inholte, *Nachhaltigkeit und Digitalisierung in der Immobilienwirtschaft*, 101.

⁴⁴ Ibidem, 102.

⁴⁵ U.S. Green Building Council, 2024.

⁴⁶ Moring, Inholte, *Nachhaltigkeit und Digitalisierung in der Immobilienwirtschaft*, 97.

⁴⁷ Gerd Waschbusch, Sabrina Kiszka, Marco Scherer, „Zertifizierungssysteme zur Nachhaltigkeitsbewertung von Immobilien“ *Immobilien & Finanzierung – Der langfristige Kredit*, No. 9 (2023): 11-13.

both BREEAM certification and DGNB Platinum certification. The Newton object is among the most energy-efficient office buildings in Munich with a primary energy consumption of 70 kWh/a m².^[48]

In Germany, BREEAM certifications are awarded by the exclusive license partner TÜV Süd.^[49] The certification process is carried out by specially trained assessors, the so-called BREEAM Assessors.^[50]

4 | Methodology

4.1. Research Design and Approach

This study employs a qualitative research methodology based on comprehensive literature review and legal analysis to examine green lease development in the German commercial real estate sector. The research adopts an interpretive approach using document analysis as the primary method for data collection. This methodology is appropriate for investigating the complex interplay between regulatory frameworks, market practices, and contractual innovations in sustainable real estate management.

4.2. Data Collection Strategy

The research relies exclusively on secondary data sources comprising three categories:

- Academic Literature Peer-reviewed journal articles, conference proceedings, and scholarly monographs published between 2015-2025, identified through systematic searches of Web of Science, Scopus, JSTOR, and Google Scholar using keywords including “green leases,” “sustainable real estate,” and “Germany.”

⁴⁸ Alexander Rüb, Moritz Marx, *Markt- und Objektbewertung: Investieren in mehr Langlebigkeit*, (2022), 21.

⁴⁹ Waschbusch, Kiszka, Scherer, „Zertifizierungssysteme zur Nachhaltigkeitsbewertung von Immobilien“, 11-13.

⁵⁰ Moring, Inholte, *Nachhaltigkeit und Digitalisierung in der Immobilienwirtschaft*, 97.

- **Legal and Regulatory Documentation** Primary sources include EU-level legislation (EU Taxonomy Regulation, SFDR, CSRD), German federal legislation (Building Energy Act), administrative guidelines, and parliamentary documents.
- **Voluntary Standards and Industry Guidelines** Non-binding frameworks including industry association guidelines, professional standards, certification schemes, and international frameworks adopted by German market participants.

4.3. Analytical Framework

The data analysis employs thematic content analysis structured around four core themes:

- **Regulatory Impact Analysis:** Examining how mandatory legal requirements drive green lease adoption
- **Market Practice Evolution:** Tracing development patterns and sector-specific applications
- **Contractual Innovation Assessment:** Analyzing technical and legal aspects of green lease clauses
- **Implementation Challenges and Opportunities:** Synthesizing barriers and emerging opportunities

4.4. Data Synthesis and Interpretation

The synthesis process cross-references findings across source categories to identify convergences and divergences. Legal requirements are analyzed in relation to documented market practices to assess implementation effectiveness. The interpretive analysis identifies causal relationships between regulatory changes and market responses while acknowledging the multi-factorial nature of real estate market dynamics.

4.5. Methodological Limitations

Several limitations must be acknowledged: exclusive reliance on secondary sources limits capture of real-time market developments; predominantly English and German language focus may exclude relevant developments in other European languages; legal analysis is constrained by formal documentary record and may not capture practical interpretation by market participants.

4.6. Validity and Reliability Considerations

To enhance validity and reliability, source triangulation was employed by comparing findings across different document types. The analysis prioritizes authoritative sources including official regulatory publications, peer-reviewed academic literature, and recognized industry publications. Temporal validity is addressed by focusing on recent developments while maintaining historical context. Multiple sources are consulted for verification of key findings, and contradictory evidence is explicitly acknowledged.

This methodological approach provides a robust foundation for systematic analysis of green lease development in Germany, while acknowledging inherent limitations in literature-based research.

5 | Impact of Contractual Conditions on Lease Agreements

Of particular importance is the so-called Green Lease clause, which integrates ecological aspects into contractual agreements and is intended to promote environmentally appropriate use and management of the property.^[51]

The clauses are predominantly driven by landlords to fulfill their reporting obligations according to Taxonomy Regulation and CSRD. These

⁵¹ Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0—Vom grünen Mietvertrag zum ESG Lease* (2024), 13.

regulations are becoming increasingly relevant against the background of the European Green Deal, which commits member states to climate neutrality by 2050. Real estate causes more than 30 percent of global CO₂ emissions.^[52]

The regulatory framework established in Chapter 2 creates direct legal imperatives that drive Green Lease adoption beyond voluntary market initiatives. The EU Taxonomy Regulation's "Do No Significant Harm" principle requires continuous compliance throughout a property's operational phase, necessitating contractual mechanisms that ensure tenant activities do not compromise taxonomy eligibility. This regulatory requirement transforms Green Lease clauses from voluntary sustainability initiatives into legal compliance tools.

SFDR's product categorization creates a direct regulatory pathway where real estate funds classified as Article 8 or Article 9 products must demonstrate quantifiable ESG performance. This regulatory classification pressure translates into contractual requirements where landlords must secure tenant cooperation for sustainability data collection and reporting. The clauses are predominantly driven by landlords to fulfill their reporting obligations according to Taxonomy Regulation and CSRD.

CSRD's standardized reporting requirements under EFRAG create specific data collection mandates that directly influence Green Lease clause design. The directive's double materiality principle requires both environmental impact assessment and financial risk evaluation, necessitating comprehensive tenant data provision beyond traditional consumption reporting.

The GEG's building automation requirements (Section 71a GEG) create direct legal obligations that must be contractually allocated between landlords and tenants. The law's renewable energy mandates (65% requirement) necessitate specific lease provisions regarding system operation, maintenance responsibilities, and cost allocation.

In practice, the agreements include reporting consumption data for energy and water, reducing waste quantities and energy and water consumption, mobility, and user comfort. The Central Real Estate Committee e.V. published the revised guide Green Lease 2.0 in 2024, which focuses

⁵² Petra Swai, *Green Lease: Darum sind ESG-Klauseln auch für Mieter wichtig* (KPMG-Law, 2024).

on minimizing the Green Lease to three essential themes: data exchange, sustainable energy sources, and resource conservation.^[53]

A practical example concerns a client from southern Germany who operates an office location with several buildings and wants to construct a new office building. For this, Green Lease clauses focusing on office spaces are to be developed that simultaneously contribute to achieving DGNB audit points.^[54]

The landlord intends to have the entire property certified for the first time in the future. Building certifications evaluate the ecological, economic, and social sustainability of buildings to make them measurable and comparable with other real estate. To obtain this certificate and an adequate certification level, the cooperation of both contracting parties is required. The tenant commits to complying with the guidelines relevant to building certification that the landlord provides. This applies only with regard to such certification requirements that fall within the tenant's area of responsibility according to the general regulations of this lease agreement and only insofar as this is reasonable for the tenant. If measures to achieve the desired certification level are to be carried out in the tenant's rental spaces, the tenant will grant access to their rental space for carrying out the measures or execute them at their own risk. The landlord will inform the tenant of the measure and the dates in good time. After issuance of the certification, the contracting parties will avoid actions for the duration of the lease agreement that have or could have negative effects on the then existing certification level. If the contracting parties determine that actions have been undertaken that could endanger the continued existence of the existing certification level, these must be immediately reported to the landlord or tenant in text form. The contracting parties commit to implementing appropriate measures to restore the existing certification level. After obtaining certification, the landlord will provide the tenant with a copy of the certificate in digital form upon request. Fulfilling the evaluation criteria may trigger additional investment measures. Costs up to a limit of [amount in euros] will be borne by the tenant. The costs of initial certification are borne by the landlord. The costs of annual recertification are borne by the tenant. The costs of regular recertification will be shared between the contracting parties.

⁵³ Zulfukar Tosun, *Nachhaltigkeitsklauseln für Mietverträge: Green-Lease-Verträge schnell und effektiv umsetzen* (Wiesbaden: Springer Fachmedien, 2024), 22-24.

⁵⁴ Ibidem, 89-91.

All of the twelve lease agreements were concluded with the aforementioned quoted clause, among others.^[55]

6 | Tenant Preferences and Decision-Making Behavior

6.1. Tenant Factors

Sustainability in terms of ESG is captured, but more than just reducing energy consumption, as the areas of Social and Governance also contain a variety of factors that were traditionally assigned to architecture, equipment, and operator responsibility. These include social factors such as the well-being of office employees, particularly in the commercial real estate sector. For tenants, the usage quality and location of a property are particularly important. Usage quality includes the design of the property regarding its use, considering both tenant needs and the environment. Important factors are accessibility, security concepts, greening, health factors such as air quality and materials used, as well as digital connectivity.^[56]

6.2. Influence of Contract Conditions in Lease Agreements

The Green Lease clause describes a sustainability-oriented lease agreement aimed at obligating the tenant to resource-conserving use and the landlord to environmentally friendly management of the property.^[57]

The clauses are predominantly driven by landlords to fulfill their reporting obligations according to Taxonomy Regulation and CSRD. These regulations are becoming increasingly relevant against the background of the European Green Deal.^[58] The advantages of Green Leases for tenants are not always immediately perceptible, as there is an imbalance in favor of the landlord. Since tenants are often poorly informed about sustainability

⁵⁵ Ibidem, 91.

⁵⁶ Zentraler Immobilien Ausschuss e.V., *ESG Guide for Office Real Estate* (2023), 10-11.

⁵⁷ Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0 – Vom grünen Mietvertrag zum ESG Lease* (2024), 13.

⁵⁸ Swai, *Green Lease: Darum sind ESG-Klauseln auch für Mieter wichtig*, 2024.

and ESG topics, this has led to lower Green Lease completions in the past. If the landlord is willing to invest in improving the property, the tenant's perspective changes. Investments such as an in-house photovoltaic system for power supply, improved facade and window insulation, or infrastructure upgrades offer the tenant significant advantages.^[59]

A practical example concerns a client from southern Germany who operates an office location with several buildings and wants to construct a new office building.^[60] The twelve lease agreements were concluded with the aforementioned quoted clause, among others.^[61]

6.3. Tenant Preferences

As part of the report "Added Value of Certified Buildings," the motivations for building certification and the added values generated by such certification were analyzed. The report shows that increased demand from tenants and customers as well as positive effects on productivity and well-being of building users are of essential importance for 65 percent of respondents.^[62]

Furthermore, the CBRE report particularly shows that higher willingness to pay is not limited to the ecological dimension. Around 67 percent of European users are willing to bear higher costs for buildings that additionally consider social sustainability aspects and promote employee well-being and health.^[63]

⁵⁹ Tosun, *Nachhaltigkeitsklauseln für Mietverträge: Green-Lease-Verträge schnell und effektiv umsetzen*, 22-24.

⁶⁰ Ibidem, 89-91.

⁶¹ Ibidem, 91.

⁶² Christoph Berger, *Mehrwerte durch Zertifizierung*, 2019.

⁶³ CBRE, 2023.

7 | The Green Lease Framework

7.1. Conceptual Definition and Scope

Green Leases do not represent an independent contract type, but are based on classic contract models such as purchase, rental, or service contracts that are supplemented by specific “green” clauses to promote higher environmental and social standards.^[64] Green Leases pursue the goal of adapting requirements for construction, equipment, and use of buildings to ecological and economic sustainability standards.^[65]

Contracts with ESG-related clauses are referred to as “green” contracts, making a comprehensive consideration of ecological, economic, and sociocultural aspects essential for understanding sustainable lease agreements.^[66] A universally applicable Green Lease that covers all rental situations is hardly realizable due to diverse requirements and specific framework conditions.^[67] The contents of a Green Lease must be adapted to the individual characteristics of the property as well as to the respective interests and needs of the contracting parties.^[68]

7.2. Effects and Benefits of a Green Lease

Green Leases are gaining increasing importance in commercial leasing as they promote sustainable use and management of real estate.

Economically, a Green Lease enables cost savings through optimized use of energy and water, reducing operating costs and ancillary costs for tenants.^[69] At the same time, sustainable building management increases the likelihood of certification.^[70] A market study by Jones Lang LaSalle shows that certified buildings achieve higher rents, with rental premiums

⁶⁴ *ESG in der Immobilienwirtschaft*, 489.

⁶⁵ *Zivilrecht im Wandel*, 457.

⁶⁶ *ESG in der Immobilienwirtschaft*, 490.

⁶⁷ *CSR und Finance: Beitrag und Rolle des CFO für eine nachhaltige Unternehmensführung*, ed. Thomas Schulz, Susanne Bergius (Berlin-Heidelberg: Springer, 2014), 314.

⁶⁸ *Ibidem*, 315.

⁶⁹ Jones Lang LaSalle Incorporated, *Green Leases – Diese Vorteile bieten grüne Mietverträge Vermietern und Mietern* (2023).

⁷⁰ *Ibidem*.

varying by location. While an average increase of 1.5% was found in top locations, this amounts to up to 3.8% in peripheral locations.^[71]

Ecologically, a Green Lease promotes resource-conserving use by optimizing energy and water consumption, reducing emissions and waste, and integrating renewable energies and environmentally friendly materials.^[72] Thus, it supports achieving climate goals and sustainable development in the real estate sector. These approaches are reflected in contractual regulations for maintenance and modernization measures.^[73]

Social aspects are also considered as Green Leases promote healthier work environments, such as through improved air quality, optimized lighting conditions, and resource-conserving technologies.^[74] Particularly companies with sustainability reporting obligations benefit from disclosure of relevant consumption data, such as rental area-related CO₂ emissions.^[75] Landlords also benefit from Green Leases as active involvement of tenants and sustainable dialogue strengthens their position as responsible market players.^[76]

7.3. Application Areas and Use Cases

Basically, “green” lease contract clauses can be divided into two main categories. The first concerns structural and technical measures, such as the use of sustainable building materials, energy-efficient equipment, or the obligation to certify according to recognized standards.^[77] The second category includes regulations for sustainable use and management of the property, including the procurement of renewable energies, use of environmentally friendly cleaning agents, water-saving measures,

⁷¹ Jones Lang LaSalle Incorporated, *Nachhaltigkeitszertifikat als Werttreiber? Empirische Erhebung und Szenarien zum Werteinfluss bei Bürogebäuden* (2021), 15.

⁷² Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0 – Vom grünen Mietvertrag zum ESG Lease* (2024), 17.

⁷³ KPMG Law Rechtsanwaltsgesellschaft mbH., *Entwicklungen in der Immobilienwirtschaft – Green Lease* (2021).

⁷⁴ Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0 – Vom grünen Mietvertrag zum ESG Lease* (2024), 17.

⁷⁵ Jones Lang LaSalle Incorporated, *Green Leases – Diese Vorteile bieten grüne Mietverträge Vermietern und Mietern* (2023).

⁷⁶ Konrad Hedemann, *Green Leases: Kostenoptimierte und Nachhaltige Nutzung Von Wohn- und Gewerbeimmobilien*, 1st ed. (Freiburg: Haufe-Lexware Verlag, 2023), 63.

⁷⁷ CSR und Finance, 315.

and strategies for emission and waste reduction.^[78] The Central Real Estate Committee defines four central aspects: exchange of consumption data between contracting parties, use of renewable energies for energy and heat supply, optimization of energy and water consumption, and environmentally friendly implementation of construction and maintenance measures.^[79] The regulatory recommendations developed in “Green Lease – the Green Lease Agreement for Germany” are based on interdisciplinary cooperation.^[80]

7.4. Implementation of Green Lease Provisions

7.4.1. Data Protection and Privacy Considerations

Evaluating the sustainability of real estate requires access to consumption data that often lies outside the direct sphere of influence of real estate companies. Therefore, clear contractual regulations for data exchange in Green Leases are essential.^[81] According to the General Data Protection Regulation (GDPR), collection, storage, and use of this data requires appropriate permissions, particularly when passing on to third parties such as metering point operators or analysis service providers.^[82] Additionally, measures for anonymization, secure storage, and timely deletion are required to ensure data protection and data security.^[83] Exchange of non-personal data should be regulated particularly regarding type of data, transmission frequency, technical implementation, and confidentiality obligations.^[84]

The Central Real Estate Committee e.V. provides an example of a model clause for data exchange:

The parties will [endeavor to] provide each other with the following information, documents and documents («data») related to sustainable use

⁷⁸ Ibidem, 315.

⁷⁹ Zentraler Immobilien Ausschuss e.V., *Green Lease 2.0 – Vom grünen Mietvertrag zum ESG Lease* (2024), 16.

⁸⁰ Freshfields Bruckhaus Deringer LLP, *Green Lease – Der grüne Mietvertrag für Deutschland* (2012).

⁸¹ Sittner, „§ 24 Green Leases – Der grüne Mietvertrag,“ Para. 33.

⁸² Ibidem.

⁸³ *Implementing ESG into Real Estate Contracts: A guide and toolkit for practitioners from a European perspective*, ed. Sabine Wieduwilt, 1st ed. (Freiburg: Haufe, 2025), 148.

⁸⁴ Ibidem, 149.

and/or management of the rental property (“sustainability information”): a) Energy and water consumption data, b) Waste generation data, c) Data required for determining the CO₂ balance of the rental property [...]. For this purpose, both parties will [endeavor to] regularly transmit sustainability information [...] to each other in suitable form (electronically where available) and within reasonable time after request by the respective other party [...]. [...] The parties will make best efforts in connection with this data exchange to safeguard the interests of the respective other party and are obligated to ensure compliance with applicable legal requirements for data protection, data security, and fair competition.^[85]

7.4.2. Energy Management and Efficiency

A Green Lease regulates energy consumption with the goal of reducing CO₂ emissions and providing consumption data for analysis. Since energy demand strongly depends on operational factors such as number of employees, home office share, or work processes, a binding consumption specification for tenants makes little sense. Additionally, the energy share of turnover varies considerably by industry.^[86] Nevertheless, consumption reduction can be achieved through optimized use and deployment of energy-efficient technologies. Particularly effective are replacement of energy-intensive machines, conversion to LED lighting, and measures for better use of daylight.^[87] The Law on Digitalization of the Energy Transition (GNDEW) provides for gradual introduction of intelligent measuring systems and obligates consumers with electricity consumption between 6,000 and 100,000 kWh per year to use smart meters from 2025.^[88]

7.4.3. Water Conservation and Management

Sustainable water consumption in commercial real estate can be optimized through various measures on landlord and tenant sides. In sanitary rooms, water-saving fittings, such as self-closing or sensor fittings as well as flow regulators reduce consumption, while water-efficient appliances

⁸⁵ Zentraler Immobilien Ausschuss e.V., *Green Lease – Der grüne Mietvertrag für Deutschland* (2018), 26.

⁸⁶ Tosun, *Nachhaltigkeitsklauseln für Mietverträge*, 33.

⁸⁷ Ibidem, 33.

⁸⁸ BMWK, Federal Ministry for Economic Affairs and Climate Action, 2023.

in kitchens should contribute to maintaining sustainability standards.^[89] In outdoor areas, drinking water consumption can be reduced through rainwater use, while site-appropriate planting minimizes irrigation needs.^[90] Digital water meters enable precise consumption recording, help detect anomalies early, and quickly fix leaks. DGNB certification evaluates target agreements and regular consumption measurements under the criterion ENV2-B Water.^[91] BREEAM In-Use certification also honors effective monitoring, water-saving fittings, leak detection systems, and measures for drinking water savings.^[92]

7.4.4. Waste Management and Circular Economy

The waste hierarchy according to § 6 Circular Economy Act (KrWG) forms the basis for sustainable waste management in Green Leases and includes measures for waste prevention, preparation for reuse, recycling, recovery, and disposal of waste. Efficient waste and recycling management reduces waste quantities, improves recyclability, and requires target agreements for residual waste and recycling quotas supported by suitable separation systems.^[93] To record waste quantities for reporting purposes, data from ancillary cost accounting can be used, while with triple net lease agreements, where tenants pay disposal costs directly to service companies, close cooperation between tenants and landlords is required to ensure precise recording and categorization of waste types.^[94]

7.4.5. Sustainable Procurement and Property Management

ESG compliance of a building is significantly influenced by selecting sustainable goods and services. Besides furniture, technology, and energy, management services such as cleaning, maintenance, and IT services also play an important role.^[95] Targeted selection criteria promote ESG goals and positively affect the entire supply chain. Purchases should be

⁸⁹ Hedemann, *Green Leases: Kostenoptimierte und Nachhaltige Nutzung Von Wohn- und Gewerbeimmobilien*, 95.

⁹⁰ Ibidem.

⁹¹ Ibidem.

⁹² Ibidem.

⁹³ Ibidem, 99.

⁹⁴ Ibidem, 99-100.

⁹⁵ Ibidem, 105.

limited to necessities and replaced by circular consumption where possible. Environmentally friendly products as well as certified and regional suppliers are preferable as they shorten transport routes and strengthen local economy.^[96] Service providers must also maintain social, ethical, and ecological standards. Fair working conditions, respect for human rights, as well as anti-corruption and occupational safety guidelines should be demonstrably guaranteed.^[97]

7.4.6. Sustainability Dialogue and Stakeholder Engagement

Continuous exchange between landlord and tenant is essential for implementing sustainability goals, analyzing consumption data, and identifying optimization potential. Since ESG measures affect not only building operation but also usage behavior, structured dialogue creates transparency and enables targeted implementation. An annual schedule has proven practicable, as more frequent meetings are often inefficient.^[98] Content such as energy and waste consumption, traffic volume, and ESG measures should be documented to implement optimization possibilities in a targeted manner.^[99] Since tenants increasingly demand information or introduce their own suggestions such as installing photovoltaic systems, this exchange should be firmly anchored in Green Lease agreements to efficiently realize long-term sustainability goals.^[100]

7.4.7. Legal Framework and Regulatory Environment

The regulatory environment established by EU Taxonomy, SFDR, CSRD, and GEG creates a multi-layered compliance framework that directly shapes Green Lease design in German commercial real estate. Unlike voluntary sustainability initiatives, these regulations create binding legal obligations that must be contractually allocated between landlords and tenants.

EU Taxonomy compliance requires continuous monitoring throughout a property's operational phase, making tenant cooperation in data provision and sustainable practices a regulatory necessity rather than a voluntary commitment. The Taxonomy's technical screening criteria translate

⁹⁶ Ibidem, 106.

⁹⁷ Ibidem, 107.

⁹⁸ Ibidem, 61.

⁹⁹ Ibidem.

¹⁰⁰ Ibidem, 62.

into specific operational requirements that must be contractually secured through Green Lease provisions.

SFDR's disclosure requirements create regulatory pressure where real estate fund managers must demonstrate portfolio-level ESG performance, driving demand for standardized Green Lease clauses across their property holdings. This regulatory cascade effect transforms individual property sustainability from market differentiation to regulatory compliance.

CSRD's mandatory reporting requirements create direct legal liability for accurate sustainability data, making tenant data provision clauses legally enforceable obligations rather than best-effort commitments. The directive's standardized reporting formats directly influence the technical specifications of data collection clauses in Green Lease agreements.

The difference between residential and commercial rental law consists in the scope of tenant protection. While residential rental law contains comprehensive protective provisions in favor of the tenant, commercial rental law grants contracting parties greater design latitude.^[101] Integration of ESG criteria in real estate contracts follows general civil law provisions of the BGB, particularly regarding contract conclusion, form requirements, and control of General Terms and Conditions.^[102] Compared to residential rental law, commercial rental law is only limitedly regulated by special legal provisions.^[103]

7.4.7.1. GERMAN CIVIL CODE (BGB) IMPLICATIONS

Commercial rental law differs fundamentally from residential rental law, particularly regarding allocation of operating costs. While §§ 556 and 560 BGB provide corresponding regulations in residential rental law, these do not apply in commercial rental law.^[104] Since sustainable services are often associated with higher costs, the tenant may claim damages in certain cases if the landlord implements measures that violate the economic efficiency requirement.^[105] Green Leases specifically address this issue by establishing sustainability aspects as permissible decision criteria within the framework of the economic efficiency requirement.

¹⁰¹ BGH, 06.04.2005, XII ZR 308/02, NZM 2005, 504 (505).

¹⁰² *ESG in der Immobilienwirtschaft*, 491.

¹⁰³ Reiner Burbulla, *Aktuelles Gewerberaummietrecht: Rechtsprechung und Vertragsgestaltung*, 3rd ed. (Berlin: Erich Schmidt Verlag, 2017), 1.

¹⁰⁴ *Ibidem*, 150.

¹⁰⁵ Sittner, „§ 24 Green Leases – Der grüne Mietvertrag,“ Para. 58.

Besides sustainable management and use, the structural characteristics of a property also influence its ESG compliance. Green Leases therefore often contain regulations on maintenance measures, structural changes, and modernizations. Particularly in GTC, however, examination according to § 307 BGB is required to avoid unreasonable disadvantage to the tenant.^[106] Additionally, the special termination right according to § 555e BGB is not mandatorily applicable in commercial rental law, but is often contractually excluded. Whether such exclusion is effective in GTC is as unclear as the question of whether rent increase after ESG modernizations is contractually permissible.^[107]

A solution for financing can be the landlord's assumption of consumption-dependent costs in the form of partial inclusive rent, particularly with energy-autonomous buildings. Alternatively, rent reductions or guaranteed savings can promote tenant participation.^[108] Allocation of ESG costs is subject to GTC legal requirements and may not unreasonably burden the tenant. A limitation to 10% of annual net rent is discussed to ensure economically sustainable cost distribution.^[109]

7.4.7.2. GENERAL TERMS AND CONDITIONS (AGB)

ESG-related contract clauses are subject to mandatory legal requirements as well as provisions of GTC law according to §§ 305 ff. BGB. GTC regulations are intended to prevent economic imbalance in favor of the landlord and ensure balanced contract design.^[110] Landlord associations that unilaterally formulate such contracts are obligated in good faith to appropriately consider tenant interests.^[111] According to consistent BGH jurisprudence, effective negotiation requires that the landlord seriously makes the substantive core of each contract clause available for disposition and is willing to adapt it individually to tenant interests and wishes.^[112]

¹⁰⁶ Ibidem, Para. 82.

¹⁰⁷ Ibidem, Para. 83-84.

¹⁰⁸ *ESG in der Immobilienwirtschaft*, 507.

¹⁰⁹ Ibidem.

¹¹⁰ „Kapitel 12,“ [in:] *Spezielle Betriebswirtschaftslehre der Immobilienwirtschaft*, ed. Egon Murfeld. 723-998 (Freiburg: Haufe Lexware, 2018), 738.

¹¹¹ BGH, 06.10.1982, VIII ZR 201/81, NJW 1983, 159.

¹¹² Friedrich Graf von Westphalen, „Bemühensklauseln in „grünen“ Mietverträgen – Eine AGB-rechtliche Antwort“ *Neue Zeitschrift für Miet- und Wohnungsrecht*, 1 (2022): 2.

7.4.7.3. LEVELS OF LEGAL OBLIGATION AND ENFORCEABILITY

In rental law, ESG regulations are gaining increasing importance, with two main types of contractual clauses emerging: effort clauses and obligation clauses. Effort clauses oblige parties to consider ecological, social, or governance-related criteria without formulating concrete success obligations.^[113] They range from “best possible” to “reasonable” measures and offer high flexibility.^[114] They are often used when parties agree on common sustainability will, but do not want to agree on measurable target obligations.^[115] In contrast, obligation clauses establish concrete ESG measures, such as waste separation, energy efficiency, or specific building certifications.^[116]

8 | Regulatory-Driven Transformation: From Voluntary to Mandatory Green Leasing

This study reveals a fundamental transformation in Green Lease development in Germany, where regulatory requirements rather than market forces have become the primary driver of contract innovation. The analysis demonstrates that the convergence of EU Taxonomy, SFDR, CSRD, and GEG creates a regulatory framework that makes Green Lease adoption functionally mandatory for significant segments of the commercial real estate market.

Key findings include:

- **Regulatory Cascade Effect:** The study identifies a systematic cascade where EU-level regulations translate into fund-level compliance requirements, which drive property-level Green Lease adoption.
- **Technical Standardization:** Regulatory reporting requirements are creating de facto standardization of Green Lease clauses, moving beyond the voluntary guidelines provided by industry associations.

¹¹³ Climate Protection Offensive of Trade, 2023, p. 7.

¹¹⁴ *ESG in der Immobilienwirtschaft*, 492.

¹¹⁵ Fritjof Terberger, Nicolas Lang, *Verbindlichkeit und Durchsetzung von Green-Lease-Klauseln in Gewerberaummietverträgen* (2024), 2.

¹¹⁶ *Ibidem*.

- **Legal Enforceability:** The integration of regulatory compliance requirements into Green Lease clauses transforms sustainability commitments from aspirational goals into legally enforceable obligations.
- **Market Segmentation:** The regulatory framework creates a bifurcated market where properties serving regulated institutional investors must adopt comprehensive Green Lease provisions, while smaller market segments remain largely unaffected

9 | Conclusion

This study reveals a fundamental paradigm shift in the German commercial real estate sector, where Green Leases have evolved from voluntary market initiatives to regulatory compliance necessities. The convergence of EU Taxonomy Regulation, SFDR, CSRD, and GEG has created an unprecedented regulatory framework that functionally mandates Green Lease adoption for significant segments of the market, fundamentally transforming the nature of sustainable contracting in German commercial real estate.

The analysis demonstrates that regulatory requirements, rather than market forces, have become the primary catalyst for Green Lease innovation in Germany. The systematic cascade effect identified in this study – where EU-level regulations translate into fund-level compliance requirements, which subsequently drive property-level contractual obligations – represents a new model of sustainability implementation in the real estate sector. This regulatory cascade creates binding legal pathways that transform sustainability commitments from aspirational goals into legally enforceable obligations.

The regulatory framework has initiated a *de facto* standardization process for Green Lease clauses, moving beyond the voluntary guidelines traditionally provided by industry associations. CSRD's standardized reporting requirements under EFRAG standards directly influence the technical specifications of data collection clauses, while EU Taxonomy's "Do No Significant Harm" principle creates continuous compliance obligations that must be contractually secured. This standardization enhances legal enforceability and reduces transaction costs across the industry.

The study identifies an emerging market bifurcation where properties serving regulated institutional investors must adopt comprehensive

Green Lease provisions, while smaller market segments remain largely unaffected by regulatory pressures. This segmentation creates differential compliance burdens and competitive dynamics within the German commercial real estate market, potentially affecting property valuations and investment flows.

The integration of regulatory compliance requirements into Green Lease design transforms traditional landlord-tenant relationships into collaborative ESG compliance partnerships. This evolution requires new competencies from legal practitioners, property managers, and market participants who must navigate the intersection of real estate law, environmental regulation, and data protection requirements. The shift from effort clauses to obligation clauses reflects this transformation toward measurable, enforceable sustainability commitments.

Green Leases represent a departure point into a new generation of lease agreements that are dynamic, responsible, and capable of effectively anchoring sustainability in the building sector. Their strength lies not only in regulatory connectivity, but in their flexibility to understand sustainability as shared responsibility between contracting parties. However, their effectiveness depends on the quality and binding nature of contractual content, supported by functioning technical systems, clear responsibilities, and cooperative understanding between landlords and tenants.

The identification of the regulatory cascade effect and its implications for contract standardization provides a framework for understanding similar transformations in other European markets. Regulatory frameworks can serve as powerful catalysts for market transformation, creating binding pathways for sustainability implementation that transcend traditional market mechanisms.

The findings suggest that Green Leases in Germany have evolved beyond their original conception as voluntary sustainability tools to become essential regulatory compliance instruments. This transformation marks not an endpoint but the beginning of a new era in commercial real estate contracting, where legal, technical, and environmental considerations converge to create innovative solutions for sustainable building management.

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Forecasting Legal Reforms to Meet the Demands of the Twin Transition in Vietnam: A Review of Land and Environmental Laws

Abstract

In a global context grappling with systemic challenges such as climate change, resource depletion, and technological inequality, the concept of the “twin transition” – the integration of digital and green transitions – has emerged as a key strategic orientation for many nations, including Vietnam. While the digital transition aims to enhance managerial efficiency, foster innovation, and bolster competitiveness, the green transition pursues sustainable development, ecological integrity, and climate change adaptation. When pursued in synergy, the twin transition offers a profound opportunity to comprehensively restructure socio-economic sectors toward modernity and sustainability. Central to navigating this process is the role of law, which serves as both a regulatory instrument for social behavior and a foundational framework for transition policies. Within this context, land and environmental law are particularly decisive in anchoring the sustainability of the transition, as they govern the parallel objectives of digitizing resource management, optimizing land use, and minimizing environmental impacts. A well-designed legal architecture in these domains not only establishes a clear and transparent framework but also acts as a catalyst for technological innovation, administrative reform, and the pursuit of environmental justice. However, this paper argues that Vietnam’s

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current land and environmental laws face significant challenges in adapting to the twin transition, including a lack of synchronization, slow adoption of new technologies, and limitations in integrating environmental-technological considerations into land governance. Therefore, this study analyzes and proposes the necessary regulatory adjustments in these two key legal fields to meet the future demands of the twin transition in Vietnam.

KEYWORDS: twin transition, sustainable development, environmental law, land law

1 | Introduction

Vietnam is at a pivotal moment of significant change, from its systemic state apparatus to the formulation and enforcement of its legal regulations. Within this context, the digital and green transitions have begun to emerge, moving from policy initiatives to concrete actions.^[1] A recent example includes moves towards a green transition through the reduction of emissions from transportation vehicles. Evidently, these signs indicate that the digital and green transitions are becoming a pervasive trend across all spheres of life, with the economic sector experiencing the most pronounced and impactful changes. To promptly adjust the legal relations arising from this twin transition, legal regulations must be adapted accordingly. In other words, it is necessary to anticipate the legal changes required for the twin transition, in order, on the one hand, to avoid the legal risks arising from the lack of a regulatory framework, and, on the other, to create a robust corridor for the sustainable development of institutions related to the twin transition, and to establish a mechanism for sustainable competition among enterprises.^[2]

A core issue of concern in the twin transition is how to achieve a successful digital transformation while ensuring the goal of a sustainable

¹ Decision No. 1658/QĐ-TTg dated 1 October 2021, approving the National Green Growth Strategy for the 2021–2030 period, with a vision to 2050; Decision No. 749/QĐ-TTg dated 3 June 2020, approving the National Digital Transformation Program to 2025, with orientation to 2030.

² Sabrina Tabares, Vinit Parida, Koteswar Chirumalla, “Twin Transition in Industrial Organizations: Conceptualization, Implementation Framework, and Research Agenda” *Technological Forecasting and Social Change*, 213 (2025).

green transition. This question is linked to and revolves around the dual objective posed in the past: how to continue pursuing economic development and achieving growth targets without harming the environment. This dual objective is a challenge not only for Vietnam, but for all nations. Differences in resources and economic potential may lead to different problem-solving approaches; however, the common goal remains green development. After all, if economic development is not linked to the “green” objective – that is, ensuring no harm to the environment – it becomes meaningless. The ultimate purpose of the economy is to serve humanity; if economic prosperity comes at the cost of people living in a degraded, polluted environment resulting from that very development, then the expectations of that prosperity lose their meaning.^[3]

The policy of pursuing a robust digital transformation was officially initiated and addressed in Politburo Resolution No. 52-NQ/TW, issued on 27 September 2019, regarding policies for proactively participating in the Fourth Industrial Revolution. This resolution set the objective of leveraging the opportunities of the 4.0 industrial revolution to promote growth model innovation, restructure the economy, develop the digital economy, and improve the quality of life.^[4] This digital transformation spirit was further affirmed in Politburo Resolution No. 57-NQ/TW of 22 December 2024, which focuses on breakthroughs in science and technology development, innovation, and national digital transformation, wherein science, technology, innovation, and digital transformation are leading strategic breakthroughs and the main drivers for developing modern production forces, perfecting national governance, and the socio-economy, helping Vietnam achieve breakthrough development in the new era.^[5]

Regarding the green transition, the analogous concept of “green growth” was first officially addressed in the Prime Minister’s Decision No. 1658/QĐ-TTg of 1 October 2021, which approved the national strategy on green growth for the 2021–2030 period, with a vision to 2050.^[6] This decision identified green growth as a strategic tool to restructure the economy,

³ Vu Ngoc Luan, Le Van Vien, Nguyen Danh Nam, “The Relationship between Environment and Economic Development in Vietnam” *Journal of Pharmaceutical Negative Results*, No. 6 (2022).

⁴ Resolution No. 52-NQ/TW dated 27 September 2019, on Guidelines and Policies for Proactive Participation in the Fourth Industrial Revolution.

⁵ Resolution No. 57-NQ/TW dated 22 December 2024, on Breakthrough Development in Science, Technology, Innovation, and National Digital Transformation.

⁶ Decision No. 1658/QĐ-TTg dated 1 October 2021, approving the National Green Growth Strategy for the 2021–2030 period, with a vision to 2050.

innovate the growth model, enhance competitiveness, and increase resilience to international fluctuations. Green growth is considered the path to achieving sustainable development while reducing greenhouse gas emissions towards a long-term carbon-neutral economy, with a people-centric approach: reducing risks for citizens from climate change, promoting a green living culture, and community responsibility. Green growth is defined as the task of the business community, organizations, and the entire society, driven by a spirit of innovation and an aspiration for sustainable development. The greening of economic sectors and lifestyles is a prominent theme of this decision.

The digital and green transitions were addressed in combination in Resolution No. 29-NQ/TW of the Party Central Committee (13th Tenure), dated 17 November 2022, which focuses on continuing to accelerate the industrialization and modernization of the country until 2030, with a vision to 2045, and includes an explanation of the role of the digital and green transitions. Specifically, the resolution defines the strategic goal of accelerating industrialization and modernization as the cause of all people and the entire political system, placing people at the centre and enterprises as the main actors, ensuring a balance between economic development and the implementation of social progress and equity, and environmental protection; and closely and synchronously linking it with urbanization, new rural development, growth model innovation, economic restructuring, and labor structure transition.^[7]

In the initial context of these guidelines, directives, and policies on the digital transition, green transition, and their combination in the twin transition, the question arises as to how Vietnam's laws need to change to meet the demands of the dramatic shifts in the economic structure and social life. The legal domains strongly affected by the twin transition are undoubtedly numerous. Therefore, within the scope of this paper, the authors focus on two legal domains that are projected to require the most immediate legal foresight to adapt to the new context: land law and environmental law. Given its specific characteristics as a country where the agricultural economy plays a leading role, land resources have always played a foundational role. To develop agriculture sustainably and effectively support

⁷ This content is stated in the guiding viewpoints section of Resolution No. 29-NQ/TW of the Sixth Plenary Session of the 13th Party Central Committee on Promoting Industrialization and Modernization of the Country by 2030, with a Vision to 2045.

the economic restructuring towards industrialization and modernization, it is necessary to start with the sustainable exploitation and use of land resources, prioritizing the protection, reclamation, and restoration of land. The assessment of laws related to this field must be conducted within the context of the demands of the twin transition. A similar requirement is posed for the environmental sector; environmental protection law must, on the one hand, not hinder the country's economic development in the new situation, and on the other hand, must ensure the objective of improving environmental quality – in other words, ensuring green and sustainable economic development.

2 | General Overview of the Twin Transition and its Regulating Law

2.1. The Concept of the Twin Transition and the Role of Law

The concept of the twin transition has been addressed and analyzed in numerous academic works, though primarily concentrated in developed countries. In Vietnam, this concept has not yet been comprehensively studied; academic research by Vietnamese authors tends to focus either on the digital transition or the green transition, with the integration of the two in a “twin transition” remaining largely unaddressed.^[8] Most literature is limited to describing and analyzing the practical difficulties that entities encounter in implementing the separate digital and green transitions. Joint research on the two is still at a nascent stage, focused on conceptual definition and identifying key features.^[9] In its most general sense, the digital and green transitions are imperatives in the current context, as the economy

⁸ Regarding to digital transition: Doan Thu Anh, “Legal System for Digital Transformation in Vietnam” *Political Theory Online Journal*. <https://politicaltheory.hcma.vn/legal-system-for-digital-transformation-in-vietnam-5930.html>; “Green Transition Barriers Must Be Removed, *Viet Nam News*, <https://vietnamnews.vn/economy/1719455/green-transition-barriers-must-be-removed.html>.

⁹ Lê Anh Tú, Lương Thanh Hải, *Chuyển Đổi Số, Chuyển Đổi Xanh Cho Phát Triển Bền Vững*, Viện nghiên cứu chiến lược, chính sách – Bộ Công thương. <https://vioit.org.vn/vn/chien-luoc-chinh-sach/chuyen-doi-so--chuyen-doi-xanh-cho-phat-trien-ben-vung--phan-1--5963.4050.html>.

and society face numerous environmental and sustainable development challenges. Consequently, this transition process offers significant benefits for sustainable economic development and international integration.

From a legal perspective, it is crucial to clarify the core characteristics of the twin transition process. First and foremost, its most fundamental characteristic is integration and synergy.^[10] This is not a mere sum of two separate transitions but rather an interaction where they intertwine and mutually reinforce each other. Digital technology provides the tools to monitor, measure, and optimize green production processes, while environmental sustainability goals, in turn, create the impetus for innovation in the digital sector, forming a positive feedback loop. Secondly, the twin transition possesses a profoundly systemic and cross-sectoral nature, impacting the entire socio-economic structure – from business models and governance methods to people's lifestyles – and requiring synchronized, large-scale change.^[11] Another key feature is its disruptive nature, driven by data and technology, where data is considered a central “resource” that facilitates more accurate decision-making and more efficient resource management.^[12] Finally, one must note the complexity and unpredictability of this process, as the rapid pace of technological change and the need to balance multiple objectives always harbor unforeseen risks.^[13]

It is from these characteristics that the role of law in regulating the twin transition is redefined, not merely as a managerial tool but as an architect creating an enabling environment.^[14] This necessitates a paradigm shift in legal thinking, moving from regulating isolated behaviors to architecting a legal ecosystem that is adaptive, encourages innovation, and ensures harmonious and sustainable development. Specifically, the formative role of law in the twin transition process is manifested in four aspects:

¹⁰ Tabares, Parida, Chirumalla, “Twin Transition in Industrial Organizations: Conceptualization, Implementation Framework, and Research Agenda.”

¹¹ Frank W. Geels, “Socio-Technical Transitions to Sustainability: A Review of Criticisms and Elaborations of the Multi-Level Perspective” *Current Opinion in Environmental Sustainability*, 39 (2019).

¹² Dario Diodato et al., “Introduction to the Special Issue on «the Twin (Digital and Green) Transition: Handling the Economic and Social Challenges»” *Industry and Innovation*, No. 7 (2023).

¹³ Tabares, Parida, Chirumalla, “Twin Transition in Industrial Organizations: Conceptualization, Implementation Framework, and Research Agenda”; European Environment Agency, *Digitalisation and the Environment*, EEA Report No 12 2022.

¹⁴ Viện Nghiên cứu Quản lý Kinh tế Trung ương, *Thúc Đẩy Hành Trình Chuyển Đổi Kép*. <https://iced.org.vn/thuc-day-hanh-trinh-chuyen-doi-kep/>.

- First, corresponding to its integrated and synergistic nature, the law must undertake the mission of harmonization and synchronization. Instead of existing in silos, the legal system needs to be reviewed to break down barriers, create interconnection and consistency, and integrate green criteria into digital policies, and vice versa.
- Second, to address its systemic and cross-sectoral nature, the law becomes a tool for framework creation and coordination, establishing a foundation for collaboration between ministries, sectors, and localities. It creates mechanisms for cooperation, information sharing, and monitoring to ensure the strategy is implemented uniformly.
- Third, in response to its disruptive, data- and technology-driven nature, the role of law is to establish the legal foundation for the digital economy and innovation. This requires regulations on data governance, personal data protection, cybersecurity, and especially mechanisms for open data sharing related to the environment and land to promote transparency.
- Fourth, to cope with its complexity and uncertainty, the law must demonstrate a role of flexible regulation and risk governance. This approach prioritizes adaptive regulations, such as “regulatory sandboxes” for controlled policy experimentation, while establishing principles of risk prevention and impact assessment to manage any negative consequences that may arise.

2.2. The Relationship between Land Law, Environmental Law, and Sustainable Development

Recognizing the formative role of law in the twin transition process, it is evident that land law and environmental law are not merely two separate legal domains, but rather two core, interdependent pillars that are decisive for the sustainability of the entire process.^[15] Thus, if the twin transition is considered the strategic path for Vietnam to realize the Sustainable Development Goals (SDGs), then land and environmental law constitute the very foundation upon which that path is built. This relationship is not

¹⁵ *Planning for Climate Change: Strategies for Mitigation and Adaptation for Spatial Planners*, ed. Simin Davoudi, Jenny Crawford, Abid Mehmood (London: Routledge, 2009).

merely theoretical, but is clearly manifested as the parallel objectives of the twin transition are pursued: digitizing resource management, optimizing land use, and minimizing negative environmental impacts.

Accordingly, land law, which governs the ownership, management, and use of land, serves as the most direct instrument for shaping the physical space for development. In the context of the twin transition, this role becomes even more critical, as land is viewed not only as a means of production, but also as a component of the ecosystem and a foundation for digital infrastructure.^[16] An advanced legal framework for land, with fully digitized land data, would allow for the optimization of land use, planning, and efficiency, such as the rational allocation of high-tech industrial zones, green data centers, or adequate land funds for renewable energy development. Conversely, environmental law establishes “safe limits” for economic activities, ensuring that the exploitation and use of land resources do not exceed the ecosystem’s carrying capacity.^[17] It sets standards and technical regulations on emissions, waste treatment, and biodiversity conservation, compelling economic development to go hand in hand with environmental protection responsibilities.^[18]

From these characteristics, it is clear that the interplay between these two legal domains creates a comprehensive regulatory mechanism. An investment project, regardless of its technological sophistication, cannot be licensed on a piece of land if it fails to meet the requirements of an environmental impact assessment. Similarly, a forest protection policy cannot be effective if land law lacks strict regulations on the allocation and lease of forest land and a mechanism to monitor its proper use. Therefore, the coordinated development and refinement of the legal system in these two fields is of pivotal importance for the twin transition. It not only contributes to creating a clear and transparent legal framework for investors and citizens, but also acts as a lever to promote technological innovation and administrative reform.^[19] As environmental standards become more stringent, enterprises are incentivized to invest in cleaner production

¹⁶ Steve Graham, Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (London: Routledge, 2001).

¹⁷ Ahjond S. Garmestani, Melinda Harm Benson, “A Framework for Resilience-Based Governance of Social-Ecological Systems” *Ecology and Society*, No. 2 (2013).

¹⁸ Daniel M. Bodansky, “International Law and the Protection of Biological Diversity” *Vanderbilt Journal of Transnational Law*, No. 4 (1995).

¹⁹ Porter M.E., “Toward a New Conception of the Environment-Competitiveness Relationship” *Journal of Economic Perspectives*, No. 4 (1995).

technologies. When land use planning and information are made public and transparent on digital platforms, the state's managerial efficiency is enhanced, and public participation in oversight becomes more substantive.

Furthermore, the refinement of land and environmental law in the digital era is also a pathway to achieving environmental justice.^[20] Access to information on environmental quality and potentially polluting projects, as well as the right to participate in local land use decision-making processes, are fundamental rights of the people. Digital technology, when supported by a robust legal framework, serves as an effective tool to ensure these rights are enforced, thereby reducing inequalities in both the benefits derived from development and the burdens of its negative environmental impacts. On this basis, land law and environmental law are therefore not separate regulatory instruments, but an inseparable system, forming the backbone for the goal of sustainable development in the challenging and opportune context of the twin transition.

3 | The Vietnam's Land and Environmental Law in the Context of the Twin Transition

3.1. Land Law

Vietnam's legal framework for land has undergone a significant transformation to adapt to the new development context. The enactment of the Land Law 2024 is not merely an adjustment but represents a shift in legislative philosophy towards more modern and sustainable land governance.

Regarding the digital transition, the Land Law 2024 has created a revolutionary legal corridor, thoroughly addressing the inherent shortcomings of the previous period. The limitations of the Land Law 2013, such as the lack of a sufficiently strong legal mechanism to uniformly regulate the land information system, led to piecemeal implementation, fragmented data

²⁰ David Schlosberg, "The Justice of Environmental Justice: Reconciling Equity, Recognition, and Participation in a Political Movement" *Moral and Political Philosophy*, No. 3 (2023).

in local records, and a national database that was never fully completed.^[21] The Land Law 2024 contains provisions that help to significantly overcome this fragmentation. Accordingly, the regulations in Chapter XII of the Land Law 2024 (from Articles 163 to 170) have created a paradigm shift in the management of land information and data. First, this law has shifted the legal language from a vision of “unity” to a clear mandate for an architecture that is “centralized, unified, synchronized, multi-purpose, and interconnected.”^[22] This change is not just a technical upgrade but a re-definition of the role of land data as a national strategic asset, directly institutionalizing the objectives of Resolution 18-NQ/TW. It transforms land data from a passive record-keeping tool into an active instrument for state governance, enabling more sophisticated and effective data-driven policymaking.

This national data platform is the technical and legal prerequisite for the next strategic step: the comprehensive digitalization of public services. Article 167 of the Land Law 2024 and Decree 101/2024/NĐ-CP have established a structural legal foundation for the transition to a digital platform. This is not an optional addition, but a deliberate strategy aimed at dismantling bureaucratic, paper-based administrative processes, which are a source of inefficiency and a breeding ground for petty corruption.^[23] By standardizing procedures, recognizing the legal validity of electronic records and signatures, and making transactions traceable through electronic logs, the law has introduced a breakthrough level of transparency and accountability.^[24] Minimizing direct contact between civil servants and citizens

²¹ Báo điện tử chính phủ, “Chính Sách, Pháp Luật Về Đất đai Còn Nhiều Hạn Chế, Bất Cập, Chồng Chéo, Thiếu Thống Nhất” Báo điện tử chính phủ. <https://xaydungchinh sach.chinhphu.vn/chinh-sach-phap-luat-ve-dat-dai-con-nhieu-han-che-bat-cap-chong-cheo-thieu-thong-nhat-119220626140710262.html>.

²² Land Law No. 31/2024/QH15., Clause 1, Article 163 clearly stipulates the principles for developing the National Land Information System, using the exact phrase: “designed comprehensively, built as a centralized, unified, synchronized, multi-purpose system with nationwide connectivity.”

²³ Article 167 of the 2024 Land Law directly stipulates the implementation of electronic transactions and the provision of online public services in the field of land management. Decree No. 101/2024/NĐ-CP subsequently concretized the procedures and responsibilities of relevant agencies in the implementation process. Direct citation of these two legal documents serves as the most authentic evidence that a “structural legal foundation” has been established.

²⁴ See the analysis of administrative reform objectives at: Patrick Dunleavy et al., *Digital Era Governance: It Corporations, the State, and E-Government* (Oxford: Oxford University Press, 2006).

is considered a key anti-corruption measure, consistent with the goal of building a “digital government” and improving the investment climate.^[25]

Regarding the green transition pillar, land law has undergone a qualitative evolution, elevating environmental concerns from an ancillary factor to a core principle. Article 5 of the Land Law 2024 has made “environmental protection and climate change adaptation” a fundamental and legally binding principle.^[26] This requirement is subsequently integrated directly into the planning process in Article 60, making sustainability a mandatory input requirement and compelling policymakers to proactively consider ecological impacts from the beginning stage.^[27] Alongside strengthening the strict controls on the conversion of rice-paddy and forest land, which are irreplaceable natural “carbon sinks,” Article 14 also decentralizes some approval authority to provincial-level People’s Councils, a change in the governance structure that may increase local flexibility but also poses challenges for capacity and oversight.^[28]

However, the most profound and impactful breakthrough is the dismantling of the rigid land classification system through Article 218, on “multi-purpose land use.” This represents a fundamental shift in economic philosophy, moving from a model of land specialization to one of land optimization, directly resolving the “zero-sum” conflict between development

²⁵ United Nations Department of Economic and Social Affairs, *United Nations E-Government Survey 2022: The Future of Digital Government* (New York: UN DESA, 2022).

²⁶ Land Law No. 31/2024/QH15, Article 5, Clause 4 stipulates the principle of land use as follows: “Exercise the rights and fulfill the obligations of land users within the land use term in accordance with this Law and other relevant legal regulations; do not infringe upon the lawful rights and interests of adjacent and surrounding land users.”

²⁷ Land Law No. 31/2024/QH15, Article 60, Clause 3 stipulates: “Land use planning and plans formulated at the national, provincial, and district levels must meet the requirements of implementing a strategy for rapid and sustainable socio-economic development; and ensure national defense and security.”

²⁸ Land Law No. 31/2024/QH15, Article 14, Clause 2 stipulates: “People’s Councils at all levels shall exercise the authority to approve local land use planning before submission to competent authorities for approval; approve land recovery for the implementation of socio-economic development projects serving national and public interests within their jurisdiction; approve the conversion of land use purposes for rice-growing land, special-use forests, protection forests, and production forests as prescribed by this Law; decide on land price tables; and supervise the implementation of land laws in their localities.”

and conservation.^[29] By introducing the legal concept of “combined use,” the law has legitimized sustainable business models that previously existed in a legal grey area, such as agricultural production combined with solar energy generation (agrivoltaics).^[30] Article 218 is thus the legal engine for optimizing land productivity per square meter, creating synergy between sectors (food, energy, tourism) that were previously seen as competitors. Of course, this flexibility is controlled by strict legal guardrails in Clause 2 of Article 218 and Decree 102/2024/NĐ-CP, to ensure the primary land use purpose is not compromised, creating a solid legal basis for circular economy and smart agriculture models.^[31]

3.2. Environmental Law

If the Land Law 2024 reshapes the physical space for sustainable development, then the Law on Environmental Protection 2020 is the legal pillar that creates the economic mechanisms and modern governance methods to operate the green transition.^[32] The enactment of this law, aimed at institutionalizing the orientations of the National Green Growth Strategy and realizing Vietnam’s international commitments – particularly the goal of achieving net-zero emissions by 2050 at COP26 – marked a systemic shift in thinking.^[33] By moving from a management approach based primarily on administrative, command-and-control instruments, to an integrated governance model, and from “managing to control” to “managing to develop,” the Law on Environmental Protection 2020 is not just a law on

²⁹ Thomas O. McShane et al., “Hard Choices: Making Trade-Offs between Biodiversity Conservation and Human Well-Being” *Biological Conservation*, No. 3 (2011).

³⁰ Max Trommsdorff et al., *Agri-Photovoltaics: Opportunities for Agriculture and the Energy Transition* (Freiburg: Fraunhofer Institute for Solar Energy Systems ISE, 2021).

³¹ Land Law No. 31/2024/QH15., Article 218, Clause 2 stipulates the requirements for multi-purpose land use. This provision is further elaborated in Article 9 of Decree No. 102/2024/NĐ-CP, which details the implementation of certain articles of the Land Law.

³² *The Oxford Handbook of Law and Economics: Volume II: Private and Commercial Law*, ed. Francesco Parisi (Oxford Academic, 2017).

³³ Minh Hậu, “Diễn Đàn «Hiện Thực Hóa Chiến Lược Quốc Gia Về Tăng Trưởng Xanh Tại Việt Nam: Thúc Đẩy Dòng Vốn Xanh»” *Bộ Kế hoạch và Đầu tư*. <https://www.mpi.gov.vn/portal/Pages/2024-9-10/Dien-dan-Hien-thuc-hoa-Chien-luoc-quoc-gia-ve-tangkgpf6m.aspx>.

pollution control, but also a macroeconomic policy tool that proactively creates new markets and reshapes the allocation of national resources towards sustainability.^[34]

The foundation of this modern governance method is a robust digital infrastructure, although its implementation still faces challenges. Similar to the land sector, the digital transition in environmental law is identified as the core for modernization and enhancing transparency. Articles 114 and 115 of the Law on Environmental Protection 2020 have established the requirement to build and operate a national environmental information and database system, with the important role of publicizing information on environmental quality and emission sources for community oversight.^[35] The most revolutionary change comes from the application of technology in monitoring, as Decree 08/2022/NĐ-CP requires facilities with a high risk of environmental pollution (as listed in Appendix II of the Decree) to install automatic, continuous monitoring systems for wastewater and emissions and transmit data directly to the management agency by 31 December 2024.^[36] This regulation has shifted the management method from a passive, inspection-based approach to a proactive, real-time monitoring model, allowing for early detection and prevention of environmental incidents.

However, the construction of this data infrastructure is facing considerable difficulties, including shortages of financial resources, technological infrastructure, and specialized personnel, and particularly the challenge of standardizing and integrating non-uniform historical data.^[37] Overcoming these barriers is an urgent task, because the digital data infrastructure is not merely a management tool, but also the essential foundation for green

³⁴ Trung Thuận, “Những Điểm Mới Mang Tính Đột Phá Của Luật Bảo Vệ Môi Trường Năm 2020” *Viện chiến lược, chính sách nông nghiệp và môi trường*. <https://tapchimoitruong.vn/gi/chuyen-muc-3/nhung-diem-moi-mang-tinh-dot-pha-cua-luat-bao-ve-moi-truong-nam-2020-21802>.

³⁵ Law on Environmental Protection No. 72/2020/QH14, Article 114 stipulates provisions on environmental information, while Article 115 regulates the environmental information system and database.

³⁶ This is stipulated in Point a, Clause 4, Article 97 of Decree No. 08/2022/NĐ-CP dated 10 January 2022, detailing the implementation of certain articles of the Law on Environmental Protection, which regulates wastewater monitoring.

³⁷ Lê Thị Hường, “Thu Hẹp Khoảng Trống Dữ Liệu Về Chất Lượng Không Khí: Đề Xuất Giải Pháp Hướng Tới Công Bằng Môi Trường” *Viện chiến lược, chính sách nông nghiệp và môi trường*. <https://tapchimoitruong.vn/ios/chuyen-muc-3/thu-hep-khoang-trong-du-lieu-ve-chat-luong-khong-khi-de-xuat-giai-phap-huong-toi-cong-bang-moi-truong-32435>.

economic mechanisms to operate. Specifically, the success of the carbon market is directly dependent on the completeness of the measurement, reporting, and verification (MRV) system for greenhouse gas emissions, which relies on data collected from automatic monitoring stations.^[38] Similarly, to effectively implement the extended producer responsibility (EPR) policy, a transparent information system is needed to track product lifecycles and recycling rates.^[39]

Alongside digitalization, the Law on Environmental Protection 2020 has made a breakthrough by officially legislating a series of market-based economic instruments, shifting the focus to regulation by economic interest. For the first time, the concept of a “circular economy” is formally defined in Article 142, with the key implementation tool being EPR in Articles 54 and 55.^[40] Accordingly, producers and importers of recyclable products and packaging (such as batteries, accumulators, tires, and commercial packaging) must be financially responsible for their collection and recycling, either by self-organizing the recycling or by making a financial contribution to the Vietnam environment protection fund.^[41] At the same time, the law has established a solid legal foundation in Article 139 for the organization and development of a domestic carbon market. This roadmap is specified in Decree 08/2022/NĐ-CP, with a pilot phase until the end of 2027 to develop regulations, the MRV system, and an exchange, before official operation in 2028.^[42] To direct investment flows, the law also introduced green finance instruments, including “green credit” in Article 149 and “green bonds” in Article 150, creating a legal corridor to encourage financial institutions to prioritize sustainable projects according to a “Green

³⁸ Miriam L. Hinostroza et al., *Measuring, Reporting, Verifying: A Primer on Mrv for Nationally Appropriate Mitigation Actions* (Denmark: UNEP Risø Centre on Energy, Climate and Sustainable Development. Department of Management Engineering, Technical University of Denmark, 2012).

³⁹ Daniel Kaffine, Patrick O'Reilly, , *What Have We Learned About Extended Producer Responsibility in the Past Decade? A Survey of the Recent Epr Economic Literature*. Organisation for Economic Co-operation and Development, 2013.

⁴⁰ Law on Environmental Protection No. 72/2020/QH14, Article 54 stipulates the recycling responsibilities of manufacturing and importing organizations and individuals, while Article 55 regulates their responsibilities for the collection and treatment of waste.

⁴¹ Law on Environmental Protection No. 72/2020/QH14, Point b, Clause 2, Article 54 and Clause 3, Article 55.

⁴² Decree No. 08/2022/NĐ-CP dated 10 January 2022, detailing the implementation of certain articles of the Law on Environmental Protection, Article 53.

Taxonomy.”^[43] These instruments, when combined with preventive tools like the strategic environmental assessment (Đánh giá môi trường chiến lược – ĐMC), which is required by Article 25 as an “environmental filter” for national and provincial land use plans, form a comprehensive legal toolkit that is both incentivizing and selective, guiding Vietnam’s economy towards a green and sustainable development trajectory.^[44]

4 | The Need for Legal Adjustment to Serve the Twin Transition

Based on the detailed analysis of the state of Vietnamese law, it is evident that a modern, multi-layered legal architecture has been shaped by the current land and environmental legal systems. The central issue to be addressed here is whether this legal architecture is truly compatible with the complex requirements of the twin transition process. When the current legal framework is compared with the theoretical role of law identified earlier in this paper, a multi-faceted assessment can be made: in terms of legal design, Vietnam’s legal system has achieved a significant degree of adaptability, even approaching progressive international practices. However, a deeper look into the challenges of implementation capacity and systemic coherence reveals its limitations and potential risks.

In terms of design, it is undeniable that the two pillar laws have created a significant shift in approach. The provisions on a centralized national information system, multi-purpose land use, the circular economy, and carbon markets have directly met the requirements for creating a clear, transparent legal framework and promoting technological innovation, as previously analyzed. In theory, these instruments have transformed the role of law from passive to proactive, from merely setting limits to actively creating new markets and business models. The integration of environmental principles into land use planning and the integration of land and

⁴³ Decision No. 21/2025/QĐ-TTg stipulating environmental criteria and the confirmation of investment projects classified as green.

⁴⁴ Article 25 of the Law on Environmental Protection 2020 stipulates the entities required to conduct strategic environmental assessment.

environmental databases demonstrate a serious legislative effort to create synergy between the two pillars of the twin transition. It can be affirmed that the legal framework on paper has provided nearly all the necessary tools to orient and regulate the transition process.

However, a legal system cannot be judged by its text alone. The depth of legal critique lies in analyzing the “gap” between the law and life. It is here that the adaptability of Vietnam’s law reveals its structural challenges:

Firstly, is the concerning disparity between the pace of legal reform and institutional capacity. New legal instruments, such as EPR, carbon markets, and big data governance, demand an incredibly complex level of state management, technical capability, and institutional infrastructure. New pressures from the digital transition, such as the requirement to manage spatial data or the potential application of artificial intelligence (AI) in planning, pose technical demands that far exceed the current capabilities of many localities. Similarly, challenges from the green transition, such as building a complete legal framework for carbon credits or enforcing strict requirements for greenhouse gas emission reduction, are not just legal provisions, but require complex MRV systems. The current administrative system, especially at the grassroots level, may not be ready to absorb and operate these mechanisms effectively. Consequently, although the law is designed to be a driver, it risks becoming a compliance burden for both regulatory agencies and enterprises if implementation capacity cannot keep pace. This is no longer an issue of legal language, but one of resources, people, and governance culture.

Secondly, legal coherence is limited to the regulatory level and is not yet guaranteed in implementation. Although the law has created points of intersection, the mechanism for inter-agency coordination in practice remains an unknown. The necessity of legal adjustment towards an integrated, interdisciplinary approach becomes ever more apparent when facing potential conflicts. For example, the goal of public transparency of land information from the digital transition may conflict with the need to protect sensitive information about natural resources from the green transition. Resolving the conflict between licensing a renewable energy project on agricultural land and protecting a local ecosystem will depend entirely on the coordinating capacity of executive agencies. Without an effective oversight and arbitration mechanism, integration on paper could lead to conflict in practice, slowing down the entire transition process.

Finally, the current legal framework remains in a more reactive stance than a proactively adaptive one. The regulations are designed to solve existing

problems, but may not be flexible enough to respond to unprecedented challenges. For instance, issues of environmental data sovereignty, the ethics of using artificial intelligence in planning decisions, and complex green financial instruments remain grey areas that the current law has only superficially addressed. The pace of technological and economic model development demands a legal framework capable of self-adjustment and adaptation, rather than waiting for legislative amendment cycles that take many years.

Based on the analysis above, it can be said that Vietnam's legal system has succeeded in building a modern, architectural framework for the twin transition, with the necessary tools. However, for that architecture to operate effectively, it requires a capable implementation apparatus. Therefore, the answer to whether the law meets the current requirements of the twin transition is twofold: "Yes, in terms of structure and orientation, but uncertain, in terms of function and operational capacity."

5 | International Lessons and Policy Orientations for Vietnam to Fulfil the Implementation Gap

5.1. International Experiences in Enhancing Functional and Operational Capacity

5.1.1. The European Union's Approach in Architecting Operational Capacity

The issue of the European Union's twin transition is not merely a story of the ambitious political vision of the European Green Deal, the EU's overarching strategy to achieve climate neutrality by 2050 and decouple economic growth from resource use; it is also a practical lesson in building operational capacity through a meticulous technical and legal infrastructure.^[45] Confronted with the challenge of translating grand policy orientations into transparent and effective market activities, the EU recognized that implementation capacity does not spontaneously arise from principled

⁴⁵ The European Green Deal (Com(2019) 640 Final).

legislation; Instead, it must be purposefully engineered through detailed, legally-binding technical instruments.^[46]

Central to this issue is the advent of the EU Taxonomy.^[47] Before its existence, the EU's green finance market operated in an ambiguous space, creating fertile ground for "greenwashing" and causing confusion for investors.^[48] To resolve this deficit in *functional capacity*, the EU did not simply issue a "green project list," but engineered a sophisticated, scientific "dictionary" that precisely and quantitatively defines what constitutes a sustainable economic activity.^[49] The true operational power of the Taxonomy lies not in its six environmental objectives, but in its detailed Technical Screening Criteria (TSC) and its legally-mandated disclosure requirements.^[50] This mechanism forces market actors to speak a common language, creating a functional system for transparent capital allocation and transforming "green finance" from a concept into a tangible, operational reality.

Similarly, the success story of the EU Emissions Trading System (EU-ETS) lies not in the "cap and trade" idea itself, but in the nearly two decades spent building a world-class Monitoring, Reporting, and Verification (MRV) system.^[51] Since the EU understood that a market can only function if its data is credible, it hence consequently invested in a detailed legal framework compelling emitters to adhere to strict measurement and reporting protocols, verified by independent third parties. The MRV system helps to create the "operational capacity" of the market, ensuring integrity and transparency, thereby turning the EU-ETS from a theoretical economic

⁴⁶ European Parliament, Technical Support Instrument: Main Features (Pe 747.871), Directorate-General for Internal Policies (European Parliament, 2023).

⁴⁷ Regulation (Eu) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the Establishment of a Framework to Facilitate Sustainable Investment, and Amending Regulation (Eu) 2019/2088.

⁴⁸ Marleen Och, "13 - the Eu Taxonomy Regulation and the Prevention of Greenwashing," [in:] *The Cambridge Handbook of Eu Sustainable Finance - Regulation, Supervision and Governance*, ed. Kern Alexandre, Matteo Gargantini, Michele Siri (Cambridge: Cambridge University Press, 2025).

⁴⁹ Ibidem.

⁵⁰ European Commission, "Commission Delegated Regulation (Eu) 2021/2139 of 4 June 2021 Supplementing Regulation (Eu) 2020/852 by Establishing the Technical Screening Criteria," ed. Official Journal of the European Union L 442 (European Commission, 2021).

⁵¹ Directive 2003/87/Ec of the European Parliament and of the Council of 13 October 2003 Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and Amending Council Directive 96/61/Ec.

model into a powerful and effective policy instrument.^[52] The lesson from the EU is definitive: operational capacity is built on legally-enforced technical precision and data integrity, not merely on broad legal principles.

5.1.2. South Korea's Strategy of State-Led, Technology-Driven Transition

If the EU's experience is about engineering technical instruments, South Korea's story is one of forging the institutional capacity of the state to command and coordinate a complex socio-economic transition. Facing the challenge of mobilizing an entire government apparatus and a cautious private sector towards a unified goal, South Korea adopted a top-down approach, institutionalizing political will into powerful governance structures and proactive market intervention mechanisms.^[53] In this line, the pivotal move that shapes this narrative was the enactment of the Framework Act on Carbon Neutrality and Green Growth.^[54] This was more than a piece of legislation; it was an act that transformed a political vision (orientation) into a legally-binding mandate for the entire system (operational capacity). By establishing a high-level Presidential Commission on Carbon Neutrality with real executive power and mandating climate impact assessments for major state plans, the Framework Act created a centralized command-and-coordination mechanism.^[55] It directly addresses the operational capacity deficit caused by the fragmentation and lack of coordination among different ministries, transforming the transition from a collection of disparate policies into a unified national campaign under a single command.

Subsequently, to address the private sector's hesitation, the South Korean state acted not just as a regulator, but as a proactive market-maker

⁵² European Commission, Commission Implementing Regulation (Eu) 2018/2066 of 19 December 2018 on the Monitoring and Reporting of Greenhouse Gas Emissions Pursuant to Directive 2003/87/Ec of the European Parliament and of the Council and Amending Commission Regulation (Eu) No 601/2012, ed. European Commission (Official Journal of the European Union, L 334/1, 2018).

⁵³ Low carbon green growth roadmap for asia and the pacific, A Paradigm Shift for Economic Growth – Case Study – Republic of Korea's National Strategy for Green Growth and Five-Year Plan. <https://www.unescap.org/sites/default/files/35.%20CS-Republic-of-Korea-National-Strategy-for-Green-Growth-and-Five9Year-Plan.pdf>.

⁵⁴ Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis (Act No. 18469).

⁵⁵ Hyungna Oh, *Green Transition in South Korea*. World Bank. https://www.wbg-kgtf.org/sites/default/files/publications/KN_GreenTransition_01_112921_o.pdf.

and de-risking partner. The experience of South Korea's operational capacity is vividly expressed through its directed financial policies.^[56] Instead of simply encouraging investment, state-backed policy banks pioneered financing for green technology, while Public-Private Partnership (PPP) models were aggressively promoted for large-scale infrastructure projects. This approach built a true operational capacity to steer and mobilize private resources, turning policy goals into bankable and attractive investment opportunities.^[57] The lesson from South Korea thus demonstrates that: operational capacity for a national-scale transition requires the institutionalization of a strong, centralized state governance structure and a proactive state role in shaping and driving the market.

5.2. Suggested Policy Orientations for Vietnam

The preceding analysis of comparative jurisprudence illuminates a path forward for Vietnam. It affirms that refining the law cannot be limited to merely amending the wording of legal documents. Instead, it requires a paradigm shift in thinking, oriented towards building a governance ecosystem that is adaptive, capable, and multi-stakeholder. To overcome the three core challenges identified – the disparity in institutional capacity, the lack of implementation coherence, and the reactive nature of the legal framework – a system of synchronized solutions, informed by the institutional precedents set by international frontrunners, is hence necessary.

In that line, the overarching orientation must be to transform the role of land and environmental law from a tool of control to a platform for promotion and creation. This requires, first and foremost, that the strengthening of land data digitalization and information transparency be viewed as a governance reform, not merely a technical task. Instead of focusing solely on building databases, the state needs to invest heavily in training a workforce capable of analyzing big data and institute a legal framework for independent, third-party verification of environmental data, mirroring the principles of data integrity that underpin the credibility of the EU's MRV apparatus. Similarly, the integration of environmental sustainability criteria into land use planning needs to be specified with clear sets of indicators

⁵⁶ ESG News, South Korea Unveils \$313 Billion Green Financing Plan to Combat Climate Change. <https://esgnews.com/south-korea-unveils-313-billion-green-financing-plan-to-combat-climate-change/>.

⁵⁷ Ibidem.

and quantitative tools, evolving towards the development of a national Green Taxonomy. Learning from the EU's precedent, such a system should be based on granular, science-based technical screening criteria to provide the market with the requisite clarity to channel capital effectively. In parallel, to address the compliance burden and promote private sector participation, it is essential to issue substantive policies that encourage green investment, creating clear incentive mechanisms regarding taxes, credit, and land access for pioneering enterprises in the fields of renewable energy and the circular economy, thereby transforming them from regulated subjects into proactive partners.

To overcome the lack of implementation coherence and the reactive nature of the legal system, two structural solutions, which must be situated within the specific context of land and environmental management, are needed: First, it is necessary to establish institutionalized and empowered inter-agency coordination mechanisms. Instead of relying on formalistic statutes, a clear legal mechanism is needed to resolve complex intersecting issues. In the medium term, this points towards the strategic necessity of a Framework Law on Climate Change and Green Growth, which would institutionalize a supra-ministerial coordinating body, akin to South Korea's Presidential Commission, with the legal mandate to resolve inter-sectoral conflicts and ensure policy coherence. The foundation for this coordination is the national database systems for land and environment, allowing agencies to share information and make decisions on an integrated data platform, thus realizing the digital aspect of the transition. Second, it is necessary to build a flexible and adaptive legal platform. The proposed "regulatory sandbox" is a critical tool not just for experimentation, but for building the indigenous technical and regulatory capacity necessary to eventually implement more comprehensive systems, such as a full-scale carbon market. These controlled experiments will provide invaluable practical lessons for refining the official legal framework, ensuring that the law keeps pace with innovation.

It must be noted that the current challenges cannot be solved by the state's efforts alone; it requires a redefinition of the roles of stakeholders in the twin transition governance model. Drawing from the developmental state model, the role of the State needs to shift from a comprehensive implementer to a strategic, market-shaping actor, a coordinator, and a guarantor of the integrity of the national land and environmental data systems. The role of enterprises is to become the main driver of innovation, empowered by land law through multi-purpose land use mechanisms

and encouraged by environmental law through market-based tools such as EPR and carbon credits. And the role of citizens and social organizations is to become an independent monitoring party, directly empowered by the transparency provisions in both laws. Their ability to access and use verified data on land use planning and environmental quality will be the most effective accountability mechanism, contributing to sustainably narrowing the “implementation gap.”

6 | Conclusion

This study has analyzed Vietnam’s legal corridor in the context of serving the twin transition, focusing on the two pillar domains of land and environment. Its principal finding is that while Vietnam has successfully architected a modern legal framework approaching international best practices, it confronts a profound “operational capacity deficit.” The legal architecture, encompassing provisions for a national data system, multi-purpose land use, and market-based environmental instruments, is theoretically robust. However, this study argues that its functionality is contingent upon bridging the critical gap between legal design and the institutional capacity for implementation. The primary contribution of this research lies in its use of comparative jurisprudence to chart a path for bridging this gap. By examining the developmental narratives of the European Union and South Korea, this paper has distilled two essential models for building state capacity: the EU’s paradigm of architecting operational capacity through granular, legally-binding, technical infrastructure, and South Korea’s model of institutionalizing a powerful, centralized state agency to command and coordinate a national transition. These international precedents provide an analytical lens through which Vietnam’s challenges can be understood and addressed. From these findings, the study reaffirms the central role of legal reform, understood not as a mere textual amendment but as a process of deep institutional engineering. The law must evolve from a set of static rules into a dynamic, foundational architecture that shapes development, creates markets, and governs risks. Ultimately, the success of Vietnam’s twin transition will be determined not by the progressive veneer of its legal texts, but by its capacity to master the sophisticated arts of regulatory statecraft required for a new era of sustainable development.

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Competition in the Digital Economy and Artificial Intelligence Era: Challenges for a Fair Digital Market and Recommendations for Vietnam

Abstract

This study examines how the digital economy transforms business competition and proposes sustainable solutions for emerging challenges. Using an interdisciplinary approach combining economic theory, legal frameworks, and technological assessment, it identifies four key disruptions to traditional competition: algorithmic collusion enabling price-setting without explicit agreements; data power abuse creating market entry barriers through strategic data control; self-preferencing practices allowing platforms to favor their services over competitors; and “killer acquisitions” eliminating future threats by acquiring potential competitors. Results reveal critical gaps in current competition laws, including difficulties defining relevant markets for digital services with network effects, limitations of traditional price-based analysis in zero-price markets, challenges measuring consumer welfare in “free” services, and tensions between protecting competition and encouraging innovation. For Vietnam as an emerging digital economy, the study recommends a comprehensive regulatory strategy: establishing a Digital Economy Unit within the Vietnam Competition Authority; expanding market dominance criteria beyond market share to include data control and network effects; introducing specific anti-competitive behavior rules; implementing transaction-value thresholds for merger control to capture high-value, low-revenue acquisitions; and adopting flexible regulatory approaches for technological change. These recommendations balance fair competition with innovation encouragement. The analysis is particularly relevant to dual transformation toward digitalization and sustainability, as digital platform concentration can either promote or hinder green innovation and sustainable development. The study demonstrates competition law reform’s crucial role in supporting both digitalization and environmental sustainability objectives, with significant implications for Vietnam’s broader sustainability agenda.

KEYWORDS: digital economy, competition law, algorithmic governance, market regulation, twin-transition, digital platforms

1 | Introduction

The Fourth Industrial Revolution is fundamentally transforming the global economy, with the digital economy serving as a key driver of growth. Technological advancements such as AI, big data, cloud computing, and the Internet of Things are driving this rapid transformation, reshaping traditional market structures and establishing disruptive new business models. The digital economy has profoundly altered market operations. Network effects, low marginal costs, multi-sided markets, and the growing centrality of data have produced a “winner-takes-all” trend across many industries. In industrialized countries, a few digital platforms have achieved dominance with market shares far exceeding those of traditional enterprises in comparable sectors.

Anti-competitive behaviors in this context have evolved distinctly from traditional markets. Rather than obvious tactics like price collusion or market division, they manifest through sophisticated pricing algorithms, data misuse, platform self-preferencing, and preemptive acquisitions of potential competitors. The complexity and opacity of these practices pose significant challenges for competition authorities worldwide, as traditional analytical tools often prove inadequate for digital markets.

This paper examines the challenges of regulating anti-competitive behavior in the digital economy and draws on international experiences to propose effective solutions for emerging economies such as Vietnam. The study addresses: (1) defining digital market characteristics and unfair competition types; (2) identifying theoretical, conceptual, and implementation challenges; (3) synthesizing regulatory lessons from other countries; (4) evaluating current legal frameworks and enforcement; and (5) recommending improvements to legal structures and enforcement mechanisms. This research gains urgency from the global “dual transformation” agenda advancing both digitalization and sustainability. Digital platforms increasingly determine market access for green technologies, sustainable products, and environmental services. When dominant platforms control these gateways, their influence can either accelerate green transformation through

network effects and data sharing or obstruct it through self-preferencing and data restrictions. Competition authorities must therefore assess how digital market concentration affects not only general innovation but specifically green innovation and sustainable business models.

This study employs an interdisciplinary methodology combining legal analysis, comparative law, and case studies, examining frameworks across the EU, US, and Asia, while analyzing landmark cases including the EU's Google Shopping decision, the FTC's Facebook investigations, and emerging Vietnamese digital platform cases.

2 | Theoretical Basis of Competition in the Digital Economy

2.1. Characteristics of the Digital Economic Market

2.1.1. Network Effects and Positive Feedback

One of the most significant aspects of the digital economy is the concept of network effects. They happen when a product or service becomes more valuable to users as more people use it.^[1] Direct network effects and indirect network effects are the two basic types of network effects. When the benefits to users increase directly with the number of other users, as in social networks or messaging apps, this is known as a direct network effect. Facebook (worldwide) and Zalo (Vietnam) are both more useful to users when more of their friends and family utilise them. In multi-sided markets, indirect network effects occur when the quantity of users on one side of the market increases its value for users on the other side. This is what happens when buyers and sellers utilise e-commerce platforms.^[2]

Network effects can sometimes create positive feedback loops, enabling large platforms to improve over time. This leads to “winner-takes-all” or “winner-takes-most” tendencies. Network effects can make it very challenging for new businesses to enter a market and increase market

¹ Michael L. Katz, Carl Shapiro, “Network Externalities, Competition, and Compatibility” *American Economic Review*, No. 3 (1985): 424-440.

² Jean-Charles Rochet, Jean Tirole, “Platform Competition in Two-Sided Markets” *Journal of the European Economic Association*, No. 4 (2003): 990-1029.

concentration.^[3] This is why there are generally only one or two corporations that control a significant portion of digital marketplaces, such as Google in online search or Facebook and YouTube in social media.

However, network effects do not always lead to a lasting monopoly, as new technologies can produce “creative destruction,” allowing new competitors to overcome the network effect barrier.^[4] The fall of MySpace to Facebook or the decline of Yahoo to Google are good examples. This illustrates the need for a balanced approach to competition policy that prevents dominant platforms from being abusive, while still allowing room for new ideas.

2.1.2. Low Marginal Costs and Economies of Scale

Another essential part of the digital economy is that it has very low marginal costs and very high fixed costs. Creating digital items, such as software, algorithms, or platforms, is a significant expense, yet serving an additional client incurs minimal additional cost.^[5] Google, for instance, does not have to spend much more money to service one more user after making a search engine. This cost structure yields high economies of scale, meaning that average costs decrease rapidly as the number of users increases. Established companies have a significant edge over their competitors thanks to economies of scale and network effects. This can lead to “superstar” companies, which are a select few that dominate the market and generate substantial profits.

In the digital economy, economies of scope also exist. Digital platforms can quickly expand into adjacent areas by leveraging their existing users, data, and technology.^[6] For instance, Amazon has grown from selling books online to operating a multi-industry e-commerce platform, offering

³ David S. Evans, Richard Schmalensee, “The Antitrust Analysis of Multi-sided Platform Businesses,” [in:] *The Oxford Handbook of International Antitrust Economics*, t. I, ed. Roger D. Blair, D. Daniel Sokol (Oxford: Oxford University Press, 2013), 404-447; David S. Evans, Richard Schmalensee, *Matchmakers: The New Economics of Multisided Platforms* (Boston: Harvard Business Review Press, 2016).

⁴ Carl Shapiro, Hal R. Varian, *Information Rules: A Strategic Guide to the Network Economy* (Boston: Harvard Business School Press, 1999).

⁵ Hal Varian, “Artificial Intelligence, Economics, and Industrial Organization,” [in:] *The Economics of Artificial Intelligence: An Agenda*, ed. Ajay Agrawal, Joshua Gans, Avi Goldfarb (Chicago: University of Chicago Press, 2019), 399-419.

⁶ Feng Zhu and Qihong Liu, “Competing with Complementors: An Empirical Look at Amazon.com” *Strategic Management Journal*, No. 10 (2018): 2618-2642.

cloud services (AWS), manufacturing consumer gadgets (Kindle, Echo), and even producing content (Amazon Studios). These economies of scope make it more challenging to define key markets and determine a company's market power.

2.1.3. Multi-Sided Markets and the Role of Platforms

Multi-sided markets are markets where two or more parties use an intermediary platform to communicate with one another. The interests of one group are affected by the existence of another group. Digital platforms such as Amazon, Shopee, Google, or Facebook function in multi-sided markets: Amazon connects sellers and buyers; Google connects search users, marketers, and content providers; and Facebook connects users, advertisers, and application developers.

A critical aspect of multi-sided marketplaces is “cross-subsidization,” which occurs when platforms charge little or no costs to attract consumers on one side of the market while generating revenue on the other side. For instance, Google lets people use its search service for free, but charges for ads. Shopee, an online shopping platform, allows customers to sign up for free but charges sellers. This unusual approach to pricing makes it challenging to apply traditional competition analysis tools, which typically examine price and market share.

Often, multi-sided platforms employ an “ecosystem envelopment” strategy, where a platform that excels in one market expands into adjacent markets to leverage its data and network effects.^[7] This can lead to “self-preferencing” difficulties, where a platform may favor its services over those of its competitors. The EU's Google Shopping case is a good example. Google was accused of prioritizing its shopping service over other shopping services in search results.^[8]

⁷ Thomas Eisenmann, Geoffrey Parker, Marshall Van Alstyne, “Platform Envelopment” *Strategic Management Journal*, No. 12 (2011): 1270-1285.

⁸ European Commission, Google Search (Shopping), Case AT.39740 (Brussels: European Commission, 2017).

2.1.4. Data as a Strategic Competitive Asset

In the digital economy, data has become a valuable asset for competitive advantage. One can gain a competitive advantage by collecting, analyzing, and utilizing big data. To improve their services, companies personalise them, find the best prices, and develop new items, using data. Data is more valuable when it is larger and covers a broader range. Big platforms can gather more varied and valuable data, which improves their services and attracts more users, creating a positive feedback loop.^[9] Combining diverse forms of data (data fusion) can also provide much value, especially when it comes to building machine learning algorithms and artificial intelligence. This is one reason why internet companies want to acquire other companies, such as Facebook's acquisition of WhatsApp and Instagram, or Google's acquisition of Fitbit.

However, having access to and control over extensive data can make it more challenging for new businesses to get started and help existing ones stay ahead. According to research from the UK's Competition and Markets Authority (CMA), data power can eliminate potential competitors and maintain market dominance for companies.^[10] This raises concerns about fair access to data and how "open data" might enhance competition.

As e-commerce sites like Shopee, Lazada, and Tiki, as well as ride-hailing apps like Grab and Be, continue to grow rapidly in Vietnam, issues of data concentration and market power are becoming increasingly important. The three most significant online shopping sites in Vietnam collectively hold a large market share. Grab and Xanh SM are the biggest ride-hailing services in major cities (VCCI 2025).^[11] This makes it harder for fair competition, especially since Vietnam's competition law lacks clear rules regarding data sharing and access rights.

⁹ Anja Lambrecht and Catherine E. Tucker, Can Big Data Protect a Firm from Competition? (Brussels: Competition Policy International, 2017). <https://www.competitionpolicyinternational.com/wp-content/uploads/2017/01/CPI-Lambrecht-Tucker.pdf>.

¹⁰ Competition and Markets Authority, Online Platforms and Digital Advertising: Market Study Final Report (London: Competition and Markets Authority, 2020), https://assets.publishing.service.gov.uk/media/5efc57ed3a6f4023d242ed56/Final_report_1_July_2020_.pdf.

¹¹ VCCI, Grab and Xanh SM Dominate Vietnam's Ride-Hailing Market: Report. <https://en.vcci.com.vn/grab-and-xanh-sm-dominate-vietnam%E2%80%99s-ride-hailing-market-report>. [accessed: 30.8.2025].

The importance of data becomes even clearer when considering the intersection of digital and green transformation. Important issues such as environmental monitoring data, supply chain sustainability metrics have value that can determine competitive advantage in the green technology market. Digital platforms that control access to environmental data or sustainable consumption patterns can leverage this information to favor their own green products or services over competitors. For instance, e-commerce platforms that possess extensive data on consumer behavior can give preferential treatment to their own sustainable private label products, while pushing competing green products to less prominent positions on their sites. This risk of data concentration extends to key sustainability areas, where information asymmetries can determine market access for green innovations.

2.2. Certain Forms of Competition Restriction in the Digital Economy

In the digital economy, anti-competitive actions have taken on new forms that differ from those of the past. The differences stem from the way digital marketplaces operate, the role of data and algorithms, and the fact that digital business models are complex and not entirely transparent. This section will examine four types of anti-competitive actions in the digital economy: collusion through pricing algorithms, abuse of data power, self-preferencing on digital platforms, and the acquisition of potential competitors.

2.2.1. Collusion Through Pricing Algorithms

When companies employ algorithms to coordinate their price behaviour, this is called algorithmic collusion. The outcomes are comparable to those of traditional collusion, but there is no explicit agreement in place. This happens in three main ways^[12]:

First, algorithms serve as “messengers” that help companies work together in a standardized manner, utilizing algorithms to facilitate transactions. In the United States, the *United States v. David Topkins* case in 2015

¹² Ariel Ezrachi, Maurice Stucke, “Artificial Intelligence & Collusion: When Computers Inhibit Competition” *University of Illinois Law Review*, No. 5 (2017): 1775-1810.

is a well-known example. In this case, online bookstores utilized pricing software to negotiate deals and manage prices.

Second, the “hub and spoke” algorithm. It allows multiple organisations to utilise the same price algorithm, which enables effects to be coordinated without a direct connection. This happens frequently when online stores utilize the same third-party pricing platform or when competitors use the same consulting firm to design their pricing algorithms.^[13]

Third, “self-learning” algorithms, which are independent machine learning algorithms designed to maximize profits, have found that parallel pricing schemes are most effective. This is the hardest type, as there is no human agreement or goal; it is simply the result of optimizing an algorithm.^[14]

Algorithmic pricing is particularly challenging for competition authorities to address. It is difficult to distinguish between legal tacit and criminal collaboration, especially when there is no clear evidence of an agreement. It is tough to prove collusive intent because powerful machine learning algorithms are like “black boxes.” Moreover, algorithms can modify prices in real-time and respond quickly to market changes. This makes it easier to maintain stable pricing arrangements.

2.2.2. Data Power Abuse and Barriers to Market Entry

In the digital economy, data is becoming a strategic asset and a source of substantial market power. The abuse of data power can emerge in many different forms:

First, not giving out important information. If a dominant platform acquires unique and important data sets for competitive advantage in a market and refuses to share them, that could be an abuse of power. For instance, in the EU’s action against Thomson Reuters, the corporation was required to allow its competitors to use its securities identification codes (SICs) as a means to resolve the issue.^[15]

Second, exclusive data agreements occur when a corporation enters into agreements with key data sources, preventing competitors from accessing

¹³ Joseph E. Harrington Jr., “Developing Competition Law for Collusion by Autonomous Artificial Agents” *Journal of Competition Law & Economics*, No. 3 (2019): 331-363.

¹⁴ Ai Deng, “What Do We Know About Algorithmic Tacit Collusion?” *Antitrust*, No. 1 (2018): 88-95.

¹⁵ European Commission, Reuters Instrument Codes, Case COMP/39.654 (Brussels: European Commission, 2012).

them. For instance, Google has secured exclusive deals with numerous publications and mobile platforms to ensure that it remains the default search engine. This lets Google acquire search data that no one else can.

Third, discriminatory access to data occurs when a platform grants its business partners or affiliates preferential access to data compared to its competitors. For instance, several have claimed that Amazon utilizes precise sales data from other merchants to create products that compete with its own.

Fourth, cross-service data combining occurs when a business utilizes data from multiple services to gain an unfair competitive advantage. The German Competition Authority (Bundeskartellamt) investigated Facebook for combining data from WhatsApp, Instagram, and the central Facebook platform^[16]. Bases of data power can create or reinforce significant barriers to entry. Big data creates “data feedback loops”: more data → better products → more users → more data. This loop can reinforce dominance and make it difficult for new competitors to compete, even with superior technology.

2.2.3. Self-Prioritization Practices on Digital Platforms

Self-preferencing is when a digital platform acts as both a market facilitator and a direct participant, giving its services or products an edge over those of its competitors on that platform. This behaviour usually happens when companies are vertically integrated, and it can show up in some ways:

The first type of bias is prominence bias, also known as visibility bias, which occurs when a platform displays its goods or services more conspicuously than those of its competitors. The EU’s Google Shopping case is a great example. Google was fined €2.4 billion for favoring its shopping service over other shopping services in search results.^[17]

Second, deep integration happens when a platform combines its service with its main platform in a way that competitors cannot copy. Apple, for instance, has integrated Apple Music with Siri, allowing customers to control Apple Music using their voice. Spotify, on the other hand, has struggled to achieve the same level of integration.

Third, proprietary data refers to a platform using data from its competitors to create goods that compete with its own. For instance, several have

¹⁶ Bundeskartellamt, Facebook Case Decision (Bonn: Federal Cartel Office, 2019).

¹⁷ European Commission, Google Search (Shopping).

claimed that Amazon utilizes comprehensive information from third-party merchants to create private-label products that compete with those sellers.

Fourth, discrimination in terms means that a platform uses different business terms for its service than its competitors do. It is said that Apple charges third-party apps a “App Store tax,” yet Apple’s apps are exempt from this fee.

Self-preferencing behaviour can have significant effects on competition. It can have “foreclosure effects,” which means that good competitors are no longer able to compete. It can also make third-party innovation less appealing, as they fear the platform will imitate and promote its products.^[18] Finally, it could make it harder for people to find different products and services in the long run.

2.2.4. Acquiring Potential Competitors

Acquiring potential competitors, also known as “killer acquisitions,” is a strategy in which a dominant company buys innovative startups with the potential to compete in the future, thereby eliminating a potential competitive threat. This behavior occurs when existing corporations acquire up-and-coming innovative companies to eliminate potential competition without utilizing the acquired technology.^[19]

There are several key aspects that these purchases have in common. First, the companies they want to acquire are often new and innovative, with low revenue valuations but technologies that could revolutionize the industry or user bases that are growing rapidly. Second, the deal value is typically far greater than the target company’s current revenue, indicating its potential future value. Third, acquisitions usually happen before the target firm can grow into a direct competitor.

Some significant strategic acquisitions in the tech industry are: Facebook’s purchases of Instagram (2012, \$1 billion) and WhatsApp (2014, \$19 billion);^[20] Google’s purchases of Waze (2013, \$1.1 billion) and

¹⁸ Massimo Motta, Martin Peitz, “Big Tech Mergers” *Information Economics and Policy*, 54 (2021): 100868.

¹⁹ Colleen Cunningham, Florian Ederer, Song Ma, “Killer Acquisitions” *Journal of Political Economy*, No. 3 (2021): 649-702.

²⁰ Rajesh Kumar B., “Major Acquisitions by Facebook: Management for Professionals”, [in:] idem, *Wealth Creation in the World’s Largest Mergers and Acquisitions* (Cham: Springer, 2019), 321-327.

DoubleClick (2007, \$3.1 billion);^[21] and Amazon's purchases of Zappos (2009, \$1.2 billion) and Twitch (2014, \$970 million).^[22] Not all of these are "killer acquisitions" in the strictest sense, but they may all eliminate future competition. Most of the time, these acquisitions do not meet the usual merger notice requirement, which is mainly based on sales. This makes it hard to enforce competition rules, which is a big problem.

These purchases have complicated effects on competition. On the one hand, they might make it harder for smaller companies to compete and easier for large platforms to maintain their position. On the other hand, the chance of being acquired is a significant reason why people invest in new businesses and innovative ideas. If there are limits on acquisitions, this reason may be less intense. Competition authorities struggle to strike the right balance between these two effects.

Due to this issue, many countries have begun to modify their online purchasing practices. The EU has established a referral system under Article 22 of the Merger Regulation to examine purchases that fall below the notification threshold.^[23] Germany and Austria have established a minimum transaction value to capture purchases that are substantial, but do not generate significant revenue.^[24] The UK has established a system to inform people about tech purchases and "Tech Sprinters."^[25]

²¹ "Google's Acquisitions Are in the Spotlight 15 Years After It Went Public" CNBC, 19 August 2019. <https://www.cnbc.com/2019/08/19/googles-best-and-worst-acquisitions-are-in-the-spotlight-15-years-later.html>.

²² FE International, *Timeline of Amazon's Biggest Acquisitions*. <https://www.feinternational.com/blog/timeline-of-amazons-biggest-acquisitions>. [accessed: 30.8.2025].

²³ European Commission, Commission Guidance on the Application of the Referral Mechanism Set Out in Article 22 of the Merger Regulation to Certain Categories of Cases, C(2021) 1959 final (Brussels: European Commission, 2021).

²⁴ German Act against Restraints of Competition (Competition Act – GWB), 10th Amendment, 2021; Austrian Cartel Act, as amended by the Cartel and Competition Law Amendment Act 2017.

²⁵ Competition and Markets Authority, *The CMA's Digital Markets Strategy* (London: Competition and Markets Authority, 2021). <https://www.gov.uk/government/publications/competition-and-markets-authoritys-digital-markets-strategy/the-cmas-digital-markets-strategy>.

3 | Challenges in Regulating Anti-Competitive Behaviors in the Digital Economy

3.1. Theoretical Challenges

3.1.1. Difficulties in Defining the Relevant Market

The first and most important stage in traditional competition analysis is to define the relevant market. However, in the digital economy, defining the relevant market can be challenging, which makes this method less effective.

First, the lines between digital marketplaces are often fuzzy and change rapidly due to technology convergence and the constant introduction of new ideas. For instance, apps like WeChat (China) and Zalo (Vietnam) have evolved from simple messaging services into comprehensive ecosystems that offer social networking, payments, e-commerce, and numerous other features. This makes it challenging to determine where the market ends.

Second, it is challenging to apply traditional methods, such as the Small but Significant Non-transitory Increase in Price (SSNIP) test, to determine the relevant market in zero-price or cross-subsidized marketplaces. It does not make sense to look at how people react to a 5% or 10% price rise when they do not pay for the service directly, such as with Google Search or Facebook.

Third, network effects and multi-sided markets make it challenging to identify a single market, as they complicate relationships between diverse user groups. For instance, while looking at competition on an e-commerce site like Shopee, you need to think about how buyers, sellers, advertisers, and other important people interact with each other.

Fourth, it is challenging to determine the geographic extent of the relevant market due to the widespread availability of numerous digital services worldwide. Users can often obtain services from multiple sources, and digital platforms can offer services across borders without maintaining a physical presence in those markets.

Some competition authorities have begun to modify their approaches, recognizing that these issues exist. The UK CMA has stated that it is more important to consider “competitive pressures” than to rely solely on a rigorous market definition. The European Commission’s report, “Competition Policy for the Digital Era,” also states that traditional market analysis may not always be effective for the digital economy, and that a more flexible approach, focusing on specific “theories of harm,” is necessary.^[26]

²⁶ Jacques Crémer, Yves-Alexandre de Montjoye, Heike Schweitzer, *Competition Policy for the Digital Era* (Brussels: European Commission, 2019).

3.1.2. Traditional Analytical Framework Based on Price and Limitations

Price has been the main indicator of consumer welfare and market power in traditional competition analysis. According to mainstream economic theory, prices that are higher than the competitive level are seen as a sign of market power and a drop in consumer welfare. Price-based analysis, on the other hand, presents numerous challenges in the digital economy.

First, many digital services, such as search engines, social networks, and messaging applications, are offered “free” to users. Most of the time, competition is based on factors other than price, such as quality, innovation, privacy, and data collection. If you only consider pricing, you may overlook these important types of competition.

Second, in markets with more than one side, prices are often complicated and include cross-subsidization. A platform could charge a substantial amount to one group of users, while offering free or discounted services to another. For instance, e-commerce platforms sometimes offer customers free services, but charge sellers a fee, which makes it harder to determine the overall effect on consumer welfare.

Third, the “pay with data” concept contradicts what we typically think of as price. People “pay” for services by letting their data be gathered and exploited.^[27] It is challenging to assign a value to this data and compare it to other data, which makes it difficult to determine the competitiveness of the market based on “data prices.”

Fourth, network effects and economies of scale result in many digital markets where the winner takes all.^[28] In these markets, competition is often “for the market” instead of “in the market.” Instead of little price changes, disruptive innovation is what makes the difference.

Recognizing these limitations, many competition authorities have begun to broaden the scope of their analysis. The European Commission has recognized the importance of non-price competition parameters such as quality, innovation, and privacy in the digital economy.^[29] The US Federal Trade

²⁷ Alessandro Acquisti, Curtis Taylor, Liad Wagman, “The Economics of Privacy” *Journal of Economic Literature*, No. 2 (2016): 442-492.

²⁸ Shapiro and Varian, Information Rules.

²⁹ European Commission, Competition Policy for the Digital Era (Brussels: European Commission, 2019).

Commission (FTC) has also emphasized the need to consider non-price competition parameters, especially privacy, in free-service markets.^[30]

3.1.3. Assessing Consumer Welfare in “Free” Services

When it comes to “free” digital services, determining their impact on customer welfare is significantly more challenging than in traditional markets. People might not pay directly, but they do provide personal information, attention, and sometimes even view ads as a form of “paying”.

First, there is not a single, easy-to-measure indicator, such as price. Several significant factors impact consumer welfare in digital services, including the quality of the service, data privacy, user experience, and innovation.^[31] For instance, how can we determine if better search results compensate for less privacy?

Second, there are hard choices to make between distinct parts of consumer welfare. Users may prioritize privacy, service quality, features, or the amount of advertising.^[32] Some people may be willing to share more information in exchange for better personalized service, while others might prioritize data privacy.

Third, users cannot fully understand the actual cost of “free” services due to information asymmetries and “perception gaps”^[33]. Many people are unaware of how their data is collected, processed, and shared, which can lead to poor decisions.

Fourth, the platform’s incentives to make consumers better off may not be the same for all user groups in a multi-sided market. For instance, a platform can enhance the experience for advertisers rather than end users, as advertisers are the primary source of income.

³⁰ Federal Trade Commission, Privacy & Data Security Update (Washington, DC: Federal Trade Commission, 2019). <https://www.ftc.gov/system/files/documents/reports/privacy-data-security-update-2019/2019-privacy-data-security-report-508.pdf>.

³¹ Maurice E. Stucke, Ariel Ezrachi, “When Competition Fails to Optimize Quality: A Look at Search Engines” *Yale Journal of Law and Technology*, No. 1 (2016): 70-123.

³² Alessandro Acquisti, Laura Brandimarte, George Loewenstein, “Privacy and Human Behavior in the Age of Information,” *Science*, No. 6221 (2015): 509-514. <https://doi.org/10.1126/science.aaa1465>.

³³ Daniel J. Solove, “Privacy Self-Management and the Consent Dilemma,” *Harvard Law Review*, No. 7 (2013): 1880-1903.

Researchers and government officials have proposed several approaches to address these issues. Newman suggested a “quality-competition-quality framework” to examine competition in markets without prices.^[34] This framework prioritizes service quality over price. The OECD has established guidelines for assessing the online performance of consumers. These rules emphasize the importance of considering factors beyond pricing, such as privacy, innovation, and quality.^[35]

3.1.4. Balancing Competition Protection and Encouraging Innovation

One of the most challenging aspects of regulating digital competition is finding a way to protect existing competition while also fostering new ideas in the long term. Innovation is the primary factor driving the growth of the digital economy and enhancing people’s lives; however, the relationship between market structure, competition, and innovation is complex and not always straightforward.

First, major platforms have a significant edge in innovation due to their substantial financial resources, vast amounts of data, and the capacity to attract top talent. Companies like Google, Amazon, and Facebook invest billions of dollars in research and development, resulting in significant technological advances. Too much intervention can make it harder for them to generate new ideas and maintain their motivation.

Second, buying creative firms can have two effects on innovation. On the one hand, the possibility of being bought is a big reason why venture investors and entrepreneurs want to invest in new ideas. On the other hand, buying a company can eliminate potential competitors and reduce the likelihood of new ideas emerging in the future.

Third, some competitive measures, such as requiring data sharing or interoperability, may encourage short-term competitiveness, but lower the motivation to innovate in the long run by reducing the returns on investment in research and development. For instance, if a company must share its new idea with its competitors, it may not invest as much money in the original idea.

³⁴ John M. Newman, “Antitrust in Zero-Price Markets: Foundations” *University of Pennsylvania Law Review*, No. 1 (2015): 149-206.

³⁵ OECD, *Quality Considerations in Digital Zero-Price Markets*, DAF/COMP(2018)14 (Paris: OECD Publishing, 2018).

Fourth, in the digital economy, new technologies and business models often completely replace old ones. This concept is known as “creative destruction”, making it more challenging to predict how competitive actions will impact innovation.

Different competition authorities worldwide have addressed this trade-off in various ways. The US has typically focused on the long-term effects of innovation, even if it entails taking the short-term risk of market concentration, provided that it leads to more innovation.^[36] The EU, on the other hand, has prioritized safeguarding existing market competition, believing that over time, competitive markets will lead to increased innovation.^[37]

This balance becomes particularly complex in the context of a dual transition, where competition authorities must consider both digital innovation and green technology development. The market position of dominant firms enables greater investment in green technology and sustainable business models. Yet, this concentration can hinder environmentally friendly innovation by creating obstacles for sustainable startups and reducing the range of green solutions available. The key challenge for competition authorities is to prevent digital market dominance from becoming a barrier to national green transformation objectives, while also preserving incentives for platforms to continue investing in sustainable technologies.

3.2. Implementation Challenges

3.2.1. The Speed of Technological Development and the Adaptability of the Law

One of the most challenging aspects of regulating digital competition is that technology advances more rapidly than the law can keep pace. Technology advances at an exponential rate, but the process of creating laws and rules can be slow and inflexible. This difference leads to a big “regulatory gap,” which means that the law may not keep up with technology.

First, creating and implementing laws can take a considerable amount of time, as several steps are involved, including research, drafting, consultation with stakeholders, and passing the law. During that time, technology

³⁶ Herbert Hovenkamp, “Antitrust and Innovation: Where We Are and Where We Should Be Going” *Antitrust Law Journal*, No. 3 (2011): 749-770.

³⁷ Josef Drexler, “Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation Without a Market” *Journal of Competition Law & Economics*, No. 3 (2012): 507-544.

and business models may have undergone significant changes, rendering the new regulation ineffective. The EU began investigating Google Shopping in 2010, but it did not decide for 2017, when the competition landscape had changed significantly.

Second, classic legal ideas in competition law, such as “relevant market” or “dominant position,” would struggle to keep pace with the digital economy’s unique features, including network effects, multi-sided marketplaces, and the utilization of data.^[38] This makes it difficult for law enforcement to apply these ideas in new contexts, which renders the law unclear.

Third, traditional regulatory thinking is “prohibitive,” meaning it identifies and prevents specific actions. In the digital market, where behaviors can change quickly and it is hard to distinguish what is fair and what is not, this method is challenging to use. For instance, personalised pricing based on user data can benefit some users while harming others, making it harder to determine the overall effect.

Some regulators have experimented with innovative solutions to address these issues. The European Commission has proposed a Digital Markets Act (DMA) that would adopt a gatekeeper approach and establish rules in advance, rather than relying on traditional market research.^[39] This would enable the law to focus on platforms with significant roles, regardless of the market in which they operate. Some countries have adopted “agile regulation,” which allows them to adjust rules quickly based on real-world insights and experience, resulting in shorter feedback cycles. Singapore, for instance, has employed “regulatory sandboxes” in fintech to test novel business models under close supervision before making them official.^[40]

³⁸ Howard A. Shelanski, “Information, Innovation, and Competition Policy for the Internet” *University of Pennsylvania Law Review*, No. 6 (2013): 1663-705.

³⁹ Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector (Digital Markets Act), Official Journal of the European Union L265/1.

⁴⁰ Monetary Authority of Singapore, FinTech Regulatory Sandbox (Singapore: Monetary Authority of Singapore, 2016). <https://www.mas.gov.sg/development/fintech/regulatory-sandbox>.

3.2.2. Technical Capacity and Resources of the Competition Authority

Competition authorities must possess the necessary technological knowledge and resources to regulate competition in the digital economy effectively. However, many competition regulators, especially in developing nations, lack the same resources and technical expertise as the IT corporations they oversee. To examine digital competition cases, a broad range of skills and experience is required, spanning classical competition economics to data science, AI, and software engineering. Many competition organisations struggle to hire and retain the right people, as these skills are difficult to find and expensive to acquire.

Second, large digital businesses have substantial financial resources and technical expertise, which enables them to hire top lawyers and employ sophisticated legal techniques.^[41] This imbalance may lead to a “capability asymmetry” between those who create the rules and those who follow them.

Third, the technologies and algorithms that power the digital economy are becoming increasingly complex and difficult to comprehend. It is challenging to assess and evaluate the impact of algorithms on competition due to the “black box” problem in artificial intelligence and machine learning.^[42]

Fourth, many competition agencies, especially in developing countries, have to prioritise cases because they lack sufficient resources or personnel. This means that more complex infractions may not be thoroughly investigated.

To address these issues, many competition agencies have initiated programs to enhance their capabilities. The European Commission has adopted a Communication on “Building a European Data Economy”, accompanied by a Staff Working Document. This document offers policy and legal solutions to unleash the EU’s data economy, which is part of its Digital Single Market strategy.^[43] Collaborating with other countries is becoming increasingly crucial for expanding capacity. The ICN and the OECD have provided a platform for competition authorities to discuss their experiences and share best practices for regulating digital competition. Bilateral collaboration

⁴¹ OECD, *Implications of E-commerce for Competition Policy*, DAF/COMP(2019)3 (Paris: OECD Publishing, 2019).

⁴² Jenna Burrell, “How the Machine ‘Thinks’: Understanding Opacity in Machine Learning Algorithms” *Big Data & Society*, No. 1 (2016): 1-12.

⁴³ EUR-Lex, *Building a European Data Economy*. https://eur-lex.europa.eu/content/news/building_EU_data_economy.html. [accessed: 30.8.2025].

between competition authorities also facilitates the sharing of knowledge and the optimal use of resources.

3.2.3. Detecting and Collecting Evidence of Violations in the Digital Environment

Enforcement authorities face unique challenges in identifying and gathering evidence of competition violations in the digital world. In the digital economy, breaches are typically more complex and challenging to identify than in classic competition violations, where evidence is often found in written agreements, meeting minutes, or direct communications.

First, a significant amount of digital anticompetitive behavior occurs through complex algorithms that appear to be uncoordinated. For example, when it comes to algorithmic pricing, competitors do not have to agree on anything; they only have to utilise the same algorithms or respond to the same market data.

Second, the digital economy generates so much data that it is challenging to find evidence of infringement. It is like looking for a needle in a haystack. Competition authorities may not yet have the advanced data analysis methods and digital forensics capabilities needed for this.

Third, the fact that many digital services operate across borders makes it challenging to determine jurisdiction and to obtain evidence. Data and algorithms may be held in various nations, making it hard to access them. However, current methods of collaboration are typically slow and ineffective.

Fourth, people typically use trade secrets and intellectual property to keep information about algorithms and data secret. This makes it challenging to strike a balance between the need for businesses to be protected by the law and the need for competition to remain open.

Competition authorities have developed new tools and strategies to address these issues. The European Commission has acquired powerful digital forensic tools and engaged data scientists to analyze a substantial amount of data in digital competition investigations.^[44] To demonstrate that Google Shopping was unfair, the commission analyzed a substantial amount of search results data. In the digital world, several countries have granted competition agencies greater authority to investigate. Germany, for instance, amended its Competition Law (GWB) to grant the competition

⁴⁴ European Commission, “Digital Forensic Capabilities in Antitrust Investigations” *Competition Policy Brief*, 2020-04 (2020): 3-7.

authority greater access to data and algorithms during investigations (Act against Restraints of Competition 2021).^[45]

3.2.4. Assessing the Competitive Impact of Algorithms and AI

Competition regulators have a new and challenging task: determining how algorithms and artificial intelligence (AI) impact competition. Algorithms and AI are becoming increasingly crucial in business decisions, from setting prices and displaying products to advertising and rankings. However, figuring out how they affect competition is not easy.

First, many modern algorithms, including deep learning models, operate like “black boxes,” meaning that developers cannot always explain exactly how the algorithm made a particular choice. This makes it difficult for competition authorities to determine if an algorithmic output is anti-competitive, as they need to be able to explain it.

Second, machine learning algorithms can evolve and grow over time as they receive new data, making it more challenging to determine their exact impact. An algorithm that begins with a competitive design can gradually start to act in an anticompetitive manner without anyone taking action to prevent it.

Third, it can be challenging to distinguish between legal and illegal optimisation methods. Dynamic pricing algorithms, for instance, can make the market more efficient by swiftly reacting to changes in supply and demand. However, they can also facilitate collaboration among individuals without revealing their identities.^[46]

Fourth, to determine the impact, it is necessary to understand how the algorithm works, what data it uses, and the business setting.^[47] Depending on the data used and the market structure, the same algorithm can have varied effects on competition.

To address these issues, competition authorities have begun to develop new approaches and tools. The Federal Trade Commission (FTC) in the US has established a “Technology Division” to investigate and provide tools for assessing the impact of new technologies, such as artificial intelligence and

⁴⁵ German Act against Restraints of Competition (Competition Act – GWB), 10th Amendment, 2021.

⁴⁶ Ezrachi and Stucke, “Artificial Intelligence & Collusion.”

⁴⁷ Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, Jean Langlois-Berthelot, “Creating Resilient Artificial Intelligence Systems. A Responsible Approach to Cybersecurity Risks” *Prawo i Więź*, No. 5 (2025): 131-149.

algorithms, on competition. The FTC has also conducted workshops and research to examine the impact of pricing algorithms and data usage on competition. Academics and international groups have also helped develop methods to evaluate things. The OECD has issued guidance on “Algorithms and Collusion,” which proposes a framework for assessing the potential for algorithm collusion, taking into account factors such as algorithm transparency, frequency of interaction, and market characteristics.^[48] An “algorithmic auditing” method utilizes code analysis, input-output testing, and simulation to examine how algorithms work. Full access to source code or training data to use this method is needed to find anticompetitive behaviour.

4 | A Reference to Vietnam’s Situation

4.1. Current Status of Legal Regulations

The digital economy in Vietnam has experienced rapid growth over the last decade. A report by Google, Temasek, and Bain & Company states that Vietnam’s digital economy was valued at \$23 billion in 2022, and is projected to reach \$49 billion by 2025.^[49] E-commerce, smartphone payments, online ride-hailing services, and social media platforms are becoming a significant part of people’s lives and how businesses operate. However, the rapid growth of the internet economy also makes it challenging for Vietnam’s competition authority to fulfill its responsibilities.

The 2018 Competition Law (CL 2018) in Vietnam is significantly improved over the 2004 version, but it still has several issues related to the digital economy. Rules on relevant markets, dominant positions, and abusive behaviour are primarily based on old ideas about how markets work. The Vietnam National Competition Commission (NCC) is also struggling with limited resources and technological expertise when addressing matters involving digital platforms and complex algorithms.

⁴⁸ OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* (Paris: OECD Publishing, 2017).

⁴⁹ Google, Temasek, and Bain & Company, *e-Conomy SEA 2022: Thriving in a Booming Digital Decade*. 2022.

4.1.1. On Anti-Competitive Practices in the Digital Economy

There has not been an official inquiry into algorithmic collusion in Vietnam yet. However, it may have occurred in online booking, e-commerce, and ride-hailing services, where dynamic pricing algorithms are commonly used. Vietnam's Competition Law 2018 (CL 2018) states that agreements that harm competition are illegal (Art. 3(4)), but it does not specify how to address algorithmic collusion. Several major platforms in Vietnam, including Shopee, Lazada, and Grab, have amassed extensive information about Vietnamese customers. There are no clear rules in the CL 2018 regarding the abuse of data power, and this behavior has not been examined yet. Self-preferential behavior can occur on large e-commerce sites, such as Shopee, Lazada, and Tiki, when they operate both the platform and sell their private label goods. There are no specific rules in the CL 2018 regarding this type of behavior, and no official inquiry is currently underway. The CL 2018 uses market share and asset thresholds to determine which economic concentrations require reporting when a company acquires a prospective competitor, also with the determination of adverse effects on competition of an economic concentration (Arts. 30-31). This might mean not acquiring new firms with limited revenue and market share, but instead focusing on those with significant potential to compete in the future.

4.1.2. On the Challenges in Regulating Anti-Competitive Practices

The CL 2018 defines that the relevant market is “a market of goods and services that can be substituted for each other in terms of characteristics, purposes of use and prices in a specific geographical area with specific competitive conditions that are significantly different from those of neighbouring areas” (Art. 3(7)). This concept primarily focuses on the ability to replace anything in terms of function and price. However, this may not entirely align with the characteristics of the digital economy, such as free services, network effects, and multi-sided markets. The CL 2018 has broadened the definition of abuse of a dominant market position to include actions that do not include price, such as “imposing unfavourable transaction conditions on customers” and “obstructing the entry or expansion of other businesses into the market.” (Art. 27). Still, there is no clear direction on how to evaluate non-price competition factors in the digital economy. When developing a new digital competition framework, this is

another big hole that needs to be filled: there is no clear way to measure consumer welfare in “free” digital services.

As Vietnam’s digital economy continues to grow rapidly, it is becoming increasingly necessary to strike the right balance between protecting competition and fostering new ideas. On the one hand, the new market needs to be protected from actions that harm competition, allowing it to grow healthily. On the other hand, a legal framework that is too stringent can hinder the growth of startups and innovative ideas. The CL 2018 is more effective in addressing the challenges of the digital economy than the 2004 version. For example, it has broadened the scope of regulation and altered the definition of “abuse of dominant position” (Art. 7(5)). The legal system, on the other hand, remains insufficiently flexible to keep pace with the rapid evolution of new technology and business models, particularly in e-commerce and digital platforms. The NCC is currently facing challenges with its resources and technical capabilities. Although efforts have been made to enhance capacity through training and collaboration with other countries, a significant gap remains between current capabilities and the requirements for regulating competition in a rapidly evolving digital economy. The CL 2018 granted the NCC greater authority to investigate, but it remains challenging to identify and gather evidence of infractions in the digital world. The lack of advanced analytical tools, technical expertise, and effective mechanisms for countries to collaborate is a major problems that need to be addressed.

Vietnam is still in the early stages of understanding how algorithms and AI impact competition. The NCC lacks the necessary tools and personnel to examine complex algorithms, which hinders its ability to investigate infractions related to algorithms.

Furthermore, the CL 2018 does not include any measures to evaluate the effects of digital market concentration on Vietnam’s green transition goals. There are no requirements for the competition authority to factor in environmental considerations during merger reviews or when assessing market dominance. This gap could undermine Vietnam’s commitment to reducing carbon emissions by 2050, especially given the critical role digital platforms play in promoting sustainable consumption, green logistics, and clean technology. To better align with environmental sustainability objectives, the regulatory framework should be revised so that digital competition policy actively supports, rather than impedes, progress toward these goals.

4.1.3. Impact on Vietnam's Green Transition

Vietnam's progress in the digital economy is closely linked to its commitments under the Paris Agreement and its national strategy for green growth. The substantial influence of major e-commerce platforms like Shopee and Lazada brings both advantages and challenges for sustainable consumption. On the one hand, these platforms have the potential to encourage the purchase of eco-friendly products by leveraging recommendation and ranking algorithms. On the other hand, they may prioritize fast-moving, inexpensive goods that do not align with sustainability goals. Complicating matters, the opaque nature of these algorithms makes it hard to determine whether current platform practices are advancing or hindering Vietnam's environmental objectives.

In the ride-hailing industry, leading companies such as Grab and Xanh SM are in a position to support green initiatives, for example, by promoting electric vehicles and optimizing routes to cut emissions. However, their significant market share also reduces competitive pressure, which could otherwise spur further innovation in green technology. The absence of explicit competition law provisions regarding sustainability and platform conduct highlights a notable shortcoming in Vietnam's ability to manage both its digital growth and green transition effectively.

4.2. Some Lessons Learned and Suggestions for Improving the Law

4.2.1. Lessons from International Experience

There are certain essential things that Vietnam can learn from other countries' experiences with controlling unfair competition in the digital economy.

First, a flexible and creative way to define the relevant market. The EU has shifted from a rigid definition of the market to focusing on a specific "harm theory." The UK has also focused on "competitive pressure" in addition to the usual market definition (Competition and Markets Authority 2020). This method aligns with the digital economy, where market borders are sometimes unclear and can change rapidly.

Second, rules should be based on roles instead of merely market shares. The EU has passed the Digital Markets Act (DMA), which adopts

a “gatekeeper” approach and imposes ex-ante requirements on platforms with large market shares, regardless of the market in which they operate.^[50] This method helps get over the problems with traditional market analysis in the digital economy.

Third, when examining consumer welfare, consider factors beyond price. The EU and the US agree that quality, innovation, privacy, and data protection are important in marketplaces where services are “free.” This is particularly essential for Vietnam, as many digital services are free there.

Fourth, competition authorities should get more technological skills and resources. Specialized groups, such as the “Digital Economy and Technology Centre” and the “Data, Technology and Analytics Unit,” will facilitate an in-depth examination of matters related to digital platforms and algorithms. Vietnam should utilize this approach to strengthen the NCC.

Fifth, new tools should be used to investigate violations and gather evidence of them, such as the use of technological equipment with AI-enhanced devices. This experience can help Vietnam address the challenge of identifying and investigating data breaches.

The European Union’s approach, with the Digital Markets Act (DMA), provides valuable insights for Vietnam as it navigates both digital and green transitions. Under Article 6 of the DMA, major platform operators – referred to as gatekeepers – must allow business users to access data generated from their activities on the platform. This provision is vital for developers of green technologies who rely on access to environmental and consumer data. Additionally, Article 7 of the DMA requires interoperability, which could foster the creation of digital environments where sustainable services have a fair chance to compete alongside established platform offerings. The European Commission’s case against Amazon (Case AT.40462) illustrates how regulatory action can address the misuse of data advantages; Amazon was required to refrain from using non-public seller data to compete with those sellers. Applying such a standard could help protect providers of green technology from unfair data practices. Furthermore, the EU’s State Aid rules for green digital transformation show how competition policy can be leveraged to promote environmental objectives while ensuring market integrity.

The EU’s approach to “green digital services” under the European Green Deal illustrates how competition authorities can integrate sustainability considerations into market assessment. This includes assessing whether

⁵⁰ Regulation (EU) 2022/1925, Digital Markets Act.

digital platforms promote sustainable consumption patterns, and whether their algorithms favour or discriminate against green products and services.

4.2.2. Proposal to Improve Vietnam's Competition Law

1. The definition of the relevant market and the method for identifying it need to be revised. In particular, the CL 2018 needs to revise the definition of the relevant market to better align with the digital economy. The new definition should consider non-price factors, such as quality, innovation, and data protection, in the analysis of substitutes. It should also modify the "Supposed Price Monopoly Test" (SSNIP) method to accommodate free services, possibly by developing new methods, such as the "Supposed Quality Monopoly Test" (SSNDQ). Finally, it should recognise the idea of multi-sided markets and the complicated relationships between different user groups.
2. The rules on market dominance need to be changed. Specifically, the criteria for determining market dominance beyond market share must be expanded to include access to and control over big data, network effects and positive feedback, switching costs, the ability to "lock in" users, ecosystem advantages, and the capacity to expand into relevant markets. At the same time, we should consider adopting a "gatekeeper" approach on digital platforms that wield significant power, as the EU Digital Markets Act does.
3. There should be rules against anti-competitive behaviour that are specific to the digital economy. The CL 2018 should include specific rules against collusion through pricing algorithms, even when there are no written agreements; abuse of data power, like not sharing important data, making exclusive data agreements, and pooling data from different services; self-preferencing behaviour on digital platforms, like showing up preferentially, deep integration, and unfair terms and conditions; and killer acquisitions, which should have transaction value thresholds in addition to the ones that already exist for market share and assets.
4. Rules governing economic concentration need to be improved. To close the "enforcement gap" in controlling innovative startup acquisitions, it is suggested that a high transaction value threshold be introduced to capture high-value but low-revenue acquisitions. Guidelines for assessing the potential impacts on competition and

innovation should also be established, and the NCC should be empowered to require notification for acquisitions below the threshold that are likely to have a significant impact on competition.

5. The NCC must establish a Digital Economy Unit equipped with experts and analytical tools designed explicitly for matters related to digital platforms. This would help make enforcement more effective. Also, we need to invest in digital forensic technology and hire experts in data science and artificial intelligence. This will facilitate international cooperation in cross-border investigations and evidence collection, as well as establish guidelines for assessing the impact of algorithms and AI on competition.
6. To keep up with the fast pace of technological progress, Vietnam should use a “flexible regulation” approach with shorter response times, encourage the creation of “regulatory sandboxes” for new digital business models, and improve communication between regulators, tech companies, and universities to make sure that rules are both applicable and encourage new ideas.
7. Develop clear criteria for evaluating mergers and market dominance that explicitly account for their effects on green innovation and sustainable market growth. This should involve determining whether proposed deals would diminish competition in green technology sectors, limit access to crucial environmental data, or increase control over sustainable supply chains. Additionally, merger notifications for platforms with substantial environmental market influence should require a thorough sustainability impact assessment.
8. The NCC should mandate that dominant digital platforms grant fair and non-discriminatory access to aggregated environmental, and sustainability data essential for advancing green innovation. This access should encompass data on consumer habits related to sustainable choices, logistics information to enhance green supply chains, and energy usage statistics critical for smart grid development. Such measures would help prevent the monopolization of data that could hinder competition in green technology sectors. Additionally, the NCC ought to implement an expedited approval process for collaborations between digital platforms and green technology firms that clearly support environmental objectives, and introduce supplementary provisions for exemptions under CL Article 13. Examples include joint ventures focused on electric vehicle charging infrastructure, renewable energy trading platforms, and circular economy initiatives.

9. Mandate major digital platforms to keep detailed audit logs of algorithmic decisions that impact the visibility and accessibility of green products and services. These platforms should also be required to prove that their algorithms do not consistently disadvantage certified environmentally friendly products or sustainable service providers. The NCC should set up a specialized Digital-Green Markets Unit, staffed with professionals skilled in both digital platform regulation and environmental economics. This unit would be responsible for designing targeted assessment tools to examine how digital market power interacts with green transition goals, performing ongoing market studies on the effects of platforms on sustainability, and collaborating closely with the Ministry of Natural Resources and Environment to align competition policies with environmental objectives.

5 | Conclusion

The digital economy has become integral to both global and Vietnamese economies, yet its characteristics – network effects, low marginal costs, multi-sided markets, and data centrality – complicate anti-competitive behavior regulation. Emerging practices like algorithmic collusion, data power abuse, self-preferencing, and preemptive competitor acquisitions demand new competition policy approaches. While Vietnam has advanced its competition laws, significant gaps remain for the digital economy. International experience demonstrates the necessity of flexible, relevant market definitions, emphasis on non-price competition factors, and enhanced technical capacity for enforcement agencies. Vietnam must update its competition framework across several areas: broadening dominant position criteria, introducing rules targeting specific digital anti-competitive behaviors, strengthening economic concentration controls, and building enforcement capacity. Critically, regulations must balance competition protection with innovation promotion, ensuring rules safeguard rather than stifle the startup ecosystem.

Given Vietnam's rapid digital transformation, establishing a robust, competitive legislative framework is essential. This protects consumer rights, encourages innovation and sustainable growth, and ensures fair

competition. The recommendations herein can strengthen Vietnam's legal system and enforcement capabilities for its expanding digital economy.

The convergence of digital competition policy and green transition represents a pivotal area for Vietnam's economic future. As Vietnam's digital economy develops, competition authorities must prevent market dominance from obstructing sustainable innovation. These recommendations provide a roadmap for balancing digital platform benefits against anti-competitive behaviors that could undermine environmental progress. Achieving this dual transformation requires not only technological advancement but also forward-thinking regulatory approaches that address the complex interplay between digital market power and environmental sustainability.

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Sovereignty by Design: Embedding Fiscal Risk Intelligence in Europe's Defence-Digital Strategy

Abstract

The European Union confronts structural uncertainty across defence and digital sectors. Fiscal governance still relies on stability-oriented frameworks that cannot handle volatility. This paper argues that strategic autonomy requires integrating actuarial reasoning – quantification, pricing and systemic treatment of uncertainty – into existing EU budgeting and investment tools. The approach does not require new institutions or treaty changes. It requires a change in decision logic inside the Multiannual Financial Framework, the European Defence Fund, the Digital Europe Programme and the European Investment Bank. Empirical work in cyber-risk insurance, cyber-threat forecasting and development finance demonstrates that uncertainty can be modelled and priced. Actuarial governance emerges as a necessary foundation for credible European sovereignty.

KEYWORDS: defence, cyberspace, cybersecurity, fiscal risk

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1 | Introduction

The issue of defence is becoming particularly important today, although it has always been a key priority in both European policy and the public policy of individual EU Member States. Defence is not only about conventional activities, but also about using cyberspace as an operational domain. An efficient army is one that makes extensive use of ICT systems for defence activities, but these systems are vulnerable to cyberattacks. Minimising cyber threats in the military sphere requires significant financial outlays as well as risk analysis, in particular forecasting the costs needed to ensure digital stability in this area.

The optimal functioning of the digital defence sphere requires adequate financial capacity, including investment in areas that may prove important for defence in the future. Therefore, it will be important to assess the fiscal risk of digital defence investments, without which defence readiness may not be at an adequate level.

Strategic thinking about defence as a highly digitised field requiring financial outlays also in high-risk areas, followed by appropriate action, will ensure military stability, which has a decisive impact on sovereignty.

In Member States that have adopted the euro as their currency, monetary policy has been federalised, but the European Union still lacks fiscal tools that could mitigate asymmetric shocks that may occur in the euro area. Member States outside the euro area are subject to fiscal constraints, and have limited capacity to respond to economic crises.^[1] The European Union's common monetary policy, combining the fiscal efforts of both euro area and non-euro area countries, must take into account Europe's digital defence status.

This paper aims to emphasise the importance of fiscal risk analysis in the context of the European digital defence strategy, and its significance for sovereignty. The main research method used in this paper is the dogmatic-legal method. An analysis of the literature on the subject was also carried out.

¹ Federico Fabbrini, *A Fiscal Capacity for the Eurozone: Constitutional Perspectives* (Brussels: Policy Department for Citizens' Rights and Constitutional Affairs, 2019), 6.

2 | Europe's Strategic Environment and Fiscal Architecture

The European Union expands its defence-industrial and digital ambitions. The European Defence Fund consolidates cross-border research and aims to strengthen the defence technological base. The European Defence Industrial Strategy pushes industry toward readiness and resilience. The proposed Artificial Intelligence Act introduces risk-tiered governance for emerging technologies. The Digital Europe Programme and NIS2 Directive expand cybersecurity obligations.

Fiscal structures do not match these ambitions. The Stability and Growth Pact still anchors policy in deficit and debt trajectories. The Multiannual Financial Framework sets rigid ceilings that ignore the volatility of strategic sectors. Europe pursues high-risk priorities with outdated fiscal tools.

The Union disperses strategic investment across unaligned instruments. Defence projects may be financed through the EDF, Horizon Europe, InvestEU or national budgets. Digital projects follow separate pipelines under Digital Europe, cohesion funds or national recovery plans. Each instrument uses its own risk logic. Exposure becomes incoherent.

Development finance research illustrates the consequences of fragmented risk treatment. SME financing in the MENA region suffered when lenders used inconsistent evaluation processes, weakening policy transmission.^[2] The analogy is straightforward: Europe cannot manage strategic investment without coherent risk assessment.^[3]

Analyses of NextGenerationEU and the Recovery Facility show how the EU gained temporary fiscal capacity while leaving long-term governance fragmented^[4]. Fragmentation limits predictability, discourages co-investment and undermines policy coherence.^[5]

² Benedikt Barthelmess, Jean Langlois, "SME Financing in MENA: A Quantitative and Qualitative Analysis of Multilateral and Bilateral Development Lenders' Intermediated Lending Practices" *Review of Middle East Economics and Finance*, No. 3 (2020): 1-32.

³ Robert Baldwin, Martin Cave, Martin Lodge, *Understanding Regulation: Theory, Strategy and Practice* (Oxford: Oxford University Press, 2012).

⁴ Federico Fabbrini, *EU Fiscal Capacity* (Oxford: Oxford University Press, 2022); Age Bakker, Roel Beetsma, Marco Buti, "Investing in European Public Goods While Maintaining Fiscal Discipline at Home" *Intereconomics*, No. 2 (2024): 98-103.

⁵ Madalina Busuioc, Martin Lodge, "The Reputational Basis of Public Accountability" *Governance*, No. 2 (2015): 247-263.

Strategic sectors face uncertainty as a structural condition. Cyberattacks propagate non-linearly. Global supply chains collapse under geopolitical pressure. Emerging technologies follow irregular curves. Regulatory frameworks shift constantly. Ignoring these realities kills strategic planning.

Research supports this point. Epidemiology-inspired cyber-threat models applied to e-government systems show that propagation of digital attacks follows measurable probabilistic dynamics.^[6] Cyber-risk insurance research demonstrates that organisational exposure can be decomposed, quantified and priced.^[7] Climate scenario modelling used by central banks proves that long-horizon uncertainty can be integrated into institutional planning.^[8] Europe must treat uncertainty as an input, not a disturbance.

3 | Actuarial Governance as Fiscal Realism

Actuarial governance applies probabilistic reasoning to public investment. It quantifies uncertainty, prices exposure and identifies correlation across projects. It clarifies the fiscal implications of political choices. It replaces vague ambition with measurable risk.

This logic already exists inside European regulatory practice. Article 325 TFEU requires sound financial management. The AI Act and NIS2 Directive rely on risk-tier frameworks. Climate-related supervisory models show how systemic uncertainty can be integrated into long-term planning. Actuarial governance extends these methods to defence-digital spending.

Treaty law does not obstruct this shift. Article 173 TFEU authorises Union support for industrial competitiveness. Article 42 TEU provides the strategic basis for cooperation in defence. The Financial Regulation stresses

⁶ Jean Langlois-Berthelot, Christophe Gaie, Jean-Fabrice Lebraty, "Epidemiology Inspired Cybersecurity Threats Forecasting Models Applied to e-Government", [in:] *Transforming Public Services – Combining Data and Algorithms to Fulfil Citizen's Expectations*, ed. Christophe Gaie, Mayuri Mehta (Cham: Springer, 2024): 151-174.

⁷ Jean Langlois, *Evaluating and Insuring Cyber Risks within Organizations*. <https://hal.science/tel-04207948/> [accessed: 13.12.2025].

⁸ *The Future is Uncertain. The NGFS Climate Scenarios Provide a Window into Different Plausible Futures*. <https://www.ngfs.net/ngfs-scenarios-portal/>. [accessed: 13.12.2025].

efficiency, economy and effectiveness, which cannot be implemented without risk-based planning.

The rules for classifying high-risk artificial intelligence systems are set out in Article 6(1) of the Artificial Intelligence Act (AI Act). According to this provision, regardless of whether an artificial intelligence system is placed on the market or put into service, such a system is considered a high-risk system if two conditions are met: 1) the artificial intelligence system is intended to be used as a safety-related component of a product covered by EU harmonisation legislation, or the artificial intelligence system itself is such a product; 2) the product of which the AI system is a safety-related component, or the AI system itself as a product, is subject to third-party conformity assessment under Union harmonisation legislation in relation to its placing on the market or putting into service. In addition to these systems, artificial intelligence systems referred to in Annex III to the Artificial Intelligence Act (Article 6(2) of the AI Act) are considered high-risk system.^[9]

According to Annex III of the AI Act, for safety reasons, high-risk AI systems include the following:

1. In the area of critical infrastructure: AI systems intended for use as safety-related components of critical digital infrastructure management processes, traffic management and operation processes, or water, gas, heat or electricity supply processes (paragraph 2 of Annex III to the AI Act);
2. In the area of access to and use of essential private services and essential public services and benefits:
 - a) AI systems intended for use by or on behalf of public authorities to assess the eligibility of individuals for basic public benefits

⁹ On the subject of artificial intelligence, see, among others: Krzysztof Kaczmarek, Mirosław Karpiuk, Claudio Melchior, "A Holistic Approach to Cybersecurity and Data Protection in the Age of Artificial Intelligence and Big Data" *Prawo i Więź*, No. 3 (2024): 103-121; Pierre-Alexandre Boudy, Małgorzata Czuryk, Claudio Melchior, "The Use of New Technologies in the Field of Security" *Ius et Securitas*, No. 2 (2025): 67-78; Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, "Artificial Intelligence in e-Administration" *Prawo i Więź*, No. 1 (2025): 383-407; Krzysztof Kaczmarek, Mirosław Karpiuk, Andrea Spaziani, "Use of artificial intelligence in public sector: threats and prospects" *Studia Iuridica Toruniensia*, No. 1 (2025): 29-48; Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, Jean Langlois-Berthelot, "Creating Resilient Artificial Intelligence Systems. A Responsible Approach to Cybersecurity Risks" *Prawo i Więź*, No. 5 (2025): 131-149.

- and services, including healthcare, as well as to grant, restrict, withdraw or demand the return of such benefits and services;
- b) AI systems intended to be used for assessing the creditworthiness of natural persons or determining their credit score, with the exception of AI systems used for detecting financial fraud;
 - c) AI systems intended to be used for risk assessment and pricing in relation to natural persons in the case of life insurance and health insurance;
 - d) AI systems designed to assess and classify emergency calls made by natural persons or to be used to dispatch or prioritise the dispatch of emergency services, including police, fire and medical services, as well as in systems for assessing the health status of patients in emergency situations (paragraph 5 of Annex III to the AI Act);
3. In the area of migration management, asylum and border control, to the extent that the use of such systems is permitted under relevant European Union or national law:
- a) AI systems intended for use by or on behalf of competent public authorities or by EU institutions, bodies, offices and agencies as polygraphs or similar tools;
 - b) AI systems intended to be used by or on behalf of competent public authorities or by institutions, bodies, offices and agencies of the European Union for the purpose of assessing the risk, including security risks, risks of irregular migration or health risks, posed by a natural person who intends to enter or has entered the territory of a Member State;
 - c) AI systems intended for use by or on behalf of competent public authorities or by institutions, bodies and organisational units of the EU for the purpose of supporting competent public authorities in the examination of applications for asylum, for visas or residence permits and related complaints regarding the eligibility of natural persons applying for a specific status, including the related assessment of the credibility of evidence;
 - d) AI systems intended for use by or on behalf of competent public authorities or by institutions, bodies, offices and agencies of the European Union in the context of migration management, asylum and border control, for the purpose of detecting, recognising or identifying natural persons, with the exception of the verification of travel documents (paragraph 7 of Annex III to the AI Act).

The risk management system, as stated in Recital 65 of the AI Act, should include a process that is planned and implemented throughout the entire life cycle of a high-risk AI system. The purpose of this process should be to identify and mitigate the risks posed by AI systems. The risk management system should be subject to regular reviews and updates to ensure its continued effectiveness. This process should ensure that the provider identifies risks or undesirable effects, and implement measures to mitigate known and reasonably foreseeable risks associated with AI systems in relation to their intended use and reasonably foreseeable misuse, including possible risks arising from interactions between the AI system and the environment in which it operates. The risk management system should adopt optimal risk management measures in light of the current state of technical knowledge in the field of AI. When determining these measures, the supplier should document and explain the choices made and, where appropriate, involve experts. When identifying reasonably foreseeable misuse of high-risk AI systems, the supplier should take into account cases of AI system use that can reasonably be expected to result from easily predictable human behaviour in relation to a given AI system (its specific characteristics and use), even if such cases are not foreseen in the intended use and operation of the AI system.

Due to the prevalence of cyber threats, particular attention should be paid to crisis management in the area of cybersecurity.^[10] According to Recital 78 of the NIS2 Directive, cybersecurity risk management measures should take into account the degree of dependence of a critical or important entity on networks and information systems and should include measures aimed at identifying the risk of incidents, preventing incidents, detecting them, responding to them, and restoring normal operation after they occur, as well as mitigating their effects. Cybersecurity risk management measures should enable a systemic analysis that takes into account the human factor in order to provide a complete picture of the security of networks and information systems.^[11] Due to the need to

¹⁰ Małgorzata Czuryk, „Zarządzanie kryzysowe w obszarze bezpieczeństwa” *Ius et Securitas*, No. 1 (2025): 6.

¹¹ For more information on cybersecurity, see, among others: Małgorzata Czuryk, „Jurisdiction of the Voivode in the Field of Crisis Management” *Studia Iuridica Lublinensia*, No. 2 (2025): 94-95. Christophe Gaie, Mirosław Karpiuk, Nicola Strizzolo, “Cybersecurity of Public Sector Institutions” *Prawo i Więź*, No. 6 (2024): 359. Dominik Bierecki, Mirosław Karpiuk, Martin Kelemen, Sergii Prylipko, „The Impact of Digital Transformation on Cybersecurity in Poland, Slovakia, and

avoid imposing disproportionate financial burdens on critical and important entities, which in turn follows from Recital 81 of the NIS2 Directive, cybersecurity risk management measures should be proportionate to the risk posed to the networks and information systems concerned, taking into account the latest state of knowledge on such measures and the cost of their implementation.

Article 9(1) of the NIS2 Directive requires Member States to designate or establish at least one competent authority responsible for incident management and crisis management in the field of large-scale cybersecurity: a cybersecurity crisis management authority. If a Member State designates or establishes more than one cybersecurity crisis management authority, it shall clearly indicate which of these authorities is to act as the coordinator for incident management and large-scale cybersecurity crisis management (Article 9(2) of the NIS2 Directive). It is also possible to designate several authorities to act as coordinators, depending on the reporting entity. This is confirmed by the implementation of the NIS2 Directive in Poland (Article 26(5)-(7) of the Act of 5 July 2018 on the national cybersecurity system). Member States shall ensure that cybersecurity crisis management authorities have adequate resources to perform their tasks effectively (Article 9(3) of the NIS2 Directive). It should be recognised that this also applies to the body acting as coordinator for incident management and large-scale cybersecurity crisis management. Member States shall ensure consistency with existing general national crisis management frameworks (Article 9(3) of the NIS2 Directive). It should be recognised that this also applies to the body acting as coordinator for incident management and crisis management in large-scale cybersecurity. Member States shall ensure consistency with existing general national crisis management frameworks (Article 9(3) of the NIS2 Directive). This concerns the consistency of resources allocated to cybersecurity crisis management authorities with existing general national crisis management frameworks. Furthermore, in accordance with Article 9(4) of the NIS2 Directive, each Member State shall adopt a national plan

Ukraine” *Prawo i Więź*, No. 6 (2025): 473-495. Małgorzata Czuryk, „Cybersecurity and Protection of Critical Infrastructure” *Studia Iuridica Lublinensia*, No. 5 (2023): 43-52. Krzysztof Kaczmarek, „Bezpieczeństwo państwa wobec współczesnych zagrożeń” *Prawo i Więź* No. 5 (2025): 576-577. Małgorzata Czuryk, „Restrictions on the Exercising of Human and Civil Rights and Freedoms Due to Cybersecurity Issues” *Studia Iuridica Lublinensia*, No. 3 (2022): 31-43. Dominik Bierecki, Mirosław Karpiuk, Claudio Melchior, Nicola Strizzolo, “Security in the Era of Cybersecurity Threats” *Prawo i Więź*, No. 4 (2025): 73-87.

for responding to large-scale cybersecurity incidents and crises, setting out the objectives and modalities for incident management and large-scale cybersecurity crisis management. This plan shall specify, in particular:

- 1) the objectives of national preparedness measures and actions;
- 2) the tasks and responsibilities of cybersecurity crisis management authorities;
- 3) cybersecurity crisis management procedures, including their integration into the overall national crisis management framework, and information exchange channels;
- 4) national preparedness measures, including exercises and training;
- 5) relevant public and private stakeholders and infrastructure;
- 6) national procedures and arrangements between relevant national authorities and institutions to ensure the effective participation of the Member State concerned in coordinated incident management and large-scale cybersecurity crisis management at Union level and the effective support of the Member State concerned for such coordinated management.

The use of the phrase ‘in particular’ in Article 9(4) of the NIS2 Directive indicates that the national plan for responding to cybersecurity incidents and crises may also contain provisions other than those required by Article 9(4) of the NIS2 Directive. This is in line with the nature of the Directive, which binds Member States as to the result to be achieved, while leaving national authorities free to choose the form and means (Article 288(3) TFEU).

Sectoral regulation strengthens this interpretation. The Digital Europe Programme links funding to performance and resilience. The EDF Regulation encourages joint risk-taking and prioritises disruptive technologies. The European Defence Industrial Strategy demands readiness and responsiveness, which require explicit treatment of technological, regulatory and geopolitical uncertainty.^[12]

The objectives of the Digital Europe programme are (according to Article 3 of the programme):

¹² Christopher Hood, Henry Rothstein, Robert Baldwin, *The Government of Risk: Understanding Risk Regulation Regimes* (Oxford: University Press, 2002); Giandomenico Majone, “From the Positive to the Regulatory State: Causes and Consequences of Changes in the Mode of Governance” *Journal of Public Policy*, No. 2 (1997): 139-167.

- 1) to support and accelerate the digital transformation of the European economy, industry and society;
- 2) to deliver the benefits of the digital transformation to citizens, public administrations and businesses across the European Union;
- 3) to increase Europe's competitiveness in the global digital economy;
- 4) to reduce the digital divide across the European Union;
- 5) to strengthen the strategic autonomy of the European Union through comprehensive, cross-sectoral and cross-border support.

The Digital Europe programme is also implemented in close coordination with other EU funding programmes in certain situations and aims to:

- 1) strengthen Europe's capabilities in key areas of digital technology and promote these capabilities through large-scale implementation;
- 2) in the private and public sectors, to ensure greater dissemination and use of Europe's important digital technologies, supporting digital transformation and access to digital technologies.

Cyber-risk insurance research shows that internal organisational risk can be decomposed and modelled.^[13] Forecasting work based on epidemiological modelling confirms that cyber-threat propagation can be anticipated.^[14] Development-finance analysis demonstrates that ignoring institutional uncertainty undermines investment impact.^[15] OECD research on digital governance stresses the need for explicit risk management mechanisms.^[16]

These findings converge. They show that uncertainty is quantifiable and that public authorities can integrate it into fiscal decision-making.

¹³ Rainer Böhme, Stefan Laube, Markus Riek, "Cyber Insurance: Models, Markets, and Misconceptions" *IEEE Security & Privacy*, No. 3 (2022): 42-51.

¹⁴ Cameron Nowzari, Victor Preciado, George Pappas, "Analysis and Control of Epidemics: A Survey of Spreading Processes on Complex Networks" *IEEE Control Systems Magazine*, No. 1 (2016): 26-46.

¹⁵ Philippe Aghion, Céline Antonin, Simon Bunel, *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations* (Harvard: Harvard University Press, 2021).

¹⁶ *Government at a Glance 2023*. https://www.oecd.org/en/publications/government-at-a-glance-2023_3d5c5d31-en.html. [accessed: 15.12.2025].

4 | Integration into Existing EU Fiscal Instruments

The European Defence Fund already contains language on performance and risk. Regulation (EU) 2021/697 establishes its mandate. Actuarial integration requires a classification of project risk profiles based on technological readiness, supply-chain dependencies, regulatory constraints and export-control exposures.

Funding intensity must follow exposure. High-risk, high-value projects should receive higher EU co-financing. Low-risk projects receive less. This produces a risk-adjusted strategic portfolio aligned with the objectives of the European Defence Industrial Strategy.

Programmes under the Digital Europe agenda handle high systemic cyber risk. Threat forecasting methods can support ex-ante evaluation. Epidemiology-based models identify propagation vectors and vulnerabilities within digital administrations.^[17] OECD guidelines emphasise the need for economic and administrative integration of digital-security risk management.^[18] Aligning funding with measurable exposure increases coherence and credibility.

The European Investment Bank already uses risk-weighted approaches in climate and infrastructure financing. Defence-digital projects can be incorporated into this system with adjusted parameters. The EIB can publish aggregate exposure to strategic-risk windows.

National finance ministries can mirror these methods in co-financing rules. Convergence around expected loss, variance and long-horizon exposure creates consistent fiscal behaviour across Member States. This supports private-sector participation and strengthens fiscal predictability.

It is also worth noting the framework for managing risks related to information and communication technologies (ICT) in the case of financial entities, which is set out in Article 6 of Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on the operational digital resilience of the financial sector (DORA). According to this provision, financial entities should have (as part of their overall risk management system) a robust, comprehensive and well-documented ICT risk management framework that enables them to respond quickly,

¹⁷ Langlois-Berthelot, Gaie, Lebraty, “Epidemiology Inspired Cybersecurity Threats Forecasting Models Applied to e-Government”, 151-174.

¹⁸ *Digital security risk management*, <https://www.oecd.org/en/topics/digital-security-risk-management.html> [accessed: 15.12.2025]; *OECD Digital Government Index*, <https://goingdigital.oecd.org/en/indicator/58> [accessed: 15.12.2025].

effectively and comprehensively to ICT risks and ensures a high level of operational digital resilience. ICT risk management includes at least the strategies, policies, procedures, protocols and ICT tools necessary for the proper and adequate protection of information and ICT resources, including software and hardware, servers, as well as physical elements and infrastructure such as facilities, data centres and designated sensitive areas, in order to ensure adequate protection against risks, including damage and unauthorised access or use. Financial entities shall ensure adequate separation and independence of ICT risk management, control and internal audit functions. ICT risk management shall be documented and reviewed at least annually, or periodically in the case of micro-enterprises, as well as in the event of serious ICT incidents and in accordance with supervisory instructions or conclusions resulting from relevant tests or operational digital resilience audit processes. Based on the conclusions of the audit review, financial entities shall establish a formal follow-up process, including rules for the timely verification and implementation of remedial measures following critical ICT audit findings.

It should also be noted that these general rules are modified in relation to entities for which DORA requires the proportionate application of DORA provisions on ICT risk management. Pursuant to Article 4(1) of DORA, financial entities shall apply these provisions taking into account the principle of proportionality. The factors influencing the proportionate application of these provisions are the size and overall risk profile of the financial entity and the nature, scale and complexity of its services, activities and operations. Since the application of DORA involves the exercise of supervisory powers over financial institutions, Article 4(1) of DORA sets limits on the interference of EU and national public authorities in the sphere of individual freedoms.^[19] In the context of financial entities using AI systems, it should be noted that their resilience depends on ICT cybersecurity. This is confirmed by Recital 76 of the AI Act, according to which cyberattacks on AI systems may rely on exploiting vulnerabilities in the digital assets of the AI system or in the underlying ICT infrastructure. This Recital also states that in order to ensure a risk-appropriate level of cybersecurity, providers of high-risk AI systems should therefore implement appropriate measures, such as security control mechanisms,

¹⁹ Dominik Bierecki, "Zasada proporcjonalności w stosowaniu rozporządzenia w sprawie operacyjnej odporności cyfrowej sektora finansowego (Digital Operational Resilience Act – DORA)" *Europejski Przegląd Prawa i Stosunków Międzynarodowych*, No. 3 (2024): 8-9.

also taking into account, where applicable, the ICT infrastructure on which the system relies. Therefore, with regard to financial market entities, there is a convergence of legal standards between the AI Act and DORA in the area of cybersecurity of ICT infrastructure intended for the operation of AI systems (including high-risk systems). The AI Act stipulates that technical solutions aimed at ensuring the cybersecurity of high-risk AI systems must be adapted to the relevant circumstances and risks (Article 15(5)(2) of the AI Act). In this context, the AI Act does not specify which circumstances should be taken into account. It therefore seems that this also concerns circumstances related to the characteristics of the financial entity, which are listed in Article 4(1) of DORA: the size and overall risk profile of the financial entity and the nature, scale and complexity of its services, activities and operations. While these characteristics do not affect the risks associated with the operation of an AI system, they do affect the framework for managing the risks associated with the ICT used to operate AI.

5 | Sovereignty, Accountability and Fiscal Culture

Strategic autonomy requires fiscal tools capable of supporting long-term investment. Analyses of the Recovery and Resilience Facility and Next-GenerationEU describe these programmes as prototypes of collective fiscal capacity.^[20] Europe needs to extend this logic to defence-digital investment rather than rely on crisis-driven improvisation.^[21]

Risk-based governance raises concerns about opacity. Yet climate-risk supervision and digital-government metrics show that complex modelling can coexist with transparency. NGFS scenarios, OECD indicators and European Court of Auditors reviews provide accessible data for public scrutiny. Publishing strategic-risk metrics in defence-digital spending would reinforce democratic legitimacy.^[22]

²⁰ Fabbrini, *EU Fiscal Capacity*; Bakker, Beetsma, Buti, “Investing in European Public Goods While Maintaining Fiscal Discipline at Home”, 98-103.

²¹ Francesco Corti, Patrik Vesan, “The Politics of the Recovery and Resilience Facility” *Journal of European Public Policy*, No. 9 (2022): 1447-1466; Zsolt Darvas, Guntram Wolff, “A Green Fiscal Pact: Climate Investment in Times of Budget Consolidation” *Bruegel Policy Contribution*, No. 18 (2021): 1-22.

²² Lucas Schramm, Ulrich Krotz, “Embedded Bilateralism, Fiscal Capacity and European Crisis Governance” *Journal of European Integration*, No. 6 (2021): 731-748;

European institutions must accept uncertainty as a baseline condition. Cyber-risk modelling, climate-scenario analysis and development-finance methodologies already show how uncertainty can be quantified. Actuarial governance is not bureaucracy; it is discipline. Europe must shift from deterministic planning to anticipatory fiscal strategy.^[23]

6 | Conclusion

European sovereignty in the defence-digital age depends on the ability to finance high-risk sectors under conditions of permanent uncertainty. Current fiscal governance remains tied to stability assumptions that no longer hold. Fragmented risk assessment and deterministic budgetary logic undermine Europe's strategic ambitions.

Actuarial governance provides the missing connective tissue. It requires no new institutions and no treaty change. It introduces uncertainty into fiscal planning, prices exposure and aligns strategic investment with measurable risk. Empirical evidence from cyber-risk insurance,^[24] cyber-threat forecasting^[25] and development finance^[26] shows that complex risks can be quantified and governed.^[27]

Erik Jones, Daniel Kelemen & Sophie Meunier, "Failing Forward? The Euro Crisis and the Incomplete Nature of European Integration" *Comparative Political Studies*, No. 10 (2021): 1693-1721.

²³ Benedikt Barthelmess, Jean Langlois, *Tokenomics: Emerging Strands of Research*. <https://ideas.repec.org/p/hal/wpaper/hal-04179572.html>. [accessed: 16.12.2025].

²⁴ Langlois, *Evaluating and Insuring Cyber Risks within Organizations*.

²⁵ Böhme, Laube, Riek, "Cyber Insurance: Models, Markets, and Misconceptions", 42-51; Martin Eling, Werner Schnell, "What Do We Know About Cyber Risk and Cyber Risk Insurance?" *Journal of Risk Finance*, No. 5 (2016): 474-491.

²⁶ Ray Berkelmans, Jason van der Merwe, "Risk-Sharing, Development Finance, and the Role of Multilateral Development Banks" *World Development*, No. 144 (2021); Chris Humphrey, "Are Credit Rating Agencies Limiting the Capital-Raising Capacity of Multilateral Development Banks?" *Review of International Political Economy*, No. 6, (2020): 1378-1407; Rishikesh Bhandary, Kelly Gallagher, Fang Zhang, "Climate Finance, Development Banks, and Blended Finance: Governance Challenges and Solutions" *Global Policy*, No. 1 (2022): 36-49.

²⁷ Baldwin, Cave, Lodge, *Understanding Regulation: Theory, Strategy and Practice*.

If Europe embeds actuarial reasoning into its fiscal architecture, it will build strategic autonomy on a foundation of discipline instead of improvisation. Sovereignty becomes measurable. Strategy becomes financially credible. Uncertainty becomes governable.^[28]

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²⁸ Marijn Janssen, Haiko van der Voort, “Adaptive Governance: Towards a Stable, Accountable and Responsive Government” *Government Information Quarterly*, No. 1 (2016): 1-5; Frank Bannister, Regina Connolly, “ICT, Public Values and Transformative Government: A Framework and Programme for Research” *Government Information Quarterly*, No. 1 (2014): 119-128; Antonio Cordella, Carla Bonina, “A Public Value Perspective for ICT Enabled Public Sector Reforms: A Theoretical Reflection” *Government Information Quarterly*, No. 4 (2012): 512-520.

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Integration of Indigenous Peoples' Protection with Environmental Sustainability as an Impact of Environmental Change

Abstract

Climate change is not merely an environmental phenomenon but a profound challenge to the relationship between law and social justice. In Indonesia, Indigenous Peoples, whose cultural survival and livelihoods are tied to forests and ecosystems, face disproportionate risks from rising temperatures, deforestation, and extractive industries. Communities such as the Dayak in Kalimantan, the Baduy in Banten, and the Orang Rimba in Jambi exemplify how environmental degradation intersects with long-standing marginalization and weak legal recognition of customary rights. This paper examines how Indonesia's legal framework mediates the nexus between climate governance and social justice. It focuses on the tension between the Job Creation Law (Law No. 11/2020), which prioritizes investment through centralized licensing and reduced environmental safeguards, and the Draft Law on Indigenous Peoples (RUU MA), which aims to formalize recognition of customary territories, participatory rights, and the principle of Free, Prior and Informed Consent (FPIC). Employing a normative and literature-based analysis, the study draws upon constitutional jurisprudence, international human rights instruments (UNDRIP, ILO Convention No. 169), and climate justice frameworks (UNFCCC, Cancun Safeguards) to evaluate how law can either perpetuate or mitigate social inequality. The findings indicate that regulatory incoherence weakens constitutional guarantees and fractures the social bond linking law, environment, and vulnerable communities. The paper proposes a rights-based model of climate governance that positions Indigenous Peoples as partners in climate solutions, reaffirming law's potential to foster, not fracture, social cohesion and justice.

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KEYWORDS: Indigenous Peoples' Rights, Climate Justice Free Prior and Informed Consent (FPIC), Job Creation Law, REDD+ Safeguards, Law and Social Bonds

1 | Introduction

The Paris Agreement's Preamble recognizes the rights of Indigenous Peoples, and scholarship defines climate justice as substantive outcomes plus fair procedures that safeguard vulnerable groups. The human rights dimension of climate justice becomes particularly pronounced when examining indigenous peoples; unique vulnerability to climate impact. Despite contributing less than 5% of global greenhouse gas emissions, indigenous communities face disproportionate climate risks due to their intimate dependence on climate-sensitive ecosystems and traditional territories.^[1] This vulnerability intersects with historical marginalization and ongoing violations of fundamental rights, including the right to self-determination, cultural integrity, and free, prior, and informed consent (FPIC) as established under the UN Declaration on the Rights of Indigenous Peoples.^[2]

The procedural dimension of climate justice demands that Indigenous Peoples have meaningful participation in climate policy design and implementation, moving beyond tokenistic consultation toward genuine partnership and decision-making authority over their territories. This procedural justice is operationalized through recognition of Indigenous governance systems, traditional knowledge integration, and benefit-sharing arrangements that respect Indigenous sovereignty. Contemporary climate finance mechanisms, particularly those targeting forest conservation and renewable energy development, must therefore incorporate robust safeguards

¹ K. Anderson, "Indigenous Communities and Climate Change" *Greenly*, 1 September 2023. <https://greenly.earth/en-us/blog/ecology-news/indigenous-communities-and-climate-change>. [accessed: 1.8.2025].

² Cultural Survival, "New Guide Supports Indigenous Leaders to Develop FPIC Protocols and Secure Self-Determined Priorities of Communities" 9 October 2023. <https://www.culturalsurvival.org/news/new-guide-supports-indigenous-leaders-develop-fpic-protocols-and-secure-self-determined>. [accessed: 13.8.2025].

that prevent further marginalization while ensuring equitable distribution of climate benefits and burdens.^[3]

The adaptation-mitigation distinction proves critical for understanding how climate interventions differently impact Indigenous communities. Adaptation measures, such as ecosystem-based approaches, traditional knowledge preservation, and climate-resilient infrastructure, tend to align more closely with Indigenous priorities for territorial protection and cultural continuity. Conversely, mitigation strategies, particularly market-based mechanisms like carbon offsetting and REDD+, often involve external actors and commodification processes that may conflict with Indigenous worldviews and land tenure systems.^[4] This analytical framework thus enables assessment of how different climate pathways either reinforce or challenge existing power asymmetries affecting Indigenous Peoples.^[5]

Climate change is now not merely an environmental issue but also a matter of climate justice and human rights^[6]. Climate impacts such as temperature increases, extreme weather events, and erosion of natural resources disproportionately affect indigenous peoples, whose dependence on traditional living spaces makes them highly vulnerable. Indonesia recorded an annual temperature anomaly of 1.68°C above pre-industrial levels in 2024, exceeding the threshold regulated in Law No. 16 of 2016 as the framework for ratifying the Paris Agreement.^[7]

The catastrophic consequences of climate change compounded by environmental mismanagement were tragically demonstrated in the flash floods and landslides that struck Aceh, North Sumatra, and West Sumatra in late November 2025. The disaster claimed over 753 lives, left 650 people missing, and affected more than 3.3 million people across 50 regencies.^[8]

³ Smita Nakhooda, Charlene Watson, Liane Schalatek, "The Effectiveness of Climate Finance: A Review of the Green Climate Fund's Approach" *Climate Policy*, No. 4 (2021): 492-508.

⁴ Esteve Corbera, Martha Estrada, Katrina Brown, "Rights to Land, Forests and Carbon in REDD+: Insights from Mexico, Brazil and Costa Rica" *Forests*, No. 2 (2011): 301-342.

⁵ Jennifer C. Franco, Saturnino M. Borras Jr., Alberto Alonso-Fradejas, Jing Ye, *The Global Land Grab: A Primer*, Transnational Institute Briefing Series (2013): 1-14.

⁶ Natalia Tkacz, "To What Extent Do Human Rights Provide an Appropriate Approach to Achieving Environmental Protection?" *Prawo i Więzy*, No. 1 (2022): 103-115.

⁷ Kimberly M. Suiseeya, "Contesting Justice in Global Forest Governance: The Promises and Pitfalls of REDD+" *Conservation and Society*, No. 2 (2014): 189-199.

⁸ "Update BNPB: 753 Meninggal Dunia akibat Banjir-Longsor di Sumatera" *Kompas.com*, 3 December 2025.

According to environmental experts from Universitas Gadjah Mada, the severity of the disaster was not solely attributable to extreme rainfall, but reflected decades of forest degradation in upper watersheds, with approximately 1.4 million hectares of forest lost between 2016 and 2024 in the affected provinces.^[9] The discovery of illegally logged timber swept by floodwaters, combined with findings from the Ministry of Forestry identifying five locations where logging operations violated regulations, provided concrete evidence that weak environmental governance and prioritization of extractive industries over ecological sustainability directly contributed to the scale of human casualties.^[10] This disaster exemplifies how the intersection of climate change impacts and systematic environmental destruction disproportionately affects Indigenous and local communities who depend on forest ecosystems for their survival, yet have minimal voice in the development policies that determine their fate.

In Indonesia, the legal framework has yet to fully realize these principles. Law No. 41/1999 on Forestry opened space for the recognition of customary forests, but the subsequent Job Creation Law (Law No. 11/2020) weakened these protections by centralizing permits, simplifying Environmental Impact Assessment (AMDAL) procedures, and restricting avenues for public participation. Although the Constitutional Court has affirmed that customary forests are no longer part of state forests (Decision No. 35/PUU-X/2012), the Job Creation Law threatens to undermine this recognition by prioritizing investment interests over Indigenous rights. Meanwhile, the long-promised Draft Law on Indigenous Peoples (RUU MA) intended as a national umbrella for collective Indigenous rights remains stalled, creating regulatory fragmentation across forestry, agrarian, and environmental sectors.^[11] Indigenous communities in Indonesia are highly vulnerable to climate change impacts because they depend on traditional living spaces and face structural marginalization regarding recognition of rights to land and natural resources. Environmental changes due to climate, deforestation, and expansion of national industries such as plantations and mining add pressure to indigenous communities who often lose access to ancestral lands and their sources of livelihood.

⁹ Universitas Gadjah Mada, "UGM Expert: Severe Sumatra Flash Floods Driven by Upper Watershed Forest Degradation" *UGM News*, 2 December 2025.

¹⁰ Dwi Januanto Nugroho, "Temuan Terkini soal Pembalakan Liar di Hutan Sumatra Penyebab Banjir" *CNN Indonesia*, 8 December 2025.

¹¹ Arief Wicaksono, "Average Air Temperature Anomaly for 2024" *Meteorology, Climatology, and Geophysics Agency*, 3 January 2025.

Concrete cases illustrate the consequences of these legal tensions. The struggle that faced by communities in Kalimantan, Jambi, and Banten, where deforestation, mining expansion, and climate-induced ecological stress undermine Indigenous livelihoods.^[12] In the context of national law, the Job Creation Law is aimed at accelerating economic development on one side. However, critics mention that several provisions in this law potentially reduce protection of indigenous peoples' rights through relaxation of AMDAL procedures and permit simplification that weakens public participation in environmental decision-making.

Meanwhile, the Draft Law on Indigenous Peoples (RUU MA), promised as a national legal umbrella for recognition of indigenous peoples' collective rights, has not yet been enacted. Regulatory fragmentation, particularly in forestry, agrarian, and environmental law, causes unresolved regulatory conflicts and worsens the vulnerability of indigenous peoples in facing climate change impacts.^[13] With the weakening of environmental protection and recognition of indigenous peoples by the Job Creation Law, and the delay in enacting the RUU MA, indigenous communities are increasingly marginalized. This violates the principles of climate justice, which affirm that vulnerable groups must obtain recognition, protection, and participation in climate policy-making.

The research gap in this study lies in the absence of a systematic legal analysis that connects Indonesia's recent regulatory reforms particularly the Job Creation Law (Law No. 11/2020) with the principles of climate justice and the protection of Indigenous rights. Previous scholarship has generally focused on issues such as Indigenous vulnerability to deforestation, land tenure conflicts, or the socio-economic impacts of climate change. However, few studies have explored how contemporary regulatory reforms generate legal tensions with constitutional guarantees and international obligations. This paper seeks to address that gap by critically examining the synchronization and contradictions between the Job Creation Law and the long-delayed Draft Law on Indigenous Peoples (RUU Masyarakat Adat/MA), and by evaluating their implications for Indigenous rights within the broader climate justice framework. Methodologically, this research employs a literature review, emphasizing doctrinal interpretation

¹² Human Rights Watch, "Indonesia: Job Creation Law Harms Workers and Indigenous Communities" 14 October 2020. <https://www.hrw.org>.

¹³ "Papuan Tribe, Palm Oil Firms Battle for Land Rights in Indonesian Top Court" *Reuters*, 20 June 2024.

and normative legal evaluation. This approach is particularly appropriate because the primary concern of the study is the legal recognition and protection of Indigenous rights in the context of climate governance. Unlike empirical or quantitative research, which might prioritize statistical relationships or survey data, the normative juridical method focuses on analyzing legal norms, identifying inconsistencies, and evaluating coherence with broader human rights principles.

The analysis draws upon a combination of primary legal sources and secondary references. Primary sources include statutory laws such as Law No. 41/1999 on Forestry, Law No. 11/2020 on Job Creation, and Law No. 16/2016 ratifying the Paris Agreement. It also examines key Constitutional Court decisions, including Decision No. 35/PUU-X/2012 on customary forests and Decision No. 91/PUU-XVIII/2020 on procedural defects in the Job Creation Law, as well as the draft legislation on Indigenous Peoples (RUU MA). International instruments, particularly UNDRIP, ILO Convention No. 169, and the UNFCCC Cancun Safeguards, provide normative benchmarks for assessing the adequacy of Indonesia's domestic framework. Secondary sources include academic journal papers on climate justice and Indigenous rights, policy documents such as BMKG climate data and Bapenas adaptation frameworks, and global frameworks such as the REDD+ safeguards.

The analytical framework of this research unfolds through four inter-related stages. It begins with a doctrinal interpretation that examines how Indonesian law recognizes, regulates, or overlooks the rights of Indigenous Peoples in the context of climate change. This is followed by a comparative evaluation, which assesses Indonesia's legal framework against international standards of climate justice and human rights, particularly the principle of Free, Prior and Informed Consent (FPIC) and the protective mechanisms under the UNFCCC. The third stage involves case-based illustrations to demonstrate how regulatory tensions are experienced in practice. Finally, the analysis turns to synthesis, identifying gaps, inconsistencies, and opportunities for harmonization between the Job Creation Law, the Indigenous Peoples Bill, and Indonesia's climate governance instruments such as the National Action Plan for Climate Change Adaptation (RAN-API) and the Enhanced NDC, while also examining Indigenous Peoples' protection models in Europe. This methodological design ensures transparency and analytical rigor while situating Indonesia's regulatory framework within constitutional jurisprudence and international principles of climate justice.

2 | Vulnerability of Indigenous Peoples' Rights in the Climate Justice Framework

Climate change has intensified vulnerabilities among Indigenous Peoples in Indonesia, both environmentally and legally. Data from the Meteorological, Climatological, and Geophysical Agency (BMKG) confirms a consistent warming trend, with temperature anomalies of 0.49°C in June 2024 and 0.4°C in September 2023, the highest since 1981. While these numbers highlight the physical dimension of climate change, their impact is disproportionately borne by communities whose livelihoods depend on forests and ecosystems.^[14] Based on these two facts, air temperature in Indonesia can be said to have experienced a quite significant increase.

This significant temperature increase also impacts the lives of living beings, especially those whose sources of life depend on nature, one of which is forest communities. Forest communities are people who live in forests and conduct their lives alongside forests, depending their lives on natural resources contained in forests.^[15] Climate change impacts the agricultural sector which is also related to economic growth and productivity of each country.^[16] Based on several studies that have been conducted, the occurrence of climate change results in increased earth temperature that affects rainfall intensity and evaporation in various countries.^[17] The consequences of climate change cause losses for forest communities who work as farmers, because changes in temperature and unpredictable rainfall have great potential to cause crop failures that result in losses for farmers. The losses experienced by farmers will also impact Indonesia's economic growth because the agricultural sector is one of the contributing sectors to the national economy in Indonesia.

Based on that fact, for indigenous people vulnerability arises from a triple dimension:

¹⁴ Society of Indonesian Environmental Journalists (SIEJ), 2024.

¹⁵ Wicaksono, "Average Air Temperature Anomaly for 2024."

¹⁶ Forestry Study Club UGM, *Social Forestry for the Welfare of Forest Village Communities*, Forestry Study Club FKT UGM. <https://foresclub.fkt.ugm.ac.id>. [accessed: 6.8.2025].

¹⁷ Khalid Abbass, Muhammad Z. Qasim, Haiyun Song, Md Murshed, Hassan Mahmood, Imran Younis, "A Review of the Global Climate Change Impacts, Adaptation, and Sustainable Mitigation Measures" *Environmental Science and Pollution Research*, 29 (2022): 42539-42559.

- a. physical vulnerability, given exposure to climate-induced disasters;
- b. legal vulnerability, due to weak recognition of customary land rights;
- c. socio-economic vulnerability, as dependence on natural resources means that any ecological disruption directly affects food security and cultural survival.

These vulnerabilities reveal not only environmental risks but also the systemic marginalization of Indigenous Peoples in Indonesia's climate governance. Besides that, several studies state that indigenous peoples in Indonesia still face legal uncertainty in recognition of customary territories, making them vulnerable to green grabbing, Reducing Emission from Deforestation and Forest Degradation (REDD+), and carbon trading schemes that do not consider the principles of FPIC (Free, Prior and Informed Consent). There is previous research that states that carbon policy implementation does not accommodate rights to land sovereignty in Papua, which potentially damages the identity and livelihoods of communities.^[18] Additionally, there is previous research that highlights how carbon investment in indigenous forests can cause human rights violations because it does not involve them in decision-making.^[19]

3 | Case Studies from Areas Most Affected by Climate Change

3.1. Dayak Shifting Cultivator Communities, West Kalimantan

West Kalimantan is one of the provinces located on Kalimantan Island. The total forest area in West Kalimantan reaches 8.2 million hectares or about 57.14% of the total area of West Kalimantan.^[20] The tribe that inhabits

¹⁸ Tunjung Sekar Sulisty, Yuliana J. Utama, Ani Putrijanti, "Legal Policy of Carbon Trading and Threats to Indigenous Peoples" *Journal of Posthumanism*, No. 6 (2025): 203-218.

¹⁹ La Ode Herlina Yusran Rangkuti, Dedy A. Batubara, Fakhry M. Syam, "Indigenous Forests and Carbon Trading: Assessing the Potential for Human Rights Violations" *Indonesian Law Journal*, No. 2 (2024): 6.

²⁰ Narasipos, "FOLU Net Sink 2030 West Kalimantan, KLHK Emphasizes Important Role of Indonesian Forests" 1 August 2022.

Kalimantan Island is known as the Dayak tribe. The Dayak tribe inhabiting West Kalimantan in Melayang Hamlet, Sahan Village, Bengkayang Regency is one of the village communities whose livelihood is largely as shifting cultivators and whose life depends on forests. The Dayak community of Melayang Hamlet is one of the village communities affected by climate change that has occurred. The Melayang Hamlet community experienced a drastic decrease in income from farming. They reported that before 2018, one hectare of land could produce 25 tons of rice, but since 2018, income has decreased drastically. This drastic decrease is caused by rice plants being attacked by pests and weather changes occurring in their village, resulting in shifts in planting and rice harvesting seasons.^[21] The Melayang Hamlet community is heavily impacted by climate change because their daily food source, rice, is obtained by planting and they never buy rice, so the climate change that occurs greatly impacts the sustainability of food sources for the village community.

3.2. Migration of Baduy Tribe Communities in Banten

The Baduy tribe is an indigenous community living in the Lebak Regency area, Banten. The Baduy tribe is forced to migrate to nearby cities such as Rangkasbitung and Serang due to several conditions caused by climate change, such as changes in rainfall patterns and unexpected droughts that often cause severe land and environmental damage such as droughts that cause various plants not to develop and continuous rain causing floods resulting in severe land erosion. This also affects the ecosystem, because temperature changes also impact the availability of natural resources used by the Baduy tribe for daily needs.^[22]

²¹ Aulia Mukaram, "Dayak Farmers Adapt to Climate Crisis, Need Innovation to Survive" *Ekuatorial*, 10 January 2022; updated 19 April 2025.

²² Elvira de Rosary, "Indigenous Peoples, Climate Crisis and Development Conflicts: What's the Solution?" *Mongabay Indonesia*, 16 October 2021.

3.3. Flash Floods in Aceh and Sumatra: Environmental Degradation and Illegal Logging

The flash floods and landslides that devastated Aceh, North Sumatra, and West Sumatra in late November 2025 represent one of the deadliest hydro-meteorological disasters in Indonesia's recent history. By early December, the disaster had claimed over 750 lives, with hundreds more missing and more than 3 million people affected across 50 regencies. According to Dr. Hatma Suryatmojo, a researcher from Universitas Gadjah Mada, the flash floods were not merely triggered by extreme weather, but reflected the accumulation of long-standing ecological degradation in upstream watersheds.^[23] Between 2016 and 2024, approximately 1.4 million hectares of forest were lost in the three affected provinces, particularly in critical ecosystems such as Batang Toru in North Sumatra and along the Bukit Barisan mountain range. This deforestation, driven by oil palm plantations, mining operations, and illegal logging, significantly reduced the land's natural capacity to absorb rainfall, causing rapid surface runoff that intensified flooding and landslides.^[24]

The discovery of large timber logs with chainsaw marks swept away by floodwaters provided concrete evidence of illegal logging activities in upstream areas. The Ministry of Forestry identified five locations where logging operations violated regulations, suspected to be among the primary triggers of the disaster. The Directorate General of Forest Law Enforcement stated that preliminary analysis indicated not only extreme rainfall but also environmental damage in the upstream areas of the Batang Toru and Sibuluan watersheds, where the loss of forest cover on slopes and upstream areas reduced soil absorption capacity.^[25] Environmental organizations including Wahana Lingkungan Hidup Indonesia (WALHI) and the Independent Forest Monitoring Network (JPIK) emphasized that the disaster was not solely a result of extreme weather, but rather the manifestation of systematic forest destruction through concessions granted to

²³ UGM, "UGM Expert: Severe Sumatra Flash Floods Driven by Upper Watershed Forest Degradation."

²⁴ Hatma Suryatmojo, quoted in "Banjir Bandang Sumatera 2025: Ekosistem Hutan Kian Rapuh, Bencana Kian Dekat" *Kompas.com*, 3 December 2025.

²⁵ Dwi Januanto Nugroho, "Temuan Terkini soal Pembalakan Liar di Hutan Sumatra Penyebab Banjir."

631 companies involved in mining, palm oil plantations, and hydroelectric power projects in ecologically sensitive areas.^[26]

The conversion of protected forests into plantations and extractive industries eliminated critical water catchment functions, transforming what should have been natural buffers into sources of vulnerability. The case demonstrates how weak environmental governance and prioritization of short-term economic gains over ecological sustainability have placed Indigenous and local communities at the frontline of climate disasters, despite their minimal contribution to environmental degradation.^[27]

4 | Orang Rimba Groups of Interior Village Communities in Rejo Sari Village

Rejo Sari Village is a village located in Merangin Regency, Jambi Province. Rejo Sari Village has palm oil plantations within which there are Orang Rimba Groups consisting of 9 Family Cards; they previously lived in forests that have now been converted into palm oil plantations owned by residents and companies. The condition of these Rimba groups is very concerning; amid the loss of their habitat/residence, the Rimba groups must also face one of the impacts of climate change, namely the presence of various diseases.^[28] Rimba groups have been attacked by various diseases several times, such as Pulmonary Tuberculosis, Dengue Hemorrhagic Fever (DHF) due to mosquito bites, and malaria. They are affected by various types of diseases due to climate change related to temperature, air humidity, and rainfall that trigger disease breeding.^[29]

²⁶ Muhammad Ichwan, quoted in “Korban Banjir-Longsor Sumatra Melampaui 750 Jiwa, 3 Juta Terdampak dan Pengungsi Capai 2,1 Juta” *Zonautara*, 3 December 2025.

²⁷ Rianda Purba, quoted in “Rekam Citra Satelit dan 8 Perusahaan Penyebab Banjir Sumatra” *CNN Indonesia*, 3 December 2025.

²⁸ KKI Warsi, “Orang Rimba in Jambi in the Vortex of Climate Change” *Riau Online*, 9 August 2023.

²⁹ Guntur Plasmanto, “Malaria Zoonosis Threatens Orang Rimba Groups” *Ekua-torial*, 15 February 2022; updated 16 February 2022.

Disease problems are not the only problems experienced by Rimba Groups. Food scarcity has become one of the impacts felt by Rimba Groups. Rimba Groups' food ingredients are sourced from hunted animals and fruits in forests, but due to land conversion, hunted animals are increasingly difficult to find, and previously Rimba Groups knew the grand resistance season, which is the abundant fruit season, but since climate change, this season only occurs once every 4 (four) years. Based on the problems experienced, Rimba Groups become an example of forest communities affected by the climate change that has occurred.

Together, these cases illustrate how Indigenous communities are disproportionately positioned at the intersection of climate change and weak legal protection. They transform climate change from an abstract environmental challenge into a human rights and justice problem.

5 | Human Rights-Based Protection and Climate Justice Framework

Indonesia's Constitutional Court has affirmed that customary forests are no longer 'state forests' but forests within indigenous territories (MK No. 35/PUU-X/2012),^[30] forming a constitutional baseline. Procedurally, scrutiny of the Job Creation Law also followed (MK No. 91/PUU-XVIII/2020), highlighting defects relevant to public participation. In the mitigation domain, REDD+ activities must observe the Cancun Safeguards (including respect for the knowledge and rights of Indigenous Peoples) and apply Free, Prior and Informed Consent (UNFCCC Decision 1/CP.16, App. I).^[31]

Various cases occurring to indigenous peoples become one of the reasons this research was conducted; the magnitude of impacts occurring due to climate change becomes a cause of serious problems faced by indigenous peoples that need to be addressed. Critical studies of the social conditions of indigenous peoples regarding climate change impacts show that policies regarding indigenous peoples' rights are often implemented under

³⁰ Constitutional Court (Indonesia), Decision No. 35/PUU-X/2012.

³¹ United Nations Framework Convention on Climate Change (UNFCCC), "Decision 1/CP.16."

conditions that weaken the rights and participation of indigenous peoples themselves. Many conditions show that climate change impact mitigation policies often fail to meet human rights standards, particularly for indigenous peoples. This also reflects that formal policies are often not aligned with climate justice principles that regulate involvement and protection for vulnerable communities.^[32]

According to the UN Special Rapporteur on the Rights of Indigenous Peoples in 2022, indigenous peoples play an important role as guardians of ecosystems capable of absorbing and storing carbon, but irony occurs when they become victims of climate mitigation policies that do not consider their customary rights and traditional knowledge. International instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and ILO Convention No. 169 outline rights to land, natural resources, and full participation in decision-making. However, in Indonesia, these principles have not been fully internalized in national climate policies, including in the Job Creation Law (United Nations Human Rights Council, 2017).

Based on several previous studies, it is identified that without explicit human rights-based protection, climate mitigation projects can end in land grabbing in indigenous territories. This not only eliminates livelihoods, but also erodes the cultural identity of indigenous peoples that is closely related to their ecological landscape.^[33] Current conditions in Indonesia show that human rights protection against climate change impacts is becoming increasingly important due to the following:

- a. Physical vulnerability, where many indigenous communities are in coastal areas, lowlands, and forests prone to climate disasters such as tidal floods, droughts, and forest fires.^[34]
- b. Legal vulnerability, because there is no specific law on indigenous peoples causing recognition and protection of their rights to depend on interpretation of national regulations that often overlap.^[35]

³² Rina Lestari, Zulkifli Akmal, "Protection of Indigenous Legal Communities Against Global Warming Impacts in Riau Province" *Riau Law Journal* (2025).

³³ Hans Nicholas Jong, "Indonesia's Indigenous Communities Sidelined from Conservation" *Mongabay*, 20 December 2024.

³⁴ Ahmad Syahputra, "Loss and Damage Due to Climate Change Impacts in the Coastal Sector" *LDCI - Climate Resilient Development Blog*, 29 August 2022.

³⁵ Sapariah Saturi Lahay, "Indigenous Communities Lack Protection, Customary Forest Designation Also Slow" *Mongabay Indonesia*, 21 March 2024.

- c. Socio-economic vulnerability where dependence on natural resources makes every ecosystem damage directly impact food security and the economy of indigenous communities.^[36]

This demonstrates a fundamental disjuncture: while international law and constitutional jurisprudence affirm Indigenous rights, national policy instruments, especially the Job Creation Law – continue to privilege investment and resource extraction over protection. The gap between normative standards and policy practice remains a defining feature of Indonesia's climate governance.

5.1. Evaluation of the Job Creation Law on Indigenous Rights and/or Protection of Indigenous People

The Job Creation Law does not contain proactive arrangements for resolving regulatory disharmony related to indigenous legal communities. There are no concrete protection instruments for the territory and integrity of indigenous peoples' customary rights.^[37] Articles regulating indigenous peoples in the Job Creation Law are only articles related to natural resource management and spatial planning, then those related to customary rights attached to indigenous peoples, and several exemptions from obligations to adjust marine space utilization activities from the central government and several other matters, but there are still many things not regulated in this Job Creation Law, such as limited public participation and permit authorization that facilitates seizure of indigenous territories.

In line with this, the limitation of such participation can be seen from the weakened AMDAL process where Environmental Approval replaces Environmental Permits, and regional authority in licensing is also abolished (although for reasons of effectiveness centralized in the central government), but this actually narrows the space for indigenous peoples to participate. Another deficiency for communities is that investment based on the Job Creation Law prioritizes corporate interests more; the Job Creation Law in several conferences and previous research is said to

³⁶ Syahputra, "Loss and Damage Due to Climate Change Impacts."

³⁷ Rofiq Hidayat, "Job Creation Bill Considered Not Yet Protecting Indigenous Legal Communities" *Hukumonline*, 10 March 2020.

place indigenous peoples' rights in a subordinate position to investment access, while traditional communities are not recognized as providers of economic contributions recognized by the state.

The Job Creation Law has been criticized for simplifying environmental sector permits and reducing the role of public participation, where policies largely facilitate natural resource exploitation without considering protection of indigenous peoples' rights. Empirical research in Riau shows that although indigenous peoples are affected by global warming (crop failure, ecological disasters), adequate legal protection mechanisms have not been found in local or national regulations.^[38] In the climate justice framework, the Job Creation Law creates disharmony with indigenous rights recognized in the Constitutional Court's jurisprudence, for example, regarding recognition of customary forests. Because business permits often violate the principles of consultation and free prior consent, this law actually weakens the legal position of indigenous peoples in facing climate projects or development that has environmental impacts.

With various conditions describing the lack of the Job Creation Law's role in protecting indigenous peoples above, specific regulations that ensure indigenous peoples' rights are accommodated inclusively and constitutionally are clearly needed, especially related to climate change. Without a clear legal umbrella, several increasingly worse conditions can arise, including:

- a. Rights to customary land remain vulnerable to overlap with climate, forestry, or investment projects.
- b. There are no FPIC (Free, Prior, Informed Consent) mechanisms required by law for development projects affecting indigenous areas.
- c. There is no benefit-sharing, compensation, or guarantee of sustainability of indigenous peoples' traditional work that is important in climate justice.

This condition describes the urgency of the need for enactment of specific comprehensive regulations regarding Protection of Indigenous Legal Communities in Indonesia. This RUU MA is expected to fill various gaps and loopholes in protection of indigenous legal communities under the enactment of the Job Creation Law. Based on analysis of the RUU MA, the author found several important points, including:

³⁸ Lestari, Akmal, "Protection of Indigenous Legal Communities."

- a. RUU MA can become potential strengthening of several indigenous legal community rights; RUU MA is designed to provide recognition such as written legal basis for rights to certain territories, and exceeds formal institutional requirements required by the Job Creation Law.
- b. Guarantee of FPIC and active participation, where RUU MA requires involvement of indigenous peoples in decision-making related to their territories in development projects and climate change mitigation.
- c. Cross-sectoral regulatory coordination, where RUU MA provides a legal umbrella to unite provisions in agrarian, environmental, forestry, and labor law that have been overlapping.

5.2. Implications for Climate Justice and Policy

Recommendations – Why is the explicit alignment of policies on Indigenous Peoples’ rights urgent?

Indonesia’s adaptation-mitigation framework (RAN-API and NDC) already outlines the broad direction for socio-economic and ecological resilience, yet it does not operationally mandate the safeguarding of Indigenous Peoples’ rights (recognition of territories, FPIC, and benefit-sharing schemes) as a prerequisite for climate programs and financing. RAN-API is designed to strengthen economic resilience, livelihoods, ecosystem services, and special areas, and has been or is being reviewed for integration into the 2020-2024 RPJMN.^[39] However, detailed implementation guidelines at the sectoral and regional levels remain varied and often lack binding provisions on human rights and climate justice. Official Bappenas sources and national adaptation documents affirm RAN-API’s mandate as a multi-stakeholder adaptation action framework, and note the existence of the RAN-API Secretariat (now merged into the Low Carbon Development Initiative or LCDI Secretariat) for cross-actor coordination (Ministry of Finance of the Republic of Indonesia). The gap lies in the absence of standardized FPIC indicators as a mandatory requirement for adaptation/mitigation projects in Indigenous territories.

³⁹ Ministry of Finance of the Republic of Indonesia – Fiscal Policy Agency, *Climate Change Financing Policy: An Introduction* (Bogor: IPB Press, 2019).

On the mitigation front, Indonesia's Enhanced NDC, announced on 23 September 2022, increased its emission reduction targets to 31.89% unconditionally and 43.20% conditionally by 2030, with the forestry/LULUCF and energy sectors carrying the greatest share of responsibility. This stronger commitment opens the door to embedding safeguards for Indigenous Peoples' rights not only to enhance effectiveness by, for example, reducing land conflicts and fostering social compliance, but also to help advance the goals of SDGs 13, 15, and 16.^[40]

Based on Presidential Regulation No. 53 of 2021, a cross-sectoral action framework and indicator-based monitoring related to human rights are established. The National Action Plan on Human Rights (RANHAM) serves as a measure to integrate climate justice metrics and complaint mechanisms for Indigenous Peoples, thereby strengthening the accountability of climate policies while also contributing to the achievement of SDG 16 targets (Constitution Act, 1982). Normatively, global standards are clear: the UNDRIP affirms the rights to self-determination, territory, and FPIC; ILO Convention No. 169 provides operational references (although Indonesia has not ratified it, its provisions can be adopted into national laws and project guidelines).^[41]

Basically, in relation to this problem, the Indonesian government has implemented various policies aimed at mitigating and anticipating negative potential from climate change impacts such as the National Action Plan for Climate Change Adaptation (RAN-API). RAN API is part of the National Development Framework in Indonesia; RAN API is a cross-sectoral thematic plan that more specifically emphasizes preparation of development plans that are resilient to climate change. Climate change adaptation in Indonesia is aimed at:^[42]

⁴⁰ Government of the Republic of Indonesia, *Enhanced Nationally Determined Contribution: Republic of Indonesia*, 23 September 2022, UNFCCC. https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf. [accessed: 14.8.2025].

⁴¹ United States Indigenous Law Center, *United Nations Declaration on the Rights of Indigenous Peoples: A Quick Reference* (2016). <https://www.usetinc.org/wp-content/uploads/bvenuti/Annual%202016/Thumbdrive%20items/Monday/Importance%20of%20Engaging%20in%20International%20Issues/2%20-%20UNDRIP%20Summary.pdf>.

⁴² Dewi Hidayati, "Study: National Action Plan for Inclusive Policy Design for Climate Change Adaptation in Indonesian Coastal Areas" (presentation, National Committee for UNESCO MOST Program and LIPI, Widya Graha LIPI Building, Jakarta, 9 January, 2019).

- a. Adjustment efforts in the form of strategies, policies, management, technology, and attitudes in reducing negative impacts to minimum levels and if possible, can take maximum advantage of positive impacts;
- b. Efforts to reduce negative impacts of climate change, both direct and indirect, continuous or discontinuous, and permanent based on their impact levels.

Several adapted policies tend to focus on climate change mitigation, such as reducing greenhouse gas emissions and forest conservation, but give less attention to adaptation of affected communities, especially those living around forests. In this context, protection of people’s basic rights such as rights to land, access to natural resources, and rights to obtain decent livelihoods are often neglected. As a result, communities forced to migrate due to climate change impacts often face legal uncertainty and lose access to their rights.

5.3. Example Programs Supporting the Protection of Indigenous Peoples

No	Program	Description
1	Social Forestry & KPH Strengthening	Through social forestry programs, indigenous and local communities obtain legal permits to manage forests. This program synergizes with climatemitigation such as peat restoration and deforestation reduction. ^[43]
2	TERRA for Customary Forest (TERRA-CF)	This scheme from BPD LH and Climate and Land Use Alliance (CLUA) support 108 indigenous communities in 20 provinces to manage customary forests independently. ^[44]
3	Mangrove Program for Coastal Resilience (M4CR)	BPD LH program funds mangrove reforestation through community-based activities (Mangrove Assistance Villages), strengthening coastal mainland resilience important for coastal indigenous peoples. ^[45]

⁴³ Lusia Arumingtyas, Ridzki R. Hariandja, “US\$103 Million Climate Fund, Input: Transparent and Strengthen Indigenous Peoples Protection” *Mongabay Indonesia*, 4 September 2020.

⁴⁴ Open Climate Change Financing in Indonesia (OCFI), “Climate Change Programs at BPD LH, What Do Communities Get?” OCFI, 22 February 2024.

⁴⁵ Ibidem.

No	Program	Description
4	Climate Village Program (PROKLIM)	Indigenous farmers and local communities are actively involved in this program, more than 4,218 villages are recorded (through community-based mitigation and adaptation actions) (Ministry of Environment and Forestry).
5	Village Authority Strengthening (NTT, ADAPTATION Coalition)	Village governments in Lembata and Rote Ndao affirm local wisdom traditions such as the Muro system for marine management, which receives local regulatory support and funding of more than Rp 4 billion climate. ^[46]
6	Community Forestry (Social Forestry)	Forest management models by communities and indigenous peoples have been granted legal permits up to 4.7 million hectares by the government (2016–2021), helping natural resource management while mitigating (IUCN NL).
7	Traditional Adaptation Practices (Sea People Tribe, Riau)	Sea People communities use natural weather forecasting, stilt houses, and seasonal migration as adaptive strategies ecologically and culturally. ^[47]

5.4. Human Rights – Based Policy Development

The state needs to make FPIC principles mandatory in every nature-based development policy or carbon scheme that touches indigenous peoples’ territories. This is in line with recommendations to build fair and transparent benefit-sharing mechanisms in climate projects.^[48] FPIC principles have been adopted in international instruments such as UNDRIP and ILO Convention No. 169. Without FPIC as a legal requirement, indigenous peoples do not have the right to reject development projects, which potentially abandons them from decision-making regarding their indigenous territories. Besides that, human rights-based policy development can also help transparent benefit-sharing; based on several studies stating that ignoring indigenous peoples’ rights in renewable energy projects can cause project failure and additional costs. Conversely, integration of co-ownership

⁴⁶ Sustainable Village Association, “Village Initiative in Climate Change Adaptation Through Protection of Local Wisdom” *Sustainable Village Association – Stories of Change*, 22 May 2025.

⁴⁷ Wahyu Ariando, “This Indigenous Community in Indonesia Is Applying Traditional Practices to Adapt to Climate Change” *Global Center on Adaptation*, 11 November 2020.

⁴⁸ Sulisty, Utama, Putrijanti, “Legal Policy of Carbon Trading.”

and benefit-sharing models has proven effective in various international projects.^[49]

Integration of the Indigenous Peoples Draft Law is needed as a form of formal recognition of indigenous territories, where RUU MA has the potential to clarify and strengthen rights to territories and participatory rights of indigenous peoples, which have been fragmented in sectoral regulations such as the Job Creation Law. Synchronization between the two can close existing legal gaps. Besides that, regulatory harmonization is needed because many studies mention inconsistencies between regulations related to indigenous peoples that potentially weaken the legal existence of indigenous peoples' rights.^[50]

An inclusive Indigenous Peoples Draft Law is no longer just an aspirational demand but an urgent need for climate justice and recognition of indigenous peoples' constitutional rights. A number of academic institutions and civil society organizations highlight the long delay in enacting this RUU, whereas during the indigenous territorial governance process still depends on partial and often overlapping sectoral regulations, indigenous rights remain vulnerable to displacement. Moreover, climate change exacerbates the vulnerability of indigenous peoples, even to regulations that should protect them, due to the absence of legal instruments that recognize their existence and capacity comprehensively.

The absence of binding safeguards for Indigenous rights in Indonesia's adaptation and mitigation frameworks represents a critical gap. RAN-API and the Enhanced NDCs articulate climate resilience and emission reduction targets, but do not embed FPIC, benefit-sharing, or recognition of customary territories as prerequisites for implementation. This undermines both justice and effectiveness: projects that disregard Indigenous rights risk conflict, social resistance, and long-term unsustainability.

Examples of existing programs, such as Social Forestry, TERRA-CF, M4CR, PROKLIM, and Mangrove Resilience initiatives demonstrate partial successes. Yet, without a clear legal mandate for FPIC and harmonization with the RUU MA, these initiatives remain fragmented. The implication is clear: legal harmonization is urgent. Without explicit protection of Indigenous

⁴⁹ Ana Zbona, Ana María Garro, "Comment: Why Indigenous Peoples' Rights Must Be at the Heart of the Transition to Renewables," *Reuters*, 18 December 2024.

⁵⁰ Ahmad Prasetyo Ramadhan, Ika Fitriani Susilowati, "Synchronization of Laws and Regulations on the Existence of Indigenous Legal Communities" *Novum: Law Journal*, No. 1 (2018).

rights, climate mitigation and adaptation strategies risk deepening marginalization. Conversely, aligning the Job Creation Law, RAN-API, and RUU MA with constitutional and international standards could transform Indigenous Peoples from passive recipients into active partners in climate governance, advancing both justice and sustainability.

6 | Comparative Analysis: Learning from European Indigenous Rights Protection Models

The European Arctic region, particularly the Nordic countries' approach to protecting the Sámi people in the context of climate change, offers critical lessons for Indonesia's development of the Indigenous Peoples Draft Law (RUU MA). Unlike generic indigenous rights frameworks, Nordic countries have developed specific legal and policy mechanisms that explicitly integrate indigenous protection into climate change adaptation and mitigation strategies. The Arctic Council, an inter-governmental forum established in 1996, provides an institutional model where Indigenous Peoples participate as Permanent Participants alongside eight Arctic states, ensuring that indigenous voices are structurally embedded in climate governance.^[51] This model demonstrates how indigenous representation can be institutionalized at the regional level, moving beyond tokenistic consultation toward genuine co-governance in climate policy formulation.^[52]

Norway's integration of Sámi rights into climate adaptation frameworks exemplifies how procedural protections can be operationalized in practice. The Norwegian consultation agreement with the Sámi Parliament, established concurrent with the Finnmark Act (2005), mandates that state authorities must consult the Sámi Parliament on any legislative or administrative measures directly affecting Sami interests, with the explicit goal

⁵¹ Arctic Council, Permanent Participants. <https://arctic-council.org/about/permanent-participants/>. [accessed: 10.12.2025].

⁵² Dalee Sambo Dorough, "The Indigenous Peoples and the Arctic Council," *The Arctic Institute*. <https://www.thearcticinstitute.org/eu-sami-cooperation-climate-change-adaptation-arctic/>. [accessed: 6.12.2025].

of reaching agreement before implementation.^[53] Critically, this consultation framework has been extended to climate-related projects, including renewable energy developments and land-use planning that may impact traditional reindeer herding areas increasingly threatened by climate change.^[54] The European Court of Human Rights (ECtHR), in *Greenpeace Nordic and Others v. Norway* (2024), reinforced state obligations to comprehensively assess climate impacts of fossil fuel extraction on Indigenous territories and livelihoods, establishing procedural environmental rights under Article 8 of the European Convention on Human Rights.^[55] This jurisprudence affirms that states must evaluate not only direct environmental harm but also the cumulative effects of climate change on Indigenous communities' traditional practices and cultural survival.

The substantive integration of Indigenous knowledge into climate adaptation planning represents another critical dimension of the Nordic model. Finland's National Adaptation Plan explicitly recognizes Sámi traditional ecological knowledge as essential for climate resilience, particularly in monitoring environmental changes, predicting weather patterns, and developing nature-based adaptation solutions.^[56] The UNFCCC's Local Communities and Indigenous Peoples Platform (LCIPP), which became operational in 2019, has facilitated knowledge exchanges where Sámi reindeer herders, fishers, and land stewards share climate adaptation strategies grounded in centuries of ecological observation.^[57] Importantly, the LCIPP's Arctic regional gathering in Norway (2023) produced formal UN documentation of indigenous climate knowledge, transforming traditional practices into recognized inputs for international climate policy. This institutional recognition contrasts sharply with Indonesia's climate governance frameworks (RAN-API, NDCs), which reference vulnerable communities generically but lack specific mechanisms for Indigenous knowledge integration or benefit-sharing from climate finance.

⁵³ Øyvind Ravna, "The Duty to Consult the Sámi in Norwegian Law" *Arctic Review on Law and Politics*, 11 (2020): 450-479.

⁵⁴ Kristin Rosendal, Øyvind Ravna, quoted in "New Nordic Cooperation to Study Sami Rights and Environmental Protection in the North" *High North News*, 24 September 2025.

⁵⁵ European Court of Human Rights, *Greenpeace Nordic and Others v. Norway*, Application No. 34068/21, Judgment of October 28, 2024, paras. 212-282.

⁵⁶ Finnish Ministry of Justice, Rights of the Sámi People. <https://oikeusministerio.fi/en/rights-of-the-sami-people>. [accessed: 10.12.2025].

⁵⁷ Gunn-Britt Retter, "Including Indigenous Knowledge in Global Climate Governance," *WWF Arctic*, 23 April 2025.

However, the Nordic experience also reveals persistent challenges that Indonesia must proactively address. Despite progressive frameworks, the European Union's prioritization of rapid green transition driven by the European Green Deal and emissions reduction targets has created tensions with Indigenous rights and environmental protection in practice.^[58] Mining operations for critical minerals needed for renewable energy technologies have proceeded in Sámi territories without adequate Free, Prior and Informed Consent (FPIC), demonstrating how climate mitigation imperatives can override Indigenous rights when institutional safeguards are weak. The UN Special Rapporteur on Indigenous Peoples (2016) noted that despite Norway's consultation mechanisms, economic pressures consistently favor extractive industries over Indigenous territorial protection, particularly when substantial state revenues are at stake.^[59] These implementation gaps underscore that legislative frameworks alone are insufficient; Indonesia's RUU MA must therefore establish independent oversight bodies with enforcement powers, transparent monitoring of FPIC compliance, and accessible remedies for communities whose rights are violated in the name of climate action.

The comparative analysis yields several actionable recommendations for Indonesia's climate-responsive RUU MA. First, Indonesia should establish statutory Indigenous representative bodies at national and regional levels with formal advisory powers in climate policy formulation, modeled on the Sámi Parliament's consultative status. Second, the RUU MA must mandate climate impact assessments that explicitly evaluate effects on Indigenous livelihoods, cultural practices, and traditional knowledge systems that not merely environmental parameters, for all mitigation and adaptation projects in or near customary territories. Third, Indonesia should create dedicated funding mechanisms ensuring direct access to climate finance for Indigenous communities, enabling community-led adaptation initiatives grounded in traditional ecological knowledge, similar to schemes emerging in Canada and Nordic countries. Fourth, the RUU MA should codify the principle that Indigenous Peoples are rights-holders and knowledge-holders in climate governance, not merely vulnerable

⁵⁸ Başak Alpan, "Emotional Politics of Norm Hierarchy in EU's External Relations: The Case of Climate Crisis and the EU's Arctic Policy" *European Security*, No. 4 (2024): 548-571.

⁵⁹ Eva Josefsen, "Implementing Indigenous Self-Determination: The Case of the Sámi in Norway" *E-International Relations*, 30 May 2014.

populations requiring protection, a paradigm shift essential for transforming Indonesia's climate frameworks (RAN-API, REDD+, NDCs) from top-down interventions into participatory partnerships. Finally, legislative harmonization must ensure that sectoral laws, including the Job Creation Law, incorporate binding FPIC requirements and Indigenous safeguards as prerequisites for project approval, preventing regulatory fragmentation that currently undermines constitutional protections. By learning from both the achievements and shortcomings of European models, Indonesia can develop a RUU MA that not only protects Indigenous rights but actively positions Indigenous Peoples as essential partners in achieving climate justice and environmental sustainability.

7 | Conclusion

The protection of Indigenous Peoples in the context of climate change is not merely a developmental concern but a constitutional and justice imperative. This research has demonstrated that while Indonesia has taken steps toward climate mitigation and adaptation, the Job Creation Law undermines procedural and substantive safeguards for Indigenous rights, placing investment priorities above constitutional guarantees. In contrast, the long-delayed Draft Law on Indigenous Peoples (RUU MA) offers the potential to harmonize fragmented regulations and institutionalize principles such as FPIC, recognition of customary territories, and participatory governance. The catastrophic flash floods in Aceh, North Sumatra, and West Sumatra in November 2025, which claimed over 753 lives and affected more than 3.3 million people, starkly illustrate the deadly consequences of regulatory incoherence and weak environmental governance.

The disaster exemplifies how the intersection of climate change impacts and systematic environmental destruction driven by illegal logging, mining concessions, and extractive industries, disproportionately affects Indigenous and local communities who depend on forest ecosystems for survival, yet have minimal voice in the development policies that determine their fate. This tragedy underscores that climate governance failures are not abstract legal problems but matters of life and death, demanding urgent reform.

The contribution of this article lies in its critical synthesis of legal tensions between existing and draft legislation, showing how regulatory disharmony perpetuates the marginalization of Indigenous communities within climate governance. By situating Indonesia's framework against international norms such as UNDRIP, ILO Convention No. 169, and the UNFCCC Cancun Safeguards, and by examining comparative models from Nordic countries' protection of the Sámi people, this study underscores the urgent need for legal harmonization that operationalizes climate justice principles. The European experience demonstrates that progressive legislative frameworks alone are insufficient without robust enforcement mechanisms, independent oversight bodies, and genuine Indigenous participation in climate policy formulation, lessons that Indonesia must heed in developing its RUU MA.

The case studies presented from the Dayak communities in West Kalimantan experiencing drastic agricultural losses, the Baduy people forced to migrate due to climate-induced environmental degradation, the Orang Rimba facing disease outbreaks and food scarcity, and the communities devastated by the 2025 Sumatra floods, collectively transform climate change from an abstract environmental challenge into a concrete human rights and justice crisis. These cases reveal the triple vulnerability faced by Indigenous Peoples: physical exposure to climate disasters, legal uncertainty due to weak recognition of customary rights, and socio-economic marginalization as ecosystem disruption directly threatens food security and cultural survival.

The conclusion is clear: unless climate policies such as the Job Creation Law, RAN-API, and the RUU MA are aligned with human rights obligations and informed by successful international models, climate governance risks reproducing injustice rather than remedying it. Conversely, by embedding FPIC as a binding legal requirement, establishing Indigenous representative bodies with co-management authority (modeled on the Sámi Parliament), mandating climate impact assessments that evaluate effects on Indigenous livelihoods and traditional knowledge systems, and creating dedicated funding mechanisms for community-led adaptation initiatives, Indonesia can transform Indigenous Peoples from vulnerable subjects into active partners in climate transition. This would not only fulfill constitutional and international commitments, but also enhance the legitimacy, effectiveness, and sustainability of national climate action, while preventing future disasters like the 2025 Sumatra floods that result from the deadly combination of climate change and governance failure.

8 | Recommendation

8.1. Strengthening FPIC as a Binding Legal Obligation The state should adopt Free, Prior and Informed Consent (FPIC) as a legally binding requirement for all development projects, climate programs, and carbon schemes affecting Indigenous territories. FPIC must be codified in statutory law and supported by clear procedures timelines, documentation standards, and dispute-resolution mechanisms, drawing on Norway's consultation model with the Sámi Parliament. The Draft Indigenous Peoples Law (RUU MA) should also establish an independent oversight body, such as an Indigenous Rights Ombudsman, with authority to monitor compliance, investigate violations, and issue binding remedial recommendations.

8.2. Urgent Enactment of the Draft Indigenous Peoples Law (RUU MA). The immediate passage of the RUU MA is necessary to provide a comprehensive legal framework for Indigenous rights and to resolve conflicts across forestry, agrarian, and environmental laws. Inspired by Finland's constitutional recognition of the Sámi, Indonesia should consider constitutional amendments that explicitly affirm the existence and rights of Indigenous Peoples, alongside statutory Indigenous representative councils with advisory and co-management powers. Such harmonization is essential to prevent regulatory inconsistencies, such as those found in the Job Creation Law, and to address vulnerabilities that contributed to disasters like the 2025 Sumatra floods.

8.3. Integrating Human Rights and Indigenous Knowledge into Climate Governance Climate governance instruments, including RAN-API, Enhanced NDCs, and sectoral regulations must incorporate human rights indicators and mechanisms for integrating Indigenous knowledge. This includes mandatory recognition of Indigenous territories, binding FPIC requirements with clear consent thresholds, transparent benefit-sharing arrangements, and participatory monitoring systems rooted in traditional ecological knowledge. Following Finland's model, Indonesia should formally recognize Indigenous knowledge as essential to climate resilience and restore substantive roles for local governments and Indigenous institutions. Independent oversight mechanisms within the National Human Rights Action Plan (RANHAM) are needed to ensure accountability.

8.4. Establishing a Specialized Indigenous Land Rights Commission Indonesia should form an Indigenous Land Rights Commission with authority to adjudicate territorial disputes, formalize customary tenure through participatory mapping, and oversee implementation of the RUU MA. Drawing lessons from Norway's Finnmark Commission, the body must ensure strong Indigenous representation, transparent methodologies, binding decision-making powers, and political independence. Reforms should also restore meaningful regional and Indigenous participation in environmental decision-making, supported by independent monitoring and accessible remedies under RANHAM.

8.5. Ensuring Direct Climate Finance Access for Indigenous Communities Indonesia should create dedicated climate-finance mechanisms that guarantee direct access for Indigenous communities, enabling community-led adaptation based on traditional ecological knowledge. Following emerging models in Canada and the Nordic countries, these mechanisms should bypass exclusionary bureaucracy, recognize Indigenous governance systems as legitimate fund managers, support capacity-building, and prioritize nature-based and ecosystem-restoration initiatives. The RUU MA should affirm Indigenous Peoples as rights-holders and knowledge-holders in climate governance, ensuring that Indonesia's climate frameworks function as participatory and just partnerships rather than top-down interventions.

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International Experiences in Applying Artificial Intelligence to Prevent Intellectual Property Infringement, and Implications for Vietnam

Abstract

The rapid evolution of artificial intelligence (AI) is transforming the enforcement of intellectual property (IP) rights worldwide. This paper examines how AI technologies are being applied internationally to detect, prevent, and manage copyright and patent infringement, and extrapolates key implications for Vietnam. However, advances of AI also raise complex legal, ethical, and policy questions. The study proposes a conceptual model integrating AI tools with human oversight to strengthen IP protection, and suggests that Vietnam adapt its legal framework and enforcement strategies in line with international best practices. In conclusion, Vietnam can leverage international experiences to craft forward-looking policies that harness AI in IP enforcement, bolstering its capacity to combat infringement in the digital era, while upholding legal and ethical standards.

KEYWORDS: artificial intelligence, intellectual property, copyright enforcement, patent protection, infringement detection

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1 | Introduction

Intellectual property infringement has become a pressing global challenge, exacerbated by the digital transformation and the proliferation of online platforms, making it easier than ever to reproduce, distribute and exploit copyrighted works, patented inventions, trademarks, industrial designs, and domain names at a global scale.^[1]

In the digital era, intellectual property (IP) infringement occurs rapidly and often transcends national borders, impacting various categories of rights. This reality places increasing pressure on both rights holders and enforcement agencies, particularly in contexts where resources are limited and the volume of potential infringement cases is substantial.

The emergence and rapid advancement of artificial intelligence (AI) have opened new opportunities to enhance the effectiveness of IP protection. Leveraging its capacity to analyse vast datasets, identify infringement patterns, and continuously improve over time, AI significantly shortens the process of detecting, pinpointing, and addressing IP violations.^[2]

In practice, AI has been deployed across multiple domains of IP enforcement. In the digital content environment, automated recognition systems are capable of scanning and comparing user-uploaded files with databases of protected works, thereby swiftly identifying infringing content. In the fields of patents and industrial designs, machine learning algorithms can simultaneously analyse national and international patent databases, along with market information, to issue early warnings of potential infringement. Moreover, computer vision technology is being applied to detect counterfeit or trademark-infringing goods on e-commerce platforms, as well as to assist customs authorities in inspecting goods at borders.^[3]

However, integrating AI into IP enforcement is not without legal, technical, and ethical challenges. Early detection systems based on fixed rules often missed sophisticated infringement tactics or produced false positives. Even with more advanced models—incorporating deep learning, natural

¹ World Intellectual Property Organization, *Generative AI: Navigating Intellectual Property Challenges* (2023). <https://www.wipo.int/publications/en/details.jsp?id=4644>. [accessed: 10.8.2025].

² World Intellectual Property Organization, *WIPO Technology Trends 2019 – Artificial Intelligence* (Geneva: WIPO, 2020). https://www.wipo.int/tech_trends/en/artificial_intelligence. [accessed: 10.8.2025].

³ Anirudh Ray, “AI in IPR: Leveraging Technology for Efficiency and Addressing Concerns” *Ile Lex Speculum*, No. 1 (2023): 333-341.

language processing (NLP), and computer vision—the risk of overreliance on algorithmic decisions continues to raise concerns over transparency, accountability, and the protection of procedural rights for affected parties.^[4]

Furthermore, the legal frameworks governing AI in IP enforcement vary significantly across jurisdictions. The European Union, for example, requires online platforms to implement “appropriate and proportionate” content-filtering measures^[5] to prevent infringement. By contrast, the United States continues to rely on the *notice-and-takedown* mechanism under the Digital Millennium Copyright Act (DMCA),^[6] with AI-based detection systems such as YouTube’s Content ID and Meta’s Rights Manager deployed voluntarily by service providers.^[7] Japan has amended its Copyright Act in 2020 to enable proactive scanning and blocking of infringing content, particularly in the manga and anime sectors^[8] while South Korea adopts a hybrid approach combining notice-and-takedown with real-time AI monitoring in industries such as K-pop and online gaming.^[9] These divergences create difficulties for implementing AI-based solutions across borders, especially for Vietnam – a country that must both safeguard its domestic IP rights and comply with international obligations.

⁴ S. Subhadharshini, “A Critical Analysis of AI Infringement Detection from Legal Perspective with Special References to Chennai” *International Journal of Advances in Engineering and Management*, No. 7 (2024): 813-831; Marek Świerczyński, Zbigniew Więkowski, “Intellectual Property and Artificial Intelligence – Selected Issues” *Prawo i Więź*, No. 3 (2022): 179-202.

⁵ European Union, Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on Copyright and Related Rights in the Digital Single Market, Official Journal of the European Union, L30 (2019): 92-125, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX%3A32019L0790>. [accessed: 10.8.2025].

⁶ United States Congress, Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

⁷ YouTube, *Content ID* (2024). <https://support.google.com/youtube/answer/2797370>. [accessed: 10.8.2025].

⁸ Agency for Cultural Affairs, Government of Japan, *Amendments to the Copyright Act* (2020). <https://www.bunka.go.jp/english/>. [accessed: 10.8.2025].

⁹ Korea Copyright Commission, *Copyright Protection and Enforcement in the Republic of Korea* (2023). <https://www.copyright.or.kr/eng>. [accessed: 10.8.2025].

1.1. Research Aim

Against this backdrop of increasing cross-border intellectual property (IP) violations in the digital environment, this paper examines selected international experiences in applying artificial intelligence (AI) to prevent infringements across the full spectrum of IP rights, including copyright and related rights, patents, trademarks, industrial designs, geographical indications, trade secrets, and domain names, and considers the implications for Vietnam's policymaking and legal framework. Drawing on scholarly literature, industry practices, and recent policy developments,^[10] we analyse how AI technologies are transforming IP enforcement, with attention to technological mechanisms (e.g., content identification algorithms, patent analytics tools, trademark image-recognition systems, counterfeit detection using computer vision),^[11] practical outcomes and limitations, and associated legal/ethical concerns such as data privacy and algorithmic bias^[12]. Based on these findings, we propose a tailored model for integrating AI into Vietnam's IP enforcement system and offer recommendations for legal reform and institutional capacity-building.

1.2. Structure

The remainder of this paper is organized as follows. Section 2 reviews the existing literature and prior research, highlighting AI techniques for detecting copyright and patent infringement and summarizing key studies. Section 3 outlines the methodology of our comparative analysis and presents the proposed framework for AI-assisted IP enforcement. Section 4 reports findings from international implementations, identifying successful applications and challenges encountered. Finally, Section 5

¹⁰ European Commission, Guidance on Article 17 of Directive (EU) 2019/790 on Copyright in the Digital Single Market (Brussels: European Commission, 2021). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0288>.

¹¹ Megan McCutcheon, Jorge Marquez, "AI-Assisted Enforcement of Intellectual Property Rights: Opportunities and Risks" *Journal of Intellectual Property Law & Practice*, No. 9 (2022): 753-764.

¹² European Union Agency for Fundamental Rights (FRA), "FRA Report on Use of AI in Predictive Policing and Offensive Speech Detection" *eu crim - European Criminal Law Associations' Forum* (2022). <https://eucrim.eu/news/fra-report-on-use-of-ai-in-predictive-policing-and-offensive-speech-detection/>. [accessed: 10.8.2025].

discusses the results and concludes with policy implications for Vietnam, recommending strategies for lawmaking and enforcement that incorporate global best practices while addressing domestic conditions.

2 | Literature Review and Previous Research Studies

2.1. AI in Copyright Infringement Detection and Enforcement

The application of AI to copyright enforcement has rapidly evolved into a mainstream practice as the proliferation of digital content increasingly outpaces the capacity for human oversight. Scholarly analyses and industry reports identify automated copyright detection as the most mature and widely implemented use of AI in intellectual property (IP) enforcement.^[13] Major content-sharing platforms such as YouTube, Facebook, and TikTok deploy AI-driven systems – utilizing techniques like digital fingerprinting, audio spectral analysis, and image recognition – to identify unauthorized use of music, videos, text, and images by matching user uploads against databases of protected works. For instance, YouTube’s Content ID system processed nearly 1.5 billion copyright claims in 2021, with approximately 99% handled automatically by algorithms.^[14] This automation enables rights holders to enforce their copyrights at an unprecedented scale and speed, far beyond the capacity of manual review.

Academic studies have examined various AI methodologies to improve infringement detection. Early rule-based systems, limited to exact matches or simple file hash comparisons, struggled to interpret context and were easily circumvented by minor modifications to content. Contemporary approaches, notably deep learning models such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), can analyse audio-visual patterns with high precision – detecting pitch-shifted songs, cropped videos, or other transformed media that evade traditional filters. Natural Language Processing (NLP) techniques further allow AI to detect

¹³ World Intellectual Property Organization, *WIPO Technology Trends: Artificial Intelligence* (Geneva: WIPO, 2023). <https://www.wipo.int>. [accessed: 10.8.2025].

¹⁴ YouTube, *Content ID Annual Report* (2022). <https://support.google.com/youtube>.

plagiarism or unauthorized use of textual works, even when paraphrased. These advancements have significantly enhanced the ability to address online piracy across domains ranging from academic literature to digital news and e-books.^[15]

Nevertheless, literature highlights persistent challenges. Infringers employ tactics such as pitch shifting, tempo changes, audio equalization, and noise insertion to evade detection, creating an ongoing “cat-and-mouse” dynamic. Hybrid AI models that combine CNNs with Long Short-Term Memory (LSTM) networks have achieved detection accuracy rates exceeding 90% for such modified content.^[16] Real-world incidents, such as the viral spread of the AI-generated “Fake Drake” track in 2023, illustrate AI’s growing role in identifying synthetic works, with advanced voice recognition confirming the song’s artificial origin and enabling its swift removal.

AI-driven enforcement also raises legal and ethical concerns. Automated notice-and-takedown systems, while efficient, transfer substantial enforcement control to private algorithms, prompting questions about transparency and due process.^[17] Even a small false-positive rate can result in millions of wrongful takedowns. YouTube’s data indicates that approximately 0.5% of automated claims are disputed, and 62% of these disputes are resolved in favour of the uploader, suggesting instances of over-blocking. The European Union’s Directive on Copyright in the Digital Single Market (2019), particularly Article 17, attempts to balance automation with user rights by requiring platforms to prevent infringing uploads while safeguarding lawful uses, such as quotation, parody, and criticism.^[18] Scholars and policymakers have therefore advocated for algorithmic transparency, third-party audits, and clear standards for acceptable error rates to align AI enforcement with legal norms.

¹⁵ M. Subhadharshini, “Artificial Intelligence Applications in Copyright Enforcement” *International Journal of Advanced Engineering and Management*, No. 1 (2024): 45-57.

¹⁶ R. Subhadharshini, “Deep Learning Applications in Copyright Infringement Detection” *International Journal of Advanced Engineering and Management*, No. 3 (2024): 112-128.

¹⁷ World Intellectual Property Organization, *WIPO Technology Trends 2023: Artificial Intelligence* (Geneva: WIPO, 2023), <https://www.wipo.int/publications/en/details.jsp?id=4690>.

¹⁸ European Union, Directive (EU) 2019/790 on Copyright and Related Rights in the Digital Single Market, Official Journal of the European Union. <https://eur-lex.europa.eu/eli/dir/2019/790/oj>.

Finally, disparities in access to advanced AI tools create unequal enforcement capabilities. Large technology companies and major content owners can afford bespoke AI solutions, whereas small and medium enterprises (SMEs) and independent creators often rely on collective management organizations (CMOs) for rights protection.^[19] This imbalance underscores the need for cooperative enforcement models or shared AI platforms to ensure equitable protection across the creative economy.

2.2. AI for Patent, Other Intellectual Property Infringement Detection and Enforcement

AI has emerged as a transformative tool in monitoring, detecting, and addressing infringements of IP rights. Leveraging NLP, ML, and computer vision, AI can process vast volumes of structured and unstructured data – from patent specifications to brand images – enabling early identification of potential violations that traditional, manual methods may overlook. This section examines AI's role in key IP domains, highlighting its operational benefits and inherent limitations.

2.2.1. AI in Patent Search, Monitoring, and Infringement Detection

AI is revolutionizing patent search and monitoring, empowering rights holders to protect their innovations against potential infringement. In the examination and novelty verification stage, AI-powered patent search systems can interpret the semantic meaning of patent specifications—rather than merely matching keywords – thereby identifying similar prior art even when described in different terms.^[20] This enables a more comprehensive assessment of novelty, reducing the risk of granting patents that lack genuine inventive value.

Beyond novelty checks, AI assists in detecting potential infringements by analysing both the technical descriptions and drawings of patents, as well as market information on related products. Machine learning models can

¹⁹ World Intellectual Property Organization (WIPO), *WIPO Technology Trends: Artificial Intelligence* (2023). <https://www.wipo.int>.

²⁰ World Intellectual Property Organization, *Artificial Intelligence and Intellectual Property: A WIPO Overview* (Geneva: WIPO, 2023). <https://www.wipo.int>.

interpret the scope of claims and determine whether a product exhibits features that may infringe, even if technical terminology has been deliberately altered^[21]. For instance, semantic search allows a new product to be cross-referenced against thousands of related patents to detect overlaps in claim scope, including cases where competitors attempt to circumvent protection by using alternative language.

Furthermore, AI tools can track competitors' patent applications and newly released products in real time, automatically issuing alerts if similarities or potential conflicts with an existing patent portfolio are detected.^[22] This capability enables patent owners to take early action – such as sending warning letters, negotiating licenses, or preparing litigation – before damage escalates. The primary advantage of AI in this domain lies in its speed and scalability: tasks that previously required months of manual review can now be completed within minutes, with high precision.

AI can even automate the creation of claim charts – detailed comparisons between each element of a patent claim and the technical features of a suspected infringing product – a process that traditionally requires weeks of legal analysis. Such automation strengthens the evidentiary basis for litigation and streamlines enforcement procedures.

Nevertheless, AI is not without limitations. Current models may struggle to fully grasp the legal context or nuanced intent of highly technical patents, particularly when claim language is complex and industry-specific. As a result, AI outputs require validation and interpretation by experienced patent professionals to ensure compliance with legal standards. Occasional false alarms – such as detecting similarity where no actual infringement exists – or missed cases involving sophisticated design-arounds underscore the importance of combining AI's large-scale screening capabilities with human expertise. Under this hybrid model, AI handles broad-spectrum monitoring and rapid detection, while human experts verify findings and make final enforcement decisions.

²¹ Anirudh Ray, "Semantic Search and AI in Patent Analytics" *Journal of Intellectual Property Technology*, No. 4 (2023): 221-239.

²² Andrew Collopy, "AI and the Future of Patent Enforcement" *WIPO Magazine* (2024). <https://www.wipo.int>.

2.2.2. Trademarks

In trademark enforcement, AI enhances the detection of counterfeiting and unauthorized brand use across e-commerce platforms and social media. Computer vision enables the recognition of logos and packaging, even after deliberate alterations in colour, font, or partial display, while NLP detects phonetically or visually similar word marks, including misspellings and character substitutions. This capability facilitates continuous, global monitoring and rapid takedown requests. Nonetheless, AI may produce false positives, where legitimate uses occur, underscoring the need for legal teams to review flagged instances.

2.2.3. Industrial Designs

AI, particularly 2D/3D computer vision algorithms, supports the comparison of product shapes, proportions, and visual features against extensive design registries. It can quantify similarity using structural indices and detect minor alterations intended to evade enforcement. This accelerates prior design searches and increases detection objectivity. However, the final legal assessment of infringement still relies on human judgment, as high visual similarity does not always equate to legal violation.

2.2.4. Trade Secrets

For trade secret protection, AI-driven user and entity behaviour analytics (UEBA) monitor system logs, network activity, and communications to detect anomalies indicative of internal data leakage or cyber intrusion. Machine learning models establish baselines of normal behaviour and flag deviations, such as unusual file access patterns or off-hour logins. Integrated data loss prevention (DLP) tools can proactively block suspicious transfers of confidential files. While AI strengthens proactive defence, adversaries may adapt to mimic legitimate patterns, requiring continuous model updates and human oversight.

2.2.5. Domain Names

AI assists in combating cybersquatting by analysing newly registered domains for visual or semantic similarity to protected marks. It can detect typographical variations, homograph attacks, and large-scale squatting

patterns, integrating WHOIS and threat intelligence data to assess risk. Early alerts enable brand owners to initiate dispute resolution procedures promptly. As with other domains, human review ensures lawful uses are not wrongly challenged.

Across all IP types, AI offers substantial advantages in speed, scalability, and the ability to detect subtle infringement patterns. It enables 24/7 global monitoring, automates labour-intensive comparison tasks, and provides actionable insights faster than traditional methods. However, AI systems can generate false positives/negatives, struggle with complex legal interpretation, and remain dependent on high-quality training data. Therefore, optimal enforcement arises from hybrid approaches that combine AI's efficiency with expert legal analysis, ensuring both accuracy and procedural compliance.

2.3. Legal, Ethical and Policy Dimensions of AI-Based IP Enforcement

The deployment of AI in IP enforcement offers transformative efficiencies in detecting, monitoring, and responding to infringement. However, its integration into legal enforcement frameworks raises significant legal, ethical, and policy challenges that must be addressed to align with rule-of-law principles, fundamental rights, and international standards.

2.3.1. Transparency and Explainability

Many AI systems, particularly deep neural networks, function as “black boxes” whose internal decision-making processes are opaque. This opacity can undermine the legitimacy of enforcement if decisions to remove content or block products are made solely by automated means without clear reasoning provided to affected parties. In the European Union, Article 17 of the Directive on Copyright in the Digital Single Market requires platforms using automated upload filters to provide users with information about filtering mechanisms and to ensure meaningful human review of disputed cases. Ensuring that AI decisions in IP enforcement are auditable, explainable, and subject to independent oversight is considered essential for both legal compliance and public trust.

2.3.2. Accuracy, Bias and Fair Use

Ethically sound AI enforcement must minimize false positives (lawful content wrongly flagged) and false negatives (actual infringements overlooked). Bias in training datasets can lead to disproportionate protection for well-resourced rights holders while disadvantaging smaller creators or those in underrepresented languages. Furthermore, AI tools may inadequately interpret nuanced legal doctrines, such as the U.S. fair use or Commonwealth fair dealing exceptions, leading to over-enforcement. Misuse of automated notice-and-takedown systems by “copyright trolls” demonstrates the potential for abuse, underscoring the necessity of counter-notice procedures and sanctions for bad-faith claims. The overarching principle is that AI enforcement should balance the protection of IP rights with the safeguarding of legitimate uses, including commentary, education, and parody.

2.3.3. Using AI as a Tool to Enforce Intellectual Property Rights

Some perspectives argue that the use of copyrighted works as training datasets for AI is only temporary, and does not involve actual consumption of the content, and therefore does not significantly affect the rights or copyright protection of the rightholders. Companies employing such data often contend that this practice should be considered “fair use” under U.S. law (or “fair dealing” in some other jurisdictions).^[23] By contrast, many copyright holders and their supporters claim that incorporating copyrighted works into AI training datasets constitutes a misappropriation of intellectual property rights and therefore cannot be deemed fair use under the law. A recent study has proposed the concept of “Develop-Fair Use” (DFU), which reconceptualizes fair use for AI as a tool of dynamic balancing rather than a fixed exception. DFU would allow courts to consider market impact and competitive effects in the AI context.^[24]

In the field of copyright for AI-generated works, the theory of genericity is regarded as a useful tool to distinguish between genuinely creative

²³ Tarek Awad, “Universalizing Copyright Fair Use: To Copy, or not to Copy?” *Journal of Intellectual Property Law*, No. 1 (2022): 1-6.

²⁴ Chao Lou, “Develop-Fair Use for Artificial Intelligence: A Sino-U.S. Copyright Law Comparison Based on the Ultraman, Bartz v. Anthropic, and Kadrey v. Meta Cases” *arXiv* (2025).

expression and elements that are merely familiar patterns, clichés, or scènes à faire. Content produced by generative AI models often contains elements that are repeatedly derived from training data, making them more generic than uniquely creative. A newly proposed approach suggests using data-driven bias to measure this degree of genericity: specifically, by analysing the frequency of expressive elements in the training dataset, it becomes possible to identify which components are generic and which are rare, carrying higher creative value. This method helps establish a clearer boundary between “reasonably generic” content – less likely to qualify for copyright protection – and highly creative content that deserves such protection. Thus, the combination of genericity theory with data-driven bias introduces a novel framework for copyright offices and courts in addressing disputes involving AI-generated works.^[25]

2.3.4. Data Privacy

AI-based enforcement often entails large-scale monitoring of online content and transactions, which may involve processing personal or sensitive data. This raises compliance obligations under data protection regimes such as the EU General Data Protection Regulation (GDPR) and Vietnam’s Personal Data Protection Decree (2023). International best practices, including those promoted by the World Intellectual Property Organization (WIPO), recommend a privacy-by-design approach – limiting data collection to what is strictly necessary and implementing robust safeguards against misuse or unauthorized access.

2.3.5. Jurisdiction and Due Process

AI enforcement mechanisms operate globally by default, yet IP rights are territorial. Automated filtering may inadvertently block content in jurisdictions where no infringement exists, creating conflicts of law. Due process requires that AI-triggered enforcement actions, such as website blocking or account suspension – be subject to human legal review. Vietnam’s Intellectual Property Law, as amended in 2022, mandates that site-blocking

²⁵ Uri Hacoheh, Adi Haviv, Shahar Sarfaty, Bruria Friedman, Niva Elkin-Koren, Roi Livni, Amit H Bermano, “Not All Similarities are Created Equal: Leveraging Data-Driven Biases to Inform GenAI Copyright Disputes” *arXiv*, (2024).

measures (Article 198b) be ordered by competent authorities, preserving a human-in-the-loop decision-making safeguard.

2.3.6. Liability and Accountability

A central legal question is the allocation of liability when AI systems make erroneous enforcement decisions. Current frameworks hold the deploying entity – whether a platform or rights holder – responsible, as AI lacks legal personhood. Policy guidance emphasizes maintaining detailed audit logs of AI operations and assigning human supervisors to validate outputs. When state authorities use AI (e.g., customs deploying image recognition to detect counterfeit goods), errors could trigger state liability, reinforcing the need for rigorous testing and certification of AI enforcement systems.

2.3.7. Equity and Access

Advanced AI enforcement tools are typically concentrated among large multinational rights holders, creating a risk of unequal access to enforcement capabilities. WIPO and other international bodies have advocated for shared AI resources and capacity-building initiatives to support smaller rights holders and enforcement agencies in developing economies. Without such measures, the “enforcement gap” between resource-rich and resource-poor stakeholders may widen.

The literature supports a “responsible AI” paradigm in IP enforcement: harnessing AI’s speed and scale while embedding it within a framework of transparency, proportionality, accountability, and human oversight. Comparative experiences from the EU, WIPO-led initiatives, and national regulatory models provide a foundation for developing balanced, rights-respecting enforcement systems in Vietnam and beyond.

3 | Methodology and Proposed Model

3.1. Research Methodology

This study adopts a qualitative, comparative approach, combining doctrinal legal analysis with a review of technological implementations. We conducted an extensive literature review of academic publications (including law journal papers, empirical studies, and technical papers) to gather theoretical and research-based insights on AI applications in IP enforcement. This was complemented by an examination of international case studies and reports from reputable organizations (e.g. WIPO, government agencies) and industry sources to capture practical experiences. By triangulating findings from scholarly research, legal developments, and real-world examples, we aimed to form a comprehensive picture of the state of AI-driven IP infringement prevention across different jurisdictions.

Our analysis particularly focused on jurisdictions that have made notable strides or faced significant controversies in this domain – including the United States, the European Union, China, and select Asia-Pacific countries – as well as global perspectives from bodies like WIPO. For each, we reviewed relevant laws (such as the U.S. DMCA framework and EU Directive 2019/790 on Copyright in the Digital Single Market), policy documents, and any available data on enforcement outcomes. We also reviewed Vietnam's current IP enforcement landscape and legal provisions (e.g., Vietnam's Intellectual Property Law, amendments in 2022, related cybersecurity regulations) to understand the baseline from which Vietnam would be integrating AI tools.

The methodology is inherently interdisciplinary, as the subject spans law, technology, and public policy. We therefore incorporated aspects of legal research (statutory and case law analysis, comparative law) and technology assessment (evaluating capabilities of AI systems and their documented effectiveness). No human subjects or surveys were involved; all data were drawn from secondary sources in the public domain. Given the rapidly evolving nature of AI, we emphasized sources from the last five years (2020-2025) to ensure currency.

The comparative analysis sought to identify both best practices and challenges observed internationally. Best practices include successful AI deployments (e.g. content ID systems, AI-assisted customs inspections) and supportive legal frameworks (e.g. clear guidelines for platform liability and user rights in the EU). Challenges include common obstacles

(e.g. algorithmic errors, lack of resources, legal gaps) that transcend jurisdictions. By extracting these patterns, we distilled key factors that any jurisdiction – and specifically Vietnam – should consider.

3.2. Proposed Model for AI-Assisted IP Enforcement

Drawing on the findings of this study, we propose a three-pillar conceptual framework for the integration of artificial intelligence (AI) into intellectual property (IP) enforcement in Vietnam. The model comprises: (1) Technology Infrastructure for Detection, (2) Legal-Adjudicative Framework, and (3) Collaborative Governance Mechanisms. Each pillar addresses a critical dimension of effectiveness, legitimacy, and sustainability.

3.2.1. Technology Infrastructure for Detection

At the core is an AI-powered detection system capable of continuous, real-time monitoring for potential IP infringements. For copyright protection, this could take the form of a centralized, government-backed or consortium-based platform employing advanced content recognition algorithms to scan popular platforms in Vietnam, such as domestic social media, streaming services, and e-commerce marketplaces, for unauthorized use of protected works. In the patent domain, AI-driven text and image analytics could be used to monitor online marketplaces, technical publications, and import/export databases for indications of unauthorized exploitation of patented inventions.

The system should be modular and upgradeable, enabling rapid adaptation to emerging infringement patterns, including AI-generated deep-fakes or synthetic works. Crucially, it must embed audit and transparency mechanisms – recording each flagged action with metadata (time, reason, confidence score) – to facilitate subsequent human review and strengthen procedural fairness. The UK's s Anti – Copying In Design (ACID) maintains a databank of over 300,000 designs (including unregistered designs) that could provide data to train an AI to recognise infringing designs. By using this dataset, AI can be trained to recognize patterns, features, and similarities across designs, which enables the automated detection of potentially infringing products. Such a system could significantly speed up the process of monitoring marketplaces, both online and offline, and provide design owners with faster alerts regarding potential infringements.

3.2.2. Legal-Adjudicative Framework

The second pillar ensures that AI outputs are integrated into a due process-compliant enforcement structure. AI-generated infringement alerts would be subject to human verification by a specialized “IP Enforcement Unit” within the National Office of Intellectual Property or an inter-agency task force. This aligns with Vietnam’s establishment of a Specialized IP Court (effective 2025), which could provide judicial oversight for contested AI-driven enforcement actions. Evidentiary rules should be updated to recognize AI-generated findings as *prima facie* evidence, sufficient to trigger action, but rebuttable through counter-evidence or legal argument. Legislative amendments may be required to formally integrate AI evidence into procedural codes, set liability standards for misuse, and impose penalties for rights holders or entities engaging in bad-faith automated takedowns.

In addition, for the collection of evidence in cases of intellectual property infringement in cyberspace, where AI applications are used, the seizure and preservation of exhibits in the form of electronic technology methods and devices must be carried out by the competent authorities and procedural bodies. This process differs from the seizure of common exhibits, documents, or objects. Where necessary, experts may be invited to participate, in order to ensure that no damage or loss of information and data stored in the devices occurs. The activities of crime scene examination and evidence collection must be documented in accordance with Article 178 of the Criminal Procedure Code. The record of seizure must include a complete list and detailed description of the seized exhibits, clearly indicating the location, characteristics, shape, dimensions, colour, and distinctive features for identification, as well as the actual condition of electronic means and accompanying devices (such as computer hard drives, phones, USB drives, memory cards, cameras, and camcorders).^[26] At the same time, photographs of the scene and exhibits must be taken, and diagrams must be drawn to reflect the location, traces, devices, and electronic means discovered and collected. These requirements necessitate coordination between artificial intelligence systems and the procedural

²⁶ Pham T. Tran, “Legal Provisions and Practical Aspects of Evidence Collection in High-Tech Crimes,” [in:] *Proceedings of the Conference Cybercrime from Criminal Law Perspective* (Ho Chi Minh City: Ton Duc Thang University & People’s Police University, People’s Public Security Publishing House, n.d.), 352–353.

authorities to ensure compliance with procedural rules, going beyond merely applying technology in the procedural process.

3.2.3. Collaborative Governance Mechanisms

The third pillar focuses on cooperation between the public sector, private platforms, and international stakeholders. Public-private partnerships would facilitate integration of AI tools into enforcement workflows, including access to proprietary content ID systems from major global and domestic platforms. Inter-agency collaboration—linking IP enforcement with cybersecurity, customs, and criminal law authorities—would expand the scope of AI application, such as image recognition for detecting counterfeit goods at borders. International engagement, particularly through the World Intellectual Property Organization (WIPO), would enable Vietnam to participate in pilot projects, share best practices, and secure capacity-building support. A sustained human capital development strategy, involving universities and research institutions, is essential to maintain, refine, and localize AI enforcement systems over time.

To effectively prevent and combat crimes or legal violations involving the use of high technology that infringe upon intellectual property rights, competent procedural authorities need to allocate funding to build infrastructure, equip specialized devices, electronic tools, and modern software to collect, process, and preserve electronic data, as well as audio-visual equipment for investigation and surveillance activities. The investment in technical equipment must be based on the actual requirements of investigation, prosecution, and adjudication activities, as well as the capacity of each unit, in order to select appropriate quantities and types. This ensures adequate working conditions for law enforcement forces in their efforts to fight against crimes and intellectual property infringements in the context of rapidly advancing technology.

3.2.4. Integration and Workflow

In practice, the workflow could be structured as follows: AI detects a potential infringement → the alert is sent to the IP Enforcement Unit → clear infringements trigger standardized takedown/block notices citing legal authority and evidence → borderline cases are escalated to human review or judicial determination → outcomes are logged and used to enhance AI performance. This model seeks to combine technological efficiency with

legal legitimacy and policy inclusiveness, ensuring that Vietnam can adopt AI in IP enforcement while safeguarding rights, maintaining transparency, and fostering equitable access to enforcement resources.

4 | Research Results

Drawing on the comparative analysis, this section presents the principal findings regarding the application of AI in combating copyright and patent infringement globally, together with observed outcomes. The results are organized thematically as follows.

4.1. Acceleration and Scale-Up of Enforcement

Across multiple jurisdictions, AI deployment has markedly accelerated the enforcement of IP rights, particularly in relation to online copyright infringement. In the United States and the European Union, large online platforms report that the vast majority of infringement actions are now handled through automated systems. YouTube's Content ID, available globally, processes over 98-99 % of copyright claims automatically.^[27] Facebook and Instagram likewise employ AI-based filtering technologies – such as Audible Magic for audio and proprietary algorithms for images and video – to detect unauthorized content at the point of upload, often blocking it within seconds. Rights holders in the music industry report that, whereas it once took days or even weeks to remove infringing works, automated filters now often detect and remove such content before it becomes publicly accessible.^[28]

China demonstrates similar large-scale monitoring: Tencent's platforms, such as WeChat, employ AI to scan billions of messages and file shares for potential IP violations, while Alibaba's AI systems scrutinize millions of product listings daily to detect counterfeit or infringing goods.^[29]

²⁷ Musically, "How Content ID Works," n.d. 2025. <https://musically.com>. [accessed: 10.8.2025].

²⁸ Ibidem.

²⁹ Digital Defynd, "How Alibaba Fights Counterfeiting with AI," n.d. <https://digitaldefynd.com>. [accessed: 10.8.2025].

In the field of patent enforcement, although detection is not as instantaneous, AI-powered analytics have significantly reduced the time required to conduct infringement searches – from weeks of manual work to mere hours. One European technology firm reported that by using an AI tool to generate claim charts (mapping product features to patent claims), it reduced litigation preparation time by approximately 50 %^[30]. Such efficiencies enable companies to take swifter enforcement action, potentially preventing further harm and even initiating pre-emptive measures against suspected infringers soon after product launch.

4.2. Improved Effectiveness

Evidence from anti-piracy and anti-counterfeiting initiatives indicates measurable improvements in enforcement effectiveness with AI adoption. For instance, YouTube's Content ID has identified and managed a vast corpus of infringing videos, generating more than USD 5 billion in monetized claims for rights holders since the system's inception.^[31] The very presence of such systems also acts as a deterrent: users are aware that blatant uploads of popular works will likely be detected, shifting much infringement toward more covert methods.

In the counterfeit goods sphere, Alibaba reports removing 95 % of infringing listings via AI-powered detection, substantially reducing the availability of counterfeit products on its platforms.^[32] Other major e-commerce operators, including eBay and Amazon, employ similar systems to identify counterfeit or patent-infringing products, leading to the removal of tens of thousands of sellers annually.

However, determined infringers adapt quickly, giving rise to an "arms race" between enforcement systems and evasion tactics. For example, in the music industry, infringers have adopted techniques such as extreme pitch alteration or slicing songs into segments to evade detection, prompting the development of more advanced AI capable of recognizing manipulated versions. Consequently, while AI has increased effectiveness, enforcement

³⁰ Snapdragon IP, "AI in patent enforcement," n.d., <https://snapdragon-ip.com>. [accessed: 10.8.2025].

³¹ Musically, "How Content ID works."

³² Digital Defynd, "How Alibaba fights counterfeiting with AI."

agencies emphasize that it is part of a continuous improvement cycle, rather than a one-time solution.

This demonstrates that while AI is a powerful tool, it is not a definitive solution, since technological offenders can also exploit AI to generate increasingly sophisticated infringing content. Moreover, the risk of “false positives” can cause harm to legitimate businesses, highlighting the need for transparent and expedited complaint and appeal mechanisms. In this context, multi-stakeholder cooperation – among e-commerce platforms, rightsholders, public authorities, and consumers – is essential, alongside complementary technological solutions, such as blockchain for product traceability and next-generation AI capable of detecting complex modifications. This combined approach is necessary to enhance the effectiveness of anti-counterfeiting measures and safeguard intellectual property rights in the digital era.

4.3. Error Rates and Disputes

Empirical evidence confirms that AI-based IP enforcement systems inevitably generate both false positives and false negatives, and that the manner in which such errors are addressed is critical to their legitimacy and effectiveness. For example, YouTube’s Content ID system reports that approximately 0.5% of automated claims are disputed, with more than half of these resolved in favour of the user.^[33] Similarly, when Instagram launched an AI filter for copyrighted music in live streams, there were widely publicized cases where the system erroneously muted live performances of artists’ own original compositions, mistaking them for unlicensed works. These incidents prompted user backlash and subsequent algorithmic adjustments.

The European Union, in the course of implementing Article 17 of the DSM Directive, explicitly acknowledged the risk of “over-blocking” and has required platforms to incorporate user complaint mechanisms.^[34] Early reports from Germany and France indicate that, while upload filters function as intended, legitimate content has at times been wrongfully removed, necessitating manual reinstatement.

³³ Musically, “How Content ID works.”

³⁴ Communia Association, *Article 17 Implementation Analysis* (2021).

In the patent sphere, AI tools often produce high volumes of false positives—flagging products that, upon closer legal and technical scrutiny, do not infringe. Companies utilizing AI for patent scans still rely heavily on patent attorneys to review the AI-generated lists, with a substantial proportion of flagged cases ultimately dismissed. Anecdotal evidence suggests that, for complex technologies, a highly sensitive AI model may incorrectly flag 30–40% of items to avoid missing any potential infringement.^[35]

The key takeaway is that human oversight significantly enhances precision. Hybrid approaches, termed “Augmented Intelligence” by some practitioners, achieve higher confidence levels in enforcement actions. Moreover, as AI models are continually retrained with data from human-corrected errors, accuracy tends to improve over time. However, the introduction of new content types or infringement tactics can temporarily spike error rates until models are adapted.

4.4. Legal and Institutional Reforms Underway

International practice reveals that AI adoption in IP enforcement is often accompanied by parallel legal reforms and institutional strengthening. In the European Union, the DSM Directive imposes obligations on large platforms to deploy automated measures while mandating enhanced user rights protections. In the United States, while no federal statute requires filtering, both the U.S. Copyright Office and the USPTO have undertaken studies on AI’s impact on copyright and patent enforcement. The U.S. Copyright Office’s 2023 report on AI and copyright examined, *inter alia*, the challenges posed by AI-generated content for enforcement regimes. Legislative proposals have suggested updating the DMCA to address automated takedowns and promote standardized content-recognition technologies, although none have yet been enacted.

In Asia, China has adopted a more administrative approach, collaborating closely with technology firms to deploy state-of-the-art AI not only for IP enforcement but also for content regulation and misinformation control. Amendments to China’s E-Commerce Law have strengthened platform liability for IP infringement, implicitly incentivizing high-tech solutions. Japan and South Korea have initiated pilot projects through their IP offices to deploy AI in prior art searches and potential infringement

³⁵ TT Consultants, *AI in Patent Analytics* (2023).

analysis, while also studying the admissibility of AI-generated evidence in judicial proceedings.

Some jurisdictions are exploring certification schemes for AI enforcement tools – where a government certifies that a content-recognition technology meets defined reliability standards, potentially offering platforms a safe harbour if they use certified systems.

Institutionally, many countries are upgrading enforcement bodies. The UK has established the “IPO Intelligence Hub”, which employs data analytics (though not yet full AI) to combat counterfeiting and piracy. Vietnam’s creation of a Specialized IP Court aligns with this global trend, enhancing judicial capacity to assess AI-derived evidence. Notably, specialized IP courts in China have experimented with AI systems to assist in determining statutory damages in copyright disputes by analysing case trends – an example of AI supporting judicial decision-making.

4.5. Lessons on Policy Safeguards

Cross-jurisdictional experiences yield several key lessons for policymakers:

User Complaint and Redress Mechanisms: Effective systems incorporate clear channels for users to contest automated enforcement actions—whether via internal platform review, mediation, or court proceedings. For example, Germany’s implementation of Article 17 allows immediate reinstatement of content if a user asserts its legality (within defined thresholds) pending final adjudication. The application of AI in the field of intellectual property is not only a technical matter but also closely linked to governance and legal policies. Therefore, Vietnam needs to promptly issue legal provisions on the evidentiary value of electronic evidence and data processed by AI, as well as establish a fast-track mechanism for resolving disputes in cases where businesses are adversely affected by erroneous analyses. At the same time, the State should promote public-private partnerships and encourage domestic technology enterprises and universities to participate in developing “Make in Vietnam” AI solutions, which would both reduce costs and strengthen endogenous capacity. This will provide an essential foundation for Vietnam to enhance the effectiveness of intellectual property enforcement in the context of global digital transformation.

Transparency Reporting: The EU requires platforms to disclose statistics on takedowns, disputes, and reinstatements, enhancing accountability. Platforms such as YouTube and X (formerly Twitter) regularly publish

transparency reports on IP enforcement, a best practice that could be replicated in Vietnam. Transparency reporting regulations in the field of intellectual property (IP) in the EU are designed to foster public oversight and encourage platform compliance. Major platforms such as YouTube, Twitter (now X), and Meta regularly publish figures on the number of content removals, the number of disputes raised by users or rightsholders, as well as the average processing time. This enables the assessment of effectiveness: regulators, researchers, and rightsholders can rely on these data to determine whether AI technologies or automated moderation mechanisms operate accurately or lead to errors (for example, the mistaken removal of lawful content). In addition, fair competition should be encouraged: when all platforms are required to publish data, transparent comparison incentivizes them to invest more in AI technologies and appeal procedures in order to maintain credibility. However, certain risks should be noted, such as the tendency of reports to provide only aggregate numbers without sector-specific details (e.g., music, software, fashion), making it difficult to assess the real impact. If appeal mechanisms are not sufficiently robust, “transparency” may remain only superficial, failing to ensure the rights of stakeholders. Furthermore, standardizing transparency reports requires significant resources, which can pose challenges for small and medium-sized enterprises.

Thus, transparency reporting is not merely a tool for ex-post oversight, but also serves as a risk-prevention mechanism, ensuring a balance between protecting IP rights and safeguarding the freedom of legitimate creativity and business activities.

Government Use of AI: Enforcement agencies themselves can benefit directly from AI. For instance, EU customs authorities, in collaboration with the EUIPO, have deployed the “Objectify” AI image-recognition tool to detect counterfeit logos on scanned images of shipping containers, significantly increasing interception rates without proportional staffing increases. In addition, AI should be utilized to fully exploit electronic databases. At present, the Intellectual Property Office of Vietnam has introduced the “Digital Library on Industrial Property based on the WIPO Publish platform” to replace the former IPLIB search tools, while continuing to promote the implementation of the one-stop-shop and interconnected one-stop-shop mechanisms, and to improve the quality of administrative procedure reception and result delivery. However, the integration of these information centres and administrative procedures must be carried out in a synchronized manner, with careful consideration of AI applications.

Furthermore, consideration should be given to allocating budgetary resources for the implementation of artificial intelligence as a tool for enforcing intellectual property rights. According to the 2022 Annual Report of the Intellectual Property Office of Vietnam, the total amount of industrial property fees and charges collected reached VND 365 billion (an increase of 6% compared to 2021, and 6% higher than the planned target).^[36] To implement artificial intelligence in the enforcement of intellectual property rights, Vietnam needs to establish a clear and feasible budget allocation plan. A suitable approach would be to earmark approximately 5–10% of the annual industrial property fee and charge revenue (equivalent to VND 18–36 billion based on 2022 figures) for a three-year pilot phase.

This budget should be directed toward three core objectives. First, building an integrated national intellectual property database capable of interconnecting with customs, market surveillance, and court systems. Second, developing AI-powered online monitoring tools, such as automated data collection software (web crawlers) and image recognition technology, to detect counterfeit goods and copyright infringements on e-commerce platforms as well as social networks. Third, investing in the training of specialized human resources – including examiners, investigators, and judges – to equip them with the skills to use and assess electronic evidence, ensuring that AI systems operate effectively and in line with legal requirements.

The deployment of AI in intellectual property enforcement entails significant risks. Financially, the initial investment costs are often substantial, while the benefits may not be immediately apparent, making it necessary to design phased expenditure plans and periodic evaluation mechanisms to ensure investment efficiency. Technically, AI systems may produce erroneous results (false positives), mistakenly identifying legitimate products as infringements, which can negatively affect genuine businesses. This requires combining automated AI analysis with human expert verification. In addition, legal risks arise due to the absence of clear regulations on the evidentiary value of AI-generated evidence, potentially leading to disputes when such evidence is presented in court. Furthermore, intellectual property data are highly sensitive and vulnerable to attacks or leaks, necessitating parallel investment in cybersecurity and data protection systems.

³⁶ Intellectual Property Office of Vietnam, *Annual Report 2022* (2022). https://ipvietnam.gov.vn/bao-cau-hang-nam/-/asset_publisher/vTLYJq8Ak7Gm/content/annual-report-2022?inheritRedirect=false. [accessed: 10.8.2025].

In sum, while AI is becoming indispensable for IP enforcement, its deployment must be accompanied by structured oversight, continual adaptation, and a balance between technological efficiency and legal safeguards. International practice serves both as proof of concept and as a cautionary guide for Vietnam's prospective adoption.

5 | Discussion and Conclusion

The foregoing analysis illustrates that artificial intelligence (AI) has already begun to reshape the enforcement of intellectual property (IP) rights on a global scale. For Vietnam, a country with a growing creative and innovative sector and increasing participation in the digital economy, leveraging AI in IP protection is not just an option, but an emerging necessity. This section discusses the implications of international experiences for Vietnam and provides recommendations for legal and policy reforms to integrate AI effectively and responsibly into the nation's IP enforcement framework.

5.1. Implications for Vietnam's IP Enforcement Strategy

International experiences demonstrate that AI can significantly strengthen detection and enforcement capabilities, which is highly relevant to Vietnam's context, where online piracy (e.g., music, film, and software) and counterfeit goods remain prevalent. The success of AI-driven content filtering and market surveillance suggests that enforcement agencies in Vietnam could dramatically improve reach and responsiveness by adopting similar technologies. For example, Vietnamese authorities could collaborate with major platforms popular in Vietnam such as YouTube, Facebook, TikTok, Zing, and Nhaccuatui to ensure that content originating from or targeting Vietnamese users is incorporated into global content identification systems.

Similarly, AI deployed on e-commerce platforms and at customs checkpoints could help intercept counterfeit and patent-infringing products entering Vietnam. The Alibaba case, where AI removed 95% of fake listings,^[37]

³⁷ Digital Defynd, *How Alibaba Uses AI to Remove Counterfeit Listings*, 2023. <https://digitaldefynd.com>.

offers a strong model for Vietnam's platforms (Shopee, Tiki, Lazada Vietnam) to emulate. However, the challenges identified globally, particularly over-blocking and algorithmic bias – must be anticipated. Given that Vietnam's Constitution protects freedom of expression (albeit balanced with other interests), safeguards against excessive filtering are essential.

The establishment of the Specialized IP Court in 2025 presents a timely opportunity to train judges and enforcement officials on AI-generated evidence, digital forensics, and procedural integration. Furthermore, Vietnam's IP Law (2022 Amendment) does not yet explicitly reference AI-assisted enforcement. Clear legislative recognition could set quality and reliability standards, delineate responsibilities, and establish procedural safeguards – drawing on the EU's transparency and redress requirements under Article 17 of the DSM Directive.

5.2. Recommendations for Legal Reform and Policy Initiatives

Amend IP Legislation to Accommodate AI Enforcement – Introduce provisions explicitly permitting and regulating “technological measures” in IP enforcement, enabling rights holders to use certified AI tools, obligating intermediaries to cooperate with automated detection, and ensuring admissibility of AI-generated evidence – subject to verification (Dentons, 2023; SSRN, 2022).

Strengthen the Notice-and-Takedown Framework with Automation – Update Vietnam's existing mechanisms to allow automated notices from certified rights holders or agencies, with audit requirements to prevent abuse.

Implement a User Redress Mechanism – Require platforms to provide a fast and transparent process for users to contest automated enforcement, drawing from the EU's Article 17 safeguards.

Data Sharing and Collaboration Agreements – Facilitate MOUs between enforcement agencies and platforms for anonymized data sharing, trend analysis, and AI training; seek technical support from WIPO, USPTO, and EUIPO.

Capacity Building and Expert Task Force – Establish an “AI and IP Enforcement” task force to oversee a national centralized infringement detection platform accessible to small rights holders.

Ensure Ethical Use and Privacy – Update data protection rules to explicitly allow proportionate automated processing for IP enforcement, while mandating safeguards against bias and misuse.

5.3. Anticipating Future Trends

AI is also changing the nature of IP infringement – through AI-generated works, synthetic media, and automated piracy. Vietnam should actively monitor international debates on AI-generated content, authorship, and liability (Dentons, 2023). Participation in ASEAN and WIPO forums will ensure Vietnam stays aligned with evolving global norms. Domestic research and pilot projects, possibly in collaboration with Vietnam’s AI sector, can prepare for these challenges.

6 | Conclusion

The integration of AI into IP enforcement offers unprecedented advantages in speed, scale, and effectiveness, but also presents risks if implemented without adequate safeguards. Vietnam is in a strong position to learn from global successes and missteps, enabling it to adopt advanced practices while avoiding earlier pitfalls. By updating legislation, fostering cross-sector collaboration, investing in AI infrastructure, and embedding fairness and accountability into enforcement processes, Vietnam can modernize its IP regime, attract investment, protect creators, and promote innovation. Properly harnessed, AI can become a force multiplier for IP enforcement, ensuring that Vietnam’s legal system remains robust and relevant in the digital era.

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Issues of Equity and Efficiency in Twin Transition in Vietnam from an Economic-Legal Integrated Perspective

Abstract

In the context of globalization and the fourth industrial revolution, the twin transition (digital transformation and green transformation) is becoming a key strategic direction for nations, including Vietnam, to promote fast and sustainable growth of the economy. However, alongside the promoted economic benefits, the twin transition process also gives rise to certain issues of fairness, affecting the sustainability of the transition model. This raises doubts about the role of the twin transition, posing a need to refine the legal framework to harmonize the goals of economic growth and social equity. This paper reinforces the view on the inevitability of the twin transition, defining the twin transition as two parallel processes, with a synergistic and contradictory relationship between digital transformation and green transformation, that contribute to promoting sustainable development. Based on the analysis of the theoretical framework and the current situation of the aforementioned digital transformation process in Vietnam, the paper proposes solutions to ensure the harmonization of fairness and efficiency in this process. Specifically, the solution involves simultaneously combining digital transformation policies with social security and sustainable development policies, tailored to regions and industries, consistent with the current practical context in Vietnam.

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KEYWORDS: green transformation, digital transformation, twin transition, fairness, injustice

1 | Introduction

The twin transition not only enhances labor productivity and the competitiveness of enterprises, but also helps the economy to grow rapidly, sustainably, and increases responsibility towards future generations. Concurrently, this process is not only a challenge in terms of technology or economic structure but also raises profound issues related to fairness and efficiency in resource allocation, ensuring social security, and designing a legal framework that supports sustainable development. Excessive focus on economic efficiency without due attention to the element of fairness will erode sustainability and the quality of growth. Conversely, being overly rigid in protecting traditional social values creates barriers that reduce economic efficiency. This poses the need to harmonize economic goals with social equity in the twin transition, ensuring both rapid growth and fairness. The balance between the goals of economic efficiency and social equity always requires the law to harmonize environmental regulations and regulations protecting the legitimate rights and interests of related parties with the overall interests of the economy, placing them under the perspective of creating a development impetus suitable for the nation's development conditions.

In the current context of Vietnam, how the twin transition should be understood, whether this process has truly harmonized the goals of economic growth and fairness, and what economic-legal solutions the State needs to ensure no one is left behind, are questions that require research and clarification. This is also the research objective of this paper.

2 | Identifying the Twin Transition

Today, “twin transition” is not only an inevitable trend associated with the strategic orientation for sustainable and efficient development, but also an opportunity to promote the growth of any socio-economy in the world, including Vietnam. Twin transition is not simply the parallel transformation of two processes – the green transformation and the digital transformation – but a transformation process with close linkages, mutual support, and contradictions between them.

Digital transformation provides the foundational tools to make the green transformation more effective. Through the application of digital technology, especially automation technology based on AI, IoT, and Big Data platforms, digital transformation helps optimize production, management, and business processes. This helps minimize the waste of resources, optimize energy use, achieve emission reduction, and enhance the effectiveness of environmental monitoring and management. In other words, digital transformation is an intrinsic need to minimize environmental impacts, enhance labor productivity, strengthen the competitiveness of enterprises and the resilience of the economy to environmental change challenges, promote the transformation of the sustainable growth model, and achieve the goal of greening the economy. Calculations by the World Economic Forum and Accenture (2022) have shown that digital technology can cut up to 20% of emissions by 2050 to achieve the International Energy Agency’s (IEA) net-zero emissions target in the energy, materials, and transport sectors. Accelerating the adoption of technology in these sectors by 2030 could reduce emissions by 4%-10%.^[1]

Conversely, the green transformation also influences the goal orientation and investment priorities of the digital transformation, promoting the development of green digital business models. The green transformation sets sustainability requirements for the digital transformation, driving digital technology innovation to meet green targets. This, in turn, limits the negative impacts of digital transformation. Because, digital technology itself also increases the use of electricity, water, and rare earths; increases carbon emissions, electronic waste, and other non-recyclable waste into

¹ World Economic Forum, *World Economic Forum Annual Meeting History at a Turning Point: Government Policies and Business Strategies* (White Report, 2022). <https://www.weforum.org/stories/2022/05/how-digital-solutions-can-reduce-global-emissions/>.

the environment, diminishing some of the environmental benefits they could bring. Research results from the World Bank have shown that this accounts for about 1.4% to 4% of global emissions, equivalent to the emissions of the aviation industry.^[2] The telecommunications industry alone is projected to generate 5.5% of the world's carbon emissions by 2025, while energy consumption, mainly from data storage and transmission by data centers along with billions of smartphones, tablets, and other connected devices, accounts for about 20% of the world's electricity consumption.^[3]

In general, digital transformation and green transformation are two processes that are both mutually supportive and contradictory contributing to promoting sustainable development. Therefore, policy and law-making need to integrate both of these processes.

3 | Theoretical Framework on Equity and Efficiency in the Twin Transition from an Economic and Legal Perspective

3.1. From the Perspective of Economics

Fundamentally, the twin transition is considered a profound economic restructuring process, innovating the growth model towards maximizing benefits quickly and sustainably. It is a complex process that brings both opportunities and challenges, costs and benefits, and needs to be managed in the right direction.

Through the lens of economics, the twin transition is considered the main driver for long-term economic growth. In this context, digital transformation helps optimize processes, increase labor productivity, and create new business models. Green transformation, through investment in clean technology and renewable energy, not only helps minimize environmental impact, but also opens up new markets and reduces dependence on

² World Bank, *Green Digital Transformation: How to Sustainably Close the Digital Divide and Harness Digital Tools for Climate Action*. *Climate Change and Development* (Washington: World Bank Group, 2023), xx.

³ Alchemy Crew, *The Future of Commercial Sustainability: Closing the Digital Gap For Emerging Commercial Insurance Risk* (White paper: Alchemy Crew Ventures, 2022), 3. [accessed: 10.12.2025].

fossil fuels. This transition process is not without costs. It requires huge investments in technology infrastructure, training the workforce for the transition, and developing and implementing policies to mitigate risks from the transition process, including asset depreciation, job losses in labor-intensive and resource-intensive industries, high carbon emissions, and addressing the aftermath of the transition. However, there are also differences in how to solve the problem among different schools of economics.

The neoclassical school of economics emphasizes the role of the free market and economic efficiency. Accordingly, the market, through the price mechanism and competition, will automatically allocate resources optimally. The market will encourage businesses to spontaneously undergo digital transformation, optimize production processes to save energy and resources, thereby reducing costs, increasing productivity, and enhancing economic efficiency and competitiveness. Businesses will also spontaneously seek green technical solutions and supply green products according to market demand, thereby promoting green transformation. However, this solitary solution through price freedom does not completely solve the problems of negative externality. For example, without legal intervention, the market may not fully account for the social costs of the environmental impacts of digital technology, leading to a lack of environmental justice. In other words, the free market-oriented approach often only focuses on economic efficiency, while social equity and other non-financial factors are usually not the main objectives. They are only considered if inequity affects economic efficiency. Proponents of this view often accept the equity-efficiency tradeoff. For example, income redistribution policies through imposing high tax rates on the wealthy to subsidize the poor may reduce the motivation to work and invest for high-income earners, thereby reducing the overall efficiency of the economy.

Conversely, modern economics scholars argue that efficiency and equity can be complementary, coexisting without being separate, especially in the long run; both the market and the government have important roles. The market promotes innovation and resource allocation efficiently in economic and technical terms. However, due to significant externalities and public benefit, the market alone cannot complete the transition process. Therefore, the Government needs to intervene through policies and build legal frameworks to guide the market and correct market failure. Thus, the twin transition is essentially a long-term, systematic restructuring process that creates significant economic, social, and environmental externalities, requiring regulatory policies for the internalization of environmental

costs (regulations on carbon pricing, emissions trading system – ETS), encouraging innovation in green digital technology, and ensuring equity objectives through policy design that combines efficiency and equity. In other words, the twin transition is a process that integrates all three objectives of economic efficiency, social equity, and environmental sustainability, focusing on the unbiased distribution of costs and benefits to limit the “digital divide” and “environmental inequality”. Accordingly, efficiency is often referenced in terms of Pareto improvement, meaning an increase in benefits for someone without making any group worse off, or at least having a reasonable compensation mechanism. Efficiency is not only measured by total utility, but also considers indicators of social welfare distribution or equity constraints. Therefore, accepting a reduction in total utility to prioritize improving the situation of vulnerable groups during the twin transition is still considered to achieve sustainable economic efficiency, a concept modern economics scholars call the theory of “just transition.” In this case, “inclusive growth” becomes the main goal, not just overall growth, but also ensuring “economic justice.” Economic justice is the fair and just distribution of potential costs and benefits. Economic justice is just one aspect of fairness, occurring mainly in 5 dimensions: employment and job transition; affordability of products and services; accessibility of products and services; access to finance and investment; and access to capabilities. In this context, economic justice is the ability of individuals and groups affected by the twin transition to be provided with resources and opportunities appropriate to their specific needs or circumstances to achieve equality. This involves equality of opportunity, equality of outcome, or ensuring social security for people in regions affected by the results of the twin transition. For instance, in the field of energy transition, policymakers must link low-carbon transition policies with distributive, procedural, and recognition justice, thereby transforming the goal of efficient emissions reduction into an equitable outcome in terms of costs and benefits among different groups and regions. Therefore, when evaluating the effectiveness of the twin transition process, the goal of equity must be placed alongside efficiency.

In the relationship between equity and efficiency, equity is a prerequisite for efficiency to occur and be sustainable, constraining policy design and evaluation criteria concurrently with efficiency. Equity creates legitimacy, political stability, and high social consensus to reduce the risk of social reactions that “break” reforms, creating a favorable environment for investment and sustainable growth. High levels of inequity will reduce the

efficiency of the twin transition. For instance, if a large portion of the population does not have access to digital technology, the efficiency of the digital transformation will decrease. This means that the efficiency of the twin transition is not just about rapid growth at a low cost, but also includes the equitable distribution of benefits and costs. Equity is not an “after-the-fact compensation for optimization,” but a design constraint from the outset to make policies feasible and effective over time. Equity is a necessary condition to internalize externalities, maintain social consensus for long-term investment, and optimize long-term efficiency dynamics. Conversely, high inequality will erode the accumulation of human capital, technology absorption capacity, and productivity growth. Therefore, the focus of the twin transition is a “just transition” to reduce instability, thereby enhancing efficiency, sustainable growth, and ensuring that no social group is left behind.

However, an overemphasis on the goal of equity may reduce the motivation to participate in the transition process, thereby diminishing the economic efficiency of the twin transition. The optimal solution to promote the twin transition is to find a balance suitable for each nation’s context, where the constraining mechanism based on an institutional foundation, including both formal institutions (laws enacted by the state) and informal institutions, is a point worthy of consideration.

3.2. From a Legal Perspective

In its role as a legal corridor that directs, regulates, creates, and promotes socioeconomic activities, the law on twin transition today does not stop at the requirement of economic-technical efficiency, but has integrated and affirmed equity as a mandatory standard in the design, implementation, and evaluation of all twin transition policies and programs. Accordingly, the law on twin transition is used to establish objectives, operating conditions, and economic-technical standards so that entities can implement them with confidence; to establish incentive and deterrent mechanisms; and to transparently delineate the rights, obligations, and legal liability of parties involved in twin transition activities. From this perspective, the law must be built on a foundation integrated with the development views of modern economics and its own specific role. It is the embodiment of justice, an instrument for creating development and correcting market failures, aiming to enhance good values for humanity.

To enhance the economic efficiency of the twin transition process, the law must aim to create a legal environment that minimizes transaction costs, optimizes resources, saves energy, promotes circular value chains, reduces emissions, and avoids transitioning to new forms of hazardous emissions to ensure the overall value added of the economy. More importantly, when developing legal standards and efficiency assessment procedures, legislators need to place them in a specific cultural-geographical-historical context, where their non-financial benefits are difficult to quantify and compensate for. Optimizing economic efficiency also requires optimizing the social costs of law-making and compliance. The law must ensure transparency and accountability, especially regulations on criteria for monitoring and evaluating the transformation process and outcomes.

An important point to recognize is that economic efficiency is only truly sustainable in the long term when the policies and regulations of the twin transition law are linked to the goal of equity. In legal science, equity is the foundation of law. Equity is not only a universal principle but also a regulatory objective of law in general. According to the natural law school, equity is a category associated with natural law and is an objective attribute that state-enacted law must ensure. This includes the distributive justice of wealth and social benefits, which natural law scholars call distributive justice, later developed by John Rawls (1921-2002) into his theory of justice. According to Rawls, inequality in the distribution of wealth and opportunities is acceptable only if it benefits the most vulnerable groups in society. When businesses restructure and lay off workers, it must not harm those in weaker social positions; on the contrary, policies should aim to prioritize improving their status.^[4] This is also the theoretical foundation upon which legislators build regulations to protect vulnerable people in the twin transition. Accordingly, equity is specified as a guiding principle in the development of twin transition law. Specifically, the twin transition law focuses on protecting vulnerable groups, reducing regional disparities, supporting retraining for the digital transformation, ensuring social security for workers and communities affected by the closure of carbon extraction and carbon energy industries, ensuring all citizens can access and benefit from the development of the digital economy and greening, making the right to request mandatory community consultation transparent when approving large-impact projects, publicizing distributional and environmental impact assessments, and creating effective complaint/

⁴ See: John Rawls, *A Theory of Justice* (Harvard: Harvard University Press, 1971).

feedback mechanisms. In general, contemporary legal science has recognized the harmonization of the goals of equity and efficiency as a mandatory principle in the design and implementation of twin transition policy.

3.3. Integrating Economic and Legal Perspectives on Equity and Efficiency in the Twin Transition

Today, the development and planning of twin transition policies are often approached in parallel from both economic and legal dimensions. Economics helps optimize resources, identify drivers for sustainable growth, analyze positive and negative externalities, and evaluate efficiency and equity from design to implementation. In particular, institutional economics helps determine the role, content, and scope of impact of institutions on the process of transforming the development model, including formal institutions such as state-issued laws and regulations, which create the foundational material for perfecting the state's positive law. Meanwhile, law plays the role of creating a binding foundation, establishing rights, obligations, and legal liability; and building mandatory criteria for efficiency and equity in transformation programs. The integration of economics and law in the twin transition will then help increase feasibility and sustainability, reduce conflicts of interest, enhance social acceptance, and optimize long-term efficiency. Therefore, the twin transition can only be successful and sustainable when all economic solutions (cost optimization, technological innovation, etc.) are implemented within a transparent legal framework, with supervision and compliance with legal standards on economic-technical aspects, social equity, and the environment. Conversely, legal design must also be based on cost-benefit analysis, economic drivers, economic data, and the practical capacity of society, rather than being formalistic or imposing measures without a practical basis. In other words, a successful twin transition requires an organic coordination between economic optimization and ensuring justice. Both must be prerequisites and constraints for each other, not to be taken lightly or addressed unilaterally. In this context, the principle of harmonization of economic efficiency and social equity in the twin transition always goes hand in hand and is integrated into policies and legal regulations. Then, the assessment of the economic efficiency of the twin transition can be expanded to incorporate environmental and social factors, such as the Genuine Progress Indicator (GPI) or

the Human Development Index (HDI), the right to access digital technology and green technology, the right to be consulted, the right to access employment opportunities and benefit from technological development, and the right to adequate compensation. Because economic transformation is ultimately a tool to promote human progress, serve human interests, and allow people to become agents of change, not its subjects. In other words, the twin transition must be human-centered in all its changes.

In general, the integration of economic and legal perspectives can be carried out based on the following 4 pillars:

- The first pillar is the synchronization of the legal-economic framework: the twin transition policy links codification with ensuring implementation conditions. For example, digital universalization for remote areas, establishing environmental protection funds.
- The second pillar is establishing tools that are both effective and equitable. For instance, establishing an emissions trading system (ETS)/carbon tax simultaneously with a distributive compensation mechanism; investment in industrial transition with criteria for retraining, ensuring social security, and mandatory community consultation processes.
- The third pillar is mandatory socio-economic impact assessment. Accordingly, all major transition projects must conduct impact assessments not only on the environment, but also on the distribution of benefits/costs and equity of access.
- The fourth pillar is the mechanism for accountability, complaints, and consultation. The law stipulates requirements for community consultation, data disclosure, and having a mechanism to receive and resolve complaints regarding the distribution of benefits and costs.

4 | The Current Situation of Ensuring Equity and Efficiency in the Twin transition in Vietnam

4.1. Context and Vision for the Twin Transition

Vietnam is one of the countries most heavily affected by climate change, sea level rise, and the over-exploitation of water resources in the upper Mekong River, even becoming a strategic weapon for upstream countries in the regional geoeconomic and political game. Its economy is deeply integrated into global supply chains with products that have a low value-added content. The contribution share of total factor productivity (TFP) to the GDP growth rate in the 2021-2023 period was only about 39.48%^[5] and is estimated to be about 42% for the 2021-2025 period, wherein the contribution of science and technology to GDP is less than 2.5%, and the contribution of digital technology to GDP growth is less than 1%. Moreover, Vietnam also faces many challenges in attracting responsible investment capital and in its main export markets, especially with the current unpredictable tax policies of Trump and the rapid changes from regional geopolitical-economic competition. In that context, the twin transition is both a trend and an inevitable necessity for the transition from an extensive growth model to an intensive growth model, a model of rapid and sustainable growth, adapting to unpredictable uncertainties.

Recognizing very early the nature and importance of the twin transition process, Vietnam has proactively participated in and implemented many international commitments on climate change and responsible trade and investment. As early as 1994, Vietnam joined the United Nations Framework Convention on Climate Change (UNFCCC) and the Montreal Protocol on Substances that Deplete the Ozone Layer; in 2002, it joined the Kyoto Protocol; in 2016, it joined the Paris Agreement on climate change; in 2018, it joined the CPTPP Agreement; in 2020, it joined the EVFTA Agreement; in 2021, it joined the Global Methane Pledge and the Declaration Glasgow on Forests and Land Use, while also adopting the ASEAN Digital Masterplan 2025; in 2022, it joined the Global Declaration on the transition from coal power to clean energy and the Just Energy Transition Partnership. These are also the important legal bases that require Vietnam to accelerate the green transformation and domestication of law.

⁵ Source: General Statistics Office, *Statistical Yearbook of Vietnam 2024* (Hanoi: Statistical Publishing House, 2024), 276.

In the face of the explosive development of the Fourth Industrial Revolution, in 2019, the Politburo issued Resolution 52-NQ/TW with a policy of developing policies and laws to promote science, technology, innovation, and national digital transformation, with a focus on developing the digital economy, building sustainable smart cities, e-government, and progressing towards digital government, while limiting the negative impacts of the Fourth Industrial Revolution. Creating a legal corridor for the implementation of new labor and employment models on digital technology platforms and perfecting social security policy suitable for the Fourth Industrial Revolution, promptly addressing the challenges posed to social development. Promoting participation in the Fourth Industrial Revolution to address environmental pollution, climate change, and sea level rise. By 2021, the 13th Party Congress had set the socio-economic development strategy for the 2021-2030 period as “rapid and sustainable development based mainly on science and technology, innovation, and digital transformation”, while also considering “strong development of science, technology, innovation, and digital transformation as the main driver of economic growth.” Implementing national digital transformation comprehensively to develop the digital economy and build a digital society. Implementing digital transformation in national governance, state administration, production, business, social organizations, and national resource management. Striving by 2030 to complete the building of a digital government, to be among the top 50 countries in the world and ranked third in the ASEAN region for e-government and digital economy.^[6]

To create new momentum and breakthroughs in the development of science, technology, innovation, and digital transformation, and to drive the country’s strong development in the new era, in late 2024 the Politburo issued Resolution No. 57-NQ/TW On breakthroughs in the development of science, technology, innovation, and national digital transformation, with the guiding viewpoint: “The development of science, technology, innovation, and national digital transformation is the most important breakthrough, the main driving force for rapidly developing modern productive forces, perfecting production relations, innovating national governance methods, developing the economy and society, preventing the risk of falling behind, and enabling the country to achieve breakthrough development and prosperity in the new era.” The development of science, technology,

⁶ Communist Party of Vietnam, *Documents of the 13th National Party Congress*. Vol. I (Hanoi: National Political Publishing House-Truth, 2021), 92.

innovation, and digital transformation is considered a decisive factor for the development of nations and a prerequisite for the country to develop prosperously. Among these, the goal by 2030 is for Vietnam to be in the top 3 leading countries in Southeast Asia and the top 50 countries in the world in terms of digital competitiveness and the e-government development index; in the top 3 leading countries in the Southeast Asian region for research and development of artificial intelligence, and a development center for certain sectors and fields of the digital technology industry where Vietnam has advantages. The vision to 2045 is for Vietnam's digital economy to account for at least 50% of GDP; to be one of the digital technology industry centers in the region and the world; and to be among the top 30 leading countries in the world for innovation and digital transformation.

Clearly, the twin transition is not only a trend but also an intrinsic need and a foundation for the development of Vietnam's economy. The twin transition helps Vietnam achieve in-depth development, innovate its growth model, restructure economic sectors, increase labor productivity and economic efficiency, enhance the economy's competitiveness and resilience against uncertain challenges, open up new business models, and help reduce transaction costs. In other words, Vietnam views the twin transition as an inevitable trend for the rapid and sustainable development of its socio-economy. In this process, efficiency and equity are two parallel and inseparable goals.

4.2. The Twin Transition Process and Emerging Issues in Ensuring Efficiency and Equity

Since the launch of the national digital transformation program in 2020, the digital transformation process in Vietnam has been proceeding strongly and comprehensively, identified as a major policy and a national focus. This process is being implemented synchronously across three main pillars: digital government, digital economy, and digital society, while having a profound impact on many specific sectors.

For digital government transformation activities, Vietnam promotes online public services through the national public service portal and ministerial and provincial public service portals, enabling citizens and businesses to perform administrative procedures online; digitalization of administrative management by applying information technology in

the internal management of state agencies, implementing an electronic document management system, online meetings, and developing national digital data; and developing digital data through the construction of national databases on population, businesses, land, and finance to create a foundation for effective data sharing and exploitation among agencies.

For digital economy activities, Vietnam promotes the development of e-commerce, digital finance, and digital agriculture, optimizing production processes through automation, IoT (Internet of Things), and big data analytics in the industrial and construction sectors, and applying technology to manage supply chains.

For digital society transformation, Vietnam implements digital education, digital health, and digital skills universalization, especially in rural areas and for vulnerable groups, to narrow the digital divide.

To promote this process, Vietnam has implemented the following solutions:

- Building and institutional improvement: Building a legal framework and policies to promote digital transformation, such as the National Assembly's promulgation of the Law on Data, Law on Electronic Transactions, Law on Digital Technology Industry, Law on Science, Technology and Innovation, and the personal data protection law, Resolution No. 193/2025/QH15 on piloting several special mechanisms and policies to create breakthroughs in the development of science, technology, innovation, and national digital transformation; the Government's issuance of Decree 180/2025/ND-CP; the Prime Minister's issuance of Decision No. 749/QĐ-TTg Approving the National Digital Transformation Program to 2025, with an orientation to 2030; and localities building action programs on innovation and digital transformation.
- Digital infrastructure development: Investing in broadband telecommunications infrastructure, cloud computing, data centers, and 5G technology to create a foundation for digital applications.
- Digital platform development: Building shared platforms for the government, businesses, and citizens, such as the national public service portal, cashless payment platforms, and online learning platforms.
- Digital human resources development: Enhancing training and improving digital skills for officials, civil servants, public employees, workers, and the entire population. This is a key factor for adapting and developing in the digital environment.

- Cyber safety and security: Ensuring information safety and cybersecurity is a vital factor in protecting personal, business, and national data in the digital environment^[7].

This digital transformation process has achieved many significant accomplishments, with Vietnam's national digital transformation index (Digital Transformation Index – DTI) reaching 0.7955 in 2024.^[8] Vietnam's e-government ranking was 71st out of 193 countries in 2024, an increase of 15 places compared to 2022.^[9] The proportion of the digital economy in GDP reached nearly 18.3% in 2024, and this ratio is expected to be 18.72% by the end of 2025.^[10] The revenue of the digital technology industry in 2024 reached approximately 151.86 billion USD. The export value of information technology hardware electronics and telecommunications in 2024 reached approximately 132.341 billion USD, accounting for about 32% of the nation's total goods export value. In the first 6 months of 2025 alone, the export value of information technology hardware, electronics, and telecommunications reached 81 billion USD, and e-commerce revenue reached 8.26 billion USD. The percentage of the adult population with a digital signature reached 35.48%. By the end of June 2025, internet infrastructure had covered 99.8% of the territory, with 99.6% of villages having mobile broadband connectivity and 82.3% of households had a broadband fiber optic internet connection. The broadband telecommunications network has covered 99.3% of the territory, with 88.7% of mobile subscribers using smartphones. Vietnam's mobile broadband download speed in February 2025 ranked 19th out of 103 countries. Fixed broadband download speed

⁷ Tuyet Dung Thai Thi, Phuc Dao Gia, “Balancing the Right to Access Information, the Right to Privacy, the Right to Personal Data Protection, and the Right to Be Forgotten in the Digital Age: The Case of Vietnam” *Prawo i Więź*, No. 6 (2024): 709-703.

⁸ Source: Ministry of Science and Technology, National DTI in 2024 increased by 8.6% compared to 2023. News report (Hanoi: Vietnam News Agency, 2024). <https://happyvietnam.vn/vnanet.vn/dti-quoc-gia-nam-2024-tang-86-so-voi-nam-2023/47418.html#:~:text=Vi%E1%BB%87t%20Nam:%20K%E1%BB%B7%20onguy%C3%AA%20m%E1%BB%9Bi&text=Theo%20c%C3%B4ng%20b%E1%BB%91%20c%E1%BB%A7a%20B%E1%BB%99,x%C3%A2y%20d%E1%BB%B1ng%20Ch%C3%ADnh%20ph%E1%BB%A7%20s%E1%BB%91>. [accessed: 1.9.2025].

⁹ United Nations, *UNE-Government Survey 2024*. Report and Annex. (New York: United Nations, 2024), 111. <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2024>. [accessed: 1.9.2025].

¹⁰ Source: Department of Digital Economy and Digital Society.

ranked 35th out of 154 countries.^[11] Vietnam's human development index (HDI) in 2023 reached 0.766, rising to 93rd out of 193 countries, placing it in the group of countries with a high HDI. However, when considering the aspect of inequality, this figure drops to 0.641, a decrease of 16%, due to disparities in education, healthcare, and income.^[12]

Indeed, alongside these achievements, the digital transformation process still faces challenges that affect its efficiency and equity. Specifically:

First, the lack of synchronization in technical infrastructure reduces growth efficiency and increases digital inequality. Specifically:

Digital technical infrastructure: the data system is quite fragmented, lacking description and classification standards, which makes integration, sharing, and interoperability difficult; the lack of a national-scale shared platform between businesses and localities increases transformation costs.

Specifically, by the end of March 2025, approximately 50% of the shared databases of ministries, sectors, and localities that have been listed as slow to be implemented, including the national databases on construction and immigration^[13], will still be affected. This impacts the equitable access to opportunities and costs for citizens, especially in online public services, healthcare and energy – three areas that significantly affect people's quality of life.

In online public services, some national and specialized databases (such as land, construction, civil registration, etc.) are slow to be completed and put into operation, or do not yet meet the requirements of "accurate, complete, clean, and active" data for implementing interconnected administrative procedures without depending on provincial administrative boundaries, making the centralized online public service system of some ministries and sectors unstable. The rate of exploitation and reuse of digitized data at ministries and sectors only reached 4.18% of dossiers; localities reached 40.71% of dossiers. The rate of online dossiers throughout the entire process of resolving administrative procedures nationwide in August 2025 only reached 39.71%, of which ministries and sectors reached 52.45%, and localities reached 15.79%. The rate of digitization of dossiers and results of resolving administrative procedures at ministries and sectors reached

¹¹ Source : Ministry of Science and Technology, Report No. 44/2025 on National Digital Transformation, March 2025. White Report. (Hanoi: Ministry of Science and Technology, 2025), 4-7.

¹² United Nations Development Programme, *Human Development Report 2025. A Matter of Choice: People and Possibilities in the Age of AI* (New York, 2025), 2.

¹³ Ministry of Science and Technology, Report No. 44/2025, 4-7.

52.57%; localities reached 65.01%. The percentage of electronically issued results with legal validity for reuse in ministries and agencies reached 52.72%; and in localities reached 68.13%.^[14]

Similarly, in the healthcare sector, Vietnam is promoting the development of shared data infrastructure through hospital information systems (HIS) and electronic medical records (EHR/EMR) to facilitate patient access, avoid duplicate tests, and improve treatment quality. However, due to fragmentation, a lack of standardized terminology, and a structure for describing/classifying data across individual systems (HIS, LIS, PACS), integration, sharing, and interoperability between hospitals are hampered. This, in turn, affects the effectiveness of digital transformation and the equitable distribution of access to digital services.

There is a disparity in digital infrastructure between regions and between business groups, which widens the digital divide between urban residents and those in high mountainous areas, and between large enterprises and small and medium-sized enterprises that lack resources to invest in digital technology, affecting fairness in accessing and benefiting from the achievements of digitalization. For example, due to a lack of investment in digital infrastructure and enhanced security capabilities, many hospitals in disadvantaged areas have not yet completed the implementation of electronic medical records. As of October 2025, only about 61% of facilities will have implemented electronic medical records.^[15] Meanwhile, about 26% of the population has 5G coverage, making it easier to use the internet for business activities and administrative procedures. Approximately over 50% of the adult population, mainly concentrated in rural areas, do not have digital signature certificates, which will make transactions in the digital environment less convenient.^[16]

The organization of connected data is also unscientific, lacking a data lifecycle policy and authorization – controlling, which reduces economic efficiency and raises public concerns about information security.

¹⁴ Source: Ministry of Interior, Report No. 8674 on the implementation of administrative reform work in the third quarter of 2025. White Report (Hanoi: Ministry of Interior, 2025), 6.

¹⁵ Source: Ministry of Health's. http://moh.gov.vn/tin-lien-quan/-/asset_publisher/vjYyM7O9aWnX/content/-a-co-hon-1-000-benh-vien-trien-khai-benh-anien-tu. [accessed: 10.12.2025].

¹⁶ Source: Ministry of Science and Technology, Report No. 44/BC-KHCN dated March 31, 2025 on National Digital Transformation, March 2025.

Energy infrastructure: The digital transformation and economic development process increases the demand for electricity consumption, with an average increase of 12-16% per year during the 2026-2030 period.^[17] This also puts pressure on the green transformation, as the main energy source is still fossil fuels. By the end of the first quarter of 2025, coal power accounts for 56.5%, hydropower for 19.1%, and renewable energy for only 16% of the national system's total electricity output, with solar power reaching 6.69 billion kWh and wind power reaching 4.45 billion kWh.^[18]

The national power grid system lacks the capacity and intelligence to efficiently integrate a large proportion of variable renewable energy sources. Transmission line congestion limits the capacity to absorb new renewable energy, leading to renewable energy curtailment, which reduces investment efficiency and affects green energy development goals. In parallel, energy storage technology, such as batteries and green hydrogen are still limited in scale and high in cost, posing challenges to the development process.

Second, regarding digital human resources: there is a shortage of high-quality digital human resources at all three levels: leadership (digital strategy literacy), experts (AI, cloud, cybersecurity, data analysis), and employees (basic digital operation skills), leading to a shift of digital human resources from small and medium-sized enterprises to large enterprises, which further exacerbates the digital divide between large enterprises and small and medium-sized enterprises.

Compared to other countries in the region, the digital skills of Vietnam's workforce are still low, ranking only above Cambodia; on a global scale, it ranks 97th out of 141 countries.^[19] Approximately 55% of Vietnam's adult population has basic digital skills, about 15% have intermediate to advanced digital skills, and about 1% have specialized skills (information technology,

¹⁷ Song Linh, "Green and Clean Energy Development to Meet Economic Growth" *Vietnam Financial Times* (2025). <https://thoibaotaichinhvietnam.vn/phat-trien-nang-luong-xanh-sach-dap-ung-tang-truong-kinh-te-173675.html> [accessed: 3.4.2025].

¹⁸ Lan Anh, "Renewable energy accounts for 16% of total system-wide electricity output" *Ha Noi: Vietnam Clean Energy e-Magazine*, Q1 (2025). <https://nangluongsachvietnam.vn/d6/vi-VN/news/Quy-I2025-nang-luong-tai-cao-chiem-16-tong-san-luong-dien-toan-he-thong-6-8-28130>. [accessed: 4.4.2025].

¹⁹ Klaus Schwab, *The Global Competitiveness Report* (Switzerland: World Economic Forum, 2019).

AI, big data).^[20] A notable point is that people with basic digital skills rarely use them for innovation, but mostly use social networks for entertainment or shopping purposes. In early 2025, about 75.2% of the country's total population uses social networks,^[21] and of these, about 1/3 of users regularly follow influencers, brands, and real-time entertainment content^[22]. On average, social platform users spend 2 hours per day sharing content, messaging, and watching videos. Notably, 86% of Gen Z internet users are identified as online gamers, many of whom use live streaming as a way to interact with the gaming community.^[23]

Meanwhile, the current training system lacks legal requirements for equipping individuals with AI Literacy and regulations on AI Literacy learning outcome standards. This creates barriers to the effectiveness of the digital transformation process.

More notably, there are also significant disparities in digital skills among different groups, such as workers in rural and remote areas, low-income individuals, informal workers, low-skilled workers, the elderly, and laborers in the traditional sectors of ethnic minorities. Therefore, accelerating the digital transformation process is likely to severely exacerbate digital inequality, affecting the ability to maintain employment, access new job opportunities, and enjoy the benefits of this transition.

Third, regarding information security: information safety and data security have not met societal demands, with many illegal acts related to digital technology emerging, eroding the digital trust of citizens and businesses, and adversely affecting the digital transformation process. For instance, in 2024, Vietnam had up to 14.5 million leaked accounts, accounting for 12% of the global total, and over 40,000 security vulnerabilities. Fraudulent activities and cyber attacks caused nearly 11 million USD in damages, primarily concentrated in the finance, energy, and technology sectors.^[24] In the first 8 months of 2025 alone, according to statistics from the Department

²⁰ PricewaterhouseCoopers, *Vietnam Digital Readiness Report* (PwC, 2021); TopDev, *Vietnam IT Market Report (2024 -2025) – Vietnam IT & Tech Talent Landscape* (TopDev, 2024).

²¹ Source: Datareportal.com. <https://datareportal.com/reports/digital-2025-vietnam>.

²² Source: statista.com. <https://www.statista.com/topics/6231/internet-usage-in-vietnam/#topicOverview>.

²³ Source: ibidem.

²⁴ Viettel Cybersecurity Company, *Report on The Information Security Risk Situation in Vietnam in 2024* (Vietnam, 2024).

of Cybersecurity and High-Tech Crime Prevention, Vietnam recorded over 4,500 detected malicious domains and 1,500 cases of online fraud disguised as deepfakes, chatbot spoofing, and malware distribution, with estimated damages exceeding 1,660 billion VND. Among these, a transnational fraud ring operating in Cambodia scammed over 13,000 victims, misappropriating nearly 1,000 billion VND.^[25]

Furthermore, the process of integrating complex legacy systems is difficult to integrate with modern digital technology. Additionally, over-reliance on a single technology provider (vendor lock-in) makes switching to another provider excessively costly, creating risks of operational disruption that affect the efficiency of the twin transition. This, in turn, creates a digital divide and a green divide in the economy, increasing the risk of vulnerable groups being left behind and eroding the goal of equity.

Fourth, regarding culture and social ethics: Culture shapes human perception, directly affecting the manner of resource allocation, opportunities for technology access, and the benefits from the twin transition. With the characteristics of a collectivist culture (collectivist culture), which values community interests and social harmony, there is a tendency to prioritize “restorative fairness” (restorative fairness). This impacts policies and laws regarding the twin transition, leaning towards rectifying consequences rather than forecasting and preventing them, thereby weakening the ability to ensure long-term fairness. The emergence of a mentality of fearing change, being afraid of failure, and lacking trust in digital services, which originates from an agricultural culture, has negatively impacted economic development and reduced the effectiveness of the digital transformation process. A risk-averse mentality, a preference for safety, and choosing technology based on “trends” (AI, blockchain, etc.) but lacking clean data/standard processes, leads to the inability to develop pilot products, undermining the effectiveness and fairness of the transformation process.

Fifth, regarding policy and law: there is a lack of synchronization and comprehensive coverage of the issues that need to be regulated in the twin transition process. A common strategy and legal framework to synchronously regulate both the digital transformation and green transformation processes as a single entity has not yet been formulated. Policies and laws

²⁵ Doan Thi Phuong, “High-tech crime and challenges in the digital transformation process” *Cong Ly Newspaper*, (2025). <https://congly.vn/toi-pham-cong-nghe-cau-va-nhung-thach-thuc-trong-tien-trinh-chuyen-doi-so-475527.html>. [accessed: 22.10.2025].

are designed and regulated separately for each process, rather than being placed in a synergistic relationship, leading to a waste of resources and reducing the effectiveness of the twin transition. Indeed, many businesses currently combining digital transformation with green transformation face numerous challenges in terms of human resources, finance, and technology infrastructure that require support from formal institutions. However, the lack of synchronization and delays in issuing implementation policies and regulations have eroded their motivation and determination to transform. The majority of businesses only undergo a relative transformation within their limited resources and do not yet dare to truly push for a deep transformation. Specifically, about 80% of innovative enterprises currently only stop at improving existing processes, rather than creating new value for the market.^[26] This is also a consequence of the delay in issuing regulations to implement support policies. Resolution 57-NQ/TW sets a target for spending on research and development (R&D) to reach 2% of GDP, with funding from society accounting for over 60%; and to allocate at least 3% of the total annual budget expenditure for science, technology, innovation, and national digital transformation, increasing gradually according to development needs. However, actual spending on investment in research and development (R&D) only accounts for 0.5% of GDP.

Regarding the digital transformation process, current legal regulations have not kept pace with new digital economy models related to artificial intelligence (AI), blockchain, tokenization of digital assets, cryptocurrency, etc. There is a lack of mechanisms to encourage digital investment, and the sandbox regulatory mechanism for new business models (Fintech, Healthtech, Edtech) is still limited. Current provisions of intellectual property law also have many shortcomings in recognizing and protecting rights to digital intellectual property created by AI as well as AI inventions. This reduces the efficiency of digital economy development in particular and the digital transformation process in general.

On 11 December 2025, the Vietnamese National Assembly enacted the Law on Digital Transformation (effective 1 July 2026). This law adopts a framework approach, coordinating inter-sectoral efforts, building upon and connecting existing laws related to digital transformation, avoiding overlap with

²⁶ Anh Minh, "Promoting the Digital Economy and TFP to Contribute to Enhancing National Competitiveness" *Government Electronic Newspaper* (2025). <https://baochinhphu.vn/thuc-day-kinh-te-so-va-tfp-gop-phan-nang-suc-canh-tranh-quoc-gia-10225071014170322.html>.

specific laws, and filling legal gaps in current legislation to form a complete legal system for digital transformation. This is the first law to recognize the principle of linking the digital economy with the green economy, reducing greenhouse gas emissions, and promoting the use of renewable energy; it also promulgates standards and regulations for reducing greenhouse gas emissions for digital infrastructure and energy-intensive digital technology applications and platforms, and provides tax incentives and green credit for digital-green projects. Despite containing only one provision, the law reflects the spirit of dual transformation. The issue of integrating digital transformation and green transformation policies is left to specialized legal regulations, which inherently have many limitations. This law also acknowledges the vision for digital transformation, the role, and policies of the state. Accordingly, digital transformation is a top strategic breakthrough, with citizens and businesses at the center, as the subjects and driving force; the State plays the role of creating institutions, leading and promoting the national digital transformation process in a fast, sustainable, inclusive, and secure direction; promoting the development of the digital economy to become an important growth driver through supporting businesses in digital transformation; building a fair, inclusive, and secure digital society; and prioritizing national resources to ensure the essential conditions for digital transformation (Article 4 of the Law on Digital Transformation).

Selectively adopting the experience of the European Union (EU) in the Digital Markets Act (DMA), the Digital Services Act (DSA), the Artificial Intelligence Act (AI Act) regarding ensuring the development of a fair and competitive digital market; To enhance transparency and protect the fundamental rights of users, South Korea's experience in laws such as the Framework Act on Intelligent Informatization, the Basic Law on the Development of Artificial Intelligence and Creation of a Trust Base, the Framework Act on the Promotion of Digital-Based Distance Education, and the Industrial Digital Transformation Promotion Act, which regulate comprehensive social digitalization and the development of digital human resources, Vietnam's Digital Transformation Law also stipulates the fundamental rights of citizens in a digital society such as:

- a. Right to access and connect to digital services: Guaranteed access to digital infrastructure, broadband internet connection services and terminal devices with reasonable quality and price, safety, meeting technical requirements, and suitable to regional conditions and the specific characteristics of population groups.

- b. Right to education, training, and digital capacity building: To receive education, training, and development in digital skills, information skills, critical thinking, and digital security, ensuring full participation in the digital socio-economic life.
- c. Right to labor and social security in the digital environment: To be guaranteed safe and fair working conditions; to receive social security benefits when working through digital platforms.
- d. Right to safety, security, and protection of personal data: To be guaranteed information security and confidentiality; to be protected in terms of privacy, personal secrets, and family secrets; to have control over personal data.
- e. Right to choose and decide on the use of digital services: To know, choose, or refuse to interact with algorithmic systems and AI;
- f. The right to human interpretation and intervention in automated decisions affecting legitimate rights and interests.
- g. The right to choose digital services in a fair competitive environment: To use digital services in a healthy and transparent competitive environment; not to be coerced or subjected to unlawful restrictions.
- h. The right to work and access to career opportunities in the digital society for all citizens fairly, by facilitating access to essential technologies and popularizing digital skills through: providing terminal equipment and internet connectivity; implementing basic digital skills training programs; providing labor market data and supporting workers in self-directing their careers in the digital environment.

However, the mechanism for compensating those harmed by this process is not stipulated in this Law.

Regarding the green transformation process, Vietnam pursues the goal of transitioning to a low-carbon economy, viewing green transformation as a pillar of sustainable growth. The green transformation occurs across multiple sectors, including energy, industry, agriculture, transportation, and tourism, along with green urban governance and resource conservation initiatives. Despite significant progress, the green economy currently accounts for only 4%-4.5% of GDP.^[27] The core barriers affecting the efficiency of this transformation also stem from infrastructure,

²⁷ Song Ha, "Initiating a New Economy: Momentum from Green Transformation, Digital Transformation" *Vneconomy Online Magazine*, (2024). <https://vneconomy.vn/khoi-tao-nen-kinh-te-moi-dong-luc-tu-chuyen-doi-xanh-chuyen-doi-so.html>.

finance, implementation capacity, and supporting institutions. Specifically, in the energy sector, the energy “greening” strategy is being promoted but faces barriers in power grid and storage infrastructure, especially the instability in policies for receiving solar and wind energy sources, which has reduced efficiency. In the industrial sector, the high cost of green technology makes it difficult for small and medium-sized enterprises to secure development capital. The green agriculture sector faces limitations regarding incentive policies, high costs, and a lack of technical guidance and digitalization support. In other words, the lack of an effective overall strategy, and reasonable plans and action programs causes the issuance of policies and legal regulations to implement support policies, and policies and training programs for human resource development to be slowly and unsynchronizably implemented, weakening the effectiveness of the green transformation process that is linked and interacts with the digital transformation.

The policy-making and legislative process is still too focused on economic efficiency and has not truly given full consideration to the element of equity, especially the harmonization between the goals of economic efficiency and social equity in the twin transition process. As analyzed above, the digital transformation itself also causes digital inequality among regions, ethnic groups, and population segments with different educational levels, social statuses, and socioeconomic conditions; inequity in income, job retention, and access to new job opportunities for vulnerable groups; and a lack of environmental justice, as digital technology itself can directly or indirectly increase environmental impact. Meanwhile, the green transformation also creates inequity in employment and job transition, affordability of related products and services (e.g., clean energy prices), accessibility of related products and services (e.g., access to education, digital health), access to transition finance, and access to capabilities (e.g., access to and development of knowledge, technology). Particularly, there is the issue of balancing current benefits with the costs borne by future generations from new forms of pollution, a concept scholars call intergenerational equity. For example, in urban transportation, the project for the energy transition from gasoline cars to electric vehicles has not clearly reflected a full assessment of the factors of a just and efficient transition. These are issues of distributive justice in benefits and risks, a reasonable transition process and roadmap, recognition of cultural characteristics, as well as compensation mechanisms for vulnerable groups/affected industries, the consequences of the post-transition period, and the issue of

intergenerational equity when the potential for pollution from improperly treated used batteries is considered. However, current legal regulations do not adequately provide for social impact assessment in policy-making, mandatory consultation mechanisms with parties with related rights and interests, or the establishment of a legal corridor for the formation and effective operation of support and compensation funds for vulnerable groups during the transition. Similarly, in ensuring the interests of the vulnerable group of workers, the provisions of the Labor Code do not effectively guarantee workers' interests during the digital technology transition, leading to employers abusing regulations on technological changes to unreasonably terminate labor contracts. In the field of human resource training to anticipate or transition to new jobs due to the twin transition or being affected by this activity, especially in the current context of AI technology development, legal regulations have many shortcomings in stipulating artificial intelligence literacy (AI literacy). Specifically, the Law on Education and its implementing documents do not have direct provisions on artificial intelligence literacy, nor an AI skills framework for different educational levels. Decision No. 1290/QĐ-BKHCN of 2024 only goes as far as recommending nine principles of responsible AI, and has not made them a mandatory legal obligation within the education system as in the United States, the European Union, Singapore, and South Korea. The Personal Data Protection Law of 2025 does not yet fully regulate acts of abuse and unauthorized self-storage of data as training data for AI in AI literacy education activities.

Today, the use of AI in the twin transition process brings many clear efficiencies. Concurrently, it also raises issues regarding the management and supervision of AI, especially the AI training dataset, to ensure that AI makes accurate, unbiased decisions that do not discriminate or violate the law. However, the 2025 Personal Data Protection Law is inadequate in providing mandatory regulations for controlling the origin, quality, and bias of the entire training dataset, as well as the algorithms used for large-scale data collection and processing. Furthermore, the model for management and product liability tracing for products created by AI also has many shortcomings. The 2025 Digital Technology Industry Law and the 2025 Artificial Intelligence Act have classified, managed, and traced liability for products created by generative AI based on a risk-based model, similar to the EU's approach, but it lacks detail and specificity, causing difficulties and increasing costs for the application process.

5 | Policy Implications and Recommendations for Perfecting the Legal Framework

5.1. Policy Implications

In essence, the twin transition consists of two parallel processes with a synergistic and contradictory relationship between the digital transformation and the green transformation. Therefore, the design of state policies and laws must be carried out within the context of the relationship between both processes.

More importantly, in the twin transition process, efficiency and equity are two parallel, complementary, and inseparable legal-economic binding factors. A twin transition process that focuses only on economic efficiency while ignoring social equity will not be sustainable. Integrating economic and legal perspectives in the twin transition shapes the principle of harmonizing the goals of equity and efficiency in the transformation process. Economic efficiency is only recognized for implementation on the basis of ensuring the goal of equity, which is specified into legal standards for social and environmental performance. In that case, equity becomes a dual constraint, serving as both an economic goal to maintain consensus and sustainable growth, and a mandatory legal standard (equality in access to technical infrastructure, digital technology, and green technology; distributive justice through compensation mechanisms for affected regions/sectors, support mechanisms for vulnerable and disadvantaged groups; implementation conditions, procedures, and roadmaps; consultation with affected communities; delineation of rights and responsibilities of stakeholders). Therefore, the principle of harmonizing equity and efficiency needs to be reflected throughout the entire process, from the design to the implementation of policies and laws on the twin transition. Accordingly, equity must be considered from all three aspects: Distributive (who bears the costs/enjoys the benefits, minimum compensation levels, loss ceilings for vulnerable groups), Procedural (transparency of the consultation process with affected parties and accountability), and Recognition (identifying cultural-geographical-historical specificities in policy design).

To harmonize the fairness and efficiency of the twin transition, legislators and policymakers can establish financial instruments (carbon tax, emissions trading system – ETS) linked to compensation mechanisms from the outset. For example, reducing taxes/electricity prices to neutralize distributional impacts, reinvesting in affected regions, directly refunding carbon revenues

to low-income households, or establishing regional/sectoral transition funds to finance retraining for transitions in affected sectors/regions.

Harmonization can also be achieved through procedures. For instance, establishing a set of multi-objective criteria to sequence the fossil fuel phase-out roadmap among sectors/regions/countries, where efficiency indicators (marginal abatement costs) must be balanced with fairness indicators (capacity, dependency, historical responsibility, development needs). Or, stipulating that incentives/investments for renewable energy projects are conditioned on commitments to create local jobs.

To ensure the effectiveness of the twin transition, it is necessary to prioritize the budget for upgrading digital infrastructure and energy infrastructure, and to reformulate labor training policies to match the needs of the transition, prioritizing the budget for skills conversion and regional/sectoral restructuring.

5.2. Recommendations for Improving the Legal Framework

Based on the analysis above, it is thought that to harmonize the goals of fairness and efficiency of the twin transition, the law also needs to be adjusted according to the principle of proportionality. This emphasizes the balance in protecting fundamental rights. For example, balancing the right to privacy with the right to data access. Or, regulations that encourage digital technology innovation while still maintaining systemic control.

To limit situations that are difficult to correct post-hoc and affect future generations, the law also needs to establish a set of criteria for assessing the fairness of the transition, as well as for monitoring, measuring, and ensuring accountability. The assessment and monitoring of fairness can be ensured through the development and integration of fairness indicators into the set of criteria for evaluating transition efficiency, such as: poverty and inequality risk index, improved access to digital services/clean electricity for vulnerable groups; post-transition disposable income, the digital divide, the green divide, the percentage of affected workers who are retrained and have equivalent or better quality jobs within a specified timeframe, the level of acceptance over time, and the ability and cost to remediate new pollution from the transition. Linked to this set of criteria are adjustment clauses for when fairness objectives are not met.

In parallel, the law needs to refine the set of criteria for organizing the transition roadmap, which includes both technical efficiency/economic

benefits and equity indices; develop a mechanism for equitable access to open data for sustainability purposes to shorten the data access gap between entities; and refine the labor law regulations on the termination of labor contract due to technological changes.

Finally, to enhance the effectiveness of the twin transition process, the law also needs to refine regulations on the management and control of risks posed by AI, as well as refine legal regulations on the recognition and protection of rights to digital intellectual property created by AI, and regulations on the legal status of compensation support funds for impacts caused by the twin transition process. At the same time, it is necessary to transparently regulate policies that encourage the transition process.

6 | Conclusion

The twin transition is the foundation for Vietnam to develop its economy rapidly and sustainably, enhancing the competitiveness and resilience of the economy against uncertain challenges. This process also poses many challenges in balancing economic efficiency and social equity. This requires Vietnam to have comprehensive economic and legal solutions, including solutions to enhance technical infrastructure capacity, issuing policies to promote a “just transition” according to a suitable roadmap, and refining relevant legal regulations.

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Navigating the Nexus in Southeast Asia: Legal Frameworks for Digital-Green Public-Private Partnerships in ASEAN’s Twin Transition Era

Abstract

This paper explores how Southeast Asia can build the legal foundations to support a “Twin Transition”: the shift toward both digital transformation and green sustainability, through Public-Private Partnerships (PPPs). Given ASEAN’s diverse legal systems, climate risks, and infrastructure gaps, PPPs are key to attracting private investment and innovation. But managing both digital and green goals in long-term contracts requires legal frameworks that are flexible, fair, and adapted to regional realities. This paper details a range of legal tools and mechanisms crucial for navigating this nexus in Southeast Asia. This includes the evolution of performance-based contracts to encompass both digital efficiency metrics and specific environmental outcomes, alongside innovative risk allocation strategies for technological obsolescence, cybersecurity, and climate-related events pertinent to the region. The paper examines the transformative potential of smart contracts and blockchain for enhancing transparency, accountability, and automated compliance in ASEAN’s digital-green projects, while also addressing their inherent vulnerabilities and regulatory challenges across diverse jurisdictions. Furthermore, it delves into the critical role of comprehensive data governance frameworks, including privacy-enhancing technologies and emerging AI governance standards, to manage the vast data generated by smart green infrastructure. Finally, it highlights the importance of fostering adaptive regulatory sandboxes for accelerating innovation, establishing robust dispute resolution mechanisms for complex, integrated projects, and leveraging existing and emerging international legal norms (e.g., cross-border data privacy rules, ASEAN digital integration frameworks) for facilitating greater regional collaboration in the Twin Transition. Ultimately, this paper advocates for a proactive, adaptive,

and ethically grounded legal architecture within ASEAN that can effectively bridge the divide between digital innovation and environmental stewardship, enabling PPPs to fully realize their potential as catalysts for a truly sustainable, technologically advanced, and resilient future across Southeast Asia.

KEYWORDS: Public-Private Partnerships (PPPs), Twin Transition, legal frameworks, ASEAN

1 | Introduction: ASEAN's Twin Transition and the Imperative for Digital-Green PPPs

The Association of Southeast Asian Nations (ASEAN) stands at a pivotal juncture, navigating a profound “Twin Transition” that encompasses both rapid digital transformation and an urgent shift towards green sustainability^[1]. These two strategic imperatives are not merely parallel policy tracks, but are increasingly recognized as deeply interconnected forces shaping the region's future development trajectory. The successful realization of ASEAN's ambitious goals within this dual transition hinges significantly on its ability to foster effective Public-Private Partnerships (PPPs).

1.1. Defining the Twin Transition: Digital Transformation and Green Sustainability in ASEAN

ASEAN's commitment to digital transformation is evident in its evolving digital landscape, which is undergoing a profound shift. This transformation is driven by a potent combination of digital sovereignty imperatives and evolving global geopolitics, leading to a nuanced “diverse cloud” approach that strategically balances local, US, and Chinese cloud service providers. This approach is not solely about technical merit, but reflects

¹ Thuy Nguyen Thi Thu, “Improving the Legal Framework for Green Finance in Vietnam. A Comparison With Selected ASEAN Countries” *Prawo i Więż*, No. 4 (2025): 847-867.

a strategic alignment and risk mitigation strategy for digital autonomy.^[2] Foundational initiatives, such as the ASEAN Digital Masterplan 2025^[3] (ADM 2025), are charting a course towards a more connected, innovative, and inclusive ASEAN, recognizing technology's pivotal role in the socio-economic fabric of the region.^[4] The economic potential is substantial, with projections indicating that ASEAN's digital economy could double to \$2 trillion by 2030.^[5]

Concurrently, ASEAN is intensifying its commitment to a green transition. This commitment is not merely an environmental obligation, but is viewed as a significant economic opportunity. Projections from the Boston Consulting Group suggest that pursuing carbon neutrality could add an impressive US\$3trillion to US\$5.3 trillion to ASEAN's GDP by 2050.^[6] Key regional initiatives underscore this dedication, including the ASEAN Green Initiative, which aims to plant at least 10 million native trees across the ten member states over a decade, and the ASEAN Biodiversity Plan, which sets ambitious goals such as restoring 30% of degraded ecosystems by 2050^[7]. Further solidifying this direction is the visionary ASEAN Strategy for Carbon Neutrality, endorsed in August 2023, which seeks to enhance ASEAN's global competitiveness through the development of regional green value chains, fostering green technologies, establishing credible standards for foreign capital flow, and cultivating green talent.^[8] The UNESCO Science Report (2021) explicitly affirms ASEAN's growing commitment to this

² Khwaja M. Mazher, "Review of Studies on Risk Allocation and Sharing in Public-Private Partnership Projects for Infrastructure Delivery" *Frontiers in Built Environment*, 11 (2025).

³ ASEAN, *ASEAN Digital Masterplan 2025* (ASEAN Secretariat, 2021).

⁴ Organisation for Economic Co-operation and Development, *Privacy Enhancing Technologies*. <https://www.oecd.org/en/topics/privacy-enhancing-technologies.html>. [accessed: 28.8.2025].

⁵ ASEAN, *ASEAN DEFA Study Projects Digital Economy Leap to US\$2tn by 2030*, 25 May 2024. <https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/>.

⁶ ASEAN, *ASEAN Charts Course for a Sustainable Future with Ambitious ASEAN Strategy for Carbon Neutrality*. 20 August 2023. <https://asean.org/asean-charts-course-for-a-sustainable-future-with-ambitious-asean-strategy-for-carbon-neutrality/>.

⁷ ASEAN Centre for Biodiversity, *ASEAN Green Initiative*, 2024.

⁸ ASEAN, *ASEAN Strategy for Carbon Neutrality: Public Summary* (ASEAN Secretariat, 2023).

dual green and digital transition, underscoring its strategic importance for the region.^[9]

A deeper examination of these two transitions reveals they are not simply parallel paths, but are profoundly interconnected and mutually reinforcing. The digital transition has the capacity to actively drive the green transition.^[10] For example, sensors can dramatically increase the efficiency of energy and materials, such as through automatic lighting systems in homes and offices triggered by movement. Likewise, the Digital Economy Framework Agreement (DEFA) supports both digital and green innovation, highlighting the powerful impact of integrating these transitions. To maximize benefits, policies and investments should target and incentivize such synergies, avoiding fragmented approaches.

1.2. The Strategic Role of Public-Private Partnerships (PPPs) in ASEAN Development

Public-Private Partnerships are key tools for building and improving infrastructure and public services. Unlike standard procurement, PPPs involve shared risks and rewards between government and private entities, with payment often tied to performance. This model enables faster delivery and makes large projects viable, especially when budgets are tight or specialized expertise is needed. PPPs usually involve long-term contracts, often lasting 20 to 30 years or more. The duration is carefully considered based on the project type and overarching policy objectives, ensuring the project's long-term necessity and the private party's sustained capacity for service delivery.^[11] A core aspect of PPPs is the meticulous distribution of risks, ideally allocating each risk to the party best equipped to assess, control, and manage its potential impacts.

Leading international development organizations, including the World Bank and the Asian Development Bank (ADB), provide extensive guidance and resources on establishing robust PPP legal frameworks, effective

⁹ United Nations Educational, Scientific and Cultural Organization, UNESCO Science Report: The Race Against Time for Smarter Development, 2021.

¹⁰ ASEAN, *ASEAN Digital Masterplan 2025*.

¹¹ Fauziah Zen, "Public-Private Partnership Development in Southeast Asia" *ADB Economics Working Paper Series*, No. 553 (2018).

governance structures, and key contractual aspects. These institutions consistently emphasize the necessity of a transparent and accountable legal and regulatory environment to build sustainable projects that align with the public interest.^[12] The World Bank, for instance, offers due diligence checklists, legislative examples, and various forms of regulation to guide effective project implementation.

PPPs are considered a critical enabler for bridging funding gaps and accelerating infrastructure development in ASEAN. The region faces substantial infrastructure investment needs, estimated by the Asian Development Bank at US\$2.8 trillion between 2016 and 2030, or US\$184 billion annually, to support economic growth and urbanization.^[13] Relying solely on public funds is often insufficient to meet these demands. PPPs are not merely an alternative financing option; they are a strategic imperative to “bridge the digital divide” and “stimulate investments across the digital economy.” The proven capacity of PPPs to mobilize significant private capital is demonstrated by the World Bank’s Private Participation in Infrastructure (PPI) database, which lists over 6,600 projects in low- and middle-income countries with investments exceeding US\$1.5 trillion between 1990 and 2019.^[14] Without effectively leveraging private sector investment and expertise through well-structured PPPs, the region risks facing significant funding shortfalls and implementation delays, thereby hindering the pace and scale of its twin transition.

1.3. The Nexus: Why Digital-Green PPPs are Critical for ASEAN’s Future

The merging of digital and green agendas unlocks powerful PPP opportunities in areas like smart cities, renewable energy, and sustainable agriculture. Digital tools enhance the efficiency and impact of green initiatives – such as sensor-driven energy savings and optimized waste systems. ASEAN’s 2045 Vision firmly embeds both digital transformation and sustainability as

¹² World Bank, World Bank Guidance on PPP Legal Frameworks. Public-Private Partnership Resource Center, 16 June 2022.

¹³ Asian Development Bank, *Framework for Improving ASEAN Infrastructure Productivity* (ASEAN Secretariat, 2020).

¹⁴ Anaïs Fabre, Stéphane Straub, “The Impact of Public-Private Partnerships (PPPs) in Infrastructure, Health, and Education” *TSE Working Paper*, No. 986 (2021).

strategic priorities. This vision articulates a future for ASEAN as a “Leading and connected Digital and Technological Community” and simultaneously as a “green ASEAN,” underscoring the foundational importance of this nexus.^[15] The ASEAN 2045 Vision aims to realize a resilient, innovative, dynamic, and people-centred ASEAN by 2045, where member states are united by regional solidarity and cooperation, envisioning a developed ASEAN as the epicentre of growth in the Indo-Pacific.^[16]

The core premise of this report revolves around the synergistic intersection of digital, green, and PPPs. While ASEAN has developed distinct policy frameworks for its digital agenda, such as the Digital Economy Framework Agreement (DEFA), and its green agenda, including the ASEAN Strategy for Carbon Neutrality and the ASEAN Declaration on Environmental Sustainability, these are often crafted and implemented in parallel.^[17] However, the available information demonstrates that digital capabilities are not merely complementary, but are transformative enablers for achieving green outcomes.^[18] If these two transitions are managed in silos, ASEAN risks missing significant synergistic benefits and failing to fully capitalize on their combined potential. This implies a higher-order strategic challenge for ASEAN: to move beyond fragmented, sectoral policy approaches towards truly integrated legal and policy frameworks that explicitly consider and promote how digital solutions can accelerate green transitions, and vice versa, within the unique structure of PPPs. This integrated approach is critical for unlocking the full potential of the twin transition and ensuring that PPPs are designed to maximize both digital efficiency and environmental sustainability simultaneously.

¹⁵ ASEAN, *ASEAN 2045: Our Shared Future* (ASEAN Secretariat, 2025).

¹⁶ Ibidem.

¹⁷ ASEAN, *ASEAN Strategy for Carbon Neutrality: Public Summary*.

¹⁸ ASEAN, *ASEAN Digital Masterplan 2025*.

2 | Foundational Legal and Policy Landscape for PPPs in ASEAN

The successful implementation of Public-Private Partnerships in Southeast Asia is deeply contingent upon the strength and clarity of its legal and policy environment. This section delves into the foundational aspects of PPP frameworks, key contractual considerations, and the inherent challenges and success factors for their effective deployment in the region.

2.1. Overview of PPP Legal Frameworks and Governance Models (World Bank, ADB perspectives)

Establishing robust governance for Public-Private Partnerships is a foundational requirement to ensure the selection of appropriate projects, promote fiscal responsibility, and avoid policy errors and associated costs.^[19] Good PPP governance involves a clear functional organization of the PPP project cycle, which can manifest in centralized models (common in unitary states with a central PPP unit) or decentralized models (more typical in federal countries, relying on line ministries and public development banks).^[20]

Developing a viable PPP framework is not a singular event but an intricate process involving a complex series of parallel and iterative initiatives.^[21] It necessitates continuous updating of various framework elements based on lessons learned from implemented PPP transactions and the evolution of national best practices^[22]. For instance, Indonesia's experience highlights the need for governments to select good projects for PPPs, ensure project preparation is thorough, and maintain commitment to the PPP process to attract private partners.

¹⁹ Inter-American Development Bank, *The Governance of Public-Private Partnerships: A Comparative Analysis*, 2020,

²⁰ Ibidem.

²¹ International Telecommunication Union and Malaysian Communications and Multimedia Commission, *Digital Policy Action Areas for a Connected ASEAN: ASEAN Best Practice Benchmarking and an Action Plan for Regional Harmonisation* (ASEAN Secretariat, 2024).

²² Ibidem.

The World Bank offers extensive resources and comprehensive guidance on PPP legal and regulatory frameworks, emphasizing the critical importance of a transparent and accountable legal and regulatory environment for building sustainable projects that align with public interest.^[23] These resources include due diligence checklists, legislative examples, and various forms of regulation to guide effective project implementation. The World Bank's guidance is intended for governments seeking to include PPPs in their toolkit for infrastructure development.

The Asian Development Bank provides valuable observations and suggestions for preparing and strengthening PPP laws specifically in developing Asia, with an emphasis on East Asia.^[24] Their analysis, derived from practical experience across various countries, identifies a broad consistency in what are considered desirable and undesirable elements within the overall PPP legal framework. While the distribution of content between a core PPP law and supporting legal instruments varies, the underlying principles remain consistent.^[25] A key observation is that a PPP law must ensure projects are affordable to users and government, and that the aggregated fiscal risk exposure of the government in the entire PPP program is assessed and managed.^[26]

The development of PPP legal frameworks is a continuous, adaptive process. The explicit statement that a viable PPP framework involves “updating the different elements of the PPP framework [...] as each new lesson is learned from PPP transactions as they are implemented and national best practice as it develops”^[27] underscores this dynamic nature. This ongoing adaptation is particularly pertinent for digital-green PPPs, where technological advancements in both digital and environmental domains are rapid and constantly evolving. Therefore, ASEAN's approach to legal frameworks for digital-green PPPs cannot be a one-time legislative act, but must incorporate institutionalized mechanisms for ongoing review,

²³ World Bank, *PPP Legal and Regulatory Framework*. Public-Private Partnership Legal Resource Center. <https://ppp.worldbank.org/public-private-partnership/node/9485>. [accessed: 8.10.2025].

²⁴ Asian Development Bank, *Public-Private Partnership (PPP) Handbook* (Asian Development Bank, 2020).

²⁵ Jeffrey Delmon, *Creating a Framework for Public-Private Partnership (PPP) Programs: A Practical Guide for Decision-Makers* (World Bank Group, 2017).

²⁶ Ibidem.

²⁷ International Telecommunication Union and Malaysian Communications and Multimedia Commission, *Digital Policy Action Areas for a Connected ASEAN: ASEAN Best Practice Benchmarking and an Action Plan for Regional Harmonization*.

learning, and adaptation of legal and policy instruments to remain relevant and effective. This implies a need for agile regulatory bodies and processes capable of responding to emergent challenges and opportunities in a timely manner.

2.2. Key Contractual Aspects and Risk Allocation Principles in PPPs

The PPP contract serves as the central pillar of the partnership, meticulously defining the relationship between the public and private parties, their respective rights and responsibilities, the allocation of risks, and providing essential mechanisms for dealing with unforeseen changes over the project's long lifecycle. These contracts can encompass several documents and agreements, such as power purchase agreements and implementation agreements, and may not be effective until other contractual agreements, like financing agreements, are in place.^[28] Contractual terms for PPPs typically range from 20 to 30 years, or even longer, with the specific duration contingent on the project type and overarching policy considerations. The project should be needed over the contract term, the private party should be able to accept responsibility for service delivery, and the procuring authority should be able to commit for the duration.^[29]

Key contractual provisions that are fundamental to PPP agreements include: clearly defined performance requirements (quality and quantity of assets/services), robust payment mechanisms (user charges, government payments, bonuses/penalties), flexible adjustment mechanisms for changing circumstances (e.g., extraordinary reviews of tariffs or modifications to service requirements), comprehensive dispute resolution procedures (e.g., expert panels, international arbitration), and detailed termination provisions.^[30] These provisions collectively establish the risk allocation within the contract, aiming to achieve the risk distribution determined during the project structuring phase.

²⁸ Zen, "Public-Private Partnership Development in Southeast Asia".

²⁹ Ibidem.

³⁰ World Bank Group, *Guidance on PPP Contractual Provisions 2019 Edition*, Public-Private Infrastructure Advisory Facility (PPIAF), 2019.

A core principle of PPPs is the strategic allocation of risks, ideally assigning each risk to the party best equipped to assess, control, and cope with its potential impacts. Common risks for private enterprise include cost overruns, technical defects, and an inability to meet quality standards (availability risk), while for public partners, demand risk (e.g., for a toll road) or ultimate liability for project outcomes can be concerns.^[31] The World Bank emphasizes that while well-designed contracts should be clear and comprehensive to create certainty, they are inherently “incomplete” given the long-term, complex nature of PPPs. Therefore, they must incorporate “bounded flexibility” to manage changing circumstances within the contract’s framework, ideally preventing costly renegotiations or premature termination.^[32]

A fundamental tension exists between the need for long-term contractual certainty and the rapid pace of technological evolution in PPPs. PPP contracts are designed for long durations, often decades, to provide the stability and predictability necessary for private investment. However, the context of the “Twin Transition” introduces an unprecedented pace of technological change, particularly in the digital domain. The acknowledgement that PPP contracts are “necessarily incomplete” and “cannot fully predict future conditions,” thus necessitating “flexibility built in,”^[33] highlights this inherent incompleteness. This, coupled with the rapid obsolescence of technology, creates a fundamental challenge: how to provide long-term contractual certainty for investors while simultaneously allowing for the agile integration of new, disruptive technologies and adaptation to unforeseen environmental changes. This implies that traditional PPP contract drafting, which often relies on fixed terms and predefined risks, may be insufficient for digital-green PPPs. Instead, it requires innovative contractual approaches that incorporate dynamic adjustment mechanisms, shared risk models for technological disruption, and provisions for continuous technological upgrades to maintain project relevance and efficiency over its lifecycle.

³¹ World Bank Group, *Allocating Risks in Public-Private Partnerships*. Public-Private Infrastructure Advisory Facility (PPIAF), 2016.

³² World Bank Group, *Managing Public-Private Partnership (PPP) Renegotiation*, 2021.

³³ Mikel Tejada Ibañez, “Rightly Done PPPs Can Be the Right Tool for Green and Resilient Infrastructure” *World Bank Blogs*, 1 July 2021.

2.3. Challenges and Success Factors for PPP Implementation in Southeast Asia

Implementing Public-Private Partnerships on a large scale in Southeast Asia is a complex undertaking, requiring specific and sufficient knowledge in areas such as financing structures, effective risk allocation, intricate contract management, and robust dispute resolution mechanisms.^[34] The transaction process itself is often protracted, adding to the complexity.^[35] Singapore, for instance, has a highly developed infrastructure, but PPPs play a lesser role there due to abundant public funds and strong public institutions, in contrast to countries like Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, where there are strong calls for PPPs.^[36] Poorly structured risk allocation can significantly deter competitive tendering, potentially reducing the number of prospective bidders and fostering opportunistic behavior.^[37] This is a critical factor, as adequate risk allocation and sharing (RAS) is considered a critical success factor in PPP project delivery, yet it is exceptionally complex to establish, structure, monitor, and enforce.^[38]

Key success factors for PPP implementation include the presence of coherent government policies, adequate public sector capacity to manage PPPs effectively, a genuine willingness within the public sector to foster mutual and collaborative relationships with private partners, and strong, consistent leadership throughout the project lifecycle.^[39] Investor confidence, particularly from international infrastructure investors, is highly sensitive to perceived political and commercial risks in unfamiliar economies. Therefore, an efficient, transparent, and predictable policy and institutional PPP framework is essential to attract and retain private capital.^[40] The ASEAN Principles for PPP frameworks offer non-binding recommendations to member

³⁴ Zen, "Public-Private Partnership Development in Southeast Asia."

³⁵ Ibidem.

³⁶ Ibidem.

³⁷ Sam Higgins et al., "Navigating the Geopolitical Cloud: ASEAN's Diverse Approach to Digital Sovereignty" *Forrester*, (2025).

³⁸ Mazher, "Review of Studies on Risk Allocation and Sharing in Public-Private Partnership Projects for Infrastructure Delivery."

³⁹ Sri Mulyani, "Critical Success Factors in Public-Private Partnership" *Journal of Accounting, Auditing and Business*, No. 1 (2021): 81-86.

⁴⁰ ASEAN Secretariat and Organisation for Economic Co-operation and Development, *ASEAN Principles for Public-Private Partnership Frameworks* (ASEAN Secretariat, 2014).

states, guiding them on how to implement effective PPP frameworks that prioritize value for money, affordability, financial sustainability, and the fulfillment of user needs and broader social objectives. These principles emphasize clear mandates, accountability, and sufficient resourcing for PPP units, as well as checks-and-balances between agencies that promote PPPs and those with oversight.

A significant disparity exists between policy ambition and practical implementation capability, highlighting an institutional capacity gap as a primary constraint on PPP scalability and innovation in ASEAN. While there are “strong calls for PPP” across key ASEAN economies like Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, a critical observation is that “public sector commitment for PPP and the realization of planned PPP projects are not always in the same path with the ambitious calls.”^[41] This suggests that the fundamental bottleneck for scaling up PPPs, especially the more complex digital-green variants, is often not merely the absence of legal frameworks but a deeper deficiency in institutional capacity. This encompasses limitations in human capital, such as a lack of specialized expertise, inadequate organizational structures, and insufficient governance maturity within public agencies.^[42] Addressing this gap through targeted capacity building, knowledge transfer, and institutional strengthening is therefore a critical precursor to unlocking the full potential of digital-green PPPs in the region.

2.4. From Soft Law to Hard Challenges: The Legal Status of ASEAN Frameworks

ASEAN’s approach to regional governance is characterized by a reliance on soft law instruments as non-binding frameworks, guidelines, and strategies that reflect consensus but lack enforceability. This legal architecture, while fostering cooperation, presents significant challenges for private investment, particularly in long-term Public-Private Partnership projects.

⁴¹ Zen, “Public-Private Partnership Development in Southeast Asia.”

⁴² World Bank, *The Role of Capacity Building in Strengthening PPP Institutions*. Public-Private Infrastructure Advisory Facility (PPIAF), 2022.

2.4.1. Non-Binding Nature of Key ASEAN Frameworks

The ASEAN Principles for Public-Private Partnership Frameworks are explicitly described as “non-binding recommendations” developed to guide member states in enhancing infrastructure investment through PPP.^[43] These principles, while comprehensive, do not impose legal obligations, leaving implementation to the discretion of individual states.

Similarly, the ASEAN Guide on AI Governance and Ethics, released in 2024, adopts a voluntary approach. It offers a set of ethical principles, transparency, fairness, privacy, and accountability, but its adoption is not mandatory. ASEAN itself acknowledges that the guide is “not legally binding” and is intended to “encourage alignment” rather than enforce compliance.^[44]

The ASEAN Strategy for Carbon Neutrality, launched in 2023, outlines ambitious goals for regional decarbonization and green investment. However, it functions as a strategic roadmap rather than a binding legal instrument. Member states retain full autonomy over their climate policies, and the strategy lacks enforcement mechanisms.^[45]

Likewise, the ASEAN Digital Masterplan 2025 envisions ASEAN as a leading digital bloc, but operates as a visionary blueprint rather than a regulatory mandate. It calls for harmonization of standards and digital inclusion, but does not compel member states to adopt specific legal reforms.^[46]

2.4.2. Institutional structure and legal implications

This reliance on soft law stems from ASEAN’s institutional design. Unlike the European Union, which possesses supranational legislative authority through its Parliament and Commission, ASEAN is an intergovernmental organization. Member states retain full sovereignty, and decisions are made by consensus. As a result, regional frameworks are aspirational and non-enforceable. For private investors, especially those entering long-term PPP contracts, this legal reality introduces profound uncertainty. Regional frameworks cannot be invoked to enforce contractual obligations or resolve

⁴³ ASEAN Secretariat and Organisation for Economic Co-operation and Development, *ASEAN Principles for Public-Private Partnership Frameworks*.

⁴⁴ ASEAN Secretariat, *ASEAN Guide on AI Governance and Ethics* (ASEAN Secretariat, 2024), <https://asean.org/book/asean-guide-on-ai-governance-and-ethics/>.

⁴⁵ ASEAN, *ASEAN Strategy for Carbon Neutrality: Public Summary*.

⁴⁶ ASEAN, *ASEAN Digital Masterplan 2025*.

disputes. Instead, investors must navigate a fragmented legal landscape shaped by diverse national laws, regulatory capacities, and political priorities. This fragmentation is more than a lack of harmonization, it is a structural barrier to legal certainty and risk mitigation.

2.5. In-Depth Legal Analysis from the National Perspective

The most significant legal analysis must occur at the national level, where “soft” ASEAN principles translate, or fail to translate, into “hard” law and binding contracts. A detailed examination of legal frameworks in key ASEAN economies reveals three distinct approaches that offer these valuable case studies.

2.5.1. Vietnam: A Proactive and Law-Driven Approach

Vietnam has emerged as a regional leader in crafting binding legal frameworks to support digital-green Public-Private Partnerships. Unlike ASEAN’s soft law instruments, Vietnam’s legislative strategy provides enforceable rights, obligations, and incentives, creating a high degree of legal certainty for private investors.

2.5.1.1. LAW ON DIGITAL TECHNOLOGY INDUSTRY (DTI LAW)

Passed by the National Assembly on 14 June 2025, and effective 1 January 2026, the DTI Law is the world’s first standalone statute dedicated to the digital technology industry.^[47] It defines digital technology as a strategic sector encompassing AI, semiconductors, cloud computing, and digital content.^[48]

Key provisions include:

- (i) Legal recognition of digital assets as “property rights under the Civil Code,” enabling enforceable ownership, transaction, and protection of intangible assets like AI models and blockchain tokens;

⁴⁷ Baochinphu.vn, *Law on Digital Technology Industry Approved*, 14 June 2025.

⁴⁸ Manh Hung Tran, Huu Tuan Nguyen, Huyen Minh Nguyen, “Vietnam: Digital Technology Law – Legal Foundations and Strategic Incentives to Accelerate Digital Economic Growth” *Connect On Tech*, 18 July 2025.

- (ii) Risk-based AI governance: AI systems are classified by societal impact, with high-risk systems subject to stricter oversight. This mirrors the EU AI Act and aligns with OECD principles;^[49]
- (iii) Startups receive 50% cost coverage for acquiring advanced technologies and developing prototypes. SMEs gain access to infrastructure subsidies, talent development, and priority in public procurement;
- (iv) Multiyear corporate tax reductions are offered to foreign firms that transfer technology and collaborate with local enterprises.^[50]

These provisions create a robust legal ecosystem for digital infrastructure, directly supporting PPPs in emerging tech sectors.

2.5.1.2. LAW ON DATA (EFFECTIVE 1 JULY 2025)

Although less publicized, the Law on Data complements the Digital/Tech regulatory framework by regulating cross-border data flows, data protection and privacy, and issues of digital sovereignty and national security. The law takes effect on 1 July 2025, and introduces obligations and classifications that affect both domestic and foreign entities handling data—measures that are directly relevant to data-driven PPPs (e.g., smart cities, AI environmental monitoring), because they create required legal guardrails for data transfer, storage, and access.^[51]

2.5.1.3. DECREE 180: INCENTIVIZING DIGITAL-GREEN PPPS (EFFECTIVE 1 JULY 2025)

Decree No. 180/2025/ND-CP (effective 1 July 2025) establishes exceptional incentive policies to promote PPPs in science, technology, innovation, and digital transformation. Key measures include generous tax and investment incentives, most notably the allowance to deduct up to 200% of actual R&D expenses for corporate income tax purposes, exemptions and reductions of land-use fees, support for technology acquisition and prototype development (up to 50% reimbursable for acquiring advanced technology/developing prototypes in certain cases), and mechanisms that can give state

⁴⁹ Ibidem.

⁵⁰ Baochinhphu.vn, *Law on Digital Technology Industry Approved*.

⁵¹ Law on Data, No. 60/2024/QH15, Law on Data (National Assembly of the Socialist Republic of Vietnam, 2024), <https://thuvienphapluat.vn/van-ban/Cong-nghie-thong-tin/Law-60-2024-QH15-Data/639658>.

agencies a procurement preference for products developed under PPPs. These incentives are intended to lower costs and share risks for private partners in innovation-heavy PPP projects.^[52]

These incentives are codified, not discretionary, offering enforceable benefits that de-risk investment and attract private partners

2.5.1.4. REVENUE-SHARING MECHANISM IN THE PPP LAW

Vietnam's PPP legal framework creates a downside revenue-sharing mechanism to protect private partners when user-pay or market revenues fall well short of the financial plan. Under the PPP law and implementing guidance, where actual project revenue drops below 75% of the revenue projected in the financial plan, the State will share 50% of the shortfall between actual revenue and the 75% threshold (i.e., the State covers half of the difference). This sharing is subject to conditions (for example, the shortfall must result from changes in planning, policy, laws or state action and investors must have exhausted remedial measures such as tariff adjustments or term extensions). The rule is framed to apply to classic market-risk PPP models (e.g., BOT/BTO/BOO) and aims to make user-pay projects more bankable by limiting downside exposure.^[53]

In practice, the mechanism operates as a contingent fiscal/contractual backstop rather than an unconditional subsidy. Guidance and commentary emphasize (i) procedural conditions for eligibility, (ii) the State's ability to require investors to pursue mitigation measures first, and (iii) that the mechanism is intended to be applied on a project-by-project basis with implementing decrees and circulars fleshing out operational detail. Some official and legal-market summaries also note limited transitional or stronger protections in early operation periods for particular projects (e.g., exceptional arrangements in the first years under certain rules).^[54]

⁵² Decree No. 180/2025/ND-CP, Mechanisms and Policies for Public-Private Partnership in the Field of Science, Technology, Innovation and Digital Transformation (Decree No. 180/2025/ND-CP) (Government of the Socialist Republic of Vietnam, 2025), <https://thuvienphapluat.vn/van-ban/EN/Dau-tu/Decree-180-2025-ND-CP-mechanisms-and-policies-for-public-private-partnership-in-the-field-of-science/671190>.

⁵³ PricewaterhouseCoopers Vietnam, *New PPP Framework: Highlights of Vietnam's PPP Regime (legal brief)* (PwC, 2020).

⁵⁴ *Vietnam's New PPP Law – Key Features and Implications*. Frasers Law Company. 2021.

2.5.1.5. STRATEGIC IMPACT

By codifying revenue-sharing and related guarantees, Vietnam reduces regulatory and cash-flow uncertainty for projects that depend on variable user demand (e.g., renewables with merchant offtake, digital platforms, smart-city services). This statutory clarity helps lenders and equity investors model downside scenarios with greater confidence; (ii) Risk mitigation via fiscal and contractual tools. The sharing rule converts a portion of market risk into a quasi-public fiscal obligation when specified triggers occur. Paired with other incentives (tax, land, R&D support) set out in implementing decrees such as Decree 180/2025, these mechanisms materially lower project risk and cost of capital for innovation-heavy PPPs; (iii) Institutional capacity to regulate emerging technologies. Binding laws plus sectoral decrees create a predictable supervisory and implementation architecture (procurement preferences, cost-sharing for prototypes, R&D deductions, etc.) which is better suited to govern projects with technical, data, and security dimensions (e.g., AI-enabled environmental monitoring or urban digital platforms). This contrasts with instruments that only offer voluntary guidance; (iv) Vietnam's statute-plus-decree model, embedding enforceable revenue-sharing and concrete fiscal incentives, offers a different governance logic from ASEAN's primarily soft law approach (e.g., the ASEAN Guide on AI Governance and Ethics), which provides nonbinding principles and harmonization guidance, but lacks enforceable fiscal or contractual guarantees for investors. That difference makes Vietnam comparatively attractive for private capital seeking legal-backed risk sharing and tangible procurement/incentive pathways.

2.5.2. Indonesia: The Institutional and Regulatory Bottleneck

Indonesia's development ambitions are *clearly articulated in its* National Medium-Term Development Plan (RPJMN) 2024–2029,^[55] which prioritizes infrastructure modernization, digital transformation, and sustainability. However, a critical gap persists between these strategic goals and the legal-institutional realities that govern Public-Private Partnerships and smart city initiatives.

⁵⁵ I.N. G. Putra, "Smart City Development in Indonesia: Challenges and Policy Directions," *Food and Fertilizer Technology Center for the Asian and Pacific Region*, August 30, 2021.

2.5.2.1. LENGTHY PPP PROCESSES AND LEGAL FRAGMENTATION

Despite a robust pipeline of PPP projects, the process remains “too lengthy,” often taking “one to two years” from project identification to financial close, a timeline that significantly deters private investment.^[56] The complexity arises from overlapping mandates and fragmented coordination among key agencies, including BAPPENAS, the Ministry of Finance, LKPP, and sectoral ministries. Each plays a role in project appraisal, procurement, and monitoring, but the lack of streamlined governance creates bottlenecks that stall momentum.^[57]

2.5.2.2. SMART CITY POLICY: SECTORAL AND UNSUSTAINABLE

Indonesia has launched numerous smart city initiatives, including the 100 Smart Cities Program, but these remain “sectoral and unsustainable,” lacking a unified legal framework for standardization and integration. There is no specific legal instrument to regulate smart city architecture, data governance, or interoperability standards. As a result, digital-green projects, such as an AI-powered waste management system, must navigate a fragmented legal landscape, facing multiple compliance regimes across environmental, data, and municipal laws.^[58]

This regulatory fragmentation increases transaction costs and legal uncertainty, undermining investor confidence. In contrast, Vietnam’s Decree 180 and DTI Law offer a unified legal foundation and targeted incentives for digital-green PPPs, streamlining project development and reducing risk.

2.5.2.3. COMPARATIVE INSIGHT

Indonesia’s institutional bottlenecks are not merely technical, they are structural. The country’s fragmented, polycentric governance architecture and the persistence of siloed ministries and agencies inhibit the coordination needed for cross-sectoral digital-green projects, producing regulatory gaps and implementation delays that undermine integrated

⁵⁶ McKinsey & Company, *Can PPPs Solve Indonesia’s Infrastructure Needs?*, 2021.

⁵⁷ Global Challenge Advisory, *A Brief Overview of Indonesian PPP Framework*, 2024.

⁵⁸ King & Wood Mallesons, *Public-Private Partnerships in Asia – Indonesia Guide*, 8 July 2025.

PPP initiatives.^[59] The absence of a consolidated, binding set of legal instruments, combined with uneven subnational capacity and overlapping agency mandates, means that ambitions for the Twin Transition often remain policy statements rather than bankable, law-backed programs.^[60] For ASEAN to make credible progress on the Twin Transition, Indonesia will need to move from high-level policy ambition to legal precision: adopting enforceable statutes, clear assignment of regulatory responsibilities, and project-level risk-sharing rules so that multi-sector PPPs can be planned, financed, and governed coherently. Vietnam's recent turn toward binding laws and implementing decrees (e.g., national data legislation and Decree 180/2025) provides a practicable model, one that replaces voluntary guidance with statutory instruments and fiscal/contractual guarantees that materially improve bankability and investor confidence.^[61]

2.5.3. Singapore: A Mature but Distinctive Legal Ecosystem

Singapore's legal environment plays a distinctive and enabling role in the Twin Transition. PPPs are used in Singapore, but they occupy a lesser role in financing major infrastructure relative to many other countries, not because of policy failure, but because Singapore's strong public finances, government-linked commercial entities, and sovereign investment capacity reduce the fiscal imperative to transfer financing risk to private partners.^[62] When a government has ample fiscal space and low borrowing costs it can often finance and deliver public assets directly; the State may instead use PPPs selectively to co-create innovation and leverage private expertise rather than to fill funding gaps.

⁵⁹ Natural Resource Governance Institute, *The Governance Challenge behind Indonesia's Resource Ambitions*, 23 June 2025.

⁶⁰ King & Wood Mallesons, "Public-Private Partnerships in Asia – Indonesia Guide."

⁶¹ Vietnam Briefing (Dezan Shira & Associates), *Vietnam's PPP Framework for Science, Tech and Digital Transformation (Decree 180/2025/ND-CP)*, 2025.

⁶² World Bank, *Singapore: Public-Private Partnership (PPP) Profile, Benchmarking Infrastructure Development 2023*, 2023.

2.5.3.1. ROBUST PERSONAL DATA PROTECTIONS WITH PREDICTABLE CROSS-BORDER RULES

The Personal Data Protection Act (PDPA) provides a baseline data-protection standard and contains a transfer-limitation obligation: personal data may be transferred overseas only where steps are taken to ensure an overseas recipient provides a standard of protection comparable to the PDPA or other safeguards are in place. This framework combined with clear PDPC guidance on transfers, gives international, data-intensive projects a reasonably predictable legal pathway for cross-border data flows, which is essential for smart cities, regional platforms, and transnational environmental monitoring.^[63]

2.5.3.1. MATURE BREACH-NOTIFICATION AND ENFORCEMENT ARCHITECTURE

Amendments to the PDPA implemented a mandatory data breach notification regime in phases (first batch effective 2021) and strengthened enforcement powers and penalties thereafter. The PDPC's operational guides set out notification thresholds, timelines and procedural expectations, providing firms and public agencies with a clear compliance playbook and reducing regulatory ambiguity that can otherwise inflate legal and operational risk for international firms.^[64]

2.5.3.1. PRACTICAL AI GOVERNANCE THAT HAS REGIONAL INFLUENCE

Singapore's Model AI Governance Framework (first published 2019, updated 2020) supplies actionable, industry-oriented governance measures, accountability structures, explainability expectations, risk management steps that influenced the development of regional, non-binding instruments such as the ASEAN Guide on AI Governance and Ethics. The existence of such a tested, operational framework demonstrates how a mature legal-regulatory ecosystem can serve both as a domestic implementation

⁶³ Personal Data Protection Commission (PDPC), *Personal Data Protection Act (PDPA)*. <https://www.pdpc.gov.sg/overview-of-pdpa/the-legislation/personal-data-protection-act>. [accessed: 8.10.2025].

⁶⁴ Personal Data Protection Commission (PDPC), *Guide on Managing and Notifying Data Breaches under the PDPA*. 2021.

tool and as a regional reference model, helping to harmonize expectations without requiring supranational law.^[65]

Taken together, these elements reframe the policy question: it is not the count of PPP contracts that matters most, but the predictability, coherence, and enforceability of the legal ecosystem that underpins digital-green projects. For international investors and implementers, Singapore's combination of legal clarity (PDPA and guides), operational governance (Model AI Framework), and fiscal capacity (sovereign) reduces transactional friction and legal risk making the city-state a reliable hub for designing, piloting, and scaling data-intensive digital-green initiatives in Southeast Asia.

Vietnam, Indonesia, and Singapore illustrate three distinct legal pathways for the Twin Transition: Vietnam pursues a proactive, law-driven model using binding statutes (and decrees such as Decree 180) and concrete fiscal/contractual tools (e.g., revenue-sharing, R&D incentives) to directly improve PPP bankability; Indonesia possesses a well-established, but fragmented framework where strong policy ambition is undermined by siloed institutions, overlapping mandates, and lengthy implementation processes that raise transaction costs for cross-sectoral digital-green projects; and Singapore relies less on traditional PPPs not from neglect, but because its mature legal ecosystem and fiscal capacity (clear PDPA cross-border rules, a tested AI governance model, and robust public financing) reduce the need to transfer risk to private partners while still offering high predictability for data-intensive initiatives. Together they demonstrate that regional progress will depend less on replicating a single financing model and more on combining legal precision, institutional capacity building, and targeted incentives, so that countries can choose the mix of statutes, regulatory clarity, and fiscal tools best suited to their fiscal context and development objectives.

⁶⁵ Infocomm Media Development Authority (IMDA), *Model AI Governance Framework (First Edition)*, 2019.

3 | ASEAN's Digital Transformation Agenda: Legal and Regulatory Dimensions

ASEAN's digital transformation agenda is underpinned by a series of strategic initiatives and evolving legal frameworks designed to foster a dynamic, secure, and inclusive digital economy. This section explores the key components of this agenda, including the Digital Economy Framework Agreement, data governance, AI governance, cybersecurity, and the role of regulatory sandboxes.

3.1. The ASEAN Digital Economy Framework Agreement (DEFA) and its Objectives

The Digital Economy Framework Agreement stands as a landmark initiative currently under negotiation by ASEAN member states, poised to establish the world's first region-wide digital economy agreement. This agreement represents a pivotal moment for the region, acting as a strategic blueprint for how nearly 680 million people can access an open, secure, and inclusive digital future. Its primary objectives include harmonizing diverse digital trade rules, integrating fragmented digital markets across the region, and unlocking ASEAN's immense digital economic potential. The comprehensive scope of DEFA encompasses critical areas such as digital trade, e-commerce, emerging technologies (including artificial intelligence and blockchain), and cross-border data flows.^[66] Negotiations for DEFA began in November 2023, with the bloc aiming to conclude at least a portion of the agreement by the end of 2025.^[67] DEFA is designed to significantly reduce regulatory divergence, which currently imposes an estimated \$15–20 billion annually in compliance overheads on ASEAN businesses. By harmonizing standards for data flows, e-payments, and digital product classification, it aims to lower transaction costs, particularly

⁶⁶ World Economic Forum, *Why ASEAN's New Digital Economy Framework Agreement Is a Game-Changer*, 26 May 2025.

⁶⁷ Naomi Wilson, "The Digital Economy Framework Agreement: ASEAN's Anchor in a Turbulent Digital Economy" *Information Technology Industry Council*, 17 July 2025.

benefiting small and medium-sized enterprises which often lack resources to navigate conflicting national rules. This unified approach is projected to cut cross-border transaction costs by 30 percent. Furthermore, binding commitments, such as banning data localization, are expected to attract substantial Foreign Direct Investment, with projections of \$30–50 billion annually,^[68] by signaling regulatory stability and aligning regional policies with global digital trade best practices. Crucially, DEFA also includes protocols for coordinated cyber defense, enhancing regional security in the digital domain, which is increasingly important for attracting AI investment. The successful implementation of DEFA is anticipated to unlock \$2 trillion in regional digital trade by 2030, significantly boosting the digital share of GDP and creating millions of digital jobs.^[69]

DEFA's ambitious objectives are fundamental to creating a predictable, efficient, and secure operating environment for any digital initiative, including complex digital-green PPPs. The agreement explicitly serves dual purposes as both a digital and a sustainability agreement, thereby laying a crucial foundation for green innovation. However, the ongoing negotiation process and the acknowledged "differences in development levels, regulatory capacity, infrastructure, and digital skills across the region" indicate that the implementation and enforcement of DEFA will be inherently complex. The success of digital-green PPPs will therefore heavily depend on how effectively DEFA translates its aspirational goals into genuinely harmonized, enforceable national regulations that reduce fragmentation, build trust, and provide the necessary legal certainty for long-term private investment.

⁶⁸ ASEAN Secretariat and Boston Consulting Group, *Study on the ASEAN Digital Economy Framework Agreement (DEFA): Public Summary Report*, 25 November 2024.

⁶⁹ Wilson, "The Digital Economy Framework Agreement: ASEAN's Anchor in a Turbulent Digital Economy."

3.2. Data Governance, Privacy Laws, and Cross-Border Data Flows in ASEAN

ASEAN is actively navigating the delicate balance between promoting the free flow of data, which is essential for digital economic growth, and ensuring effective data protection and privacy for its citizens.^[70] The Digital Economy Framework Agreement is central to this effort, aiming to establish an open, secure, interoperable, competitive, and inclusive regional digital economy.^[71] The evolving cyber laws of the People's Republic of China (PRC), which increasingly emphasize digital sovereignty and data localization, are significantly influencing Southeast Asia's digital regulatory environment.^[72] This growing influence, supported by infrastructure investments and digital partnerships under initiatives like the Digital Silk Road, complicates ASEAN's efforts to foster seamless, cross-border data flows and can lead to regulatory fragmentation. This challenge is particularly acute, as ASEAN's push for cross-border data flows is directly challenged by the PRC's insistence on digital localization.

Individual ASEAN member states have established their own specific privacy laws, such as Singapore's Personal Data Protection Act (PDPA), Malaysia's PDPA, and Thailand's PDPA. These laws exhibit varying approaches to data transfer and localization. Generally, they require that overseas recipients provide a level of data protection equivalent to national standards or that specific legal conditions for transfer are met, such as obtaining consent from the data subject, fulfilling contractual obligations, or serving significant public interest reasons. For instance, Singapore's PDPA sets limitations on data controllers regarding the transfer of personal data outside the country, requiring legally enforceable obligations or specified certifications from overseas recipients.^[73] Malaysia's PDPA generally restricts transfers unless specific conditions are met, though an upcoming

⁷⁰ Keita Oikawa, "ASEAN Data Governance: Implications for the Digital Economy Framework Agreement" *Economic Research Institute for ASEAN and East Asia (ERIA)*, No. 10 (2025).

⁷¹ World Economic Forum, *Why ASEAN's New Digital Economy Framework Agreement Is a Game-Changer*.

⁷² Julia Rocio Gatdula, "The PRC's Evolving Cyber Laws and Implications for Southeast Asia's Digital Economy and Integration" *Center for Strategic and International Studies (CSIS)*, 4 August 2025.

⁷³ Personal Data Protection Commission, *Advisory Guidelines on Key Concepts in the PDPA: Chapter 19 – The Transfer Limitation Obligation*, 27 July 2017.

amendment will allow transfers provided the Act's conditions are met.^[74] Thailand's PDPA also subjects transfers to strict limitations, generally requiring transfers to countries with adequate protection levels or under specific legal grounds.^[75]

Recommendations for DEFA, as part of its data governance mandate, include the creation of a comprehensive and regularly updated data regulation repository to enhance transparency and reduce compliance costs for businesses. Furthermore, DEFA should establish minimum standards for personal data protection and a clear framework for addressing sensitive issues such as government access to both personal and non-personal data, all aimed at building trust in cross-border data exchanges.^[76] Promoting regulatory interoperability and discouraging unnecessary data localization, drawing lessons from agreements like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, is also advised. The proposed ASEAN Data Governance Hub could serve as a pivotal mechanism for supporting digital integration.^[77]

Privacy Enhancing Technologies (PETs) are recognized as powerful tools that can complement existing privacy and data governance frameworks by enhancing data confidentiality and enabling secure collaboration.^[78] PETs offer innovative solutions that could help address some of the complexities associated with cross-border data flows, for example, by obfuscating personal data to such an extent that it can no longer relate to an identifiable individual. While Privacy Enhancing Technologies offer valuable support for data protection, they should not be viewed as a one-size-fits-all solution. Their use involves notable challenges, including potential data breaches and substantial computational demands, which highlight the need for well-defined regulatory frameworks to manage their risks effectively.

The successful implementation of integrated digital-green PPPs, particularly those involving smart infrastructure, is inherently reliant on the efficient and trusted flow of large volumes of data. However, the rising

⁷⁴ TMO Group, *Data Protection Laws in Southeast Asia: Overview by Country* (2024), 18 July 2024.

⁷⁵ Ibidem.

⁷⁶ Oikawa, "ASEAN Data Governance: Implications for the Digital Economy Framework Agreement."

⁷⁷ United Nations Conference on Trade and Development, *Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)*, 2018.

⁷⁸ Organisation for Economic Co-operation and Development, "Emerging Privacy-Enhancing Technologies: Current Regulatory and Policy Approaches" *OECD Digital Economy Papers*, No. 351 (2023).

global trend of digital sovereignty, exemplified by China's data localization policies influencing the region, coupled with the diverse and often restrictive national privacy laws within ASEAN, creates a fundamental tension.^[79] This tension between national control over data and the economic and operational benefits of cross-border data utility represents a significant legal and practical hurdle for digital-green PPPs, which often require seamless data exchange across borders and jurisdictions. This implies that ASEAN must develop a sophisticated and nuanced approach that carefully balances national security and privacy concerns with the imperative for data flow. This could involve promoting regulatory interoperability, developing regional data sharing protocols, and actively exploring the deployment of Privacy Enhancing Technologies to facilitate secure data exchange without compromising national interests.

3.3. AI Governance and Cybersecurity Frameworks in the Region

ASEAN has proactively addressed the governance of Artificial Intelligence by releasing the ASEAN Guide on AI Governance and Ethics^[80]. This guide provides foundational principles for organizations, including transparency and explainability, fairness and equity, security and safety, robustness and reliability, human-centricity, privacy and data governance, and accountability and integrity. It outlines key focus areas for the design, development, and deployment of AI systems, along with national and regional recommendations for policymakers, such as nurturing AI talent and investing in AI R&D.

A subsequent Expanded ASEAN Guide on AI Governance and Ethics specifically addresses the unique opportunities and risks posed by Generative AI (Gen AI). This expanded guide explores risks such as mistakes and anthropomorphism, factually inaccurate responses and disinformation, deepfakes, infringement of intellectual property rights, privacy and confidentiality, and the propagation of embedded biases.^[81] It recommends a range of policy actions for responsible adoption, emphasizing thoughtful,

⁷⁹ Heylyung Yun, "China's Data Sovereignty and Security: Implications for Global Digital Borders and Governance" *Chinese Political Science Review*, Vol. X (2024).

⁸⁰ ASEAN Secretariat, *ASEAN Guide on AI Governance and Ethics*.

⁸¹ ASEAN Secretariat, *Expanded ASEAN Guide on AI Governance and Ethics – Generative AI* (ASEAN Secretariat, 2025).

proportional, and regionally interoperable measures to ensure safety and promote a trusted Gen AI ecosystem.

Cybersecurity is identified as a critical and growing concern, as rapid digital transformation simultaneously increases ASEAN countries' vulnerability to cyber threats targeting their critical infrastructure, government institutions, businesses, and citizens.^[82] Cybercrime in Southeast Asia, for instance, increased by 82% between 2021 and 2022, with data breach losses exceeding \$3 million by July 2023.^[83]

Cybersecurity Risk Management (CRM) has emerged as a fundamental framework for understanding organizational security posture and investment decisions, with empirical research demonstrating its strong influence on resource allocation.^[84] The systematic identification, assessment, and mitigation of cybersecurity threats are particularly critical given the region's rapidly evolving threat landscape. Multi-group analysis reveals that critical infrastructure sectors exhibit significantly stronger direct relationships between risk management, governance, and cybersecurity investment, reflecting their heightened exposure and regulatory requirements compared to other sectors. This aligns with ASEAN's Cybersecurity Cooperation Strategy 2021-2025, which emphasizes risk-based approaches to securing the region's digital infrastructure.^[85] Digital defense is recognized as a strategic priority, with countries like Indonesia actively strengthening their digital defense access and capabilities through synergy between the Ministry

⁸² Mahirah Mahusin, Hilmy Prilliadi, "Strengthening ASEAN's Cybersecurity: Collaborative Strategies for Enhanced Resilience and Regional Cooperation" *ERIA Policy Brief*, (2024).

⁸³ Moises B. Carandang, Roxanne Jacutan, "Southeast Asia Is Tackling Cyberattacks on the Underbanked" *World Economic Forum*, 15 October 2024.

⁸⁴ Phasikha Rattanapong, Narongsak Sukma, Smitti Darakorn Na Ayuthaya, "Determinants of Cybersecurity Investment in ASEAN Organizations: An Integrated Structural Equation Modeling Approach" *Frontiers in Communications and Networks*, 6 (2025); Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, Jean Langlois-Berthelot, "Creating Resilient Artificial Intelligence Systems. A Responsible Approach to Cybersecurity Risks" *Prawo i Więź*, No. 5 (2025): 131-149; Dominik Bierecki, Mirosław Karpiuk, Claudio Melchior, Nicola Strizzolo, "Security in the Era of Cybersecurity Threats" *Prawo i Więź*, No. 4 (2025): 73-87; Christophe Gaie, Mirosław Karpiuk, Nicola Strizzolo, "Cybersecurity of Public Sector Institutions" *Prawo i Więź*, No. 6 (2024): 347-363.

⁸⁵ Phasikha Rattanapong, Narongsak Sukma, Smitti Darakorn Na Ayuthaya, "Determinants of Cybersecurity Investment in ASEAN Organizations: An Integrated Structural Equation Modeling Approach" *Frontiers in Communications and Networks*, 6 (2025).

of Communication and Digital Affairs and the National Armed Forces. This collaboration extends to expanding internet connectivity in remote regions and strengthening national defense in the digital domain, acknowledging that digital warfare is a component of modern geopolitical conflicts.

The urgency of harmonized and sector-specific AI and cybersecurity governance for critical infrastructure PPPs is paramount. Digital-green PPPs, particularly those involving smart cities, energy grids, and other critical infrastructure, are inherently reliant on advanced digital technologies, including AI, and are highly susceptible to cyber threats.^[86] The information highlights the “diverse digital landscapes” and varying maturity of national laws related to data protection and cybersecurity across ASEAN member states. This fragmentation, coupled with the significant vulnerability of critical infrastructure,^[87] suggests that a siloed or inconsistent approach to AI and cybersecurity governance could create systemic vulnerabilities across regional PPPs, undermining trust and deterring investment. The stronger influence of risk management and governance factors on cybersecurity investment in critical infrastructure sectors further underscores the need for a targeted approach. Therefore, a crucial implication is that ASEAN must prioritize the development of harmonized, sector-specific AI and cybersecurity frameworks for digital-green PPPs, potentially through a dedicated working group as suggested in the ASEAN Guide on AI Governance and Ethics. This is essential not only for mitigating risks but also for attracting and securing the necessary private investment in these high-stakes, high-impact projects, ensuring their long-term resilience and operational integrity.

3.4. Role of Regulatory Sandboxes in Fostering Digital Innovation

Regulatory sandboxes are structured, time-bound environments that allow innovators to test emerging technologies under relaxed regulatory conditions. These frameworks help regulators observe risks in real time, while enabling businesses to validate commercial viability without the full burden

⁸⁶ Jianguo Ding, Attia Qammar, Zhimin Zhang, Ahmad Karim, Huansheng Ning, “Cyber Threats to Smart Grids: Review, Taxonomy, Potential Solutions, and Future Directions” *Energies*, 15 (2022): 6799.

⁸⁷ Rattanapong, Sukma, Ayuthaya, “Determinants of Cybersecurity Investment in ASEAN Organizations: An Integrated Structural Equation Modeling Approach.”

of compliance. Across ASEAN, countries like Singapore, Malaysia, Thailand, Indonesia, Brunei, and Vietnam have adopted fintech-focused sandboxes with varying durations and scopes. For example, Singapore's MAS sandbox spans banking and securities sectors,^[88] Thailand emphasizes blockchain and biometrics,^[89] and Brunei explores Islamic.^[90] Vietnam has taken a notable step forward by expanding its sandbox under the IFC Resolution to include digital technologies, crypto assets, and green finance, demonstrating a commitment to digital transformation and sustainable innovation.^[91]

This expansion signals a strategic evolution in regulatory thinking. Vietnam's inclusion of green finance and carbon credits within its sandbox reflects a growing recognition that the model, proven effective in fintech, can accelerate the twin digital-green transition. Specialized sandboxes could support innovations like AI-powered smart grids, blockchain-based carbon credit tracking, and IoT-enabled sustainable agriculture platforms.^[92] These environments offer low-risk experimentation, generate real-world data, and inform agile, future-proof policy frameworks. As ASEAN economies pursue sustainable growth, adopting digital-green sandboxes could strengthen public-private partnerships and position the region as a leader in climate-conscious innovation.

3.5. The Jurisdictional Fragmentation of National Laws

The existing treatment of ASEAN's digital transformation agenda in the paper gives a good descriptive account of instruments and principles but falls short of a project-level legal analysis. That omission matters because high-level convergence on principles (e.g., the ASEAN Guide on AI Governance and Ethics) does not by itself resolve concrete, transaction-level frictions that arise when a single PPP spans multiple national legal regimes.

⁸⁸ Monetary Authority of Singapore, *FinTech Regulatory Sandbox*, 2023.

⁸⁹ Bank of Thailand, *Regulatory Sandbox Framework*, 2023.

⁹⁰ Brunei Darussalam Central Bank, *FinTech Regulatory Sandbox Guidelines*, 2020.

⁹¹ Tram Ngoc Bich Nguyen, Duong Duy Nguyen, *Vietnam's Regulatory Sandboxes: Paving the Way for Digital Innovation* (Tilleke & Gibbins. Mondaq, 2025).

⁹² Liyuan Liu, Meng Han, "EcoIntegrity: AI-Augmented Blockchain Framework for Carbon Footprint Tracking and Incentives in IoT," [in:] *Smart Grid and Innovative Frontiers in Telecommunications* (Springer, 2025).

Singapore: Under the PDPA, organisations may transfer personal data overseas only if they have taken “appropriate steps” to ensure the overseas recipient is bound by legally enforceable obligations or a comparable standard of protection (e.g., contractual clauses, binding corporate rules, or certification mechanisms).^[93] This means that for a Singapore data provider to ship live, personal-identifiable traffic or mobility data to a foreign host, the Singaporean partner must secure enforceable contractual protections or rely on an adequacy mechanism. That requirement is contract-focused: private law obligations can clear the transfer gate, but they must be sufficiently binding and enforceable.

Indonesia (PDP Law No. 27/2022): Indonesia permits cross-border transfers where (1) the recipient jurisdiction has an equivalent or higher protection level, (2) adequate and binding safeguards are in place (e.g., appropriate contractual safeguards or BCRs), or (3) where the data subject consents (with narrow practical utility for large machine-generated flows).^[94] Implementation rules add reporting/notification duties and a tiered approval process that can delay operational transfers. In short, Indonesia also accepts contractual or adequacy routes, but supervisory reporting and administrative review add time and compliance steps.

Vietnam (Law on Data / 60/2024 and related measures), Vietnam’s recent data legislation expands regulatory reach beyond personal data to broader categories such as “important data” or “core data,” with prior-authorization or localization risk for certain categories and a broad government access/remit in defined circumstances.^[95] The practical effect reported in contemporaneous coverage and sectoral analysis, is that some cross-border transfers may require prior authorization or be restricted on national-security grounds, creating a potential hard stop for transfers that would otherwise be permitted under Singapore PDPA contracting solutions.

Illustrative Impact at the Project Level (Smart-City PPP): Consider a scenario where a Singapore-based systems integrator manages a smart-city mobility platform that collects and processes live traffic data. The platform

⁹³ Personal Data Protection Commission (PDPC), *Advisory Guidelines on Key Concepts in the Personal Data Protection Act (PDPA)*, 17 May 2022.

⁹⁴ “Indonesia Personal Data Protection Law (Law No. 27/2022) and Commentary on Cross-Border Transfers (Articles 55–56),” [in:] *Lexology*. <https://www.lexology.com/library/detail.aspx?g=3d7e6476-a8b4-4dc3-bbd5-b7ba70507b2c>.

⁹⁵ Reuters, “Vietnam’s Planned Data Law and Industry Reaction,” U.S. Tech Firms Warn Vietnam’s Planned Law to Hamper Data Centres, Social Media, 4 November 2024.

is designed to transmit anonymized, real-time telemetry to a regional analytics cloud located in Vietnam, supporting cross-border optimization and collaborative research. Under Singapore's legal framework, such data transfers are permissible if the Vietnamese data processor is bound by enforceable contractual safeguards. However, Vietnam's Data Law introduces a different legal reality. The same traffic feed could be deemed "important data" if it intersects with definitions related to critical infrastructure or national security. This classification may trigger regulatory requirements such as prior government approval, data localization, or mandatory in-country processing, obligations that cannot be bypassed through contractual agreements alone. In practice, this legal asymmetry turns what was expected to be a routine API integration into a prolonged regulatory negotiation. It may require a fundamental redesign of data architecture, including where data is stored and who has access. These legal constraints also ripple into financial modeling, affecting projected revenues, contract structuring, and how insurers evaluate political and regulatory risk exposure.

3.5.1. The Legal Status of ASEAN Soft Law, how Non-Binding Instruments can Nevertheless have Legal Effect

ASEAN soft-law instruments (for example, the ASEAN Guide on AI Governance and Ethics) are formally non-binding, but scholarship and practice show soft law can shape behaviour, contractual drafting, and interpretive frames in disputes. Soft law's normative force operates through (a) uptake into domestic guidance and agency practice, (b) incorporation into contractual specifications and procurement standards, and (c) citation by arbitral panels and courts as persuasive authority.

Arbitration and comparative-law literature documents how non-binding codes, model guidelines, and technical standards are routinely used in international arbitration to interpret parties' expectations and to supply "industry standard" benchmarks (soft law thereby exerts normative pressure in private dispute resolution). In infrastructure and technology disputes, arbitrators often rely on recognized technical or ethical frameworks to assess reasonableness or best practice.^[96] In the ASEAN context, regional guides (e.g., ASEAN AI Guide) have already been repackaged in national

⁹⁶ Gabrielle Kaufmann-Kohler, "Soft Law in International Arbitration: Codification and Normativity" *Journal of International Dispute Settlement*, (2010).

guidance documents and agency toolkits (for instance, Singapore's PDPC and IMDA frameworks predated and shaped ASEAN's guide), showing an evident pathway from national model to ASEAN soft law to national adoption/interpretation loop. The PDPC's Model AI Governance Framework and Singapore's operational guides contributed templates and practical use cases that informed ASEAN's approach. Thus, soft law functions as both a transmission belt of best practice and a menu that national regulators can import, sometimes turning voluntary principles into de facto requirements through procurement rules or regulation. Soft law's persuasive power depends on (i) whether domestic authorities adopt or reference it, (ii) whether contracting parties expressly incorporate the guide into contracts (e.g., "the parties shall comply with the ASEAN AI Guide and the PDPC Model AI Framework"), and (iii) whether dispute-resolution actors regard it as authoritative.^[97] Evidence suggests the path from soft law to practical legal effect is real but conditional, not automatic.

4 | ASEAN's Green Sustainability Agenda: Legal and Policy Frameworks

ASEAN's commitment to green sustainability is a cornerstone of its long-term vision, evolving from foundational environmental protection efforts to a proactive strategy for fostering a green economy. This section explores the region's vision for sustainability, key environmental policies, and the emerging landscape of green finance.

4.1. ASEAN's Vision for a Green Economy and Carbon Neutrality

ASEAN's commitment to a "green ASEAN" is rooted in its 2045 Vision, which emphasizes sustainable growth across terrestrial and aquatic ecosystems through the integration of both green and blue economies. This strategic direction positions ASEAN as a leader in climate resilience and

⁹⁷ Kristina Fong, "From Paper to Practice: Utilizing the ASEAN Guide on Artificial Intelligence (AI) Governance and Ethics" *Trends in Southeast Asia*, No. 18 (2024).

sustainability within the Indo-Pacific. Far from being a regulatory burden, the green transition is framed as a major economic opportunity. According to Boston Consulting Group, achieving carbon neutrality could add between USD 3 trillion and USD 5.3 trillion to ASEAN's GDP by 2050, attract up to USD 6.7 trillion in green investments, and generate up to 66 million jobs.^[98] This economic upside is a compelling driver for ASEAN's push toward digital-green public-private partnerships (PPPs), transforming sustainability from a moral imperative into a competitive advantage.^[99]

To operationalize this vision, ASEAN launched the Strategy for Carbon Neutrality in August 2023, outlining four key outcomes: building green value chains, enabling green technology exchange, establishing globally credible standards, and cultivating green talent.^[100] The strategy is supported by eight targeted initiatives, including harmonizing policies for green manufacturing, upgrading trade agreements to support circular products, and standardizing infrastructure for clean vehicles and power trading. It also includes frameworks for carbon credit verification, climate reporting, green finance instruments, and regional qualifications for green skills.^[101] These efforts collectively aim to accelerate ASEAN's transition to a carbon-neutral economy while enhancing its global competitiveness and investment appeal.

4.2. Key Environmental Laws, Policies, and Initiatives

ASEAN's environmental cooperation dates back to 1977 and is currently guided by the ASEAN Socio-Cultural Community (ASCC) Blueprint 2025, which envisions a sustainable, inclusive, and resilient regional community. The Blueprint promotes collaboration in biodiversity conservation, climate change mitigation and adaptation, sustainable urban development, and circular economy practices.^[102] The 2007 ASEAN Declaration on Environmental Sustainability further solidifies this commitment through three pillars: Environmental Protection and Management, Responding to Climate

⁹⁸ VNTR, *ASEAN's Carbon Neutrality Strategy Could Unlock \$5.3 Trillion Economic Potential*, 26 November 2024.

⁹⁹ ASEAN, *ASEAN for Business Bulletin – January 2024* (ASEAN Secretariat, 2024).

¹⁰⁰ ASEAN, *ASEAN Strategy for Carbon Neutrality: Public Summary*.

¹⁰¹ Ibidem.

¹⁰² ASEAN Secretariat, *ASEAN Socio-Cultural Community Blueprint 2025* (ASEAN Secretariat, 2016).

Change, and Conservation of Natural Resources.^[103] These include honoring multilateral agreements, promoting renewable energy, enhancing energy efficiency, and supporting biodiversity initiatives like the ASEAN Centre for Biodiversity, which launched the ASEAN Green Initiative to plant 10 million native trees and the ASEAN Biodiversity Plan targeting 30% ecosystem restoration by 2050.^[104]

Recent developments mark a strategic shift from reactive environmental protection to proactive green economy development. Initiatives such as the ASEAN Green Future research project, launched in 2021 with support from the UN Sustainable Development Solutions Network, aim to build regional capacity for climate policy and decarbonization research.^[105] The ASEAN Institute for Green Economy (AIGE), established in 2014, serves as a hub for green technology and capacity building. Complementing these efforts, the ASEAN Strategy for Carbon Neutrality and the ASEAN Catalytic Green Finance Facility (ACGF) promote green value chains, carbon markets, and sustainable infrastructure investment.^[106] This evolution signals a broader economic integration of sustainability, urging legal frameworks to support digital-green public-private partnerships not just as compliance mechanisms but as engines of innovation and competitiveness.

4.3. Green Finance and Investment Mechanisms in ASEAN

ASEAN is rapidly advancing its green finance ecosystem through strategic initiatives like the ASEAN Catalytic Green Finance Facility (ACGF), launched in April 2019 by the ASEAN Infrastructure Fund. The ACGF provides over US\$1 billion in loans to help governments de-risk green infrastructure projects, making them more attractive to private investors.^[107] Complementing this, the ASEAN Strategy for Carbon Neutrality promotes the deployment of green and sustainability-linked bonds and sukuk standards, while encouraging the development of local green funds and fund managers.^[108] These efforts reflect a regional push to deepen

¹⁰³ ASEAN Secretariat, *ASEAN Declaration on Environmental Sustainability*, 2007.

¹⁰⁴ ASEAN Centre for Biodiversity, *ASEAN Green Initiative*, 2024.

¹⁰⁵ United Nations Sustainable Development Solutions Network, *ASEAN Green Future Project*, 2021.

¹⁰⁶ ASEAN, *ASEAN Strategy for Carbon Neutrality: Public Summary*.

¹⁰⁷ Ibidem.

¹⁰⁸ Ibidem.

capital markets and mobilize private sector investment for climate-aligned infrastructure. Institutions like the Asian Development Bank play a pivotal role through platforms such as the Southeast Asia Green Finance Hub and the Blue Southeast Asia Finance Hub, which support bankable green and ocean health projects across the region.^[109]

Vietnam's inclusion of green finance and carbon credits in its IFC Resolution regulatory sandbox further signals a progressive regulatory stance, allowing experimentation with novel financial instruments.^[110] However, despite these promising developments, ASEAN's green finance landscape still faces challenges in regulatory clarity and standardization. The ASEAN Strategy for Carbon Neutrality highlights the need for globally credible standards and a regional measurement, reporting, and verification framework to facilitate seamless carbon credit trading.^[111] Without harmonized taxonomies and transparent reporting mechanisms, investor confidence may remain limited, and cross-border digital-green public-private partnerships may struggle to scale. Strengthening the legal and regulatory infrastructure is essential to unlock the full potential of green capital and position ASEAN as a competitive hub for sustainable finance.

5 | Navigating the nexus: Legal frameworks for Digital-Green PPPs

The convergence of digital transformation and green sustainability in ASEAN creates a unique opportunity for Public-Private Partnerships to drive innovative and impactful development. This section explores the synergies between these transitions, identifies specific opportunities for digital-green PPPs, and highlights the need for integrated approaches in policy and project planning.

¹⁰⁹ Asian Development Bank, *Blue Southeast Asia Finance Hub*, 2023.

¹¹⁰ VnEconomy, *Carbon Credit Exchange and Green Finance in Vietnam*, 13 August 2025.

¹¹¹ ASEAN, *ASEAN Strategy for Carbon Neutrality: Public Summary*.

5.1. Synergies and Interdependencies between Digital and Green Transitions

Digitalization is increasingly recognized as a transformative force in advancing environmental sustainability across ASEAN. Technologies such as sensors, smart meters, and AI-driven energy systems are enabling more efficient resource use and greener infrastructure. For example, motion-triggered lighting systems and predictive energy forecasting tools help reduce consumption, while integrating solar and wind energy into data centers supports decarbonization efforts.^[112] The ASEAN Digital Economy Framework Agreement further amplifies this potential by promoting interoperable digital tools that reduce trade-related emissions, enhance supply chain transparency, and foster green innovation. Initiatives like paperless customs, e-invoicing, smart agriculture, and eco-friendly logistics are foundational to building a digital economy that aligns with sustainability goals.^[113]

Smart city Public-Private Collaborations (PPCs) exemplify the convergence of digital and green agendas. These partnerships deploy technologies such as automated waste collection, smart lighting, and traffic optimization to achieve both operational efficiency and environmental impact. For instance, smart lighting systems can cut energy use by up to 60%, while intelligent waste management improves recycling and reduces landfill dependency.^[114] This synergy highlights the need for a “digital-green by design” approach in policy and infrastructure planning. Rather than treating digital and green elements as separate or optional, ASEAN should embed their integration from the outset of PPP projects. Doing so will unlock compounded benefits, enhancing resilience, efficiency, and sustainability, while positioning the region as a leader in climate-smart digital development.^[115]

¹¹² Rajesh Singh, et al., “Energy System 4.0: Digitalization of the Energy Sector with Inclination towards Sustainability” *Sensors* 22 (2022): 6619.

¹¹³ Economic Research Institute for ASEAN and East Asia, *Understanding the ASEAN Digital Economy Framework Agreement* (Economic Research Institute for ASEAN and East Asia, 2023).

¹¹⁴ World Economic Forum, *Primer for Smart City Public-Private Collaborations*, 2023.

¹¹⁵ Singapore Institute of International Affairs, *Building a Digital-Green ASEAN: Growing Intersections between Digital Growth and Sustainability Goals* (Infocomm Media Development Authority (IMDA), 2023).

5.2. Identifying Opportunities for Digital-Green PPPs in ASEAN

Digital-green Public-Private Partnerships are emerging as transformative mechanisms across ASEAN, particularly in smart cities, renewable energy, and sustainable agriculture. In urban development, cities like Singapore and New Clark City in the Philippines are pioneering integrated digital-green solutions. Singapore's Housing and Development Board is deploying smart technologies such as motion-triggered lighting, smart fans, and advanced wastewater systems to optimize energy use and enhance livability.^[116] Meanwhile, New Clark City is implementing autonomous electric buses, climate-resilient infrastructure, and smart mobility systems to reduce congestion and environmental impact.^[117] These smart city PPCs not only improve operational efficiency and sustainability, but also shift financial models from capital-intensive to service-based, lowering barriers for urban innovation.^[118]

In the energy sector, the ASEAN Power Grid (APG) initiative exemplifies regional ambition for renewable energy integration and cross-border electricity trade. PPPs are central to mobilizing investment in climate-resilient infrastructure, with mechanisms such as climate-smart contracts and risk assessments ensuring long-term viability.^[119] Similarly, ASEAN-China cooperation in agriculture is driving the adoption of smart farming, biodiversity protection, and circular economy practices.^[120] Foundational digital infrastructure, fiber-optic networks, mobile towers, data centers, and cybersecurity, underpins these sectoral efforts, enabling scalable and interoperable solutions.^[121] The convergence of digital and green agendas across sectors highlights the need for legal frameworks that promote cross-sectoral integration, shared platforms, and regional standards. Such alignment will accelerate ASEAN's connectivity goals and unlock synergistic benefits for sustainable development.

¹¹⁶ Singapore Economic Development Board, *Singapore's Advanced Wastewater Recycling*, 2022.

¹¹⁷ New Clark City, *Green and Resilient Urban Planning*, 2025.

¹¹⁸ Singapore Institute of International Affairs, *Building a Digital-Green ASEAN: Growing Intersections between Digital Growth and Sustainability Goals* (Infocomm Media Development Authority (IMDA)).

¹¹⁹ R.J. Silitonga, "Trading Renewable Energy through the ASEAN Power Grid," *ASEAN Centre for Energy*, August 7, 2018.

¹²⁰ Ministry of Foreign Affairs of the People's Republic of China, *ASEAN-China Action Plan on Green Agricultural Development 2023–2027*, 2024.

¹²¹ ASEAN, *ASEAN Digital Masterplan 2025*.

6 | Recommendations for ASEAN

6.1. Develop Integrated Digital-Green PPP Legal and Policy Frameworks

ASEAN should move beyond parallel policy development for digital and green agendas towards truly integrated legal and policy frameworks that explicitly promote and incentivize digital-green synergies within PPPs.

First, mandate “digital-green by design” in project planning: Legal frameworks should encourage, and where appropriate, mandate the integration of digital efficiency and environmental sustainability from the initial design phase of PPP projects. This ensures that new infrastructure and services are inherently optimized for both digital and green outcomes from conception, maximizing synergistic benefits and avoiding siloed development.

Second, harmonize cross-sectoral digital-green standards: Building on initiatives like the ASEAN Strategy for Carbon Neutrality and DEFA, develop harmonized regional standards for digital-green technologies, data interoperability, and environmental performance metrics. This includes establishing common taxonomies for green finance, standardized measurement, reporting, and verification (MRV) frameworks for carbon credits, and interoperability standards for smart infrastructure. Such harmonization will reduce compliance costs and attract international investment.

Third, establish clear risk allocation for emerging risks: Update PPP contractual guidelines to explicitly address and allocate risks associated with rapid technological obsolescence, cybersecurity threats, and climate change impacts. This requires innovative contractual approaches that incorporate dynamic adjustment mechanisms, shared risk models for technological disruption, and provisions for continuous technological upgrades to maintain project relevance and efficiency over its long life-cycle. Cybersecurity risk management frameworks, particularly for critical infrastructure, should be integrated into PPP contracts, with clear responsibilities and investment priorities.

6.2. Strengthen Institutional Capacity and Governance for PPPs

Addressing the institutional capacity gap within public sectors is crucial for scaling up complex digital-green PPPs.

First, enhance public sector expertise: Invest in targeted capacity building programs for government officials involved in PPPs, focusing on specialized knowledge in digital technologies, green finance, complex contract management, risk assessment (including climate and cyber risks), and dispute resolution specific to digital-green projects. This includes providing high-quality financial, legal, economic, and project management capacities to relevant public actors.

Second, promote agile regulatory bodies: Foster regulatory bodies with clear mandates, sufficient resourcing, and the flexibility to adapt to rapid technological advancements and evolving environmental challenges. This involves institutionalizing mechanisms for ongoing review, learning, and adaptation of legal and policy instruments to ensure their continued relevance and effectiveness.

Third, improve project selection and preparation: Implement robust, merit-based project selection processes for digital-green PPPs, ensuring projects are well-prepared, financially viable, and aligned with national and regional strategic goals. This includes utilizing project preparation funding and viability gap funding to make projects more affordable and bankable.

6.3. Foster Innovation Through Expanded Regulatory Sandboxes

Leverage regulatory sandboxes as a strategic tool to accelerate the development and adoption of digital-green innovations.

First, expand sandboxes to digital-green technologies: Actively promote and develop specialized regulatory sandboxes that specifically target integrated digital-green solutions. This includes exploring sandboxes for AI-driven smart grid technologies, blockchain-based carbon credit tracking systems, IoT-enabled sustainable agriculture platforms, and green finance instruments.

Second, facilitate cross-border sandbox collaboration: Encourage cross-border collaboration among national regulatory sandboxes within ASEAN. This would allow for the testing of digital-green solutions across multiple

jurisdictions, providing invaluable real-world data and insights to inform regional policy harmonization and reduce regulatory fragmentation.

Third, prioritize policy learning from sandboxes: Ensure that regulatory sandboxes are designed not just for product testing but also as explicit mechanisms for regulatory learning and policy adoption. This means actively using the insights gained from sandbox experiments to inform and evolve broader legal and policy frameworks for digital-green PPPs.

6.4. Enhance Green Finance and Investment frameworks

To strengthen the green finance ecosystem to unlock capital for digital-green PPPs:

First, standardize green finance instruments: Accelerate the development and adoption of globally credible standards for green/sustainability-linked bonds and sukuk, as well as clear taxonomies for green investments, to attract more foreign capital flow into ASEAN.

Second, de-risk green infrastructure projects: Continue to support and expand mechanisms like the ASEAN Catalytic Green Finance Facility (ACGF) to provide loans and de-risk commercially viable green infrastructure projects, making them more attractive to private investors.

Third, promote public-private dialogue on green investment: Foster continuous dialogue between public and private sectors to identify impediments to green sector investments and develop innovative financing mechanisms, including leveraging social impact investment within PPP structures.

6.5. Policy Recommendations for ASEAN: Operationalizing Digital-Green PPPs

First, integrate digital and green dimensions into national and regional PPP frameworks: Embed twin-transition imperatives at the design stage to ensure PPPs deliver synergistic benefits. For instance, mandate performance-based contracts with dual metrics, e.g., digital efficiency (IoT uptime >95%) and environmental outcomes (carbon reduction targets aligned with the 2023 Carbon Neutrality Strategy), while incorporating “bounded flexibility” clauses for tech upgrades, as critiqued in Section 2.2.

ASEAN Secretariat should facilitate model clauses by 2026, drawing from World Bank toolkits, to harmonize across diverse jurisdictions and reduce renegotiation risks (e.g., 30% project delays noted in ADB data).

Second, enhance regional cooperation on data governance and AI ethics: Develop binding guidelines from soft-law like the ASEAN Guide on AI Governance (2024/2025 expansions) to manage data in smart green infrastructure. This includes harmonized standards for privacy-enhancing technologies and cross-border flows, addressing vulnerabilities in block-chain applications (Section 3.3). Replace voluntary adoption with mandatory audits for PPPs, piloted in high-risk sectors like renewable energy grids, to counter fragmentation, e.g., Singapore's PDPA interoperability vs. Vietnam's gaps.

Third, promote structured public-private dialogues for green-digital investment: Evolve ad-hoc forums into annual multi-stakeholder summits, leveraging the 2025 ASEAN Forum on Sustainability's focus on AI-driven financing. This should identify barriers (e.g., political risks in unfamiliar economies, per Section 2.3) and co-develop mechanisms like green bonds or social impact funds within PPPs, targeting \$5.3T in carbon-neutral GDP gains. Critically, integrate doctrinal tools from member states, such as Vietnam's 2025 carbon credit exchanges, to ensure equitable risk-sharing.

Fourth, build institutional capacity for agile regulation and innovation: Invest in training PPP units via ADB's capacity-building programs, focusing on adaptive sandboxes (Section 3.4) to test digital-green technologies without regulatory silos. Recommend mid-term reviews every 5 years, aligned with ASEAN 2045's policy correction mechanisms, to incorporate lessons from pilots like Singapore's wastewater recycling PPPs.

Fifth, leverage innovative financing for resilient infrastructure: Prioritize blended finance models, such as the Blue SEA Finance Hub for sustainable projects, to attract private capital for digital-green PPPs in vulnerable sectors (e.g., smart cities). This addresses funding gaps (Section 1.2) by tying incentives to ESG metrics, with ASEAN-wide guarantees to mitigate climate risks.

7 | Conclusion

This research paper examines how Southeast Asian nations can establish robust legal foundations to support the “Twin Transition,” the concurrent advancement of digital transformation and green sustainability, by emphasizing the pivotal role of Public-Private Partnerships in mobilizing private investment and innovation. It argues that ASEAN’s diverse legal systems must adopt flexible, equitable, and regionally tailored frameworks to enable effective PPPs, focusing on four critical areas: evolving traditional contracts into performance-based agreements that measure digital and environmental outcomes; developing innovative risk allocation mechanisms for challenges such as technological obsolescence and climate-related disruptions; leveraging emerging technologies like blockchain and smart contracts to enhance transparency and automate compliance; and fostering regional collaboration through adaptive legal architectures and instruments such as regulatory sandboxes and the ASEAN Digital Economy Framework Agreement. Ultimately, the paper advocates for an integrated legal strategy that aligns digital innovation with environmental stewardship, positioning ASEAN to lead in building a resilient, sustainable, and future-ready regional economy.

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Shaping Green Digital Rights in Vietnam: A Law-And-Economics Perspective on Data Governance and Digital Asset Regulation in the Context of the Twin Transition

Abstract

This paper analyzes Vietnam's current legal framework for data governance and digital asset regulation, while exploring the potential for the formation of "green digital rights," a novel interdisciplinary concept at the intersection of environmental sustainability, digital innovation, and legal theories of property rights. Through a legal-economic lens, the study assesses how the recognition of digital assets can incentivize environmentally friendly business models and financial instruments. Empirical analysis, based on a detailed case study in Khanh Hoa province, reveals both opportunities and persistent legal gaps in high-tech marine aquaculture and smart urban development. The research findings indicate that while the recognition of data as a digital asset opens prospects for green finance, significant legal gaps persist in environmental data governance and the application of digital assets to sustainable development sectors. Policy recommendations derived from this analysis include enhancing regulatory clarity, implementing legal sandboxes to foster innovation, improving environmental data standards, and strengthening institutional capacity. This study not only provides actionable policy recommendations but also contributes to deepening the theory of sustainable digital governance and property rights in the context of the twin transition.

KEYWORDS: green digital rights, data governance, digital asset regulation, environmental law, twin transition

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1 | Introduction

The global “twin transition” – the convergence of digital transformation and environmental sustainability – represents a profound paradigm shift in contemporary governance, challenging traditional frameworks and demanding innovative approaches to reconcile technological advancement with urgent environmental imperatives.^[1] For rapidly developing economies like Vietnam, this transition is a strategic imperative for economic competitiveness and climate resilience within a volatile global context.^[2] Vietnam has aggressively pursued digital economic growth, targeting over 30% GDP contribution by 2030,^[3] alongside strong commitments to green growth and carbon emission reduction targets. However, this rapid digital expansion runs parallel to persistent environmental challenges, including increasing greenhouse gas emissions and growing resource constraints,^[4] necessitating integrated legal and economic frameworks for data, digital assets, and green innovation.^[5]

Digital technologies fundamentally reshape environmental governance through enhanced monitoring, improved stakeholder engagement, and more effective policy interventions.^[6] Despite Vietnam’s foundational legislation, such as the Data Law 2024 and the Law on Digital Technology

¹ OECD, “The Digital and Green Transitions: Opportunities and Challenges” *OECD Economic Outlook*, 1 (2023): 45-72.

² Francis Mark A. Quimba, Ramonette B. Serafica, Connie Bayudan-Dacuycuy et al., “Green and Digital: Managing the Twin Transition toward Sustainable Development” *PIDS Discussion Paper Series*, (2023):

³ Huy Cuong Nguyen, Le Dang Khoi, *Vietnam Digital Transformation and the Way Forward* (Cham: Springer, 2024); Dinh Chuc Nguyen, Tung Anh Dao, “Digital Transformation in Vietnam: Policies, Results and Recommendations” *Journal of Southeast Asian Economies*, No. 1 (2023).

⁴ Xuan Bach Pham, The Cong Phan, “Toward Sustainable Development: Green Economy with Economic Growth and Carbon Emission in Vietnam” *Journal of Infrastructure, Policy and Development*, No. 3 (2024); Massoud Moslehpour, Talla M. Aldeehani, Amena Sibghatullah et al., “Dynamic Association between Technological Advancement, Green Finance, Energy Efficiency and Sustainable Development: Evidence from Vietnam” *Economic Research-Ekonomska Istraživanja* (2023).

⁵ Nhu Ha Nguyen, Minh Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?” *International Journal of Multidisciplinary Research and Analysis*, No. 1 (2025).

⁶ Jennifer Gabrys, *Citizens of Worlds: Open-Air Programs, Wellness, and the Social Contexts of Environmental Computing* (Minneapolis: University of Minnesota Press, 2022).

Industries 2025,^[7] which establish data as a legally recognized asset,^[8] integrating these digital governance mechanisms with environmental sustainability remains an underexplored and complex challenge. Vietnam faces fragmented data governance laws,^[9] nascent digital asset regulation,^[10] and gaps in green finance policies.^[11] Competing perspectives on national security versus economic openness further complicate regulatory cohesion,^[12] risking the undermining of both digital economic growth and environmental goals due to a lack of integrated frameworks.^[13] This highlights the urgent need for interdisciplinary analysis.

This study addresses these critical gaps by introducing and developing “green digital rights” as a novel interdisciplinary framework, explicitly connecting environmental law, digital governance, and economic theory. This conceptualization extends beyond traditional property rights to include environmental externalities, sustainability metrics, and participatory governance mechanisms, drawing on governance mode theory.^[14]

⁷ Vietnam National Assembly. Law on Digital Technology Industry (No. 18/2025/QH15). Hanoi, 2025.

⁸ Nguyen, “Data Governance in Vietnam: Legal Framework and Implementation Challenges” *Vietnam Law Review*, 3 (2024): 234-267.

⁹ Waewpen Piemwichai, “Report: Vietnam’s First-ever Personal Data Protection Decree” *Global Privacy Law Review*, No. 3 (2023): 121-126; Ho Bich Hang Nguyen, “Addressing Fragmentation in Vietnam’s Data Protection Laws: Recommendations for a Unified Legal Framework” *Vietnam Journal of Legal Sciences*, No. 1 (2024).

¹⁰ The Giang Vien, Thi My Huong Vo, “Digital Assets in the Context of the Fourth Industrial Revolution, International Integration, and Vietnamese Law” *Cogent Social Sciences*, No. 1 (2023).

¹¹ Thanh Binh Nguyen, Tan Sinh Bach, Van Thuy Tien Le, “Transformational Policies and Strategies Framework Accelerating Green Transition – The Case of Agriculture in Vietnam” *Environmental Progress & Sustainable Energy*, 42 (2023); Nguyen, Nguyen, Nguyen, “Policy on Green Credit Development in Vietnam” *International Journal of Advanced Economics*, 6 (2024): 448-456.; Hong Quan Nguyen, Dung Tien Nguyen, Minh Ba Nhat Le, “Green Finance: A Solution towards Green Growth in Vietnam” *Economics*, No. 4 (2024).

¹² Thi Hang Banh, Thi Hong Hanh Phan, “Vietnam – Striking a Balance between National Security and External Pressures,” [in:] *Data Governance and the Digital Economy in Asia*. London: Routledge, 2024.

¹³ Kim Hieu Bui, “The Effect of Digital Transformation on Vietnam’s Regulatory Framework” *International Journal of Religion*, 2 (2023); Dinh Trinh Tran, Huong Vu Thi, “Developing a Green Economy towards Sustainability: Research in Vietnam in the Context of Digital Transformation” *International Journal of Advanced Economics*, No. 10 (2024): 503-516.

¹⁴ Richard J. Torraco, “Governance Modes for Sustainability Transitions: A Systematic Review” *Sustainability Science*, No. 3 (2023): 1245-1267.

The research constructs an integrated conceptual framework combining legal and economic perspectives on data governance, digital asset regulation, and the twin transition.^[15] It elucidates the interdependence between legal structures, economic incentives, and technology adoption in shaping Vietnam's green digital landscape.^[16]

The study employs a comprehensive mixed-methods approach, including legal doctrinal analysis, economic theory application, and an empirical case study in Khanh Hoa province (January-May 2025), utilizing stakeholder interviews and IoT monitoring data. The primary objectives are to critically assess Vietnam's legal and economic frameworks for green digital rights, identify regulatory gaps, and propose policy directions to harmonize digital innovation with environmental sustainability.^[17] By fostering coherent governance models, this research aims to effectively support Vietnam's twin transition goals.

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¹⁵ Charlotte Ducuing, "Data as a Contested Commodity" *Global Jurist*, No. 3 (2024); Schneider Ingrid, "Digital Sovereignty and Governance in the Data Economy: Data Trusteeship Instead of Property Rights on Data," [in:] *A Critical Mind*, ed. Christine Godt, Matthias Lamping (Berlin-Heidelberg: Springer, 2023), 369-406.

¹⁶ Jason Liao, "Enabling a Sustainable Digital Transformation" *Journal of Latin American Sciences and Culture*, No. 9 (2024): 33-43; Khatun Maimuna, Rashed Hosain, Mohammad Rakibul Islam Bhuiyan, et al. "Green Entrepreneurship and Digital Transformation for Sustainable Development," [in:] *Digitizing Green Entrepreneurship* (Hershey: IGI Global, 2024), 153-180.

¹⁷ Nguyen, Dang, "Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?"; Quimba, Serafica, Bayudan-Dacucyuy et al., "Green and Digital: Managing the Twin Transition toward Sustainable Development."

¹⁸ Nguyen, Dang, "Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?"; Quimba, Serafica, Bayudan-Dacucyuy et al., "Green and Digital: Managing the Twin Transition toward Sustainable Development."

¹⁹ Huy Cuong, Dang Khoi, *Vietnam Digital Transformation and the Way Forward*.

2 | Literature Review: Comprehensive Overview and Research Gap Analysis

2.1. Descriptive Summary of the Studies

This section maps the research landscape of the literature on shaping green digital rights in Vietnam, focusing on the intersection of legal frameworks, economic incentives, and sustainable digital transformation. The studies encompass diverse methodologies including policy analysis, empirical surveys, econometric modeling, and comparative legal reviews, predominantly centered on Vietnam's evolving regulatory environment and its alignment with international standards. The geographic focus is primarily Vietnam, with several studies benchmarking against global best practices, providing a comprehensive view relevant to the research questions on regulatory effectiveness, green integration, and twin transition outcomes. The studies have been categorized into key themes, revealing the main areas of academic focus, as presented in Table 1.

The distribution of papers in Table 1 reveals a distinct disparity in research areas. While the technical and legal aspects of digital transformation are extensively covered, with the "Regulatory frameworks for digital transformation and data governance" theme appearing in 18 out of 50 papers, the social and equity dimensions of the twin transition are less explored, as evidenced by the "Climate justice and social aspects of green transition" theme appearing in only 3 out of 50 papers. This disparity indicates that while the technical and legal facets of digital transformation are well-researched, the equity and social implications of the twin transition remain a significantly underexplored area. This creates a crucial gap that the current study, through its focus on "green digital rights," can indirectly or directly address.

Temporally, the literature on shaping green digital rights in Vietnam shows a continuous evolution from foundational concepts to more integrated frameworks, as presented in Table 2.

Table 1: Key Themes in the Literature on Green Digital Rights (Vietnam Context)

Theme	Appears In	Theme Description
Regulatory frameworks for digital transformation and data governance	18/50 Papers	This theme encompasses research on Vietnam’s evolving legal and regulatory environment addressing digital transformation, data protection, and digital asset regulation. Studies highlight efforts to balance national security, privacy, and economic innovation, with analyses of legal gaps, enforcement challenges, and international benchmarking, including comparisons with GDPR and ASEAN frameworks. ^[20] The need for unified, adaptive legal structures that support digital governance and innovation while protecting digital rights is emphasized. ^[21]
Green economic development and policy integration	16/50 Papers	Research under this theme explores Vietnam’s policies, strategies, and challenges in promoting green economic growth, circular economy, and sustainable development. Key findings indicate progress in green finance, green credit, and green startups, though limitations persist due to capital, technology, and institutional barriers. ^[22] The literature stresses the importance of comprehensive policy frameworks and coordinated stakeholder engagement to advance green growth aligned with environmental goals. ^[23]

²⁰ Bui, “The Effect of Digital Transformation on Vietnam’s Regulatory Framework”; Ngoc Anh Dao Nguyen, “Online Personal Data Protection Focuses on the Path of Vietnam’s Digital Transformation and the Next Stage” *International Journal of Religion*, 2 (2023); Piemwichai, “Report: Vietnam’s First-ever Personal Data Protection Decree,” 121-126; Nguyen, “Addressing Fragmentation in Vietnam’s Data Protection Laws: Recommendations for a Unified Legal Framework”; Odiljon Tojiev, “Laying the Legal Groundwork for Digital Governance” *International Journal of Law, Justice and Jurisprudence*, No. 1 (2024); Nguyen, Dao, “Digital Transformation in Vietnam: Policies, Results and Recommendations”; Ha N Nguyen, “Regulating Cyberspace in Vietnam: Entry, Struggle, and Gain” *Columbia Journal of Asian Law*, No. 2 (2022): 160-199.

²¹ Nguyen, “Data Governance in Vietnam: Legal Framework and Implementation Challenges,” 234-267.

²² Nguyen, Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?”; Nguyen, Bach, Le, “Transformational Policies and Strategies Framework Accelerating Green Transition – The Case of Agriculture in Vietnam”; Tran, Thi, “Developing a Green Economy towards Sustainability: Research in Vietnam in the Context of Digital Transformation,” 503-516; Pham, Phan, “Toward Sustainable Development: Green Economy with Economic Growth and Carbon Emission in Vietnam”; Nguyen, Nguyen, Le, “Green Finance: A Solution towards Green Growth in Vietnam”; Nguyen, Nguyen, Nguyen, “Policy on Green Credit Development in Vietnam.”

²³ Thanh Khoe Tran, Thanh Phuong Nguyen, “Developing a Circular Economy Contributes to Promoting Green Growth: International Experiences and Lessons for Vietnam” *Transactions of the Chinese Society of Agricultural Machinery*, 10 (2024).

Theme	Appears In	Theme Description
Twin transition: Digitalization and environmental sustainability	15/50 Papers	This theme examines the interconnected process of digital transformation and green transition in Vietnam, assessing how digital technologies facilitate sustainable development and green innovation. Studies reveal opportunities through digital infrastructure, green digital learning, and innovation management, alongside challenges such as skill shortages and investment gaps. ^[24] The twin transition is framed as a strategic priority requiring integrated policy support and technological advancement. ^[25]
Legal-economic perspectives on data and digital assets	10/50 Papers	This cluster focuses on the conceptual and practical aspects of data governance from law-and-economics viewpoints, including data property rights, market commodification of data, and governance models such as data trusteeship. The literature critically reviews regulatory approaches to digital assets and data as contested commodities, underlining the economic implications of legal recognition and the necessity for tailored governance frameworks. ^[26] These perspectives provide foundational insights for policy innovation in digital rights.

²⁴ Huy-Cuong Vo-Thai, My-Linh Tran, “Green Innovation Strategies in Vietnamese Enterprises: Leveraging Knowledge Management and Digitalization for Sustainable Competitiveness” *Journal of Knowledge Management* (2024); Hong Hai Phan, Ngoc Hung Tran, “The Influence of Management Commitment on Digital and Green Transformation in Vietnamese Enterprises: Empirical Insights” *VNU Journal of Economics and Business*, No. 6 (2024): 62-72; Nha Minh Nguyen, Thanh Hoai Tu, Van Vo Hien, Phong Nguyen Nguyen, “Digital Approach toward Environmental Sustainability in Supply Chains: Evidence from Vietnamese Firms” *Sustainable Development* (2023); Van Hien Vo, Malik Abu Afifa, Duong Van Bui, “ESG Implementations, Green Process Innovation, and Social Performance in Vietnamese Manufacturing Firms” *Corporate Social Responsibility and Environmental Management* (2025); Huy Cuong, Dang Khoi, *Vietnam Digital Transformation and the Way Forward*; Liao, “Enabling a Sustainable Digital Transformation,” 33-43.

²⁵ Huy Cuong, Dang Khoi, *Vietnam Digital Transformation and the Way Forward*.

²⁶ Vien, Vo, “Digital Assets in the Context of the Fourth Industrial Revolution, International Integration, and Vietnamese Law”; Ingrid, “Digital Sovereignty and Governance in the Data Economy: Data Trusteeship Instead of Property Rights on Data,” 369-406; Ducuing, “Data as a Contested Commodity.”

Theme	Appears In	Theme Description
Government role and policy support for digital and green innovation	14/50 Papers	The literature highlights government initiatives, policies, and regulatory reforms that foster digital transformation, green innovation, and inclusive economic development in Vietnam. Empirical studies indicate the positive impact of government policy on SME digitalization, innovation capabilities, and green business development, while also identifying gaps in enforcement and resource allocation. ^[27] The state’s role is crucial in creating enabling environments for sustainable digital economy growth.
Data protection and privacy in the context of digital rights	9/50 Papers	This theme centers on the protection of personal data amid Vietnam’s rapid digital transformation, focusing on legal frameworks, enforcement challenges, and public awareness. Recent regulatory developments, such as the 2023 Personal Data Protection Decree, the Personal Data Law 2025 enacted on 26 June 2025, signal progress but also reveal fragmentation and the need for coherent, comprehensive data privacy laws aligned with international best practices. ^[28] The protection of digital rights is positioned as essential for trust and sustainable digital development.

²⁷ Nguyen, Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?”; Nguyen, Bach, Le, “Transformational Policies and Strategies Framework Accelerating Green Transition – The Case of Agriculture in Vietnam”; Phuong V. Nguyen, Tan Mai Binh, Nu Hoang Ton Uyen, Zafar U. Ahmed, “Government Policy, IT Capabilities, Digital Transformation, and Innovativeness in Post-COVID Context: Case of Vietnamese SMEs” *The International Journal of Organizational Analysis* (2023); Nguyen, Dao, “Digital Transformation in Vietnam: Policies, Results and Recommendations”; Tran, Thi, “Developing a Green Economy towards Sustainability: Research in Vietnam in the Context of Digital Transformation,” 503-516; Thi Bich Nga Tran, “Legal Policy Recommendations for Fostering Green Business Development: A Case Study of Enterprises in Vietnam” *Qubahan Academic Journal*, No. 3 (2024): 334-346.

²⁸ Banh, Phan, “Vietnam – Striking a Balance between National Security and External Pressures”; Nguyen, “Online Personal Data Protection Focuses on the Path of Vietnam’s Digital Transformation and the Next Stage”; Piemwichai, “Report: Vietnam’s First-ever Personal Data Protection Decree,” 121-126; Nguyen, “Addressing Fragmentation in Vietnam’s Data Protection Laws: Recommendations for a Unified Legal Framework”; Vietnam, Personal Data Law (No. 91/2025/QH15), National Assembly 2025; Vietnam, Decree No. 165/2025/NĐ-CP Detailing the Implementation of Certain Provisions of the Law on Data, Government 2025.

Theme	Appears In	Theme Description
Green finance and sustainable investment	8/50 Papers	Studies emphasize the role of green finance mechanisms, including green credit, green bonds, and financial innovation, in supporting Vietnam’s sustainable development objectives. Research reveals regulatory gaps and enforcements issues, alongside potential for leveraging new technologies like block-chain for green financial mobilization. ^[29] Green finance is identified as a critical lever for aligning economic growth with environmental sustainability.
Digital skills and human resource development for digital transformation	6/50 Papers	This emerging theme highlights the importance of developing digital competencies and workforce readiness to support Vietnam’s digital transformation and sustainable development goals. Research critiques current policy conceptualizations of digital skills and calls for more robust frameworks to ensure inclusive, effective digital capacity building. ^[30] Proper human resource development is seen as foundational for long-term digital and green innovation success.
Climate justice and social aspects of green transition	3/50 Papers	Limited but insightful literature examines the social equity and justice aspects within Vietnam’s green transformation policies, analyzing procedural, distributive, and recognition justice in climate strategies. Findings suggest strengths in recognition justice but weaknesses in distributive measures, underscoring the need for inclusive, equitable policy design that addresses vulnerable groups. ^[31] This theme connects social sustainability with environmental and economic goals.

²⁹ Nguyen, Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?”; Trong Lam Vu, Thi Thu Hien Phan, Hong Mai Nguyen, et al., “Dynamic Association of Green Financial Innovation, Eco-financing, Carbon Tax, Economic Openness, and Sustainable Energy Transition in Vietnam” *Economic Research-Ekonomska Istraživanja* (2023); Nguyen, Nguyen, Nguyen, “Policy on Green Credit Development in Vietnam”; Vien, Vo, “Digital Assets in the Context of the Fourth Industrial Revolution, International Integration, and Vietnamese Law”; Nguyen, Nguyen, Le, “Green Finance: A Solution towards Green Growth in Vietnam.”

³⁰ Vo-Thai, Tran, “Green Innovation Strategies in Vietnamese Enterprises: Leveraging Knowledge Management and Digitalization for Sustainable Competitiveness”; Phan, Tran, “The Influence of Management Commitment on Digital and Green Transformation in Vietnamese Enterprises: Empirical Insights,” 62-72; Thi Lan Anh Nguyen, Le Dieu Linh Pham, Ngoc Thac Trinh, “Human Resource Development for Digital Transformation in Vietnam: A Need for Reconceptualizing Digital Skills and Competence” *VNU Journal of Science: Policy and Management Studies*, No. 3 (2022): 51-61.

³¹ Hoang Khoi Nguyen, “Climate Justice in Vietnam’s Green Transformation: A Three-dimensional Analysis of the Green Growth and Climate Change Mitigation Sectors” *Vietnam Journal of Science, Technology and Engineering*, No. 1 (2023): 90-99.

Theme	Appears In	Theme Description
International and regional context of digital and green policies	4/50 Papers	Research here situates Vietnam’s digital and green policy development within ASEAN and global frameworks, assessing opportunities and challenges from regional agreements such as ASEAN DEFA and DEPA. The comparative lens reveals regulatory gaps and the need for harmonization to enhance digital trade and green cooperation. ^[32] This theme underscores the influence of international integration on national policy evolution.

Source: authors’ own elaboration based on a systematic literature review, 2025

Table 2: Evolution of Research on Green Digital Rights (Vietnam)

Year Range	Research Direction	Description
2021–2022	Foundational digital and environmental policies	Early studies centered on the impact of digital economy on energy efficiency and initial digital transformation policies. Focus was on foundational issues like digital skills, data regulation evolution, and the beginnings of green growth strategies in Vietnam. These works laid the groundwork by analyzing the state of digital readiness, regulatory challenges, and the environmental impact of economic growth.
2023	Regulatory frameworks and digital transformation	Research in this year explored Vietnam’s legal frameworks for digital governance, personal data protection, and financial innovation linked to sustainable development. There was a strong focus on the digital transformation process in government and enterprises, including SME innovation and green supply chains, alongside assessments of data governance and digital asset regulation. Studies also examined green financial innovation, green entrepreneurship, and the interplay of digital policies with environmental goals.
2024	Integrative strategies for twin transition	Literature emphasized the integration of digital transformation and green growth policies, including circular economy development, climate justice, and human resource development for digital competence. Research stressed managerial commitment, policy reform, and benchmarking against ASEAN and international frameworks. Strategic frameworks for climate-neutral economies, digital sovereignty, and sustainable digital transformation were proposed, reflecting a holistic approach to Vietnam’s twin digital and green transition.

³² Banh, Phan, “Vietnam – Striking a Balance between National Security and External Pressures”; Thanh Khoe Tran, Nguyen, “Developing a Circular Economy Contributes to Promoting Green Growth: International Experiences and Lessons for Vietnam”; Ducuing, “Data as a Contested Commodity.”

Year Range	Research Direction	Description
2025	Advanced regulatory and innovation perspectives	The most recent studies analyzed the effectiveness and gaps of current regulatory frameworks in supporting sustainable development goals, especially in financial innovation and ESG implementation. Emphasis was placed on the practical implications of digital asset formalization, green process innovation, and the need for regulatory reforms to strengthen Vietnam’s position in achieving a green digital economy. These works contribute to policy recommendations and comparative analyses with global best practices.

Source: authors’ own elaboration based on a systematic review of the literature, 2025

This progression indicates that the research field is maturing from basic concepts to more integrated and strategic approaches. The shift from “Foundational digital and environmental policies” (2021-2022) to “Integrative strategies for twin transition” (2024) and “Advanced regulatory and innovation perspectives” (2025) suggests that the academic community is increasingly seeking more integrated and sophisticated solutions. The current study’s concept of “green digital rights,” by explicitly bridging law, economics, digital, and environmental aspects, aligns perfectly with this integrated, advanced research direction, positioning the paper at the forefront of the evolving discourse.

2.2. Critical Analysis and Synthesis of Existing Scholarship: Agreements, Divergences, and Limitations

The reviewed studies collectively recognize the critical need for robust regulatory frameworks to govern data, digital assets, and green initiatives in Vietnam, emphasizing the interplay between legal structures and economic incentives. There is broad consensus on the importance of integrating environmental sustainability within digital transformation policies, but opinions vary on the effectiveness and coherence of current implementations, particularly concerning enforcement and practical outcomes. These divergences often reflect differences in research focus, methodologies, and the evolving policy context in Vietnam compared to international standards.

The strengths and weaknesses of Vietnam’s green digital rights framework, synthesized from the literature, are detailed in Table 3.

Table 3: Strengths and Weaknesses of Vietnam’s Green Digital Rights Framework (Literature Synthesis)

Aspect	Strengths	Weaknesses
Regulatory frame-works for data governance and digital assets	Several studies offer detailed analyses of Vietnam’s evolving legal landscape, highlighting recent legislative advances such as the Personal Data Protection Decree and digital asset formalization efforts that provide foundational legal bases for digital economy growth and green finance integration. ^[33] Comparative perspectives with international frameworks enrich understanding of Vietnam’s position and challenges in data localization and cross-border data flows. ^[34]	Despite progress, the regulatory environment remains fragmented and lacks a unified personal data protection law, leading to enforcement challenges and legal ambiguities. ^[35] The cautious approach to digital asset regulation delays full exploitation of their economic and environmental potential. ^[36] Moreover, national security concerns often constrain data openness, limiting the scope of digital rights aligned with sustainability. ^[37]

³³ Nguyen, Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?”; Vien, Vo, “Digital Assets in the Context of the Fourth Industrial Revolution, International Integration, and Vietnamese Law”; Piemwichai, “Report: Vietnam’s First-ever Personal Data Protection Decree,” 121-126.

³⁴ Banh, Phan, “Vietnam – Striking a Balance between National Security and External Pressures.”

³⁵ Nguyen, “Addressing Fragmentation in Vietnam’s Data Protection Laws: Recommendations for a Unified Legal Framework.”

³⁶ Vien, Vo, “Digital Assets in the Context of the Fourth Industrial Revolution, International Integration, and Vietnamese Law.”

³⁷ Banh, Phan, “Vietnam – Striking a Balance between National Security and External Pressures.”

Aspect	Strengths	Weaknesses
Integration of digital transformation and green economic policies	Research underscores the strategic alignment of digital transformation initiatives with green growth policies, emphasizing the role of digital infrastructure, innovation, and green finance in promoting sustainable competitiveness. ^[38] Empirical studies demonstrate positive impacts of digital transformation on environmental performance and green process innovation, supported by managerial commitment and policy frameworks. ^[39]	However, the integration is often hindered by insufficient capital, technological gaps, and limited human resource capabilities, which impede the scalability and effectiveness of green digital initiatives. ^[40] The literature also points to a lack of synchronization between digital and green policies, with green economic development still at an early stage and facing systemic barriers. ^[41]

³⁸ Vo-Thai, Tran, “Green Innovation Strategies in Vietnamese Enterprises: Leveraging Knowledge Management and Digitalization for Sustainable Competitiveness”; Nguyen, Nguyen, Nguyen, “Policy on Green Credit Development in Vietnam.”

³⁹ Phan, Tran, “The Influence of Management Commitment on Digital and Green Transformation in Vietnamese Enterprises: Empirical Insights,” 62-72; Nguyen, Tu, Hien, Nguyen, “Digital Approach toward Environmental Sustainability in Supply Chains: Evidence from Vietnamese Firms.”

⁴⁰ Tran, Thi, “Developing a Green Economy towards Sustainability: Research in Vietnam in the Context of Digital Transformation,” 503-516; Nguyen, Pham, Trinh, “Human Resource Development for Digital Transformation in Vietnam: A Need for Reconceptualizing Digital Skills and Competence,” 51-61.

⁴¹ Nguyen, Tu, Hien, Nguyen, “Digital Approach toward Environmental Sustainability in Supply Chains: Evidence from Vietnamese Firms.”

Aspect	Strengths	Weaknesses
Law and economics perspective on twin transition	The application of law and economics frameworks provides a robust theoretical lens to analyze property rights over data, regulatory approaches, and economic incentives for green digital rights. ^[42] Studies highlight the importance of legal clarity and economic incentives in fostering innovation and sustainable digital markets, including the role of green financial innovation and eco-financing in supporting energy transitions. ^[43]	Nonetheless, empirical evidence on the effectiveness of these frameworks in Vietnam’s context is limited, with many studies relying on qualitative or theoretical analyses without extensive data validation. ^[44] The complexity of balancing economic growth with environmental sustainability remains insufficiently addressed, particularly regarding the unintended consequences of digitalization on carbon emissions. ^[45]
Challenges in harmonizing digital rights with sustainable development goals	The literature identifies critical barriers such as fragmented legal frameworks, low public awareness, and enforcement weaknesses that undermine the protection of digital rights and green growth objectives. ^[46] Social dimensions, including equity and climate justice, are recognized but often underexplored in policy implementation. ^[47]	There is a notable gap in addressing the social justice aspects of the twin transition, with limited integration of procedural and distributive justice considerations in green digital policies. ^[48] Additionally, the tension between national security imperatives and individual digital rights creates regulatory conflicts that complicate harmonization efforts. ^[49]

⁴² Ducuing, “Data as a Contested Commodity”; Ingrid, “Digital Sovereignty and Governance in the Data Economy: Data Trusteeship Instead of Property Rights on Data,” 369-406.

⁴³ Vu, Phan, Nguyen, “Dynamic Association of Green Financial Innovation, Eco-financing, Carbon Tax, Economic Openness, and Sustainable Energy Transition in Vietnam.”

⁴⁴ Ducuing, “Data as a Contested Commodity”; Ingrid, “Digital Sovereignty and Governance in the Data Economy: Data Trusteeship Instead of Property Rights on Data,” 369-406.

⁴⁵ Pham, Phan, “Toward Sustainable Development: Green Economy with Economic Growth and Carbon Emission in Vietnam.”

⁴⁶ Nguyen, “Online Personal Data Protection Focuses on the Path of Vietnam’s Digital Transformation and the Next Stage”; Nguyen, Bach, Le, “Transformational Policies and Strategies Framework Accelerating Green Transition – The Case of Agriculture in Vietnam”; Nguyen, “Addressing Fragmentation in Vietnam’s Data Protection Laws: Recommendations for a Unified Legal Framework.”

⁴⁷ Nguyen, “Climate Justice in Vietnam’s Green Transformation: A Three-dimensional Analysis of the Green Growth and Climate Change Mitigation Sectors” *Vietnam Journal of Science, Technology and Engineering*, No. 1 (2023): 90-99.

⁴⁸ Nguyen, “Climate Justice in Vietnam’s Green Transformation: A Three-dimensional Analysis of the Green Growth and Climate Change Mitigation Sectors,” 90-99.

⁴⁹ Banh, Phan, “Vietnam – Striking a Balance between National Security and External Pressures”; Nguyen, “Regulating Cyberspace in Vietnam: Entry, Struggle, and Gain,” 160-199.

Aspect	Strengths	Weaknesses
Benchmarking and international comparisons	Comparative analyses with ASEAN frameworks and major economies provide valuable benchmarks for Vietnam's digital economy and green growth strategies, highlighting opportunities for regional cooperation and policy alignment. ^[50] International best practices in regulatory sand-boxes and innovation promotion offer practical insights for Vietnam's policy reforms. ^[51]	However, the literature reveals that Vietnam's regulatory and innovation ecosystems are still developing, with challenges in adapting international models to local contexts, including skill gaps and cybersecurity concerns. ^[52] The pace of legal reforms and infrastructure development may lag behind the rapid digital and environmental changes, limiting competitiveness. ^[53]
Human resource development and organizational readiness	Studies emphasize the critical role of digital skills, managerial commitment, and organizational readiness in enabling successful digital and green transformations. ^[54] Policy analyses highlight the need for reconceptualizing digital competence to better support inclusive and effective digital transformation. ^[55]	Despite policy recognition, there is insufficient empirical assessment of HR development outcomes and digital literacy effectiveness, with existing certification programs being outdated or underutilized. ^[56] The gap between policy intentions and practical implementation in workforce development remains a significant obstacle. ^[57]

⁵⁰ Ducuing, “Data as a Contested Commodity”; Huy Cuong, Dang Khoi, *Vietnam Digital Transformation and the Way Forward*.

⁵¹ Nguyen, Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?”

⁵² Ducuing, “Data as a Contested Commodity”; Nguyen, Dao, “Digital Transformation in Vietnam: Policies, Results and Recommendations.” Compare: Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, Jean Langlois-Berthelot, “Creating Resilient Artificial Intelligence Systems. A Responsible Approach to Cybersecurity Risks” *Prawo i Wiąż*, No. 5 (2025): 131-149; Dominik Bierecki, Mirosław Karpiuk, Claudio Melchior, Nicola Strizzolo, “Security in the Era of Cybersecurity Threats” *Prawo i Wiąż*, No. 4 (2025): 73-87.

⁵³ Nguyen, Dao, “Digital Transformation in Vietnam: Policies, Results and Recommendations”; Tran, Thi, “Developing a Green Economy towards Sustainability: Research in Vietnam in the Context of Digital Transformation,” 503-516.

⁵⁴ Phan, Tran, “The Influence of Management Commitment on Digital and Green Transformation in Vietnamese Enterprises: Empirical Insights,” 62-72; Vo, Afifa, Bui, “ESG Implementations, Green Process Innovation, and Social Performance in Vietnamese Manufacturing Firms.”

⁵⁵ Nguyen, Pham, Trinh, “Human Resource Development for Digital Transformation in Vietnam: A Need for Reconceptualizing Digital Skills and Competence,” 51-61.

⁵⁶ Ibidem, 51-61.

⁵⁷ Ibidem, 51-61.

Aspect	Strengths	Weaknesses
Policy and institutional recommendations	The literature collectively proposes comprehensive policy recommendations, including legal reforms, green financing mechanisms, enhanced enforcement, and stakeholder engagement to foster green digital rights and sustainable growth. ^[58] Emphasis on multi-stakeholder collaboration and transparency is recurrent, aiming to build a conducive environment for the twin transition. ^[59]	Nonetheless, many recommendations remain at a conceptual level without detailed implementation roadmaps or measurable targets. The complexity of coordinating across sectors and levels of governance poses challenges for policy coherence and effectiveness. ^[60] The dynamic nature of digital and environmental domains requires adaptable and iterative policy approaches, which are not always reflected in current frameworks. ^[61]

Source: authors’ own elaboration based on a systematic literature review, 2025

A key tension in the literature is Vietnam’s struggle to balance national security and data openness, creating barriers to clear digital rights and green initiatives. Security-driven data protection laws restrict openness, undermining governance and policy coherence.

Another challenge is the human resource gap: outdated training and weak digital literacy hinder the twin transition, revealing that legislative efforts alone are insufficient without robust education and capacity building.

Finally, fragmented legal frameworks emerge as a systemic barrier. Fragmentation causes ambiguity, weak enforcement, and delayed innovation, highlighting the urgent need for unified laws to support effective implementation and green digital transformation.

⁵⁸ Nguyen, Dang, “Does the Regulatory Framework for Financial Innovation Effectively Support Sustainable Development Goals in Vietnam?”; Nguyen, Bach, Le, “Transformational Policies and Strategies Framework Accelerating Green Transition – The Case of Agriculture in Vietnam”.

⁵⁹ Bui, “The Effect of Digital Transformation on Vietnam’s Regulatory Framework”; Tojiev, “Laying the Legal Groundwork for Digital Governance.”

⁶⁰ Thi Kim Thoa Nguyen, Huy Cuong Nguyen, “Exploring Multi-level Governance in Vietnam’s Digital Transformation: Challenges and Opportunities” *Journal of Public Administration and Policy*, (2024).

⁶¹ Bui, “The Effect of Digital Transformation on Vietnam’s Regulatory Framework.”

2.3. Identifying Research Gaps and Demonstrating the Necessity of the Current Study

The literature reveals key limitations: reliance on short-term data, fragmented legal frameworks, and narrow methodologies that limit generalizability. Social dimensions such as equity and human resource development are underexplored, while most studies overemphasize policy analysis without empirical validation. Research also shows geographic bias toward urban sectors and conceptual ambiguities in constructs like digital competence and green finance.

These shortcomings create critical gaps: absence of a unified data protection framework, weak integration of green objectives in digital asset regulation, limited empirical validation of law-and-economics models, and underdeveloped governance models emphasizing sustainability. Other gaps include human resource deficiencies, regulatory weaknesses in green finance, minimal attention to social justice, lack of synchronization between digital and green policies, and scarce comparative analyses with regional peers.

The current study addresses these gaps by introducing “green digital rights” as a novel interdisciplinary framework, combining legal-economic analysis with empirical evidence from Khanh Hoa. It develops a sustainability-focused data governance model and evaluates the integration of green principles into digital asset regulation. By offering both theoretical innovation and practical recommendations, this research provides a comprehensive approach to advancing Vietnam’s twin transition.

2.4. Conceptualizing “Green Digital Rights”: A Law-And-Economics Framework

To address this analytical gap in the literature, this paper introduces and develops the concept of “green digital rights” as a novel theoretical construct. We define green digital rights not as a single entitlement, but as a bundle of legally recognized rights over environmental data, analogous to traditional property rights. This bundle includes:

- (i) the right to access and use environmental data for monitoring and innovation;
- (ii) the right to derive income from this data through licensing or sale;
- (iii) the right to exclude others from unauthorized use; and
- (iv) the right to participate in the governance of data collection and sharing mechanisms.

From a Law and Economics perspective, the formal establishment of this rights bundle is critical for two reasons. First, it directly engages with the Coase Theorem.^[62] By assigning clear, enforceable, and transferable property rights over environmental data, the legal framework reduces the transaction costs associated with bargaining over environmental externalities. This allows market-based solutions – such as the data licensing agreements and performance-based insurance contracts observed in our empirical study – to emerge and function efficiently.

Second, it draws upon Ostrom's theories of governing the commons.^[63] Much environmental data, particularly in shared ecosystems like marine environments, constitutes a common-pool resource. Without clear governance rules, it is susceptible to under-provision and misuse. The concept of green digital rights, therefore, necessitates governance models beyond simple private ownership, such as the data trusts and data commons platforms referenced in recent Vietnamese legislation, which allow for managed access and collective benefit-sharing. By constructing this theoretical framework, we move beyond mere description to deploy green digital rights as a robust analytical tool for evaluating and shaping the twin transition.

⁶² Ronald H. Coase, "The Problem of Social Cost" *Journal of Law and Economics*, 3 (1960): 1-44.

⁶³ Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press 1990).

3 | Vietnam's Legal Framework: Comprehensive Analysis

In the twin transitions of digital transformation and green transition, Vietnam's legal system has begun establishing principles to safeguard green digital rights, particularly in data governance and digital asset regulation. Despite initial legislative progress, notable gaps persist that hinder effective implementation.

First, legal definitions and standards. Vietnamese law defines digital data broadly to include information in digital form, encompassing environmental data from IoT devices and remote sensing. Under Vietnamese law, digital data is defined as information regarding objects, phenomena, or events, which may consist of, or combine, forms such as sound, image, numerical values, text, or symbols expressed in digital form (hereinafter referred to as “data”).^[64] The Law on Data 2024 recognizes data as a property right,^[65] while Article 46 of the Law on Digital Technology Industries 2025 affirms digital assets as legally recognized forms of property. These provisions allow environmental data to be monetized, forming a basis for valuing ecosystem services and monitoring through digital technologies.

However, no clear criteria exist for classifying “environmental data” or “green” digital assets, nor for their valuation or certification. This ambiguity undermines market transparency and investor confidence. Drawing on international practices – such as ESG criteria and Climate Bonds Initiative standards – Vietnam could establish a dedicated framework for green digital assets (e.g., carbon tokens, renewable energy-linked credits), enhancing transparency, due diligence, and capital mobilization.

Secondly, enforcement capacity. While regulations, such as Article 17 of Decree 165/2025/NĐ-CP, set technical standards, enforcement remains weak. Local agencies often lack adequate tools, expertise, and personnel to supervise digital operations, while SMEs struggle with compliance due to financial, technological, and human resource constraints. Targeted measures, including a “Green Digital Transformation Support Fund” for SMEs and “Green Digital Competence Centers” to train regulators, could address these gaps.

⁶⁴ Vietnam, Law on Digital Data, no. 27/2024/QH15, art. 3, cl. 1.

⁶⁵ Vietnam, Law on Digital Data, no. 27/2024/QH15, art. 3, cl. 15.

Thirdly, participatory governance. The current framework lacks robust mechanisms for stakeholder participation. Although the 2025 Law references data commons platforms, it omits clear provisions on feedback channels, complaint procedures, and co-governance models. The Law on Digital Technology Industries 2025 makes reference to mechanisms for environmental data sharing through data commons platforms.^[66] Establishing participatory structures—such as community-based monitoring platforms and inclusive policy forums – would improve transparency, accountability, and legitimacy in environmental data governance.

Fourthly, international cooperation and alignment. Environmental data has cross-border significance, yet operational mechanisms for international collaboration remain limited. Article 23 of the Law on Data 2024 permits cross-border transfers for research and climate monitoring but emphasizes sovereignty without detailing interoperability standards or cooperation protocols. Active engagement in ASEAN's Data Governance Framework, along with bilateral/multilateral agreements on environmental data exchange, could balance sovereignty with integration, facilitating access to climate finance and clean technologies.

In sum, while Vietnam's framework – anchored by the Law on Digital Data 2024, and Law on Digital Technology Industries, 2025 – marks progress, it requires further refinement to: (1) clarify concepts and standards; (2) enhance institutional and enforcement capacity; (3) ensure stakeholder participation; and (4) strengthen international legal alignment. These steps are essential to fully realize green digital rights, balancing technological advancement, environmental protection, and the public interest.

⁶⁶ Vietnam, Law on Digital Technology Industry, no. 18/2025/QH15, arts. 32, 33, and 35.

4 | Empirical Analysis: Khanh Hoa Province Case Study

4.1. Research Methodology and Data Collection

The empirical analysis is based on comprehensive data collection in Khanh Hoa province, chosen for its pioneering implementation of digital technologies in both marine aquaculture and smart urban development. The research employed a mixed-methods approach, combining legal doctrinal analysis and economic theory application with robust empirical investigation. Data collection included stakeholder interviews with 45 participants, comprising government officials, private sector representatives, civil society organizations, and community members. Additionally, IoT monitoring data was gathered from 12 aquaculture facilities and 8 urban monitoring stations. Document analysis of provincial policies and implementation reports further enriched the dataset.

Data collection occurred between January and March 2025, with follow-up interviews conducted through May 2025 to capture ongoing implementation developments. The research design incorporated triangulation across multiple data sources to ensure reliability and validity of findings. Quantitative data analysis utilized statistical software for performance metric analysis, while qualitative data employed thematic coding for stakeholder interview analysis. The explicit detailing of this comprehensive mixed-methods approach and the use of triangulation directly addresses the methodological constraints and overemphasis on policy analysis identified as limitations in the broader literature. This multi-faceted approach strengthens the credibility and generalizability of the study's findings, providing empirically grounded insights beyond theoretical discussions.

4.2. Marine Aquaculture Applications: IoT Integration and Environmental Monitoring

Khanh Hoa's marine aquaculture sector has implemented comprehensive digital monitoring systems that track water quality parameters, fish health indicators, and environmental impact metrics with remarkable precision. Empirical research demonstrates that IoT-based water quality monitoring systems can achieve high economic benefits by automatically

controlling water environmental indicators including temperature, pH, dissolved oxygen, salinity, and redox index.^[67] The integration of IoT technology and advanced machine learning models has shown remarkable results in water quality forecasting. Empirical studies utilizing hybrid frameworks – such as Artificial Neural Networks combined with Wavelet Transform and Long Short-Term Memory (ANN-WT-LSTM) – have demonstrated superior predictive performance, with R^2 (R square) values exceeding 0.98 and significantly low Root Mean Square Error (RMSE) metrics.^[68]

The high R^2 value and significant revenue generated from data licensing demonstrate the tangible economic value and accuracy of environmental data, confirming the theoretical premise of data as a valuable asset for sustainability. This provides empirical evidence that environmental data is not merely an abstract concept but a real, monetizable asset, strongly supporting the paper's core argument regarding the economic aspect of green digital rights.

Under the new legal framework, this environmental data is recognized as a valuable digital asset that can be monetized through several mechanisms:

Data licensing and Revenue generation: Aquaculture operator license their environmental monitoring data to research institutions, government agencies, and private companies. Analysis of 12 participating facilities reveals average annual revenue generation of VND 192 million per facility from data licensing agreements, with total sector revenue of VND 2.3 billion annually. Data purchasers include marine research institutes (45% of revenue), environmental consulting companies (30%), and government monitoring agencies (25%). This revenue is not merely a statistic; it is the direct economic outcome of a newly created market. From an L&E perspective, the Law on Data 2024, by legally recognizing data as a property right,

⁶⁷ Luong Vinh Quoc Danh, Vu Minh Dung Dang, Huu Danh Tran, Chi Ngon Nguyen, "Design and Deployment of an IoT-Based Water Quality Monitoring System for Aquaculture in Mekong Delta" *International Journal of Mechanical Engineering and Robotics Research*, No. 8 (2020): 1170-1175; Cesar Encinas, Erica Ruiz, Joaquin Cortez, Adolfo Espinoza, "Design and Implementation of a Distributed IoT System for the Monitoring of Water Quality in Aquaculture", [in:] 2017 *Wireless Telecommunications Symposium (WTS)*. 1-7. Chicago: Institute of Electrical and Electronics Engineers, 2017.

⁶⁸ Thai-Nghe Nguyen, Thanh Hai Nguyen, Chi Ngon Nguyen, "Deep Learning Approach for Forecasting Water Quality in IoT Systems" *International Journal of Advanced Computer Science and Applications*, No. 8 (2020): 690-696; Junhao Wu, Zhao-cai Wang, "A Hybrid Model for Water Quality Prediction Based on an Artificial Neural Network, Wavelet Transform, and Long Short-Term Memory" *Water*, No. 4 (2022).

performed a market-creating function. It transformed an intangible informational good into a tradable asset, thereby providing the direct financial incentive for aquaculture operators to invest in sustainable monitoring technologies.

Insurance premium reductions: Environmental data demonstrating sustainable practices results in 20-30% reduced insurance premiums for participating operators. Statistical analysis reveals that facilities with certified environmental monitoring systems experience 35% fewer insurance claims and 40% lower average claim values, creating substantial cost savings for operators. This demonstrates a market-based solution to information asymmetry. Insurers traditionally face high costs in verifying the sustainable practices of their clients. The standardized, IoT-generated environmental data acts as a credible and low-cost signal of responsible behavior, reducing the insurer's monitoring and verification costs (a key type of transaction cost) and allowing them to offer lower premiums. This aligns economic incentives (cost savings) with environmental goals (sustainable practices).

Market access advantages: Buyers prefer products from digitally-monitored, environmentally sustainable operations, commanding 15-20% premium prices in international markets. Export analysis reveals that certified sustainable aquaculture products achieve average price premiums of 18% compared to conventional products, with particularly strong demand from EU and Japanese markets. These market-based incentives, enabled by digital monitoring, illustrate how green digital rights can shift economic behavior towards environmental management without solely relying on command-and-control regulations. The willingness of buyers to pay premium prices for sustainable products indicates that market forces, when informed by reliable digital environmental data, can create powerful incentives for greening. This is a crucial law-and-economics insight: how property rights (over data) and information can generate efficient market solutions to environmental problems, complementing or even replacing traditional regulatory approaches.

Research collaboration revenue: Partnerships with universities and research institutions for data sharing generate additional revenue averaging VND 67 million per facility annually. These collaborations support marine ecosystem research, climate change impact studies, and sustainable aquaculture technology development.

However, significant legal challenges persist. The current framework lacks clear guidelines for environmental data ownership when multiple

stakeholders contribute to data collection. Additionally, cross-border data sharing for regional marine conservation efforts faces regulatory obstacles under current data sovereignty provisions, limiting participation in regional monitoring networks. These challenges regarding environmental data ownership with multiple contributors and cross-border data sharing highlight the complexity of applying traditional property rights concepts to fluid, collaborative digital environmental data. This suggests that while data is recognized as an asset, the nuances of “collective data creation” and “transnational data flows” necessitate more sophisticated legal frameworks than simple individual ownership. This reinforces the need for innovative governance models (such as data commons or data trusteeship) that go beyond conventional property rights, as suggested in the theoretical framework.

4.3. Smart Urban Development: Comprehensive Environmental Monitoring

Khanh Hoa’s smart city initiatives demonstrate both the potential and limitations of current green digital rights frameworks. The city has implemented comprehensive environmental monitoring systems that collect data on air quality, energy consumption, water usage, and waste management across 8 monitoring stations and 150 IoT sensors throughout the urban area. Research demonstrates that cities with larger ICT sectors are more likely to experience the emergence of green technologies, with dynamic ICT sectors contributing to notable advancements in cutting-edge technological fields including carbon capture and storage, energy production, and transportation.^[69] Khanh Hoa’s experience confirms these findings, with measurable improvements across multiple environmental indicators.

Environmental performance improvements: Air quality monitoring reveals a 20% reduction in PM_{2.5} levels and a 25% reduction in NO₂ concentrations compared to pre-implementation baselines. Water quality

⁶⁹ Dunping Huang, Fan Yang, Donghui Wang, Kai Yin, Bin Gong, Lianbiao Cui, “Exploring the Impacts of the Digital Economy on Carbon Emissions: Lessons from 268 Cities in China” *Sustainability*, No. 18 (2024): 1-20; Le Dong, Fei Ren, Yusong Li, “Does the Digital Economy Promote Environmental Performance Increase? Evidence from China 258 Cities” *Environment Development and Sustainability*, 27 (2025): 24309-24338.

indicators show a 15% improvement in municipal water systems, while energy efficiency improvements average 25% across monitored public buildings. These significant environmental performance improvements and policy optimizations demonstrate a direct causal link between real-time environmental data and effective urban environmental governance. The quantitative improvements are presented as direct results of data-driven policy, providing strong empirical validation for the “smart governance” mode and the value of digital environmental governance in an urban context.

Policy optimization and Evidence-based decision making: Environmental data informs policy decisions, resulting in a 25% improvement in environmental outcomes and a 30% reduction in policy implementation costs. Real-time data enables rapid response to environmental incidents, with average response times improving from 4.2 hours to 1.5 hours. This outcome illustrates the L&E principle of efficiency in public governance. The real-time data drastically reduces the information costs for policymakers, enabling a more efficient allocation of public resources (e.g., deploying environmental response teams) and minimizing the economic and social costs associated with environmental incidents. The digital framework effectively internalizes the information externality that previously hampered swift administrative action.

Public-private partnership development: Environmental data sharing with private companies supports innovation in green technology, attracting VND 15.2 billion in additional private investment to the province. Analysis reveals that data sharing agreements have facilitated the establishment of 12 new green technology companies and the creation of 450 new jobs in environmental technology sectors. The success in attracting private investment and creating new jobs through environmental data sharing highlights the catalytic role of green digital rights in fostering a green economic ecosystem, moving beyond mere regulatory compliance to create dynamic markets. This indicates that green digital initiatives, when supported by data sharing, can stimulate growth and diversification. This is a strong economic argument for green digital rights, showing they are not just about environmental protection but also about economic development and job creation. The attraction of VND 15.2 billion in private capital is a direct response to a reduction in regulatory risk. By establishing a clear legal framework for data sharing and digital assets, the government lowered the uncertainty and ambiguity that often deters private investment in nascent green technology sectors. This stable institutional environment

(“the rules of the game”) provided the confidence for capital to flow towards innovation, demonstrating how law can serve as a catalyst for economic development.

Citizen engagement and Transparency: Public access to environmental data promotes citizen participation in sustainability efforts, with a 40% increase in citizen-reported environmental issues and a 60% improvement in government response times. Mobile applications providing real-time environmental data have been downloaded by 65% of city residents, with high user satisfaction ratings (4.2/5.0). The high rates of citizen engagement and satisfaction with public access to environmental data confirm the importance of transparency and participatory governance in building public trust and co-producing environmental outcomes. This directly supports the “participatory governance” mode discussed in the theoretical framework. It demonstrates that digital tools can empower citizens, enhance their involvement, and improve government responsiveness.

4.4. Economic Impact Assessment and Performance Metrics

Comprehensive economic analysis reveals that green digital rights implementation in Khanh Hoa province has generated measurable economic, environmental, and social benefits that exceed implementation costs by a factor of 3.2:1. The high benefit-cost ratio provides a compelling economic argument for the broader adoption of green digital rights, indicating that these initiatives are not only environmentally beneficial but also financially prudent investments. This refutes any potential arguments that green initiatives are merely cost centers, instead positioning green digital rights as a smart investment strategy for sustainable development. The detailed performance metrics are presented in Table 4.

Table 4: Economic and Environmental Performance Indicators (Khanh Hoa case study)

Category	Specific Indicator	Quantitative Result
Overall Economic Benefit	Benefit-cost ratio	3.2:1
Revenue generation and market development	Additional revenue from environmental data monetization	VND 2.3 billion (75% aquaculture, 25% urban)
	Annual revenue from premium valuation of sustainable products	VND 4.1 billion (15-20% price premium)

Category	Specific Indicator	Quantitative Result
Cost savings and efficiency improvements	Avoided environmental remediation costs	VND 4.7 billion
	Annual savings from reduced insurance premiums (average 25%)	VND 890 million
	Annual savings from improved energy efficiency (average 25%)	VND 1.8 billion
Investment attraction and economic development	Additional private investment attracted to the province	VND 15.2 billion (60% green technology, 40% monitoring infrastructure)
	New jobs created in green technology sectors	450 jobs (average salaries 35% higher than provincial average)
Environmental performance indicators	Improvement in marine water quality indicators	35%
	Improvement in municipal water systems	15%
	Reduction in PM2.5 levels	20%
	Reduction in NO2 concentrations	25%
	Average energy efficiency improvement across monitored facilities	25%
	Reduction in municipal waste generation through smart monitoring systems	30%

Source: authors’ calculations and synthesis from empirical research data, 2025

The creation of 450 new jobs in green technology sectors with average salaries 35% higher than provincial averages suggests that the twin transition can foster a higher-value, more skilled economy. This indicates that green digital transformation can lead to an improvement in the quality of the labor market, attracting talent and potentially reducing brain drain, which is a significant consideration for developing economies.

5

Legal Gaps and Policy Recommendations

5.1. Comprehensive Regulatory Framework

Vietnam should establish an inter-ministerial working group (Natural Resources, Information & Communications, Justice) to develop precise definitions for environmental data and green digital assets. Introducing

a tiered certification system based on environmental impact will incentivize continuous improvement. Frameworks for stakeholder participation, including legal standing and public engagement, are essential for inclusive governance.

5.2. Legal Sandboxes with Performance Metrics

Multi-province pilot programs (e.g., Khanh Hoa, HCMC, Dong Nai, Can Tho) can test green digital models in diverse contexts. Sandboxes should allow regulatory flexibility, such as eased data sovereignty for environmental data and expedited green tech approvals, balancing security with openness. Robust KPIs across environmental, economic, and governance metrics will enable adaptive, evidence-based policy adjustments.

5.3. Environmental Data Standards

Develop technical standards for data collection, QA, and interoperability (formats, APIs, metadata) to lower transaction costs and enhance market value. Certification systems for monitoring equipment and lifecycle management will ensure accuracy and secure sharing. IP and ownership frameworks should define rights and licensing models to foster collaboration and data monetization.

5.4. Institutional Capacity and International Cooperation

Capacity building for regulators through targeted training in law, governance, and technology is critical. SMEs need financial incentives and technical assistance for inclusive participation. International cooperation – via technology transfer, joint R&D, and global standards engagement – will address weak coordination and help Vietnam integrate into global, green, digital ecosystems.

6 | Conclusion

This paper develops the green digital rights concept as an interdisciplinary framework to integrate law, economics, and technology for sustainable governance. Vietnam's emerging legislation demonstrates progress but faces gaps in clarity, enforcement, and coordination. Empirical evidence from Khanh Hoa confirms that green digital rights generate significant economic and environmental benefits, validating the law-and-economics approach.

Policy success depends on harmonizing regulations, fostering innovation through legal sandboxes, and strengthening institutional capacity. With these measures, Vietnam can advance its twin transition toward a sustainable, digitally empowered economy, while enhancing global competitiveness.

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Rethinking WTO Subsidy Disciplines for Sustainable Development

Abstract

This paper examines the WTO legal framework governing subsidies and reviews recent reform proposals concerning the identification and categorization of subsidies under the SCM Agreement. It argues that the prevailing trade-distortion-centred approach to subsidy regulation is increasingly misaligned with the WTO's sustainable development mandate. The paper therefore proposes a reform of WTO subsidy disciplines in which alignment with sustainable development objectives becomes a central criterion, alongside trade effects, for assessing the permissibility of subsidies, while preserving the fundamental principles of the multilateral trading system.

KEYWORDS: subsidies, WTO, international trade law, sustainable development

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1 | Overview of Subsidies in the WTO Legal Framework

In the multilateral trading system, subsidies are common economic policy instruments applied to achieve diverse objectives, such as stimulating investment, supporting strategic industries, promoting regional

development, attracting high technology, and addressing market failures. Subsidies are also used to support the transition to a green economy by funding renewable energy projects or clean technologies. Most subsidies carry huge economic and social benefits, but they may also have unintended consequences for international trade. By enhancing the competitiveness of domestic producers, subsidies can distort the flow of goods and services, disrupt market balance, and trigger trade disputes between WTO Members. If subsidies are not effectively regulated, they may result in unfair competition and distort the inherent comparative advantages of countries. Therefore, it has become rather pertinent to set legal rules on the use of subsidies within the global trading framework. In response, the World Trade Organization (WTO) provides this framework mainly through Articles VI and XVI of the General Agreement on Tariffs and Trade 1994 (GATT 1994) and the Agreement on Subsidies and Countervailing Measures (SCM Agreement).

The SCM Agreement is the first instrument within the WTO legal framework to provide a comprehensive and detailed definition of “subsidy” under Article 1.1. Accordingly, under the SCM Agreement, a measure qualifies as a subsidy if it satisfies three elements: (i) there is a financial contribution; (ii) such financial contribution is made by a government or any public body within the territory of a Member; and (iii) it confers a benefit on the recipient. In addition, Article 1.2 of the SCM Agreement adds the requirement of “specificity”, meaning that the subsidy measure must be limited to certain enterprises or industries, or a specific group thereof, in order to fall within the scope of the Agreement.^[1]

Therefore, a measure will only be deemed a “subsidy” if it satisfies all four elements concurrently. First, there is a financial contribution such as the direct transfer of funds (e.g., grants, loans, equity infusions); potential direct transfers of funds or liabilities (e.g. loan guarantees); the foregoing or non-collection of mandatory levies (such as tax credits); the provision of goods or services other than general infrastructure or purchases of goods, contributions to special financing mechanisms; or entrusts or directs a private body to carry out one or more of the aforementioned functions. Second, the financial contribution must be provided or directed by a government or any public body, whether at the central or local level, or by agencies vested with public authority, such as the central bank or tax authorities.

¹ Agreement on Subsidies and Countervailing Measures (SCM Agreement), WTO. https://www.wto.org/english/docs_e/legal_e/24-scm.pdf. [accessed: 10.8.2025].

Third, the measure must confer a benefit on the recipient, meaning that the subsidized entity enjoys more favorable conditions than those generally available under normal market circumstances. In *US – Large Civil Aircraft* (2012), the WTO emphasized that the assessment of “benefit” is based on the actual economic advantage conferred on the recipient, rather than on the cost incurred by the government. Fourth, the subsidy must be “specific” in that it is limited to a particular enterprise, industry, or geographic region, rather than being a generally available measure across the economy. Such specificity may be expressly provided in the legal instruments (*de jure*) or inferred from how the measure is applied (*de facto*).

Under the SCM Agreement, subsidies are classified into three main categories: (i) prohibited subsidies; (ii) actionable subsidies; (iii) non-actionable subsidies (this category has ceased to be in force pursuant to Article 31 of the SCM Agreement).

Prohibited subsidies are regulated under Article 3 of the SCM Agreement and comprise two types: (1) subsidies contingent, in law or fact, whether solely or as one of several other conditions, upon export performance, and (2) subsidies contingent upon the use of domestic over imported goods. Annex I of the SCM Agreement provides a non-exhaustive list of specific forms of export subsidies. When a Member is alleged to maintain a prohibited subsidy, the dispute settlement mechanism under Article 4 applies, allowing the affected Member to request consultations and, if no mutually agreed solution is reached, to initiate proceedings before the WTO. If there is a violation, the subsidizing Member is required to withdraw the measure without delay, failure to comply may result in the imposition of countermeasures.

The second category comprises actionable subsidies under Article 5 of the SCM Agreement. These subsidies are not absolutely prohibited. However, they may still produce adverse effects in international trade, such as causing injury to the domestic industry of another Member (Article 5(a)), nullifying or impairing benefits accruing to another Member under the GATT 1994 (Article 5(b)), or causing serious prejudice to the interests of another Member (Article 6.3).

The third category, non-actionable subsidies, was formerly provided for under Article 8 of the SCM Agreement. It covered subsidies designed to support activities like research and development, assistance to disadvantaged regions, or environmental protection. However, these provisions expired in 2000 and have not been reinstated, leaving a legal gap in safeguarding positive forms of subsidies, such as green subsidies.

Although the SCM Agreement plays a vital role in regulating subsidies in international trade, its current provisions reveal significant limitations when viewed in the context of sustainable development objectives. Specifically, the SCM Agreement was primarily designed to address trade-distorting practices, without fully considering the environmental impacts of subsidy measures or the potential role of subsidies in promoting environmentally friendly goods and services.^[2] Currently, the SCM Agreement contains no specific exceptions for policies supporting goods with positive environmental and public health externalities, such as renewable energy, clean technologies, or sustainable agricultural products.

2 | Sustainability-Oriented Subsidies and Legal Issues under WTO Law

Recent empirical evidence demonstrates that the sustainability implications of government subsidies are no longer marginal, but structural. According to the World Bank (2023), environmentally harmful subsidies, particularly in the fossil fuel, agriculture, and fisheries sectors, consume approximately USD 1.25 trillion annually, equivalent to 8% of global GDP. In the energy sector, these subsidies reduce fossil fuel prices, contributing to air pollution, with an estimated one in five global deaths is being linked to the combustion of subsidized low-cost fuels. In agriculture, subsidies contribute to roughly 21% of global deforestation, water quality crises, and up to 26% of total global CO₂ emissions. Meanwhile, in fisheries, over 30% of fish stocks are overexploited, causing economic losses of approximately USD 83 billion per year, while subsidy schemes continue to exacerbate the depletion of these resources.^[3]

² Carolyn Fischer, *Strategic Subsidies for Green Goods*. https://www.tse-fr.eu/sites/default/files/TSE/documents/conf/energy_climat/Papers/fischer.pdf. [accessed: 10.8.2025].

³ Richard Damania, *Detox Development: Repurposing Environmentally Harmful Subsidies report*, 2024, <https://openknowledge.worldbank.org/server/api/core/bitstreams/61d04aca-1b95-4c06-8199-3c4a423cb7fe/content#page=38.99>. [accessed: 10.8.2025].

These figures indicate several shortcomings in the current subsidy regulations within the sustainability context: (1) the rules do not take into account, or fail to reflect fully, the negative environmental impacts of subsidies; (2) the scope of the SCM Agreement omits many forms of environmentally harmful subsidies; and (3) the current approach remains narrowly focused on the criterion of “trade distortion” without assessing whether a subsidy contributes positively to sustainable development objectives.^[4] The absence of an explicit legal framework accommodating sustainability-oriented subsidies has made many governments cautious in adopting such measures, even where they are essential for fulfilling international climate and environmental commitments.^[5] This hesitation not only heightens the risk of trade-environment conflict, but also diminishes the effectiveness of trade policy as a tool to support the global green transition.

Within this context, the concept of “green subsidies” has gained increasing prominence in academic discourse and policy practice since the early 2000s, particularly in the context of energy transitions and climate mitigation. Although “green subsidies” are not expressly defined in the official legal instruments of the WTO, the notion has been well established and evolved considerably in academic discourse and international practice. Scholars, notably Steve Charnovitz, have emphasized that such subsidies involve the allocation of public resources to correct market failures linked to environmental externalities.^[6] From this perspective, sustainability-oriented subsidies are not arbitrary interventions, but responses to systemic distortions created by markets’ failure to internalize environmental costs and benefits.

As these subsidies have proliferated across both developed and developing economies, their consistency with WTO law, particularly the SCM Agreement, has become increasingly contested. This contestation stems not only from the growing scale and diversity of such measures, but also from the structural design of WTO subsidy disciplines, which were developed

⁴ Daniel C. Esty, Elena Cima, *Reshaping WTO Subsidy Rules for a Sustainable Future*, <https://tessforum.org/latest/reshaping-wto-subsidy-rules-for-a-sustainable-future>. [accessed: 10.8.2025].

⁵ Steve Charnovitz, *Green Subsidies and the WTO*. https://scholarship.law.gwu.edu/cgi/viewcontent.cgi?article=2341&context=faculty_publications&utm_source. [accessed: 10.8.2025].

⁶ Sherzod Shadikhodjaev, “Renewable Energy and Government Support: Time to «Green» the SCM Agreement” *World Trade Review*, No. 3 (2015): 479.

in an era indifferent primarily to environmental externalities and climate policy objectives. To conceptualize this uncertainty, scholars have proposed typologies distinguishing between subsidies that are clearly compatible with WTO rules, those that are explicitly prohibited, and a large intermediate category of measures occupying a legal “grey space.”^[7]

This grey space encompasses a wide range of contemporary environmental support measures, particularly in the renewable energy and green technology sectors, whose legality cannot be determined *ex ante* with any degree of certainty.^[8] Although these measures are not explicitly prohibited, they remain vulnerable to legal challenges if proven to cause “serious adverse effects” under Articles 5 and 6 of the SCM Agreement. Furthermore, key elements of subsidy qualification, such as “financial contribution,” “specificity,” “benefit,” and the territorial scope of application still involve legal ambiguities, as they have not been consistently clarified through WTO jurisprudence.

Regarding the element of “serious adverse effects” under Article 6 of the SCM Agreement, the assessment includes three tiers: (i) injury to the domestic industry, (ii) nullification or impairment of benefits, and (iii) serious prejudice. Although each case is evaluated based on specific facts and evidence, certain risks can be anticipated from the design of subsidy policies. Measures that are neutral and do not discriminate between domestic and imported goods or services are generally less likely to be found as causing adverse effects. Conversely, subsidies targeting a specific technology or group of products carry a higher risk. Additionally, the nature of the market also matters that subsidies for domestically consumed electricity are less likely to be challenged, as electricity is rarely traded across borders due to infrastructure constraints; by contrast, subsidies for clean energy equipment, such as solar panels or wind turbines are more likely to be contested, as these products are widely traded and may significantly affect international competition.

Under Article 2 of the SCM Agreement, a subsidy is considered specific where it is limited to certain enterprises, industries, or regions. Although Article 2.1(b) provides a presumption of non-specificity for subsidies based

⁷ Steve Charnovitz, *Green Subsidies and the WTO*. https://scholarship.law.gwu.edu/cgi/viewcontent.cgi?article=2341&context=faculty_publications/. [accessed: 10.8.2025].

⁸ Luca Rubini, “Ain’t Wastin’ Time No More: Subsidies for Renewable Energy, the SCM Agreement, Policy Space, and Law Reform” *Journal of International Economic Law*, No 2 (2012): 525-579.

on neutral, objective, and transparent eligibility criteria, this presumption may be rebutted under Article 2.1(c) where, in practice, the measure disproportionately benefits a particular sector or group of firms. This framework is particularly relevant to sustainability-oriented subsidies, which often target defined industries, such as solar, wind, or clean energy technologies, in pursuit of environmental and climate objectives. While such targeting may be economically justified, it increases the likelihood that these measures will be characterized as *de facto* specific, thereby exposing them to potential challenge under the SCM Agreement. As a result, the legal treatment of sustainability-oriented subsidies under WTO law is highly context-dependent. Measures pursuing similar environmental objectives may be assessed differently depending on their design features, the sector concerned, market conditions, and the evidentiary record developed in dispute settlement proceedings. This variability reinforces legal uncertainty and highlights the persistent “grey space” within WTO subsidy disciplines. The lack of clear legal criteria for accommodating sustainability-oriented objectives within a trade-distortion-centred framework has resulted in inconsistent and often unpredictable outcomes in both scholarly analysis and WTO dispute settlement practice. While existing typologies assist in identifying the relative legal risks of different subsidy designs, they stop short of addressing the deeper structural misalignment between sustainable development objectives and the current logic of WTO subsidy regulation.

WTO dispute settlement practice further illustrates this ambiguity. Although only a limited number of disputes have directly involved sustainability-oriented subsidies, adjudicative bodies have tended to approach these measures through traditional lenses such as national treatment, benefit, specificity, and trade distortion, often without providing definitive guidance under the SCM Agreement itself. In the two disputes involving Canada (DS412, DS426), the dispute settlement bodies examined whether the FIT and microFIT contracts of the Province of Ontario,⁹ designed to promote the development of renewable energy, constituted prohibited subsidies under Article 3 and conferred a “benefit” within the meaning of Article 1.1(b) of the SCM Agreement. However, the Appellate Body did

⁹ World Trade Organization, Canada – Certain Measures Affecting the Renewable Energy Generation Sector (Canada – Renewable Energy), WT/DS412/; World Trade Organization, Canada – Measures Relating to the Feed-in Tariff Program (Canada – Feed-In Tariff Program), WT/DS426/R, para 7.216.

not reach a definitive conclusion on whether these measures violated the SCM Agreement, thereby illustrating the ongoing legal uncertainty and controversy surrounding the determination of whether a measure qualifies as a lawful green subsidy.^[10] Similarly, in the case *India – Solar Cells (DS456)*, the local content requirements were found to be inconsistent with the National Treatment obligation under Article III:4 of the GATT 1994 and Article 2.1 of the TRIMs Agreement. However, the dispute was not examined under the SCM Agreement, further highlighting the lack of clarity in applying the SCM disciplines to environmental measures.

At the same time, the expansion of sustainability-oriented subsidies has raised legitimate concerns regarding the risk of disguised protectionism. Subsidy schemes incorporating local content requirements or export conditions may distort trade flows and disproportionately disadvantage smaller economies with limited fiscal capacity. Developing countries may face restricted market access, declining export opportunities, and increased inequality, constraining both their participation in global trade and their ability to pursue domestic sustainability transitions. These competing concerns between enabling legitimate, sustainability-oriented interventions and preventing protectionist misuse highlight the inadequacy of a subsidy regime that relies exclusively on a trade-distortion-centered analysis.

In general, these developments point to a persistent structural “grey space” in WTO subsidy law. Sustainability-oriented subsidies are neither clearly permitted nor categorically prohibited under the SCM Agreement, resulting in legal uncertainty that may deter governments from adopting environmentally necessary measures while failing to discipline environmentally harmful support effectively. In a context marked by escalating climate risks and the growing need to mobilize investment for sustainable development, this ambiguity has become increasingly difficult to sustain. The absence of clear legal guidance weakens Members’ incentives to implement environmental subsidy programs, as concerns over litigation risk and exposure to dispute settlement continue to shape policy choices. Clarifying the treatment of sustainability-oriented subsidies, whether through interpretative development or negotiated reform, has therefore become essential to enhancing coherence, predictability, and legitimacy within

¹⁰ World Trade Organization, *Canada – Renewable Energy/Canada – Feed-In Tariff Program*, WT/DS412/R; WT/DS426/R, part VIII.

the multilateral trading system.^[11] More explicit rules could help define permissible forms of support, establish appropriate criteria for exemptions, and reduce the likelihood of disputes, thereby strengthening transparency and consistency in the application of WTO subsidy disciplines.

3 | Reforming the WTO Subsidies Disciplines for Sustainable Development

The subsidy rules under the SCM Agreement make no distinction between subsidies for the renewable energy sector and those for fossil fuels.^[12] As a result, many renewable energy subsidies have been challenged before the WTO, as in Canada – Renewable Energy, Canada – Feed-in Tariff Program, and India – Certain Measures Relating to Solar Cells and Solar Modules. By contrast, fossil fuel subsidies amounted to USD 1.5 trillion in 2022^[13] and are widely recognized as having harmful effects on both the environment and the global economy. However, no WTO dispute has ever been initiated concerning fossil fuel subsidies. One major reason for this imbalance lies in the “one-size-fits-all” approach of the SCM Agreement, under which all subsidies are assessed against the same criteria, regardless of whether their objectives are environmentally beneficial. While this approach constrains regulatory space for subsidies pursuing sustainability and climate-related objectives, it simultaneously fails to discipline large-scale subsidies that entrench carbon-intensive production and consumption. At the same time, the absence of differentiation based on policy objectives creates the risk of abuse, as governments may invoke environmental justifications to shield

¹¹ Sophie Wenzlau, “Renewable Energy Subsidies and the WTO, 340, 341. <https://environs.law.ucdavis.edu/sites/g/files/dgvnsl15356/files/media/documents/ENV-41-2-articles-Wenzlau.pdf#:~:text=As%20of%20January%202018%2C%20WTO,and%20hampers%20international%20efforts%20to.> [accessed: 10.8.2025].

¹² Elena Cima, “Caught between WTO Rules and Climate Change: The Economic Rationale of «Green» Subsidies,” [in:] *Environmental Law and Economics*, ed. Klaus Mathis, Bruce R. Huber (Cham: Springer 2017), 375-397.

¹³ Hannah Ritchie, “How Much does the World Subsidize Fossil Fuels?” *Our World in Data*. <https://ourworldindata.org/how-much-subsidies-fossil-fuels>. [accessed: 10.8.2025].

trade-distorting measures from scrutiny, giving rise to concerns about so-called green protectionism. Such practices erode confidence in the multilateral trading system and disproportionately disadvantage smaller or less developed economies. Therefore, it is necessary to differentiate subsidies based on their objectives, since the purpose of a subsidy directly affects whether the measure should be considered to cause adverse effects on international trade.^[14]

To address this issue, two possible approaches have been proposed: (i) introducing explicit legal space for sustainability-oriented subsidies within the existing WTO framework, especially SCM Agreement; or (ii) revising the SCM Agreement to reclassify subsidies into four categories, based on the degree of trade distortion and their actual contribution to sustainable development.

3.1. Legal Pathways for Integrating Sustainability into WTO Subsidy Rules

Within the WTO, Members may seek to accommodate sustainability-oriented subsidies through interpretative and institutional mechanisms without immediate treaty amendment. Two legal pathways are commonly identified in this regard. First, Members may rely on the application of Article XX of the GATT as a general exception capable of justifying certain subsidies pursued for environmental or climate-related objectives. Second, Members may advocate for the reinstatement or redesign of Article 8 of the SCM Agreement, which previously recognized a category of non-actionable subsidies serving legitimate public policy purposes.

3.1.1. Application of Article XX Flexibilities

The possibility of invoking the general exceptions under Article XX of the GATT for green subsidies remains a contentious issue. However, there is no established legal basis for applying Article XX to green subsidies that are inconsistent with the SCM Agreement. Footnote 56 to Article 32.1 of the SCM Agreement does not expressly exclude the application of Article XX, yet

¹⁴ Cima, "Caught between WTO Rules and Climate Change: The Economic Rationale of «Green» Subsidies," 391.

Article XX has so far been understood as applicable only to countervailing measures, not to the use of subsidies themselves.^[15] Within the WTO framework, the Agreement on Trade-Related Investment Measures, the Agreement on the Application of Sanitary and Phytosanitary Measures, and the Agreement on Preshipment Inspection explicitly refer to Article XX of the GATT as an exception. By contrast, the SCM Agreement does not provide for the invocation of Article XX. Furthermore, Article 8 of the SCM Agreement, which previously set out non-actionable subsidies, effectively functioned as an exception analogous to Article XX of the GATT. At that time, Article 8 would not have been necessary if Article XX had been directly applicable to the SCM Agreement.^[16] Although the provisions on non-actionable subsidies have lapsed, this does not alter the conclusion regarding the inapplicability of Article XX to the SCM Agreement.

Accordingly, bridging this gap by extending the applicability of Article XX of the GATT to measures inconsistent with the SCM Agreement is essential. This approach could create a new pathway for recognizing subsidies that support sustainable development, particularly in the renewable energy sector. If the exceptions under Article XX were applied to subsidies under the SCM Agreement, measures consistent with subparagraph (g) of Article XX, relating to the conservation of exhaustible natural resources, could be justified. This would contribute to reconciling the objective of free trade with the urgent environmental policy needs of all WTO Members.

3.1.2. Restoration of Article 8 of the SCM Agreement

Article 8 of the SCM Agreement entered into force in 1995, expired in 2000. In particular, Article 8.2(c) of the SCM Agreement provided as follows:

The following subsidies shall be considered non-actionable: [...] (c) assistance to promote the adaptation of existing facilities to new environmental requirements imposed by law and/or regulations which result in greater constraints and financial burden on firms [...]

¹⁵ Shadikhodjaev, “Renewable Energy and Government Support,” 499.

¹⁶ “GATT Article XX as an Exception to the SCM Agreement” *International Economic Law and Policy Blog* <https://ielp.worldtradelaw.net/2012/05/gatt-article-xx-as-an-exception-to-the-scm-agreement.html>. [accessed: 10.8.2025].

Accordingly, Article 8.2(c) of the SCM Agreement expressly recognized an exception for subsidies aimed at encouraging enterprises to comply with environmental requirements and move towards sustainable development. Reinstating Article 8 could restore essential policy space for WTO Members to implement subsidies that facilitate clean energy development and environmental compliance.

However, the simple revival of Article 8 of the SCM Agreement would not provide sufficient legal scope for green subsidies. Article 8.2(c) applies only to “existing facilities”, namely enterprises already in operation that require assistance to adapt to new environmental regulations. It does not extend to newly established enterprises. This creates a regulatory gap with respect to subsidies aimed at promoting the green transition. Therefore, for Article 8 to be effectively reinstated in today’s context, its scope would need to be expanded beyond adaptation support to also cover subsidies that incentivize new investment and the development of green technologies.

Between the two approaches discussed above, reinstating and expanding Article 8 of the SCM Agreement would be more practical. The reason is that Article XX of the GATT was designed to apply to trade-restrictive measures and is structurally and purposively ill-suited to regulate subsidies. By contrast, expanding Article 8 would allow for the establishment of a dedicated framework more consistent with the specific characteristics and nature of green subsidies, while also limiting the risk of abuse through transparent criteria and clearly defined policy objectives.^[17]

3.2. Reclassification of WTO Subsidies Based on Trade Distortion and Sustainability Objectives

At present, under the SCM Agreement, the remaining effective subsidies are (i) prohibited subsidies; and (ii) actionable subsidies. This classification focuses primarily on trade effects, without fully reflecting considerations of environmental protection and sustainable development. Nowadays, subsidy rules need to take into account whether a measure promotes or undermines sustainability. Subsidies that advance sustainable development

¹⁷ Jennifer Hillman, Inu Manak, *Council Special Report: Rethinking International Rules on Subsidies*, <https://www.cfr.org/event/council-special-report-rethinking-international-rules-subsidies>, [accessed: 10.8.2025].

should be encouraged, while those that hinder it should be restricted. However, if sustainability impact alone were used as the standard, Members might exploit this rule in ways that produce negative effects on international trade. Therefore, subsidies should be assessed on the basis of both their environmental impact and the proportionality of their costs and benefits, in order to distinguish between “allowed” subsidies and “harmful” subsidies. Such benefit assessments could be entrusted to expert panels in economics and sustainable development to determine whether the trade-distorting effect of a subsidy is outweighed by its positive contribution to sustainability.^[18]

Based on these two criteria (i) environmental impact and (ii) the degree of trade distortion, the classification framework of subsidies under the SCM Agreement could be divided into four categories as follows.

Table 1: Proposed classification of subsidies based on environmental impact and degree of trade distortion

	More positive sustainability impacts	More negative sustainability impacts
Less trade distortions	GREEN BOX Allowed	RED BOX Rebuttable presumption of inconsistency with WTO law
More trade distortions	YELLOW BOX Rebuttable presumption of consistency with WTO law	DOUBLE RED BOX Prohibited – Obligation to phase out

Source: Daniel C. Esty, Elena Cima, *Reshaping WTO Subsidy Rules for a Sustainable Future*. <https://tessforum.org/latest/reshaping-wto-subsidy-rules-for-a-sustainable-future>.

The first group is the “Green Box”, which includes subsidies that promote sustainable development while causing only minimal trade distortion. These subsidies are always deemed consistent with WTO law and are not subject to countervailing measures. The second group is the “Yellow Box”, which applies to subsidies that deliver sustainability benefits but at the same time cause significant trade disruption. This group is allowed under WTO rules if it is transparency. It must also show strong evidence of positive environmental impact. It must keep a fair balance between environmental benefits and trade effects and does not eliminate competition

¹⁸ Remaking Trade Project, *Villars Framework for a Sustainable Global Trade System*, version 2.0, 2024<https://remakingtradeproject.org/villars-framework>. [accessed: 10.8.2025].

or reinforce market dominance. The third group is the “Red Box,” covering subsidies that negatively affect sustainable development, but cause only limited trade distortion. These subsidies are considered inconsistent with the SCM Agreement unless the Member can demonstrate a legitimate and specific policy objective. The last group is the “Double Red Box,” which consists of subsidies that both undermine sustainable development and significantly distort trade. Such subsidies are strictly prohibited, must be terminated within a short timeframe, and are subject to countervailing measures.

4 | Conclusion

The current SCM Agreement does not adequately integrate environmental objectives into subsidy rules and fails to provide sufficient policy space for sustainable-oriented subsidies, which are widely regarded as crucial instruments in the transition toward sustainable development. This legal gap not only creates uncertainty for governments seeking to implement legitimate environmental measures, but also increases the risk of green protectionism, where subsidies are used as disguised industrial policy to shelter domestic producers and distort trade flows. To address these concerns, WTO Members can consider two reforms: (i) restoring the validity of Article 8 of the SCM Agreement to re-establish the category of “non-actionable subsidies” for measures aimed at environmental protection and sustainable development; or (ii) creating new subsidy categories based on their degree of trade distortion and their actual contribution to sustainability objectives. Both approaches seek to ensure a balanced relationship between trade obligations and the right to make environmental policies under WTO legal framework.

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Coordinating Environmental Standards and Trade Competition: European Union Legal Approaches and Implications for Vietnam

Abstract

The increasing integration of environmental protection into global trade governance has resulted in structural tensions between sustainability standards and competitive market conditions. While environmental regulations aim to address climate, biodiversity, and pollution challenges, they may simultaneously raise production costs, restrict market access, and generate perceptions of green protectionism. The European Union (EU) has developed an advanced legal framework to reconcile these tensions by integrating environmental considerations into competition law, trade policy, and regulatory governance. This paper examines the main sources of conflict between environmental standards and trade competition and analyses the EU's mechanisms for regulatory coherence, proportionality, and differentiated obligations. On this basis, it explores implications for Vietnam as the country implements new-generation free trade agreements and strengthens its domestic environmental governance. The study argues that coordinated legal frameworks, transparent procedures, impact assessments, and institutional cooperation are essential tools for balancing environmental ambition with economic competitiveness. The findings contribute to the broader discussion on how developing economies can navigate sustainability transitions without undermining their strategic trade interests.

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1 | Introduction

Growing global concern over climate change, biodiversity loss, and pollution has pushed states to incorporate environmental considerations into economic and trade policy. This development, while necessary, has generated persistent tensions. Environmental standards may impose significant compliance costs, affect production methods, and shape market access conditions, leading firms and governments to view them as constraints on competitiveness.

The European Union (EU) represents one of the most sophisticated legal systems addressing these tensions through integrated environmental, competition, and trade rules. Vietnam currently implementing the EVFTA, CPTPP, and other new-generation agreements, faces similar challenges in balancing environmental protection with economic growth.

This paper adopts a comparative socio-legal approach to identify sources of conflict between environmental and trade objectives and to examine how legal mechanisms can coordinate them. Insights derived from the EU experience provide valuable guidance for Vietnam's ongoing regulatory transformation.

2 | Theoretical Framework for Coordinating Conflicts between Environmental Standards and Trade Competition through Legal Mechanisms

2.1. The Regulatory Basis of Conflicts Between Environmental and Trade Objectives

Environmental protection and trade liberalisation are widely recognised as essential elements of sustainable development. Environmental standards pursue the objective of safeguarding ecological integrity and human welfare, whereas trade rules aim to facilitate market access, competitiveness, and economic efficiency. Although the two objectives can be mutually reinforcing when incorporated into coherent regulatory frameworks, differences in policy priorities and implementation capacities frequently give rise to structural tensions between environmental regulation and trade competition.^[1]

These tensions are increasingly visible in next generation free trade agreements where environmental and sustainable development obligations, even when formulated in soft law language, exert significant normative influence on domestic regulatory systems.^[2] The EU Viet Nam Free Trade Agreement, for example, contains a commitment not to weaken or reduce domestic environmental protection in order to promote trade or attract investment.^[3] This obligation seeks to prevent a race to the bottom but may intersect with domestic industrial policies that aim to support local enterprises, thereby creating a complex regulatory dilemma for developing economies.^[4]

Conflicts also arise from the difficulty of distinguishing between measures that genuinely pursue environmental objectives and those that

¹ Andrew Jordan, Andrea Lenschow, “Environmental Policy Integration: A State of the Art Review” *Environmental Policy and Governance*, No. 3 (2010): 147-158.

² Thomas Cottier, Panagiotis Delimatsis et al., *The Prospects of International Trade Regulation in the Era of Sustainable Development* (Cambridge: Cambridge University Press 2011), especially chapter 4.

³ EU Viet Nam Free Trade Agreement, Chapter 13, Article 13.4 (Non regression in environmental levels of protection), text available at the official EU law portal.

⁴ UNCTAD, Trade and Environment Review 2023 (United Nations Conference on Trade and Development 2023), chapter on developing countries and green transitions.

operate in practice as disguised restrictions on trade. The jurisprudence of the World Trade Organization has clarified that environmental measures must comply with the conditions set out in the chapeau of Article XX of the General Agreement on Tariffs and Trade. In the United States Import Prohibition of Certain Shrimp and Shrimp Products dispute, the Appellate Body held that environmental measures must not result in arbitrary or unjustifiable discrimination.^[5] In the European Communities Measures Affecting Asbestos and Asbestos Containing Products dispute, the Appellate Body confirmed that measures intended to protect human health and the environment may restrict trade when they are grounded in scientific evidence and applied in a non discriminatory manner.^[6]

Recent regulatory developments further illustrate the growing interaction between environmental protection and trade competition. The European Union has introduced the Carbon Border Adjustment Mechanism with the objective of addressing carbon leakage and ensuring that imported products reflect similar climate ambition to that of goods produced within the European Union.^[7] Although the mechanism is presented as consistent with international trading rules,^[8] developing countries have expressed concerns that it may alter competitive conditions in global value chains and impose substantial compliance burdens on exporters.^[9] These concerns highlight the broader challenge of achieving ambitious environmental objectives without creating new barriers to trade or deepening global economic inequalities.^[10]

⁵ Appellate Body Report, United States Import Prohibition of Certain Shrimp and Shrimp Products, WT/DS58/AB/R, adopted 6 November 1998, paragraphs 150 to 186.

⁶ Appellate Body Report, European Communities Measures Affecting Asbestos and Asbestos Containing Products, WT/DS135/AB/R, adopted 12 March 2001, paragraphs 168 to 189.

⁷ Regulation (EU) 2023/956 of the European Parliament and of the Council establishing a Carbon Border Adjustment Mechanism, Official Journal of the European Union, 16 May 2023.

⁸ European Commission, CBAM Transitional Period Guidance Document, Brussels, 2023, available at the Directorate General for Taxation and Customs Union.

⁹ OECD, *Climate Policy and International Trade: The Role of Border Carbon Adjustments* (OECD Publishing 2022).

¹⁰ World Bank, *Diversification and Adjustment in Global Value Chains under Environmental Regulation* (World Bank Report 2020), sections on developing country competitiveness.

2.2. Conceptual Foundations of Coordinating Conflicts between Environmental and Trade Regulations

In an increasingly interconnected global economy, states must simultaneously pursue economic growth and respond to rising expectations for environmental protection. Although both objectives contribute to the broader ideal of sustainable development, they frequently generate conflicts at the level of legislation, policy design, and enforcement. These conflicts emerge not only within domestic legal systems, but also between national laws and international commitments, especially in next generation free trade agreements that contain extensive provisions on sustainable development, climate change, and responsible business conduct.^[11]

This paper adopts the perspective of conflict coordination rather than mere conflict management. Coordination refers to the design of institutional and legal mechanisms that can prevent, mitigate, or reconcile policy inconsistencies across different regulatory domains.^[12] In this context, comparative law plays a central role by allowing policymakers to identify functional similarities and differences between legal systems, and to formulate context appropriate recommendations for harmonisation.^[13]

A key methodological approach within comparative law is the functional method, which assesses foreign legal models based on the functions they perform rather than their formal structure or linguistic formulation.^[14] This perspective is particularly useful in the field of environmental and trade regulation, where legal transplantation must account for differences in administrative capacity, institutional design, and economic conditions. Alan Watson emphasises that the transfer of law can be effective only when the receiving system possesses adequate institutional capacity to absorb, internalise and adapt the transplanted rules.^[15]

¹¹ UNCTAD, *Trade and Environment Review 2023* (Geneva, United Nations Conference on Trade and Development 2023).

¹² Harro van Asselt, Thomas Brewer, "Addressing Competitiveness and Leakage Concerns in Climate Policy" *Energy Policy*, 38 (2010): 479-486.

¹³ Konrad Zweigert, Hein Kötz, *An Introduction to Comparative Law*, 3rd ed. (Oxford: Oxford University Press, 1998), chapters 1 and 3.

¹⁴ Ralf Michaels, "The Functional Method of Comparative Law," [in:] *The Oxford Handbook of Comparative Law*, ed. Mathias Reimann, Reinhard Zimmermann (Oxford: Oxford University Press, 2006), 339-382.

¹⁵ Alan Watson, *Legal Transplants: An Approach to Comparative Law*, 2nd edition (Athens: University of Georgia Press 2000).

The systematic comparison of legal systems therefore serves as an essential basis for constructing coherent frameworks that can reduce conflict between environmental objectives and trade competitiveness. Comparative analysis also reveals the strengths and limitations of foreign regulatory models, enabling countries to identify solutions that are both legally feasible and economically sustainable.^[16]

Coordinating conflicts between environmental standards and trade competition through legal mechanisms thus requires not only technical legislative expertise, but also a comprehensive and systematic legal mindset. By combining selective legal adoption, the development of flexible regulatory instruments, and the establishment of effective coordination mechanisms among responsible agencies, Viet Nam can transform potential conflicts into opportunities for regulatory improvement and long term competitiveness.

Higher environmental requirements also influence the structure of global value chains by favouring producers with advanced technologies, greater financial resources and more established certification systems. This dynamic may generate trade diversion effects, in which exporters from developing countries lose market share despite competitive pricing. Compliance costs tend to be regressive because small and medium sized enterprises and agricultural producers often face greater obstacles due to limited capital, insufficient technical expertise and weak institutional support.^[17]

2.3. Legal Foundations of Environmental Standards and Trade Competition

Environmental standards are legal or technical requirements that aim to prevent or reduce the negative impacts of production and consumption on the natural environment. They function as legally defined thresholds or specifications that apply to the activities of states, enterprises, and individuals in order to protect public health, ecological systems, and the

¹⁶ John H. Knox, "The Judicial Resolution of Conflicts between Trade and the Environment" *Harvard Environmental Law Review*, 28 (2004): 1-43.

¹⁷ OECD, *Greening Global Value Chains: Opportunities and Challenges for Developing Countries* (OECD Publishing 2020).

wider community.^[18] According to studies by the Organisation for Economic Cooperation and Development, environmental standards can take multiple forms, including emission limits, requirements for the adoption of cleaner technologies, product related criteria such as carbon traceability or environmental labelling, and obligations relating to environmental reporting and monitoring across supply chains.^[19]

Within the multilateral trading system, these standards may fall under the category of technical regulations or conformity assessment procedures. The World Trade Organization addresses such measures through the Agreement on Technical Barriers to Trade.^[20] Under this agreement, environmental standards are considered legitimate when they are based on scientific evidence, are applied in a non discriminatory manner and do not create unnecessary obstacles to international trade.^[21] This framework seeks to strike a balance between the sovereign right of states to regulate for environmental protection and the broader objective of maintaining predictable and open trading conditions.

Environmental standards are typically grounded in scientific research, empirical data, and technical expertise to ensure both effectiveness and feasibility.^[22] In the context of regional and bilateral trade agreements, such as the EU Viet Nam Free Trade Agreement, environmental and sustainable development provisions have become binding elements that shape domestic regulatory frameworks and influence market access conditions.^[23]

Trade competitiveness refers to the ability of a country or enterprise to produce and supply goods and services that meet international market requirements in terms of quality, price and regulatory compliance. It involves the capacity to maintain or expand market share in an increasingly

¹⁸ Philippe Sands, Jacqueline Peel, *Principles of International Environmental Law*, 4th ed. (Cambridge: Cambridge University Press 2018), chapters 4 and 6.

¹⁹ OECD, *Environmental Policy Instruments for Green Growth* (OECD Publishing 2020), chapter on regulatory instruments.

²⁰ World Trade Organization, *Agreement on Technical Barriers to Trade*, 1995, available at the official WTO legal texts portal.

²¹ Mitsuo Matsushita, Thomas Schoenbaum, Petros Mavroidis, Michael Hahn, *The World Trade Organization: Law, Practice and Policy*, 3rd ed. (Oxford: Oxford University Press 2015), chapter on technical regulations.

²² United Nations Environment Programme, *Environmental Standards: Scientific Basis and Policy Applications* (UNEP Report 2019).

²³ European Commission, *Trade and Sustainable Development Chapters in EU Free Trade Agreements* (Brussels 2020).

integrated global economy.^[24] While competitiveness is influenced by domestic laws on competition, subsidies and market conduct, it is also shaped by core principles of the World Trade Organization, such as trade liberalisation, non discrimination, control of adverse trade practices and transparency. As global economic integration deepens, trade competition law increasingly interacts with policy areas that were traditionally considered non economic, including environmental protection, labour standards and sustainable development.^[25]

The relationship between environmental standards and trade competition can be both complementary and conflictual. On the one hand, well designed environmental standards can promote long term competitiveness by encouraging innovation, improving resource efficiency and enabling producers to meet consumer demand for sustainable products. On the other hand, when these standards require imported products to comply with certification schemes, such as carbon measurement or environmental labelling, without adequate technical assistance for developing country exporters, they may result in de facto discriminatory effects and trigger trade disputes.^[26] For this reason, legal frameworks play a vital role in designing standard setting mechanisms that uphold environmental protection objectives while ensuring fairness, predictability and transparency in international trade.

3 | The European Union Approach to Coordinating Environmental and Trade Objectives

Under Article 11 TFEU, environmental protection requirements must be integrated into all EU policies, including trade and competition, thereby establishing the constitutional foundation of the EU's conflict-coordination model.

²⁴ World Bank, *Competitiveness and Global Value Chains* (World Bank Report 2020).

²⁵ UNCTAD, *Trade and Environment Review 2023* (United Nations Conference on Trade and Development 2023).

²⁶ OECD, *Environmental Requirements and Market Access* (OECD Trade Policy Studies, 2011).

3.1. Environmental Policy Integration within European Union law

The European Union has developed a distinctive regulatory and institutional coordination model that seeks to harmonise environmental objectives with the requirements of international trade. Through a sustained commitment to sustainable development and fair competition, the European Union has constructed an integrated legal framework supported by multi level coordination mechanisms. These mechanisms are designed to anticipate and mitigate conflicts that may arise between increasingly stringent environmental standards and the principles that govern free trade. The model is grounded in the rule of law and informed by the principles of proportionality and transparency in decision making. The integration of environmental considerations into all areas of European Union law is expressly recognised and made legally binding by Article 11 of the Treaty on the Functioning of the European Union. The provision states that environmental protection requirements must be incorporated into the definition and implementation of the policies and activities of the Union with a particular view to promoting sustainable development. This mandate is further reinforced by the Charter of Fundamental Rights of the European Union and by cross sectoral policies, including the European Green Deal. Together, these instruments reflect the mainstreaming approach that has become central to European Union environmental law, in which environmental protection is regarded not as a subsidiary concern, but as an intrinsic requirement for the legitimacy and effectiveness of trade and competition policy.^[27]

To give effect to the requirement that environmental protection be integrated into all areas of European Union policy, the Union has developed a comprehensive set of legal instruments that operate across the domains of trade, investment, and market regulation. These instruments include market based mechanisms, border adjustment measures, and financial support schemes that promote environmentally responsible economic behaviour. Together, they illustrate the multi level regulatory strategy through which the European Union coordinates potential conflicts between environmental objectives and the requirements of free trade.^[28]

²⁷ Joost Pauwelyn, *International Trade and Environmental Regulation* (Cambridge: Cambridge University Press, 2006), 143.

²⁸ OECD, *Aligning Policies for a Low Carbon Economy* (OECD Publishing, 2021), 94-95.

The first and most developed mechanism is the European Union Emissions Trading System. It is the largest greenhouse gas emissions trading scheme in the world and is based on the cap and trade principle, a legal and economic method that transforms environmental obligations into market incentives.^[29] The system establishes a maximum quantity of greenhouse gases that may be emitted within the Union during a specific trading period and allocates or auctions emission allowances to firms.^[30] Each allowance represents the right to emit a fixed amount of greenhouse gases that is measured in tonnes of carbon dioxide equivalent.^[31] Firms may purchase or sell allowances depending on their compliance needs, which encourages cost effective emission reductions and generates a carbon price signal that influences investment and production decisions.^[32] The current phase of the system covers the period from 2021 to 2030 and aims to reduce emissions by at least sixty two per cent compared with 2005 levels.^[33]

A second instrument is the Carbon Border Adjustment Mechanism. It has been introduced to address the problem of carbon leakage and to ensure that goods imported into the European Union reflect levels of climate ambition that are broadly comparable to those required within the internal market.^[34] Under this mechanism, importers of products such as steel, cement, aluminium, fertilisers and electricity must declare the embedded carbon emissions of their goods and make a corresponding financial adjustment when these emissions exceed the reference level established by the European Union.^[35] The mechanism seeks to protect both environmental integrity and fair competition by ensuring that firms inside and outside the Union operate under conditions that reflect

²⁹ “Cap and trade” is a combined legal and economic mechanism that has been recognised in Directive 2003/87/EC, Article seventeen of the Kyoto Protocol, and national systems including those of the United States and China.

³⁰ European Union, Directive (EU) 2018/410 amending Directive 2003/87/EC, Official Journal of the European Union, L 76, 19 March 2018, 3 to 27.

³¹ Total greenhouse gas emissions represent the total mass of greenhouse gases released into the atmosphere in a given period and are measured in tonnes of carbon dioxide equivalent.

³² Denny Ellerman, *Pricing Carbon: The European Union Emissions Trading Scheme* (Cambridge: Cambridge University Press 2010), chapter 2.

³³ European Commission, EU Emissions Trading System. [accessed: 2.8.2025].

³⁴ European Parliament and Council, Regulation (EU) 2023/956 establishing a Carbon Border Adjustment Mechanism, Official Journal of the European Union, L 130, 16 May 2023, 52 to 103.

³⁵ Ibidem, Articles six to nine.

the principle of a level playing field.^[36] Recital twelve of the Carbon Border Adjustment Mechanism regulation states that equal competitive conditions are necessary to prevent market distortions and to uphold climate commitments within the framework of international trade.^[37] The European Commission has also issued detailed guidance during the transitional period, emphasising transparency, predictability and consistency with the rules of the World Trade Organization.^[38] Scholarly analysis supports the view that well designed border adjustment measures may be compatible with international trade law, provided that they respect the principles of non discrimination and environmental necessity.^[39]

A third component of the European Union's coordination model is the Green State Aid framework. To support the transition to clean energy and environmentally responsible production, the Commission has adopted the Guidelines on State Aid for Climate, Environmental Protection and Energy. These guidelines permit Member States to provide financial support to firms that adopt cleaner technologies or invest in energy efficiency, on the condition that such support is transparent, necessary, and proportionate.^[40] The framework strikes a balance between the need to promote environmental objectives and the prohibition of aid that may distort competition within the internal market under Article one hundred and seven of the Treaty on the Functioning of the European Union. Under this approach, environmental protection and fair competition are treated as mutually reinforcing objectives rather than conflicting mandates.

Through these instruments, the European Union demonstrates how law can be used to align environmental ambition with economic competitiveness. The cap and trade system provides market incentives, the Carbon Border Adjustment Mechanism ensures fair competitive conditions and the Green State Aid rules allow targeted public support for environmentally beneficial innovation. Together, they form a coherent regulatory strategy

³⁶ OECD, *Aligning Policies for a Low Carbon Economy* (OECD Publishing, 2021), 94-95.

³⁷ European Union, Regulation (EU) 2023/956, Recital twelve.

³⁸ European Commission, *CBAM Transitional Period Guidance Document* (Brussels 2023). [accessed: 1.8.2025].

³⁹ Harro van Asselt, Michael Mehling, "Trade and Climate Change: Towards a Legal Framework for Border Carbon Adjustments" *European Journal of International Law*, No. 2 (2018): 411-436.

⁴⁰ European Commission, *Guidelines on State Aid for Climate, Environmental Protection and Energy* (CEEAG 2022).

for coordinating potential conflicts between environmental and trade objectives within a highly integrated market.

3.2. Institutional and Governance Mechanisms for Coordinating Environmental and Trade Policies in the European Union

The European Union approach to coordinating environmental objectives with trade and competition policy is supported by a sophisticated system of governance and inter institutional coordination. This system has been designed to ensure coherence across different policy domains and to enable the Union to address complex regulatory interactions in a consistent and transparent manner. A defining feature of this model is the emphasis on both horizontal and vertical coordination among the institutions of the Union and the Member States. The European Green Deal explicitly recognises that effective governance requires cooperation across all levels of decision making within the Union.^[41] This principle is reflected in the broader environmental governance structure of the European Union, which relies on multi level and cross sectoral coordination to support climate policies such as the European Green Deal, the Carbon Border Adjustment Mechanism and the Fit for fifty five package.^[42]

Within the institutional framework of the European Union, two bodies play a particularly central role in ensuring coordination between environmental and trade objectives. The Directorate General for the Environment and the Directorate General for Trade cooperate closely in the development of new environmental standards and during the negotiation and implementation of free trade agreements. All significant policy decisions in these areas are subject to mandatory inter departmental consultation, as required by the Rules of Procedure of the Commission.^[43] This process serves to reduce policy fragmentation, to resolve potential conflicts at an early stage and to ensure that environmental protection and sustainable development objectives are incorporated into the making of trade policy.

⁴¹ European Commission, The European Green Deal, COM (2019) 640 final.

⁴² The “Fit for fifty five” package was announced by the European Commission on fourteen July 2021 to achieve a reduction of at least fifty five per cent in emissions by 2030 and carbon neutrality by 2050 under the European Climate Law.

⁴³ European Commission, Commission Decision 2021/2121, C(2021) 8759 Final, Rules of Procedure of the Commission. [accessed: 2.8.2025].

Scholarly analysis has highlighted this mechanism as a defining element of the European Union's co regulatory governance in trade and sustainable development chapters.^[44]

In addition to internal consultation procedures, the European Union uses a set of soft co regulation mechanisms that facilitate coordination between the Union institutions, Member States and stakeholders. These mechanisms include the Trade and Sustainable Development Committees established under Union free trade agreements. The committees operate as platforms for regular dialogue between governments and also provide structured opportunities for consultation with civil society organisations, business associations, and international environmental bodies.^[45] This system strengthens transparency, enhances accountability and promotes legitimacy in the development, and implementation of environmental standards in the trade context.

These practices are rooted in foundational documents such as the White Paper on European Governance, which calls for greater openness, participation, effectiveness and coherence in Union policymaking,^[46] and the Better Regulation Guidelines, which set out principles for transparent, evidence based and inclusive legislative and regulatory processes. The same governance principles also extend to Union external agreements, including the EU Viet Nam Free Trade Agreement, which incorporates institutions such as the Trade and Sustainable Development Committee and the Domestic Advisory Groups.

Taken together, Article eleven of the Treaty on the Functioning of the European Union, the European Union Emissions Trading System, the Carbon Border Adjustment Mechanism and the Green State Aid Framework demonstrate the multi layer approach through which the European Union integrates environmental objectives into economic governance. This approach provides a structured and adaptable model for reconciling potential conflicts between environmental regulation and the requirements of international trade.

⁴⁴ Lorand Bartels, "The EU's Trade and Sustainable Development Chapters: Towards Co regulatory Governance" *Journal of International Economic Law*, No. 3 (2021): 465-491.

⁴⁵ Oran R. Young, "The Coordination of Environmental and Trade Policies in the EU" *European Law Journal* (2020): 76.

⁴⁶ European Commission, White Paper on European Governance (25 July 2001).

4 | Implications for Vietnam under the EVFTA

4.1. Coordinating Environmental and Trade Objectives within the EVFTA Framework

In the context of deepening international economic integration and increasing pressure from global environmental requirements, Viet Nam faces significant challenges in reconciling environmental protection with trade and economic development. International agreements, including new generation free trade agreements, require Viet Nam to pursue sustainable growth, while also meeting demanding environmental standards. Drawing on the experience of the European Union provides valuable insights into legal and institutional strategies that Viet Nam may adopt in order to coordinate environmental and trade policies within a coherent regulatory framework.^[47]

The European Union has developed an advanced model for aligning environmental objectives with trade liberalisation through instruments such as the Emissions Trading System and the Carbon Border Adjustment Mechanism.^[48] These tools demonstrate a mature degree of policy coherence between environmental regulation and trade competitiveness, a condition that Viet Nam has not yet fully attained. Domestic regulations in Viet Nam remain fragmented, and environmental obligations are not consistently integrated across the laws governing investment, commerce, and enterprise management.^[49] This legal fragmentation creates obstacles for the effective implementation of international commitments under the EVFTA.

A further lesson from the European Union model lies in its use of transitional arrangements and technical assistance, which reflect the principle of common but differentiated responsibilities.^[50] Under EVFTA implementation, the European Union has supported Viet Nam through programmes

⁴⁷ Ari Van Assche, Minna Sorsa, *European Union Law and Policy on Trade and Environment* (Oxford: Oxford University Press 2018), 74.

⁴⁸ Alice Smith, *The EU and Developing Countries: Environmental Trade Policy* (London: Routledge, 2017), 89.

⁴⁹ Vietnam Chamber of Commerce and Industry, *Survey on the Readiness of Vietnamese Enterprises to Meet the Requirements of Greening the Supply Chain*, Internal Report, Project supporting EVFTA and ESG implementation (Hanoi 2023), 18-22.

⁵⁰ UNDP Vietnam, *Policy Brief: Governance for Green Trade and Carbon Border Adjustment Mechanism* (Hanoi: UNDP Vietnam, 2022), 6-8.

designed to strengthen the capacity of local enterprises to comply with green standards, including those relating to carbon reporting and sustainable production.^[51] Such support has increased the acceptability of new regulatory requirements for developing country partners and has helped reduce concerns that environmental measures may function as disguised barriers to trade.

The EVFTA is therefore more than a trade liberalisation instrument. It also serves as a platform for Viet Nam to adjust and reform its domestic regulatory framework in order to address potential conflicts between environmental and trade objectives. Its environmental provisions require that measures adopted for environmental purposes do not unnecessarily restrict trade, while encouraging the improvement of environmental standards in areas such as carbon emissions, environmentally responsible public procurement, and certification schemes.

Effective implementation of these commitments requires institutional reform and strengthened coordination across the ministries responsible for environmental protection, industrial policy, and trade. At present, Viet Nam does not have a binding interministerial coordination mechanism capable of addressing issues such as carbon traceability, green supply chain requirements or the implications of the Carbon Border Adjustment Mechanism for export sectors.^[52] This lack of horizontal coordination creates gaps in enforcement and may allow conflicts between environmental and trade rules to remain unresolved.

The challenge posed by the Carbon Border Adjustment Mechanism is a clear example. The transitional phase, launched in late 2023, requires exporters of steel, cement, aluminium and fertilisers to report embedded carbon emissions.^[53] Viet Nam has not yet established a national system capable of verifying and standardising product level emissions data, which is necessary for compliance with European Union requirements. As a result, many enterprises must rely on foreign certification bodies, which increases costs, reduces competitiveness and limits Viet Nam's regulatory

⁵¹ European Commission, CBAM: Implementing Regulation – Transitional Period, Official Journal of the European Union, L 230, 16 June 2023, Annex IV; see also EuroCham Vietnam, CBAM Position Paper and Green Compliance in Vietnam (Hanoi 2023), 5-7.

⁵² Ibidem; see also VCCI, Survey on the readiness of Vietnamese enterprises, above note 3.

⁵³ European Parliament and Council, Regulation (EU) 2023/956 establishing a Carbon Border Adjustment Mechanism, OJ L 130, 16 May 2023.

autonomy in developing its own carbon market as envisaged in the Law on Environmental Protection and in the national commitment to achieve carbon neutrality by 2050.^[54]

Despite these challenges, the EVFTA provides a significant opportunity for Viet Nam to build a more coherent legal environment that integrates national and international standards. The agreement encourages Viet Nam to improve its regulatory capacity in areas such as sustainable procurement and carbon reporting, not for the purpose of introducing new trade obstacles, but to ensure that environmental protection enhances rather than restricts long term trade development.^[55] With appropriate institutional reforms, selective adaptation of European Union practices and improved domestic coordination, Viet Nam can harmonise environmental and trade policies in a manner consistent with its international obligations and long term development strategy.

4.2. Implications for Vietnam

First, legal harmonization. Vietnam's legal provisions on environment, investment, and trade remain fragmented, creating overlaps and inconsistencies in implementing EVFTA commitments. Harmonization is therefore essential to ensure that environmental regulations are coherent with trade rules while avoiding unnecessary barriers. An intersectoral legal review mechanism should be established to align these laws and create a unified framework for green trade governance.^[56]

Second, institutional coordination. The absence of a binding coordination mechanism among ministries (MONRE, MOIT, MPI) hampers the integration of environmental and trade objectives. Vietnam could draw from the EU by establishing a National Council on Green Trade Governance to provide intersectoral policy advice and oversee implementation of EVFTA commitments.^[57] Digital platforms should complement this effort,

⁵⁴ UNDP Vietnam, *Policy Brief: Governance for Green Trade and CBAM*, 7.

⁵⁵ Smith, *The EU and Developing Countries: Environmental Trade Policy*, 89.

⁵⁶ UNDP Vietnam & CIEM, *Báo cáo đánh giá khung pháp lý về liên kết thương mại - môi trường trong bối cảnh thực thi EVFTA* (Hà Nội: UNDP, 2023), 15-18.

⁵⁷ European Commission, *Working Better Together: Inter-service Cooperation in Trade and Environment Policies* (Brussels: EC, 2021), 6-9.

enabling businesses to track green requirements and enhance compliance capacity.^[58]

Third, domesticating green standards. Vietnam should gradually embed international green standards into binding legal instruments. This includes introducing carbon traceability requirements to comply with CBAM, applying green procurement in public investment, and developing eco-label and certification schemes.^[59] The EU's Environmental Policy Integration principle offers a useful reference: environmental concerns must be mainstreamed across trade and investment policies.^[60] Selective adaptation, rather than wholesale transplantation, will allow Vietnam to ensure both trade competitiveness and sustainable development.^[61]

These implications highlight that the EVFTA serves as both a challenge and an opportunity for Vietnam to reform its legal system and strengthen institutional capacity in balancing trade and environmental objectives.

5 | Conclusion

The EU model demonstrates how conflicts between environmental standards and trade competition can be reconciled through integrated legal mechanisms, offering valuable lessons for Vietnam. The EU model demonstrates that such conflicts can be addressed through integrated legal mechanisms that combine environmental policy integration, market-based tools, and intersectoral coordination. For Vietnam, the EVFTA provides both pressure and opportunity to reform its legal system. By aligning domestic laws, strengthening institutional coordination, and selectively adapting EU practices, Vietnam can build a coherent framework that safeguards trade competitiveness while advancing sustainable development. Rather than wholesale transplantation, Vietnam should selectively adapt EU practices, ensuring coherence with its domestic conditions and international commitments.

⁵⁸ VCCI, Khảo sát mức độ sẵn sàng của doanh nghiệp Việt Nam trước các yêu cầu xanh hóa chuỗi cung ứng (Hà Nội: VCCI, 2023), 22-23.

⁵⁹ European Parliament and Council, Regulation (EU) 2023/956 Establishing a Carbon Border Adjustment Mechanism (OJ L 130, 16 May 2023).

⁶⁰ Article 11 TFEU.

⁶¹ Sands, Peel, *Principles of International Environmental Law*, 329-331.

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Human Rights-Based Approach to Legal Recognition of Same-Sex Relationships in Vietnam

Abstract

This paper focuses on analyzing the relationship between human rights and the development of laws regulating cohabitation as spouses between same-sex partners in Vietnam. From a human rights perspective, the right to live together as spouses is a fundamental right recognized in international instruments such as the 1948 Universal Declaration of Human Rights and the 1966 International Covenant on Civil and Political Rights, to which Vietnam is a State Party. However, Vietnam's current legal system still lacks specific provisions recognizing the cohabitation of same-sex couples as spouses. This legal gap prevents same-sex couples from enjoying certain rights and legitimate benefits afforded to heterosexual couples. Adopting a human rights-based approach, the paper proposes a legal framework suitable for Vietnam to progressively recognize and protect the right of same-sex partners to cohabit as spouses. This mechanism aims to gradually ensure the recognition and protection of such rights, thereby upholding the principles of equality and non-discrimination and promoting harmony between national laws and Vietnam's international human rights commitments.

KEYWORDS: same-sex couples, cohabitation as husband and wife, human rights

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1 | Introduction

In recent years, the LGBT community in Vietnam, in general, and same-sex individuals, in particular, have become increasingly visible and widely recognized in society. Survey results published by the Institute for Studies of Society, Economy, and Environment (iSEE) have provided significant insights into the sexual orientation, education levels, occupations, and social barriers faced by this community. A nationwide survey of 2,340 MSM (men who have sex with men) showed that 63.4% identified as gay, 17.7% as bisexual, 11% were unsure of their sexual orientation, and 3.8% identified as heterosexual. A small number of participants also identified as transgender. In another iSEE survey of 3,000 gay men and 200 lesbians, the results indicated that 68% of gay men and 70% of lesbians had a high level of education (university or higher). More importantly, it is also notable that individuals in the LGBT community work in a wide range of professions, with the customer service sector accounting for the highest percentage at 18%. This finding helps to refute the stereotype that gay people primarily work in the entertainment or arts industries.^[1] As of 2024 estimates, the LGBTQI+ community in Viet Nam^[2] is about 1.65 million people, accounting for approximately 2% of the population.^[3]

At the international level, the rights to cohabit as spouses without discrimination are regarded as fundamental human rights. These rights are guaranteed by the Universal Declaration of Human Rights (1948), the International Covenant on Civil and Political Rights (ICCPR, 1966), and the Yogyakarta Principles.^[4] These documents all affirm that everyone is equal before the law, and no one shall be discriminated against based on sexual orientation or gender identity.

¹ UNDP, USAID, *Being LGBT in Asia: Viet Nam Country Report* (Bangkok: UNDP and USAID, 2014), 29.

² The concept of LGBTQI+ reflects gender diversity and includes lesbian, gay, bisexual, and transgender identities; Q stands for queer/questioning, referring to those who are in the process of exploring their own gender identity; I stands for intersex, referring to people who do not fit typical definitions of male or female; and the “+” symbol represents many other gender and sexual identities, highlighting the richness of diversity such as asexual, pansexual, and more.

³ Nam Phuong, “Vietnam has about 1.65 million Homosexual, Bisexual, and Transgender People” *Dan Tri*, 19 September 2025.

⁴ This document is considered the first international legal document to recognize and protect the rights of homosexual individuals.

In Vietnam, the 2014 Law on Marriage and Family abolished the prohibition on same-sex marriage, but still does not recognize such relationships, as stipulated in Clause 2, Article 8: “The State does not recognize marriage between persons of the same sex.” This prevents same-sex couples from being able to marry according to their needs and wishes. This provision creates a “legal grey area,” where same-sex couples may cohabit as spouses, but enjoy few legal rights or obligations compared to heterosexual couples. From a human rights perspective, the lack of recognition and protection for same-sex relationships can place this group at certain disadvantages. Moreover, this situation is not in line with current global trends. Therefore, adopting a human rights-based approach is an urgent direction in developing legal provisions to recognize the right of same-sex couples to cohabit. Although it may not yet be termed “marriage,” an appropriate legal framework could protect their civil and personal rights in certain circumstances.

2 | Content

2.1. Human Rights and the Right to Cohabitation of Same-Sex Couples

Based on different approaches, there are various definitions of human rights^[5]. According to the Office of the United Nations High Commissioner:

Human rights are universal legal guarantees that protect individuals and groups against actions or omissions that interfere with fundamental freedoms, entitlements, and human dignity.

The United Nations’ Human Rights FAQ document defines human rights more broadly as:

⁵ Wojciech Załuski, “The Crisis of Human Rights Discourse” *Prawo i Więź*, No. 6 (2025): 1015-1123.

Human rights can also be generally defined as the inherent rights to which every person is entitled, and without which we cannot live as human beings.^[6]

According to the *Advanced Political Theory* textbook on the Theory and Law of Human Rights:

human rights are natural entitlements, which stem from the inherent dignity of all people, and are recognized, respected, protected, and guaranteed by the international community and nations through national and international legal systems.^[7]

Human rights stem from the principle that all individuals are born equal in dignity and rights, regardless of gender, sexual orientation, or gender identity. As early as ancient Greece, the philosopher Zeno stated, "No one is born a slave; slavery is a condition imposed by the deprivation of the natural freedom inherent to human beings." This idea was later reaffirmed and developed by many philosophers. Notably, Thomas Hobbes believed that individuals "have the right to do whatever they consider just and reasonable," while John Locke argued that "governments can only be legitimate if they recognize, respect, protect, and promote the inherent and inalienable rights of citizens." Thomas Paine emphasized that "rights cannot be granted by any government, because doing so would imply that governments also have the power to revoke them at will."^[8] Theories of human rights were also further developed by thinkers such as Jean-Jacques Rousseau, Montesquieu, George Wilhelm Friedrich Hegel, John Stuart Mill, and Henry David Thoreau. Overall, the human rights philosophy of this era had a consistent theme: it affirmed the position and value of individuals in society and championed their natural needs and aspirations, with the fundamental one being the freedom to exist.^[9]

The idea of protecting human rights is also reflected in the emergence of international documents concerning human rights and freedoms.

⁶ *Textbook on Theory and Law of Human Rights* (Hanoi: National Political Publishing House, 2011), 21.

⁷ *Advanced Curriculum in Political Theory: Theory and Law on Human Rights* (Hanoi: Political Theory Publishing House, 2018), 11.

⁸ *Textbook on Theory and Law of Human Rights*, 40.

⁹ *Human Rights in International Law and Vietnamese Law* (Hanoi: Hong Duc Publishing House-Vietnam Lawyers Association, 2014), 31.

According to the 1948 Universal Declaration of Human Rights (UDHR), every individual:

Everyone has the right to life, liberty and security of person [...] No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.^[10]

The International Covenant on Civil and Political Rights (ICCPR), to which Vietnam has been a member since 1982, also affirms, in Article 17, the protection of privacy and family life; and, in Article 26, it requires member states to ensure:

All persons are equal before the law and are entitled without any discrimination to the equal protection of the law. In this respect, the law shall prohibit any discrimination and guarantee to all persons equal and effective protection against discrimination on any ground such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.^[11]

In particular, the Yogyakarta Principles, which guide the application of international human rights law in relation to sexual orientation and gender identity, have established that:

Everyone has the right to found a family, regardless of sexual orientation or gender identity. Families exist in diverse forms. No family may be subjected to discrimination on the basis of the sexual orientation or gender identity of any of its members.^[12]

Approaching it from this perspective, the recognition of the right of same-sex couples to live together as husband and wife cannot be limited

¹⁰ Article 3 and Article 12, Universal Declaration of Human Rights, last modified 6 August 2025. <https://www.un.org/en/about-us/universal-declaration-of-human-rights>.

¹¹ Article 26, International Covenant on Civil and Political Rights, last modified 7 August 2025. <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights>.

¹² Principle 24, The Yogyakarta Principles, last modified 6 August 2025. <https://yogyakartaprinciples.org/>.

solely to the concept of “marriage.” This is a practical expression of human rights and should be protected by domestic law, just like other cohabiting relationships. The right to live together as husband and wife is a specific form of the right to found a family and the right to privacy, which should be protected as a fundamental right of every individual in international human rights documents. Although Vietnam abolished the sanction for organizing same-sex weddings according to Decree 110/2013/NĐ-CP, the law has still not recognized this cohabiting relationship.

This creates legal inequality compared to opposite-sex couples who cohabit as spouses or register for marriage, which is inconsistent with the principle of non-discrimination (ICCPR Article 26). Human rights—particularly the right to family and the right to privacy—form the theoretical basis for recognizing same-sex couples’ right to cohabit as spouses. When international law and standards, such as the Yogyakarta Principles, acknowledge this right, perhaps it is time for Vietnam to reconsider its non-recognition of same-sex cohabiting relationships under the law.

Therefore, the recognition and establishment of a legal framework for the right of same-sex couples to live together as husband and wife is an essential step in advancing a comprehensive and equitable human rights approach in Vietnam. Ensuring legal equality for citizens of all sexual orientations reflects the responsibility of a rule-of-law state in protecting vulnerable groups.

2.2. The Current Status of Recognizing the Right of Same-Sex Couples to Cohabit as Spouses in Vietnam and Future Directions

In Vietnam, human rights issues are also upheld and respected by the Vietnam Party, Vietnam Government. For example, the 2013 Constitution, passed by the National Assembly of the Socialist Republic of Vietnam on 28 November 2013, affirms that human rights are “recognized, respected, protected, and guaranteed.”^[13] Vietnam has made notable progress in recognizing the rights of same-sex individuals, particularly by abolishing the provision prohibiting marriage between people of the same sex. Previously, under the 2000 Law on Marriage and Family, same-sex marriage was

¹³ Article 3 of the 2013 Constitution.

classified as a prohibited act.^[14] This behavior was subject to administrative penalties, with fines ranging from 100,000 VND to 500,000 VND, as stipulated in Point e, Clause 1, Article 8 of Decree No. 87/2001/ND-CP dated 21 November 2001, issued by the Government on administrative sanctions in the field of marriage and family. In 2013, the Government issued Decree No. 110/2013/ND-CP, dated 4 September 2013, regulating administrative sanctions in the fields of judicial assistance, civil status, marriage and family, civil judgment enforcement, and bankruptcy of enterprises and cooperatives. Under this Decree, same-sex marriage is no longer subject to administrative penalties.

The draft amendment to the Law on Marriage and Family also presents two viewpoints on this issue. The first viewpoint agrees to continue prohibiting same-sex marriage for various reasons. The second viewpoint proposes removing the prohibition, while not legally recognizing the relationship, and suggests that the law should include provisions that, on one hand, help prevent discriminatory attitudes toward people of the same sex, and, on the other hand, provide a legal basis for resolving issues related to property and children (if any) in cases where same-sex couples live together as spouses.^[15] On 19 June 2014, the National Assembly passed the 2014 Law on Marriage and Family, which removed the ban on same-sex marriage and instead stated that such relationships would not be recognized. Specifically, Clause 2, Article 8 of the 2014 Law on Marriage and Family states: “The State does not recognize marriage between people of the same sex.”

The abolition of the ban on same-sex marriage in a legal document at this time was considered a step that was appropriate for the socio-economic development context, demonstrating the state’s views and management approach to this issue amid socio-economic development and global trends.^[16] Although the law has not yet progressed to recognizing marriage between people of the same sex, various influencing factors remain, such as traditional views on marriage, beliefs about preserving lineage, and the notion

¹⁴ Clause 5, Article 10 of the 2000 Law on Marriage and Family, Law No. 22/2000/QH10, dated 9 June 2000.

¹⁵ Tue Van, “Proposal to Remove the Ban on Same-Sex Marriage,” *Government Newspaper*, 7 August 2025.

¹⁶ Vo Van Thanh, Le Kien, and Chi Mai, “Same-Sex Marriage: Why Is It Not Yet Recognized?” *Tuoi Tre*, 6 August 2025.

of building a family consisting of parents and children,^[17] then the removal of the prohibition has demonstrated a shift in the state's approach and governance of this issue toward a more open and progressive direction.

From a social perspective, this regulation means that same-sex couples are still not allowed to register their marriage and it has no legal effect, but they are permitted to hold wedding ceremonies as a form of social rather than legal expression.^[18] This shows that the State wants to maintain a buffer – “not yet legally recognized, but permitted culturally and socially” – as a cautious step to observe, to allow time to gauge the level of social acceptance and political debate, before considering stronger measures.

This provision holds significant meaning for same-sex couples, as it allows them to publicly hold wedding ceremonies—a ritual deeply symbolic in Vietnam's marriage traditions.

At the same time, the removal of the prohibition on same-sex marriage can also be understood as an indirect acknowledgment of the right to freely choose a life partner, and the right of same-sex couples to live together as spouses, even though it does not yet amount to full legal recognition equivalent to lawful marriage.

From a human rights perspective, abolishing the ban on same-sex marriage is meaningful in expanding the legal space for the right to freely choose one's lifestyle and the right to privacy—rights enshrined in international treaties to which Vietnam is a party, particularly the International Covenant on Civil and Political Rights (ICCPR). The absence of prohibitive provisions reflects a human rights-based approach and lays the groundwork for further legal reforms toward ensuring equality in terms of gender and sexual orientation.

In cases where same-sex couples live together as spouses and jointly acquire property, such property is considered shared ownership by portions, as stipulated in Article 209 of the 2015 Civil Code. According to this provision, shared ownership by portions refers to joint ownership in which each co-owner's share in the common property is clearly defined. Each co-owner has rights and obligations with respect to the jointly owned property

¹⁷ *Public Opinion Survey Results on Same-Sex Marriage* (Hanoi: The Gioi Publishers, 2013), 18.

¹⁸ Van Phuc Nguyen, “Regulating Same-Sex Marriage in Vietnam: Negotiations between Legalisation and Social Recognition” *Ridao*, 10 August 2025.

corresponding to their ownership share, unless otherwise agreed.^[19] In cases where the parties request the division of assets acquired during their cohabitation as spouses, they can petition the Court for a resolution. The Court will rely on the parties' agreement or their proportional contributions to divide the assets. However, if there is a dispute, the parties must prove their contribution to creating the shared assets, which can be a complex issue for same-sex couples. A survey shows that in cohabiting relationships between same-sex partners, assets gradually accumulate and become more complex over time. The longer the cohabitation, the more joint assets are acquired and accumulated. In the 35-49 age group, up to 55% of cohabiting couples jointly own high-value assets (such as cars, savings accounts, gold, etc.), 50% have joint business investments, 57.9% jointly own land and houses (though the registration papers are in only one person's name), and 20% report owning land and houses in both their names. These percentages are significantly lower in the two younger age groups. Specifically, only 37.4% of the 24-34 age group reported having joint business investments with their partners, and this rate drops to 23.8% for the 19-24 age group.^[20]

Compared to same-sex couples living together as spouses, the legal resolution of consequences arising during cohabitation for opposite-sex couples is more clearly defined. If the parties request a divorce, the Court will accept the case and issue a ruling not recognizing the marital relationship.^[21] The rights and obligations between a man and a woman living together as husband and wife, and their children, shall be resolved in accordance with the provisions of the 2014 Law on Marriage and Family, regarding the rights and obligations of parents and children.^[22] Accordingly, this includes rights such as alimony, representation of the child, and inheritance rights. Notably, the regulations on resolving property relations must ensure the lawful rights and interests of women and children;

¹⁹ Article 209 of the Civil Code, Law No. 91/2015/QH13, dated 24 November 2015.

²⁰ Vu Thanh Long, Do Quynh Anh, and Chu, Lan Anh, "Same-Sex Cohabitation: Love and Cohabitation of Gay, Bisexual, and Transgender People in Vietnam" *iSee*, 12 August 2025.

²¹ Clause 2, Article 53 of the Law on Marriage and Family, Law No. 52/2014/QH13, dated 19 June 2014.

²² Article 15 of the Law on Marriage and Family, Law No. 52/2014/QH13, dated 19 June 2014.

domestic work and other tasks related to maintaining the shared household are considered as income-generating labor.^[23]

From the above analysis, it can be seen that current Vietnamese law devotes a certain level of attention to the cohabitation of same-sex couples as husband and wife. However, after more than 10 years of implementing the 2014 Law on Marriage and Family, the law still does not recognize the right of same-sex couples to live together as husband and wife under any legal framework.

2.3. Orientation for Developing Laws on the Right of Same-Sex Couples to Cohabit as Spouses in Vietnam from a Human Rights-Based Approach

2.3.1. Legal Shortcomings in the Lack of Recognition of Same-Sex Couples' Right to Cohabit as Spouses in Vietnam

From the above analysis, the fact that Vietnamese law has not yet recognized the right of same-sex couples to cohabit as spouses leads to the following shortcomings.

Firstly, the lack of a legal basis to protect the rights and interests of the parties. Article 8, Clause 2 of the current Law on Marriage and Family demonstrates a limited neutrality, meaning it neither prohibits, nor recognizes or regulates. Meanwhile, the 2015 Civil Code and other related laws do not provide any legal mechanism to protect cohabitation relationships between same-sex individuals as a form of personal relationship in marriage and family. The consequence of this non-recognition is clear: same-sex couples living together cannot ask a court to dissolve their relationship, do not have rights to marital and family property, have no inheritance rights, lack the legal standing to act as a representative when one partner is ill, has an accident, or dies, and are unable to jointly adopt a child as legally prescribed. According to the report, "Being LGBT in Asia: Viet Nam Country Report," the LGBT community in Vietnam confirms that:

²³ Article 16 of the Law on Marriage and Family, Law No. 52/2014/QH13, dated 19 June 2014.

More than 70% of surveyed LGBT people state that the biggest difficulty is not being recognized and protected by law, which leads to serious consequences in their real-life cohabitation as a family.^[24]

Thus, the law does not provide a legal framework for same-sex relationships to be established and protected as a legitimate form of cohabitation. Same-sex couples living together are not legally recognized as ‘husband’ or ‘wife’, which leads to significant limitations in the establishment, exercise, and protection of personal rights. They lack the legal basis to act as each other’s lawful representative in medical, civil, or administrative situations.

Secondly, their human rights are not fully guaranteed. The 2013 Constitution affirms that human rights are to be respected, protected, and guaranteed. At the same time, Vietnam is a member of several important international conventions such as the ICCPR, ICESCR, and CEDAW, all of which emphasize the principle of non-discrimination. From a human rights perspective, the lack of legal recognition of same-sex couples’ cohabitation as spouses in a specific legal form may lead to certain limitations, creating a legal gap, whereby LGBT couples are not able to equally enjoy fundamental human rights as heterosexual couples in securing their rights and benefits. In some cases, this may be seen as a lack of compatibility with the principles of equality before the law and the right to privacy, as enshrined in the International Covenant on Civil and Political Rights (ICCPR) – particularly Articles 17 and 26, as discussed above.

2.3.2. Legal Orientations toward Recognizing and Ensuring the Right of Same-Sex Couples to Cohabit as Spouses based on a Human Rights Approach

Before 2008, the LGBT community in Vietnam was often viewed as a “social evil.” Subsequently, through the activities of civil society organizations (NGOs) and media, the LGBT community has made efforts to change the perception from “social evil” to that of a “human being” meaning ordinary citizens whose personal and human rights are respected.^[25] To improve

²⁴ UNDP, USAID, *Being LGBT in Asia: Viet Nam Country Report* (Bangkok: UNDP and USAID, 2014), 38

²⁵ Pham Quynh Phuong, “From “Social Evils” to “Human Beings”: Vietnam’s LGBT Movement and the Politics of Recognition” *Journal of Current Southeast Asian Affairs*, 41 (2022): 423.

closer to international human rights standards, Vietnam should consider developing legal provisions related to the right of same-sex couples to live together as husband and wife.

Firstly, recognize a legal form for same-sex couples living together as spouses. At present, the recognition of same-sex marriage in Vietnam remains unfeasible. However, establishing a legal framework for same-sex cohabiting relationships is achievable. This would provide same-sex couples with a certain legal status, thereby ensuring their lawful rights and interests in social life. Currently, countries around the world have established various forms of legally recognized cohabitation, similar to marriage, such as civil partnerships in the United Kingdom, the Pacte Civil de Solidarité (PACS) in France, registered life partnerships in Germany, registered partnerships in Sweden, and both civil unions and domestic partnerships in the United States.^[26]

A prime example is France, which adopted the form of a civil solidarity pact (Pacte civil de solidarité – PACS) in 1999. Regulated by the French Civil Code, the civil solidarity pact (PACS) is a contract entered into by two adult individuals, whether different-sex or same-sex, to organize their cohabitation. Those who wish to establish a PACS can register it with the competent authority. Dissolving a PACS is also simpler than divorce. It can be terminated by the marriage of one or both partners, the death of one or both partners, by a joint declaration from the partners, or by a unilateral decision of one of them.^[27] In the United Kingdom, the Civil Partnership Act 2004 (Effective from late 2005) and has undergone several amendments, allowing same-sex couples in England and Wales to register civil partnerships. Initially, this form was available only to same-sex couples, and later it was extended to opposite-sex couples. In 2019, the legal system in England and Wales reached a significant milestone by officially allowing opposite-sex couples to register a civil partnership—a provision that had previously applied only to same-sex couples since 2005. This change was the result of a long political campaign, including numerous private member's bills and a landmark ruling by the Supreme Court in the case of *Steinfeld and Keidan v. Secretary of International Development* (2018).^[28] According to

²⁶ Le Quang Binh, "Same-Sex Marriage: Global Trends, Social Impacts, and Lessons Learned for Vietnam" *Civil Law Information*, 19 September 2025.

²⁷ Articles 515-7, Code civil, last modified 4 August 2025. <https://www.legifrance.gouv.fr/>.

²⁸ Jacqueline Humphreys, "The Civil Partnership Act 2004, Same Sex Marriage and the Church of England." *Ecclesiastical Law Journal*, 8 (2006): 289.

the regulations, to register a civil partnership, individuals must be at least 18 years old and follow the specified registration procedures. Once the procedures are complete, the couple is issued a civil partnership certificate. When the civil partnership becomes irretrievably broken, the couple can petition the court to dissolve the relationship.^[29] A civil partnership can also be terminated if it is declared void, or when one or both partners die.

Therefore, if Vietnam is to legally recognize same-sex cohabitation, a comprehensive legal framework must be established to govern such relationships. Specifically, regulations should define the conditions for registration, including age requirements, marital status (i.e., being single and not currently in a cohabiting relationship with another person), and certain prohibited cases of cohabitation. The registration procedures should also be clearly outlined to ensure public acknowledgment of the relationship, thereby enabling legal protection and recognition.^[30] In addition, regulations concerning the termination of cohabitation should be clearly articulated. These may include cases where one or both parties pass away, one party enters into a legally recognized marriage with another individual, or either party requests to end the cohabiting relationship. Such provisions are necessary to ensure legal clarity and protect the rights and obligations of the individuals involved.

Secondly, regulations on the legal rights and obligations of each party in a cohabitation relationship. In legal relations, their content includes the rights and obligations between the parties. When the law recognizes the cohabitation of same-sex couples, they also have certain rights and obligations toward each other. Each party in the cohabiting relationship is responsible not only for ensuring material support to maintain a stable shared life but also for providing emotional support, thereby laying the foundation for a sustainable and harmonious relationship. For PACS couples, Article 515-4 of the French Civil Code likewise stipulates that partners must provide each other with both material and emotional support.

Thirdly, establish a mechanism to protect property rights, representation rights, and inheritance rights for same-sex couples living together. This suggestion is inspired by the laws of the French Republic and the United Kingdom. PACS provides benefits related to joint assets, taxes, and social

²⁹ Section 37, Part 1, Civil Partnership Act 2004. <https://www.legislation.gov.uk/ukpga/2004/33/section/37>.

³⁰ Cao Vu Minh, "Should a civil partnership institution be recognized between two people of the same sex" *Journal of Legislative Studies*, 8 August 2025.

welfare, but these are less extensive than those of formal marriage. For example, couples in a PACS do not have the right to jointly adopt children like married couples do. For civil partnerships in the UK, this relationship grants nearly all the rights and obligations equivalent to marriage, including property division, pension benefits, medical decision-making rights, inheritance, recognition as legal next of kin in hospitals, and access to social benefits.^[31]

Once the right to cohabit as spouses is legally recognized for same-sex couples in Vietnam, it becomes essential to establish mechanisms for the protection of their rights. These rights should, at a minimum, be equivalent to those currently afforded to opposite-sex couples who cohabit without formal marriage registration. This includes the need for legal provisions governing the resolution of personal and property-related matters upon request. Accordingly, the next step for Vietnam is to revise relevant legal documents, such as the Civil Code, the Law on Marriage and Family, and the Law on Civil Status, in order to provide a legal basis for the establishment and resolution of rights and obligations arising from such relationships.

3 | Conclusion

Approaching human rights in the development of laws concerning the rights of same-sex couples to live together as spouses is a highly practical issue in Vietnam. The reality is that same-sex couples living together as spouses is increasingly common, yet there is no robust legal framework to protect their legitimate rights and interests. This situation remains incompatible with international human rights instruments, such as the ICCPR (Articles 17 and 26) and the Yogyakarta Principles (Principle 24), which require member states to address these gaps. In practice, although same-sex couples in Vietnam may live together and hold wedding ceremonies without prohibition, their fundamental legal rights and interests—such as marital-like joint property, inheritance rights, and personal representation—are not adequately guaranteed. Meanwhile, many countries, such as France with its PACS system and the United Kingdom with

³¹ Humphreys, “The Civil Partnership Act 2004, Same Sex Marriage and the Church of England.”

civil partnerships under the Civil Partnership Act 2004, have responsibly recognized and protected same-sex cohabiting relationships, gradually moving toward full marriage equality.

For Vietnam, a legal model equivalent to a “civil partnership” could be an appropriate option at the present stage to initially recognize the right of same-sex couples to live together as spouses. Although not identical to marriage, it would still ensure fundamental rights. The legal recognition of same-sex cohabiting relationships would not only align with the domestic trend of improving marriage and family law, but also demonstrate Vietnam’s commitment to the process of international integration on human rights.

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Peeling the Onion Skins: Assessing Securitization of Intellectual Property Right for Private Sector Development in China and Vietnam

Abstract

The rise of the knowledge economy and the growing importance of intangible assets have prompted governments to explore innovative financing mechanisms centered on intellectual property rights (IPR). In 2025, China and Vietnam introduced ambitious policy frameworks to strengthen the private sector, including China's Private Sector Promotion Law and Vietnam's Resolution No. 68-NQ/TW. Both emphasize the necessity of dismantling structural barriers and diversifying access to capital through IPR. Against this policy backdrop, IPR securitization emerges as a theoretically promising yet legally and institutionally demanding tool. This paper examines the intersection of IP law and securitization regimes in both jurisdictions to assess whether IPR securitization can serve as a viable instrument for private-sector development. Moving from general conceptual grounding, through jurisdictional policy context, into doctrinal legal analysis, and finally to applied policy recommendations, the paper concludes that IPR securitization is not a one-size-fits-all solution. In other words, it may support the development of the private economy as a policy option, but only under legal alignment, institutional maturity, and an incremental, context-sensitive reform strategy. By highlighting the prerequisites for the successful implementation of IPR securitization, the paper contributes to ongoing debates on sustainable private-sector growth, innovation finance, and the legal adaptations needed to bridge the gap between intangible capital and market liquidity.

KEYWORDS: IPR securitization, innovative financing, IPR financing, private sector, private economy

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1 | Introduction

In recent decades, the global economy has shifted from tangible to intangible assets, with intellectual property rights (IPR)^[1] becoming a key driver of innovation, competitiveness, and growth. According to the World Intellectual Property Organization (WIPO) and Brand Finance, the global value of corporate intangible assets reached a record USD 80 trillion in 2024, representing a 28% increase from the previous year and underscoring the growing centrality of intangibles in global economic competitiveness.^[2] Despite this transformation, IPR remains underutilized in financial markets. Meanwhile, traditional monetization methods, such as licensing, franchising, or direct sales, often yield fragmented income streams and inefficient monetization. From a public policy perspective, the inability to fully mobilize IPR as a financial asset not only wastes strategic resources, but also exacerbates financing gaps, hindering innovation and inclusive growth.

Against this backdrop, attitudes toward the use and exploitation of IPR are shifting worldwide, creating new financing opportunities, particularly through IPR securitization. By converting future income streams from IPR into tradable securities, this mechanism offers a potential funding avenue for businesses. This is especially beneficial for small and medium-sized enterprises (SMEs) and the private sector, which often face barriers to traditional credit. However, this so-called “alchemy” is not universally applicable. Without a strong structure, IPR securitization could become a zero-sum game that places burdens on both issuers and investors.

¹ In this paper, the term IPR is used to avoid ambiguity and potential legal issues in the Vietnamese and Chinese contexts. Notably, under Vietnam’s IP Law (Arts. 3 and 4(1)) and Chinese law (Civil Code Art. 123 and the sectoral IP statutes), IP is defined more narrowly than in international institutions or Anglo-American usage. Whereas global practice treats IP as a broad bundle of legally protected and economically valuable rights, neither Vietnam nor China provides a comprehensive, rights-based definition of IP. Instead, IPR (known as *quyền sở hữu trí tuệ* in Vietnam and 知识产权 (*zhishi chanquan*) in China) is primarily understood as exclusive rights over defined categories of creative subject matter (e.g., inventions, works, trademarks), which acquire property status only upon legal recognition. Since most transactions in practice rely on rights to IP-generated receivables (rather than the creative objects themselves), the term “IPR securitization” more accurately captures the nature of the underlying assets and avoids conceptual ambiguity in these jurisdictions.

² WIPO, “The Value of Intangible Assets of Corporations World-Wide Rebounds to All-Time High of USD 80 Trillion in 2024” *Global-Innovation-Index*, 28 February 2025.

In China and Vietnam, where private sector development is increasingly prioritized under recent legal and policy reforms, the securitization of IPR has gained growing attention. This is also in line with the broader context, in which SMEs form the economic backbone yet remain excluded mainly from conventional financing channels.^[3] In Vietnam, for instance, SMEs represent 96% of all active businesses, employ 47% of the workforce, and contribute approximately 36% to the gross domestic product as of 2021.^[4] Yet, FiinGroup data show that only 9.3% of SMEs can obtain capital. According to the White Book of Vietnamese Enterprises in 2024, SMEs account for only 18% of the total outstanding credit in the system.^[5] In China, up to February 2025, “more than 90 percent of private companies are SMEs, and more than 90 percent of SMEs are private companies”,^[6] but “50-57% credit demand have not applied for loans from formal and informal financing channels”.^[7]

As such, both countries have aimed to transform intangible assets into productive capital to reduce financing bottlenecks that constrain SME growth and the private economy. China pursues this by developing capital market tools and piloting IP finance, while Vietnam promotes the use of IPRs in business transactions and finance through new policies. Against this backdrop, IPR securitization emerges not just as a technical financial innovation but as a potential policy-aligned tool. However, significant legal, institutional, and market barriers still exist. All of them must be addressed before IPR securitization can meaningfully promote the private economy.

By “peeling back the onion skins,” this paper aims to uncover the layers of complexity involved in adopting IPR securitization. Using a comparative

³ According to the International Finance Corporation (IFC), the unmet credit demand among micro, small, and medium-sized enterprises (MSMEs) in emerging markets stood at approximately USD 5.7 trillion in 2024, rising to USD 8 trillion when informal enterprises are included. See IFC, IFC MSME Finance Factsheet, MSME Finance (Washington D.C.: International Finance Corporation, World Bank Group, September 2024), www.IFC.org/MSMEFinance.

⁴ OECD, *SME and Entrepreneurship Policy in Viet Nam* (OECD Publishing, 22 January 2021).

⁵ Lê Giang, “Chỉ 9,3% SME tại Việt Nam tiếp cận được tín dụng ngân hàng [Only 9.3% of SMEs in Vietnam have Access to Bank Credit]” *Bloomberg Businessweek Vietnam*. <https://bbw.vn/chi-9-3-sme-tai-viet-nam-tiep-can-duoc-tin-dung-ngan-hang-54254.html>. [accessed: 4.12.2025].

⁶ Chinese Government Website, “China’s SME Development Index Edges up in February” 12 March 2025.

⁷ Jin Yuhuan et al., “Influencing Factors of Financing Constraints of Micro and Small Enterprises (MSEs) in China: A Risk Information Conveyance Perspective” *Human Behavior and Emerging Technologies*, No. 1 (2024): 3614328.

doctrinal and policy analysis, the paper argues that IPR securitization can support private sector development only under specific legal, institutional, and market conditions. In doing so, it contributes to debates on innovation finance in emerging markets by identifying the legal alignments, institutional maturity, and reform strategies needed to make IPR securitization a viable driver of long-term, inclusive, and resilient private sector growth.

In short, while offering several benefits to stakeholders and the economy, the applicability of IPR securitization remains limited and highly context-dependent. It is therefore not a universal mechanism but a conditional financial tool whose success depends on clear asset isolation rules, credible valuation systems, and mature capital-market structures. The comparative analysis of China and Vietnam illustrates how the same mechanism may operate differently depending on institutional readiness.

Recently, in China, IPR securitization has been part of a broader industrial upgrade strategy that promotes IPR commercialization, technology transfer, and SME financing in line with an innovation-focused growth model.^[8] This is the most crucial starting point to support additional policy goals aimed at promoting the private sector. However, Vietnam is still in its early stages. Through a series of efforts to reform IP commercialization and to raise awareness of the effective use of IPR in the economy, the country is moving toward a new era. Innovative forms of alternative fundraising, like IPR securitization, have their place in this development.

2 | Conceptual Framework: Understanding IPR Securitization

2.1. Foundations of IP Finance and the Emergence of IPR Securitization

In contemporary economies, IPRs are becoming increasingly important. While IP law primarily focuses on recognition and protection, a booming economy requires integrated legal support for IPR and their

⁸ Ying Jiehong, "A Discussion on the Legal Framework of Securitization from the Perspective of Intellectual Property" *Legality Vision*, No. 23 (2022): 120-122.

commercialization. As IP law reaches a critical point, various reforms are developing to address the needs of modern commerce.

According to WIPO, IP finance is an emerging field focused on using IP to secure funding. Essentially, it involves using IP as collateral or as a valuable asset to access credit, raise funds, or attract investment.^[9] This approach transforms intangible value into tangible financial support, enabling innovation-driven and creative firms to expand, invest, and further develop their competitive advantages.^[10] However, IP finance remains in its early stages of development. Numerous obstacles hinder its progress, and overcoming them requires collaboration across sectors and disciplines.^[11]

In practice, IPR mainly facilitates financing in two ways. First, they act as collateral to secure loans or be used in structured finance. Second, they indicate creditworthiness, representing a company's value and potential for future earnings. Different IPRs, based on value and income potential, can be leveraged through various financing channels, such as collateral loans, sale-and-leasebacks, or securitization. Among these methods, securitization is ideal for IPR with stable revenue streams, as it converts future cash flows into immediate capital through the issuance of securities.

Soon appearing in the 1800s, securitization gained prominence in the 1970s and quickly became a familiar financing vehicle in the U.S. before the 2007-2008 crisis.^[12] This trend led to a prosperous period for the U.S. financial industry and extended to the UK around 1980.^[13] Starting with computer equipment leases and bank credit card receivables,^[14] Asset-backed Securitization (ABS) has been based on a range of monetary assets. Theoretically, securitization applies to any assets that exhibit predictable and legally enforceable cash flows, provided that such assets can be

⁹ WIPO Information Meeting on Intellectual Property (IP) Financing Secretariat, *WIPO Information Paper on Intellectual Property Financing* (Geneva: World Intellectual Property Organization, 10 March 2009).

¹⁰ Michael Kos, "What Is IP Financing and Why Is It so Important?" *IP Finance Webinar and Ask the Expert Series*, 10 May 2024.

¹¹ WIPO, *WIPO and IP Finance: Moving IP Finance from the Margins to the Mainstream* (Geneva: World Intellectual Property Organization, 2025).

¹² Gary Gorton, Andrew Metrick, "Chapter 1: Securitization," [in:] *Handbook of the Economics of Finance*, vol. II (Amsterdam: Elsevier, 2013), 1-70.

¹³ Marilee Owens-Richards, *The Collateralisation and Securitisation of Intellectual Property*. Doctoral Dissertation, Queen Mary, University of London, 2016.

¹⁴ Lewis S. Ranieri, "The Origins of Securitization, Sources of Its Growth, and Its Future Potential," [in:] *A Primer on Securitization*, ed. Leon T. Kendall, Michael J. Fishman (Cambridge: The MIT Press, 1996), 31-44.

validly transferred and isolated from the originator's bankruptcy estate. However, securitizing intangible assets does not seem to be equivalent to the counterpart.

Around the 1990s, IPR securitization emerged as a distinct form of ABS. In IPR securitization, revenue-generating from IPRs is pooled to create new financial instruments, such as bonds, which are then sold to investors. This mechanism enables the immediate raising of funds against future income streams, monetizing IPRs that yield steady royalties.^[15] Similar to other ABS structures, IPR securitization is a quasi-security that uses contractual arrangements to secure assets rather than traditional filing methods. However, unlike conventional ABS, IPR securitization leverages revenues generated from commercial use or other exploitation of intangible assets, commonly including patents, trademarks, and copyrights, to back and repay investors.^[16]

Generally, it was the ability to unlock liquidity from inherently illiquid IPR that made Bowie Bond, the first IPR securitization, a phenomenon at the time of its issuance in the U.S. As a precedent, this deal generated enormous enthusiasm and hope for enhancing IP liquidity and demonstrated IPR's potential role in broader ABS markets.^[17] Following the Bowie Bonds, Hollywood quickly adopted IPR securitization.^[18] Similarly, fashion brands and

¹⁵ Dov Solomon, Miriam Bitton, "Intellectual Property Securitization" *Cardozo Arts & Entertainment Law Journal*, No. 1 (2015): 125-180.

¹⁶ Sanjay Kumar Verma, "Financing of Intellectual Property: Developing Countries' Context," *Journal of Intellectual Property Rights*, 11 (2006): 22-32.

¹⁷ The "Bowie Bonds" in 1997 allowed the Rock artist David Bowie to convert future royalties from around 300 pre-1990 songs into \$55 million in bonds, offering a 7.9% interest rate and a 10-year maturity with a self-liquidating feature. Initially seen as low risk, the bond was a private debt instrument sold directly to institutional investors. Bowie became a pioneer in monetizing his IP due to various factors, mainly his reputation, which ensured steady, long-term revenue and support from investment banker David Pullman. After this success, similar deals arose for artists like Motown songwriters (1998), Ashford & Simpson (1998), James Brown (1999), and Dusty Springfield and Iron Maiden (1999). See Nicole Chu, "Bowie Bonds: A Key to Unlocking the Wealth of Intellectual Property" *Hastings Communications and Entertainment Law Journal*, 21 (1998): 472-499; Lisa M. Fairfax, "When You Wish Upon a Star: Explaining the Cautious Growth of Royalty-Backed Securitization," *Columbia Business Law Review*, 3 (1999): 411-487.

¹⁸ Typical deals involving DreamWorks, Village Roadshow, Universal, Marvel Entertainment, and Miramax between 1997 and 2011. Edward De Sear, "Why Hollywood Turned to Securitization" *Digital Magazine, IFLR*, (31 March 2006).

F&B franchises entered the market through trademark securitizations.^[19] In the patent field, some biotech companies securitized future revenues from drug licensing and sales. However, patent-based securitization has generally progressed more slowly, with limited public data.^[20]

Inspired by U.S. developments, Europe began recognizing IPR securitization as a viable financing tool in the 1990s.^[21] After the introduction of Bowie Bond in the U.S., several British artists, who have more control over their business than their American counterparts, expressed interest in creating their own bond offerings. The first European IPR securitization deal was the 1997 securitization of Rod Stewart's music catalog,^[22] followed by the 1999 securitization of receivables from Italian filmmaker Cecchi Gori's future film library.^[23]

Notably, there was a significant gap between the high expectations for IPR securitization and its actual uptake. While praised for its capital-raising potential, practical obstacles hinder widespread adoption, resulting in relatively low transaction volumes in both the U.S. and Europe. Until 2004, there were only 38 deals, mainly concentrated in the U.S. region. The market was reported to have increased from \$400 million in 2002 to over \$2.5 billion in 2006.^[24]

In Asia, the development of IPR securitization has been more cautious and incremental. Japan was the first country to explore this financing structure

¹⁹ There is public information about the transaction from Bill Blass (1999), Guess Inc. (2010), Dunkin' Donuts (2006), and Domino's Pizza (2007). See Ronald S. Borod, "An Update on Intellectual Property Securitization" *The Journal of Structured Finance*, No. 4 (2005): 65-72.

²⁰ One of the most famous patent securitization deals was the Yale-developed HIV drug Zerit deal in 2000, underwritten by Royalty Pharma. This deal failed in November 2002 when BioPharma Royalty Trust entered early amortization. Later, Royalty Pharma participated in another crucial securitization involving 13 medicines from various companies, raising 225 million USD, with only nine generating royalties and four awaiting FDA approval. See Maria Cristina Odasso, Elisa Ughetto, "Patent-backed Securities in Pharmaceuticals: What Determines Success or Failure?" *R&D Management*, No. 3 (2011): 219-239.

²¹ Owens-Richards, "The Collateralisation and Securitisation of Intellectual Property."

²² Chu, "Bowie Bonds: A Key to Unlocking, the Wealth of Intellectual Property."

²³ Giovanni Pini, David K A Mordecai, "Finance for an Italian Library of Movies Plc" *The International Rating Agency (Fitch IBCA)*, n.d., 1998.

²⁴ Mario Calderini, Maria Cristina Odasso, "Intellectual Property Portfolio Securitization: An Evidence Based Analysis" *SSRN Electronic Journal*, (2008).

with early pioneering deals in 2002 and 2003.^[25] The remaining countries have been quite hesitant and have only made policy moves since the 2010s. In China, the concept of “explore and develop IPR securitization” was first introduced in 2015, with a pilot IPR securitization financing program starting in 2017.^[26]

Due to WIPO’s promotion of general IP finance amid the challenging economic environment, recent years have seen a renewed interest in IPR securitization as a means to unlock IPR liquidity and provide alternative financing options. However, practical challenges continue to overshadow the theoretical benefits.

2.2. Legal Characteristics and Economic Rationale of IPR Securitization

In nature, IPR securitization is a financial process rather than an economic right of IP owners. In this structure, the owners extend their exclusive economic rights to the creation and exploitation of IPRs, including assignment and licensing, by resembling an ABS model. It starts with asset

²⁵ The first copyright-backed securitization in Japan (2002) involved royalties for the ground-based broadcasting rights to unaired 34 films from the popular series “It’s Tough Being a Man” (男はつらいよ, *Otoko wa Tsurai yo*), licensed by Shochiku Co., Ltd. The second deal (2003) was a notable patent-backed securitization that involved royalties from exclusive licenses for four optical technology and lens development patents. See Hiroyuki Watanabe, *Intellectual Property as Securitized Assets*. Japan Patent Office Report of the 2003FY Industrial Property Research Promotion Project. Institute of Intellectual Property, March 2004.

²⁶ China saw its first copyright-backed securitization deals at the end of 2018, namely the First Entrepreneurship – Wenke Leasing Phase I Asset-Backed Special Program, the First Capital Beijing Culture & Technology Finance Leasing Co., Ltd. Asset-Backed Security Specific Plan Phase I, and Qiyi Century Intellectual Property Supply Chain Financial ABS. A year later, the first patent-backed deal took place. However, the first authentic patent securitization deal was approved in 2019, known as the Xingye Yuanrong-Guangzhou Development Zone Patent License ABS Plan, valued at 300 million RMB. It is reported that, by the end of 2022, there were 86 securitization products backed by IP that raised 21.6 billion yuan for enterprises in China. See Hefa Song, Anqi Liu, “Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison” *Innovation and Development Policy Journal*, 4 (2022): 168-189.

identification, bankruptcy remoteness requirement,^[27] and the structuring of securities in the capital market. However, since the legal infrastructure appears to be non-existent or, at best, still under formation in each jurisdiction, there remains a significant opportunity for related stakeholders to create new types of deals and financial structures.^[28] To maintain the stated spirit and structural model, a crucial requirement is asset isolation, even in cases of bankruptcy, to protect investor interests.

Regarding the function and purpose. Inheriting the “alchemy magic”^[29] from securitization, IPR securitization unlocks the financial potential of IPR and brings several benefits to related stakeholders. For IP owners, it provides upfront, cost-effective funding for R&D and commercialization. At the same time, it diversifies financing sources and facilitates risk transfer.^[30] The securitization structure also offers IP owners accounting advantages through off-balance-sheet treatment and an optimized capital

²⁷ Historically, the term „bankruptcy remoteness” highlights that asset isolation challenges often occur during bankruptcy proceedings. While asset isolation can fail for reasons unrelated to bankruptcy (e.g., failure to transfer the assets), the risk is exceptionally high during bankruptcy because trustees and courts can reclaim transferred property and reintegrate it into the bankruptcy estate. Legal analysis of “bankruptcy remoteness” thus focuses on three key conditions to prevent assets from being returned to the estate: (1) The transaction must qualify as a “true sale;” (2) The transaction must not constitute a fraudulent conveyance; and (3) The SPV must not be “substantively consolidated” with any other entity in bankruptcy. See John Patrick Hunt, Richard Stanton, and Nancy Wallace, “The End of Mortgage Securitization? Electronic Registration as a Threat to Bankruptcy Remoteness” *UC Davis Legal Studies Research Paper*, (2011): 269.

²⁸ Information asymmetry persists in IP and financial markets, further preventing the public from understanding the exact IPR securitization structure/process. This creates significant opportunities for stakeholders to innovate new deals and economic structures. For example, there is a new model of IPS named whole business securitization (WBS), which uses a “true control” model rather than the traditional “true sale” in ABS structures. Its success, notably in the 1999 Formula One championship financing, made it a significant EU financing option by the 2010s. This kind of variation has been used continuously in Japan, as seen in the famous case of Spiber’s business value securitization backed by Spiber’s patents in 2020, which successfully raised JPY 40 billion (USD 311 million) by the end of 2021. See Tuulikki Haaranen, Tahir M. Nisar, “Innovative Ways of Raising Funds and Adding Value: A Stakeholder Approach to Whole Business Securitization” *Business Horizons*, No. 5 (2011): 457-466.

²⁹ According to Steven L Schwarcz, “The Alchemy of Asset Securitization” *Stanford Journal of Law, Business & Finance*, 1 (1994): 133-154: “Alchemy refers to a technique whereby medieval chemists attempted to turn base metals into gold.”

³⁰ Borod, “An Update on Intellectual Property Securitization.”

structure.^[31] For investors, it creates access to stable, income-generating assets with potential for capital appreciation, supported by transparency and standardized valuation, while fostering long-term investment in innovation.^[32] Instead of a security interest, a securitization structure protects the investor's interest through asset isolation and a requirement of bankruptcy remoteness, which are usually supported by credit enhancement. For banks, it enables balance-sheet relief, credit-risk redistribution, and more efficient capital circulation.^[33]

Recently, new perspectives suggest that valuation from IPR securitization could represent a measurable value of IPR, offering a standardized way to assign monetary value to often intangible IPR. This framework provides a guide for potential investors who still rely on conventional IPR evaluation methods, benefiting the creation and encouraging more IPR investments.^[34] In essence, rather than simplifying valuation, IPR securitization introduces market-based pricing signals that can complement traditional valuation methods and gradually strengthen valuation consistency. It helps non-experts understand IPR's commercial potential and boosts confidence in IPR securitization as an investment.

At the macroeconomic level, IPR securitization also enhances financial market liquidity, broadens funding access for underbanked entities such as SMEs and startups, and strengthens the link between IP creation and capital markets, thereby advancing innovation-driven growth. For governments, it serves as a resource mobilization tool aligned with national innovation and sustainability strategies, facilitates public-private risk-sharing, and supports climate-resilient investment, ultimately contributing to economic resilience, technological progress, and sustainable development.^[35]

Regarding legal structure, an IPR securitization transaction's input is the right to receive future payments derived from IP assets, typically arising from licensing, leasing, sales, or even litigation compensation. Multiple

³¹ İlayda Nemlioglu, "A Novelty on Unlocking Businesses' Potential Growth: Intellectual Property Securitisation" *Procedia Computer Science*, 158 (2019): 999-1010.

³² Innokenty Y. Alekseev, *Securitization of Intellectual Property* (Thesis project, Stanford Law School, 2002).

³³ Gorton, Metrick, "Chapter 1: Securitization."

³⁴ Alekseev, "Securitization of Intellectual Property."

³⁵ Janice Denoncourt, "Chapter 7: A Modern Role for Intellectual Property Rights in Sustainable Finance, Prudential Banking and Capital Adequacy Regulation," [in:] *Intellectual Property and Sustainable Markets*, ed. Ole-Andreas Rognstad, Inger B. Ørstavik (Cheltenham: Edward Elgar Publishing, 2021).

revenue sources may be pooled together to achieve sufficient cash flow stability, which is essential for converting income rights into creditor rights.^[36] In exchange for an upfront lump-sum payment, IP owners can transfer or assign these rights to an originator or trust, enabling immediate access to capital.

Meanwhile, the output consists of securities backed by the mentioned input. It is widely understood as converting illiquid assets into liquid securities by issuing bonds, shares, trust certificates, or other financing instruments designated to have secondary-market value. In other words, the most critical feature of the output lies in its legal recognition in the capital market.^[37] IPR securitization thus acts as a bridge between IP-rich entities needing capital and investors seeking alternative investment opportunities.^[38]

Regarding key participants, an IPR securitization transaction typically involves four major players:

- a. Originator, usually the IP owner, who earns fixed and predictable income from licensing, leasing, or other revenue-generating activities. However, a bank or third party can also act as the originator by pooling income streams from multiple IP owners while securing creditors' rights.^[39] Their primary task is to pool and isolate the revenue streams;
- b. Special Purpose Vehicle (SPV), a legally independent entity that acquires securitized IPRs and issues securities backed by them. In nature, SPV is the new creditor of the revenue, generally in the form of a special-purpose company, trust, partnership, limited liability company, or stock corporation.^[40] It is a central player in the IPR securitization deal, serving as a conduit for the collection and distribution of income.
- c. Supporting agencies, the largest group, including but not limited to servicers, rating agencies, credit enhancers, underwriters, trustees,

³⁶ Song, Liu, "Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison."

³⁷ Jonathan C. Lipson, "Re: Defining Securitization," *Southern California Law Review*, 85 (2012): 1229-1280.

³⁸ Ibidem.

³⁹ Song, Liu, "Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison."

⁴⁰ Watanabe, "Intellectual Property as Securitized Assets."

and more, whose services are used by SPV to support the operation of IPR securitization and ensure investors' legitimate rights and interests. Before distributing returns to investors, expenses paid to them are deducted as part of the SPV's operating expenses;^[41]

- d. Investors, the purchasers of securities from the IPR securitization transaction, who will receive future payments backed by the right to receivables from IPR and can supervise SPV activities to protect their rights.^[42] Normally, investors do not directly own the underlying assets (IPR) or hold a security interest. Instead, they invest in securities issued by the SPV, which legally owns the receivables or IPR and directs the cash flows to repay investors. As a result, investors rely only on the SPV to channel payments in accordance with the terms of the notes.^[43]

Last but not least, regarding the legal basis of IPR securitization. Typically, this funding method is practical because it relies on well-established rules around assignment of claims and factoring. These rules treat right to receivables as assignable contractual rights, similar to tangible assets, allowing them to be sold, pledged, or transferred. Essentially, claim assignment can raise funds for specific purposes and allows the entity to leverage trade receivables before they are collected, with the security interest limited to the entity's physical form assets.^[44] This approach also aligns with international frameworks, such as those from UNCITRAL, UNIDROIT, IFRS, and others, which recognize contract-based income as a financial asset, providing a gradual and legally sound way to adopt IPR securitization while reducing regulatory uncertainties. As such:

Under the civil law framework, IPR securitization could be seen as a complex contractual arrangement. Legally, it combines features of both contractual and proprietary rights, creating a hybrid structure of private law doctrines and financial engineering techniques designed to facilitate

⁴¹ Rachit Parikh, "The Forgotten World of IP: How Can Intellectual Property Be Securitized and How It Should Be Regulated" *University of Illinois Journal of Law, Technology & Policy*, (2020).

⁴² Song, Liu, "Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison."

⁴³ Ariel Glasner, "Making Something out of Nothing: The Trend towards Securitizing Intellectual Property Assets and the Legal Obstacles That Remain" *Journal of Legal Technology Risk Management*, 3 (2008): 27.

⁴⁴ Solomon, Bitton, "Intellectual Property Securitization."

asset-backed finance and reduce credit risk.^[45] In practice, IPR securitization is often described as a quasi-security because it functionally isolates assets and channels their cash flows to investors, much like secured financing. Yet, it does not create a security interest in the traditional sense, as investors hold claims only in the securities issued by the SPV, not in the underlying IP itself. It is a financial transaction in which receivables are assigned, and its success relies on contractual clarity among the IP originator, licensees, and the SPV.

From an IP law perspective, IPR securitization represents an extension of IPR exploitation and a new form of commercialization. Due to its quasi-secure nature, which relies on contractual arrangements rather than traditional filing methods for asset security, IPR-backed security is often conceptualized as an innovative alternative, a primary application, and a significant improvement to IPR collateralization. At its core, IPR securitization represents an evolutionary step in the commercialization of IPR, which traditionally relied on licensing, assignment, franchising, or direct sale. IPR securitization, by contrast, treats IPR not merely as an exclusionary right but as a strategic economic asset capable of generating securitized cash flows.^[46] This approach integrates IP law with capital market practices, opening new financing pathways for IP-rich but capital-poor firms such as startups and creative industries.

Ultimately, from a securities law perspective, IPR securitization is a type of asset-backed securities issuance that uses IPR-generated receivables as underlying assets. While similar to securitizations backed by credit card or lease receivables, IPR-generated receivables are often more complex to value and tend to be more volatile. It usually requires a high level of professionalism and expertise. However, as long as cash flows are stable and predictable, IPRs behave similarly to other underlying assets.^[47] Securities issued by SPVs backed by IPR-generated receivables are subject to securities law requirements, including offering conditions, disclosure obligations, and listing standards.

Despite its theoretical appeal, however, IPR securitization remains challenging to implement due to four ongoing structural and regulatory hurdles.

⁴⁵ Peter Drahos, *A Philosophy of Intellectual Property*, vol. 1 (London: Routledge, 1996).

⁴⁶ Solomon, Bitton, "Intellectual Property Securitization."

⁴⁷ Owens-Richards, "The Collateralisation and Securitisation of Intellectual Property."

First, there is conceptual and legal uncertainty over whether IPR-generated receivables qualify as a clearly securitizable asset class, given fragmented rules on assignment, co-ownership, licensing restrictions, encumbrances, and the lack of a unified publicity system. Second, the transaction structure itself is inherently complex and often masks significant costs from layered contracts, monitoring duties, and heavy reliance on intermediaries. Third, IPR valuation remains highly unstandardized across jurisdictions and industries, leading to significant information asymmetries and cash-flow unpredictability, which weakens investor confidence. Finally, institutional acceptance is limited as many civil-law jurisdictions lack SPV legislation, bankruptcy-remoteness mechanisms, specialized market infrastructure, and experienced intermediaries capable of managing ABS. Collectively, these factors show that IPR securitization is not a universally applicable financing tool, but rather one that depends heavily on legal clarity, valuation standards, and institutional support readiness.

3 | Policy Backdrop: IP-Backed Securitization in the Context of Private Sector Reform in China and Vietnam

3.1. China's Private Sector Reform and Pilot Program for IPR Securitization

Recognized as a key component of the socialist market economy and a primary force for modernization, the private economy was acknowledged early in the Constitution and highlighted at the 18th National Congress of the Communist Party of China. Before 2025, however, efforts to promote private sector development mainly relied on local policies and regulations. It was not until July 2024, following the proposal by the 3rd plenary session of the 20th Central Committee, that China began planning to create laws supporting the private economy. After three rounds of discussion, the Private Sector Promotion Law of the People's Republic of China was

officially approved at the 15th session of the Standing Committee of the 14th National People's Congress. The law is set to take effect in May 2025.^[48]

In this legislation, the core message emphasized by Chinese lawmakers has always been that developing a high-quality private economy requires legislative support. During consultations, there was extensive debate over whether to call it “promotional legislation” or “incentive legislation.” However, most Chinese scholars agree that private economic legislation primarily aims to encourage growth, with incentives built into the mechanism. Therefore, the rule of law is regarded as the ideal business environment, essential for creating a foundation, stabilizing expectations, and fostering long-term benefits.^[49] This approach helps build a legal and social setting that promotes the shared growth of different ownership economies, including the private sector. Essentially, the Private Sector Promotion Law is China's first official law specifically aimed at developing the private sector.

Alongside traditional principles, this law highlights a problem-based approach. Its main focus is to provide clear, solution-focused regulations, strengthen institutional stability, reduce policy gaps and administrative discretion, and create a stable, fair, transparent, and predictable environment for the development of private enterprise. Generally, there has been a shift in legislative thinking toward private enterprises, focusing more on institutional reform, increased enforcement, and policy commitments rather than the traditional approach that emphasizes only general orientation or overall incentives. In chapters 2 and 3, this law emphasizes the importance of fairness in access to capital and highlights the need to reform financial services to better match the characteristics of the private sector economy,^[50] which closely aligns with China's earlier pilot program on IPR securitization.

In 2015, the concept of “explore and develop IPR securitization” was first introduced in the Several Opinions of the CPC Central Committee and the State Council on Deepening the Reform of Systems and Mechanisms and Accelerating the Implementation of the Innovation-Driven Development Strategy. This duty was later outlined in the State Council's 2015 Opinions

⁴⁸ Full text could be referred at: https://www.pkulaw.com/en_law/431967ae9827285fbdbf.html?keyword=private%20sector%20promotion%20law.

⁴⁹ Zhang Lin, “On Incentive-Based Legislation for the Private Economy” *Oriental Law*, No. 3 (2022).

⁵⁰ Nguyen Ngoc Phuong Hong, Luu Minh Sang, “Cú hích pháp lý cho kinh tế tư nhân – từ Trung Quốc đến Việt Nam [Legal Boost for Private Economy – from China to Vietnam]” *SaigonTimes Magazine*, May 2025.

on Accelerating the Construction of an Intellectual Property Power under the New Situation and continuously proposed as a pilot in the Program to Build a National Technology Transfer System (2017). In 2018, the State Council issued Measures No. 38 (2018), which supports financial innovation to benefit the real economy and pilot IPR securitization in designated free trade zones.^[51]

To achieve this, the National Intellectual Property Administration of China (CNIPA) has encouraged IPR securitization since 2015.^[52] In 2017, this authority also backed several initiatives promoting IPR securitization. In 2018, it collaborated with the China Securities Regulatory Commission (CSRC) to form a pilot guidance working group. At the same time, policies from multiple departments, including the National Copyright Administration, the People's Bank of China, and the State Administration for Market Regulation, were also introduced.^[53]

By 2019, over ten IP-backed securitization deals had been initiated or were awaiting government approval, with total proceeds surpassing RMB10 billion. This year, the Initiatives by 50 pioneer forums on IPR securitization were issued as a benchmark for the new era of IPR securitization in China. By the end of 2021, the number of deals had increased from 25 at the beginning of the year, raising over ¥7.5 billion,^[54] to 91 transactions with a total value of over 21 billion RMB. According to IPFinance.cn, 206 products had been issued by the end of 2024 with a total value of RMB 41.319 billion. Existing successful cases are mainly concentrated in regions that received early policy support and have robust economies, specifically Guangdong, Beijing, Shanghai, and Hainan.^[55]

In 2025, along with the issuance of the new Private Sector Promotion Law, the IPR securitization market is expected to be vibrant again and play a key role in “releasing the value of idle assets through various means, improving their reinvestment capability, and enhancing asset quality and benefits” (Article 18). So far, Chinese authorities maintain a positive attitude

⁵¹ Song, Liu, “Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison.”

⁵² Duan Yicai, “A Study on the Standardization of Service Procedures for Intellectual Property Securitization Financing” *Popular Standardization*, No. 15 (2023): 106-107, 110.

⁵³ Song, Liu, “Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison.”

⁵⁴ Du Zhongbo, “Major Models and Reflections on the Current State of Intellectual Property Securitization in China” *Chinese Wisdom*, No. 9 (2022): 38-41.

⁵⁵ Chung, *Innovation's Crouching Tiger (Second Edition)*.

towards IPR securitization, with state support focused on aligning IPR securitization with goals such as supporting SMEs, enhancing innovation, and transforming traditional industries.^[56]

This could come from specific reasons, especially as IPR securitization fits with (1) a risk management strategy focused on diversifying and controlling risks through a broader investor base and IPR portfolio; and (2) the principle of sharing, which aligns well with socialist values, giving more people the chance to participate and share potential wealth according to their risk appetite.^[57]

Notably, IPR securitization in China typically follows the government-led model and emerged as a strategic response to financing challenges faced by innovation-driven enterprises, particularly SMEs with rich intangible assets but limited access to capital.^[58] It is flexible enough to adapt to the new goal of promoting the private economy. However, positioning IPR securitization as a financing channel aligned with evolving economic priorities in China is not without challenges.

First, there is no unified or dedicated legislation. While current transactions operate under general laws such as the individual IP law, Contract law, Trust law, Enterprise Bankruptcy Law, and basic ABS regulations,^[59] none are tailored to the unique needs and risks of IPR securitization transactions. In other words, China lacks a centralized legal framework for IPR registration or securitization-specific due diligence, resulting in reliance on informal assessments and fragmented local practices.^[60]

⁵⁶ Xu Xin, "On the Necessity of Promoting an Intellectual Property Securitization Regime in China" *Modern Business Trade Industry*, No. 6 (2010): 79.

⁵⁷ Chung, *Innovation's Crouching Tiger (Second Edition)*.

⁵⁸ Zhang Yao, "Institutional Responses to the Risks of Intellectual Property Securitization and Their Prevention" *Journal of Henan University of Technology (Social Science Edition)*, No. 6 (2019): 43-49.

⁵⁹ In China, most of the IPR securitization deals are formed under an ABS structure and mostly rely on regulations of Measures for the Administration of the Filing of Asset-Backed Special Programs, regulated under CSRC oversight. See Song, Liu, "Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison."

⁶⁰ For example, there is no legislation for the incorporation and governance of SPV in China. Instead, SPVs are typically created through Measures for the Administration of the Filing of Asset-Backed Special Programs, which are regulated under CSRC oversight, without specific legal personhood or independent status. These are contractual arrangements, not independent legal entities, and are operated by securities companies or their subsidiaries. Thus, they do not legally prevent the originator's creditors from accessing the underlying IP assets in default. See

Second, China's IPR securitization practices are mostly indirect, often involving the securitization of receivables derived from secondary financial contracts (loans, leases, or trusts) rather than IP direct revenue streams, such as royalties or license fees. Additionally, the mentioned "indirect" nature also emphasizes the lack of actual control and legal separation from the IP originator.^[61] Meanwhile, disclosure obligations related to the IPR used in securitization, such as prior encumbrances, litigation, co-ownership, or licensing, are not clearly defined, increasing legal and transactional risks for investors.

Third, the absence of standardized IPR valuation methods leads to pricing inconsistencies, which complicates risk assessment and diminishes investor confidence. Although China introduced the Asset Appraisal Law in 2006, as well as the Trademark Valuation Guide and Patent Valuation Guide in 2021 and 2023, respectively, it is still criticized for having no unified, authoritative valuation standards for IPR.^[62] In reality, different local agencies perform valuations, often using inconsistent methods, which reduces accuracy and credibility.

Last but not least, the regulatory framework is highly fragmented, with oversight divided among the CSRC, the CNIPA, and other related authorities.^[63] This division results in a lack of coordination and precise regulation. Furthermore, the lack of a clear tax policy for IPR securitization transactions creates uncertainty regarding value-added tax, corporate income tax, and potential double taxation. This situation increases transaction costs and limits scalability.^[64]

Xu Ran, Shi Rui, "An Inquiry into China's Legal Regime for Intellectual Property Securitization," *Sci-Tech & Development of Enterprise*, No. 6 (2019): 33-34; Li Jingyu, "A Study on the Legal Risks of Intellectual Property Asset Securitization" *Journal of Shanxi Energy Institute*, No. 3 (2020): 75-77.

⁶¹ Zhao Mingxin, "An Empirical Review of Intellectual Property Securitization Practices in China and Related Institutional Needs," *Securities Law Review*, No. 1 (2021): 449-461; Bao Xinzong, Chen Baitong, Xu Kun, "Intellectual Property Securitization in the Chinese Context: Policy Background, International Comparison, and Model Exploration" *Forum on Science and Technology in China*, No. 11 (2021): 176-188.

⁶² Zeng Weixin, "The Current State of Development and a Summary of Practical Models of Intellectual Property Securitization in China" *China Invention & Patent*, No. 7 (2021): 64-72.

⁶³ Han Yingmei, Liu Yanping, "Constructing China's Legal Framework for Intellectual Property Securitization" *Economic Research Guide*, No. 21 (2019): 192-194.

⁶⁴ Zheng Hongfei, "Legal Dilemmas and Improvement Proposals for the Tax Regime of Intellectual Property Securitization in China" *Southwest Finance*, No. 10 (2018): 35-40.

In sum, China's IPR securitization is operating in a legal gray area, relying heavily on policy-driven pilot programs rather than a stable legal framework.^[65] Several legal restrictions impact qualified investors, issuance numbers, and investment amounts in ABS, making China's IPR securitization primary market highly restrictive. This shows the government's caution with complex financial structures and reflects a developing financial and legal environment that is still clarifying rules for asset transfers, SPV independence, and IP valuation. Currently, China offers no tax incentives for IPR securitization.^[66] Together, they pose challenges in attracting consistent institutional investment and in expanding beyond local market experiments.

To address these gaps, domestic scholars have proposed several key reforms. These include establishing a unified legal system for IPR securitization, including clear rules on SPV operation and asset transfer,^[67] improving the IP registration and publicity system, primarily to facilitate legal transfer and securitization of rights,^[68] and developing national IPR valuation standards.^[69] Furthermore, suggestions have been made to implement tax incentive mechanisms for IPR securitization participants and clarify the tax treatment of IP-derived income in asset securitization contexts.^[70]

⁶⁵ Ying Jiehong, "A Discussion on the Legal Framework of Securitization from the Perspective of Intellectual Property."

⁶⁶ Song, Liu, "Intellectual Property Rights Securitization Models Selection and Policies Development in China: Based on a Multi-Case Comparison."

⁶⁷ Xu, Shi, "An Inquiry into China's Legal Regime for Intellectual Property Securitization."

⁶⁸ Zhao, "An Empirical Review of Intellectual Property Securitization Practices in China and Related Institutional Needs."

⁶⁹ Han, Liu, "Constructing China's Legal Framework for Intellectual Property Securitization."

⁷⁰ Zheng, "Legal Dilemmas and Improvement Proposals for the Tax Regime of Intellectual Property Securitization in China."

3.2. Vietnam's Private Sector Reform and Readiness for a New Age of IP Exploitation

In recent years, Vietnam has implemented ambitious reforms to strengthen its private sector as a key driver of economic growth. Since it was first mentioned in Resolution 09-NQ/TW (2011)^[71] and Resolution 10-NQ/TW (2017),^[72] the private sector in Vietnam has experienced substantial growth. They account for approximately 51% of GDP, more than 30% of the state budget, create over 40 million jobs, represent more than 82% of the total workforce, and contribute nearly 60% of the total social investment capital.^[73] However, several barriers still hinder their development and breakthroughs in scale and competitiveness.

In May 2025, the approval of Resolution No. 68-NQ/TW (2025) on private sector development marked a significant policy milestone.^[74] This regulation explicitly supports removing barriers to the growth of private enterprise, increasing financing options, and promoting innovation-led expansion. Like China, Vietnam also aims to improve its legal framework and eliminate barriers to market entry for private enterprises. The goal is to create a transparent, consistent, long-term, and stable business environment that is easy to navigate and cost-effective. Notably, the issuance of IP pricing support policies is explicitly highlighted (Part III.2.2). This aligns with the specific goals of the research on creating a legal framework for receivables securitization (Part III.3.2), aiming to lay a groundwork for including IPR securitization in Vietnam.

⁷¹ Resolution 09-NQ/TW dated December 9, 2011, of the Politburo of the Communist Party of Vietnam on Building and Promoting the Role of Vietnamese Business People in the Period of Promoting Industrialization, Modernization, and International Integration.

⁷² Resolution 10-NQ/TW dated June 3, 2017 of the Politburo of the Communist Party of Vietnam on Developing the Private Economy to Become an Important Driving Power of the Socialist-Oriented Market Economy.

⁷³ Tô Lâm, "Phát Triển Kinh Tế Tư Nhân – Đòn Bẩy Cho Một Việt Nam Thịnh Vượng (Private Economic Development – A Strategy for a Prosperous Vietnam)" *Tạp Chí Cộng Sản*, 1059 (2025): 3-8.

⁷⁴ Resolution No. 68-NQ/TW dated May 4, 2025, by the Politburo of the Communist Party of Vietnam on Private Sector Development. Full text could be referred at: <https://thuvienphapluat.vn/van-ban/EN/Doanh-nghiep/Resolution-68-NQ-TW-2025-regarding-private-sector-development/656375/tieng-anh.aspx>.

Meanwhile, commitments to building an innovation-driven economy are maintained via the Ten-year Socio-economic Development Strategy (2021–2030), approved at the 13th National Congress of the Communist Party of Vietnam, as well as subsequent Party and State documents. In recent years, the Vietnamese government has started to focus on promoting the commercialization and utilization of IPR. Both Vietnam's National Intellectual Property Strategy by 2030^[75] and the Program on Development of Intellectual Assets by 2030^[76] concentrate on improving the exploitation of IPR in industry and business activities. Additionally, the Ministry of Science and Technology (MOST) is working with the Ministry of Finance to develop a circular that outlines methods for IP asset valuation and implements the recognition for organizations conducting IPR valuations.^[77]

Notably, the 2024–2025 period also brings significant changes to the promotion of science, technology, and innovation. The adoption of Resolution No.57-NQ/TW^[78] has again highlighted the importance of turning scientific and technological research findings into practical applications, especially for commercial purposes. IP is now recognized as a vital tool for transforming research and innovation outcomes into economic assets. This Resolution thus provides the institutional foundation for Vietnam's comprehensive reform of its IP legal system, aiming to position IP rights as strategic assets in the development of a knowledge-based economy, innovation, and the financialization of intangible assets.

In line with this policy direction, on June 27, 2025, the Law on Science, Technology, and Innovation was passed.^[79] In this law, “innovation” is placed on equal footing with “science and technology” for the first time. The Law reflects this orientation by providing incentives to increase the commercialization of research outcomes (Article 6) and by promoting the integration of intangible assets into financial markets through pilot

⁷⁵ Approved by Decision 1068/QĐ-TTg dated 22 August 2019 of the Prime Minister of Vietnam on approving the National Intellectual Property Strategy by 2030.

⁷⁶ Approved by Decision 1068/QĐ-TTg dated 22 August 2019, of the Prime Minister of Vietnam on approving the National Intellectual Property Strategy by 2030.

⁷⁷ Nguyễn Mạnh Hùng, “Sở hữu trí tuệ phải biến kết quả nghiên cứu thành tài sản” *Cổng Thông tin điện tử Bộ Khoa học và Công nghệ*, 17 May 2025.

⁷⁸ Resolution No. 57-NQ/TW dated December 22, 2024, of the Politburo of the Communist Party of Vietnam on Breakthroughs in Science, Technology, and Innovation Development in Vietnam.

⁷⁹ Law No. 93/2025/QH15 dated 27 June 2025 of the National Assembly on Science, Technology and Innovation, coming into effect from 1 October 2025.

programs (Articles 21-23). Rather than limiting innovation policy to research institutions, the law broadens the focus to include enterprises, start-ups, and cross-sector collaborations.

Until the end of 2025, Vietnam's existing IP law^[80] is also expected to undergo its fourth amendments aimed at supporting principles that promote commercialization, in line with central resolutions on innovation, creativity, and the growth of the private sector.^[81] In this upcoming amendment, one of the most important provisions is the new Article 8a, which opens the possibility of treating IP rights as a financial asset that can be traded on the market.

Against this backdrop, Vietnam's private enterprises, especially SMEs, are being given a supportive legal environment to increase awareness and actively leverage their IPR portfolios. These reforms recognize IP not just as a niche concern for creators or specialized sectors but as a form of capital capable of supporting credit access and investment. Current IP policies also clearly demonstrate that the government consistently links IP development with the growth of the private sector and digital economy.^[82]

Regarding infrastructure, Vietnam has approximately 150 venture capital firms, of which 60 focus on science and technology.^[83] There are also twenty-two technology exchanges, comprising nineteen local, two regional, and one national science and technology exchange managed by the MOST

⁸⁰ Law No. 50/2005/QH11 dated 29 November 2005, on Intellectual Property, coming into effect from July 1, 2026. The law was drafted under time pressure for WTO accession and is considered one of the shortest lawmaking processes, with only 11 months. Thus, there are amendments in 2009, 2019, and 2022. In 2025, it will be amended to promote a private economy and an innovation-driven economy.

⁸¹ Notably, Vietnam's current IP law was enacted in 2005. After three amendments in 2009, 2019, and 2022, it has experienced numerous updates and improvements. See "Năm 2025, Bộ KH&CN Chủ Trì Soạn Thảo 9 Luật Liên Quan Đến KHCN, ĐMST và CDS" *Tạp Chí Khoa Học và Công Nghệ Việt Nam*, 16 July (2025): 2.

⁸² Lê Quang Vinh, "Phát Triển Kinh Tế Số Cần Tài Sản Hóa Quyền Sở Hữu Trí Tuệ [Converting Intellectual Property Rights into Assets Is Essential for the Growth of the Digital Economy]" *VnEconomy*, 22 July 2025.

⁸³ There was also information about the IP asset trading platform built by the Vietnam Intellectual Property Research Institute (<https://ipplatform.gov.vn/trade-floor>), integrated in IPPlatform. However, there have been no practical activities and further updates. See Đỗ Mỹ Hạnh, Lê Thị Nam Giang, "Khung Pháp Lý và Giải Pháp Nâng Cao Hiệu Quả Thương Mại Hóa Quyền Sở Hữu Trí Tuệ Là Kết Quả Của Nhiệm vụ Khoa Học và Công Nghệ Sử Dụng Ngân Sách Nhà Nước" (Khai thác hiệu quả quyền sở hữu trí tuệ và phục vụ phát triển kinh tế xã hội trong kỷ nguyên vươn mình của Việt Nam, Ho Chi Minh city, Vietnam, 2025).

(<https://techmartvietnam.vn>).^[84] In addition, institutional initiatives, such as the National Innovation Center,^[85] have been rapidly expanded since 2023 to promote innovation ecosystems.^[86]

Overall, Vietnam's recent policy and legal changes mark a clear move toward institutionalizing innovation and incorporating IP into its financial system. Although monetizing IPR has mainly involved licensing and assignment deals, the focus on diversifying funding sources, along with the rapid rise in the value of intangible assets, is creating good conditions for adopting innovative financing methods.^[87] Given the current situation, IPR securitization aligns well with Vietnam's high-level policy goals. It provides a promising way to unlock capital from underused intangible assets by turning them into tradable securities, supporting business growth and innovation investments. As a result, the connection between Vietnam's private-sector reforms and the potential development of IPR securitization can be seen as a strategic move.

However, Vietnam's progress toward IPR securitization still seems to be in the early stages, with broad adoption remaining a distant goal. Legally, Vietnam lacks a dedicated framework for securitization, leaving essential elements such as SPV formation, true-sale requirements, and bankruptcy remoteness undefined, while fragmented registration systems for assigning or pledging IPRs create uncertainty regarding priority and enforceability. Even more difficult, the concepts of securitization and trust arrangements are still unfamiliar.^[88] Key elements, such as recognized

⁸⁴ The first national-level science and technology exchange in Vietnam (<https://techmartvietnam.vn>), was launched on June 30, 2025, managed by the Ministry of Science and Technology, under a public-private partnership model. See Anh Vu, "Mô hình hoạt động nào cho các sàn giao dịch khoa học và công nghệ? (Which operating model for technology exchanges?)" *The SaigonTime*, 16 August 2025.

⁸⁵ The Vietnam National Innovation Center (<https://nic.gov.vn/>) was launched in 28 October 2023, managed by Ministry of Planning and Investment, under public-private partnerships model.

⁸⁶ Xuân Bình, "Sàn Giao Dịch Khoa Học và Công Nghệ - Kết Nối Nghiên Cứu, Sản Xuất và Thị Trường" *Tạp Chí Khoa Học và Công Nghệ Việt Nam*. <https://vjst.vn/vn/tin-tuc/19072/san-giao-dich-khoa-hoc-va-cong-nghe---ket-noi-nghien-cuu-san-xuat-va-thi-truong.aspx>. [accessed: 12.8.2025].

⁸⁷ Lê Thị Thiên Hương, "Chúng khoán hóa quyền sở hữu trí tuệ: Tìm vốn trong khủng hoảng Covid!" *Tạp chí Kinh tế Sài Gòn*, 4 August 2021.

⁸⁸ Previously, in response to the commitment to ASEAN's Hanoi Action Plan 2000 for developing the securities market, Decision No. 252/QĐ-TTg approving the strategy for developing the Vietnamese securities market from 2011 to 2020 proposed the task of "gradually building a mechanism for ABS." However, in Decision

SPV structures and enforceable asset-isolation mechanisms, are either undeveloped or untested by law. While there is no explicit statutory protection guarantee of “bankruptcy remoteness,” the legal separation must be established through appropriate structuring and corporate governance in accordance with general civil and corporate laws. In practice, this might lower, but not eliminate, legal risk from creditor claims unless it is correctly structured and documented.

Institutionally, the supporting market infrastructure remains underdeveloped. Current science and technology exchanges have not yet assumed roles such as setting prices or establishing specific market transactions for buying and selling. According to representatives of the Ministry of Science and Technology of Vietnam, the commercialization rate of intangible assets is about 0.1%, which is very low compared to the global average of 5%. This indicates that the contribution of these assets to enterprise revenue in Vietnam remains minimal. Using them to raise capital is even less common.^[89]

Despite efforts by competent authorities to develop IPR valuation guidelines,^[90] Vietnam still lacks a unified valuation standard or methodology. Additionally, there is no presence of professional valuation and advisory organizations specializing in IPRs, nor reliable market data for reference. The lack of a coordinated information infrastructure also makes it difficult to assess the value and potential for exploiting IPR.^[91]

Furthermore, limited awareness and capacity among regulators, banks, and investors, along with a risk-averse mindset and weak IP enforcement mechanisms, diminish the willingness to participate in complex IP-based financing structures. The situation becomes even more complicated without specialized IP courts and due to concerns over disputes or fraudulent claims that could disrupt expected cash flows.

No. 1726/QĐ-TTg in 2023 approving the Strategy for developing the securities market to 2030, this content no longer exists. With the issuance of Resolution No. 68-NQ/TW, legislation of securitization in Vietnam is expected to be explored and drafted. See Nguyen Ngoc Phuong Hong, “Chứng khoán hóa tài sản trí tuệ – Giải pháp mới trong thương mại hóa và huy động vốn.”

⁸⁹ Nguyễn Mạnh Hùng, “Sở hữu trí tuệ phải biến kết quả nghiên cứu thành tài sản.”

⁹⁰ The latest legislation for IP valuation in Vietnam is Circular No. 37/2024/TT-BTC dated 16 May 2024 of the Ministry of Finance on promulgation of the Vietnamese Valuation Standards on Valuation of Intangible Assets

⁹¹ Vũ Anh Thư, “Định giá tài sản sở hữu trí tuệ trong giao dịch dân sự” *Tạp chí Nghiên cứu Lập pháp*, No. 271 (2014).

In sum, the potential for IPR securitization aligns well with Vietnam's private sector reform. By establishing a legal framework that treats IPR as a legitimate financial asset, improving IPR valuation standards, and developing market infrastructure for asset-backed securities, Vietnam can position itself to enter a new phase of IPR utilization, one that goes beyond traditional commercial use and leverages IPR as a powerful financing tool. This evolution not only supports domestic enterprise growth, but also aligns with Vietnam's broader goal to integrate more deeply into global value chains and knowledge-based industries. However, gaps in institutional and market capacity mean adoption will likely need careful consideration and should be implemented gradually.

4 | Comparative Insights and Reform Pathways

Both China and Vietnam are at crucial stages in considering IPR securitization within broader private-sector development strategies. Yet, their starting points, institutional capacities, and policy priorities vary significantly. The comparative analysis shows that the viability of IPR securitization is deeply contingent on legal and institutional readiness. The same mechanism may enable capital access in jurisdictions with mature markets, but may generate systemic risks in countries where valuation standards, SPV regulation, and secondary markets remain underdeveloped.

Generally, both countries could link the promotion of the private economy to IPR securitization, as both are entering a phase in which intangible assets are key yet underused for financing. Private firms, especially small and medium-sized, hold significant IPR, but face challenges in accessing credit due to limited collateral and cautious lending. Under these circumstances, incorporating IPR securitization provides a new capital-raising channel, unlocking asset value and fostering a financial ecosystem that rewards innovation. It aligns with policies to move toward high-tech industries, reducing reliance on physical assets, and supports reforms with market-based financing to boost entrepreneurship and growth.

From a broader perspective, it seems that China has quickly recognized the benefits of this new form of capital mobilization. So far, China's IPR securitization framework has developed through a top-down, government-led approach, supported by a relatively advanced capital market, pilot

programs, and sector-specific guidelines from regulatory agencies like the CSRC and the CNIPA. This approach has enabled rapid experimentation, but also exposed structural issues, such as the absence of an independent legal entity for SPVs and inconsistencies in IP valuation standards. If these gaps are addressed, China is well-positioned to leverage IPR securitization as a strategic tool to expand financing channels, stimulate innovation, and accelerate the growth of its private economy.

Vietnam, on the other hand, remains in an initial exploratory phase, lacking a dedicated securitization framework and with an expanding capital market. Nevertheless, Vietnam's legal reforms, especially the upcoming 2025 amendments to the IP Law, signal growing policy recognition of IP commercialization as a driver of innovation and SME financing. In the context of Vietnam's ongoing efforts to support the private sector, stimulate innovation, and diversify investment channels, there is an apparent demand to enhance access to credit and financial inclusion. This laid the background for the emergence of IPR securitization.

However, it is worth noting that the IPR securitization model, developed in Western markets, was dominated by entertainment and tech giants with IP portfolios that held substantial, predictable value.^[92] It was not designed to support financial inclusion or specific policy goals such as promoting the private economy. Moreover, Wall Street's role in pioneering IPR securitization was driven primarily by the U.S.'s deregulation policies and the need to create more tradable securities for sale to investors.

Thus, IPR securitization in Western concepts might not seamlessly fit into the financial and economic landscape of emerging countries. It is also, of course, not a one-size-fits-all solution and cannot replace traditional bank lending. At the same time, the expansion of securitization, which eventually contributed to the 2008 financial crisis, also provides an essential lesson that IPR securitization must be supported by strong institutional safeguards, accurate valuation, and transparent oversight to prevent systemic risk.

Therefore, any reform pathway to introduce or expand IPR securitization in China and Vietnam must be multifaceted, going beyond simple legal transplantation.^[93] Such reforms should simultaneously address structural weaknesses in IP valuation, investor confidence, and enforcement mechanisms, while establishing clear policy connections to private

⁹² Tahir M. Nisar, "Intellectual Property Securitization and Growth Capital in Retail Franchising" *Journal of Retailing*, No. 3 (2011): 393-405.

⁹³ Verma. "Financing of Intellectual Property: Developing Countries' Context."

sector development goals. This would ensure that the adoption of IPR securitization is not just a copy of Western models, but a carefully adapted approach that supports both market efficiency and socio-economic priorities.

In particular, China needs to strengthen legal certainty around asset isolation, standardize IPR valuation methodologies, and encourage private-led participation to reduce overreliance on government intervention.^[94] Meanwhile, Vietnam must first build the essential legal and institutional foundations before attempting to transplant any foreign IPR securitization model. This includes establishing a dedicated ABS framework with clear SPV rules, true-sale doctrines, and bankruptcy-remoteness mechanisms; harmonizing IP and secured-transaction registration systems; developing standardized IPR valuation and market infrastructure; and strengthening regulatory, financial, and investor capacity.

In both jurisdictions, cross-cutting reforms, such as enhancing transparency in IPR transactions, fostering rating agency expertise in intangible assets, and creating cross-border cooperation mechanisms, would not only improve market trust, but also integrate IPR securitization into broader strategies for private sector empowerment. It is also essential to identify legal and procedural issues early, together with supporting tools such as IPR insurance and the establishment of secondary markets, which collectively form the market infrastructure necessary for integrating securitization into private-sector development policies.

For Vietnam, China's experience also offers a practical blueprint. It demonstrates that, even without the legal sophistication, a country can successfully launch IPR securitization through carefully planned, government-supported pilot programs that mitigate risk using guarantees, flexible structures, and regional testing. By focusing on bundling IPR into the current ABS regime, China provides an adaptable template for countries where IP markets are underdeveloped, and investor confidence remains fragile. So far, IPR securitization has remained part of a broader industrial upgrading strategy, supporting IPR commercialization, technology transfer, and SME financing in line with China's innovation-focused growth model.^[95] At the same time, Chinese experience also shows that without ongoing legal reforms, especially in SPV regulation, IPR transferability, and valuation standards, scalability and investor trust will remain limited.

⁹⁴ Xu Ran, Shi Rui, "An Inquiry into China's Legal Regime for Intellectual Property Securitization."

⁹⁵ Ying Jiehong, "A Discussion on the Legal Framework of Securitization from the Perspective of Intellectual Property."

Thus, Vietnam's policymakers must carefully balance their enthusiasm for IPR securitization with a pragmatic assessment of whether their legal and financial infrastructures can support it without exacerbating systemic risks. Adopting IPR securitization into a national economic system requires a roadmap to integrate IPR protection maturity with financial market development. The country must have strong legal frameworks to safeguard IPR, enforce contracts, and resolve disputes effectively. At the same time, it needs a well-developed financial ecosystem, including sophisticated capital markets and reliable valuation standards. The adoption may be slow, but it must depend on the revival of credit markets and on the broader acceptance of a standardized IPR valuation among banks and financial institutions.^[96]

Additionally, investor awareness and market acceptance are also critical for facilitating IPR securitization. Even with strong legal protections and developed financial markets, IPR securitization cannot function effectively without investors who understand and trust the asset class. In Vietnam, most investors and the public are unfamiliar with IP financing, leading to skepticism about their valuation, liquidity, and risk profile. Market acceptance thus depends on education, transparency, and a track record of successful deals that demonstrate the viability of IPR securitization.

Notably, in several markets, the expansion of IPR collateralization has tended to support the conditions necessary for later securitization. While collateral is not compulsory in all IPR securitization structures, broader acceptance of IPR-backed loans and the reliability of IPR as collateral are helping to normalize IPR as a financial asset within IPR securitization. Conversely, a well-functioning IPR securitization ecosystem can further legitimize IPR-backed lending by creating secondary markets and improving liquidity. While IPR collateralization and IPR securitization are sometimes related, expanding the use of IPR in secured lending can help Vietnam strengthen familiarity with intangible assets and thereby improve preconditions for future securitization.^[97]

Learning from China's experience, in the initial stages, pilot transactions in select sectors (such as technology and creative industries) or in

⁹⁶ Stanley Lai, "Securitise Your IP Rights in Asia" *Managing Intellectual Property*, No. 188 (2009): 30.

⁹⁷ Naoto Koizuka, *IP Finance in Japan* (IP Finance in Japan: Challenges and Potentials, Japan Patent Office, June 2022).

designated environments, such as international financial centers^[98] or free trade zones, can test the regulatory framework while demonstrating real success stories, thereby building confidence among private investors and policymakers. Over time, integrating IPR securitization into mainstream capital markets will make it a sustainable financing option that broadens access to capital, supports innovation, and enhances the global competitiveness of Vietnam's private economy.

5 | Conclusion

IPR securitization could be a potential solution for promoting private economies in China and Vietnam. However, when reconsidering its possibilities, it is crucial to recognize that the success of IPR securitization depends not only on financial engineering but also on legal frameworks, institutional capacity, and broader economic strategies. Although IPR securitization has been introduced as a revolutionary way to raise finance, there is a paradox between global practice and each country's demand. Throughout history, IPR securitization has remained a controversial financial instrument, characterized by significant risks and uncertainties. Of course, without careful adaptation, it may generate more risks than rewards. However, neither overestimating nor underestimating IPR securitization is beneficial. For China and Vietnam, IPR securitization can serve as a complementary tool for private sector development when supported by coherent legal frameworks, credible valuation, and institutional maturity. Absent these conditions, the mechanism may amplify rather than mitigate financial and systemic risks.

⁹⁸ According to Resolution No. 222/2025/QH15 dated 27 June 2025, of the National Assembly of Vietnam on International financial hubs in Vietnam, which comes into effect on September 1, 2025, Ho Chi Minh City and Da Nang City will be designated as the locations for the establishment. Immediately after that, on 1 August 2025, the Government issued Decision No. 1646/QĐ-TTg dated 1 August 2025, of the Prime Minister of Vietnam on Establishing the Steering Committee for the International Financial Center in Vietnam. Furthermore, the draft of the Law on Specialized Courts in the International Financial Center was also sent to relevant agencies and organizations for their comments in September 2025.

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2025. <https://www.wipo.int/web/global-innovation-index/w/blogs/2025/the-value-of-intangible-assets-of-corporations>.
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The Convention on the Contracts for the International Sale of Goods (CISG) and the Sustainable Supply Chain: Towards Ethical and Social Standards

Abstract

The Convention on the Contracts for the International Sale of Goods (1980) (CISG) has been praised as the greatest legislative achievement in the field of international private law due to its significant ratifications (currently by 98 States), and has also been cited and used widely in several judgments and arbitral awards. However, it has been 37 years since the CISG came into force, and the new century has witnessed more complex issues than the simple act of selling and buying. The question is whether the CISG continues to adapt to the emergence of new trends in the 21st century, especially as ethical and social problems related to human rights and environmental sustainability receive increasing attention. This at first sight seems to have no relevance to the area that CISG governs. Having said that, ethical and social standards can potentially affect several aspects of the sale contracts, particularly the conformity of goods regarding the social and ethical quality and purpose, and whether the CISG remedies regarding the violation of the contract due to the social and ethical standards are applicable. Given the increasing emphasis on sustainable global supply chains as a key trend in recent years, sales contracts in these chains that are governed by the CISG and that involve environmental, social, and human rights considerations throughout the production process require renewed scrutiny. In this context, assessing whether the CISG can be interpreted in light of social and ethical standards becomes increasingly important for re-evaluating its relevance and impact in this new era.

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1 | Overview of the Relationships between the Sustainable Supply Chain and the CISG

1.1. The Social and Ethical Standards as Part of the Sustainable Supply Chain

The accountability of supply chain agents for social responsibility initiatives has been widely recognized, which demands that supply chain management focus more on sustainable development. Sustainable supply chains encompass not only environmental performance, but also social and ethical expectations that protect workers and communities across the value chain. Two foundational international frameworks, the UN Guiding Principles on Business and Human Rights and the OECD Due Diligence Guidance for Responsible Business Conduct, articulate the corporate responsibility to respect human rights and to conduct risk-based due diligence that spans the enterprise's operations and its business relationships.^[1] These frameworks have become reference points for both regulators and private governance in global supply chains.

Regulatory developments have reinforced the salience of social and ethical standards along supply chains. However, it can be observed that the codification of business ethics has been largely concentrated in Western jurisdictions, whereas other regions tend to rely more on soft-law instruments or customary practices. The EU Corporate Sustainability Due Diligence Directive, in force since 25 July 2024, requires covered companies to identify, prevent, mitigate, and account for adverse human rights

¹ Office of the United Nations High Commissioner for Human Rights, *Guiding Principles on Business and Human Rights* (New York and Geneva: United Nations, 2011). https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf. [accessed: 14.8.2025]; Organisation for Economic Co-operation and Development, *OECD Due Diligence Guidance for Responsible Business Conduct* (Paris: OECD Publishing, 2018), <https://mneguidelines.oecd.org/due-diligence-guidance-for-responsible-business-conduct.htm>. [accessed: 14.8.2025].

and environmental impacts throughout their global value chains.^[2] Germany's Supply Chain Due Diligence Act likewise extends defined due diligence obligations to direct and indirect suppliers.^[3] In the United States, the Uyghur Forced Labor Prevention Act creates a rebuttable presumption that goods linked to Xinjiang involve forced labour and are therefore barred from import unless the importer produces clear and convincing evidence to the contrary. This regime effectively pushes traceability and documentation obligations upstream.^[4]

Alongside these legislations, private governance translates social and ethical expectations into operational standards. Multi-stakeholder and certification schemes, such as SA8000 for workplace and labour conditions and ISO 20400 on sustainable procurement provide auditable or process-oriented criteria, for example, the prohibition of child or forced labour, health and safety management, grievance mechanisms, procurement integration, transparency, and accountability.^[5] These instruments increasingly function as procurement baselines and are frequently incorporated into sourcing, tendering, and supplier management processes.

The academic and managerial literature converges on three enablers of ethical supply chains, namely transparency, traceability, and collaboration, as firm-level capabilities that mitigate risk and deliver competitive advantage through innovation and market positioning.^[6] Conversely, ethical

² European Union, Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on Corporate Sustainability Due Diligence, Official Journal of the European Union, 25 July 2024. <https://eur-lex.europa.eu/eli/dir/2024/1760/oj/eng>. [accessed: 14.8.2025].

³ German Federal Ministry of Labour and Social Affairs, Act on Corporate Due Diligence Obligations in Supply Chains (LkSG). overview page. <https://www.bmas.de/EN/Home/home.html>. [accessed: 14.8.2025].

⁴ United States, Uyghur Forced Labor Prevention Act, Pub. L. No. 117-78, 135 Stat. 1525 (2021), § 3(b)(2). <https://www.congress.gov/117/plaws/publ78/PLAW-117publ78.pdf>.

⁵ Social Accountability International, SA8000 Standard, 2014. <https://sa-intl.org/programs/sa8000/>. [accessed: 14.8.2025]; International Organization for Standardization, *ISO 20400:2017 Sustainable Procurement Guidance* (Geneva: ISO, 2017). <https://www.iso.org/standard/63026.html>. [accessed: 14.8.2025].

⁶ Oluwafunmilayo Esan, Funmilayo Aribidesi Ajayi, Olufunke Olawale, "Supply Chain Integrating Sustainability and Ethics: Strategies for Modern Supply Chain Management" *World Journal of Advanced Research and Reviews*, No. 1 (2024): 1930-1953. <https://doi.org/10.30574/wjarr.2024.22.1.1259>; Janine M. Pierce, Donna M. Velliaris, "Sustainable Supply Chains: Ethical Challenges and Actions for Best Practice," [in:] *Emerging Applications in Supply Chains for Sustainable Business Development*, ed. M.

lapses trigger reputational harm, consumer backlash, and regulatory exposure. Monitoring and auditing also remain challenging in jurisdictions with weaker institutional frameworks.^[7]

Partnerships and certification networks support ethical and transparent supply chains by disseminating norms and creating credible signals, such as buyer codes of conduct, industry consortia, and third-party certification ecosystems. This literature highlights collaborative architectures between firms, civil society, and standard setters as practical vehicles for implementing and verifying ethical performance.^[8]

Mechanically, social and ethical standards travel through the chain via five channels. First, contractual incorporation of codes and standards. Second, representations and warranties concerning responsible sourcing. Third, cascading obligations that bind sub-suppliers. Fourth, traceability and documentation duties that evidence origin and conditions. Fifth, audits and monitoring together with grievance and remedy processes. The OECD Guidance expressly contemplates these leverage strategies as part of proportionate, risk-based due diligence, and procurement standards such as ISO 20400 reinforce integration into purchasing practice.^[9] In the field of management, the ISO standards are frequently seen as governance benchmarks for ethics, compliance, and social responsibility inside supply chains.

Taken together, these public and private regimes increasingly crystallise social and ethical expectations into the commercial substance of cross-border transactions. When such expectations are framed as attributes of goods or as process-based assurances that are essential to the bargain, they can shape the parties' legitimate expectations in downstream sales contracts, which sets up the later analysis of conformity and remedies under the CISG that will be further discussed.

Vijaya Kumar, Goran D. Putnik, K. Jayakrishna, V. Madhusudanan Pillai, Leonilde Varela (Hershey, PA: IGI Global, 2019), 115-129.

⁷ Mariia Sandul, "Social and Ethical Aspects of Global Supply Chains: Risks and Opportunities" *Scientific Bulletin of Uzhhorod National University. Series: International Economic Relations and World Economy*, No. 48 (2023): 61-64.

⁸ Pierce, Velliari, "Sustainable Supply Chains," 115-129.

⁹ OECD, *OECD Due Diligence Guidance for Responsible Business Conduct*; International Organization for Standardization, *ISO 20400:2017 Sustainable Procurement — Guidance*.

1.2. Social and Ethical Standards in the Contract Law Field

Contracts traditionally seem to have no relevance to maintaining and promoting ethical and social quality. However, with the focus on development initiatives in the new century, it has become more common for businesses to include social and ethical requirements in their contracts.^[10] Menscher argues that business ethics extends beyond legal requirements, and trust and honesty are foundational to contractual relationships that should be designed into both the bargain and its performance architecture, including disclosure duties, candour in negotiations, and cooperation in performance.^[11] In international sales, ethical standards can enter CISG-governed contracts through specific stipulations, through usages of trade, and through the Convention's interpretive and conformity provisions. The doctrinal gateways are Articles 8 and 9 on intent, practices, and usages, together with Article 35 on conformity by description, specification, or particular purpose. When supplier codes, certification schemes, and process-based assurances are incorporated in this way, failures may amount to nonconformity and can trigger the CISG's remedies. The literature underscores that the Convention is sufficiently flexible to address such ethical concerns when the parties have juridified them in their agreement.^[12]

The absence of motivation to establish a hard policy for entrepreneurs enables a good-faith, practical mechanism for ethical conduct in relationship contexts. Data from the construction sector suggests that explicit terms regarding good faith and collaboration can help mitigate ongoing integrity issues and enhance professional ethical standards, without replacing them. In the context of cross-border sales, well-defined good faith clauses, accompanied by audit rights, obligations for rectification and remediation, and responsible departure strategies, can enhance performance while upholding ethical standards.^[13] Recent practice also indicates

¹⁰ Katerina Mitkidis, "Sustainability Clauses in International Supply Chain Contracts: Regulation, Enforceability and Effects of Ethical Requirements" *Nordic Journal of Commercial Law*, No. 1 (2014).

¹¹ Barbara Mescher, "Business Ethics and the Law of Contract" *Journal of Law and Financial Management*, No. 2 (2009): 8-12.

¹² Ingeborg Schwenzer, "Ethical Standards in CISG Contracts" *Uniform Law Review*, No. 1 (2017): 122-131.

¹³ Jim Mason, "Delivering Ethical Improvement through Contractual Good Faith," [in:] *Ethics for the Built Environment*, ed. Peter Fewings (Abingdon-New York: Routledge, 2008), 281-290.

a growing incorporation of ethical clauses in commercial contracts, including in French contracting, even though cultural and implementation challenges remain. This supports the view that existing private law techniques can operationalise ethical expectations across sectors and jurisdictions.^[14]

1.3. The Relationship between the Supply Chain Contract and the CISG

The relationship between supply chain contracts and the CISG is considered complex and evolving. The CISG governs international sales contracts, yet, since the mid-1990s, its practical applicability appears to have declined as trade has reorganised around supply chains rather than one-off spot sales. One explanation is structural. Modern supply networks are built on layered agreements, such as framework procurement, manufacturing and quality agreements, logistics and vendor managed inventory arrangements, codes of conduct, and audit or traceability protocols that regulate performance beyond a single delivery. A recent study argues that this diffusion of supply chain contracting helps to explain the downward trend in case law applying the CISG.^[15]

From a functional perspective, supply chain contracts operate as coordination mechanisms that align incentives among parties and optimise system performance. Classic instruments include revenue sharing, buy-backs, rebates, and option contracts. The literature treats these devices as tools to induce effort, allocate risk, and move decentralised channels toward near first-best outcomes.^[16] At the same time, contracts structure inter-organisational relationships by regulating partner behaviour and allocating tasks, timing, and information, so they serve as governance devices within the chain.^[17] Properly designed, such contracts do not displace

¹⁴ A. Dufлот, "Ethical Clauses in French Commercial Contracts," *Courier of the Kutafin Moscow State Law University (MSAL)*, No. 1 (2022): 72-78.

¹⁵ Eriko Taoka, "Policy Proposals for the Formulation of International Uniform Sales Law Based on a Supply Chain Sales Model" *Impact*, No. 2 (2025): 42-43.

¹⁶ Charles X. Wang, "A General Framework of Supply Chain Contract Models" *Supply Chain Management: An International Journal*, No. 5 (2002): 302-310.

¹⁷ Dorsaf Zouari, Karine Evrard-Samuel, "Toward a Relational Structuring within the Supply Chain: The Contract as a Coordination Mechanism" *Logistique & Management*, No. 2 (2013): 7-18.

the CISG. They can complement it. INCOTERMS rules, for example, work in tandem with the Convention on delivery and risk allocation, and thereby strengthen the legal framework for international sales.^[18]

Scope remains a matter of transaction type. Many upstream documents, such as framework agreements, supplier codes, or audit protocols, are not themselves sales and therefore fall outside the CISG. By contrast, call off purchase orders or individual supply contracts placed under a framework are sales and ordinarily fall within the CISG unless the parties exclude it. Mixed contracts are filtered by Article 3. Contracts for goods to be manufactured or produced are treated as sales unless the buyer supplies a substantial part of the materials, and contracts in which the preponderant part of the seller's obligations is services fall outside the Convention. Authoritative commentary elaborates these boundaries.^[19] Because the CISG primarily addresses obligations of performance between seller and buyer at the sales node, a growing share of supply relationships will lie beyond its reach, which in turn elevates the importance of well-drafted coordination contracts to manage complex international trade.^[20]

In practice, parties should separate the framework or coordination layer from the sales layer, decide expressly whether the CISG applies to the sales layer, and cascade the obligations that matter into the sales contracts. Those obligations can include technical quality, ethical and social standards, documentation and traceability, and audit rights. Once incorporated, they can be analysed as conformity and remedy questions under the Convention, while the broader coordination architecture continues to govern the relationship outside it.

¹⁸ Juana Coetzee, "The Interplay between Incoterms and the CISG" *Journal of Law and Commerce*, No. 1 (2013): 1-22.

¹⁹ United Nations, United Nations Convention on Contracts for the International Sale of Goods (1980), arts. 1, 3, 6; CISG Advisory Council, Opinion No. 4: Contracts for the Sale of Goods to Be Manufactured or Produced and Mixed Contracts (Article 3 CISG) (2004); Secretariat Commentary on the 1978 Draft Convention on Contracts for the International Sale of Goods, Commentary to article 3.

²⁰ Taoka, "Policy Proposals for the Formulation of International Uniform Sales Law," 42-43.

1.4. The Relationship between the Sustainable Supply Chain and the International Sale of Goods Contract

Coming into a more specific contract law field, particularly international sales contracts, the relationship between sustainable supply chains and the international sale of goods contract is both doctrinally intricate and institutionally evolving. The CISG supplies a uniform regime for cross-border sales, but its remedial architecture operates inter partes and does not itself give workers, communities, or other third parties standing to enforce sustainability undertakings embedded in buyer and seller agreements.^[21] As a result, private contracts have become crucial tools for implementing transnational sustainability standards along global value chains. They complement public regulation and allocate compliance risks across supplier tiers.^[22] Sustainability contractual clauses, including supplier codes, traceability and audit obligations, no forced labour warranties, and ecolabel or specification requirements, aim to close regulatory gaps and shield firms from reputational, regulatory, and supply disruption risks associated with unethical supplier conduct, although enforceability can falter where clauses are aspirational, indeterminate, or lack verification and remedy scaffolding.^[23]

Within the framework of CISG, the most important question is whether sustainability aspirations have become sales requirements at the sales node. With the growing initiatives of companies to comply with corporate social

²¹ United Nations, *United Nations Convention on Contracts for the International Sale of Goods (CISG)*, opened for signature April 11, 1980, 1489 U.N.T.S. 3 (entered into force January 1, 1988), arts. 1, 3, 4, 6, 7, 8, 9, 25, 35, 38–39, 49, 50, 74–77. https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-09951_e_ebook.pdf.

²² Fabrizio Cafaggi, “Regulation through Contracts: Supply-Chain Contracting and Sustainability Standards,” *European Review of Contract Law*, No. 3 (2016): 218–258. <https://doi.org/10.1515/ercl-2016-0013>.

²³ Katerina Peterkova Mitkidis, “Sustainability Clauses in International Supply Chain Contracts: Regulation, Enforceability and Effects of Ethical Requirements” *Nordic Journal of Commercial Law*, No. 1 (2014). <https://journals.aau.dk/index.php/NJCL/article/view/2888>. [accessed: 14.8.2025]; Priscila Pereira de Andrade, “The Limited Contribution of the United Nations Convention on Contracts for the International Sale of Goods to the Application of Biofuel «Sustainability Clauses»” *Canadian Yearbook of International Law/Annuaire Canadien de Droit International*, 53 (2016): 119–143.

responsibility and to adapt to sustainability awareness, they may opt to adhere to international standards and codes, or even draft their own code of conduct.^[24] For example, many companies, including big suppliers such as Nike^[25] and Walmart,^[26] publish the Supplier Code of Conduct on their website, stipulating that the suppliers' working conditions are safe and hygienic, child labour is not used, and standards to protect the environment are complied with.^[27] And, since international sales contracts are one of the important instruments in the supply chain process, they play an important role in implementing those standards.^[28] In fact, codes of conduct do not appear as the main text of the international sale contracts or are negotiated by the parties.^[29] They can potentially be a part of a sales contract if the parties referred to them in the contracting documents or on their websites. However, to what extent the sustainability standards are integrated as part of the binding obligations for the buyers and the sellers in a sale contract governed by CISG depends on how these standards are incorporated, including expressed terms in the contract or implied terms through practices. If sustainability attributes are written as descriptions or specifications or are linked to a specific objective that the seller knows about, not following them may be considered a lack of conformance under Article 35. Trade usages and established practices can turn private standards into legally binding obligations. Documentary performance may be necessary for delivery to include certifications, audit summaries, and chain of custody data. If they are missing or incorrect, a conformity claim can be made, and the CISG remedy suite can be opened.^[30]

Strategically, evidence suggests that firm-level internationalisation, green innovation, and sustainable supply chain management are significantly associated and complement each other. This reinforces the business

²⁴ Fabrizio Cafaggi, "Regulation through Contracts: Supply-Chain Contracting and Sustainability Standards," 220.

²⁵ Nike Facility Code of Conduct. <https://about.nike.com/en/resources/nike-supplier-code-of-conduct>. [accessed: 10.8.2025].

²⁶ Walmart: Our Code of Conduct. https://www.walmartethics.com/content/walmartethics/en_us/code-of-conduct.html. [accessed: 10.8.2025].

²⁷ Bin Jiang, "Implementing Supplier Codes of Conduct in Global Supply Chains: Process Explanations from Theoretic and Empirical Perspectives" *Journal of Business Ethics*, No. 1 (2009): 77.

²⁸ Cafaggi, "Regulation through Contracts: Supply-Chain Contracting and Sustainability Standards."

²⁹ Schwenzer, Muñoz, "Sustainability in Global Supply Chains Under the CISG."

³⁰ Cafaggi, "Regulation through Contracts," 218-258.

case for drafting sustainability clauses that are CISG operable.^[31] As sustainability awareness rises in lead markets, importers are increasingly compelled to ensure supplier compliance with sustainability regulations and private standards. In this environment, the contractual tool is not only helpful, but indispensable for the international trade of sustainable products.^[32]

1.5. The Need for the CISG to Govern Ethical and Social Standards

Despite the growing trends of integrating social standards into policies for the sustainability goals analysed, the CISG does not contain any norms or instructions on how the sustainability goals and social standards can be integrated into the sale of goods contract. This is understandable since the CISG was drafted in the 1970s, and at that time, international ethical rules and sustainable policies were not mainstream among lawyers and traders.^[33] There are both doctrinal and practical reasons to read the CISG in a way that accommodates ethical and social standards in international sales contracts. Doctrinally, this interpretation advances the Convention's aims of uniformity, predictability, and the protection of legitimate expectations in cross-border trade. Practically, buyers increasingly bargain for environmental, social, and governance attributes as contracted qualities of goods, and consumers in lead markets reward products that comply with sustainability expectations. Placing these expectations outside the CISG risks fragmented outcomes across domestic systems and undermines the Convention's international character.^[34]

³¹ Najam Akber Anjum, Zubair Ali Shahid, Muhammad Shujaat Mubarik, and Ummad Mazhar, "Role of Green Innovation and Sustainable Supply Chain Management in Firm Internationalization" *Review of International Business and Strategy*, No. 2 (2024): 292-310.

³² Cafaggi, "Regulation through Contracts," 218-258; Mitkidis, "Sustainability Clauses in International Supply Chain Contracts"; De Andrade, "La contribution limitée de la Convention," 119-143.

³³ Ingeborg Schwenzer, Edgardo Muñoz, "Sustainability in Global Supply Chains Under the CISG" *European Journal of Law Reform*, No. 3 (2021): 309.

³⁴ United Nations, United Nations Convention on Contracts for the International Sale of Goods (CISG), opened for signature 11 April 1980, 1489 U.N.T.S. 3 (entered into force 1 January 1988), arts. 4, 7(1), 7(2), 8, 9, 35, 74. https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-09951_e_ebook.pdf.

Recent papers converge on the same conclusion that the CISG can host ethical and social standards when parties juridify them. Schwenger argues that the Convention is flexible enough to accommodate ethical expectations that are included through specific stipulations or that arise from usages of trade.^[35] Wilson examines how the Convention's rules on conformity and damages can be deployed to address child labour risks, provided that the expectation is written into the contract and supported by evidence.^[36] Zatorski contends that sustainable development may be treated as an internationally recognised trade standard that can inform analysis under Article 35 when assessing what goods ordinarily conform to or what specifications are reasonably assumed.^[37] Lee analyzes goods whose market value is linked to compliance with environmental, social, and governance criteria and suggests that a failure to meet such criteria can amount to nonconformity under the Convention.^[38] Taken together, this literature indicates that the CISG can and should address ethical and social standards in international sales contracts, which reflects the growing demand for ethically produced goods in lead markets.

To preserve uniformity and prevent overreach, a clear guardrail test is appropriate. An ethical or social standard should fall within CISG conformity where it is expressly incorporated or demonstrably a usage of trade, where it is stated in objective and verifiable terms, where it is material to the bargain or to the commercial identity of the goods, and where the contract supplies documentary pathways and a graduated remedy structure that includes cure or replacement, price reduction, damages, and avoidance for fundamental breach. When these conditions are met, noncompliance is nonconformity and the Convention's remedies apply. Where they are not, claims should be channelled to domestic law or treated as collateral representations with limited consequences under the Convention.^[39] The details

³⁵ Schwenger, "Ethical Standards in CISG Contracts," 122-131.

³⁶ Simon Wilson, "Ethical Standards in International Sales Contracts: Can the CISG Be Used to Prevent Child Labour?" Master's thesis, Victoria University of Wellington, 2015.

³⁷ Daniel Zatorski, "Sustainable Development as a New Trade Usage in International Sale of Goods Contracts," [in:] *Law and Development: Balancing Principles and Values*, ed. Piotr Szewdo, Richard Peltz-Steele, Dai Tamada (Singapore: Springer, 2019), 227-241.

³⁸ Byung Mun Lee, "ESG and Emotional Non-conformity of Goods in Contracts for International Sale of Goods" *Journal of Korea Trade*, No. 1 (2024): 149-164.

³⁹ Schwenger, "Ethical Standards in CISG Contracts," 122-131; Wilson, "Ethical Standards in International Sales Contracts."

on how the CISG can be interpreted under social and ethical terms shall be discussed further.

2 | Interpretations of the CISG under Social and Ethical Standards in International Supply Chain Contracts

2.1. The Potential of Incorporating Social and Ethical Standards through CISG Interpretation under Article 7

It is necessary to first examine whether Article 7 of the CISG, which is the “gap-filling” provision, can be the key to assess whether the CISG can be the potential bridge to enable “an interpretative path that allows the achievement of public policy goals through private means” by incorporating the social and ethical standards implicitly.^[40] Article 7 of the CISG stated that the Convention shall be interpreted to promote uniformity in its application and the observance of good faith in international trade.^[41] It has been observed that many courts cited this Article in solving cases to make contemporary moral or ethical considerations,^[42] however this is more like a private perspective. Taking into consideration social and ethical standards and sustainable policies, it indeed serves a public purpose in addition to a private objective.^[43] For example, unsustainable practices, such as corruption, environmental destruction, and human rights violations during the supply chain process, which are matters that public policy and legislation must address, can impact the conformity level of final goods in the sale of goods contract.^[44] The CISG, unfortunately, remains silent on

⁴⁰ Nevena Jevremovic, “Unified Law in a Fragmented World: CISG and Conformity in Global Production” *Journal of Law & Commerce*, No. 229 (2025): 249.

⁴¹ Article 7(1), The Convention on the International Sale of Goods 1980 (CISG).

⁴² Ben Kohler, “For an Independent Development of the CISG Beyond Article 7 (2): A Stocktake and a Proposal,” [in:] *Balkan Yearbook of European and International Law 2020* (Springer, 2021).

⁴³ Jevremovic, “Unified Law in a Fragmented World: CISG and Conformity in Global Production.”

⁴⁴ Schwenzer, Muñoz, “Sustainability in Global Supply Chains Under the CISG.”

the extent to which Article 7 can be interpreted to allow the achievement of public policy goals.

Several debates have been made about whether public international law could be invoked to affect the private aspect of sales through the interpretation methods of Article 7. Some scholars argued that Article 7(1) is understood to reinforce the purposes mentioned in the Preamble, including the development of international trade and the removal of legal barriers.^[45] Particularly, the Vienna Convention on the Law of Treaties (1969) mentioned that in the interpretation of conventions, the preparatory work of the treaty and the circumstances of its conclusion can be supplementary means; thus, the Preamble can be one source.^[46] Consequently, in the application of the CISG, it not only extends to the concept of international sale contracts, but also serves the purpose of providing international trade with a viable body of rules for the effective governance of international sales contracts.^[47] Public law has indeed been considered in the interpretation of the CISG, as reflected in the famous New Zealand Mussels case of the German court.^[48] The German court, in solving the case, must interpret whether the “conformity” requirements of goods that the seller must meet in Article 35 CISG should be affected by the public law standards of the seller or buyer in a sale contract. While this case elicited criticism concerning the extent of legal certainty available to buyers and sellers,^[49] as considered from multiple angles, it underscored that the demarcation between private sales law and broader public regulatory frameworks is less distinct than often presumed.

Other viewpoints argue that the Preamble is a mere statement between Contracting States, thus it should bear no supplement on the interpretation of the CISG’s provisions.^[50] Indeed, the Preamble was included in the CISG

⁴⁵ Maren Heidemann, “Object and Purpose as Interpretation Tool in International Commercial Law Conventions: How to Make the ‘Top Down Approach’ Work,” [in:] *The Future of the Commercial Contract in Scholarship and Law Reform* (Springer, 2018).

⁴⁶ Article 32, The Vienna Convention on the Law of Treaties 1969.

⁴⁷ Kohler, “For an Independent Development of the CISG Beyond Article 7 (2): A Stocktake and a Proposal.”

⁴⁸ New Zealand Mussels Case (Bundesgerichtshof (German Supreme Court) 8 March 1995). <https://cisg-online.org/search-for-cases?caseId=6122>.

⁴⁹ Meredith P. Jones, “Whose Mussels Carry the Burden?: Public Law Standard Conformity under the CISG” *Florida Journal of International Law*, No. 3 (2016): 353.

⁵⁰ Kohler, “For an Independent Development of the CISG Beyond Article 7 (2): A Stocktake and a Proposal.”

at a very late stage without substantial discussion, consequently, its relevance for interpreting the CISG is in doubt.^[51] Moreover, neither the CISG does not act as a standalone jurisdiction nor does it have any explanations for the end-users to interpret it autonomously, allowing a wide interpretation that can lead to the “homeward trend” where the interpretation can be influenced by national or regional tradition.^[52]

Any viewpoint has merit, however, the viewpoint that principles outside of the CISG, including public standards or provisions, can be referred to in the interpretation of the CISG, in an appropriate case, if necessary, in compliance with Article 7, is more influenced by the authors’ perspective. Since the sale of goods across borders is not always merely governed by private international law, it can result in some aspects being governed by public requirements, such as pollution or personal injury.^[53] Especially in an international sale contract involved in several stages of the global supply chain process, the sustainable policy regarding goods can act as an implied part of a sale contract. As Mazzacano stated, “focusing on the private aspect, such as the substantive rules within the CISG that govern international sale of goods transactions, without regard for the public law component would neglect an important, complex and symbiotic interplay between these two bodies of law”.^[54]

⁵¹ John Honnold, Harry M. Flechtner, *Honnold’s Uniform Law for International Sales under the 1980 United Nations Convention*, 5th ed. (Alphen aan den Rijn: Kluwer Law International, 2021).

⁵² Kohler, “For an Independent Development of the CISG Beyond Article 7 (2): A Stocktake and a Proposal.”

⁵³ Peter Mazzacano, “Public International Law vs. Private International Law: Competing or Complimentary Intersectionalities in the CISG?,” [in:] *Public International Law and Private International Law: Charting a Blurry Boundary – Towards Convergence or Still Divergence?* (Springer Nature, 2022).

⁵⁴ Mazzacano, “Public International Law vs. Private International Law: Competing or Complimentary Intersectionalities in the CISG?”

2.2. The Application of the Sustainable Standards Included in the Code of Conduct

2.2.1. Sustainability Standards are Expressed in the Contract through Standard Terms

In a sales contract, the buyer may indicate the code of conduct or any sustainability standards in the acceptance made to the seller, in other words, the code of conduct is made and known during the formation of the contract between the parties. This code of conduct can potentially set the requirements for the quality of goods that the seller shall conform to. And the intention to be bound by those standards shall be governed by Article 8 of the CISG concerning the rule of interpretation. Article 8(1) of the CISG states that any statements made by and other conduct of a party are to be interpreted according to his intent, where the other party knew or could not have been unaware of what that intent was. Thus, if the parties are well aware of the existence of the ethical or sustainable standards included in the Code of Conduct, through the expressed statement or annex of the contract, then it shall become part of the contract and can potentially be a vital part to determine the obligations of the parties with the conformity of goods or breach of the contract.

Those mentioned are considered the ideal situation. In fact, the sustainability terms are not always expressed in the offer, acceptance, or in parts of the contract. With the development of technologies and media today, the code of conduct is mostly posted on the suppliers' websites, available in different languages, taking Nike,^[55] Walmart,^[56] Hershey,^[57] and Unilever's Codes of Conduct^[58] as examples. Thus, the question is whether those terms contained on the websites can be part of the sale of goods contract,^[59] although they can be considered as expressed terms. The CISG does not

⁵⁵ "Nike Facility Code of Conduct."

⁵⁶ "Walmart: Our Code of Conduct."

⁵⁷ Ethics and Compliance. https://www.thehersheycompany.com/en_us/home/sustainability/sustainability-issues/ethics-and-compliance.html. [accessed: 10.8.2025].

⁵⁸ Unilever Code of Business Principles and Code Policies. <https://www.unilever.com/files/92ui5egz/production/a7ad961ef886a578ab4dd316b4e5195cbco965ao.pdf>. [accessed: 10.8.2025].

⁵⁹ Schwenzer and Muñoz, "Sustainability in Global Supply Chains Under the CISG."

provide any requirements or instructions on how the Code of Conduct is to be considered when referred to by the parties in the offer and formation of the contract.

Taking into consideration the CISG Advisory Council Opinion No. 13, it states that standard terms are included in the contract if the parties have expressly agreed to the inclusion at the time of the formation of the contract, and the other parties had a reasonable opportunity to take notice of the terms.^[60] This Opinion can be relevant in this case, since the Codes of Conduct may include terms that are quite similar to the standard terms. Consequently, there are several ways that the Codes of Conduct, via the internet, can be incorporated into a sales contract, such as an offer or contract clause providing a hyperlink to the websites containing the Code of Conduct.^[61]

To meet the condition of “reasonable opportunity” for other parties to take notice of the terms, the hyperlink or the attachment of the codes shall be made noticeable to the sellers. Another problem is that those codes of conduct are quite long, with various terms, approximately 30-50 pages, which creates difficulties for the supplier to decide which ones shall be incorporated in the contract. Accordingly, to avoid any arising disputes, the interested parties should address specific terms to be incorporated into the contract.^[62] The provisions on the codes of conduct can be divided into mandatory and quasi-mandatory provisions. The application of each type should be assessed on a case-by-case basis. However, provisions that directly impact the quality of goods in a sales contract, such as public law standards regulating the supply chain in the production of goods, should be treated as mandatory, and sellers must comply with these obligations. Noteworthy, the languages of the codes of conduct should also be the languages that the supplier could reasonably be expected to understand.^[63]

⁶⁰ “CISG Advisory Council Opinion No.13: Inclusion of Standard Terms under the CISG,” 20 January 2013. <https://ciscgac.com/opinions/ciscgac-opinion-no-13/>.

⁶¹ Schwenzer, Muñoz, “Sustainability in Global Supply Chains Under the CISG.”

⁶² Ingeborg Schwenzer, Benjamin Leisinger, “Ethical Values and International Sales Contracts,” [in:] *Commercial Law Challenges in the 21st Century: JanHeller in Memoriam* (Uppsala: Iustus Forlag, 2008).

⁶³ Schwenzer, Muñoz, “Sustainability in Global Supply Chains Under the CISG.”

2.2.2. Sustainability Standards are Implied through Practices

Although not being expressed, the code of conduct can potentially be incorporated in the parties' contract under Article 9(2) CISG, which regulates that the parties are bound by any usage to which they have agreed and by any practices which they have established between themselves. It can be understood from this Article that, in a situation where the code of conduct is known to the parties through past sales, it may meet the standard of evidence to be incorporated into a present contractual relationship.^[64]

Article 9(2) of the CISG also mentions that the parties are considered to have implicitly made applicable to their contract a usage of which the parties knew or ought to have known and which in international trade is widely known. Whether the implied code of conduct can amount to trade usage to apply Article 9(2) may depend on the types of codes. To meet the requirement of being "known or ought to be known" by the parties, standards in the codes of conduct must be widely applied by large companies and bear international characteristics similar to the Incoterms. Some standards are established by international organisations, such as the ISO,^[65] with a variety of codes in a wide range of areas concerning human rights, child labour, and other labour standards that can be considered applicable in this case.^[66] However, the application of implied ethical standards through codes of conduct in sales contracts can be challenging, as each court may have different viewpoints on whether the codes are sufficiently known to the parties, and the interpretation of Article 9(2) of the CISG may depend on case-by-case analysis.

⁶⁴ Ibidem.

⁶⁵ "ISO: Global Standards for Trusted Goods and Services," <https://www.iso.org/home.html>. [accessed: 11.8.2025].

⁶⁶ Schwenzer, Muñoz, "Sustainability in Global Supply Chains Under the CISG."

2.3. The Conformity of Goods under Article 35 CISG and Liability Scope

2.3.1. The Conformity of Goods under Article 35 CISG

Under Article 35(1) of the CISG, the seller is required to deliver goods that are of the quantity, quality, and description required by the contract. This Article does not specifically mention whether the seller must conform to the ethical standards in the process of producing, packaging, and shipping the goods to know whether they are liable for any remedies relevant to ethical defects accordingly. However, the spirit of Article 35(1) is more likely to deal with “express” conformity obligations, which correspond to the descriptions in the contractual agreements between parties.^[67] Thus, the goods are considered conforming not when they meet subjective standards, but rather when they meet the requirements that the parties made in their contract. This notion of interpretation is supported to promote the uniform and autonomous interpretations of the CISG. Wherefore, in the contract that the buyer made clear about the requirements for the goods to conform to their codes of conduct, obviously, the ethical and sustainability standards included in the codes are factors to consider whether the supplier complies with their obligations. How the codes can be considered expressed in the sale contracts between parties has been mentioned above, involving the analysis of Articles 7, 8, and 9 regarding the rules of interpretation.

Besides the expressed terms, the seller is bound to implied contractual agreements regarding good conformity. A leading case of an Austrian court in 2023 ruled that, regardless of contractual provisions, international business customs must be presented as the minimum standard of quality.^[68] However, although CISG recognises these implicit behaviours, as Luca states, “it is first and foremost important to underline that they have a limited scope”.^[69] Particularly, in cases where the parties have no prior agreement, the goods must be fit for any particular purpose expressly or impliedly made known to the seller at the time of the conclusion of the contract, as set out in Article 35(2). The question raised is to what extent

⁶⁷ Villy de Luca, “The Conformity of the Goods to the Contract in International Sales,” *Pace International Law Review*, No. 1 (2015): 22.

⁶⁸ Oberster Gerichtshof 2 Ob 48/02a (Austrian Court, 27 February 2003). https://cisg-online.org/files/cases/6722/abstractsFile/794_89814552.pdf.

⁶⁹ Luca, “The Conformity of the Goods to the Contract in International Sales.”

the standards in the codes or ethical terms can be understood as “made known” to the seller to be seen as part of the contract.

There are several viewpoints on this aspect. One viewpoint is that the New Zealand Mussels Case should be revisited. This case assessed the scope of the seller’s obligations under Article 35(2), and, indeed, the Court ruled that it is unreasonable for the seller to know the public law requirements in the buyer’s place of business.^[70] Thus, considering the standards and sustainability terms, as abovementioned, there are many levels for codes of conduct, including codes that bear national scopes, such as the British Retail Consortium, providing standards for retail businesses in the United Kingdom.^[71] This leads to the same discussion relevant to the Mussels Case, which is when the supplier is from another country, whether they should know and comply with the BRC standards that the buyer subscribed to if it is not noticed in the first place. Following the ruling in the Mussels Case, it can be understood that ethical and sustainability terms are hard to become conformity requirements if they are not notified by the interested parties in the first place, since it is considered “unreasonable” for the other parties to know about such rules. However, from the authors’ viewpoint, with the rising needs for sustainable protection, especially the emergence of human rights and ethical standards into the supply chain, the interpretation of Article 35(2) should be more open for adaptation.^[72]

Indeed, another viewpoint, which is reflected through the CISG Advisory Council Opinion No. 19, agreed with a broad interpretation of the quality of goods under Article 35.^[73] The Opinion has expanded the scope of conformity assessment of goods, encompassing compliance with standards that govern the use of goods, such as public law regulations and industry codes.^[74] To prevent differences in interpretation, the Opinion also noted the limited scope within which the implied standards under Article 35(2) need to be interpreted in the context surrounding the contract.^[75] For example, if the mandatory application were the standard, which is incorporated

⁷⁰ *New Zealand Mussels Case.*

⁷¹ “BRC: About Us,” <https://brc.org.uk/about-us/#>. [accessed: 8.12.2025].

⁷² Jevremovic, “Unified Law in a Fragmented World: CISG and Conformity in Global Production.”

⁷³ “CISG Advisory Council Opinion No 19.” <https://cisgac.com/opinions/cisgac-opinion-no-19/>. [accessed: 12.8.2025].

⁷⁴ “CISG Advisory Council Opinion No 19.”

⁷⁵ “CISG Advisory Council Opinion No 19.”

into a national regulatory framework, which directly affects the use of goods in a given market, then such compliance should be expected.^[76]

Having said that, CISG does not have a standalone jurisdiction, thus, one of the main goals of CISG is to achieve uniformity in its application. The CISG Advisory Council serves this purpose by giving guidance, primarily to legislators, implementing the CISG, or acts that might in turn have any impact on the application of the CISG.^[77] For this purpose, the Advisory Opinion in fact does not have a legally binding effect, and the courts or arbitral tribunals can decide whether to refer to the Opinion when deciding a case governed by the CISG. Although it possesses and encourages States to interpret the CISG in certain ways, the only authority that is truly binding on a court is the prior decision of a superior court in its jurisdiction on the same issue.^[78] Thus, the outcome on whether the courts or arbitral tribunals recognise the incorporation of ethical terms and standards under Article 35(2) depends on the courts' reception.^[79] Accordingly, whether ethical values can be considered as the conformity requirements for the liability side is still in doubt.

In the authors' view, it can be observed that the contract can be a legal link for global supply chains because contracts are also legal instruments, thus, the commitments and performance standards they contain are binding, even in the absence of binding legislation.^[80] And since human rights, especially the rights of labor in the supply chains, as well as the prevention of the abuse of human rights, and many sustainable standards, the viewpoint following the Advisory Opinion No.19 should be taken into consideration to adapt to the new developments in international trade, especially the rise of the supply chain governance to meet the ethical and social standards. Since the sales contract is embedded in the global supply chain process potentially relates to the entire production process.^[81]

⁷⁶ "CISG Advisory Council Opinion No 19."

⁷⁷ Ingeborg Schwenzer, *The CISG Advisory Council Opinions*, vol. XXIII (The Hague: Eleven International Publishing, 2017).

⁷⁸ Joshua D.H. Karton, Lorraine de Germiny, "Has the CISG Advisory Council Come of Age?" *Berkeley Journal of International Law*, No. 2 (2009): 475.

⁷⁹ Karton, Germiny, "Has the CISG Advisory Council Come of Age?"

⁸⁰ "RCP Policy Brief What the EU Corporate Sustainability Due Diligence Directive Says About Contracts," https://media.business-humanrights.org/media/documents/RCP_Policy_Brief_CSDDDContracts_July_8_final.pdf. [accessed: 13.8.2025].

⁸¹ Fabrizio Cafaggi, "Sales in Global Supply Chains: A New Architecture of the International Sales Law," [in:] *Unity and Diversity in the Law of the (International) Sale of Goods* (Cheltenham: Edward Elgar, 2019).

For instance, the CO₂ requirements associated with carbon programmes may require coordination among contracts and contractual performances to minimize carbon emissions along the entire chain.^[82]

2.3.2. Liabilities for Breach of Contract under the Conformity Obligations

Regarding liabilities concerning the non-conformity of goods, parties may resort to usual remedies, including specific performance, avoidance of the contract, price reduction, or a damage claim.^[83] However, these possible remedies also raise the question of how to apply them in connection with the non-conformity resulting from violations of ethical standards.^[84] Since the violations of ethical and sustainability standards are non-physical, such as goods that are a result of the supply chain of illegal labor usage or failing to comply with the sustainable standards. This creates difficulties in the process of examining non-conforming goods and notifying the other parties about such defects.

If the parties express to incorporate the standard terms into their contract for liabilities for non-conforming goods, Articles 38 and 39 of CISG state that the buyer must first notify the seller of the defaults. Taking the ethical and sustainable standards into consideration, the violations of ethical and sustainable standards normally result in the process in which the goods are manufactured,^[85] accordingly, the examination of the non-conformity can be challenging. Moreover, the extent of damage is difficult to ascertain and quantify, as ethical and sustainability violations within production chains often manifest in abstract or theoretical forms. The assessment of whether the non-conformity of goods contributes to a fundamental breach in Article 25 can also be detrimental to considering the remedies. These problems have not yet been solved with any instructions on interpreting the CISG.

Taking into consideration the supply chain process, it is a series of business transactions starting with raw materials and ending with the sale of

⁸² Cafaggi, "Sales in Global Supply Chains: A New Architecture of the International Sales Law."

⁸³ Articles 46, 77, CISG.

⁸⁴ Schwenzer, Leisinger, "Ethical Values and International Sales Contracts."

⁸⁵ Ingeborg Schwenzer, "Ethical Standards in CISG Contracts."

a finished product.^[86] Therefore, for the production of finished goods, there is significant involvement of parties in both upstream and downstream parts. The fact is that detection of non-conforming goods may give rise to potential liability on the part of multiple stakeholders, rather than solely implicating the seller.^[87] From the recognition to the evaluation of whether the non-conformity constitutes a minor or fundamental breach, the effect the defaults impose on the entire chain should be considered, instead of only focusing on the traditional standards, such as quality or quantity. In the context of a sales contract, buyers often acquire goods for further distribution within the market. Accordingly, when assessing defects concerning liability, it is necessary to consider not only the immediate non-conformity, but also any consequential losses arising therefrom. Such losses may include, for example, the buyer's inability to resell the goods in question, to utilise a particular raw material in production, or the exposure to legal claims initiated by downstream customers.^[88]

3 | The Suggestions of Interpretations of the CISG in Relation to the Social and Ethical Standards in International Supply Chain Contracts

As abovementioned, CISG does not create a self-standing jurisdiction.^[89] Opening the scope of interpretation can be an opportunity for CISG to govern a shift in the contract's paradigm, which focuses more on the ethical and sustainable developments rather than merely private notions. Yet it creates the challenge that if the scope of interpreting the CISG can not be determined, it can lead to the diversity of application, or the "homeward

⁸⁶ Vibe Ulfbeck et al., *Law and Responsible Supply Chain Management Contract and Tort Interplay and Overlap* (London: Routledge, 2019).

⁸⁷ Cafaggi, "Sales in Global Supply Chains: A New Architecture of the International Sales Law."

⁸⁸ Florian Mohs, "Enforcing Compliance with Ethical Standards in the Supply Chain: Contractual Remedies under the CISG" *Vindobona Journal of International Commercial Law and Arbitration*, No. 1 (2018): 64.

⁸⁹ Jan M. Smits, "Problems of Uniform Laws," [in:] *International Sales Law: A Global Challenge* (Cambridge: Cambridge University Press, 2014).

trends” which detrimentally affect its goal from the outset. From the analytical viewpoint abovementioned on the notions of the sale contract that might potentially affect the application and interpretation of CISG, it can be seen that the incorporation of social and ethical standards into contracts governed by the CISG is still vague and the discussion has thus far remained at a theoretical level, without any definitive references regarding the method of application.

To prevent the diversity and unpredictability in the interpretation of the CISG, the extension must be well considered. By resorting to codes of conduct or other public law regarding the sustainable supply chains to evaluate the social and ethical impact on the quality of goods and liabilities of parties in the sale contract, it can be considered as a gap-filling system for the external gap in the CISG. Filling external gaps means trying to cover the areas of law intentionally not covered by an instrument.^[90] CISG is one of the instruments that is considered owing to longevity and usefulness through its gap-filling mechanism, particularly through Article 7, which “keeps the Convention sufficiently flexible to accommodate the new needs and circumstances of international trade by providing adequate normative solutions.”^[91] However, instead of resorting to national law, especially with the developments of several legislations regarding the supply chain process for sustainable developments in the EU or the US analysed in the previous part, this gap-filling without a clear determination of the scope can potentially lead to harmful trends. These difficulties can be most effectively overcome by recourse to established mechanisms, particularly Advisory Opinions or scholarly articles, which not only facilitate, but also actively safeguard the uniform interpretation and application of the Convention across jurisdictions.^[92]

Moreover, closely aligning with the purpose of the CISG from the outset is to promote uniformity in application, which reduces the difficulties in international trade and lowers the transaction costs for the parties involved in the international sales contract.^[93] And, since sales contracts are a vital part of the global supply chain, the interpretation of the CISG

⁹⁰ Ulrich Magnus, “Interpretation and Gap-Filling in the CISG and in the CESL” *Journal of International Trade Law and Policy*, No. 3 (2012): 275.

⁹¹ Marko Jovanović, “Forever Young: The Gap-Filling Mechanism of the CISG As a Factor of Its Modernization,” [in:] *Balkan Yearbook of European and International Law* 2020 (Springer Nature, 2020).

⁹² Ibidem.

⁹³ Preamble, CISG.

should not be assessed merely by private contractual notions. From a supply chain perspective, to avoid an overly expansive interpretation and the incorporation of social and ethical considerations into contracts for the sale of goods, limitations may be established by distinguishing between ordinary sales contracts and sales contracts arising from supply chains, thereby determining the conformity of goods and the parties' liabilities in the event of a breach. As Cafaggi suggested, one of the solutions is to have distinct legal regimes for isolated sales and sales embedded in supply chains,^[94] and only the latter can go beyond the incorporation of social and ethical standards. This suggestion indeed might need to be discussed further, but still worth looking at.

4 | Conclusion

Sustainable supply chains now embed social and ethical expectations, alongside environmental performance. Public frameworks have mainstreamed risk-based due diligence, transparency, and traceability across corporate groups and supplier tiers, while regulatory regimes and import controls push documentation and verification obligations upstream. Private governance translates these expectations into auditable practice through codes, certification schemes, and procurement standards, and firms build the capabilities of transparency, traceability, and collaboration to manage risk and capture advantage. In contract law, ethics is part of contract design and performance. Normative grounding comes from Integrative Social Contracts Theory, which recognises local commercial norms bounded by universal hypernorms, and sector practice shows that expressing good faith clauses can uplift behaviour.

As a long-standing instrument, the CISG must adapt to new commercial trends of incorporating ethical and sustainable standards through its gap-filling mechanism in Article 7. Especially when the international sale contracts act as the instrument for the operation of a global supply chain. The discussion on how this uniform law extends by emerging social and ethical values in Codes of Conduct into the parties' sales contract, as

⁹⁴ Cafaggi, "Sales in Global Supply Chains: A New Architecture of the International Sales Law."

well as the conformity of goods under Article 35, is still diverse. With the confirmation from CISG Advisory No. 19 that conformity of goods can be interpreted beyond traditional and physical quality, it can be seen that the interpretation of the CISG can potentially go beyond the private sales aspect, especially on the liabilities of parties in violating social and sustainable standards in the process of manufacturing the goods. However, to prevent being a double-edged sword, the gap-filling mechanism in interpreting the ethical and sustainable standards, especially in sales contracts embedded in the supply chain process, should be well considered to avoid any unpredictability and divergence in application.

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Patent Protection for Plant Varieties in Vietnam: The Key to Success for the Digital Transformation of the Agricultural Sector

Abstract

Patent protection plays a crucial role in fostering innovation and facilitating the application of technology in agricultural production. In Vietnam, where agriculture remains a vital sector in the national economy, the development and implementation of technologies related to plant breeding, propagation, cultivation, harvesting and postharvest processing are of strategic importance – particularly in the context of accelerating digital transformation. However, the current legal framework primarily focuses on plant variety protection for newly created varieties, while the protection of technological processes associated with plant variety development through patent law has not been fully utilized. This underutilization limits the incentives for innovation and weakens the link between research outcomes and practical applications in the agricultural sector. Drawing on international experiences from countries such as Israel and China, where patent systems are effectively integrated into agri-tech development policies, this study examines the role of patent protection in enhancing the technological capacity of Vietnam's agricultural sector. The analysis highlights how the combination of strong intellectual property regimes, increased investment in research and development, and effective

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collaboration among the state, research institutions, and enterprises can serve as a catalyst for agricultural digitalization. The paper concludes by proposing legal and institutional reforms to improve the patent protection of plant-related technological innovations, aiming to promote sustainable, innovation-driven growth in Vietnam's agriculture and contribute to a successful digital transformation of the sector.

KEYWORDS: agricultural digitalization, plant variety, intellectual property, patent protection

1 | The Role of Agriculture in Shaping Vietnam's Economic Development Orientation

Over the nearly four decades since the inception of the Renovation reforms, agriculture has consistently served as a cornerstone of Vietnam's socio-economic development. The sector not only ensures national food security for a population approaching 100 million, but also functions as a critical stabilizing pillar of the national economy during periods of crisis – particularly in the face of global economic volatility, natural disasters or epidemics. The agricultural sector has maintained stable growth, averaging approximately 2.8 to 3% per year over the past decade, thereby reinforcing its strategic importance in the country's overall development trajectory.^[1] This has contributed to maintaining balance within the economic structure and mitigating the adverse impacts of external crises. Even in 2024, the agriculture, forestry and fisheries sector continued to record positive growth of 3.27%, contributing approximately 5.4% to the total value added of the national economy. Although the rate of labor in this sector has declined in structural terms, it still accounts for approximately 27% of the total national workforce, reflecting the sector's enduring role as a sustainable source of livelihood for rural areas (General Statistics Office of Vietnam, 2025).^[2]

¹ Le Minh Hoan, "Vị thế nông nghiệp Việt Nam sau gần 40 năm tiến hành công cuộc đổi mới" *Communist Review*, 11 March 2025. <https://www.tapchicongsan.org.vn/web/guest/kinh-te/-/2018/1061702/vi-the-nong-nghiep-viet-nam-sau-gan-40-nam-tien-hanh-cong-cuoc-doi-moi.aspx>. [accessed: 9.8.2025].

² General Statistics Office of Vietnam, "Báo cáo tình hình kinh tế – xã hội quý IV và năm 2024" Ministry of Finance, January 2025. <https://www.nso.gov>.

Vietnam's agriculture is no longer merely a traditional production sector; it has been, and continues to be, a driver of new growth through increasing product value, expanding exports and fostering the development of global value chains. In 2024, the total export turnover of agricultural, forestry and fishery products reached USD 62.4 billion, representing an 18.5% increase compared to the previous year, with a trade surplus of USD 18.6 billion – the highest level ever recorded.^[3] By 2030, Vietnam aims to be among the world's top 15 agricultural exporters.^[4] To achieve this goal, the agricultural sector must continuously improve crop varieties, production processes and supply chain management, with innovation and intellectual property serving as central pillars.

In addition, agriculture plays a crucial role in the strategy for poverty reduction, job creation and social welfare assurance, particularly in rural, mountainous or remote areas. The agricultural sector accounts for a significant proportion of the national labor force and serves as a nurturing environment for the development of cooperatives, small and medium-sized enterprises and production – consumption linkage models. These linkages foster the modernization of rural areas.

In the context of the digital economy becoming an inevitable trend, agriculture is expected to be among the pioneering sectors in digital transformation. The application of advanced technologies, such as the Internet of Things (IoT), artificial intelligence (AI), blockchain, geographic information systems (GIS), smart sensors and e-commerce in the production and distribution of agricultural products has yielded positive results. These innovations have contributed to improving productivity, product quality, traceability and competitiveness in the international market.

Furthermore, the agricultural sector holds a pivotal position in the national strategy for a circular economy and green growth. The reuse of agricultural by-products, the integration of production with environmental

vn/bai-top/2025/01/bao-cao-tinh-hinh-kinh-te-xa-hoi-quy-iv-va-nam-2024/. [accessed: 10.8.2025].

³ Thanh Tra, “Xuất khẩu nông lâm thủy sản năm 2024 – Kỷ lục mới, vị thế mới” *Nhan Dan Online*, 20 December 2024, <https://nhandan.vn/xuat-khau-nong-lam-thuy-san-nam-2024-ky-luc-moi-vi-the-moi-post851502.html>. [accessed: 9.8.2025].

⁴ Resolution No. 19-NQ/TW of the 5th Plenum of the 13th Central Committee, dated June 06, 2022 “On Agriculture, Farmers and Rural Areas to 2030, with a vision to 2045” and Decision No. 150/QĐ-TTg of the Prime Minister, dated January 28, 2022, “Approving the Strategy for Sustainable Agriculture and Rural Development for the 2021-2030 Period, with a Vision to 2050.”

protection and adaptation to climate change have become core elements in action programs at both ministerial and local levels. In this process, investment and protection of intellectual property rights for research-based products, particularly plant varieties, are considered one of the “key enablers” to ensure sustainable development and innovation in the digital era.

From the above analysis, it is evident that agriculture is not only an essential economic sector of Vietnam, but also plays a strategic role in shaping a sustainable, inclusive and modern economic development model. In this context, plant variety patent protection policies should be regarded as a critical tool for enhancing innovation capacity, attracting investment, and promoting comprehensive digital transformation in the agricultural sector.

2 | Vietnamese Legal Framework on the Protection of Plant Varieties

Under Vietnamese law, plant varieties are protected solely through provisions on rights to plant varieties as prescribed in the Law on Intellectual Property 2005. According to Article 158, a plant variety shall be eligible for protection if it simultaneously meets the following conditions as prescribed by law: novelty, distinctness, uniformity, stability and an appropriate denomination.^[5] A plant variety that meets these requirements shall be granted a protection title upon the request of its owner to the Department of Crop Production and Plant Protection. Once the protection title is issued, the owner is entitled to a set of rights, including the right of commercial exploitation, the right over harvested materials, the right to prohibit others from using and the right to dispose of the protected plant variety.^[6] The term of protection for a plant variety protection title is twenty-five (25) years for woody plants and woody vines, and twenty (20) years for other plant varieties, counted from the date of issuance of the protection title.^[7]

⁵ Article 158 of the Law on Intellectual Property 2005 (amended and supplemented in 2009, 2019, and 2022).

⁶ Article 186 of the Law on Intellectual Property 2005 (amended and supplemented in 2009, 2019, and 2022).

⁷ Article 169.2 of the Law on Intellectual Property 2005 (amended and supplemented in 2009, 2019, and 2022).

In addition to the Law on Intellectual Property, the provisions of the Law on Biodiversity 2008 (amended and supplemented in 2018) establish a legal framework for the protection of plant varieties in Vietnam, particularly through principles and mechanisms for the conservation and sustainable utilization of genetic resources, including endemic and valuable plant varieties. According to Article 4, access to, exploitation, and use of genetic resources must be permitted and accompanied by an obligation to share benefits with the State and relevant communities. Integrating these provisions with the plant variety protection mechanism under the Law on Intellectual Property holds significant importance. Specifically, when entities engaged in research and breeding enter into contracts for access to genetic resources and benefit-sharing, the issuance of a protection certificate for a new plant variety serves as a critical catalyst for promoting transparent benefit-sharing. This regulation aims to prevent the indiscriminate exploitation and use of genetic resources for breeding new plant varieties while establishing a legal mechanism to ensure that economic benefits derived from the commercialization of plant varieties are reinvested into activities supporting biodiversity conservation and development, as well as aiding local communities providing the genetic resources, while safeguarding the exclusive exploitation rights of plant breeders. Furthermore, Articles 55 to 62 of the Law mandate that access to genetic resources (including plant varieties for research or commercial production) must be authorized and conducted through benefit-sharing contracts to ensure a balance of interests among plant breeders, farming communities, and the State. These domestic legal provisions align with the Nagoya Protocol 2010 on Access to Genetic Resources and Benefit-Sharing, to which Vietnam is a party. Thus, the integration of plant variety protection with mechanisms for genetic resource access and benefit-sharing not only fosters innovation in agriculture, but also contributes to sustainable development, harmonizing the interests of researchers, communities, and the State.

The advantage of Vietnam's legal framework on plant varieties is the establishment of a specialized legal system tailored to their biological characteristics, while maintaining consistency and avoiding conflicts with international regulations, such as the 1991 UPOV Convention (International Convention for the Protection of New Varieties of Plants) and the TRIPS Agreement.^[8] The extension of protection rights to harvested materials

⁸ Article 27.3.b of the TRIPS Agreement: "Members may also exclude from patentability:

enhances the capacity to prevent infringements at multiple stages of the production chain. This mechanism contributes to encouraging the breeding and development of new varieties suited to Vietnam's ecological and social conditions, thereby improving the productivity and quality of agricultural products. At the same time, the clear stipulation of protection terms and conditions builds trust for entities investing in plant breeding, thus fostering the development of new, high-yield and high-quality varieties.

However, alongside the benefits brought by the legal provisions on plant variety protection, several significant limitations remain. Specifically, the registration process for protection is often lengthy, with the requirement for technical testing (DUS)^[9] consuming considerable time and resources, creating difficulties for farmers and small enterprises. Furthermore, latent conflicts persist between the rights of plant breeders and the rights of farmers to use traditional varieties. In particular, granting breeders exclusive rights to exploit new varieties may limit farmers' access to seeds, especially when such varieties are developed from genetic resources that already exist in traditional agricultural production. This raises the issue of balancing the promotion of innovation with the protection of farmers' rights and traditional farming practices.

Under the current legal framework in Vietnam, the scope of protection does not extend to plant breeding processes, which constitute a key factor in maintaining and enhancing the innovation capacity of the breeding sector. The absence of protection for such processes not only diminishes incentives for long-term research investment, but also creates a legal gap in safeguarding the legitimate rights of entities engaged in plant breeding. In practice, breeding processes, although potentially incorporating advanced technical solutions, novel technologies and a high degree of creativity, are not independently protected as patents under Article 59.6 of the 2005 Law on Intellectual Property, but rather only as part of the protection granted

- (a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals;
- (b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement."

⁹ Article 3.5 of Decree No. 79/2023/ND-CP: "Technical testing (hereinafter referred to as DUS testing) means the testing of the distinctness, uniformity, and stability of a plant variety."

to plant varieties themselves. This legal limitation renders it difficult to secure direct protection for technological achievements in breeding, such as gene-editing techniques, polyploid breeding and tissue culture. Consequently, competitors may employ similar processes to create different plant varieties without infringing existing rights, thereby intensifying competitive pressures and further reducing incentives for innovation.

Therefore, it is necessary to establish a mechanism allowing for the combination or supplementation of plant breeding process protection in the form of patents. Such a mechanism would ensure comprehensive protection for both the plant variety and the associated breeding technology, while at the same time maintaining a balance between breeders' rights and the broader interests of the agricultural sector.

Patent rights fall under the category of industrial property rights and are governed by Chapter VII of the 2005 Law on Intellectual Property. A patent is defined as a technical solution in the form of a product or process that resolves a specific problem through the application of natural laws^[10]. To be eligible for a patent, an invention must satisfy the criteria of novelty, inventive step and industrial applicability. Protection in the form of a utility solution patent requires only novelty, industrial applicability and non-obviousness to a person skilled in the art.^[11] The term of protection for a patent is 20 years from the filing date, while that for a utility solution patent is 10 years from the filing date.^[12]

In the agricultural sector, the scope of patent protection plays a crucial role in the process of generating propagating materials, notably including asexual propagation techniques, polyploid breeding, gene editing and tissue culture. In parallel, protection for harvested materials is equally significant, encompassing technologies for mechanized harvesting, post-harvest handling and storage. Overall, the protection of these processes directly safeguards core technologies, prevents unauthorized replication and facilitates the recovery of research costs. This is particularly important given that research expenditure often constitutes a substantial proportion of costs in high-tech plant breeding and agricultural production.

¹⁰ Article 12.4 of the Law on Intellectual Property 2005 (amended and supplemented in 2009, 2019, and 2022).

¹¹ Article 58 of the Law on Intellectual Property 2005 (amended and supplemented in 2009, 2019, and 2022).

¹² Article 93 of the Law on Intellectual Property 2005 (amended and supplemented in 2009, 2019, and 2022).

The patent protection mechanism has the advantage of providing broad coverage, encompassing both products and processes. This facilitates the development of new technologies, promotes mechanization and incentivizes the automation of production. In particular, process protection addresses the “gap” in the plant variety protection regime, which only protects the final result (the new variety) and purely biological processes, but does not extend to the underlying technology used to create it. Such protection helps prevent the replication of processes to produce similar or identical varieties without infringing upon plant variety rights. However, the requirements for patent protection are considerably stricter than those for plant variety protection, particularly with respect to novelty and inventive steps. Many domestic agricultural technologies fail to meet these standards, as they involve only minor improvements to pre-existing technologies.^[13] The costs associated with patent registration, maintenance and enforcement are relatively high, requiring financial capacity and legal expertise that farmers or small enterprises often find difficult to meet. In practice, the number of agricultural patent applications in Vietnam remains limited, with the majority originating from multinational corporations or large research institutions.^[14] This situation increases the risk of dependence on imported technologies and reliance on the terms of technology transfer from foreign entities.

¹³ Philip A. Jackman, Blaž Vculek, “Seeds of Innovation: Cultivating Tomorrow’s Growth through Robust Intellectual Property Safeguards for Novel Plant Varieties,” *Sterne Kessler Goldstein & Fox PLLC*, 1 December 2023. <https://www.sterneessler.com/news-insights/publications/seeds-of-innovation-cultivating-tomorrows-growth-through-robust-intellectual-property-safeguards-for-novel-plant-varieties/>. [accessed: 10.8.2025].

¹⁴ Nhi Anh, “Số lượng sáng chế của chủ thể Việt Nam chỉ bằng 1/7 so với chủ thể nước ngoài” *VnEconomy*, 29 March 2024. <https://vneconomy.vn/so-luong-sang-che-cua-chu-the-viet-nam-chi-bang-1-7-so-voi-chu-the-nuoc-ngoai.html>. [accessed: 10.8.2025].

3 | International Experience

In the context of digital agricultural transformation, the registration of intellectual property rights, particularly patents and plant variety rights, plays a pivotal role in promoting the development of crop-based agriculture by safeguarding research outcomes and creating competitive advantages. Agriculture, however, is a value chain that spans from seed production, cultivation and harvesting to post-harvest processing. Therefore, to comprehensively assess the current status of protection and utilization of patents in this sector, it is appropriate to categorize them into three main groups: plant varieties, cultivation technologies and post-harvest technologies. Such categorization enables a comparative evaluation of the effectiveness of patent protection among China, Israel and Vietnam, while also allowing for the identification of best practices from the former two countries in terms of research investment and effective exploitation of intellectual property assets in agriculture.

3.1. China: Plant Variety Protection and AgriTech Patent Framework

Over the past decade, China has emerged as the leading country within the UPOV system in terms of the scale of plant variety protection (PVP) registrations. According to UPOV data from 2023, China received 16,184 PVP applications, accounting for 55.7% of the total number of applications worldwide, demonstrating its dominance in the protection of new varieties among UPOV member states.^[15]

With respect to agricultural inventions, patent landscape reports published by WIPO identify China as one of the principal drivers of AgriTech growth, particularly in sub-sectors related to mechanization and autonomous equipment, the Internet of Things (IoT) and sensors, as well as post-harvest supply chains. Globally, over 3.5 million patent families in the broader AgriFood domain have been published over the past two

¹⁵ World Intellectual Property Organization, *World Intellectual Property Indicators 2024: Plant Variety Highlights*, 2024, <https://www.wipo.int/web-publications/world-intellectual-property-indicators-2024-highlights/en/plant-variety-highlights.html>. [accessed: 11.8.2025].

decades, of which AgriTech accounts for approximately 60% (~2.1 million) and FoodTech for 40% (~1.5 million). However, only around 12% of these constitute international patent families, reflecting the tendency of innovation chains to target domestic markets, especially in Asia and China. Within this landscape, the segment of *autonomous devices in precision agriculture* has experienced an average annual growth rate of 10.4%, with China ranking among the leading sources of patent output alongside the United States and Germany.^[16] In the specific domain of post-harvest sensors, patent data analysis reveals a marked increase since 2014, with the majority of patenting activity originating from Asia and China emerging as the leading granting authority. This trend reflects the region's technological capabilities in quality monitoring of agricultural products, preservation, packaging and the integration of artificial intelligence into post-harvest processes.^[17]

To achieve these accomplishments, China has established an exceptionally robust legal framework, including:

Firstly, the amended Law on Seed of China, effective as of 1 March 2022, expanded the scope of Plant Breeders' Rights in accordance with the UPOV standards. The revision introduced legal protection not only for propagating material, but also for harvested material and incorporated the system of Essentially Derived Varieties (EDV) into the national legislation.^[18]

Secondly, the Regulations on the Protection of New Plant Varieties (2025), comprising 8 chapters and 49 articles, introduce a number of significant amendments. Notably, the scope of protection has been expanded from being limited solely to propagating material to also include harvested products; the term of protection has been extended from 20 to 25 years for trees and vines and from 15 to 20 years for other plant varieties. The Regulations also clarify the guidance for determining Essentially Derived Varieties

¹⁶ World Intellectual Property Organization, *Patent Landscape Report – Agrifood: Autonomous Devices in Precision Agriculture*, 2023. <https://www.wipo.int/web-publications/patent-landscape-report-agrifood/en/7-autonomous-devices-in-precision-agriculture.html>. [accessed: 12.8.2025].

¹⁷ Željko Kevrešan et al., “Insights from a Patent Portfolio Analysis on Sensor Technologies for Measuring Fruit Properties,” *Postharvest Biology and Technology*, 2024. https://www.researchgate.net/publication/376916406_Insights_from_a_Patent_Portfolio_Analysis_on_Sensor_Technologies_for_Measuring_Fruit_Properties. [accessed: 12.8.2025].

¹⁸ ChinaIPR, *China's New Seed Law: Reflection of PVP Expansion and EDV Inclusion*, 2022. <https://www.chinaipr.com/2022/>.

(EDVs) and increase the penalties for infringements of Plant Breeders' Rights. In particular, if propagating material is used without authorization to produce harvested products, Plant Breeders' Rights protection shall still apply, except in cases where the right holder had no reasonable opportunity to exercise their rights at the propagating material stage.

Thirdly, the Judicial Interpretation II, which is issued by the Supreme People's Court of China (SPC), further clarifies and provides detailed guidance on the application of the Law on Plant Breeders' Rights. This document introduces several noteworthy innovations: (i) it explicitly defines the farmer's privilege, allowing farmers to use harvested propagating materials for replanting on their own farmland for non-commercial purposes; (ii) in certain circumstances, it shifts the burden of proof for infringement to the alleged infringer, thereby easing the evidentiary burden for rights holders; and (iii) it permits the application of the technical benchmark comparison method in dispute resolution, assisting in determining the uniformity and stability of plant varieties. These provisions not only aim to increase deterrence against infringement, but also help reduce litigation costs, thereby facilitating more effective protection of breeders' rights.^[19]

Finally, the legal framework fosters AgriTech innovation. China's Patent Law (amended in 2021, effective June 01, 2021) introduced a number of provisions aimed at strengthening the protection and utilization of patents, thereby creating strong incentives for the high-tech agriculture (AgriTech) sector. Key amendments include: (i) reinforcing the principle of good faith in the registration, application and exploitation of patents; (ii) enhancing penalties for infringement, including the application of punitive damages of up to five times the assessed amount; (iii) allowing the extension of patent terms if the examination process is delayed due to objective causes; and (iv) introducing an open licensing mechanism to encourage the sharing of patents where statutory conditions are met. In addition, the Patent Law Implementing Regulations (2023) and the prioritized examination guidelines clearly identify fields eligible for fast-track protection, including food security, post-harvest technology, seed materials and digital agriculture. The prioritized examination mechanism plays a key role in shortening

¹⁹ Mark Cohen, "China's New Judicial Interpretation on Harmonizing Plant Variety Protection with IP Reforms and Agricultural Policy" *China IPR*, 10 October 2021. <https://www.chinaipr.com/2021/10/10/chinas-new-judicial-interpretation-on-harmonizing-plant-variety-protection-with-ip-reforms-and-agricultural-policy-in-chinas-new-judicial-interpretation/>. [accessed: 12.8.2025].

the patent processing cycle: from 2013 to 2017, the number of prioritized examination requests increased by an average of 30% annually, reaching 18,855 requests in 2017; by 2018, the figure had risen to 34,673. With this mechanism, the examination period for patents in priority fields such as AgriTech can be reduced to as little as 03 to 06 months, helping to swiftly bring new technologies into production and commercialization.^[20]

3.2. Israel: High-Tech Agricultural Ecosystem Closely Linked to PVP and Patents

Israel has developed high-tech agriculture on the foundation of being “water-scarce but technology-rich”: precision irrigation, smart greenhouses, environmental sensors-data systems, along with an institutional framework that encourages R&D and strong IP protection. Regarding plant variety protection (PVP), Israel is governed by the Plant Breeders’ Rights Law 5733-1973 and related subordinate legislation; the basic protection term is 20 years, while for trees and vines it can be up to 25 years, consistent with UPOV practices. The competent authority clearly defines the scope of rights and registration procedures, thereby creating legal certainty for plant breeders.

In the patent pillar, Israel’s Patents Law 5727-1967 establishes the examination-publication-opposition sequence; notably, the pre-grant opposition period is three months from the date of acceptance publication, in principle non-extendable helping shorten the lag in bringing technology to market compared with many other systems. The opposition procedure applies uniformly to all related claims, creating an inter partes check mechanism while avoiding delays in grant timelines.^[21]

The science-innovation ecosystem is the decisive foundation. The Volcani Center (National Agricultural Research Organization) under the Ministry of Agriculture, with constituent institutes on agricultural engineering, soil-water-environment, plant protection, post-harvest and food

²⁰ Armstrong Teasdale, “2020 Amendments to China Patent Law” *Armstrong Teasdale Thought Leadership*, December 22, 2020. <https://www.armstrongteasdale.com/thought-leadership/2020-amendments-to-china-patent-law/>. [accessed: 12.8.2025].

²¹ Section 30 Patents Law 5727-1967 of State of Israel.

technology, serves as Israel's "knowledge factory" for agriculture. On the applied side, Netafim originating in the Negev desert (1965-1966), which is marked the invention-commercialization milestone for drip irrigation and still leads global precision irrigation; at the same time, Israel maintains a wastewater reuse rate of nearly 90% for agriculture-institutional-technical infrastructure rare worldwide, enabling endogenous demand for water-saving technologies.^[22]

In terms of funding and application-filing promotion policies, the Israel Innovation Authority (IIA) operates multiple support programs for AgriTech/Agrifood R&D: grants of up to 50% of R&D costs (plus 10% in development zones), mega-fund/technology-incubation programs for startups, and bilateral cooperation funds, such as SIIRD (Israel – Singapore). The co-funding mechanism – paired with an obligation to repay based on revenue – lowers the cost barrier to patent/international (PCT) filing for SMEs, accelerating the commercialization of irrigation, sensor, robotics, and farm-data-analytics technologies.^[23]

Regarding IP activity intensity, WIPO national profile statistics show Israel's high patenting intensity in measurement technology, ICT, and medical-pharmaceutical fields; in agriculture, these platforms translate directly into sensor-, data-, and irrigation/micro-climate-control-based AgriTech. Combined with a stable PVP legal framework and short opposition timelines, Israel's ecosystem creates a "fast loop" from research to protection to pilot deployment to market, allowing planting and post-harvest solutions (handling, storage, cold logistics, AI/sensor-based sorting) to enter production with low delay.^[24]

Policy implications for Vietnam: (i) Design a fast-track route for patents serving food security, irrigation-sensors-greenhouses-robotics, coupled with opposition within a fixed timeframe similar to Israel; (ii) establish IIA-style co-funded R&D programs for AgriTech/Agrifood, prioritizing field trials (pilot) and providing financial support for PCT applications; (iii) strengthen post-harvest research capacity (cold chain, quality sensors,

²² Israel Ministry of Agriculture, About Plant Breeders' Rights, n.d. <https://www.agri.gov.il/>. [accessed: 13.8.2025] presents the 20/25-year protection term and the scope of rights.

²³ Ibidem.

²⁴ World Intellectual Property Organization, *Intellectual Property Statistics Country Profile – Israel*, 2023. <https://www.wipo.int/edocs/statistics-country-profile/en/il.pdf>. [accessed: 12.8.2025].

digital traceability) via specialized centers closely linked to businesses, to shorten the “last mile” between exclusive rights and application.

4 | Policy Implications

Experiences from China and Israel demonstrate that a successful protection model for high-tech agriculture must operate simultaneously on two legal pillars: (i) plant variety protection and (ii) patent protection in AgriTech/Agrifood.

China has established a comprehensive legal framework with priority examination and adjudication mechanisms, expanding the scope of protection from propagating material to harvested material, introducing stricter penalties and issuing judicial guidelines to reduce the costs of rights enforcement. Israel, despite its smaller agricultural scale, has optimized the effectiveness of protection by extending the PVP term, implementing a centralized registration system and maintaining reasonable farmer exemptions, alongside robust research-commercialization support programs.

However, expanding the protection of breeding processes in the form of patents carries the risk of conflict with the right to access genetic resources, particularly where traditional varieties or native germplasm are used. Patent rights, by granting exclusive exploitation, may restrict farmers' access to technology, thereby impacting food security and biodiversity. This necessitates the harmonized coordination of intellectual property law, biodiversity law and international instruments such as the UPOV Convention 1991, the TRIPS Agreement and the Nagoya Protocol 2010.

From a practical standpoint, international experience also underscores that the effectiveness of patent protection is strongly shaped by natural conditions, cultivation practices and production structures. Vietnam, where farmland is fragmented, topography is mountainous and the proportion of perennial crops is high (coffee, pepper, rubber, durian) is difficult to implement large-scale mechanization as Brazil or the United States. Therefore, innovation should target locally adapted solutions, for example, small-scale coffee harvesters for the Central Highlands or sensor-robot systems for fruit orchards on steep terrain. Patent application should cover all three stages: pre-harvest (mini tillers, precision seeders, pest- and disease-resistant varieties), harvest (harvesters, robotic pickers, ripeness

sensors) and post-harvest (processing lines, vacuum packaging, deep-cold storage). The case of Vietnam losing durian export market share to China due to failure to meet post-harvest processing and preservation standards is a clear demonstration of the link between innovation capacity, IP protection and international competitiveness.

Policy implications for Vietnam include: (i) establishing a fast-track examination mechanism for patents serving food security, smart irrigation, sensors, greenhouses and robotics, combined with a limited-time opposition procedure as in the Israeli model; (ii) implementing co-funding programs for AgriTech/Agrifood R&D similar to the Israel Innovation Authority, with priority for field trials and PCT application support; and (iii) strengthening post-harvest R&D capacity (cold chain, quality sensors, digital traceability) through specialized centers closely linked to enterprises, thereby shortening the gap from patent grant to commercial application. This is the legal-technical foundation for modernizing agricultural production, reducing dependence on imported machinery and enhancing the position of Vietnamese agricultural products in global value chains.

From a legal-social perspective, patenting breeding processes can generate conflicts with the right to access genetic resources, particularly where the process relies on traditional varieties or local germplasm. By granting exclusive exploitation, patents may restrict farmers' technological access, affecting food security and biodiversity. Harmonization between intellectual property law, biodiversity law, and international agreements such as the UPOV Convention 1991, TRIPS, and the Nagoya Protocol 2010 is therefore essential.

In practical application, the effectiveness of patent protection in agriculture depends on natural conditions, cultivation patterns and production structure. Vietnam's fragmented farmland, mountainous terrain and high proportion of perennial crops (coffee, pepper, rubber, durian) limit the feasibility of large-scale machinery deployment as seen in Brazil or the U.S. For example, while Brazil employs large-scale integrated coffee harvesters in the Amazon region, Vietnam must develop small, lightweight harvesters adapted to the Central Highlands representing a promising innovation direction for domestic enterprises.

Patent utilization spans the entire production cycle: pre-harvest (mini tillers, precision sowing technology, pest-resistant varieties), harvest (combine harvesters, robotic pickers, ripeness sensors) and post-harvest (processing lines, vacuum packaging, deep-freeze storage). Vietnam's loss of durian export share to China due to insufficient post-harvest processing

and preservation technology illustrates the direct connection between patent protection, technological innovation capacity and global agricultural competitiveness.

From a policy standpoint, integrating plant variety protection with patent protection not only safeguards the interests of breeders and inventors, but also stimulates innovation across the agricultural value chain. This constitutes a critical legal foundation for modernizing production, reducing reliance on imported machinery, increasing value-added and elevating the global standing of Vietnamese agricultural products.

5 | Conclusion

The analysis reveals that both China and Israel have achieved remarkable success in protecting and exploiting intellectual property rights in agriculture, albeit through two distinct strategic approaches: China adopts a comprehensive and large-scale protection model, optimizing legal frameworks, priority examination procedures and expanding the scope of plant variety protection to create a domestic “technology shield”. Israel, by contrast, leverages a fast-paced innovation ecosystem, short statutory opposition periods and robust financial support for R&D to bring technologies from the laboratory to the market with minimal delay and broad international reach. Based on these findings, the study suggests a dual-track pathway for Vietnam: (i) strengthen the legal framework for PVP and patents in an integrated manner, prioritizing AgriTech fields and applying fast-track examination for critical technologies; and (ii) implement financial support and technology incubation policies similar to Israel, encouraging enterprises and research institutions to pursue international protection and commercialization. Combining the breadth of China’s model with the depth of Israel’s model could enable Vietnam to both expand domestic protection coverage and enhance the global value and impact of its agricultural intellectual property assets.

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The European Union's Legal Framework on the Prevention of Child Labour in Global Supply Chains: Lessons for Vietnam

Abstract

Over the past years, the European Union (EU) has been the first to come up with a strong legal framework to eliminate child labour within global supply chains. Through tools like the Directive on Corporate Sustainability Due Diligence (CSDDD), the EU is bringing businesses to report, avert and address the negative human rights effects through child labour among transnational corporations in their operations. This research examines the normativity and institutional underpinnings of an EU regulatory strategy on the prevention of child labour in international trade, in terms of its legal enforceability, engagement of stakeholders, and access to remedy. It also discusses the applicability and flexibility of these tools to the situation in Vietnam, a nation that is becoming more integrated into global supply chains and more internationalized due to trade agreements like the EU-Vietnam Free Trade Agreement (EVFTA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The study uses a comparative legal approach, which shows that both normative synergies and regulatory gaps can be established between EU legal norms and national legislation on labour in Vietnam. The results indicate, that although the legal system in Vietnam has adopted some of the international labour norms, there are some major issues, especially on the aspects of the legal definition, enforcement ability, corporate responsibility, and supply chain transparency. The paper has concluded that the EU experience has lessons to be learnt by Vietnam, on how to strengthen its child labour governance. These involve institutionalisation of the mandatory human rights due diligence, improving the labour inspection regime, and revising the law to suit international and bilateral obligations. This research paper is a part of a wider research on the issue of responsible global trade and legal reform based on human rights in the emerging economies.

KEYWORDS: child labour, supply chains, European Union law, due diligence, Vietnam

1 | Introduction

The protection of human rights in global supply chains is a critical issue, and millions of workers, including children, are subjected to poor working conditions, under-subsistence wages, abuse, exploitation, and occupational health risks.^[1] This fact highlights the need to enhance the legal systems aimed at helping in punishing the problem of child labour. It is in this context that the EU has shown a trailblazer as it has passed major legal tools which include the CSDDD and the FLR. These tools institutionalize the transition process of a mechanism of promoting voluntary compliance to the backing of binding due diligence responsibilities on companies, to eliminate child labour. Such change in legislation policy of EU has direct legal impact on partner countries, especially in the case of the implementation of EVFTA to Vietnam. The present paper is hence aimed at the systematic and analytical development of the legal mechanisms established in the EU, and comparing it with the legal framework in Vietnam, to make appropriate policy suggestions that would guarantee compliance and sustainable integration.

2 | Theoretical Framework

2.1. The Concept of Child Labour and International Standards

To date, the term “child labour” continues to be understood differently among countries. This stems from variations in national circumstances, making it difficult to establish a single universally accepted definition. The most widely accepted explanation is that provided by the International

¹ European Center for Constitutional and Human Rights, *Exploitation & Global Supply Chains*. <https://www.ecchr.eu/en/cluster/exploitation-global-supply-chains/>. [accessed: 1.7.2025].

Labour Organization (ILO), which is frequently cited in research. According to the ILO, child labour refers to work that deprives children and adolescents of their childhood, potential, and dignity, and that is harmful to their physical and mental development. Specifically, it includes work that^[2]: (i) is dangerous and harmful to the child's physical, mental, or moral well-being; (ii) interferes with schooling; (iii) deprives the child of the opportunity to attend school; (iv) forces the child to drop out prematurely; and (v) compels the child to attempt to combine school with long and heavy work.

At present, the prevention and elimination of child labour are guaranteed through core ILO Conventions, particularly Convention No. 138 on Minimum Age (1973) and Convention No. 182 on the Worst Forms of Child Labour (1999). The United Nations also emphasizes the right to protection from economic exploitation under Article 32 of the 1989 Convention on the Rights of the Child (CRC), which has been ratified by nearly all countries, including Vietnam. Accordingly, under the international legal principle of *pacta sunt servanda*, both Vietnam and the EU are legally obliged to eliminate child labour through effective domestication and enforcement of these standards.

2.2. Human Rights and Children's Rights Theory

This theory is a theoretical basis for approaches of law on child labour. According to the Office of the United Nations High Commissioner for Human Rights, human rights are universal legal provisions that guard individuals and groups against human rights-related actions or lack thereof, which interfere with their human dignity, rights, and freedoms.^[3] According to this perspective, child labour may be considered as a severe infringement of the fundamental rights of children who are especially the right to education, holistic development, and the right not to be exploited.^[4] These

² International Labour Organization, *What is Child Labour*. <https://www.ilo.org/topics/child-labour/what-child-labour>, [accessed: 1.7.2025].

³ Office of the High Commissioner for Human Rights, *Frequently Asked Questions on a Human Rights-based Approach to Development Cooperation* (New York-Geneva: United Nations, 2026), 1.

⁴ Michael Freeman, "Children's Rights as Human Rights: Reading the UNCRC," [in:] *The Palgrave Handbook of Childhood Studies*, ed. J. Qvortrup, W.A. Corsaro, M.S. Honig (London: Palgrave Macmillan, 2009): 377-393.

rights were established on the basis of the UN Convention on the Rights of the Child and ILO Conventions No. 138 and No. 182. This theoretical basis is reflected in the EU legal framework, which gives the rights of children prominence in the Charter of Fundamental Rights of the European Union (2000), especially Article 24^[5] and Article 32^[6] which guarantees the rights of children and bans child labour.

2.3. Supply Chain Responsibility Theory

With the scenario of globalization and intense international economic integration, production, distribution, and consumption activities cease to take place in one national territory and, instead, the activities are distributed among two or more countries. This reality has given rise to global supply chains, in which each participating country becomes a crucial link. Therefore, responsibility cannot be limited to where human rights violations occur, but must extend to all actors in the supply chain. The UN Guiding Principles on Business and Human Rights (UNGPs) require businesses to respect human rights by seeking to prevent or mitigate adverse human rights impacts directly linked to their operations, products, or services, through business relationships, even if they did not contribute to those impacts.

The “Guiding Principles on Business and Human Rights: Implementing the United Nations ‘Protect, Respect and Remedy’ Framework” clarifies that a company’s business relationships include partnerships, entities within the value chain, and any state or non-state entities directly linked to its business operations, products, or services.^[7] These provisions form the

⁵ Children shall have the right to such protection and care as is necessary for their well-being. They may express their views freely. Such views shall be taken into consideration on matters which concern them in accordance with their age and maturity.

⁶ The employment of children is prohibited. The minimum age of admission to employment may not be lower than the minimum school-leaving age, without prejudice to such rules as may be more favourable to young people and except for limited derogations. Young people admitted to work must have working conditions appropriate to their age and be protected against economic exploitation and any work likely to harm their safety, health or physical, mental, moral or social development or to interfere with their education.

⁷ United Nations – Office of the High Commissioner for Human Rights, *Guiding Principles on Business and Human Rights: Implementing the United Nations „Protect,*

foundation for the EU's Corporate Sustainability Due Diligence Directive (CSDDD), which obliges companies to conduct human rights risk assessments – covering child labour – throughout their supply chains, regardless of territorial boundaries.^[8] Failure to comply may result in civil or criminal liability depending on the degree of violation.

2.4. Transnational Legal Theory

The issues of law in a highly globalized environment are not national based, but usually transnational. The international issues that currently confront the world, i.e. trade, human rights, environment protection, etc., demand cooperation between nations and regions and development of transnational legal frameworks. Philip Jessup first presented this theory in *Transnational Law*^[9] where he came up with the concept of transnational law as a type of law that governs the behavior of not only the states but also individuals and legal entities across borders as well as the subfields of both the public and the private international law. Elaborating on this, Gunther Teubner came up with the concept of a global law without a state, where legal norms can be generated and function through self-organizing networks in finance, commerce, and transnational businesses.^[10]

This theory was later formalized by peer Zumbansen^[11] in the theory of transnational legal pluralism, that analyzes the interplay of national regulations, international law, and non-state regulations in governing international behaviour. According to Cutler,^[12] the authority of multinational companies and privately established institutions could generate substantive norms of law to regulate market behavior and supply chains. In this regard, law is not limited to the territorial border, but is a distributed

Respect and Remedy” Framework (New York-Geneva: United Nations, 2011).

⁸ European Commission, Proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937 COM/2022/71 final (Brussels, February 23, 2022).

⁹ Philip Caryl Jessup, *Transnational Law* (New Haven: Yale University Press, 1956).

¹⁰ Gunther Teubner, “Global Bukowina: Legal Pluralism in the World Society,” [in:] *Global Law Without a State*, ed. Gunther Teubner (Aldershot: Dartmouth): 3-28.

¹¹ Peer Zumbansen, “Transnational Legal Pluralism” *Transnational Legal Theory*, No. 2 (2010): 141-189.

¹² Claire A. Cutler, *Private Power and Global Authority: Transnational Merchant Law in the Global Political Economy* (Cambridge: Cambridge University Press, 2003).

and movable legal ecosystem. The theory is utilized in the examination of EU legal mechanisms to eliminate child labour in the global supply chains. The EU has also developed transnational legal tools that have formed an ecosystem of laws that bind non-EU businesses, which operate within the EU market, rather than just having recourse to the national law.

3 | Research Methodology

This study is a comparative and evaluative legal analysis, in exploring the EU and Vietnamese legal provisions regarding the prevention and eradication of child labour. The author chose relevant laws, such as the EU legal instruments, international treaties, and the Vietnamese domestic laws that are pertinent in eradicating child labour in a three step process. To begin with, the paper examines the EU laws that deal with the prevention of child labour, such as: Corporate Sustainability Due Diligence Directive (CSDDD), the Forced Labour Regulation (FLR), and Trade and Sustainable Development (TSD) chapters to the chosen EU Free Trade Agreements (FTAs). Second, the research looks at the Vietnamese legal framework of prevention of child labour. Third, this paper employs comparative legal analysis, through which the study is able to determine the similarities and differences between the Vietnamese legal system and that of the EU legal framework on child labour. The results are the foundation of the proposals to reform the laws to enhance the fight by Vietnam to eradicate child labour successfully.

4 | The European Union's Legal Framework for the Prevention and Abolition of Child Labour in Supply Chains

4.1. Regulation on Corporate Sustainability Due Diligence

European Parliament and Council Directive (EU) 2024/1760 of 13 June 2024 on Corporate Sustainability Due Diligence is an important pillar in the EU approach to oblige large corporations to detect, avoid, and manage the risks to human rights and the environment in their entire supply chains. It is important to note that, although this Directive is applied inside the EU, it has an influence on the companies operating in third countries, which have great operations or receive great revenues on the territory of the EU market.

The Directive applies to companies established under the laws of a Member State and meeting one of the following criteria: (i) The company has, on average, more than 1,000 employees and a worldwide net turnover of more than EUR 450 million in the last financial year for which annual financial statements have been or should have been prepared; (ii) The company does not meet the above thresholds, but is the ultimate parent company of a group that meets them, based on consolidated annual financial statements for the most recent financial year; (iii) The company has entered into or is the ultimate parent company of a group that has entered into franchising or licensing agreements within the Union in exchange for royalties with independent third-party companies, where such agreements ensure a common identity, business concept, and uniform business methods, and where the royalties amount to over EUR 22.5 million in the most recent financial year, and provided that the company or group has worldwide net turnover exceeding EUR 80 million in that same year.^[13] Importantly, the Directive also applies to companies established under the laws of third countries, provided they meet certain thresholds.^[14]

The CSDDD explicitly requires companies to identify, address, and remedy all adverse impacts that their operations or value chains may have on human rights in general, and children's rights in particular. The Annex to the Directive lists the key human rights and fundamental freedoms instruments forming the legal basis for due diligence obligations, including the UN Convention on the Rights of the Child, ILO Convention No. 138

¹³ Article 2 (1).

¹⁴ Article 2 (2).

on Minimum Age (1973), and ILO Convention No. 182 on the Worst Forms of Child Labour (1999). It emphasizes that children must be explicitly recognized as stakeholders and rights-holders, requiring companies to give special attention to the adverse impacts on individuals and groups at heightened risk.

The due diligence process outlined in the CSDDD aligns with the six steps identified in the OECD Due Diligence Guidance for Responsible Business Conduct.^[15] Based on this, Article 5(1) of the Directive requires companies to undertake risk-based human rights and environmental due diligence by performing the following actions:

Table 1: Risk-Based Human Rights and Environmental Due Diligence Activities^[16]

Required Action	Legal Basis
Integrate due diligence into policies and risk management systems	Article 7
Identify and assess actual or potential adverse impacts	Article 8
Prioritize adverse impacts where necessary	Article 9
Prevent and mitigate potential adverse impacts; cease actual adverse impacts and mitigate their extent	Articles 10–11
Provide remedy for actual adverse impacts	Article 12
Engage meaningfully with stakeholders	Article 13
Establish and maintain notification and complaints mechanisms	Article 14
Monitor the effectiveness of due diligence policies and measures	Article 15
Publicly communicate on due diligence	Article 16

In practice, companies must take appropriate measures to identify and assess actual and potential adverse impacts arising from their own operations, subsidiaries, or sometimes those of their business partners. They must then implement adequate measures to prevent, mitigate, and remedy such impacts in accordance with the Directive. This involves the respect of basic labour rights including the express outlawing of child labour and forced labour through the ILO core labour standards. These requirements are spanning the entire value chain, which would include suppliers of raw

¹⁵ Organisation for Economic Co-operation and Development, *OECD Due Diligence Guidance for Responsible Business Conduct* (Paris: OECD Publishing, 2018).

¹⁶ Source: Compiled by the author.

materials,^[17] partners involved in the distribution business, and the logistics providers delivering end products to customers.^[18]

To maintain the CSDDD, every EU Member State must provide one or more supervisory authorities to monitor the compliance with the requirements established under national legislation adopted under Articles 7 to 16 and under Article 22 of the Directive. Member States should also ensure the independence of such authorities as well as assure that their powers are exercised without favor, in a transparent and respectful manner of professional secrecy. In addition, the other innovative feature of the CSDDD is that companies which do not comply with their due diligence duties may be liable, civilly, where the breach or omission leads or contributes to damage. In case a company does not conduct adequate due diligence and this results in injury in its supply chain due to the violation of human rights (like child labour use) the victims can enjoy the damages by suing the companies in the national courts of the EU Member States. Although this also has some limitations, such as companies are not registered to be guilty when the breach was completely caused by a rogue supplier, this is a big legal step forward,^[19] as the companies may now be responsible of committing an infringement in third world countries.

4.2. Regulation on Prohibiting Products Made with Forced Labour

In addition to preventive instruments such as the CSDDD, the EU has actively implemented a direct enforcement and deterrent tool at its borders: Regulation (EU) 2024/3015 of the European Parliament and of the Council of 27 November 2024 concerning the prohibition of products made with forced

¹⁷ Article 3 (1) (g) of the CSDDD explains: (i) activities of a company's upstream business partners related to the production of goods or the provision of services by that company, including the design, extraction, sourcing, manufacture, transport, storage and supply of raw materials, products or parts of products and the development of the product or the service.

¹⁸ Article 3 (1) (g) of the CSDDD explains: (ii) activities of a company's downstream business partners related to the distribution, transport and storage of a product of that company, where the business partners carry out those activities for the company or on behalf of the company, and excluding the distribution, transport and storage of a product that is subject to export controls under Regulation (EU) 2021/821 or to the export controls relating to weapons, munitions or war materials, once the export of the product is authorised.

¹⁹ Article 29(1).

labour on the Union market (FLR). The core and most essential task of this regulation is to prohibit the placing on the market and the export from the EU of any products made with forced labour. This prohibition is broad based and covers all industries and all the levels of the supply chain.^[20]

The FLR provides a definition of forced labour based on Article 2 of ILO Convention No. 29 (1930). As per this, forced or compulsory labour refers to all the work or service that is obtained by means of a threat of punishment and which the person in question has not presented himself or his own will. The forced child labour is also included in this definition, including the cases when children are forced to labour, which may be through being trafficked, being enslaved, or forcibly recruited to work in factories, workshops, or on farms. In such a way, the FLR indirectly shields children against the worst forms of child labour, as any product that is associated with exploitative or coercive utilization of children is not permitted to the EU market.

FLR creates a strong enforcement tool, since it provides a direct ban on the market, and thus restricts access to the market directly. Its scope of application is wide and encompasses all fields and all companies, irrespective of size, revenue and location, that has got involved in the production towards the EU market. This will certainly have wide reaching implications for world supply chains. In addition, the added forceful child labour in the ILO-conformist definition gives holistic protection and sense of purpose in the regulation.

FLR has a strict enforcement mechanism that is coordinated at the EU level. The Member States should designate effective authorities that will enforce the Regulation. These authorities, together with the European Commission, are responsible for ensuring the effective and uniform implementation of the FLR across the Union.^[21] Where suspected forced labour occurs outside the EU, the European Commission shall serve as the lead competent authority. Where suspected forced labour occurs within a Member State, the competent national authority will take the lead.^[22]

²⁰ In the FLR, “supply chain” means the system of activities, processes and actors involved at all stages upstream of a product being made available on the market, namely the extraction, harvesting, production and manufacturing of a product in whole or in part, including in the working or processing related to the product at any of those stages.

²¹ Article 5(1).

²² Article 15.

4.3. Trade and Sustainable Development Provisions

The EU's trade policy has transcended its traditional role as a purely economic instrument to become a vital means of realizing and disseminating the Union's core values, including human rights and environmental protection. The integration of dedicated Trade and Sustainable Development (TSD) chapters into new-generation Free Trade Agreements (FTAs) – a practice beginning with the 2009 EU-Korea FTA^[23] – is the clearest manifestation of this policy direction. The TSD chapters of new-generation FTAs are not only aimed at maintaining social and environmental goals in the trade practices, but also it is used as a catalyst to implement sustainable development globally. Mainstreaming the provision of sustainability is entrenched in the legal texts that form the Trade policy of the EU. In particular, Article 3(5) of the consolidated version of the Treaty on European Union (TEU) and the treaty on the functioning of the European Union (TFEU) confirms that the Union will play its role in the peace, security, sustainable development of the earth, free and fair trade, eradication of poverty and protection of human rights, especially to the children. This is not a mere political statement, but it is a legal duty, which becomes the foundation of the addition of the chapters on TSD by the European Commission as a part of modern FTAs.

The TSD clauses of the new-generation FTAs have a clause that fosters sustainable social values especially labour commitments. Among them, the successful eradication of child labour is one of the fundamental components. The labour-related provisions do not establish new labour standards for the signatory countries, but, on the contrary, the EU FTAs compel the parties to the agreement to renew their adherence to the successful implementation of the core ILO Conventions, especially the 1998 ILO Declaration on Fundamental Principles and Rights at Work. The strategy not only consolidates the current governing structure in the world, but also increases the enforceability of such pledges. As an example, Article 13.4 of the EU-Vietnam Free Trade Agreement (EVFTA) stipulates that the parties shall respect, protect, and effectively enforce the main principles in relation to labour, and one of them is the effective abolition of child labour. The phrase “respect, promote, and effectively implement” signifies an obligation of conduct rather than an obligation of result – meaning that

²³ Eline Blot, Antoine Oger, James Harrison, *Enhancing Sustainability in EU Free Trade Agreements: The Case for a Holistic Approach* (Brussels: Institute for European Environmental Policy, 2022).

parties must demonstrate active efforts to realize these principles rather than being held in violation solely due to the continued existence of the problem. Furthermore, “effectively” implies that a country must have in place a functional legal, policy, and enforcement framework to address the issue, without implying that child labour must be entirely eradicated the moment the agreement enters into force. Similarly, the EU–Japan Economic Partnership Agreement (EPA) also lists the elimination of child labour as one of the fundamental labour rights that both parties pledge to uphold.

In parallel with the obligation to respect and implement international standards under the commitment, signatory parties must also observe the non-regression principle. This implies that both parties commit not to undermine or disparage its own domestic labour laws in such a way that will be appealing to trade or to invest. As an example, legalizing the practice of child labour or relaxing the application of the labour laws in the name of competitive advantage. This principle is used to avoid a race to the bottom in labour standards – something that has remained of concern even in the face of globalization.^[24]

The operationalization of labour undertakings regarding labour obligations, in particular the obligation towards the effective abolition of child labour, under the TSD chapters in EU FTAs, is defined by two different models:

This model is applicable to FTAs of the EU, which were signed before 2022. It aims at encouraging collaboration towards enhancing labour standards as opposed to the use of immediate punitive actions. The enforcement mechanism under Chapter 13 of the EVFTA is a typical example, as outlined in Articles 13.16 and 13.17. This mechanism is entirely separate from the general dispute settlement system in Chapter 15. The traditional EU TSD mechanism does not include trade sanctions (such as suspension of preferences or imposition of tariffs) in the event of non-compliance. Instead, compliance pressure stems from political commitments and reputational concerns. The first formal invocation of the expert panel mechanism by the EU occurred in the EU–Korea FTA dispute.^[25]

²⁴ Nita Rudra, *Globalization and the Race to the Bottom in Developing Countries: Who Really Gets Hurt?* (Cambridge: Cambridge University Press, 2008); Ozay Mehmet, “Race to the Bottom: The Impact of Globalization on Labor Markets – A Review of Empirical and Theoretical Evidence,” [in:] *Globalization and the Third World*, ed. Baidyanath N. Ghosh, Halil M. Güven (London: Palgrave Macmillan, 2006), 147–64.

²⁵ European Commission, Directorate-General for Trade, “EU steps up engagement with Republic of Korea over labour commitments under trade agreement”,

Second, the “hard” model. The most significant innovation in this model is the proposal to apply the general dispute settlement mechanism of the FTA to disputes arising under the TSD chapter. In other words, violations of TSD commitments are to be treated with the same procedural rigour as tariff or technical barrier disputes, with legally binding rulings issued by adjudicative panels. Consequently, trade sanctions may be applied if the losing party fails to comply with the ruling within a reasonable time frame. Under the SSDS mechanism, the winning party may suspend trade concessions, such as preferential tariffs, against the non-compliant party.^[26]

Table 2: Comparison of Enforcement and Dispute Settlement Mechanisms in Selected EU FTAs (2019–present)^[27]

FTA	Key Provisions	Dispute Resolution Procedure	Legal Effect / Sanctions
EU–Korea	Art. 13.14: Consultations Art. 13.15: Expert Panel	1. Request for consultations 2. If unresolved after 90 days, establishment of Expert Panel 3. Non-binding report with recommendations	No binding effect; no sanctions. Used as basis for dialogue.
EU–Canada (CETA)	Art. 23.9: Gov’t Consultations Art. 23.10: Expert Panel	Same procedure as Korea FTA	No binding effect; no suspension of obligations. Based on Commission monitoring and dialogue.

Press release, 17 December 2018; European Union, “Republic of Korea – Compliance with Obligations under Chapter 13 of the EU–Korea Free Trade Agreement: Request for Consultations by the European Union”, 17 December 2018.

²⁶ Eline Blot, *Reflections on the New Approach to the TSD Chapters for Greener Trade* (Brussels: Institute for European Environmental Policy, 2023).

²⁷ Compiled by the author from the following agreements: Comprehensive Economic and Trade Agreement (CETA) between Canada, of the one part, and the European Union and its Member States, of the other part. 2016. Signed 30 October. Official Journal of the EU L 11 (14 January 2017); Economic Partnership Agreement between the European Union and Japan. 2018. Signed 17 July. Official Journal of the EU L 330 (27 December 2018); Free Trade Agreement between the European Union and its Member States, of the one part, and the Republic of Korea, of the other part. 2010. Signed 6 October. Official Journal of the EU L 127 (14 May 2011); Free Trade Agreement between the European Union and New Zealand. 2024. Signed 22 March. Official Journal of the EU L 2024/866; Free Trade Agreement between the European Union and the Republic of Singapore. 2018. Signed 19 October. Official Journal of the EU L 294 (14 November 2019); Free Trade Agreement between the European Union and the Socialist Republic of Viet Nam (EVFTA). 2019. Signed 30 June. Official Journal of the EU L 186 (12 June 2020).

FTA	Key Provisions	Dispute Resolution Procedure	Legal Effect / Sanctions
EU-Singapore	Art. 12.16: Gov't Consultations Art. 12.17: Expert Panel	90-day consultation deadline; panel formed thereafter	Non-binding recommendations; no sanctions.
EU-Japan (EPA)	Art. 16.17: Consultations Art. 16.18: Expert Panel	3-month consultation period; panel report with recommendations	Non-binding; compliance depends on state action plan.
EU-Vietnam (EVFTA)	Art. 13.15: Consultations Art. 13.16: Expert Panel	90-day consultation; panel report with recommendations	Non-binding; no trade sanctions.
EU-New Zealand	Chapter 26: Common Dispute Settlement	1. Compulsory consultations 2. If unresolved, adjudicative panel ruling	Binding ruling; non-compliance may trigger trade retaliation.

It should be mentioned that the new hard model does not mean the complete abandonment of dialogue and cooperation as those are still the basic tools. Instead, the EU has added its own weapon, in the form of hard power sanctions. This addition is aimed at maintaining positive interactions, but also with a credible enforcement in cases where core commitments are flouted by partner countries, especially in matters of principle like child labour. Even the fact that sanctions even though they are hardly used and only used as a final resort, adds weight and seriousness to consultations and dialogue at the early stages, which generate greater incentives to resolve through cooperation.

5

Vietnam’s Legal Framework on the Prevention and Elimination of Child Labour

In spite of positive socio-economic development and attempts to advance the legal system, child labour remains an ongoing concern in Vietnam throughout the decades. As of 2023, the General Statistics Office and the ILO reported 269,604 children aged 5-17 in child labour in Vietnam or 36.9% of the total number of children in child labour (Wikileaks, 2023). Out of them 76.4 percent were rural and 23.6 percent were urban. According to age, the majority (65.6) were 1517, and the rest (28.7) were 1214 and 511 respectively. Child labour is distributed amongst the four industry sectors as follows.

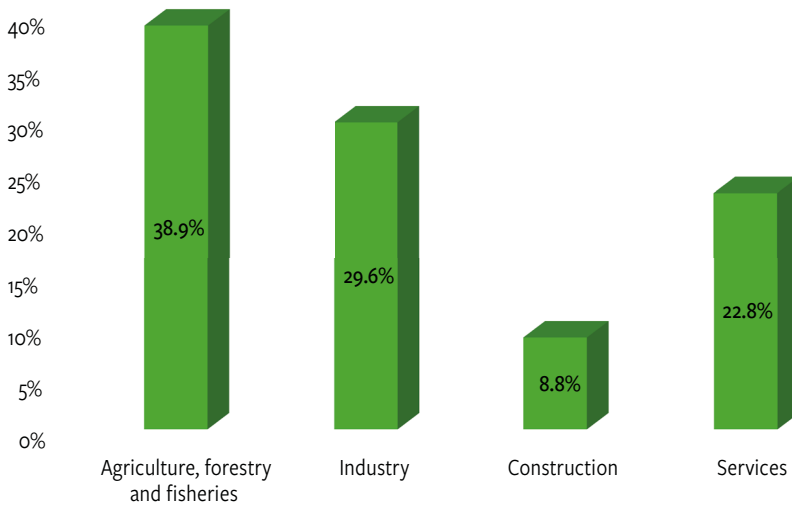


Figure 1: Sectoral Distribution of Child Labour^[28]

The statistics show that child labour is not distributed, but rather concentrated in rural locations and mostly in agriculture, forestry, and fisheries; activities where state surveillance and protection systems are not well established. Understanding the gravity of this concern, Vietnam has been found to be politically committed and actively in tandem with the international standards. The adoption of two of the main ILO Conventions, namely Convention No. 138 on Minimum Age and Convention No. 182 on the Worst Forms of Child Labour, is a significant legal step. Meanwhile, in the last ten years, Vietnam has come to an estimated relatively comprehensive, cross-sectoral national legal framework to internalize international obligations, using principal tools such as the Constitution, the Labour Code, and the Law on Children, the Penal Code, and a plethora of implementing decrees and circulars. Key aspects include:

First, clauses on fundamental definitions. The 2019 Labour Code is silent on the use of child labour, but it implies the use of minor workers (*lao dong chua thanh nien*). Article 143(1) refers to minor workers as those that are below 18 years of age. In the meantime, the 2016 Law on Children provides the definition of children as people less than 16 (Article 1). This difference between the definition of a child (under 16) and the definition of a minor worker (under 18) could pose a legal gap to protect the workers between 16 and less than 18. Moreover, the Law on Children also offers a definite

²⁸ Source: General Statistics Office & ILO (2025).

definition of the concept of child exploitation. Article 4(7) defines it as acts of compelling children to work contrary to labour laws; engaging them in pornography or exploitative tourism; or involving them in prostitution and other profit-driven purposes. Accordingly, any violation of legal provisions on the employment of minors under the Labour Code can be considered a form of child exploitation, and thus prohibited by law. Meanwhile, there is no unified definition of “child labour” at the EU level; EU documents cite international standards (UN Convention on the Rights of the Child, ILO 138, 182) as the basis for their definition. In general, child labour is understood as work that deprives children of their childhood, harms their development, and should be eliminated. The EU considers children as a special group that needs to be protected in the supply chain.

Second, provisions on the minimum working age. Vietnamese labour law currently adopts a tiered age structure to balance child protection with socio-economic realities. Article 143 of the 2019 Labour Code sets the minimum working age at 15, aligning with Article 2 of ILO Convention No. 138. Acknowledging that children may engage in some forms of economic activity suitable to their age and development, the law allows for exceptions under strict conditions. Likewise, EU countries adhere to ILO Convention 138: the minimum working age is usually 15 (it can be lower for light work or apprenticeships; the worst jobs under 18 are strictly prohibited). At the same time, the CSDDD requires businesses to respect the minimum age according to international standards. Some EU countries allow children to participate in cultural and artistic activities under conditions, similar to international practice.

Third, provisions on the employment of minor workers. In addition to age and job-type restrictions, Vietnamese labour law sets strict principles and conditions on employing minors to protect their development and prevent child labour. Generally,^[29] minors under 18 may only be assigned tasks appropriate to their health and developmental needs to ensure their comprehensive growth. Employers must take care of their labour, health, and education, providing opportunities for minors to attend school, receive vocational training, and develop professional skills. Additionally, the hiring of minors requires consent from their parents or legal guardians, and employers must maintain a separate register with full information on each minor employee (name, age, job, periodic health check results), which must be presented upon request by competent authorities.

²⁹ Article 144 of the 2019 Labour Code.

Fourth, provisions on prohibited jobs and workplaces. To protect minor workers' health, safety, and morality, Article 147 of the 2019 Labour Code prohibits minors aged 15-18 from engaging in certain jobs and working in certain environments. These prohibitions are detailed in Annex III (harmful jobs) and Annex IV (hazardous workplaces) of Circular No. 09/2020/TT-BLĐTBXH. Overall, these lists are relatively comprehensive and address multiple physical and safety risks for child workers. The EU prohibits the worst forms of child labour under ILO Convention 182, including hazardous work. EU member states have their own lists of prohibitions on the employment of persons under 18 years of age in arduous or hazardous work, but there is no common list for the EU. The CSDDD requires businesses to assess the risks of child labour in their supply chains, paying particular attention to hazardous work, in order to prevent it in time.

Fifth, liability and sanctions for violations. Decree No. 12/2022/ND-CP (dated 17 January 2022) is the principal legal document on administrative sanctions in the labour sector. Article 29 is dedicated to violations related to the employment of minor workers, with fines ranging from: (i) VND 1 million to VND 2 million; (ii) VND 20 million to VND 25 million; and (iii) VND 50 million to VND 75 million – depending on the severity of the violation. In cases where the conduct poses significant social danger, criminal liability applies. Article 296 of the 2015 Penal Code (amended 2017) criminalizes the use of persons under 16 in hazardous or toxic jobs. However, for criminal liability to arise, one of two conditions must be met: (i) the offender has been previously sanctioned or convicted for the same act and reoffends; or (ii) the act causes bodily harm of 31-60% to one person or the same cumulative level to multiple persons. The punishment can increase to 3-7 years, or even 5-12 years, of imprisonment under aggravating circumstances, such as repeat offenses or fatal consequences. Meanwhile, each EU country will designate an agency to monitor compliance with the CSDDD, with the right to inspect and require businesses to stop violations. Sanctions include administrative fines (the level of fines is determined by each country, and can be very severe) and civil liability – victims have the right to sue for compensation if businesses cause damage due to neglecting their due diligence obligations. FLR empowers EU customs to investigate and ban imports of goods if forced labor (including forced child labor) is detected. The EU enforcement mechanism, as well as public pressure, causes a two-fold pressure, that is, obliges to go through compliance procedures and charges violations.

6 | Comparative Assessment and Lessons for Vietnam

The analysis of the legal landscape on preventing and eradicating child labour in the EU and Vietnamese jurisdictions shows a certain number of areas of convergence as well as areas of divergence that provide valuable insights into reforming the policy in the Vietnamese jurisdiction. These results can be divided into the following major dimensions.

6.1. The Approach to Corporate Responsibility

The legal system of the EU has been transformed back from the voluntary promotion to compulsory legal requirements with a high preventive character. Specifically, the CSDDD is a clear indication of this strategy since it asks firms to take an active role in ensuring that they do due diligence to be able to spot, avert and control the risks of child labour in their entire supply chain. In comparison, the Vietnamese law has been predominantly reactive with its provisions quite indicative of a compliance-after-violation model. The Law on Enterprises and other legislation regulating the matters demand that businesses adhere to the ban on child labour usage and provide penalties, in case of violation. Nonetheless, the law is yet to create a liability on businesses to carry out comprehensive supply chain due diligence. With this regulatory gap, the recommended action to be taken by Vietnam is to study, develop and progressively introduce a due diligence mechanism akin to the CSDDN, particularly on big companies and those that are involved in export supply chains. By legalizing the duty of due diligence, the companies would not just get motivated to actively scrutinize and sanitise their supply chains, but it would also make the Vietnamese firms more competitive in the global market, especially in the EU.

6.2. Enforcement and Sanction Mechanisms

As demonstrated in the analysis, the EU law has developed a comparatively efficient, so-called dual-pressure mechanism, whereby the CSDDD holds the liabilities of procedural failures (poor due diligence, which can result in fines or civil proceedings), whereas the FLR holds the liabilities on the outcomes (products associated with forced labour, including child forced labour, must not enter the market). The power of the victims to

bring civil distress is a breakthrough in the enforcement mechanisms. Sanctions are mainly administrative or criminal in Vietnam and the state would enforce them after violations have been identified. This restricts the value of prevention. This means that Vietnam needs to think of enhancing its legal system on corporate civil liability. Mechanisms ought to be instigated to enable child labour victims or their representatives to prosecute lead companies in the supply chain for damages, in the occasion that it can be proved that a deficiency of supply chain oversight resulted in the infringement. Meanwhile, the Penal Code needs to be modified to deter and prevent more. This involves an extension of the age of protection under the hazardous child labour provisions to any age below 18 years old in compliance with ILO Convention No. 182 as well as criminal liability of purposeful use of child labour in the forbidden work notwithstanding the absence of harm evidence.

6.3. The Scope of Legal Application

As can be seen, EU laws have a distinctly transnational nature, and laws like the CSDDD and FLR have extra-territorial applicability to companies and operations which are not located within the EU and which also hold companies accountable to their entire global supply chains. Conversely, the law of the Vietnamese nowadays is mostly limited to domestic settings and the liability of corporations can be evaluated only in connection with the first-tier suppliers or direct operations. Even though Vietnam is not able to enact extraterritorial laws, it may still apply the principle of supply chain responsibility to the local legislation. This may include binding regulations, which hold large businesses to responsibility and accountability of sub-contractors, household manufacturers, and small-scale suppliers in their supply chains, where the threat of child labour is the greatest, particularly in the informal economy and agriculture.

6.4. Mainstreaming Labour Standards into Trade Policy

It can be analyzed that the EU employs trade as a variant of so-called soft power in order to spread the values of human rights. This policy can be best illustrated in the TSD chapter of FTAs like EVFTA. Most notably the EU is moving away from a more enforcement based on dialogue and moving

towards a more rigorous one, which could entail trade sanctions in case of non-compliance to TSD commitments. Vietnam is a direct participant in FTAs, including the EVFTA, which is directly influenced by the changing trend. Although Vietnam has tried to tame its labour commitments, good execution is still a major challenge. It is thus important to understand that the adherence to the labour provisions in FTAs goes beyond the international legal requirement to uphold and continue enjoying economic gains. This shift in the EU towards a hard enforcement policy is an alarming sign. Based on this, Vietnam should be more active and resolute towards the enforcement of labour laws, especially at the local level and in the major export industries, to prevent any future conflicts of trade.

6.5. The Role of Stakeholders and Transparency

The CSDDD lays particular importance on the involvement of the stakeholders, such as children and their organizations, whereby companies must engage in significant consultations and develop effective grievance mechanisms. There is also the requirement of transparency and publicity on due diligence activities. In Vietnam, social organizations and communities have little influence in ensuring that a corporation adheres to labour law. The process of corporate grievance is not a well-regulated process with strong legal mechanisms as in the case of the EU. So, Vietnam requires improving its legal system to improve the oversight of social institutions, trade unions and communities. The government should encourage – and eventually require – enterprises to establish transparent, accessible, and safe internal grievance mechanisms for workers and communities to report suspected child labour. Promoting a culture of transparency should include requiring large enterprises to disclose their policies and measures for preventing child labour in their annual or sustainability reports.

7 | Some Recommendations for Vietnam

Based on the EU's experience in preventing child labor that has been analyzed and compared with the practice in Vietnam in the past, the author proposes the following specific recommendations:

First, research to establish an inter-sectoral steering committee on preventing child labor. The Government should assign the Ministry of Home Affairs to preside over, and coordinate with, the Ministry of Industry and Trade, the Ministry of Agriculture and Environment, the Vietnam Chamber of Commerce and Industry (VCCI), and relevant agencies, to establish a steering committee to review legal gaps and develop a plan to implement a mechanism for assessing corporate responsibility for child labor. In addition, develop pilot guidelines on supply chain assessment, select a number of key export industries, such as textiles and seafood, to pilot the requirement for enterprises to conduct assessment of responsibility for child labor in the supply chain. VCCI and industry associations coordinate to develop a set of guidelines for businesses on the appraisal process (based on OECD guidelines and EU experience), including how to evaluate suppliers, set criteria for no child labor when signing contracts.

Second, implementing risk-based point inspections. The Ministry of Home Affairs directs labor inspectors to focus on areas and industries with high risks of child labor, such as agriculture in the Central Highlands provinces, aquaculture in the Mekong Delta. Piloting inspection methods based on risk analysis: using data from child labor surveys, education statistics, to prioritize inspections of establishments with signs of suspicion. Along with that, it is necessary to strengthen communication and training, organize communication campaigns to raise awareness for businesses and the community about child labor laws and new requirements from the EU market. At the same time, open short-term training courses for labor inspectors on skills to detect hidden child labor and methods to approach child labor, train businesses on building internal complaint mechanisms, and handling procedures when detecting child labor.

Third, continue to study and perfect the legal framework on enterprise responsibility assessment. On a pilot basis, the Ministry of Home Affairs will preside over drafting legal regulations, which can be in the form of a decree or added to the current Labor Code on human rights assessment obligations for businesses. In the short term, the regulations can be limited to a number of risky export industries (textiles, agriculture) and applied to businesses on a certain scale, then gradually expanded. Refer to the experience of CSDDD to clearly define the responsibilities of businesses in assessing and reporting child labor risks of suppliers. The new regulations need to clearly establish the joint responsibility of leading enterprises for child labor violations in subcontractors and households in their supply chains. At the same time, it is necessary to supplement regulations allowing

victims of child labor or their legal representatives to sue for compensation against enterprises if they can prove that the lack of control of the enterprise contributed to the damage.

Fourth, increase the maximum administrative fine for violations of child labor (higher than the current VND75 million) to increase deterrence. Study the expansion of the scope of Article 296 of the Penal Code to protect people under 18 years old (instead of under 16) from hazardous labor, in accordance with Convention 182. At the same time, improve the process of surprise inspections based on reports from people or organizations, maintain an effective hotline and information portal for reporting child labor, and connect directly with inspection agencies for timely inspection and handling.

Fifth, strengthen international cooperation and the role of businesses. The Ministry of Home Affairs continues to cooperate closely with the ILO and the EU in technical projects to improve the capacity to enforce child labor laws. Actively participate in the 8.7 Alliance on the Elimination of Child Labor to learn from international experience. VCCI and industry associations organize forums and conferences to share good practices among businesses on controlling child labor in the supply chain, creating a network of pioneering businesses. Internalization of international standards and good execution of appraisal mechanisms in the long run will enable Vietnam to satisfy the needs of the major trade partners, retain its good image, and competitive power in its increased involvement in the global supply chain.

8 | Conclusion

The new legal framework provided by the EU, including the Corporate Sustainability Due Diligence Directive (CSDDD), the Forced Labour Regulation (FLR) and the Trade and Sustainable Development (TSD) chapters, has created a transnational legal mechanism that is binding. The process is a transition of soft law to hard law and, in this case, a compulsory due diligence on businesses within the supply chains, with the aim of ending child labour, and forced labour and thus, recreating the global business standards. In the case of Vietnam, being an EU partner in the EVFTA, these regulations not only provide the country with a chance to improve

its reputation as a trading partner but also a challenge of opening its institutional, legal, and enforcement loopholes.

Based on the experience of the EU, the following key policy directions can be reproduced in Vietnam: (i) Mandatory human rights due diligence of the businesses; (ii) Increasing the capacity of the labour inspection and judicial mechanisms in the context of effective access of remedy; (iii) embedding the labour standards into the broader framework of sustainable development and corporate accountability; and (iv) using the EVFTA as an impetus to reform the legal frameworks. Thus, it is not only a compliance mandate, but also a strategic necessity to make the Vietnamese legal framework consistent with international standards in order to facilitate sustainable development and ensure the protection of human rights.

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The Necessity for a Legal Framework to Regulate the Environmental Impact of Data Centers in Vietnam: International Experiences and Recommendations for Vietnam

Abstract

As Vietnam accelerates its digital transformation, data centers have quietly become essential infrastructure for the economy. However, behind this role lies a concerning reality: their development is running counter to the nation's environmental commitments, particularly the "net-zero" target for 2050. The core issue lies in a legal vacuum. Vietnam's current legal framework, particularly the 2020 Law on Environmental Protection, was designed for traditional industries and lacks specialized regulations to manage the unique impacts of data centers. Key internationally recognized environmental performance

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indicators, such as Power Usage Effectiveness (PUE) and Water Usage Effectiveness (WUE), are almost entirely absent from normative documents. The lack of synchronization among environmental, energy, and technical infrastructure standards has created a fragmented legal environment, diminishing the effectiveness of state governance. An analysis of international experience reveals that advanced nations have proactively established effective legal frameworks. The European Union and Germany apply mandatory regulations with clear roadmaps for PUE and renewable energy adoption. The State of California (USA) utilizes a procedural mechanism, compelling investors to demonstrate and propose measures to mitigate environmental impacts from the initial permitting stage. Meanwhile, Singapore implements a comprehensive state management strategy through its Green Data Centre Roadmap. Drawing from these lessons, this paper proposes a system of synchronized solutions for Vietnam. The objective is not merely to “control” negative impacts, but to construct an intelligent legal corridor that transforms green standards into a genuine competitive advantage, enabling Vietnam’s digital infrastructure to develop robustly and sustainably.

KEYWORDS: legal framework; environmental impact; Data Centers (DCs)

1 | Introduction

The global digital transformation process is profoundly restructuring the economy, while also posing an urgent demand for a sufficiently robust technical infrastructure^[1]. In this context, data centers have emerged as a core, indispensable foundation. Functioning as hubs for the convergence, processing, and distribution of massive data resources, data centers are not only a prerequisite for the operation of cloud computing, artificial intelligence (AI), and the Internet of Things (IoT), but also for online public services. The relentless increase in demand for digital services is the primary driver for the construction and expansion of data centers, making them organically and inseparably integrated with the contemporary economic structure.^[2]

¹ Krzysztof Kaczmarek, Mirosław Karpiuk, Claudio Melchior, “A Holistic Approach to Cybersecurity and Data Protection in the Age of Artificial Intelligence and Big Data” *Prawo i Więź*, No. 3 (2024): 103-121.

² Dirk Turek, Peter Radgen, “Optimized Data Center Site Selection – Mesoclimatic Effects on Data Center Energy Consumption and Costs” *Energy Efficiency*, No. 3 (2021): 33.

However, alongside the outstanding benefits in economic growth and technological innovation, the operation of contemporary DCs is posing serious environmental challenges. The global energy consumption of DCs, estimated at 460 terawatt-hours (TWh) in 2022, is projected to exceed 1,000 TWh by 2026.^[3] The massive-scale consumption of energy and water resources, coupled with significant greenhouse gas emissions, is placing heavy pressure on ecosystems and directly threatening efforts to achieve the Sustainable Development Goals (SDGs) on a global scale.

Within this general trend, Vietnam has identified digital transformation as a strategic driver for its new development phase, with major orientations outlined in the National Digital Transformation Program and Resolution No. 57-NQ/TW. This inevitably leads to the need to expand DC infrastructure to meet the data storage and processing demands of the digital economy. Here, a major policy paradox has emerged: the development of this essential digital infrastructure risks running counter to Vietnam's strong political commitment to sustainable development, particularly the goal of achieving net-zero emissions by 2050, as declared at COP26.^[4]

This paradox becomes even more pronounced when considering the existing legal gaps. Although the 2020 Law on Environmental Protection and related documents have created a general regulatory framework, Vietnam still lacks a specialized, comprehensive, and effective legal corridor to regulate the specific environmental impacts of the DC sector. Technical regulations on energy efficiency, water use, emissions management, or environmental data reporting obligations for DC operators remain fragmented, not specifically defined, and lack sufficiently strong enforcement mechanisms. In practice, although some businesses have begun to integrate ESG (Environmental, Social, and Governance) factors into their reporting, the disclosure of quantitative data on the environmental impact of DCs remains limited, revealing a significant gap between commitment and practical action.^[5]

From the issues outlined above, the study of establishing an effective legal framework to control and regulate the environmental impacts of DCs in Vietnam has become urgent. The authors aim to clarify the urgency of

³ Minh-Thanh, "Xây dựng trung tâm dữ liệu phục vụ AI, nhu cầu tiêu thụ điện tại châu Á tăng vọt," *Nhịp sống kinh tế Việt Nam & Thế giới*, 7 May 2024.

⁴ Thu Cúc, "Việt Nam chủ động triển khai bài bản các cam kết tại COP26" *Báo điện tử Chính phủ* (baochinhphu.vn), 1 November 2023.

⁵ Huỳnh Diệu Ngân, "Hành trình ESG của Việt Nam: Thực trạng và giải pháp" *Tạp chí Kinh tế và Dự báo*, 19 June 2024.

this issue by: (1) Analyzing the current situation and assessing the level of environmental impact of DCs globally and in Vietnam; (2) Examining, comparing, and evaluating legal models, policies, and sustainable practices for DCs in several typical countries; (3) Based on this, proposing recommendations to improve Vietnam's legal framework, regulating DC activities in a manner consistent with green growth and sustainable development goals.

The paper employs the following research methods: (i) The legal analysis method is used to analyze regulations and policies in the world and in Vietnam related to the connection between DCs and environmental impact; (ii) the comparative methodology is used to study international legal regulations and policies on regulating the environmental impact of DCs, thereby learning from experiences for Vietnam; (iii) the case study method is used to provide practical illustrations, reinforcing the arguments and analyses presented in the research; and (iv) other scientific methods, including analysis and synthesis, will be integrated throughout the paper to clarify and strengthen the scientific arguments.

On that basis, this research is expected to contribute an in-depth legal perspective, supporting policy-making and shaping new management principles for DCs, a field that is still relatively new within the environmental and technology legal corridor in Vietnam.

2 | Overview of Data Centers and Environmental Impacts

2.1. Overview of Data Centers

2.1.1. Definition and Classification of Data Centers

Technically, according to the international standard ISO/IEC 22237-1:2021, a DC is understood as a specialized structure or group of structures designed to house, connect, and operate information technology and telecommunications equipment for the purpose of storing, processing, and transmitting data⁶. This definition emphasizes that a DC is an infrastructure

⁶ International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC), *ISO/IEC 22237-1:2021 Information Technology—Data Centre Facilities and Infrastructures—Part 1: General Concepts* (Geneva: ISO, 2021).

with a complex physical architecture, requiring compliance with specific technical conditions to ensure the operational capability of large-scale computing systems.

From a legal perspective, many countries have officially recognized DCs in their legal systems. For instance, United States federal law defines a DC as a facility containing electronic equipment for processing, storing, and transmitting digital information, while also requiring it to meet performance standards.^[7] In Vietnam, the 2023 Law on Telecommunications defines a DC as a type of telecommunications facility, including station houses, computer systems, electrical equipment, and auxiliary infrastructure installed for processing, storing, and transmitting data.

From both these approaches, it can be understood that a DC is not just a space for servers, but a specific infrastructure structure, clearly regulated by law, and playing an essential role in managing, exploiting, and protecting data.

Regarding classification, DCs are currently divided according to various criteria, depending on the research objective or management requirements. This paper provides two approaches based on two common sets of criteria: (1) classification by ownership and (2) classification by technical standards.

Firstly, classification by ownership^[8]:

1. Enterprise Data Center: Owned and operated by a single organization (a state agency or private enterprise) to serve its internal data storage and processing needs.
2. Colocation Data Center: A third party provides the infrastructure for businesses to rent space, power, and networking; the business still controls its own equipment and can configure it to its specific needs.
3. Cloud or Hyperscale Data Center: Operated by cloud computing service providers, offering processing resources, storage, and network services to users through a flexible and scalable virtualized environment.

⁷ 'U.S.C. Title 42 – The Public Health and Welfare. <https://www.govinfo.gov/content/pkg/USCODE-2016-title42/html/USCODE-2016-title42-chap152.htm>. [accessed: 22.7.2025].

⁸ FS, "Comprehensive Guide to Data Center Classifications and Categories," FS. <https://www.fs.com/sg/blog/comprehensive-guide-to-data-center-classifications-and-categories-11717.html>. [accessed: 22.7.2025].

Secondly, classification by technical standard (Tier). Based on the Uptime Institute's evaluation system, DCs are divided into 4 levels from Tier I to Tier IV^[9]:

1. Tier I: Basic infrastructure with no redundancy; suitable for systems that do not require continuous operation.
2. Tier II: Adds some redundant components, enhancing reliability compared to Tier I.
3. Tier III: Designed with multiple power and cooling sources, allowing for maintenance without service interruption; suitable for systems requiring high availability.
4. Tier IV: The highest level, ensuring continuous operation even during a severe incident; typically applied to critical systems, such as finance, healthcare, and national data.

The classification of DCs is not only of technical value, but also serves as a basis for developing appropriate legal regulations – from electrical safety and cybersecurity standards to obligations for environmental reporting and energy efficiency. This approach helps ensure transparency, controllability, and a sustainable development orientation for data infrastructure in the digital era.

2.1.2. Development Trends of Data Centers in the World and in Vietnam

In the context of the profound digital transformation occurring globally, DCs have become an essential infrastructure in the digital economy. No longer limited to data storage and processing, DCs today play a central role in operating foundational technologies such as cloud computing, AI, blockchain, and IoT. With this role, DCs are considered the “backbone” of the digital ecosystem^[10] and a strategic asset in the technological develop-

⁹ “Uptime Institute Tier Classification System” *Uptime Institute*, n.d. <https://uptimeinstitute.com/tiers>.

¹⁰ Emmanuel Igba, Kehinde Abiodun, Esther Ojoma Ali, “Building the Backbone of the Digital Economy and Financial Innovation through Strategic Investments in Data Centers” *International Journal of Innovative Science and Research Technology (IJISRT)*, No. 1 (2025): 332-348.

ment of many nations.^[11] Consequently, many countries have identified DC development as a priority in their digital security and sustainable growth strategies. This is also a field of strategic competition among global technology corporations, not only for its economic potential but also for its long-term influence on data control and technological mastery.

As of 2024, there are over 11,000 active DCs globally, with a total market value of approximately 242.7 billion USD.^[12] Among these, large-scale DCs account for over 35% of the market share and are primarily owned and operated by technology giants such as Amazon Web Services (AWS), Microsoft Azure, Google Cloud, Meta, Apple, Alibaba, and Tencent. It is projected that by 2032, the global DC market value could double to nearly 585 billion USD,^[13] reflecting the rapid growth trend and increasing demand for efficient, secure, and sustainable digital infrastructure.

In the Southeast Asian region, Vietnam has emerged as a potential market with an impressive growth rate. In recent years, the DC market in Vietnam has achieved an average growth of 15-18% per year, surpassing the average for the Asia-Pacific region.^[14] As of the first quarter of 2024, the country had 33 operational DCs, deployed by 49 licensed service providers, concentrated mainly in Hanoi and Ho Chi Minh City,^[15] and is expected to expand strongly in the coming period.

It can be affirmed that Vietnam is entering a vibrant development phase for DC infrastructure, with many opportunities to leverage its digital economy potential. However, this is accompanied by significant challenges, particularly concerning the environment and energy. To effectively utilize its existing potential, there is a need for synchronous policies that promote green investment, improve the legal framework, and enhance public-private partnerships to ensure sustainable development and enhance national digital capacity in the digital era.

¹¹ Siemens Smart Infrastructure, "This Is the State of Play in the Global Data Centre Gold Rush" *World Economic Forum*, 22 April 2025.

¹² "Data Center Market Size, Share & Trends|Growth Report [2032]" *Fortune Business Insights* (2025).

¹³ John Minnix, "215 Data Center Stats (June-2025)" *Brightlio*, (2025).

¹⁴ Mạnh Ninh, "Việt Nam đón làn sóng đầu tư trung tâm dữ liệu, tăng trưởng gần 18% mỗi năm" *Tạp chí Điện Tử Ứng Dụng* (2025).

¹⁵ Hồng Ánh, "Khai phá thị trường trung tâm dữ liệu" *Báo Nhân Dân điện tử*, 6 April 2025.

2.3. Environmental Impacts of Data Centers

2.3.1. Greenhouse Gas Emissions from Electricity Consumption

2.3.1.1. EMISSIONS DURING OPERATION

The continuous operation of DCs to meet the ever-increasing demands for data processing, storage, and exchange has led to massive electricity consumption. This, in turn, results in significant greenhouse gas emissions during DC operations,^[16] becoming one of the factors exacerbating global climate change.

According to a report by the International Energy Agency (IEA), DCs currently consume approximately 1-1.5% of the total global electricity^[17] – a figure comparable to, or even exceeding, the consumption of many countries.^[18] It is projected that, by 2030, this consumption could more than double, reaching 945 TWh per year,^[19] depending on the pace of technological development and the adoption of energy-saving solutions. Alarming, the majority of electricity-supplying DCs still comes from fossil fuels, such as coal, oil, and natural gas. These are the primary sources of CO₂ emissions during electricity generation,^[20] thereby contributing to the greenhouse effect and global warming.

In a typical DC, the majority of electricity consumption is concentrated in two main component groups. First is the IT equipment, including servers, storage devices, and network infrastructure, which accounts for about 45-50% of total electricity consumption.^[21] This is because these devices must operate continuously 24/7 to ensure the performance and stability of the entire system. Second is the cooling system, responsible for controlling temperature and maintaining safe operating conditions for the equipment,

¹⁶ Dhanabalan Thangam et al., “Impact of Data Centers on Power Consumption, Climate Change, and Sustainability,” [in:] *Computational Intelligence for Green Cloud Computing and Digital Waste Management* (Hershey, PA: IGI Global, 2024), 60-83.

¹⁷ Daniel Raphael Ejike Ewim et al., “Impact of Data Centers on Climate Change: A Review of Energy Efficient Strategies” *The Journal of Engineering and Exact Sciences*, No. 6 (2023): 6.

¹⁸ Renee Obringer et al., “The Overlooked Environmental Footprint of Increasing Internet Use” *Resources, Conservation and Recycling*, 167 (April 2021).

¹⁹ Siemens Smart Infrastructure, “This Is the State of Play in the Global Data Centre Gold Rush.”

²⁰ “Data Center Power Consumption: Challenges and Solutions” *Hivenet*, n.d.

²¹ Kazi Main Uddin Ahmed, Math H.J. Bollen, Manuel Alvarez, “A Review of Data Centers Energy Consumption and Reliability Modeling,” *IEEE Access*, 9 (2021): 152536-63.

which consumes nearly 40% of the electricity,^[22] especially during periods of high-intensity data processing. Notably, the rapid development of AI, particularly deep learning models and natural language processing (NLP), is placing significant pressure on the existing energy consumption structure. Unlike traditional computing tasks, modern AI models require a superior volume of computation, using specialized hardware such as GPUs or TPUs – which have a much higher power consumption density than conventional CPUs.^[23]

According to an analysis by the IEA (2023), without the application of effective mitigation measures, global CO₂ emissions from DCs could increase to 300-500 million tons by 2035.^[24] This not only threatens the world's climate goals, but also serves as a warning about the severe and difficult-to-remedy environmental consequences of the uncontrolled development trend of global DCs.

2.3.1.2. EMBODIED CARBON

In addition to emissions during the operational phase, another often-overlooked source with significant impact is the emissions throughout the equipment's lifecycle – known as embodied carbon. Processes such as raw material extraction, manufacturing of electronic components, equipment assembly, transportation, and infrastructure construction all consume large amounts of energy, the majority of which still comes from non-renewable sources.^[25]

Notably, the short lifecycle of equipment is a direct factor increasing supply chain emissions. Under common operating conditions, servers and storage devices are typically replaced after a 3-5 year cycle to enhance

²² Xiaojing Zhang et al., "Cooling Energy Consumption Investigation of Data Center IT Room with Vertical Placed Server" *Energy Procedia*, 105 (May 2017): 2047-2052.

²³ Emma Strubell, Ananya Ganesh, Andrew McCallum, "Energy and Policy Considerations for Deep Learning in NLP," [in:] *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, ed. Anna Korhonen, David Traum, Lluís Màrquez (Florence: Association for Computational Linguistics, 2019).

²⁴ Zachary Skidmore, "IEA: Data Center Energy Consumption Set to Double by 2030 to 945TWh" *Data Center Dynamics* (2025).

²⁵ Dante Niewenhuis et al., "FootPrinter: Quantifying Data Center Carbon Footprint," [in:] *Companion of the 15th ACM/SPEC International Conference on Performance Engineering (ICPE '24 Companion)* (New York: Association for Computing Machinery, 2024), 189-195.

operational performance and minimize technical risks. This periodic replacement drives the need for new manufacturing and continuous supply chain operations, thereby further increasing emissions in the pre-operational stages.

Many recent studies indicate that supply chain emissions can account for up to 20-30% of the total lifecycle emissions of a DC.^[26] This percentage tends to be even higher in countries with clean electricity grids, such as Norway, Sweden, or Canada, where operational emissions have been significantly reduced through renewable energy. In these cases, supply chain emissions can even surpass operational emissions.^[27]

Thus, this reality shows that if the focus is solely on emissions during operation, while ignoring the pre-operational factors across the entire DC lifecycle, the assessment of environmental impact will be subjective and incomplete. This is an important consideration in policy planning related to the sustainable development commitments of the digital infrastructure sector.

2.3.2. E-Waste Generation

DCs are gradually becoming one of the largest and most concerning sources of electronic waste (e-waste) on a global scale. Unlike many traditional industries, DCs are characterized by continuous operation with high-intensity data processing requirements and a strong dependence on the pace of technological innovation.

In practice, each equipment update cycle in a DC typically lasts only 3 to 5 years^[28] Consequently, a large amount of hardware – from servers and storage devices to network components – is replaced to ensure performance and compatibility with new infrastructure. This process rapidly increases the quantity of discarded technological equipment, leading to an ever-growing volume of e-waste.

²⁶ Tuğana Aslan, Peter Holzapfel, Lutz Stobbe, Andreas Grimm, Nils F. Nissen, Matthias Finkbeiner, “Toward Climate Neutral Data Centers: Greenhouse Gas Inventory, Scenarios, and Strategies” *iScience*, No. 1 (2025).

²⁷ Carole-Jean Wu et al., “Beyond Efficiency: Scaling AI Sustainably” *ArXiv preprint*, 22 June 2024.

²⁸ Green Revolution Cooling, *E-Waste: Addressing a Growing Problem for Data Centers in 2022*, (2022).

According to statistics, DCs generate over 2 million tons of e-waste annually, accounting for approximately 4% of the total global e-waste.^[29] Notably, the rapid and continuous development of AI, particularly large language models, is significantly increasing this pressure. The restructuring of infrastructure to meet the computational demands of AI is forcing DCs to shorten the replacement cycles for equipment like GPUs,^[30] motherboards, and cooling systems, thereby exacerbating the e-waste problem in the digital infrastructure sector.

From an environmental standpoint, e-waste is a type of waste with high toxicity and the risk of long-term harm. Discarded electronic equipment often contains hazardous substances such as lead (Pb), mercury (Hg), cadmium (Cd), and other semiconductor compounds. If not properly treated, these substances can leach into soil, groundwater, or be released into the air, causing multi-level pollution and severely affecting ecosystems.^[31] In particular, these heavy metals have long biological decomposition cycles, easily leading to bioaccumulation, food chain contamination, and widespread ecological exposure. This risk not only impacts the natural environment, but also threatens public health,^[32] especially for vulnerable groups such as children, pregnant women, and the elderly, who are susceptible to long-term exposure to heavy metals.

Faced with the reality of rapidly increasing yet ineffectively controlled e-waste from DCs, it is particularly necessary to improve policies for managing equipment lifecycles, controlling environmental risks, and orienting the development of digital infrastructure towards sustainability, safety, and responsibility.

²⁹ Data Centers and the Environment, 2019 Report on the State of the Green Data Center, 2020. https://www.supermicro.com/white_paper/DataCenters_and_theEnvironmentDec2019.pdf.

³⁰ Russ Ernst, "Ticking Time Bomb: AI, Data Centers, and the Looming E-Waste Crisis" *Data Center Knowledge* (2025).

³¹ Devin N. Perkins et al., "E-Waste: A Global Hazard" *Annals of Global Health*, No. 4 (2014): 286-295.

³² Ibidem.

2.3.3. Pressure on Water Resources

Besides high electricity consumption and increasing e-waste volumes, DCs also exert significant pressure on water resources.^[33] In DCs, water is primarily used in cooling systems to control the temperature of information technology equipment, such as servers, storage devices, and network equipment. Specifically, during continuous high-intensity operation, this equipment generates substantial heat. If the equipment is not cooled effectively, the rising temperature can reduce processing performance, increase the risk of equipment failure, and even cause system disruptions. Therefore, maintaining stable temperature conditions (typically ranging from 20 to 22 degrees Celsius) is a mandatory technical requirement to ensure the continuous, safe, and efficient operation of a DC.^[34]

Two common cooling methods in DCs are air cooling and liquid cooling (Borgini, 2024). With the air cooling method, water is chilled to about 7-10°C by a chiller system and then used to cool the air in the server room.^[35] This cold air is recirculated to maintain a stable temperature for the equipment. However, the heat exchange process causes water to evaporate, and most of it cannot be recovered, leading to significant water resource loss.^[36] In the liquid cooling method, the system uses a dielectric fluid to absorb heat directly from the equipment. This method can be implemented by immersing the entire device in the fluid or by piping the fluid to high-heat points like CPUs and GPUs through a system of tubes. Despite technical differences, both forms result in evaporation and difficulty in reusing the liquid after cooling.^[37] Thus, regardless of the technology applied, current cooling methods at DCs consume large amounts of water, posing a clear challenge to the efficient use of this resource during operation.

Currently, the water consumption of DCs is at an alarming scale. A medium-sized DC can use up to 110 million gallons of water per year, equivalent

³³ James Riordon, "NASA Satellites Reveal Abrupt Drop in Global Freshwater Levels" *NASA Science: Earth*, 15 November 2024.

³⁴ Justin Eure, "The World's AI Generators: Rethinking Water Usage in Data Centers to Build a More Sustainable Future" *Lenovo StoryHub*, 22 March 2024.

³⁵ Kevin Heslin, "Ignore Data Center Water Consumption at Your Own Peril" *Uptime Institute Journal* (blog), 2016.

³⁶ Dominic O'Donnell, "Data Center Water Usage Challenges and Sustainability" *Sensorex Liquid Analysis Technology*, 16 August 2022.

³⁷ Julia Borgini, "Data Center Cooling Systems and Technologies and How They Work" *SearchDataCenter* (TechTarget), 2024.

to the annual domestic water consumption of about 1,000 households. For large-scale DCs, this figure can reach up to 5 million gallons per day, or about 1.8 billion gallons per year – equivalent to the water demand of a town with a population of 10,000 to 50,000 people.^[38] Notably, the rapid development of AI, especially LLMs, has been and is significantly increasing the demand for data processing at DCs.^[39] This places considerable pressure on cooling systems, leading to ever-increasing water consumption during operation.

Faced with this situation, DCs are now ranked among the top ten commercial industries with the highest water consumption in the world.^[40] Meanwhile, according to United Nations forecasts, by 2025, approximately 50% of the global population will be living in areas under severe water stress.^[41] These data highlight the connection between DC operations and the water resource crisis, demanding timely and comprehensive policy solutions.

3 | Legal Framework Regulating the Environmental Impact of Data Centers in Vietnam and Around the World

3.1. Legal Framework Regulating the Environmental Impact of Data Centers in Vietnam

Vietnam's legal framework regulating the environmental impacts of data centers is currently constituted by a multi-layered legal system that lacks integration. This system includes three main normative layers: (1) foundational principles on environmental protection, (2) regulations on energy management, and (3) technical infrastructure standards. However, the loose interaction and lack of synchronization among these layers have

³⁸ Miguel Yañez-Barnuevo, "Data Centers and Water Consumption" *Environmental and Energy Study Institute (EESI)* 2025.

³⁹ Heslin, "Ignore Data Center Water Consumption at Your Own Peril".

⁴⁰ Taqi Joanne Emerson, James Johnson, "Data Centers and Water: From Scrutiny to Opportunity" *White & Case LLP*, 18 December 2024.

⁴¹ UNICEF, *Water Scarcity*, n.d.

created legal gray areas, weakening enforcement effectiveness and failing to address the inherent environmental impacts specific to the digital industry.

The foundational legal layer regulating the environmental impacts of data centers in Vietnam is formed mainly from the 2020 Law on Environmental Protection together with two pillar decrees, Decree 08/2022/ND-CP and Decree 06/2022/ND-CP. The Law and Decree 08/2022/ND-CP have established a modern management mechanism based on the principles of disclosure, transparency, and accountability, while laying the groundwork for the carbon market. Under the regulations, a data center must conduct an EIA if the project is classified into Group I (high risk of environmental impact, Clause 3 Article 28 of the 2020 Law on Environmental Protection) or Group II (at risk of impact, Clause 4 Article 28 of the 2020 Law on Environmental Protection). This classification is based on criteria stipulated in Decree 08/2022/ND-CP, in which decisive factors include: electricity consumption capacity, the scale of the backup generator system, the amount of water used for cooling, and whether the project site is near sensitive areas such as residential zones or water sources. Accordingly, data center projects with large scale and high risk of environmental impact must prepare an EIA report, in which they specify the legal basis and the degree of conformity with planning; assess the choice of technology and project components likely to cause adverse impacts; describe natural, socio-economic conditions and the suitability of the location; identify, assess, and forecast the main impacts and wastes generated in each project phase; in accordance with Article 32 of the 2020 Law on Environmental Protection. After the construction phase, these centers are required to obtain an Environmental Permit in order to operate under Article 32 of the 2020 Law on Environmental Protection, which explicitly stipulates discharge limits and obligations for monitoring and periodic reporting. However, in practice after more than one year of implementing the 2020 Law on Environmental Protection, as recorded by experts, the lack of detailed guidance and the contradictions in certain provisions are major barriers to enterprises' legal compliance (CEBID, 2023). It is precisely here that the first conceptual incompatibility appears.^[42] The environmental law system was built based on the model of traditional industries, where "pollutants are defined as tangible wastes such as air emissions (SOx, NOx), industrial wastewater,

⁴² Trung tâm Đổi mới sáng tạo vì Bình đẳng và Phát triển (CEBID), *Những vướng mắc qua thực tiễn 1 năm triển khai Luật Bảo vệ Môi Trường 2020*, 2023.

or hazardous solid waste.” Meanwhile, the largest environmental impacts of a data center are of a different nature: (1) massive energy consumption from the national power grid and (2) the emission of excess thermal energy into the environment. The 2020 Law on Environmental Protection and its guiding documents are almost entirely “silent” on the core environmental performance indicators of the global DC industry, such as PUE, WUE, or ERR.^[43] Under this law, enterprises must provide and disclose information on pollutants, wastes, environmental impact assessment reports, and ecosystems via the national information system or electronic portals, ensuring public accessibility. Therefore, a data center can fully comply with EIA reporting obligations by declaring emissions from backup generators or the handling of used batteries, yet remain completely outside the law’s control with respect to the operation that consumes megawatts of electricity every hour. This creates a paradox in which the law strictly manages peripheral impacts but entirely leaves the core impact open. In addition, Clause 1 Article 6 of Decree 06/2022/ND-CP concretizes Articles 91 and 92 of the Law on Environmental Protection by stipulating that facilities emitting from 3,000 tons of CO₂ equivalent per year or consuming from 1,000 TOE per year, including data centers, must conduct greenhouse-gas inventory, develop emission-reduction plans, and report energy-efficiency indicators (such as PUE). This has shifted large-scale data centers from “voluntary” to “mandatory obligations.” When exceeding 3,000 tons of CO₂ equivalent per year or 1,000 TOE per year, enterprises must inventory greenhouse gases, prepare reduction plans, and report energy-efficiency indicators. This requires installing metering down to the equipment level to calculate reliable PUE, integrating electricity-water-fuel data into the management system, and determining an emissions baseline and annual reduction targets.

The second legal layer, shaped by the Law on Economical and Efficient Use of Energy 2010, establishes principles for energy management intertwined with energy security strategies and environmental protection. It mandates that key energy-consuming facilities develop annual and five-year plans, conduct periodic energy audits, and comply with technical standards on energy efficiency, thereby approaching data centers from the perspective of a “key energy-consuming facility.” Under this lens, data centers – with

⁴³ Daniel Raphael Ejike Ewim et al., “Impact of Data Centers on Climate Change: A Review of Energy Efficient Strategies” *The Journal of Engineering and Exact Sciences*, No. 6 (2023): 16397–01e.

their inherent continuous large-scale electricity consumption – naturally fall under stringent regulatory oversight. This management logic, while effective for factories with relatively stable production cycles, proves outdated and ill-suited when confronting the operational essence of a data center. The load of a data center is not static, but fluctuates continuously on a millisecond basis, contingent upon traffic volume and computational tasks. Conducting periodic energy audits is akin to assessing a marathon runner's health by measuring their heart rate only once throughout the entire training regimen. It yields a static, obsolete snapshot that utterly fails to capture actual energy efficiency and cannot foster real-time optimization behaviors. Moreover, the Law emphasizes energy labeling for individual devices but lacks a mechanism to measure and standardize the overall performance of a complex system. This constitutes the gap that precludes the PUE (Power Usage Effectiveness) metric – despite being the industry's gold standard – from becoming a mandatory legal requirement in Vietnam. Concurrently, Decision 500/QĐ-TTg delineates the national power source structure, prioritizing renewable energy, curtailing coal-fired thermal power, and fostering synchronous transmission grid development, thereby positioning data centers within the category of critical loads directly impacted by grid overload scenarios. Supply reliability thus directly governs PUE and the frequency of backup generator operations, while the proportion of renewable electricity and water infrastructure conditions influence carbon intensity and WUE (Water Usage Effectiveness), guiding site selection near priority transmission corridors and with effective electronic waste management protocols.

Within the specialized legal tier concerning technical infrastructure standards, the prevailing key instrument is Circular 23/2022/TT-BTTTT, which mandates data centers to adhere to rigorous standards such as TCVN 9250:2021 or ANSI/TIA-942 (Clause 1, Article 4), to safeguard the quality and security of the national digital infrastructure. However, upon deeper scrutiny, a notable divergence emerges between the environmental protection orientation and the practical application of the technical standards framework: standards like TIA-942 or the Uptime Institute's Tier classification system focus almost exclusively on reliability and uptime, compelling data centers to implement multi-layered redundant power and cooling systems. Maintaining these redundant systems, often at low loads for failover readiness, results in wasteful electricity consumption, elevating PUE and diminishing energy efficiency. The paradox lies in the fact that a data center may attain Tier IV certification for reliability while

concurrently operating inefficiently from an energy standpoint. Furthermore, Circular 23 merely “encourages” existing data centers to retrofit for environmental compliance, inadvertently permitting legacy facilities to persist in inefficient operations without substantive legal compulsion for reform. In contrast, the Government’s and Ministry of Information and Communications’ digital infrastructure strategies – particularly Decision 1132/QĐ-TTg and the Digital Infrastructure Development Framework – orient toward establishing “green data centers,” aligned with international standards and technological planning, even preliminarily referencing a PUE threshold of approximately 1.4 as a benchmark for environmentally friendly data centers. This duality indicates that, in terms of policy direction, Vietnam has articulated objectives to integrate digital infrastructure development with environmental sustainability; however, in practice, the extant technical standards framework remains biased toward operational reliability, without robust integration of environmental metrics such as PUE, WUE, emissions from backup generators, or electronic waste management. Consequently, adjustments are imperative to reconcile these dual objectives, embedding environmental requirements within infrastructure technical standards to ensure both high reliability and the advancement of sustainable data center development in Vietnam.

It is evident that the limitations within the environmental legal framework for data centers do not manifest in isolation. Rather, they form a tightly interwoven chain of issues, wherein a legal impediment precipitates practical challenges for enterprises and regulatory authorities alike. At the core, the root cause is the absence of specific provisions. Pivotal statutes such as the Environmental Protection Law 2020 remain overly generic, devoid of tailored clauses for the data center sector. In the absence of explicit regulations, enterprises are left uncertain about precise compliance obligations. This compels them to navigate between two suboptimal paths: either incurring substantial expenditures on premium technologies merely for precautionary assurance, or risking legal infractions. Both options impose onerous financial burdens, particularly on small and medium-sized enterprises. Secondly, the complexity escalates as Vietnam’s regulations have yet to formally incorporate globally prevalent international standards, such as the PUE metric. Without an officially endorsed common benchmark, enterprises grapple with technology selection and encounter difficulties in benchmarking and evaluating their operational efficacy against peers. This also hampers state agencies in conducting inspections and oversight. Ultimately, these intertwined issues culminate in a tangible

predicament: a shortage of human resources. With ambiguous legislation and unharmonized technical standards, the formulation of comprehensive training curricula becomes infeasible. How can one cultivate an expert in data center environmental management when the requisite standards and criteria for such roles remain ill-defined? This dearth of specialists not only decelerates appraisal and licensing procedures, but also exacerbates the challenges in sustainably operating data centers.

In essence, this can be conceptualized as a chain: non-specific legislation engenders elevated compliance costs and a paucity of standards, which in turn precipitates a shortfall in skilled personnel. To foster sustainable development in the data center industry, a holistic resolution of this interconnected chain is essential, commencing with the refinement of the legal framework in a more precise and pragmatic manner.

3.2. Legal Regulations and Policies Regulating the Environmental Impact of Data Centers Around the World

3.2.1. Regarding the Legal Framework

Globally, many developed countries and regions have long recognized the importance of controlling the environmental impact of data centers (DCs) and have proactively built legal frameworks and policies appropriate to their contexts. Although each has a different approach regarding the level of compulsion and enforcement methods, the common goal is to develop a more sustainable, efficient, and transparent digital infrastructure.

In Europe, the European Union (EU) is one of the leading regions with a multi-layered legal and climate policy system. Prominent among these are the EU Climate Law and the Energy Efficiency Directive (EED). The EU Climate Law, effective since July 2021, has transformed the goals of the European Green Deal into legally binding obligations, setting a commitment to achieve net-zero emissions by 2050 and to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. To operationalize these targets, the EU has implemented the “Fit for 55” package, within which the Energy Efficiency Directive (EED) (EU 2023/1791) plays a pivotal role.

The new Energy Efficiency Directive (EED) represents a major reform, fully replacing the previous directive with more stringent provisions on energy efficiency, particularly for data centres. Under the new regulations, data centres with an installed IT power capacity of 500 kW or above

are required to collect, analyse, and publicly disclose data on PUE, WUE, environmental footprint, and waste heat reuse potential (Article 12(1) EED, 2023). This data must be disclosed for the first time in May 2024 and updated annually, enabling the EU to develop concrete sustainability benchmarks for the entire region. In addition, data centres with a total energy input exceeding 1 MW are required to utilise or recover waste heat, except where such utilisation or recovery is technically or economically infeasible (Article 26(6), EED 2023). These regulatory provisions not only promote transparency and strengthen environmental accountability, but also support the EU's strategic objectives of reducing greenhouse-gas emissions and enhancing energy efficiency.

In Germany, the Federal Energy Efficiency Act (EnEfG 2023) is a prime example of domesticating EU directives, while setting very high standards for the DC industry. This law specifies targets for reducing final and primary energy consumption by 2030 and 2045. For DCs, the law requires them to achieve a maximum PUE of 1.5 from 2027 and 1.3 from 2030 (Article 11(1) EnEfG 2023), with new centers (operational from July 2026) required to achieve a PUE not exceeding 1.2 (Article 11(2) EnEfG 2023). The law also mandates that DCs use a minimum of 50% renewable energy from 2024 and 100% from 2027 (Article 11(3) EnEfG 2023), establish an energy management system, mandate waste heat reuse, and publicly disclose detailed operational data into a common European database. Other mandatory obligations include the establishment of an energy management system (for example, in accordance with ISO 50001), compulsory waste-heat reuse, and the public disclosure of detailed operational data into the EU-wide common database (applicable to data centres with a capacity of 300 kW or above). These provisions are strictly supervised, with severe penalties that may reach up to 100,000 euros in cases of non-compliance. Beyond data centres, the legislation also imposes energy-saving obligations on large enterprises and requires public authorities to take the lead and set an example.

In the United States, instead of a single federal statute, environmental regulation of data centres is primarily implemented at the state level, with the California Environmental Quality Act (CEQA) serving as the most prominent and stringent example. CEQA is not a regulatory code that directly prescribes metrics such as PUE or WUE; rather, it is a procedural statute requiring developers to analyse, disclose, and mitigate environmental impacts as a condition for project approval. When a new data centre is proposed, the process begins by determining whether it qualifies as

a “project” within the meaning of the statute. Under §21065 of the Public Resources Code (PRC), the term ‘project’ is defined broadly to include any activity undertaken by a private entity that requires approval from a public agency; a data centre therefore clearly falls within this scope. Subsequently, the lead agency must conduct an Initial Study pursuant to §15063 of the CEQA Guidelines to determine whether the project may have a “significant effect on the environment.” This concept is defined in PRC §21068 as a substantial, or potentially substantial, adverse change in the environment. For a data centre, factors such as massive energy demand, the use of millions of gallons of water for cooling, and associated greenhouse-gas emissions will almost certainly be examined as potential significant impacts. If evidence indicates that a significant impact may occur, PRC §21002.1 requires the public agency to adopt feasible mitigation measures to reduce such impacts. A data-centre developer cannot merely report its high energy consumption; it must propose concrete mitigation strategies, such as: (1) committing to achieve an exceptionally low PUE through advanced design; (2) utilising recycled water or high-efficiency closed-loop cooling systems to reduce water consumption; and (3) entering into long-term Power Purchase Agreements (PPAs) with renewable-energy providers.

3.2.2. Regarding Regulatory and Incentive Policies

In addition to mandatory legal regulations, many countries and regions also implement regulatory and incentive policies to promote the development of sustainable DCs.

In Europe, the EU encourages voluntary initiatives, such as the EU Code of Conduct for Data Centres, which encourages operators to adopt best practices in energy saving, PUE transparency, and the integration of green technology solutions.

In Asia, Singapore stands out as a model of proactive and strategic state management. Following a moratorium on new DC permits from 2019 to 2022, the island nation announced the Green DC Roadmap. This roadmap sets comprehensive goals such as a PUE below 1.3 and a WUE below 2.0 m³/MWh within 10 years,^[44] while also promoting technological innovation (Tropical DC Standard, advanced cooling technologies) and the

⁴⁴ Infocomm Media Development Authority, *Driving a Greener Digital Future: Singapore’s Green Data Centre Roadmap* (Singapore, 2024).

use of green energy to license at least 300 MW of new capacity for projects using low-carbon energy.

These advanced policies and legal frameworks show that the EU, Germany, Singapore, and the United States not only set stringent standards for energy efficiency and the environment for DCs, but also flexibly combine mandatory regulations with incentive mechanisms, creating strong momentum for a green transition in the digital infrastructure sector. These are valuable experiences that Vietnam can reference in the process of building a legal framework for sustainable DC management.

4 | Policy Solutions and Recommendations for Perfecting Vietnamese Law

Based on the analysis of experiences from advanced countries, we propose a system of seven synchronized solutions with tight linkages, aimed at shaping a sustainable digital future for Vietnam.

Firstly, prioritize the development and promulgation of a set of National Standards for sustainable data centers, with specific objectives and a mandatory roadmap. This is a foundational solution that plays the role of establishing a common benchmark and minimum technical requirements for the entire industry. The lack of a clear benchmark will lead to uneven development, where investors may choose to sacrifice environmental standards to maximize short-term profits. Experience from Germany with EnEfG and Singapore with the Sustainable Data Centre Roadmap has demonstrated that regulations of an incentive nature are often not strong enough to create system-level change. Therefore, Vietnam's standards need to be mandatory and developed in a scientific manner, focusing on core performance indicators that are internationally recognized. Accordingly, the Ministry of Science and Technology, assigning the Directorate for Standards, Metrology and Quality, shall be responsible for drafting.

Specifically, the standards need to clearly stipulate measurement methods and mandatory performance thresholds, according to a roadmap, for important indicators such as: Power Usage Effectiveness, Water Usage Effectiveness, Carbon Usage Effectiveness, and the Ratio of Renewable Energy Use. The implementation roadmap can be divided into stages, for

example: the initial stage focuses on requiring the installation of measurement equipment and data reporting; the next stage sets initial performance thresholds; and the final stage tightens requirements, such as new data centers built from 2028 must achieve $PUE \leq 1.3$ and 50% of energy consumed must come from renewable sources. From there, mandatory benchmarks will help gradually reduce PUE and WUE, thereby lowering operating costs and reducing pressure on local electricity and water. Next, increasing the share of renewable energy leads to a reduction in carbon emission intensity and opens up opportunities to access green credit. At the same time, standardized measurement and reporting data enhance transparency, helping regulatory agencies conduct effective ex-post review and investors accurately compare performance. On that basis, the momentum for innovation in cooling technology and heat recovery is activated, improving energy efficiency across the entire system, while limiting uneven development among localities and strengthening confidence in a stable policy orientation.

Secondly, integrate data center management regulations into the existing legal system to ensure consistency and feasibility. Building an entirely new law dedicated solely to data centers may take substantial time and resources, while this industry is developing at a very rapid pace. Therefore, a more practical and effective approach is to integrate specific regulations into existing specialized laws, similar to how California (United States) uses CEQA to manage large technology projects. To establish a comprehensive and effective legal corridor for managing the development of data centers, we propose a two-step legal approach. The foundational step is to amend Decree No. 08/2022/ND-CP to officially identify “Investment and operation projects for data centers with a designed capacity of 500 kW or more” as Group II investment projects, subject to the mandatory requirement of preparing an environmental impact assessment report. However, to make the assessment deep and substantive, the next core step is to directly amend Article 32 of the 2020 Law on Environmental Protection. Accordingly, the Law needs to add a new clause, stipulating that the EIA report for this type of project must include specific, mandatory content. These requirements must range from an in-depth analysis of PUE and WUE, quantitative assessment of impacts on the power grid infrastructure, development of a comprehensive lifecycle management plan for electronic waste, to the requirement to have a feasible technical plan for waste-heat recovery and reuse. The combination of these two amendments will create a tight legal framework that not only clearly defines responsibilities but also sets out

specific technical standards, ensuring that the nation's critical digital infrastructure is developed robustly while remaining in harmony with strategic goals on energy security and sustainable environmental protection.

In parallel with that is the amendment of Decree No. 21/2011/ND-CP to add a new criterion, thereby identifying "Data centers with energy consumption from 500 TOE/year or more" as key energy-using facilities. Instead of having to create a new management mechanism, this small change will automatically trigger a series of legal obligations already clearly stipulated in the Law on Economical and Efficient Use of Energy. Specifically, data centers in this category will by default have to comply with mandatory requirements such as conducting energy audits every 03 years (under Article 34), developing and implementing detailed annual and 05-year energy management plans (under Article 34), as well as appointing an energy manager with professional certification (under Article 35). This approach helps to effectively leverage the existing law enforcement apparatus, ensuring that critical digital infrastructure is closely supervised, in sync with the overall picture of energy security and sustainable national development.

Thirdly, establish a mechanism for monitoring, reporting, and transparency of information. Regulations will only remain on paper if there is no effective monitoring and enforcement mechanism. The lesson from the EU's EED shows the importance of data collection and public disclosure. Vietnam needs to build a mandatory periodic reporting system whereby all data centers within the scope of regulation are obliged to collect and submit annual reports on key environmental performance indicators that have been stipulated in the National Standards. To ensure accuracy and objectivity, reported data needs to be verified through a third party, namely independent auditing entities with expertise in energy and the environment. Audit results must be sent simultaneously to the state management agency and be published in summary. Based on the data collected, a national database on data center performance needs to be established. After anonymizing sensitive business information, aggregated data on industry-average PUE, WUE, renewable energy usage ratio, etc., needs to be made public. Accordingly, the Ministry of Industry and Trade is responsible for guiding the reporting process for energy indicators, organizing periodic energy audits, and integrating results into the management of key energy-using facilities. The Ministry of Natural Resources and Environment presides over receiving and conducting ex-post review of environmental indicators, integrating them into EIA dossiers and post-licensing management.

The Ministry of Information and Communications builds and operates the national digital platform on data center performance, ensuring information security and data connectivity with relevant ministries and sectors. This transparency helps state regulators formulate evidence-based policies, facilitates investors and customers in comparing and selecting sustainable service providers, and at the same time creates healthy competitive pressure for underperforming enterprises to continuously improve their environmental performance.

Fourthly, implement financial and market incentives to create momentum for the green transition. Alongside mandatory regulations (“the stick”), preferential policies (“the carrot”) play a pivotal role in creating economic motivation for enterprises to invest in sustainable technologies, which often involve high initial costs. Vietnam needs to design a diverse incentive package, which the authors propose to include:

1. Tax and credit incentives: Apply preferential tax rates (reductions in corporate income tax during some initial years, exemptions/reductions of import duties on high-efficiency green technology equipment) for data centers that meet or exceed national standards. At the same time, facilitate access for green data center projects to green credit sources with preferential interest rates from commercial banks and development investment funds.
2. Market and procedural incentives: Create favorable conditions for green data centers to sign direct power purchase agreements with renewable energy suppliers. This is a mutually beneficial mechanism, helping data centers ensure a clean and stable energy supply at competitive prices, while renewable energy developers gain large and long-term customers. In addition, a priority mechanism in administrative procedures can be applied, allowing shortened review and construction permitting times for data center projects with clear commitments to sustainable development. Experience from Singapore shows that projects meeting green standards are prioritized in the allocation of new capacity quotas, demonstrating the effectiveness of non-financial incentives in promoting the green transition of the digital infrastructure sector. This approach increases market certainty and the ability to mobilize capital, thanks to direct power purchase agreements that lock in clean energy costs at competitive and long-term levels. At the same time, procedural prioritization shortens approval times and reduces implementation

risks, thereby accelerating project timelines and attracting high-quality investment flows.

3. In particular, attention should be paid to transition costs for existing data centers. Upgrading older data centers to meet new standards on energy and environmental efficiency will incur significant costs, raising the question of who will bear them. To address this issue, in addition to the aforementioned tax and credit incentives, the State should consider establishing green transition support funds or co-financing programs, in which the state budget, international organizations, and enterprises jointly share upgrade costs. This mechanism not only helps reduce the financial burden on businesses, but also promotes a synchronized transition, avoiding disparities in technological level and environmental performance between new and operating data centers, ensuring that the entire sector advances together toward the goal of sustainable development.

Fifthly, promote the reuse of waste heat, turning waste into a resource. Waste heat released from thousands of servers in data centers is a vast resource, yet most of it is currently being wasted. Drawing on mandatory regulations from Germany and RU, Vietnam needs a strategic approach to harness this heat source effectively. Accordingly, the Ministry of Natural Resources and Environment will lead the mandate to include a heat-reuse plan in EIA reports for DCs with a capacity above 1 MW, issue technical guidelines, define cases of exemption where reuse is not technically or economically feasible, and coordinate with localities to integrate this into sustainable urban planning. At the same time, the Ministry of Planning and Investment will adjust the licensing process, prioritize DCs located near residential areas, high-tech agricultural greenhouses, or industrial parks, issue priority licensing criteria, require heat-reuse commitments in investment dossiers, and support the mobilization of PPP financing from organizations such as the ADB. The Ministry of Industry and Trade will provide technical support, develop standards for heat-recovery systems, incorporate them into the Law on Economical and Efficient Use of Energy, coordinate with energy suppliers to assess potential, and encourage the use of renewable energy. In addition, urban and industrial spatial planning should prioritize licensing DCs near areas with heat demand—such as residential zones for hot-water supply, greenhouses, aquaculture, or factories requiring heat for drying and steaming. Incentive or mandatory mechanisms for large-capacity DCs must include a plan for heat recovery and

reuse, except where infeasible. PPP models can be deployed to build heat distribution networks in which DCs supply heat and end-users are customers, thereby reducing energy costs, creating economic and environmental symbiosis, and contributing to national greenhouse-gas reduction goals. This serves specific objectives such as reducing annual greenhouse-gas emissions, supplying waste heat for applications like residential heating, agricultural greenhouses, or industrial processes, and lowering energy costs for consumers by 15–20%. From there, a large number of green jobs can be created (in operating and maintaining heat systems), ESG indicators of Vietnam's DC sector can be enhanced in line with global trends, and the sustainability of digital infrastructure can be increased.

Sixthly, make strategic investments in research, development, and training of high-quality human resources. To keep pace with global technology trends and optimize the operational efficiency of data centers in a hot and humid climate, the Ministry of Science and Technology will preside over research, development, and sandbox testing programs for advanced data center technologies, focusing on liquid-cooling systems that are more efficient than air cooling, on-site renewable energy integration and storage solutions, and AI-based real-time energy management software. The Ministry will issue a policy framework to support PPP and concessional financing for green technologies, fund sandboxes at the Saigon Hi-Tech Park, and coordinate with enterprises and international organizations such as Singapore (through IMDA or VSIP) for technology transfer and curriculum development. In parallel, develop formal training programs and internationally recognized professional certifications on the design, construction, and operation of green data centers, integrate sustainable data center content into engineering curricula, grant certifications such as Certified Data Centre Professional, and organize short-term courses with Singaporean partners via GITECH Asia 2025. The expectation is to optimize operating costs and improve energy efficiency of data centers; increase attraction of R&D investment; expand the scale and quality of green data centers; promote the formation of sustainable jobs in the digital infrastructure sector; and at the same time reduce the intensity of greenhouse gas emissions, contributing to the realization of the long-term goal of carbon neutrality.

Seventhly, shift the control focus to the early stage of the project, requiring sustainability commitments right from the investment licensing phase. Instead of focusing only on controlling environmental impacts during the operational phase or end of life, Vietnam should shift the focus to the early

stage of the project lifecycle. Specifically, the State should require large-scale data centers to commit to targets for energy efficiency, water use, greenhouse gas emissions, and green technology solutions from the time of project preparation and investment licensing application. Experience from CEQA shows that data center developers are required to present detailed commitments on PUE, use of recycled water, renewable power purchase agreements, and other environmental mitigation measures before being granted a construction permit. This helps to screen out unsustainable projects from the outset, while creating incentives for enterprises to proactively invest in green technology and make environmental commitments transparent to the community and regulatory agencies. Therefore, in the process of improving the legal framework, Vietnam should clearly stipulate that all large data center projects must have a detailed environmental commitment document, which is appraised and monitored throughout the project lifecycle. The authors propose that, during appraisal and issuance of the investment registration certificate, large-scale data center projects be required to submit a detailed and legally binding “Environmental Commitment Statement.” This statement must clearly present: (i) Projected performance indicators (PUE, WUE); (ii) Plan for the use of renewable energy; (iii) Green technology solutions to be applied; (iv) Plan for lifecycle management of equipment. These commitments will not only be reference documents, but will also become an inseparable part of the investment license and the basis for competent authorities to supervise and conduct post-inspection throughout the project’s lifecycle. Requiring a strong commitment from the outset will help effectively screen out investors who lack capacity or goodwill, while enhancing corporate accountability before the law and the community, consistent with the global trend of sustainable governance (ESG). To enhance the sustainability of data centers in Vietnam, the Ministry of Planning and Investment will preside over appraisal and issuance of the investment registration certificate, requiring large data center projects to submit the “Environmental Commitment Statement.” In addition, the Ministry of Natural Resources and Environment will appraise the “Commitment” in the EIA report under Decree 08/2022/ND-CP, issue technical guidance for assessing commitments on greenhouse gas reduction, recycled-water use, and mitigation measures, refuse to license projects that fail to meet standards, and build transparent reporting systems for post-inspection, ensuring compliance from project preparation to operation. This, in turn, screens and eliminates unsustainable projects, thereby reducing environmental risks and increasing the

proportion of green data centers in the system. At the same time, it attracts high-quality capital in the medium term, promotes green investment from institutional investors and financial institutions, enhances transparency of commitments to the community, and consolidates social confidence in a sustainable development orientation.

5 | Conclusion

The 21st century has placed Vietnam on a strong digitalization development trajectory, where digital infrastructure, with DCs as its core, has become an indispensable lifeline for economic prosperity and social progress. However, behind this role as a growth driver lies a structural environmental and energy security challenge. DCs, with their massive consumption of energy and water resources, pose a difficult problem: how to expand digital infrastructure capacity without paying the price of environmental degradation and increased pressure on the national power grid. The authors affirm that a passive approach, waiting for the market to self-regulate, is no longer appropriate. Vietnam is at a crucial crossroads, where proactively creating a comprehensive, effective, and visionary legal framework will determine the nation's sustainable development trajectory for decades to come.

Analysis of international experience has provided invaluable lessons, showing a diversity of approaches, but all sharing a common goal. From the European model, the lesson on the power of mandatory regulations, with clear roadmaps and a transparent monitoring and reporting system, has been proven to be a pillar for creating synchronous change on a large scale. Meanwhile, the experience from California, USA, shows the effectiveness of a procedural legal mechanism, where the burden of proof and proposing solutions to mitigate environmental impacts is shifted to the developer, thereby indirectly promoting high standards from the initial stages of a project. And from Singapore, a model of strategic state management has emerged clearly, harmoniously combining the setting of strict standards with strong investment and support for innovation to turn challenges into competitive advantages. In summary, there is no single formula for all, but a successful framework for Vietnam must be a smart combination of elements: mandatory requirements, flexibility in implementation, and the enabling role of the state.

On that basis, the research has proposed a synchronized system of solutions comprising seven main pillars. The foundation of this system is the development of a mandatory set of National Standards and the integration of DC management regulations into the current legal system. A mechanism for monitoring, reporting, and information transparency. A system of diverse incentive policies. Looking to the future, promoting the reuse of waste heat and strategic investment in research, development, and human resource training will help Vietnam master technology and optimize resources. Finally, shifting the control focus to the early stages of the project, requiring sustainability commitments right from the licensing phase, will be a strategic preventive step, ensuring sustainable development from the roots.

Building a legal framework for sustainable DCs is not only an environmental obligation, but also a strategic investment for the future and for enhancing national competitiveness. A clear, transparent, and highly predictable legal corridor will attract leading global technology investors, who increasingly value standards on environment, society, and governance (ESG). By decisively and synchronously implementing the proposed solutions, Vietnam will not only solve its internal energy and environmental problems but can also assert its position as a leading regional digital hub – a hub that is not only technologically powerful but also a pioneer in sustainable development.

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Advancing Administrative Sanctions Through Digital Transformation: A Legal Perspective from Vietnam

Abstract

Digital governance refers to the process of applying digital technologies to innovate the operational methods of public authorities, with the aim of enhancing the effectiveness and efficiency of governance as well as the quality of public services. In Vietnam, digital transformation has been identified as an inevitable trend, strongly driven by the policies and directives of the Communist Party and the State. The revision of the existing legal framework is currently underway to align with the policy of streamlining the state apparatus and promoting digital transformation, ensuring consistency with newly enacted laws in the present period. Within this context, the field of administrative penalty enforcement is also under pressure to leverage technology in order to address the shortcomings of traditional methods. In practice, the conventional administrative sanctioning process in Vietnam remains cumbersome, slow, and insufficiently integrated with modern technological tools, resulting in cumbersome procedures for citizens and challenges for authorities. Consequently, digital transformation in administrative penalty enforcement is expected to simplify procedures, enhance transparency, and improve the effectiveness of law enforcement.

KEYWORDS: digital transformation, administrative sanctions, legal framework, e-governance, Vietnam

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1 | Introduction

Digital governance refers to the process of applying digital technologies to innovate the operational methods of public authorities, with the aim of enhancing the effectiveness and efficiency of governance as well as the quality of public services. Digital transformation goes beyond the mere computerization of existing procedures (such as the implementation of e-government); it also encompasses a fundamental shift in governance mindset and the restructuring of processes toward a data-driven foundation.^[1]

In Vietnam, digital transformation has been identified as an inevitable trend, strongly driven by the policies and directives of the Communist Party and the State.^[2] The revision of the existing legal framework is currently underway to align with the policy of streamlining the state apparatus and promoting digital transformation, ensuring consistency with newly enacted laws in the present period. Within this context, the field of administrative penalty enforcement is also under pressure to leverage technology in order to address the shortcomings of traditional methods. In practice, the conventional administrative sanctioning process in Vietnam remains cumbersome, slow, and insufficiently integrated with modern technological tools, resulting in cumbersome for citizens and challenges for authorities. Consequently, digital transformation in administrative penalty enforcement is expected to simplify procedures, enhance transparency, and improve the effectiveness of law enforcement.

¹ Burak Erkut, "From Digital Government to Digital Governance: Are We There Yet?" *Sustainability*, No. 3 (2020): 860; Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, "Artificial Intelligence in e-Administration" *Prawo i Więź*, No. 1 (2025): 383-407.

² Communist Party of Vietnam, *Documents of the 13th National Congress of the Communist Party of Vietnam - Volume I*, (National Political Publishing House, 2021), 45.

2 | Discussion and Results

2.1. The Development of Legal Regulations Governing Digital Transformation in Administrative Sanctioning in Vietnam

Over the past decade, Vietnam has consistently advanced the application of information technology and digital transformation in state governance, including in the field of administrative penalty enforcement, with the aim of enhancing efficiency, transparency, and cost savings for both citizens and competent authorities. This development necessitates the continuous updating of the legal framework governing administrative sanctions, enabling the use of technical and professional means to detect violations and to conduct penalty enforcement through electronic platforms, in line with the national digital transformation agenda.

The 2012 Law on Handling of Administrative Violations (Law No. 15/2012/QH13) laid the legal foundation for the application of science and technology in administrative penalty enforcement for the first time. Article 64 of the Law authorizes competent agencies and officials to use “professional technical equipment and devices” to detect violations, but limits such application to the areas of traffic order and safety, and environmental protection. This provision paved the way for the use of devices such as cameras, speed-measuring equipment, and breath alcohol analyzers as a legal basis for imposing penalties, rather than relying solely on direct observation.

On 12 November 2013, the Government issued Decree No. 165/2013/ND-CP, stipulating the list, management, and use of professional technical equipment for detecting traffic and environmental violations. The Decree specifies in detail the types of devices permitted for use such as speed measuring devices with image recording capability, breath alcohol analyzers, and cameras and the procedures for collecting and processing results. This provided the legal basis for law enforcement bodies, such as the Traffic Police, to implement measures like issuing penalties based on camera surveillance (remote fine collection, commonly referred to in Vietnam as “cold ticketing” or “cold fines”) or using speed guns. However, at this stage, digital transformation in administrative penalty enforcement remained limited; most procedures were still conducted manually, and there were no regulations governing sanctioning or communication with violators through online platforms.

In response to practical demands, the National Assembly enacted the Law Amending and Supplementing Certain Articles of the Law on Handling

of Administrative Violations in 2020 (Law No. 67/2020/QH14), introducing significant adjustments to expand and strengthen the application of science and technology in penalty enforcement. Specifically, the Law added a provision allowing records and decisions on the temporary seizure of evidence or means of administrative violations to be prepared and transmitted via electronic means instead of being issued solely in paper form. This represents a modest yet notable step, as it permits the use of electronic records and documents in sanctioning procedures, thereby laying the groundwork for the exchange and storage of violation-related information within digital systems.

The Government promulgated Decree No. 135/2021/ND-CP on the list, management, and use of professional technical equipment and the procedures for collecting and using data obtained from such equipment, replacing Decree No. 165/2013/ND-CP. This Decree expands the list of devices permitted for use across multiple sectors. For example, List I enumerates 24 types of professional technical equipment used for road traffic management, including speed-measuring devices, cameras, breath alcohol analyzers, distance-measuring devices, GPS devices, and traffic surveillance camera systems, among others. Notably, the Decree assigns the Ministry of Public Security to take the lead in guiding implementation and requires relevant ministries and sectors to issue procedures for the use of equipment and for the collection and utilization of data from devices provided by individuals and organizations within their respective management areas. For instance, the Ministry of Public Security issued Circular No. 67/2024/TT-BCA, stipulating procedures for managing and using professional technical equipment within the People's Public Security forces and for processing data obtained from devices provided by individuals and organizations.

The Government's digital transformation agenda requires the legal framework on administrative penalty enforcement to take a significant step forward by enabling the entire sanctioning process to be conducted in an electronic environment. On this basis, the National Assembly adopted the Law Amending and Supplementing Certain Articles of the Law on Handling of Administrative Violations, in 2025 (Law No. 88/2025/QH15). This Law introduced Article 18a on the Handling of Administrative Violations in the Electronic Environment, providing a clear legal framework for sanctioning without direct physical contact through electronic systems. The provision stipulates that the handling of administrative violations in the electronic environment shall be carried out where conditions on

infrastructure, technology, and information are adequately met. The collection, storage, and use of data must ensure integrity, authenticity, security, and proper purposes. The Law also emphasizes the requirement for data connectivity and sharing, mandating that information systems serving sanctioning purposes be interconnected or capable of connecting with the National Database on the Handling of Administrative Violations and other relevant state management systems. This reform represents a significant innovation consistent with the strategy of building an electronic government, under which data on violations and sanctions will be centrally managed, facilitating the retrieval of violation histories and preventing both duplicate penalties and the omission of repeat offenses.

To implement the new provisions on digital transformation in administrative penalty procedures, on 1 July 2025, the Government issued Decree No. 190/2025/ND-CP, introducing additional regulations on the handling of administrative violations in the electronic environment. This marks a step toward institutionalizing the policy of promoting the application of information technology and digital transformation in state governance.^[3] This Decree provides detailed regulations on the conditions and procedures for imposing administrative penalties through electronic means. Competent authorities must operate information systems that meet the digital platform standards applicable to state agencies, while individuals or organizations committing violations must possess suitable electronic devices and consent to participate in the electronic penalty process. Requirements relating to information security, data protection, electronic authentication, and data storage must be ensured in accordance with the law. Violators (or representatives of violating organizations) are required to use digital signatures, in compliance with the Law on Electronic Transactions; in the absence of such signatures, the system may apply alternative authentication methods permitted by law. In cases where an administrative violation record is prepared in an electronic environment and the violator is unable to provide an electronic signature, the digital signature of the record's issuer shall still ensure its legal validity. The delivery of the violation record, penalty decision, and related documents shall be conducted through an electronic portal or an information system designated by the competent authority.

³ Cao Thi Dung, "Perspectives of the Party and the State on Digital Transformation and the Protection of the Party's Ideological Foundation in the Context of Digital Transformation" *Journal of State Organization*, No. 1 (2025): 17.

2.2. Practical Implementation of Digital Transformation in Administrative Sanctioning in Vietnam

2.2.1. Application of Technology in Administrative Sanctioning

The road traffic sector serves as a prominent example of the impact of digital transformation on administrative penalty enforcement in Vietnam. In recent years, the Traffic Police have widely implemented a model of traffic violation sanctioning through automated surveillance camera systems, commonly referred to as “remote fine collection.” Cameras installed along major roads continuously record images of vehicles and violations such as running red lights, speeding, or improper lane usage. Violation data captured by the cameras are transmitted to a processing center for verification and for the issuance of penalty decisions, without the need to stop the vehicle on site.^[4]

The Traffic Police Department, under the Ministry of Public Security, has established an Integrated Command Information Center, incorporating AI technology and connecting thousands of cameras on key roadways to monitor and handle traffic violations nationwide. The AI system is trained to recognize more than 20 common types of violations, filtering and issuing alerts in near real time. More complex violations that cannot be automatically detected are manually analyzed by officers to ensure that no case is overlooked. The “remote fine collection” process integrates technology with legal procedures: upon detecting a violation, the system extracts images or video, identifies the license plate and vehicle, and queries registration data to determine the owner. Officers then cross check the information against related databases, such as vehicle registration, prior violations, insurance, and inspection records, to verify and supplement the case file before sending a notice of violation to the vehicle owner.^[5] Thanks to the application of technology, the system can identify whether an individual has previously been penalized. The violation data of vehicles and their owners are stored and linked with relevant databases, allowing for the retrieval of each individual’s violation history. This not only helps determine the severity

⁴ Bui Tien Dat, Vu Minh Quan, and Nguyen Thuy Giang, “Sanctions for Administrative Violations through Detection by Specialised Technical Equipment in the Road Traffic Field” *Legislative Studies*, No. 20 (2022): 52.

⁵ Viet An, *Traffic Police Department Operates AI-Based Monitoring and Sanction Center*. <https://vnexpress.net/cuc-csgt-van-hanh-trung-tam-giam-sat-va-xu-phat-bang-ai-4915346.html>.

of each violation, but also provides a basis for applying the “recidivism” aggravating factor when sanctioning new offenses. Identifying recidivism is a crucial element in making fair and reasonable penalty decisions, while also enhancing the deterrent effect against repeated offenses.

A notable innovation is that the method of delivering violation notices and receiving responses has become more convenient, through the use of digital technology. At present, the Traffic Police are piloting the delivery of violation alerts via the VNeTraffic mobile application managed by the Ministry of Public Security. Vehicle owners who install this application receive a violation notice within approximately two hours after the offense is recorded.^[6] The electronic notice provides details of the violation, including the type of offense, the time and location, supporting evidence in the form of images or video, and instructions for the violator to fulfill their obligations, such as paying the fine or appearing to resolve the matter. For vehicle owners who do not use the application, authorities continue to send written notices to the registered address of the vehicle owner and simultaneously update violation data on the Traffic Police Department’s online portal for public access.^[7] The combination of traditional and digital channels ensures that violators are promptly and effectively informed, while enhancing convenience for those with access to technology.

Upon receiving the notice, the violator may proceed to the police office as instructed to present identification documents, complete the record of the violation if it was not prepared at the scene, and receive the penalty decision. Owing to data connectivity between units, the violator is not required to return to the location where the offense occurred; the case file may be electronically transferred to the police office in the violator’s place of residence for processing, provided that the technical infrastructure is adequate.^[8] This is an important improvement, demonstrating how digital transformation removes geographical barriers in penalty enforcement by leveraging interconnected networks to maximize convenience for citizens.

⁶ Hong Quang, *Traffic Violations: Notification Will Be Sent Within 2 Hours, Fine Payment Online*. <https://tuoitre.vn/vi-pham-giao-thong-se-gui-thong-bao-trong-vong-2-gio-nop-phat-online-20250711083325391.html>.

⁷ Bong Mai, *New Regulations on the Procedure for Handling ‘Cold Fines’ in Traffic Violations*. <https://nhandan.vn/quy-dinh-moi-ve-trinh-tu-xu-ly-phat-nguoi-vi-pham-giao-thong-post848001.html>.

⁸ Thanh Chau, *The Procedure for Handling Traffic Safety Violations Through Camera-Based Fines (So-Called “Cold Fines”)*. <https://baochinhphu.vn/trinh-tu-phat-nguoi-vi-pham-trat-tu-an-toan-giao-thong-duong-bo-10224112915131558.html>.

A notable aspect is the integrated coordination between the Traffic Police and relevant agencies to ensure the enforceability of penalty decisions. Data from the “remote fine collection” system are shared with the vehicle inspection authority: if a vehicle owner fails to comply with the penalty decision within the prescribed time limit, an alert is updated in the system, preventing the vehicle from passing inspection until the fine is paid in full. Once the penalty has been satisfied, the police notify the removal of the alert so that the vehicle can undergo inspection as usual.^[9] This “inspection suspension” mechanism exemplifies the application of technology to effectively enforce administrative sanctions in practice, ensuring that violators comply with the imposed measures.

Overall, the application of information technology and digital transformation in traffic violation enforcement in Vietnam has yielded positive results. The surveillance camera system and the “remote fine collection” process have enabled the timely detection and handling of numerous offenses that were previously difficult to control, such as violations occurring beyond the direct observation range of the Traffic Police. According to the Traffic Police Department, this model has significantly reduced violations such as overloading and reckless speeding on expressways, owing to the deterrent effect of continuous monitoring. For instance, after six months of piloting remote fine collection for overloaded vehicles in Ho Chi Minh City (November 2023–May 2024), the number of violations recorded by weight inspection devices was 3,124 cases, representing a decrease of nearly 91 percent compared to the same period before implementation (34,638 cases). Many vehicle owners complied, paying more than VND 15.6 billion in fines, with the total expected amount exceeding VND 28.6 billion.^[10] Notably, the combination of technology and procedural reforms is gradually changing the habits and awareness of road users, as every violation can now be recorded and sanctioned, thereby fostering better compliance with the law. This serves as an important foundation for expanding digital transformation into other areas of administrative penalty enforcement.

⁹ Bong Mai, *New Regulations on the Procedure for Handling ‘Cold Fines’ in Traffic Violations*. <https://nhandan.vn/quy-dinh-moi-ve-trinh-tu-xu-ly-phat-nguoi-vi-pham-giao-thong-post848001.html>.

¹⁰ Quy Hien, *Thanks to Cold Ticketing, Heavy Overload Violations Decreased Sharply*. <https://nhandan.vn/nho-phat-nguoi-so-vu-vi-pham-cho-qua-tai-trong-giam-sau-post813695.html>.

2.2.2. Integration of Administrative Sanction Procedures through the Online Public Service Portal

In addition to modernizing the stages of detecting violations and issuing penalty decisions, Vietnam has also promoted the digitization of the penalty execution and payment stages. A notable initiative is the integration of administrative penalty inquiry and payment services into the National Public Service Portal. Since 2020, in certain pilot localities, traffic violators have been able to access dichvucong.gov.vn to check penalty decisions and make online payments via bank accounts or e-wallets, replacing the traditional practice of making cash payments at the State Treasury or commercial banks.

Initial statistics indicate that, while the system offers considerable convenience, it has not yet been widely used. After three months of piloting in five localities in 2020, the Traffic Police uploaded 13,000 violation cases (including 11,000 cases with penalty decisions) to the National Public Service Portal, but only 97 cases were paid online, a very low rate.^[11] This partly reflects citizens' initial habits and reluctance toward the new method, while also revealing technical and legal obstacles that must be addressed to promote the use of online public services.

The use of the National Public Service Portal requires citizens to have an electronic account and a certain level of information technology proficiency, which poses a barrier for many people, particularly the elderly or those with limited Internet access. As a result, the rate of voluntary account registration and online fine payment remains low. To address this, the State has intensified public communication and guidance efforts, while integrating public postal services: after paying fines online, citizens can receive the return of temporarily seized documents, such as driving licenses, at their homes via postal delivery, thereby saving travel time and encouraging the use of online methods. These are small but necessary steps toward fostering a habit of electronic interaction between citizens and administrative authorities.

Despite initial limitations, the model of paying administrative fines through the National Public Service Portal has affirmed the correctness of its policy orientation. Digitizing fine collection channels offers multiple

¹¹ Thu Thuy, *Application of Information Technology in Handling Traffic Violations: How Is It Done?*. <https://cand.com.vn/Hoat-dong-LL-CAND/Ung-dung-Cong-nghe-thong-tin-trong-xu-ly-vi-pham-giao-thong-nhu-the-nao-i571268/>.

benefits: (i) Convenience for citizens, enabling them to pay fines anytime and anywhere, avoiding the need to queue at the State Treasury; (ii) Transparency, as payments are made through the banking system, minimizing the risk of mismanagement or misappropriation of funds; and (iii) Resource efficiency, reducing the volume of paperwork for officials (eliminating the need to issue manual receipts or compile statistics by hand) and lowering social costs in terms of time and travel expenses.^[12] In practice, in many developed countries, 100 percent of traffic violation fines are paid either through designated agencies or online, with the police not directly collecting fines in order to prevent petty corruption.^[13]

Beyond the traffic sector, efforts are underway to expand the integration of administrative penalty data into digital platforms. The Government has developed national databases on population and on administrative violations, providing the foundation for intersectoral connectivity. The long-term vision is to establish a centralized administrative penalty management system in which every penalty decision, across all sectors such as land, construction, environment, and taxation, can be monitored, enforced, and statistically recorded through a single online portal. This approach not only improves services for citizens, but also enables regulatory authorities to analyze violation data for timely policy adjustments. It can be said that the initial steps taken in the traffic sector are providing valuable experience for Vietnam to implement digital transformation in administrative penalty enforcement on a broader scale.

¹² Nguyen Hoang Viet, "New Legal Provisions on Monetary Fines in Handling Administrative Violations" *Legislative Studies*, No. 14 (2022): 51.

¹³ Do Thien, "Traffic Penalty Systems in Other Countries" *Legal News Online*, 12 February 2014. <https://plo.vn/cach-phan-ghiao-thong-o-cac-nuoc-post265517.html>.

2.3. Legal Challenges in the Context of Digital Transformation of Administrative Sanctioning in Vietnam

2.3.1. The Procedures, Processes, and Standards for Electronic Evidence Remain Unclear

One major challenge lies in ensuring the legal validity of electronic documents and evidence in the penalty enforcement process.^[14] In court proceedings, the law has gradually recognized electronic evidence and established evaluation criteria such as authenticity and integrity. However, in administrative penalty enforcement – which involves a much simpler procedure – detailed regulations remain lacking, resulting in numerous practical difficulties. For instance, how can it be confirmed that an image captured by a camera is authentic and has not been altered? Who bears the responsibility for proving this? What steps must be taken in the process, from collecting violation data to storing it in the case file, to ensure the integrity of the evidence? Circular No. 73/2024/TTBCA issued by the Ministry of Public Security provides that results collected using technical equipment (such as images and data) must be listed, printed, and included in the violation case file.^[15] This essentially treats printed images from cameras as ordinary evidence. However, in the future, when the process becomes entirely digital, with no printed documents, it will be necessary to establish a digital evidence protocol, for example, applying digital signatures and time stamps to violation data immediately upon collection to confirm its originality. Without such regulations, electronic evidence could be subject to disputes over reliability and probative value, making it difficult to conclusively resolve cases if the violator does not cooperate.

Practical experience with “remote fine collection” in the traffic sector shows that penalties are not always effectively enforced. One reason is that the Law on Handling of Administrative Violations currently lacks coercive measures to ensure strict compliance by violators. Another reason is that violators intentionally evade sanctions by changing their place of residence, selling the vehicle, or claiming that they were unaware of, and

¹⁴ Paul W. Grimm, Daniel Capra, Gregory P. Joseph, “Authenticating Digital Evidence” *Baylor Law Review*, No. 1 (2017): 3.

¹⁵ Bong Mai, *New Regulations on the Procedure for Handling ‘Cold Fines’ in Traffic Violations*. <https://nhandan.vn/quy-dinh-moi-ve-trinh-tu-xu-ly-phat-nguoi-vi-pham-giao-thong-post848001.html>.

never received, the penalty notice.^[16] In addition, remote fine collection faces a significant challenge in that it is based solely on the violation committed by the vehicle, without identifying who was actually driving at the time. This becomes problematic when the person operating the vehicle at the time of the violation is not its registered owner, leading in some cases to wrongful penalties when the Traffic Police incorrectly identify the violating vehicle.^[17]

2.3.2. Protection of Personal Data and Privacy

The expansion of camera-based surveillance and the integration of databases entail the collection and processing of large volumes of personal data, such as vehicle images linked to their registered owners, facial recognition information, and travel routes. Without robust protection mechanisms, the risk of infringing on privacy rights is significant: camera systems may inadvertently capture private activities, and violation data, if leaked, could harm an individual's honor or reputation, or be exploited for commercial or advertising purposes without the person's knowledge.

For a long time, Vietnamese law had no provisions on the protection of personal data collected through the use of professional technical equipment for detecting and sanctioning violations, resulting in a legal gap regarding issues such as the retention period of data, its use for purposes other than penalty enforcement, or the right to request deletion of data after the fine has been paid. On 17 April 2023, the Government issued Decree No. 13/2023/ND-CP on the protection of personal data, the first legal instrument to address this matter. Subsequently, on 26 June 2025, the National Assembly adopted the Law on Personal Data Protection, effective from 1 January 2026, establishing a legal framework and sanctions for violations, thereby affirming the importance of privacy rights in the digital era.

However, sanctions alone are not sufficient; it is equally important to develop technical standards and regulations to ensure that penalty-related data is securely protected. For instance, camera data should be encrypted, with access restricted to authorized personnel only; the sharing of data

¹⁶ Le Trung Hieu, "Improvements of Legal Regulations on "Cold Fines"," *Legislative Studies*, No. 23 (2017): 53.

¹⁷ Quynh Tho, *Motorist Fined Through Traffic Surveillance Despite no Violation – Turns out it was a Mistake*. <https://plo.vn/bi-csgt-phat-nguoi-du-khong-vi-pham-hoa-ra-phat-nham-post823068.html>.

must comply with the “purpose limitation” principle; and citizens should be informed of the data retention period and the means of accessing their own data. If these safeguards are not effectively implemented, the risk of misuse or leakage of personal information will increase, undermining public trust in the digital system.

2.3.3. Ensuring Citizens’ Rights in the Electronic Administrative Sanctioning Process

Digital transformation does not imply a reduction of the rights of persons subject to administrative sanctioning. On the contrary, digital systems should be designed with a “citizen-centric” approach, ensuring that individuals can exercise all their rights and fulfill their obligations in the most convenient manner possible.^[18] The challenge lies in ensuring fairness and accessibility for all individuals. Not everyone is sufficiently proficient in technology to use applications or access online portals; therefore, at the current stage, competent authorities must continue to maintain traditional channels, such as sending letters and providing in-person services, to handle administrative procedures for citizens. At the same time, the electronic administrative sanctioning process must be transparent and clearly structured, so that citizens can easily monitor the status of their cases. For example, after paying a fine online, they should receive an electronic confirmation; if the decision has been executed, the system must update to remove any related alerts. A lack of such information may cause confusion for citizens or force them to make repeated visits to different offices, which contradicts the objectives of administrative reform. Therefore, when applying administrative sanctioning in the electronic environment, attention must be paid to ensuring the right of the alleged violator to present explanations, in order to guarantee objectivity, transparency, democracy, and compliance with the law in the sanctioning process, which serves as the basis for issuing the penalty decision. A feasible mechanism is to allow the violator to submit explanations remotely, via an online portal or application, within a specified period after receiving the violation notice, instead of being required to be physically present to sign the record of violation.^[19]

¹⁸ Quoc Dinh, *Putting Citizens at the Center of Digital Transformation*. <https://daidoanket.vn/lay-nguoi-dan-lam-trung-tam-trong-chuyen-doi-so-10304256.html>.

¹⁹ Cao Vu Minh, “Accountability in Administrative Sanctions and Legal Aspects Needing Improvement” *Journal of Law and Practice*, No. 50 (2022): 79.

The right to lodge complaints and initiate lawsuits must also be safeguarded in the digital environment. Under current law, a person subject to administrative sanctioning is entitled to challenge the sanctioning decision through a complaint procedure or by filing a lawsuit before an administrative court. Empirical evidence suggests that only a limited number of “remote fine collection” traffic violation cases are brought to court, but errors cannot be entirely ruled out. In this context, the electronic system should support the complaint process by providing a function that allows citizens to submit complaints online and attach supporting evidence. Likewise, the complaint handling authority could respond via electronic means. These are the next steps to be considered to ensure the comprehensiveness of the rule of law in the course of digital transformation, meaning that technology must not diminish the legal institutions that safeguard human rights.

2.3.4. Accountability and Responsibility of State Authorities

The employment of AI systems presents challenges for liability rules^[20]. When applying complex technical systems such as AI in administrative sanctioning, the question arises: who bears ultimate responsibility, the human or the machine? As a matter of principle, all administrative decisions must be issued by a competent authority and the issuer must be legally accountable, with technology serving solely as a supporting tool. However, in practice, there is a risk that officials may delegate responsibility to the system if they become overly reliant on technology. To prevent this, the decision-making process should be clearly regulated: AI may automatically detect violations, but the penalty decision must be reviewed and approved by an authorized official, with the legal grounds and extracted data from the system clearly recorded. Upon request from the citizen, the authority must be able to explain the grounds and process that led to the penalty decision.^[21] This requires capacity building for officials to ensure that they understand and are able to operate digital systems, thereby avoiding a mindset of leaving the process entirely to machines. At the same time, an internal control mechanism for digital operations must be in place. For example, the system log should record which official approved a decision

²⁰ Miriam Buiten, Alexandre de Streel, Martin Peitz, “The law and economics of AI liability” *Computer Law and Security Review*, No. 48 (2023).

²¹ Le Thi Thuy, “Some Fundamental Solutions to Enhance Accountability in Public Service Activities” *State Management Review*, No. 248 (2016): 36.

or entered specific data, so that in the event of an error, the relevant individual can be held accountable.

Another aspect of accountability concerns responsibility when the system makes errors or experiences malfunctions. If the software misidentifies a case and causes inconvenience to a citizen, will the authority provide compensation or issue an apology? At present, the Law on State Compensation Liability provides for compensation in administrative management activities, but it primarily applies to unlawful administrative decisions that have caused damage.^[22] In the technological context, there are nonmaterial damages, such as the time and effort spent resolving system errors, that are difficult to quantify. Therefore, the State should adopt a constructive attitude and respond promptly when receiving reports of malfunctions from citizens, treating such responses as part of the responsibility of the agency providing digital public services. Only then can the public develop trust in and support for digital transformation.

In summary, the above legal challenges demonstrate that applying digital technology to administrative sanctioning is by no means a simple matter of replacing equipment or modifying procedures. Rather, it requires a comprehensive approach that encompasses the improvement of the legal framework, the enhancement of enforcement capacity, and the safeguarding of citizens' rights.

2.4. International Experience in Digital Transformation of Administrative Sanctioning

Many countries around the world have taken the lead in applying technology to administrative sanctioning, particularly in the traffic sector, thereby offering valuable lessons for Vietnam. For example, in developed countries such as Australia, France, Germany, South Korea, and Malaysia, the model of “remote fine collection” through camera surveillance combined with a separated fine collection mechanism has become common practice. Police officers generally do not stop vehicles or collect cash fines on the spot; instead, all violations are recorded by camera systems, after which the competent authority sends a violation notice directly to

²² Tran Van Hung, “The Law on State Compensation Liability and the Issue of Protecting Human Rights” *Vietnam Lawyers Journal*, No. 4 (2018): 27.

the registered address of the vehicle owner. The notice clearly states the nature of the offense, the applicable fine, and instructions for payment or lodging a complaint.^[23]

One noteworthy international practice is the separation between the authority responsible for imposing sanctions and the authority responsible for collecting fines. In Australia, traffic police have the authority to prepare violation records and issue administrative sanctioning decisions, while the collection of fines is carried out by the road management authority. After receiving a notice, issued either by the police or generated from the camera system, specifying the violation, the fine amount, the account details for payment, the time and location of the offense, and the payment deadline, the violator can choose to pay the fine in person or transfer the amount to the account indicated in the notice.^[24]

In France, police officers prepare electronic records using handheld devices, after checking the violator's documents and entering all relevant information about the person and the offense. The violator signs using an electronic pen, completing the record, which the police then send to a central processing center. This center issues a penalty notice with full details and sends it to the violator's place of residence. For static traffic violations, police officers also prepare electronic records on site, without requiring a signature, and send the penalty notice to the registered vehicle owner. The police do not have the authority to collect fines directly. Violators may pay fines in cash, by check, by credit card, or through penalty stamps, as instructed in the notice, either at a public finance center or via the Internet using a credit card. The most common method is online payment, which allows violators to pay at any time and from any location through the official payment portal of the competent authority.^[25]

In South Korea, a dense network of surveillance cameras combined with high speed Internet connectivity can capture most traffic violations for the purpose of "remote fine collection". When a violation is detected, the system records the vehicle information, immediately retrieves the owner's data, and sends a penalty notice to the registered residential address.

²³ Do Thien, "Traffic Penalty Systems in Other Countries."

²⁴ Phan Thong Anh, Vo Phuc Anh, "Whether or not a Provision on Account Establishment for Vehicle Fines for Motorists Traffic Offences?" *Legislative Studies*, No. 6 (2017): 37.

²⁵ Nguyen Tuyen, *Experience in Handling Traffic Violations in France*. <https://baotintuc.vn/tin-tuc/kinh-nghiem-xu-ly-vi-pham-giao-thong-tai-phap-tiep-theo-va-het-2014032422554413.html>.

As most financial transactions in South Korea are conducted through banks and online payment systems, the police only need to enter the name and identification number of the vehicle owner to identify their bank account; if the fine is not paid within the prescribed period, that account will be frozen.^[26]

International experience shows that, upon receiving a violation notice, citizens make fine payments at the state treasury or an administrative office rather than directly to the police.^[27] This approach aims to prevent misconduct within the enforcement force, as police officers have no opportunity to receive money directly, thereby reducing the risk of bribery and illicit payments. This model is highly relevant for Vietnam, particularly as the country is developing the National Public Service Portal as an intermediary fine collection channel, separating the payment process from direct interaction between the violator and the sanctioning officer.

Many countries place strong emphasis on maximizing convenience for citizens in paying fines online. In several states in Germany and Australia, for example, the violation management system allows individuals to access the official website, enter the violation code provided in the notice sent by post, view the details of the offense, and make payment via credit card or bank transfer. This enables citizens to fulfill their obligations regardless of whether the violation occurred in a different city or state, without the need to travel. In Malaysia, nearly 100 percent of citizens choose to pay fines online due to this convenience. To encourage compliance, many jurisdictions impose stricter measures for late payments: after the deadline, a second notice is sent with the fine increased by 50 percent or doubled; continued noncompliance may result in additional sanctions, such as suspension of vehicle inspection, revocation of driving licenses, or recovery through court proceedings.^[28] Thanks to these warning systems and strict sanctions, the rate of fine payment compliance in these countries is very high, thereby ensuring the deterrent effect of the law.

International experience demonstrates that digital transformation in administrative sanctioning is an irreversible trend that brings significant practical benefits: it enhances governance efficiency by enabling

²⁶ Cao Ha, *International Experiences in Traffic Violation Penalties That Vietnam Should Learn From*. <https://giaothong.tapchixaydung.vn/kinh-nghiem-cac-nuoc-phat-vi-pham-giao-thong-viet-nam-nen-hoc-hoi-18387797.html>.

²⁷ Do Thien, "Traffic Penalty Systems in Other Countries."

²⁸ Do Thien, "Traffic Penalty Systems in Other Countries."

the detection and sanctioning of violations anytime and anywhere, while reducing personnel costs; it increases transparency and objectivity by minimizing direct contact and ensuring that all violations are supported by recorded evidence; and it offers convenience for citizens through streamlined procedures that can be carried out online. The key conditions for success, as learned from other countries, are the establishment of a comprehensive legal framework and a fully integrated digital infrastructure, combined with sustained efforts in public communication and education to ensure that both citizens and officials can adapt to the new approach.

2.5. Recommendations for Improving Digital Transformation in Administrative Sanctioning in Vietnam

Firstly, it is necessary to improve the legal framework governing electronic evidence and documents. The law should clearly define the legal value of evidence collected from electronic means and devices, such as images, videos, and digital data, in administrative sanctioning, while establishing technical standards for collection and preservation procedures. For example, violation data should be digitally signed by an authorized officer, stored in a secure system, and accompanied by an access log. Such measures would ensure that electronic evidence has a level of reliability equivalent to that of traditional evidence, thereby serving as a solid basis for issuing sanctioning decisions.

Secondly, privacy and personal data protection must be ensured through the development of specific regulations on data management within the electronic sanctioning system. In particular, the law should specify the retention period for violation data, for example, deleting images one year after the case is resolved to avoid the accumulation of sensitive data, and strictly prohibit the use of data for unlawful purposes. An anonymization mechanism should be applied when sharing data between agencies not directly responsible for sanctioning, providing only necessary information, for example, license plate numbers for inspection suspension without including the driver's personal details. In parallel, the legal framework on personal data protection should be further developed to establish a solid legal basis for the secure processing of citizens' data in the digital environment.

Thirdly, interagency coordination and data interoperability must be strengthened to maximize the effectiveness of digital transformation in administrative sanctioning. Regulations should be enacted to promote data connectivity and sharing among the police, transport authorities, financial agencies, judicial bodies, and local governments, in accordance with the “one violation – one digital case file” principle. Each case should be assigned a unified file code, allowing all relevant authorities, such as the decision making authority, the state treasury collecting the fine, and the enforcement authority, to update the processing status in the system. This requires investment in uniform technological infrastructure from the central to the local level to avoid partial connectivity that may cause disruptions. At the same time, an interagency monitoring mechanism should be established; for example, once the State Treasury receives the fine payment, it should update the status to “paid” so that the police can immediately remove the violation alert, or when a court accepts a lawsuit against a sanctioning decision, it should notify the issuing authority to temporarily suspend enforcement. If these coordination procedures are standardized in legal instruments, the electronic sanctioning system will operate effectively and consistently nationwide.

Fourthly, the accountability and transparency of sanctioning authorities should be enhanced. The law should emphasize the principle that, regardless of the level of technological application, ultimate responsibility for a sanctioning decision rests with the issuing authority. It is therefore recommended to add provisions requiring that all automatically generated decisions, such as those proposed by camera systems, be approved by an authorized person, who will be held accountable for any errors. Regular accuracy checks of technical systems, such as camera calibration and recognition software testing, should be conducted, with results disclosed appropriately to strengthen public trust. In cases where a system error leads to an incorrect decision, the authority must proactively revoke or amend the decision, issue an apology to the citizen, and provide remedies, such as refunding fines and compensating for any damages. This should be codified in law to ensure that authorities cannot evade responsibility. Additionally, the creation of a transparent administrative sanctioning information portal should be encouraged, disclosing statistical data, such as the number of cold ticketing cases, number of online fine payments, and number of complaints, to enhance public oversight.

Fifthly, capacity building for human resources and public awareness campaigns should be prioritized. While not directly regulated by law,

the effectiveness of the above solutions depends on training programs for public officials on digital system operation skills, information security practices, and service oriented attitudes in the electronic environment. At the same time, public communication and guidance should be strengthened to help citizens understand how to use online public services, as well as their rights and obligations when participating in the electronic sanctioning process. When both implementers and participants are knowledgeable and proficient, the law can be effectively applied in practice. This is a decisive factor in ensuring that the digital transformation process is sustainable and enjoys broad public support.

3 | Conclusion

Digital transformation offers significant opportunities to innovate the methods of administrative sanctioning in Vietnam. In practice, from surveillance camera systems to the National Public Service Portal, technology has contributed to improving efficiency, enhancing transparency, and creating convenience for both the State and citizens. However, to maximize its effectiveness, this process must go hand in hand with legal and institutional reforms, ensuring the core values of legality, fairness, protection of human rights, and accountability of public authorities.

Vietnam has demonstrated its commitment to improving the legal framework, as reflected in the National Assembly's adoption of provisions on electronic sanctioning in the 2025 amended Law on Handling of Administrative Violations, which is a positive signal. The objective is to establish a robust legal foundation for the comprehensive digitization of the sanctioning process, supporting the deployment of new technological solutions without adversely affecting citizens' rights. International experience shows that combining a sound legal framework with modern technological infrastructure can transform administrative sanctioning procedures from cumbersome processes into swift, transparent, and citizen-friendly public services.

In the future, researchers may explore several directions: (1) Studying the application of artificial intelligence and machine learning in detecting administrative violations, for example using AI to analyze images to detect illegal construction or improper waste disposal, and identifying the legal

requirements applicable to AI, including responsibility when AI errs and the prevention of algorithmic bias; (2) Assessing the social impacts of automated sanctioning to determine whether it leads to long-term behavioral change or merely short-term compliance, and examining the role of law in education and prevention through technology; (3) Comparing China's social credit model with Western rule of law approaches in electronic sanctioning, drawing lessons on balancing management efficiency with the protection of human rights; (4) Exploring the potential use of blockchain technology to manage the fine payment process, store receipts transparently, and prevent misconduct; (5) Surveying public acceptance of new electronic enforcement measures, such as account freezes or tax deductions, with the aim of proposing communication strategies and legal reforms suited to Vietnam's legal culture. These research directions can support lawmakers and policymakers in shaping policies that ensure technology serves the law and the people, thereby promoting progress in administrative sanctioning in Vietnam within the broader process of global digital transformation.

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Sustainable Consumer Data Protection in Vietnam's E-Commerce: Bridging Legal Gaps Through Global Insights

Abstract

Vietnam's enactment of the Personal Data Protection Law (PDPL), in 2025, scheduled to enter into force in 2026, represents a landmark shift toward codifying a modern data protection regime. Yet, the law enters a digital marketplace dominated by data-driven e-commerce platforms, uneven institutional capacities, and fragmented regulatory frameworks. This paper examines whether the PDPL can meaningfully safeguard consumer personal data in Vietnam's rapidly expanding e-commerce sector, and what legal, institutional, and comparative insights can support its sustainable implementation. Drawing on a structured comparative analysis of the EU's GDPR, China's PIPL, and California's CCPA, the paper evaluates how different regulatory philosophies, including rights-based, state-centric, and market-driven, offer lessons for refining Vietnam's approach. Building on doctrinal, comparative, and normative analysis, the paper identifies persistent gaps in enforcement independence, lawful bases for processing, cross-border data governance, and sector-specific guidance for e-commerce. It proposes a sustainability-oriented, multi-dimensional reform framework emphasizing institutional independence, regulatory harmonization, risk-based governance, and sustainable data stewardship. The paper contributes to theoretical debates on consumer data governance in emerging economies, and provides policy guidance for Vietnam as it seeks to build a trustworthy, rights-respecting, and sustainable digital market.

KEYWORDS: consumer data protection, e-commerce, GDPR; personal data governance, Vietnam PDPL

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1 | Introduction

Vietnam's digital economy has experienced unprecedented growth over the past decade, driven largely by the proliferation of e-commerce platforms and data-driven transactional models. Personal data has increasingly become the central asset enabling targeted advertising, personalized recommendations, and dynamic pricing, thereby reshaping consumer interaction in online environments.^[1] Yet these same practices expose consumers to heightened vulnerabilities, including unauthorized data sharing, opaque profiling, and cross-border risks.

The enactment of the Personal Data Protection Law (PDPL) in 2025 marks Vietnam's first comprehensive legislative effort to consolidate dispersed rules into a unified statutory regime.^[2] Compared to earlier frameworks – primarily embodied in Decree No. 13/2023/ND-CP – the PDPL introduces more robust legal definitions, explicit rights for data subjects, monetary penalties, and obligations for high-risk processing. However, its alignment with actual data-intensive commercial practices remains uncertain, particularly in e-commerce settings dominated by private platforms, multinational service operators, and third-party data brokers.

Existing scholarship on Vietnam's data protection reform has mainly assessed the transition toward codification and examined similarities with the GDPR.^[3] However, limited academic literature directly addresses how the PDPL functions within e-commerce and how consumer data – distinct from general personal data – is regulated through consent-based or risk-based governance. Furthermore, sustainability implications remain underexplored. In digital markets, the protection of consumer data contributes not only to privacy assurance but also to sustainable commercial trust and long-term market fairness, themes that have not received systematic attention.

¹ Viktor Mayer-Schönberger, Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (Boston: Houghton Mifflin Harcourt, 2013); Julie E. Cohen, *Between Truth and Power: The Legal Constructions of Informational Capitalism* (Oxford: Oxford University Press, 2019); Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: PublicAffairs, 2019).

² National Assembly of Vietnam, *Personal Data Protection Law* (adopted June 2025, effective January 2026).

³ Graham Greenleaf, "Vietnam's 2024 Draft Data Privacy Law Is Ambitious and Ambiguous" *Privacy Laws & Business International Report*, 192 (2024): 22-25.

This paper addresses three major questions. First, how does the PDPL currently regulate consumer personal data in e-commerce contexts? Second, what structural and institutional gaps continue to constrain enforcement and operational clarity? Third, what comparative insights from the GDPR, PIPL, and CCPA can support Vietnam's next reform stage?

This paper makes three contributions. Doctrinally, it provides one of the first structured assessments of the PDPL, specifically through an e-commerce lens. Conceptually, it distinguishes consumer data from general personal data and situates this distinction within sustainability-oriented regulatory theory. Normatively, it proposes a reform framework grounded in comparative lessons but adapted to Vietnam's institutional realities, emphasizing enforcement independence, risk-based governance, and cross-border compatibility.

The remainder of the paper proceeds as follows. Section 2 reviews relevant research on consumer data and digital governance. Section 3 analyzes how the PDPL regulates consumer personal data in e-commerce. Section 4 conducts a comparative analysis of GDPR, PIPL, and CCPA. Section 5 proposes policy recommendations and outlines a reform roadmap. Section 6 concludes.

2 | Literature Review: Consumer Data, Privacy, and E-Commerce Governance

Research on data governance is well-established across interdisciplinary domains, especially law, economics, behavioral studies, and digital sociology. Three major strands of research provide theoretical grounding for this paper.

Contemporary data-driven markets are shaped by the commodification of user information and the strategic use of transactional data for behavioral analytics, profiling, and predictive market segmentation. Scholars identify personal data as the core extractive resource enabling surveillance-oriented and hyper-personalized commercial systems.^[4] A second

⁴ Ben Wagner, *Algorithmic Regulation* (Oxford: Oxford University Press, 2022); Zuboff, *The Age of Surveillance Capitalism*; Cohen, *Between Truth and Power*; Evgeny

line of research emphasizes how platforms capture value asymmetrically through algorithmic categorization, behavioral nudging, and monetization of metadata, ultimately reinforcing market power in digital ecosystems. Although these perspectives offer sophisticated explanations of data-centric markets, they have not been fully examined in emerging regulatory systems such as Vietnam, where legal frameworks have historically lagged behind technological innovation.

Data protection regimes differ fundamentally in their regulatory philosophies and institutional outcomes. Comparative legal scholarship distinguishes between rights-based approaches (EU), security-based approaches (China), and market-based approaches (United States). A large body of work compares the institutional design and enforcement structure under these regimes, emphasizing how their normative foundations filter into compliance obligations and business incentives.^[5] However, existing comparative studies rarely extend into examining how hybrid models could be applied in a transitional economy with multi-layered regulation such as Vietnam, especially for e-commerce-specific data clusters involving tracking, profiling, cross-border storage, and real-time monetization.

Prior studies of Vietnam's regulatory development highlight an uneven progression toward comprehensive rules, shifting from overlapping ministerial circulars and decrees into nationwide statutory legislation. Discussions frequently address problems of dispersed authorities, lack of unified definitions, or insufficient enforcement mechanisms. Yet these studies often treat personal data as a homogeneous legal category rather than consumer-specific data generated through online commerce.^[6] Little research articulates how data protection contributes to broader policy goals such as digital trust, sustainable e-commerce development, and consumer fairness, an academic gap that this paper addresses through a sustainability-oriented governance framework.

Morozov, *To Save Everything, Click Here: The Folly of Technological Solutionism* (New York: PublicAffairs, 2013).

⁵ Christopher Kuner, *Transborder Data Flows and Data Privacy Law* (Oxford: Oxford University Press, 2013); Igor Calzada, "Citizens' Data Privacy in China: The State of the Art of the Personal Information Protection Law (PIPL)" *Smart Cities*, No. 3 (2022): 1129-1150. <https://doi.org/10.3390/smartcities5030057>; Daniel J. Solove, Woodrow Hartzog, "The Scope and Potential of FTC Data Protection" *George Washington Law Review*, 83 (2015): 2230-2273.

⁶ Tô Trang Lam, "Some Legal Aspects of Personal Data Protection in the World – Experience for Vietnam," *Cogent Social Sciences*, No. 1 (2024); Greenleaf, "Vietnam's 2024 Draft Data Privacy Law."

3 | Conceptual and Legal Foundations of Consumer Data Protection

3.1. Personal Data and Consumer Data: Distinction and Overlap

Personal data is commonly understood as information relating to an identified or identifiable natural person, regardless of the context in which such information is generated or processed.^[7] This broad and technology-neutral concept forms the cornerstone of contemporary data protection regimes, including the GDPR and Vietnam's Personal Data Protection Law (PDPL). By framing personal data as a general legal category, these regimes seek to ensure baseline protection for individual autonomy and informational dignity across diverse social, administrative, and commercial settings.^[8]

Within this broad category, consumer data represents a context-specific subset of personal data generated through commercial interactions between individuals and market actors. Consumer data typically encompasses transactional records, purchasing histories, browsing behavior, preference signals, and inferred profiles derived from online interactions on digital platforms.^[9] Unlike general personal data, consumer data is intrinsically linked to market asymmetries, profit-driven processing, and behavioral influence strategies, particularly in e-commerce environments characterized by large-scale data aggregation and automated decision-making.^[10]

The distinction between personal data and consumer data, however, is not absolute. While all consumer data qualifies as personal data under prevailing legal definitions, not all personal data carries the same economic function or regulatory risk profile. The overlap between these categories creates regulatory challenges, especially when general data protection rules are applied uniformly to consumer-generated datasets without accounting for their commercial sensitivity and potential for manipulation. Failure to acknowledge this overlap may result in formalistic consent

⁷ Christopher Millard, W. Kuan Hon, "Defining 'Personal Data' in e-Social Science" *Information, Communication & Society*, 15 (2011).

⁸ Regulation (EU) 2016/679 (General Data Protection Regulation), art. 4(1); National Assembly of Vietnam, *Personal Data Protection Law*, arts. 2-3; Solove, Hartzog, "The Scope and Potential of FTC Data Protection."

⁹ Rahmi Ayunda, "Personal Data Protection to E-Commerce Consumer: What Are the Legal Challenges and Certainties?" *Law Reform*, No. 2 (2022): 144-163.

¹⁰ OECD, "Exploring the Economics of Personal Data: A Survey of Methodologies for Measuring Monetary Value" OECD Digital Economy Papers, No. 220 (2013).

mechanisms, insufficient safeguards against profiling, and weak oversight of downstream data sharing practices in digital markets.

3.2. Intersection between Privacy, Data Protection, and Consumer Protection

Privacy traditionally reflects a normative and rights-based concept concerned with individual autonomy, dignity, and control over personal life.^[11] In legal theory, privacy functions as a foundational value rather than a purely regulatory tool, shaping the ethical boundaries of information use and surveillance.^[12] Within digital environments, privacy interests are increasingly challenged by continuous data extraction, behavioral monitoring, and opaque commercial practices that extend beyond the individual's immediate awareness or consent.

Data protection, by contrast, operates as a procedural and institutional framework designed to operationalize privacy through concrete obligations imposed on data controllers and processors.^[13] Rather than safeguarding privacy as an abstract right, data protection law focuses on governance mechanisms such as consent requirements, purpose limitation, accountability, risk assessment, and supervisory oversight. In this sense, data protection serves as the primary legal instrument through which privacy principles are translated into enforceable compliance duties within both public and private sectors.

Consumer protection law introduces a distinct regulatory logic by addressing information asymmetries, unfair commercial practices, and contractual imbalances in market transactions.^[14] Unlike privacy and data protection regimes, consumer protection frameworks are explicitly

¹¹ Lam, "Some Legal Aspects of Personal Data Protection in the World – Experience for Vietnam."

¹² Daniel J. Solove, *Understanding Privacy* (Cambridge: Harvard University Press, 2008).

¹³ European University Institute, *Guide on Good Data Protection Practice in Research* (Florence: European University Institute, 2022), 5.

¹⁴ Archana Goel, Utkal Khandelwal, Jayalakshmy Ramachandran, "Three Decades of Consumer Protection Literature: Systematic Review and Future Research Agenda" *Journal of Creative Communications* (2025); Nguyen Duy Phuong, Nguyen Duy Thanh, "Law on Corporate Social Responsibility for Consumers in Vietnam" *Prawo i Więż*, No. 1 (2022): 297-312.

market-oriented, aiming to ensure transparency, fairness, and effective remedies in commercial relationships. In digital commerce, consumer protection norms increasingly intersect with data governance, particularly where personal data functions as a form of counter-performance in exchange for access to online services or price advantages.

The intersection of privacy, data protection, and consumer protection reveals significant regulatory tension in e-commerce governance. While data protection regimes emphasize procedural legality and consent, consumer protection law demands substantive fairness and protection against manipulation. In Vietnam, these frameworks largely operate in parallel rather than as an integrated regulatory matrix, resulting in fragmented oversight of consumer data practices on digital platforms. This fragmentation weakens protection against profiling-based exploitation, dynamic pricing discrimination, and opaque data-driven marketing strategies, underscoring the need for coordinated governance across legal domains.

3.3. Risks Arising from E-Commerce-Driven Data Ecosystems

E-commerce platforms operate as data-intensive ecosystems in which consumer interactions are continuously recorded, aggregated, and analyzed across multiple layers of digital infrastructure. These ecosystems generate a wide range of risks that extend beyond traditional data security concerns, including pervasive behavioral monitoring, large-scale profiling, and algorithmic influence over consumer choice. Such risks are amplified by the integration of third-party analytics services, advertising networks, and cross-platform tracking technologies that obscure data flows from end users.^[15]

These risks are structurally produced by the commercial logic underpinning platform-driven digital markets. Real-time data collection enables predictive analytics, dynamic pricing, and personalized recommendation systems that can subtly shape consumer behavior while remaining largely invisible to affected individuals. The reliance on inferred data – such as predictive preferences, risk scores, and consumption propensities – further

¹⁵ Shoshana Zuboff, *The Age of Surveillance Capitalism* (New York: PublicAffairs, 2019); Julie E. Cohen, *Between Truth and Power: The Legal Constructions of Informational Capitalism* (Oxford: Oxford University Press, 2019).

intensifies regulatory challenges, as these data points are rarely disclosed, contested, or meaningfully consented to by consumers.^[16]

From a legal perspective, e-commerce-driven data risks raise concerns that cannot be fully addressed through consent-based compliance alone. Algorithmic profiling may lead to discriminatory outcomes, informational manipulation, and unequal market access, particularly where consumers lack effective mechanisms to understand, challenge, or opt out of automated decision-making processes.^[17] In jurisdictions with fragmented regulatory oversight, such as Vietnam, these risks expose gaps in accountability, enforcement coordination, and substantive fairness protections, highlighting the need for sector-specific governance approaches tailored to digital commerce.

3.4. PDPL's Normative Model and its Practical Implications

Vietnam's Personal Data Protection Law (PDPL) adopts a predominantly consent-based normative model, positioning individual consent as the primary legal ground for lawful data processing. This model reflects an intention to affirm personal autonomy and individual control over personal data, while introducing baseline obligations such as purpose limitation, data minimization, and risk-based impact assessments for high-risk processing activities.^[18] In doctrinal terms, the PDPL aligns with a rights-oriented conception of data protection, emphasizing formal legality and procedural compliance as central regulatory objectives.

Despite these normative commitments, the PDPL's implementation framework reveals significant practical limitations in data-intensive commercial environments. The absence of an explicit "legitimate interests" ground, combined with limited guidance on profiling, inferred data, and automated decision-making, encourages platforms to rely on layered consent mechanisms rather than substantive risk mitigation.^[19] As a result,

¹⁶ Ben Wagner, *Algorithmic Regulation* (Oxford: Oxford University Press, 2022); OECD, "Exploring the Economics of Personal Data".

¹⁷ Solove, Hartzog, "The Scope and Potential of FTC Data Protection"; Graham Greenleaf, "Vietnam's 2024 Draft Data Privacy Law Is Ambitious and Ambiguous."

¹⁸ Graham Greenleaf, "Vietnam's 2024 Draft Data Privacy Law Is Ambitious and Ambiguous" *Privacy Laws & Business International Report*, 192 (2024): 22-25.

¹⁹ Kuner, *Transborder Data Flows and Data Privacy Law* (Oxford: Oxford University Press, 2013); Calzada, "Citizens' Data Privacy in China: The State of the Art of

compliance strategies often prioritize disclosure formalities over meaningful governance redesign, leaving underlying asymmetries in data-driven market power largely unaddressed.

At the system level, these implementation gaps have important implications for e-commerce governance in Vietnam. A consent-centric regulatory architecture may inadvertently normalize excessive data extraction, while shifting the burden of protection onto consumers who lack the informational capacity to assess complex data practices.^[20] Without clearer standards for accountability, proportionality, and enforceable safeguards against abusive profiling, the PDPL risks functioning as a procedural compliance framework rather than a mechanism for substantive consumer data protection. This limitation calls for a broader governance-oriented approach to consumer data protection. These challenges underscore the need to complement consent-based rules with structural governance tools tailored to platform-driven digital markets.

3.5. Sustainable Data Protection as a Governance Principle

The concept of sustainable data protection has emerged in contemporary regulatory scholarship as a response to the limitations of purely procedural and consent-based data governance models. Rather than focusing exclusively on short-term compliance obligations, sustainable data protection emphasizes long-term accountability, proportionality, institutional resilience, and the alignment of data practices with broader social and economic objectives. In this sense, sustainability functions not merely as a policy aspiration but as a governance principle guiding the design and evaluation of data protection regimes in digital economies.^[21]

Applied to consumer data governance, sustainability requires regulators to move beyond individual consent as the sole legitimizing mechanism for data processing. Sustainable frameworks prioritize structural safeguards, including transparency by design, limits on excessive data extraction,

the Personal Information Protection Law (PIPL)."

²⁰ Francesca Casalini, Javier López González, "Trade and Cross-Border Data Flows" *OECD Trade Policy Papers*, No. 220 (2019).

²¹ European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Shaping Europe's Digital Future*, COM(2020) 67 final, 19 February 2020; Casalini, González, *Trade and Cross-Border Data Flows*.

meaningful oversight of profiling practices, and mechanisms that reduce informational asymmetries between platforms and consumers.^[22] These elements are particularly relevant in e-commerce environments, where data-driven business models operate continuously and at scale, generating cumulative risks that cannot be effectively mitigated through isolated consent decisions.

For Vietnam, adopting sustainable data protection as a governance principle offers a conceptual foundation for refining the PDPL's implementation in line with international best practices, while remaining sensitive to domestic regulatory capacity. By embedding sustainability-oriented criteria – such as proportionality, accountability, and institutional coordination – into consumer data regulation, Vietnam can better address systemic risks associated with platform dominance, cross-border data flows, and algorithmic decision-making. This governance-oriented perspective also provides a coherent analytical bridge to comparative regulatory models examined in the following section.

4 | Comparative Analysis of Consumer Data Protection Frameworks

Comparative assessments of global data protection frameworks reveal meaningful contrasts in regulatory philosophies, legal obligations, enforcement structures, and mechanisms for consumer rights protection. These contrasts provide important reference points for Vietnam as it seeks to operationalize the PDPL in a complex and rapidly evolving e-commerce environment.

²² Ben Wagner, *Algorithmic Regulation* (Oxford: Oxford University Press, 2022); Julie E. Cohen, *Between Truth and Power: The Legal Constructions of Informational Capitalism* (Oxford: Oxford University Press, 2019).

4.1. Regulatory Philosophy and Normative Foundations

The GDPR is grounded in a rights-based regulatory philosophy rooted in European constitutional traditions, treating personal data protection as an extension of fundamental rights to privacy, dignity, and informational self-determination. This normative foundation emphasizes proportionality, accountability, and the balancing of competing interests, allowing data processing to be justified not only through consent but also through legitimate interests and public policy considerations. As a result, the GDPR conceptualizes consumer data protection as part of a broader human rights architecture rather than a purely market-regulatory instrument.^[23]

In contrast, China's Personal Information Protection Law (PIPL) reflects a governance philosophy centered on state supervision, cybersecurity, and social stability. While the PIPL formally recognizes individual rights, its regulatory logic prioritizes systemic risk management, data localization, and administrative control over data-intensive industries.^[24] Consumer data protection under the PIPL thus operates within a security-oriented framework that emphasizes ex ante control and state oversight rather than judicially mediated balancing of interests.

The California Consumer Privacy Act (CCPA) adopts a markedly different normative orientation, grounded in market transparency and consumer choice rather than comprehensive rights protection. Its emphasis on notice, opt-out mechanisms, and limited purpose restrictions reflects a pragmatic attempt to correct information asymmetries without fundamentally restructuring data-driven business models. Consumer data is treated primarily as a commercial asset subject to disclosure obligations, positioning consumer autonomy within a transactional logic.^[25]

Vietnam's PDPL exhibits a hybrid normative character, borrowing rights-based language from the GDPR while operationally relying on a consent-centric model closer to transactional approaches. However, unlike the GDPR, the PDPL lacks explicit balancing mechanisms or alternative lawful

²³ GDPR, Charter of Fundamental Rights of the European Union, OJ C 326, 26 October 2012, arts 7-8; Kuner, *Transborder Data Flows and Data Privacy Law*.

²⁴ Igor Calzada, "Citizens' Data Privacy in China: The State of the Art of the Personal Information Protection Law (PIPL)" *Smart Cities*, No. 3 (2022): 1129-1150.

²⁵ California Consumer Privacy Act of 2018, Cal. Civ. Code § 1798.100 et seq.

bases for processing, limiting its capacity to address consumer data risks in complex e-commerce ecosystems.^[26]

4.2. Enforcement Architecture and Institutional Design

Effective consumer data protection depends not only on substantive rights but also on institutional enforcement design. Under the GDPR, independent supervisory authorities (DPAs) play a central role in interpreting norms, coordinating cross-border enforcement, and imposing sanctions.^[27] This institutional independence enhances regulatory credibility and ensures that consumer data protection is insulated from short-term political or commercial pressures.

By contrast, enforcement under the PIPL is centralized within state administrative agencies with broad discretionary powers. While this model enables swift regulatory intervention, it also concentrates interpretive authority and limits avenues for adversarial challenge by consumers or firms. Consumer protection is thus mediated through administrative governance rather than rights-based adjudication.^[28]

The CCPA relies on a mixed enforcement architecture, combining regulatory oversight by the California Privacy Protection Agency (CPPA) with private enforcement mechanisms in limited circumstances.^[29] This structure prioritizes regulatory guidance, standardized compliance tools, and accessibility for consumers, albeit at the cost of narrower substantive protections.

Vietnam's PDPL currently adopts a centralized enforcement model similar to the PIPL, with oversight vested in a single executive authority.^[30] The absence of an independent supervisory body or sector-specific regulators constrains enforcement diversity and limits the development of specialized

²⁶ Graham Greenleaf, "Vietnam's 2024 Draft Data Privacy Law Is Ambitious and Ambiguous" *Privacy Laws & Business International Report*, 192 (2024): 22-25.

²⁷ European Union, *Regulation (EU) 2016/679 — General Data Protection Regulation (GDPR)*, arts. 51-58 (2016).

²⁸ Gulbakyt Bolatbekkyzy, "Comparative Insights from the EU's GDPR and China's PIPL for Advancing Personal Data Protection Legislation," *Groningen Journal of International Law*, 11 (2024): 129-146.

²⁹ California Consumer Privacy Act of 2018, Cal. Civ. Code § 1798.199.10 (establishing the enforcement authority of the California Privacy Protection Agency).

³⁰ Lam, "Some Legal Aspects of Personal Data Protection in the World – Experience for Vietnam."

consumer data governance expertise, particularly in fast-evolving digital markets.

4.3. Lawful Bases for Processing and Consumer Autonomy

The GDPR's pluralistic framework of lawful processing bases – including consent, legitimate interests, contractual necessity, and legal obligations – provides regulatory flexibility in commercial contexts.^[31] This structure allows consumer data processing to be assessed through proportionality and necessity tests rather than relying exclusively on formal consent.

The PIPL permits processing without consent in limited circumstances tied to statutory duties, public interests, or emergency situations, reflecting its security-oriented logic.^[32] Although narrower than the GDPR's framework, these exceptions acknowledge the limitations of consent in large-scale data ecosystems.

The CCPA operationalizes consumer autonomy primarily through opt-out rights, particularly concerning data sales and targeted advertising.^[33] While this approach enhances practical accessibility, it places the burden of protection on consumers and offers limited safeguards against profiling and inferred data practices.

Vietnam's PDPL, by contrast, relies almost exclusively on consent as the legal basis for consumer data processing.^[34] This approach risks overburdening consumers with complex disclosure requirements, while allowing data-intensive platforms to legitimize extensive processing through procedural compliance rather than substantive justification.

³¹ GDPR arts. 6-7.

³² PIPL arts. 13-15.

³³ CCPA §1798.120.

³⁴ PDPL consent provisions.

4.4. Consumer Rights, Redress Mechanisms, and Accessibility

Under the GDPR, consumer rights such as access, rectification, erasure, and objection are reinforced by procedural guarantees, response deadlines, and oversight by supervisory authorities.^[35] These mechanisms transform abstract rights into actionable protections within digital markets.

The CCPA emphasizes usability and interface-based rights execution, requiring businesses to provide clear mechanisms for submitting requests and opting out of data sales.^[36] While substantively narrower, this design enhances practical consumer engagement with data rights.

The PIPL recognizes individual rights but channels enforcement primarily through administrative oversight, limiting the role of private complaints and judicial remedies.^[37] Consumer redress thus depends heavily on regulatory discretion rather than individual empowerment.

Vietnam's PDPL formally recognizes consumer rights but lacks standardized procedures, timelines, and digital interfaces for their exercise. This gap weakens the practical effectiveness of consumer data rights in e-commerce settings, where scale and automation demand accessible remedies.^[38]

4.5. Cross-Border Data Transfers and Platform Accountability

Cross-border data governance constitutes a critical dimension of consumer data protection in global e-commerce. The GDPR employs adequacy decisions, standard contractual clauses, and binding corporate rules to manage cross-border transfers, while maintaining rights equivalence.^[39]

³⁵ GDPR arts. 12-22; European Data Protection Board, *Guidelines 01/2022 on Data Subject Rights – Right of Access* (adopted 28 March 2023), European Data Protection Board. https://www.edpb.europa.eu/system/files/2023-04/edpb_guidelines_202201_data_subject_rights_access_v2_en.pdf.

³⁶ California Privacy Protection Agency, *California Consumer Privacy Act Regulations* (effective January 2, 2024), §§ 7013–7020 (requiring clear opt-out mechanisms and consumer request submission interfaces), https://cppa.ca.gov/regulations/pdf/cppa_regs.pdf.

³⁷ PIPL rights provisions.

³⁸ PDPL; Greenleaf.

³⁹ GDPR Chapter V.

The PIPL adopts a more restrictive approach, requiring security assessments and data localization in certain circumstances, reflecting concerns over national security and regulatory control.^[40]

The CCPA relies primarily on contractual and transparency-based mechanisms, emphasizing disclosure rather than substantive transfer restrictions.^[41]

Vietnam's PDPL requires notification and risk assessments for certain cross-border transfers but lacks interoperable mechanisms comparable to adequacy or mutual recognition frameworks.^[42] This creates uncertainty for multinational e-commerce platforms and limits Vietnam's integration into global digital trade regimes.

Taken together, the comparative analysis demonstrates that effective consumer data protection in digital markets depends on more than the formal recognition of individual rights. Jurisdictions that combine pluralistic lawful processing bases, diversified enforcement architectures, and sector-specific safeguards are better equipped to address the structural risks posed by data-intensive e-commerce ecosystems. These comparative insights provide an analytical foundation for assessing how Vietnam's PDPL can evolve toward a more sustainable and resilient consumer data protection framework.

5 | Toward a Sustainable Consumer Data Protection Framework for Vietnam

5.1. Reframing Consumer Data Protection through Sustainability

Conventional approaches to consumer data protection in Vietnam have largely emphasized formal compliance, particularly through consent-based obligations and procedural disclosures. While these mechanisms establish a baseline of legality, they are insufficient to address cumulative and systemic risks generated by data-intensive e-commerce ecosystems. A sustainability-oriented framework requires a shift from short-term

⁴⁰ PIPL cross-border transfer rules.

⁴¹ CCPA disclosure framework.

⁴² PDPL, art. 20.

compliance towards long-term governance objectives, including proportionality, accountability, institutional resilience, and market fairness.^[43]

Under this perspective, consumer data protection is no longer treated as an isolated individual right but as a structural component of sustainable digital market regulation. Sustainability thus functions as an evaluative criterion, enabling regulators to assess whether data practices contribute to or undermine consumer trust, competitive neutrality, and long-term economic stability.

5.2. Institutional Sustainability: Diversifying Enforcement and Oversight

Institutional design constitutes a foundational element of sustainable consumer data protection. As demonstrated in Section 4, jurisdictions with diversified enforcement architectures – such as independent supervisory authorities or sector-specific regulators – exhibit greater regulatory adaptability and enforcement credibility. Vietnam’s centralized enforcement model, while administratively efficient, constrains institutional learning and limits the development of specialized oversight capacity for complex e-commerce practices.

To enhance institutional sustainability, Vietnam could consider establishing a semi-independent supervisory mechanism for consumer-facing data practices, supported by inter-agency coordination with competition and consumer protection authorities. Such diversification would strengthen accountability, reduce regulatory blind spots, and enable more responsive governance of platform-driven markets.

⁴³ European Commission, Shaping Europe’s Digital Future, COM(2020) 67 final (19 February 2020).

5.3. Substantive Sustainability: Beyond Consent-Centric Regulation

Sustainable data protection requires recalibrating substantive legal standards beyond exclusive reliance on consent. As comparative analysis indicates, proportionality-based assessments, legitimate interest balancing, and risk-tiered obligations provide more robust safeguards against excessive data extraction and abusive profiling. Vietnam's PDPL currently lacks these substantive instruments, resulting in compliance strategies that prioritize formal disclosures over meaningful risk mitigation.

Introducing sustainability-oriented substantive standards – such as explicit limits on inferred data use, enhanced safeguards for automated decision-making, and clearer criteria for lawful profiling – would align consumer data governance with long-term fairness objectives rather than short-term transactional consent.

5.4. Sector-Specific Sustainability in E-Commerce Governance

E-commerce platforms present distinctive sustainability challenges due to continuous data generation, algorithmic personalization, and cross-platform integration. A sustainable regulatory framework should therefore incorporate sector-specific obligations tailored to these dynamics. Such measures may include standardized transparency dashboards, interoperable consent withdrawal mechanisms, and mandatory impact assessments for high-risk consumer data practices.

By embedding sustainability considerations into sectoral governance, regulators can address systemic risks at their source rather than relying on ex post enforcement. This approach also enhances regulatory predictability for businesses while improving consumer trust in digital marketplaces.

5.5. Sustainable Cross-Border Data Governance and Market Integration

Cross-border data flows are integral to the sustainability of Vietnam's e-commerce ecosystem. However, fragmented or opaque transfer rules may undermine both consumer protection and market integration. Comparative experience demonstrates that sustainable cross-border governance relies on interoperability mechanisms – such as adequacy assessments, mutual recognition frameworks, and standardized contractual safeguards – rather than rigid localization alone.

For Vietnam, developing sustainability-oriented cross-border data governance would support consumer protection while facilitating participation in regional and global digital trade regimes. Such alignment is essential for ensuring that data-driven growth remains compatible with long-term regulatory coherence and international trust.

Framing consumer data protection through a sustainability-oriented governance lens highlights the limitations of short-term, consent-centric regulatory strategies. For Vietnam, advancing sustainable consumer data protection entails integrating proportionality-based standards, diversified oversight mechanisms, and sector-specific safeguards into the implementation of the PDPL. This approach allows consumer data governance to evolve alongside digital market development, reinforcing long-term consumer trust and regulatory coherence.

6 | Conclusion

This paper has examined consumer data protection in Vietnam's e-commerce sector through the lens of sustainability-oriented governance. Moving beyond a narrow focus on consent and procedural compliance, the analysis has demonstrated that data-intensive commercial ecosystems generate cumulative and systemic risks that require long-term regulatory responses. Conceptual distinctions between personal data and consumer data, coupled with an assessment of privacy, data protection, and consumer protection frameworks, reveal structural limitations in Vietnam's current regulatory approach.

Comparative analysis of the GDPR, China's PIPL, and the CCPA highlights that sustainable consumer data protection depends not solely on the recognition of individual rights, but on the integration of proportionality-based standards, diversified enforcement architectures, and sector-specific safeguards. These elements enable regulators to address profiling, inferred data use, and cross-border data flows more effectively than consent-centric models alone.

For Vietnam, adopting sustainable data protection as a governance principle provides a coherent pathway for refining the implementation of the PDPL without undermining its normative foundations. By embedding sustainability-oriented criteria – such as accountability, institutional coordination, and long-term market fairness – into consumer data regulation, Vietnam can better align digital economic growth with consumer trust and regulatory resilience. These insights underscore the importance of treating consumer data protection not as a static compliance obligation, but as an evolving governance project.

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HUONG NGUYEN

Protecting Consumers Against „Greenwashing” under European Union Law: Lessons for Vietnam

Abstract

This study critically examines the European Union’s evolving legal approach to combating greenwashing, with a particular focus on the Proposal for a Green Claims Directive (GCD) and related legislative initiatives under the European Green Deal. Employing systematization, analytical-synthetic methods, and comparative legal analysis, the research identifies substantive shortcomings in Vietnam’s current framework, including the absence of explicit rules on environmental claims and the lack of independent verification mechanisms. The findings reveal that the GCD Proposal, although not yet adopted, provides a structured and transparent regulatory model through its three core requirements: reliable scientific substantiation, life-cycle assessment, and third-party verification. Drawing on these insights, the paper proposes targeted reforms to Vietnam’s legal system, including the introduction of a statutory definition of greenwashing, the establishment of verification protocols aligned with international standards, and the imposition of sanctions proportionate to the harm caused by deceptive claims. These recommendations aim to enhance consumer protection, foster genuine sustainable business practices, and align Vietnam’s regulatory framework with global sustainability goals. By bridging comparative legal insights with domestic policy needs, the article contributes both to academic discourse on environmental law and to the practical advancement of Vietnam’s green transition.

KEYWORDS: greenwashing, European Union law, Green Claims Directive, consumer protection, sustainable development

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1 | Introduction

Since the publication of the Brundtland Report in 1987, the concept of sustainable development has undergone more than three decades of evolution and refinement, becoming a central strategic orientation in global governance amidst challenges such as climate change, resource depletion, and social inequality. According to the classic definition provided by the World Commission on Environment and Development (WCED) in the Brundtland Report, sustainable development is understood as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”^[1] This concept has been further operationalised through the 2030 Agenda and its 17 Sustainable Development Goals (SDGs), adopted by the United Nations in 2015. Among these, SDG 12 (Ensure sustainable consumption and production patterns) and SDG 13 (Take urgent action to combat climate change and its impacts) clearly underscore the intrinsic link between economic growth and environmental-social responsibility.^[2] The United Nations Environment Programme (UNEP) affirms that transitioning towards sustainable lifestyles and consumption patterns is not merely an option but a prerequisite for achieving sustainable development.^[3] The concept was first defined at the Oslo Symposium on Sustainable Consumption in 1994, where sustainable consumption was understood as

the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations.

¹ World Commission on Environment and Development (WCED). *Our Common Future*. Oxford: Oxford University Press, 1987. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>.

² United Nations, *Transforming our World: The 2030 Agenda for Sustainable Development* (2015). <https://sdgs.un.org/2030agenda>.

³ United Nations Environment Programme (UNEP), *Visions for Change: Recommendations for Effective Policies on Sustainable Lifestyles* (Nairobi: UNEP, 2011). <https://www.unep.org/resources/report/visions-change-recommendations-effective-policies-sustainable-lifestyles>.

It is not only a change in consumption habits but also a long-term transformation strategy involving awareness, public policies, and corporate social responsibility. According to Testa et al. (2019), for environmentally conscious consumers, sustainability is a key factor in shaping purchasing decisions.

In the context of the green transition, consumers are not only beneficiaries but also drivers urging businesses to be more transparent about their supply chains, production processes, and environmental claims. Providing information that is “accessible, reliable, and verifiable”^[4] from suppliers is a key condition enabling consumers to make easy, practical, and sustainable decisions. Conversely, misleading claims undermine trust, hinder sound choices, and overshadow businesses genuinely committed to sustainable development.^[5] However, accompanying the rise of “green” consumption is the proliferation of practices that exploit environmental concerns for misleading marketing purposes, commonly referred to as greenwashing. This phenomenon involves businesses making environmental claims that are dishonest, exaggerated, or lacking scientific basis, thereby eroding public trust and hindering genuine sustainable development efforts. The European Union (EU) has emerged as a global pioneer in identifying and regulating greenwashing. The GCD Proposal requires that all environmental claims be grounded in reliable scientific evidence, assessed through a life-cycle approach, and independently verified by a third party. This approach establishes a transparent and verifiable legal standard aimed at protecting consumers and ensuring fair competition, while also serving as an important reference point for developing countries. In Vietnam, although several laws concerning consumer protection, competition, and environmental management already exist, the regulatory framework governing environmental claims remains fragmented, lacking a unified definition of greenwashing and an independent verification mechanism. This regulatory gap renders the market vulnerable to unsubstantiated “green” claims and places genuinely sustainable businesses at a competitive disadvantage. In the context of deepening global integration

⁴ United Nations Environment Programme (UNEP), *Consumer Information*. <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-lifestyles/consumer-information-including>. [accessed: 25.6.2025].

⁵ Organisation for Economic Co-operation and Development (OECD), “Protecting and Empowering Consumers in the Green Transition: Misleading Green Claims” *OECD Digital Economy Papers*, No. 375 (2025): 5. https://www.oecd.org/en/publications/protecting-and-empowering-consumers-in-the-green-transition_12f28e4f-en.html.

and increasing pressure to comply with international sustainability standards, drawing insights from the EU experience becomes essential. While previous studies have examined greenwashing from the perspectives of communications, business ethics, or consumer behavior, research assessing the GCD's applicability in developing countries – particularly in light of Vietnam's fragmented legal framework and absence of independent verification – remains limited, presenting an important scholarly gap that this paper seeks to address.

Against this backdrop, this paper pursues two key objectives: (i) to analyze the structure and regulatory principles of the GCD Proposal in order to identify its core legal standards for controlling greenwashing; and (ii) to assess the feasibility of applying these standards in developing countries, using Vietnam as the case study. Through this analysis, the paper aims to contribute both theoretical and practical insights to the policy-making process toward building a more transparent and effective legal environment for regulating greenwashing and promoting sustainable consumption.

The contributions of this paper can be identified along three dimensions. First, it offers a systematic approach to the GCD Proposal by elucidating its structure, regulatory rationale, and core requirements relating to transparency, scientific substantiation, and independent verification – issues that have often been discussed only in a fragmented manner in existing literature. Second, by comparing the EU's experience with Vietnam's legal context, the paper provides an in-depth comparative assessment, clarifying areas of alignment, gaps, and challenges in adopting international standards on greenwashing control. Third, the paper proposes feasible policy recommendations to improve Vietnam's regulatory framework on environmental claims, thereby contributing directly to ongoing legal reforms aimed at enhancing transparency and sustainability. These contributions enrich greenwashing scholarship and offer meaningful reference value for other developing countries with similar conditions.

2 | The Concept and Characteristics of Greenwashing

The rise of greenwashing is closely tied to the context in which sustainable consumption has become a dominant trend over the past decade. As pressures associated with the green transition intensify, businesses have

stronger incentives to use environmental claims as a marketing tool to enhance a “green” image without genuinely improving their production practices. Therefore, identifying the nature, characteristics, and impacts of greenwashing is an essential step in establishing a theoretical foundation for a legal framework governing this conduct. Conceptually, the EU approaches greenwashing as a commercial practice aimed at gaining unfair competitive advantages by marketing products as environmentally friendly when they do not, in fact, meet the sustainability criteria set by the EU.^[6] From a communication and business ethics perspective, the German Environment Agency (UBA) defines greenwashing as “the efforts of organisations to present themselves as “green” or “sustainable,” particularly through communication and marketing activities, without systematically implementing corresponding actions towards sustainability in their actual operations.”^[7] From the standpoint of consumer protection, the Organisation for Economic Co-operation and Development (OECD) considers greenwashing to be the practice whereby businesses provide environmental information that is inaccurate, exaggerated, or unverifiable, thereby hindering consumers’ ability to make informed choices.^[8] The OECD also identifies typical manifestations of this practice, including: making false or unsubstantiated claims; using vague or ambiguous language, such as “planet friendly,” “eco-conscious,” or similar expressions without concrete evidence; or creating implicit impressions through the use of green imagery, nature-evoking visuals, or environmentally suggestive brand or product names, even when such products do not actually possess the claimed environmental attributes.^[9]

A well-known example of greenwashing is the “Conscious” campaign by H&M. In 2022, the Dutch Authority for Consumers and Markets (ACM) ordered H&M to remove the terms “Conscious” and “Conscious Choice”, deeming them vague green claims lacking sufficient substantiation.^[10]

⁶ Recital 11, Regulation (EU) 2020/852, Official Journal of the European Union L 198/13 (22 June 2020). <https://eur-lex.europa.eu/eli/reg/2020/852/oj/eng>.

⁷ Umweltbundesamt (German Environment Agency), *Greenwashing und Sustainable Finance*, 20 December 2022. <https://www.umweltbundesamt.de/greenwashing-sustainable-finance#undefined>. [accessed: 25.6.2025].

⁸ Organisation for Economic Co-operation and Development (OECD), “Protecting and Empowering Consumers in the Green Transition: Misleading Green Claims,” 5.

⁹ Ibidem, 5.

¹⁰ The Netherlands Authority for Consumers and Markets (ACM), Commitment Decision – H&M, Case No. ACM/22/179209; Reference ACM/UIT/583382, 19 August

In the same year, Norwegian consumer authorities warned that the use of the Higg MSI (Material Sustainability Index) tool in marketing could violate the law due to its presentation of industry-average data as product-specific metrics.^[11] Under regulatory pressure, H&M, in its 2022 Sustainability Disclosure Report, announced plans to review and improve transparency in its use of the “Conscious” label, while updating material composition information for previously labeled products.^[12] This clearly demonstrates the use of language to create a lasting impression without verification, undermining consumer trust in green claims.^[13] The inconsistency between claims and reality not only diminishes trust, but also significantly reduces the likelihood of repurchasing environmentally friendly products in the future.^[14] This is concerning because trust is a core factor influencing consumers’ purchasing decisions.^[15]

Based on the definitions discussed, several key characteristics of greenwashing can be identified: Firstly, the strategic use of environmental elements as marketing tools; Secondly, the absence of clear and verifiable evidence supporting environmental claims; Thirdly, the creation or reinforcement of misleading impressions among consumers; Fourthly, a lack of consistency between corporate communications and the company’s actual practices.

2022. <https://www.acm.nl/system/files/documents/commitment-decision-hm.pdf>. [accessed: 2.7.2025].

¹¹ Norwegian Consumer Authority (Forbrukertilsynet), “H&M – Potentially Misleading Environmental Claims Using Higg MSI Data,” 14 June 2022. <https://www.forbrukertilsynet.no/wp-content/uploads/2022/06/hm-potentially-misleading-environmental-claims-in-marketing-using-higg-msi-data-in-marketing-of-garments.pdf>. [accessed: 2.7.2025].

¹² H&M Group, *Sustainability Disclosure 2022* (Stockholm: H&M Group, 2023). <https://hmgroup.com/wp-content/uploads/2023/03/HM-Group-Sustainability-Disclosure-2022.pdf>. [accessed: 2.7.2025].

¹³ Nancy E. Furlow, “Greenwashing in the New Millennium” *Journal of Applied Business and Economics*, No. 6 (2010): 22-25.

¹⁴ Neringa Vilkaitė-Vaitonė, “The Greenwashing Trap: How Misleading Marketing Affects Consumer Green Purchasing Habits” *Business: Theory and Practice*, No. 2 (2024): 593-602.

¹⁵ Guenzi, Paolo, Michael D. Johnson, Sandro Castaldo, “A Comprehensive Model of Customer Trust in Two Retail Stores.” *Journal of Service Management* 20 (2009): 290-316.

3 | The Impacts of Greenwashing

From the above analysis, it is evident that greenwashing is not merely the act of distorting an environmental image but also a commercial practice with potential legal, economic, and social implications. Clearly identifying its concept and characteristics serves as the basis for a comprehensive risk assessment, thereby clarifying the challenges it poses to consumers, markets, businesses, and society at large.

From the consumer's perspective, greenwashing poses one of the most immediate and tangible risks. When businesses use inaccurate or ambiguous environmental information to attract attention or create a falsely favorable impression, consumers may be driven to make purchasing decisions based on incomplete or misleading grounds, thereby undermining their right to accurate information and informed choice. This directly infringes upon their right to information and their right to make informed choices – both of which are widely recognized as fundamental rights in modern consumer protection policies.^[16] According to NielsenIQ's 2024 global survey, 72% of consumers indicated they are willing to pay more for products that are committed to sustainable development. However, according to the “Consumer Sustainability Survey 2023” conducted by Blue Yonder, 56% of consumers expressed skepticism or lack of full trust in corporate sustainability claims.^[17] This reflects a significant level of doubt within the global consumer community, warning that non-transparent environmental marketing can undermine brand trust. In response to this situation, the OECD emphasizes that providing effective and well-targeted information plays a critical role in helping consumers compare products, reduce the risk of being misled, and enhance market transparency.^[18] To ensure that consumers are able to make sound decisions, effective consumer policy must place them in a position to “make informed choices”

¹⁶ United Nations Conference on Trade and Development (UNCTAD), *United Nations Guidelines for Consumer Protection (as Expanded in 2015)*. UN Doc. DITC-CPLPMISC2016D1. Geneva: United Nations, 2016.

¹⁷ Agility PR Solutions, “Sustainability Remains a Strong Consumer Concern—They Just Don't Trust Brands' Eco-Claims,” *Bulldog Reporter*, 21 April 2023. <https://www.agilitypr.com/pr-news/public-relations/sustainability-remains-a-strong-consumer-concern-they-just-dont-trust-brands-eco-claims>.

¹⁸ Organisation for Economic Co-operation and Development (OECD), *Consumer Policy Toolkit* (Paris: OECD Publishing, 2010), 82-83, https://www.oecd.org/en/publications/consumer-policy-toolkit_9789264079663-en.html.

and to be “protected from unfair commercial practices.”^[19] Vague claims such as “environmentally friendly,” “clean,” or “green,” if not supported by concrete evidence, can easily mislead consumers, erode trust even in genuinely eco-friendly products, and thus reduce the overall effectiveness of environmental marketing efforts.^[20]

From a business perspective, the growing prevalence of greenwashing is producing a number of adverse consequences for businesses.^[21] It distorts a healthy competitive environment and especially disadvantages companies that adhere to ethical business practices and environmental standards. When deceptive environmental claims go unpunished, legitimate businesses lose the motivation to innovate and may even be forced to alter their strategies in order to survive. Furthermore, greenwashing undermines fair competition and contributes to the spread of misinformation throughout the sustainable supply chain.^[22] Companies that are genuinely pursuing sustainability transitions often find themselves at a disadvantage compared to competitors who merely “greenwash” their image without taking corresponding actions.

From the societal perspective, in a landscape saturated with “green” claims, consumers are at risk of experiencing information overload, leading to a phenomenon known as “green fatigue.” This term refers to a psychological state in which the public becomes confused, skeptical, and even weary due to the repetitive exposure to inconsistent environmental messaging. As a result, the public may become passive in adopting sustainable consumption behaviors, despite their continued desire for environmental information that is truthful, concise, and easily accessible – without the sensation of being overwhelmed.^[23]

In conclusion, greenwashing is a practice that cannot be taken lightly. It poses a direct threat to consumer rights, distorts market dynamics, and hinders the progress toward building a sustainable and transparent

¹⁹ Ibidem, 9.

²⁰ Marc A. Delmas and Vanessa C. Burbano, “The Drivers of Greenwashing” *California Management Review*, No. 1 (2011): 67.

²¹ Ajay Khatter, “Challenges and Solutions for Environmental Sustainability in the Hospitality Sector” *Sustainability*, No. 15 (2023): 11491.

²² Xavier Font, Islam Elgammal, Ian Lamond, “Greenhushing: The Deliberate Under Communicating of Sustainability Practices by Tourism Businesses” *Journal of Sustainable Tourism*, No. 7 (2017): 1007-1023.

²³ Judith B. Strother, Zohra Fazal, “Can Green Fatigue Hamper Sustainability Communication Efforts?” In *2011 IEEE International Professional Communication Conference (IPCC)* (Cincinnati, OH: IEEE, 2011), 1-6.

economy. The aforementioned consequences affect not only consumers and fair competition, but also underscore the urgent need for a robust legal framework to effectively regulate greenwashing behavior.

4 | Regulatory Approaches to Greenwashing in the European Union

4.1. Overview of the European Green Deal Strategy

The European Green Deal (EGD) was formulated with the overarching goal of making Europe the first climate-neutral continent by 2050,^[24] meaning achieving net-zero greenhouse gas (GHG) emissions. To realize this objective, the European Commission has adopted a series of proposals to align EU policies on climate, energy, transport, and taxation with the aim of reducing net GHG emissions by at least 55% by 2030 compared to 1990 levels^[25] – serving as a stepping stone toward the 2050 target. According to the European Commission, the EGD is described as

a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy [...] where economic growth is decoupled from resource use.^[26]

To implement the EGD, the EU has implemented a comprehensive, transformational policy framework covering sectors such as energy, industry, production and consumption, infrastructure, transportation, food, agriculture, construction, taxation, and social welfare.^[27] The core focus is to

²⁴ European Commission, *Delivering the European Green Deal* (2022). https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en. [accessed: 24.6.2025].

²⁵ European Commission, *The European Green Deal*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en. [accessed: 17.2025].

²⁶ European Commission, *The European Green Deal*, COM(2019) 640 final, 11 December 2019. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>. [accessed: 21.6.2025].

²⁷ Ibidem.

build a sustainable, resilient economy with a fair distribution of benefits. A notable feature of the European Green Deal (EGD) is its interdisciplinary nature, requiring coordinated integration of legislation, investment, innovation, national reforms, and international cooperation,^[28] while ensuring that environmental and social factors are fully mainstreamed throughout. In addition, to ensure the effective implementation of the green transition across Europe, the European Commission has proposed and implemented numerous legal initiatives that establish an interdisciplinary foundation, promoting consistency among climate, energy, consumption, and competition policies. These instruments form a cross-cutting legal foundation designed to enhance policy coherence among climate, energy, consumer, and competition law^[29] – thereby strengthening the EU’s capacity to regulate environmental misconduct, including greenwashing. According to Gómez (2021), playing a central role in the transition means establishing a green financing ecosystem to attract and mobilize private sector capital for strategic projects.^[30]

4.2. The Green Claims Directive

4.2.1. Background of Its Introduction

Against this backdrop, the GCD Proposal introduces a more detailed and technically robust framework, particularly through its core legal criteria for determining the lawfulness of green claims. Building upon the legal gaps identified during the implementation of the European Green Deal (EGD), on 22 March 2023, the European Commission officially released the proposal for the GCD Proposal as a concrete step toward regulating greenwashing practices within the EU market. The central objective of this proposal is to empower consumers by enabling them to make more informed purchasing decisions based on transparent, reliable, and verifiable information regarding the sustainability of products or services.^[31] Prior to

²⁸ Ibidem.

²⁹ European Commission, *Delivering the European Green Deal*, 2022. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en. [accessed: 24.6.2025].

³⁰ Jorge Fernández Gómez, “The European Green Deal and the Energy Transition: Challenges and Opportunities for Industrial Companies” *Boletín de Estudios Económicos*, No. 232 (2021): 191-211.

³¹ Ibidem.

the introduction of the GCD Proposal, the regulation of greenwashing had initially been integrated into the proposal to amend Directive 2005/29/EC on Unfair Commercial Practices and Directive 2011/83/EU on Consumer Rights. This proposal, submitted in March 2022, aimed to strengthen consumer empowerment in the green transition by improving the availability of sustainability-related information and preventing unfair commercial practices.^[32] Following a period of consultation and negotiation, the proposal was formally adopted on 28 February 2024, as Directive (EU) 2024/825, which entered into force on March 26, 2024, and requires Member States to complete transposition into national law by 27 March 2026.^[33] However, practical implementation revealed that these amendments were still insufficiently specific to effectively address increasingly sophisticated forms of misleading environmental claims. In fact, the introductory section of the GCD Proposal (March 2023) explicitly acknowledged that enforcement of the current rules under the Unfair Commercial Practices Directive continues to face challenges for national authorities, especially in complex areas such as environmentally misleading claims.^[34] Therefore, the GCD Proposal was introduced as a specialized legislative instrument (*lex specialis*), with the expectation of filling the existing regulatory gaps in the EU legal framework. It also aims to establish a transparent, comparable, and verifiable mechanism for assessing environmental claims across the entire EU market.^[35]

4.2.2. Core Legal Content of the Green Claims Directive

4.2.2.1. CRITERIA FOR DETERMINING THE LEGALITY OF GREEN CLAIMS

The GCD Proposal marks a significant step forward in regulating environmental information disclosed in the EU market. According to Articles 3 and 4 of the GCD Proposal, a green claim is only considered lawful when

³² European Commission, Proposal for a Directive Amending Directives 2005/29/EC and 2011/83/EU as Regards Empowering Consumers for the Green Transition, COM(2022) 143 final (2023). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52022PC0143>. [accessed: 25.6.2025].

³³ European Parliament and Council of the European Union, Directive (EU) 2024/825 of the European Parliament and of the Council of 28 February 2024. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024Lo825&qid=1752165619262>. [accessed: 15.7.2025].

³⁴ European Commission, *Green Claims Directive*.

³⁵ European Commission, *Green Claims Directive*, Explanatory Memorandum, sec. 1.1.

it meets three core conditions: (i) it is based on reliable scientific evidence, (ii) it is assessed through a life cycle approach, and (iii) it is independently verified. These conditions reflect fundamental legal requirements to ensure that environmental information is accurate, objective, and not misleading to consumers.

Firstly, according to Article 3 of the GCD Proposal, all explicit green claims on the EU market are only considered legal when supported by full, reliable scientific evidence, with the responsibility for verification resting on traders in the Member States. Verification goes beyond providing an affirmative statement; it must be accompanied by a comprehensive technical assessment that defines the scope of the claim, uses accurate, objective, and up-to-date data, and reflects the actual environmental impact. Importantly, the assessment must be based on widely recognized scientific evidence and refer to relevant international standards to ensure consistency,^[36] verifiability, and credibility—particularly ISO 14020:2022 and ISO 14021:2016. To promote consistency and transparency, the GCD Proposal encourages the use of globally recognized technical standards. ISO 14021:2016 sets out specific requirements for self-declared environmental claims, including the use of claims, symbols, and graphics relating to products. This standard also introduces commonly used terminology in environmental claims along with valid usage conditions. Notably, ISO 14021:2016 goes beyond formal requirements by offering methods for content verification, including life cycle assessment (LCA), to prevent greenwashing through unfounded or deceptive environmental labeling.^[37] Additionally, ISO 14020:2022 lays out the fundamental principles and general requirements applicable to all types of environmental claims and related communication programs. These may include self-declared claims, ecolabels, environmental product declarations (EPDs), and environmental footprint communications.^[38] The integration of such standards helps harmonize environmental information systems, thereby enhancing the credibility and objectivity of green claims. Empirical research has shown that the lack of clear criteria and

³⁶ European Commission, *Green Claims Directive*, art. 3(1).

³⁷ International Organization for Standardization (ISO), *ISO 14021:2016 — Environmental Labels and Declarations — Self-Declared Environmental Claims (Type II Environmental Labelling)* (Geneva: ISO, 2016), cl. 1 (“Scope”) and cl. 5 (“General Requirements”).

³⁸ International Organization for Standardization (ISO), *ISO 14020:2022 — Environmental Statements and Programmes for Products — Principles and General Requirements* (Geneva: ISO, 2022), cl. 1 (“Scope”).

scientific substantiation methods can lead to consumer skepticism and undermine the effectiveness of corporate sustainability communication.^[39] Therefore, the provisions in Articles 3 and 4 of the GCD proposal play a key role in ensuring that environmental information is not exploited as a tool for unethical marketing, but genuinely reflects a product's environmental contribution and impact. Moreover, the GCD Proposal issues specific warnings about climate-related claims, which are particularly prone to misleading consumers. Phrases such as “climate neutral,” “carbon neutral,” “100% CO₂ offset,” or “net zero emissions by a certain year” are often used without adequate, transparent, and consistent substantiation.^[40] Studies have shown that most carbon credits in voluntary offset markets fail to meet essential criteria such as additionality, permanence, and independent verifiability—conditions necessary to ensure the environmental integrity of offsets.^[41] As such, the use of climate-related claims without reliable evidence not only risks misleading consumers, but may also constitute a form of greenwashing, as emphasized in Recital 21 of the GCD proposal.

Secondly, in addition to the requirement for reliable scientific substantiation, a fundamental principle for validating the legality of green claims is the comprehensive assessment based on the product life cycle, as clearly stipulated in Article 3(1)(c) of the GCD Proposal. This provision establishes a mandatory criterion to ensure the accuracy of environmental information and to prevent bias. Accordingly, a green claim is considered lawful only if the trader can demonstrate that “the environmental impacts, environmental aspects or environmental performance that is the subject of the claim are significant from a life-cycle perspective.”^[42] A particularly important requirement specified in point (c), paragraph 4, Article 3 of the GCD Proposal allows for the development of rules based on the product life cycle to guide the substantiation of green claims for specific product groups, ensuring accurate and comprehensive transparency in assessing environmental impacts from extraction to disposal. The goal is to prevent

³⁹ Francesco Testa, Fabio Iraldo, Alessandra Vaccari, Elisa Ferrari, “Why Eco-Labels Can Be Effective Marketing Tools: Evidence from a Study on Italian Consumers,” *Business Strategy and the Environment*, No. 4 (2015): 252-265.

⁴⁰ European Commission, *Green Claims Directive*, recital 21.

⁴¹ Patrick Greenfield, “Revealed: More than 90% of Rainforest Carbon Offsets by Biggest Certifier are Worthless, Analysis Shows” *The Guardian*, 18 January 2023. <https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe>. [accessed: 20.7.2025].

⁴² European Commission, *Green Claims Directive*, art. 3(1)(c).

“selective disclosure,”^[43] a symbolic strategy by which companies seek to gain or maintain legitimacy by selectively disclosing favorable or appealing metrics, thereby masking poor or controversial overall performance.^[44] In light of increasing pressure for transparency and accountability,^[45] some organizations tend to employ symbolic decoupling—the strategic separation of external communications from internal practices—misleading consumers and undermining the effectiveness of environmental communication.^[46] In environmental governance practice, Life Cycle Assessment (LCA) has long been recognized as a comprehensive and systematic analytical tool that enables accurate measurement of the cumulative environmental impacts of a product or activity throughout its life cycle. According to ISO 14040:2006 and ISO 14044:2006, an LCA is structured into four stages: goal and scope definition, life cycle inventory (LCI), life cycle impact assessment (LCIA), and interpretation of results. These standards provide a unified and objective scientific basis, and are widely used in public policy design, corporate compliance monitoring, and global eco-labeling systems. From the above analysis, it can be affirmed that the provision in Article 3(4)(c) of the GCD Proposal is not merely a technical compliance requirement, but rather a clear expression of the EU’s consistent policy orientation toward establishing a legal environment that is transparent, verifiable, and honest. It aims to protect consumer trust and promote market competition based on genuine environmental performance rather than superficial marketing tactics.

Thirdly, an essential condition for ensuring the legality of green claims under the GCD Proposal is the requirement of independent third-party verification, as stipulated in Article 3(3). According to this provision, any explicit green claim made by a trader is deemed lawful only if it has been assessed and verified by an independent verifier and accompanied by both

⁴³ Francesco Testa, Olivier Boiral, Fabio Iraldo, “Internalization of Environmental Practices and Institutional Complexity: Can Stakeholders’ Pressures Encourage Greenwashing?” *Journal of Business Ethics*, No. 2 (2018): 287-307.

⁴⁴ Christopher Marquis, Michael W. Toffel, Yanhua Zhou, “Scrutiny, Norms, and Selective Disclosure: A Global Study of Greenwashing” *Organization Science*, No. 2 (2016): 483-504.

⁴⁵ Maria Roszkowska-Menkes, Maria Aluchna, Bogumił Kamiński, “True Transparency or Mere Decoupling? The Study of Selective Disclosure in Sustainability Reporting” *Critical Perspectives on Accounting*, 98 (2024): 102700.

⁴⁶ James D. Westphal, “Systemic Symbolic Management, Corporate Social Responsibility, and Corporate Purpose: A Cautionary Tale” *Strategy Science*, No. 2 (2023): 221-232.

substantiating information and a certificate of conformity in accordance with Article 10.^[47] This mechanism serves as a pre-market control tool to ensure objectivity, transparency, and accuracy of environmental claims within the EU. Article 10 of the GCD Proposal obliges Member States to establish a verification process for substantiating and communicating explicit environmental claims and for environmental labelling schemes, ensuring compliance with Articles 3 to 8 of the Directive. Verification must be carried out by an independent verifier meeting the strict criteria of Article 11 and completed before a trader markets the claim or attaches the eco-label. After evaluation, the verifier issues a certificate of conformity confirming the claim or label's compliance with the GCD Proposal. This certificate must be recognized by the competent authority of the Member State and notified through the Internal Market Information System to ensure its legal validity and enforceability across the EU.^[48]

A noteworthy real-life legal case illustrating the importance of verification is the Danish Crown case in Denmark. The Danish High Court ruled that the label “Climate-controlled pork” used by Danish Crown was misleading and deceptive. The claim lacked independent certification, went beyond verifiable content, and undermined consumers' ability to make environmentally informed decisions. Although the phrase “more climate-friendly than you think” was considered by the Court to be a subjective assessment and not unlawful, the term “climate-controlled pork” was found to be misleading due to the absence of clear substantiation. The Court concluded that the company violated national rules on truthful advertising.^[49] In this context, the verification requirement under Article 10 of the GCD Proposal is not merely a technical standard, but a vital legal mechanism to ensure transparency and accountability in environmental communication. Ignoring this verification obligation may lead to unlawful misleading claims, as exemplified by the Danish Crown case.

In conclusion, the independent verification mechanism goes beyond the scope of a mere administrative procedure, emerging as a core element in ensuring the accuracy of green claims, strengthening public trust, and promoting fair trade. However, to ensure practical feasibility, the GCD Proposal

⁴⁷ European Commission, *Green Claims Directive*, art. 3(3).

⁴⁸ European Commission, *Green Claims Directive*, art. 10(7).

⁴⁹ “Danish Firm’s ‘Climate-Controlled Pork’ Claim Was Misleading, Court Rules” *The Guardian*, 1 March 2024. <https://www.theguardian.com/environment/2024/mar/01/danish-firm-climate-controlled-pork-claim-misleading-court-rules>. [accessed: 18.7.2025].

introduces a conditional exemption for microenterprises, as defined under Commission Recommendation 2003/361/EC. Specifically, the obligation to conduct independent verification and obtain a certificate of conformity shall only apply if microenterprises voluntarily request verification, pursuant to Article 10(3) of the GCD Proposal. This approach reflects the EU's effort to balance the need for transparency in environmental information with support for small businesses, avoiding unnecessary administrative burdens in the costly context of the green transition. In addition to the core legal requirements discussed above, the GCD Proposal also sets out supplementary rules for comparative green claims, which refer to claims that state or imply a product or activity has a more positive environmental impact than that of another product or trader.^[50] According to Article 4, for a comparative green claim to be considered lawful, its substantiation and assessment must comply with both Article 3 and the specific criteria under Article 4. These include equivalence in data sources, scope of the value chain and life cycle, environmental aspects assessed, and analytical assumptions used. This aims to ensure objectivity, prevent the distortion of comparison results, and avoid the risk of misleading consumers, especially amid the growing occurrence of greenwashing through selective comparisons or the manipulation of evaluation standards.

4.2.2.2. REGULATIONS ON COMMUNICATION METHODS AND TRANSPARENCY OF INFORMATION

Alongside establishing substantive conditions for assessing the lawfulness of environmental claims, the GCD also sets out strict rules on communication methods to ensure that information is provided in a transparent, comprehensive, and non-misleading manner to consumers. After defining the core legal conditions for the legitimacy of green claims, the GCD Proposal further sets strict rules on how such claims are communicated, requiring information to be transparent, clear, and easily accessible, under Article 5, in order to protect consumer rights and ensure information consistency across the EU.

Firstly, Article 5(1) of the GCD Proposal requires Member States to ensure that all explicit environmental claims made by traders and communicated to the market comply fully with the transparency and substantiation obligations. Specifically, such claims may only refer to environmental impacts,

⁵⁰ European Commission, *Green Claims Directive*, art. 4(1).

environmental aspects, or environmental performance that have been clearly substantiated, according to Articles 3 and 4. Pursuant to Article 3(1)(c), the claim is considered lawful only if the stated impacts or aspects are significant, based on the product's life-cycle perspective; or, under point (d), if it refers to environmental performance, the claim must account for all significant aspects or impacts relevant to that performance.^[51] These requirements aim to prevent selective or vague communication, which may mislead consumers and undermine the legitimacy of green claims in the market.

In addition to these content-based restrictions, Article 5(3) stipulates that if the green claim pertains to a final product, and the use phase is among the most relevant life-cycle stages, then the claim must include clear guidance for consumers on how to use the product in a way that enables them to achieve the expected environmental performance. This provision safeguards the accuracy of claims, while also highlighting the consumer's role in realising the claimed environmental benefits. As shown by Lyon and Montgomery (2015), the lack of usage guidance in green claims is one of the main reasons consumers are misled about the actual environmental impact of a product.^[52]

Similarly, Article 5(4) sets out specific conditions for claims referring to future environmental performance, requiring them to be linked to time-bound commitments related to the company's own operations and value chain. Most importantly, Article 5(6) outlines the mandatory accompanying information that must be provided together with the green claim, either in physical form or via a digital method (e.g. QR code or website link). This requirement illustrates the EU's systematic approach to transparent and verifiable disclosure, aiming to combat the phenomenon of green rhetoric – i.e., using environmental terminology to polish corporate image without actual sustainable commitments,^[53] a tactic flagged in numerous environmental communication studies.

A typical case of “green rhetoric” is the Volkswagen (VW) “clean diesel” campaign, which became one of the largest automotive scandals in

⁵¹ European Commission, *Green Claims Directive*, art. 5(2).

⁵² Thomas P. Lyon, A. Wren Montgomery, “The Means and End of Greenwash” *Organization & Environment*, No. 2 (2015): 223-249.

⁵³ Micael-Lee Johnstone, Lay Peng Tan, “Exploring the Gap between Consumers' Green Rhetoric and Purchasing Behaviour,” *Journal of Business Ethics*, No. 2 (2015): 311-328.

history.^[54] For years, VW promoted its diesel vehicles as “clean”, “eco-friendly” and compliant with strict emissions standards. However, in 2015, the U.S. Environmental Protection Agency (EPA) uncovered that VW had installed defeat devices to manipulate emissions tests,^[55] concealing real-world emissions up to 40 times higher than allowed.^[56] The Dieselgate scandal not only revealed technical fraud, but also highlighted the misuse of “green language” as a marketing tool with no substantial environmental basis. This example underscores the risks consumers face without legally mandated transparency in the communication and substantiation of green claims, as envisaged in Article 5 of the GCD Proposal. It explains why the disclosure of data, evaluation processes, and scientific evidence underlying a green claim is considered a cornerstone of the EU’s anti-greenwashing strategy.

4.2.2.3. ENVIRONMENTAL LABELS AND ASSOCIATED LEGAL REQUIREMENTS

In addition to the provisions on explicit environmental claims, the GCD Proposal establishes a distinct legal framework for environmental labels – a widely used communication tool that nevertheless poses significant risks of consumer deception. According to Article 7 of the GCD Proposal, any environmental label intended for use in the EU market must fully comply with the requirements set out in Articles 3 to 6, and must be subject to verification by an independent verifier, in accordance with the procedure laid down in Article 10. Notably, only labels awarded under environmental labelling schemes established under EU law are permitted to present ratings or scores based on an aggregated indicator of environmental impacts of a product or trader.^[57] This provision is designed to prevent private entities or traders from arbitrarily issuing quantitative assessments that could mislead consumers and distort fair competition in the EU market. According to Paragraph 2 Article 8 of the GCD Proposal sets out strict criteria for environmental labeling programs, including: (i) transparency of ownership and decision-making authorities; (ii) disclosure of objectives and

⁵⁴ Kirstin Ridley, Toby Sterling, “Dutch, English Drivers Team Up to Sue VW over ‘Dieselgate’” *Reuters*, 13 June 2017.

⁵⁵ Jack Ewing, *Faster, Higher, Farther: The Volkswagen Scandal* (New York: W.W. Norton & Company, 2017).

⁵⁶ U.S. Environmental Protection Agency (EPA), *Learn About Volkswagen Violations*, 2025. <https://www.epa.gov/vw/learn-about-volkswagen-violations>. [accessed: 25.7.2025].

⁵⁷ European Commission, Green Claims Directive, art. 7(2).

monitoring procedures; (iii) participation conditions appropriate to the size and revenue of businesses; (iv) scientific standards developed by experts; (v) mechanisms for handling complaints and addressing violations such as label withdrawal. These provisions ensure that labeling programs in the EU operate transparently, manage risks effectively, are legally accountable, and enhance the reliability of environmental information for consumers.

One notable aspect of the GCD Proposal is the introduction of strict limitations on the creation of new environmental labelling schemes at the national, regional, and private levels. According to paragraphs 3, 4, and 5 of Article 8, from the date of transposition of the Directive, Member States shall no longer be allowed to establish new national or regional environmental labelling schemes, except for those already in existence prior to that date. Such existing schemes may continue to operate in the Union market only if they fully comply with the criteria set out in the Directive. At the same time, environmental labelling schemes established by public authorities in third countries or by private operators, whether based inside or outside the EU, shall only be permitted if they can demonstrate added value in terms of environmental ambition. This includes the scope of environmental impacts covered, the level of environmental performance achieved, and the schemes' ability to support the green transition, particularly for small and medium-sized enterprises. This regulation clearly reflects the EU's commitment to addressing the proliferation of unregulated, self-declared environmental labels, which have significantly undermined consumer confidence within the EU market. In fact, for many years, the EU has witnessed an explosion of environmental labels with more than 230 different green labels and over 100 energy labels, half of which offer weak verification or lack independent auditing mechanisms altogether,^[58] make it difficult for consumers to distinguish and reduce market confidence.

Consequently, Articles 7 and 8 of the GCD Proposal serve not only as technical supplements to content and communication requirements (Articles 3 and 5), but also as cornerstones of the Directive's overall architecture, safeguarding consumers' right to accurate and transparent environmental information in the green marketplace.

⁵⁸ European Commission, *Green Claims – Ensuring Environmental Labels and Claims Are Credible and Trustworthy* (Luxembourg: Publications Office of the European Union, 2021). https://environment.ec.europa.eu/topics/circular-economy/green-claims_en. [accessed: 24.7.2025].

4.2.2.4. MONITORING, ENFORCEMENT, AND SANCTION MECHANISMS

In addition to the substantive and evidentiary requirements, the GCD Proposal also establishes a relatively comprehensive enforcement mechanism to ensure that the rules governing environmental claims are implemented in a meaningful manner, as provided under Articles 15 to 17. This mechanism not only reflects the EU's commitment to enforcing environmental claim standards, but also strengthens deterrence against green information violations.

Article 15 requires competent authorities in Member States to conduct regular checks on environmental claims and environmental labelling schemes circulating in the EU market. These monitoring activities go beyond formalistic reviews and must be based on comprehensive and transparent assessments. The results of these checks must be published online to enable civil society and consumers to access information, thereby enhancing external oversight. If a violation is detected, traders are obliged to remedy or remove the non-compliant claim within 30 days, in accordance with the principles of proportionality and the right to be heard under EU law.

Complementing this monitoring system, Article 16 introduces a complaint-handling and access-to-justice mechanism. Any individual or organisation with a legitimate interest – including environmental, public-health, and consumer-protection NGOs – may submit substantiated complaints when there is reason to believe that a trader has violated the Directive. Unlike many traditional complaint mechanisms that are merely procedural, the GCD Proposal requires competent authorities to substantively assess and respond to complaints by initiating investigations, holding hearings, and taking remedial measures if violations are confirmed. The outcome must be communicated in writing with clear justification, ensuring the complainant's right to be informed and to monitor the process. Notably, the GCD Proposal affirms the right to independent judicial review as a legal safeguard to ensure procedural fairness, enforcement effectiveness, and legal accountability in administrative decisions related to greenwashing. This mechanism embodies the principles of access to information, public participation in environmental decision-making, and access to justice enshrined in the 1998 Aarhus Convention.^[59] It also reflects the growing

⁵⁹ United Nations Economic Commission for Europe (UNECE), *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention)*, 1998, art. 4.

role of consumers, independent organisations, and the media in overseeing the accuracy of environmental claims.^[60]

To reinforce deterrence, Article 17 provides a framework for sanctions to address breaches of legal obligations concerning the substantiation and communication of green claims. Member States are required to establish effective, proportionate, and dissuasive penalties to ensure the Directive's enforceability. This provision must be interpreted in conjunction with Directive 2008/99/EC on the protection of the environment through criminal law, demonstrating a multi-level coordination approach within the EU legal framework for environmental protection. When determining the type and level of penalties, competent authorities must consider a range of factors, including the seriousness and intentionality of the infringement, the harm caused to consumers, the trader's financial capacity, the illicit economic gains obtained, previous violations, and sanctions imposed in other Member States for similar offenses. This comprehensive approach aims to ensure a fair and proportionate relationship between the violation and the legal consequences – an important principle in administrative and environmental justice. Importantly, Member States are required to implement three minimum categories of sanctions: (i) fines that effectively deprive the trader of any economic benefit derived from the infringement, with increased penalties for repeat violations; (ii) confiscation of revenues from misleading green claims; and (iii) temporary exclusion from public procurement and access to public funding for up to 12 months. In particular, fines must reach a minimum threshold equivalent to 4% of the trader's total annual turnover in the relevant Member State(s), as stipulated in Article 21 of Regulation (EU) 2017/2394. This reflects the EU's firm stance on harmonising penalty levels across Member States and ensuring meaningful deterrence. A notable example of practical enforcement aligned with the spirit of the GCD Proposal is the case of Shein, a global fast-fashion conglomerate, fined €1 million by the Italian Competition Authority (AGCM) in August 2025. Shein was found to have made unsubstantiated environmental claims for its “evoluSHEIN by Design” line – using misleading phrases such as “recyclable” and “circular system” – without any scientific evidence or third-party verification. AGCM concluded that this constituted a serious case of deception, exploiting consumer concerns

⁶⁰ Netto Sebastião Vieira de Freitas, Marcos Felipe Falcão Sobral, Ana Regina Bezerra Ribeiro, Gleibson Robert da Luz Soares, “Concepts and Forms of Greenwashing: A Systematic Review” *Environmental Sciences Europe*, 32 (2020): 19.

for environmental sustainability, particularly in the context of fast fashion's known environmental harms.^[61] The Shein case illustrates that well-designed administrative sanctions – when based on clear legal criteria and rigorously enforced – play a critical role in deterring greenwashing, promoting transparency, and restoring consumer trust in the green market. Therefore, the provisions under Articles 15 to 17 of the GCD Proposal are essential to securing the enforceability of the entire regulatory framework on environmental claims within the EU internal market.

5 | Challenges and Implications for Developing Countries: The Case of Vietnam

5.1. The Current Legal Framework on Consumer Protection Against Greenwashing in Vietnam

5.1.1. Current Legal Provisions in Vietnam Regarding Greenwashing

Although greenwashing is becoming increasingly common, Vietnam has not yet established a specific legal framework to regulate this behavior. Essentially, greenwashing involves providing false or misleading environmental information in business activities and can be considered false advertising or unfair competition, which are already governed by existing laws.

First and foremost, Article 10 of the 2023 Law on Consumer Rights Protection strictly prohibits businesses and individuals from deceiving or misleading consumers by providing false, incomplete, or inaccurate information about products, goods, services, or related documents and certifications.^[62] In addition to this prohibition, Article 21 of the same law imposes specific obligations on businesses to provide accurate, complete, and transparent information about their products, goods, and services, including quality, functionality, origin, composition, and specific benefits

⁶¹ “Italian Regulator Hits Shein with 1 Million Euro Greenwashing Fine” *Reuters*, 4 August 2025.

⁶² National Assembly of Vietnam, *Law on Protection of Consumers' Rights* 2023, art. 10(1)(a).

tailored for each gender group. Businesses are also required to ensure that product labeling reflects the true nature of the product, includes usage instructions, warranty policies, and clearly displays pricing.^[63] These information disclosure obligations, combined with the prohibitions under Article 10, form an important legal basis for addressing unsubstantiated green claims that lack scientific evidence or transparency regarding origin, process, or environmental impact. Failure to meet these requirements may constitute a breach of the obligation to provide truthful information to consumers – a core aspect in regulating greenwashing from the perspective of consumer protection. Furthermore, Clause 9, Article 8 of the 2012 Law on Advertising prohibits false or misleading advertisements regarding business capabilities, uses, quality, origin, warranty period, and other aspects of products and services. When businesses use terms such as “environmentally friendly,” “green,” “100% recycled”, or “carbon neutral” without reliable scientific evidence or legitimate supporting documents, it may be considered an act of providing false or misleading information about the quality, characteristics, or functionality of the product. In addition to laws on advertising and consumer protection, the Law on Competition 2018 also plays a critical role in addressing greenwashing as a form of unfair competition. Specifically, Point a Clause 5, Article 45 prohibits the act of “unlawful solicitation of customers” by providing false or misleading information about goods, services, promotions, or transaction conditions.^[64] Accordingly, if a business makes environmental claims that cannot be substantiated by scientific evidence or verified documents—such as claiming its product is “entirely eco-friendly,” “zero emissions,” or “made from 100% recycled materials” – it may not only breach advertising laws, but also be sanctioned for misleading consumers in a way that unlawfully attracts customers from competitors. This issue is particularly notable in the context of increasingly intense competition among brands leveraging environmental claims. Notably, Decree No. 75/2019/ND-CP on penalties for administrative violations in the field of competition provides specific sanctions under Article 20 for such acts. Unlawful solicitation of customers through false or misleading information can result in fines ranging from VND 100 million to 200 million, with the fine doubled if the violation spans across two or more provinces or centrally governed cities.^[65] Additionally,

⁶³ Law on Protection of Consumers’ Rights 2023, art. 21.

⁶⁴ National Assembly of Vietnam, Law on Competition 2018, art. 45.

⁶⁵ Government of Vietnam, Decree No. 75/2019/ND-CP, art. 20.

supplementary sanctions and remedial measures may be applied. Besides regulations on consumer protection, advertising, and unfair competition, the 2005 Commercial Law also contributes to the legal framework controlling greenwashing through prohibitions on misleading promotion and product display. Specifically, Article 109 of this law strictly forbids false advertising regarding aspects such as quantity, quality, price, function, design, origin, packaging, service methods, or warranty period.^[66] Additionally, Article 123 clearly outlines prohibited cases in the display and introduction of goods and services. Accordingly, displaying products in a manner that misrepresents their actual quality, price, function, design, packaging, or warranty period with the intent to deceive customers is considered a violation of the law. These provisions play an important role in establishing the legal boundaries against deceptive forms of greenwashing in commercial promotion activities.

While Vietnam has not yet established a dedicated legal framework for greenwashing, the current legal system can still be applied indirectly to regulate certain manifestations of the practice. However, the application remains fragmented and lacks effective enforcement, mainly due to the absence of clear and measurable standards for environmental claims. This highlights the urgent need to develop specific standards for environmental information, along with mechanisms for verification and enforcement.

5.1.2. The Current State of Identifying and Addressing Greenwashing Practices in Vietnam

While Vietnamese law has not yet formally recognised “greenwashing” as an independent legal violation, misleading or vaguely framed environmental claims are increasingly evident in commercial advertising and corporate communication. These practices, however, are rarely examined through an environmental or consumer-protection lens; instead, they are typically addressed under general rules on false advertising or the provision of inaccurate information to consumers. Although Vietnam has not recorded any large-scale litigation or high-profile enforcement cases comparable to those in the EU or the United States, numerous manifestations of greenwashing-like behaviour have emerged across sectors such as real estate, banking and finance, fashion, FMCG, and cosmetics. These practices

⁶⁶ National Assembly of Vietnam, Commercial Law 2005, art. 109(7).

often go unlabelled as “greenwashing,” reflecting both limited regulatory awareness and the absence of a specialised legal framework.

In the real estate sector, many businesses use terms such as “eco-project” or “green urban area” without clear environmental evidence, raising doubts about their authenticity. To gradually regulate the arbitrary use of green claims, on 4 July 2025, the Prime Minister issued Decision No. 21/2025/QĐ-TTg on environmental criteria and certification of investment projects classified as green, effective from 22 August 2025. This legal document serves as a screening and validation tool for environmental claims in investment activities. Accordingly, to be recognized as “green,” a project must meet specific environmental protection criteria such as energy saving, greenhouse gas emission reduction, and efficient resource use. It must also possess a valid environmental impact assessment report or environmental permit. The Decision also enables independent verification organizations – those conforming to the National Standard TCVN ISO/IEC 17029:2020 or the International Standard ISO/IEC 17029:2019 on conformity assessment^[67] – to certify a project’s “green” status. Additionally, certified projects may benefit from easier access to green finance sources such as green bonds, preferential loans from banks, or environmental funds. This regulation represents a crucial step toward establishing a legal foundation for classifying, verifying, and preventing deceptive greenwashing practices in investment sectors that are prone to abuse, such as real estate, energy, and finance. Similarly, in the banking and finance sector, terms like “green bank,” or “green credit” are used by several credit institutions to build an environmentally friendly image. However, most current “green” financial products still lack clear criteria, have no independent verification mechanism, and do not publicly disclose their green lending portfolios, posing a high risk of greenwashing that falsely projects a sustainable image without substantial commitment. Additionally, greenwashing has also spread to the fast-moving consumer goods, fashion, and cosmetics industries, with claims such as “environmentally friendly,” “100% natural,” “sustainable,” and “chemical-free” often lacking scientific evidence or independent certification. For example, some fashion brands promote “green fashion”, but use non-biodegradable synthetic materials; many cosmetics are labeled “organic” or “vegan” without legitimate certification. Without strict controls, such claims risk distorting consumer standards,

⁶⁷ Prime Minister of Vietnam, Decision No. 21/2025/QĐ-TTg on Confirmation of Investment Projects Classified as Green, art. 4.

creating confusion, and undermining public trust in environmentally friendly products. A notable example of green-themed advertising, even when unrelated to environmental aspects, is the case of Kera vegetable candy. This product was heavily marketed as “green, healthy candy” with messages like “one piece contains the same fiber as a plate of vegetables,” “naturally extracted vegetables,” “sugar-free,” and featured green packaging to imply a high vegetable content. However, tests conducted by the National Institute for Food Safety Testing revealed that the actual fiber content was negligible. Meanwhile, the product contained up to 33.4 g of Sorbitol (~35%) unlisted on the label, and the actual vegetable content was only about 0.6–0.75%, contradicting the advertised 28% vegetable extract.^[68] This case demonstrates how green or natural-themed language can mislead consumers, even when the product is not directly marketed as environmentally friendly. While the case may not fall strictly under the definition of “greenwashing”, it highlights the need to critically examine the misuse of green-associated language in product communication policy.

Despite the increasing prevalence of such practices, Vietnam has not yet sanctioned any case explicitly under the label of greenwashing. Most violations have resulted only in administrative penalties for false advertising, inaccurate information, or unfair competition, without being examined through the environmental-governance or consumer-protection lens that the green transition requires. The absence of a specialised legal framework, the lack of clear identification and assessment standards, and the limited development of independent monitoring and verification mechanisms have collectively created a significant regulatory gap in recognising, categorising, and effectively addressing greenwashing behaviour. This situation underscores the urgent need for Vietnam to introduce a legal definition of greenwashing, establish substantiation and verification procedures, and strengthen enforcement tools—particularly as sustainable development and green finance are emerging as national priorities.

⁶⁸ “Thành phần kẹo rau củ Kera được quảng cáo gian dối như thế nào?” *VnExpress*, 4 April 2025. <https://vnexpress.net/thanh-phan-keo-rau-cu-kera-duoc-quang-cao-gian-doi-nhu-the-nao-4870842.html>. [accessed: 8.8.2025].

5.2. Key Legal Shortcomings and Reform Proposals for Addressing Greenwashing in Vietnam: Comparative Insights from the EU

5.2.1. Legal Gaps and Limitations in Vietnam's Legal Framework

Although the Vietnamese legal system has initially introduced several provisions related to the obligation to provide truthful and adequate information to consumers and prohibits deceptive advertising practices, significant legal gaps remain in identifying, defining, and addressing greenwashing practices. These gaps not only pose challenges for state management, but also create opportunities for businesses to exploit green communication as a marketing strategy without being subject to specific legal constraints.

Firstly, the term “greenwashing” is currently neither defined nor mentioned in any legal normative document, despite its growing prevalence and increasing sophistication across sectors such as real estate, fashion, cosmetics, finance, and fast-moving consumer goods. The absence of a legal definition makes it difficult for regulatory authorities to classify, monitor, and apply corresponding sanctions to acts that exhibit greenwashing characteristics.

Secondly, current regulations only indirectly address greenwashing through legal provisions on false advertising (Clause 7, Article 109 of the 2005 Law on Commerce), unfair competition (Article 45 of the 2018 Law on Competition), or misleading information to consumers (Articles 10 and 21 of the 2023 Law on Consumer Rights Protection). However, these provisions mainly focus on the delivery of untruthful information and fail to reflect the specific nature of greenwashing, which involves deliberately using language, symbols, colors, or imagery associated with environmental themes to create a false positive impression about a product or brand. Moreover, Vietnamese law does not yet require that environmental claims be substantiated with clear, quantitative criteria, scientific evidence, or independent verification—elements that are widely recognized as international standards for green claims.

Thirdly, the Vietnamese legal system has yet to develop national standards or specialized technical guidelines for environmental claims, particularly for green marketing practices. In contrast, jurisdictions such as the EU, UK, and Australia have issued specific regulations on green claims, requiring businesses to substantiate terms like “sustainable”, “eco-friendly”, “carbon neutral” or “organic” with verifiable evidence under

the supervision of competent authorities. While Decision No. 21/2025/QĐ-TTg represents an important step in categorizing and verifying green investment projects in Vietnam, its scope remains limited to investment activities in certain sectors and does not extend to commercial advertising, consumer communication, or product labelling – areas where greenwashing is most prevalent and difficult to regulate.

Fourthly, the current legal framework has not yet issued detailed technical guidelines to regulate the use of potentially misleading or ambiguous terms in commercial activities, especially environmental-related claims. The lack of clear legal definitions for vague concepts such as “green”, “natural”, “vegan”, “eco-friendly” or “sustainable” enables businesses to exploit linguistic elements as marketing tools without providing scientific evidence or undergoing independent verification. In practice, many products are labeled “100% natural”, “eco-friendly,” or “green product” without specific standards for verification and without being subject to control by environmental or consumer protection authorities. This legal gap must be promptly addressed to ensure transparency, fairness, and accountability in commercial communications.

5.2.2. Lessons from the EU and Recommendations for Improving Vietnam’s Legal Framework

5.2.2.1. LESSONS FROM THE EU

In the context of globalization and the transition toward a green economy, the EU has taken the lead in establishing a legal framework to effectively regulate greenwashing practices. Legislative initiatives, such as the GCD Proposal, along with mandatory standards for data substantiation and independent certification, have contributed to the development of a stringent, transparent, and consistent mechanism for overseeing environmental claims across the bloc. This approach not only safeguards consumer rights, but also promotes meaningful and transparent environmental accountability among businesses. EU law serves as a legal reference not only due to its pioneering position, but also because of certain similarities in market contexts. Both the EU and Vietnam have witnessed a rapid rise in demand for green consumption, accompanied by the prevalence of environmental claims lacking scientific substantiation. As previously analyzed, prior to the adoption of the GCD Proposal, the regulation of greenwashing was initially embedded in general consumer protection and competition legislation, specifically Directive 2005/29/EC on Unfair Commercial Practices

and Directive 2011/83/EU on Consumer Rights. However, these provisions were largely principle-based and did not establish an independent, scientific verification mechanism for environmental claims. In contrast, Vietnam still lacks direct legal regulations on greenwashing, addressing it only indirectly through the 2023 Law on Consumer Rights Protection and the 2018 Law on Competition, which remain insufficient for effectively verifying environmental claims. Moreover, both the EU and Vietnam regard green transition as a key development priority,^[69] yet both face challenges regarding the transparency and reliability of environmental claims without an effective control mechanism. Although there are many similarities, there are also fundamental differences that must be considered to determine the limits of legal transposition. The EU represents a unified market with a centralized coordination mechanism through the European Commission, a harmonized legal and technical infrastructure, and a requirement that all green claims be independently verified, with recognition across member states.^[70] In contrast, Vietnam lacks an independent verification mechanism, has limited monitoring resources, and has yet to develop a centralized data system. Furthermore, the business structure in Vietnam is predominantly small- and medium-sized enterprises, which cannot readily comply with the stringent standards applied in the EU. On this basis, the EU's experience in standardizing legal requirements, enhancing transparency, and protecting consumers represents an important and valuable reference for Vietnam. In other words, Vietnam can consider legal transplants^[71] from the EU framework to develop its own greenwashing regulations. However, the implementation of such a model must be carried out cautiously, selectively, and gradually, in order to avoid the risks of “imposition” or “replication”, which could result in distortions due to Vietnam's unique social, political, and economic context.^[72] Therefore, Vietnam needs to assess its practical capacity, infrastructure, and enterprise scale to ensure both the feasibility and effectiveness of these legal transplants. Based on the analysis of the similarities, differences, and limitations of EU law in relation to Vietnam's context, the following section will propose solutions to improve

⁶⁹ “Chuyển đổi xanh – Chung tay vì một Việt Nam phát triển bền vững” *Lao Động*, 27 March 2025. <https://laodong.vn/kinh-doanh/chuyen-doi-xanh-chung-tay-vi-mot-viet-nam-phat-trien-ben-vung-1482618.ldo>. [accessed: 18.9.2025].

⁷⁰ European Commission, Green Claims Directive, art. 10(7).

⁷¹ Alan Watson, *Legal Transplants: An Approach to Comparative Law* (Edinburgh: Scottish Academic Press, 1974), 96-97.

⁷² Ibidem.

Vietnam's legal framework and strengthen the effectiveness of controlling greenwashing practices during the green transition, thereby enhancing consumer protection and promoting genuine sustainable business practices.

5.2.2.2. RECOMMENDATIONS FOR IMPROVING VIETNAM'S LEGAL FRAMEWORK

Based on the previously analyzed legal shortcomings regarding greenwashing in Vietnam, it is evident that the current legal system is not yet equipped to effectively identify, regulate, and address this issue. To fill the legal gaps in light of the green transition and to learn from the EU's legislative practices, this paper offers several specific recommendations:

Firstly, it is necessary to clearly define the term "greenwashing" in official legal documents as an independent violation. The development of a legal definition for greenwashing would help distinguish it from other forms of deception in trade and advertising, thereby providing a solid basis for consistent and accurate enforcement. Such a definition should emphasize the misuse of environmental claims to mislead consumers into forming a false positive perception, regardless of whether the product actually meets green criteria.

Secondly, Vietnam should issue a dedicated legal guideline on environmental claims in commercial advertising. This document should clearly define content standards for potentially misleading terms such as "eco-friendly," "sustainable," "green," "organic", "natural," and "vegan". At the same time, businesses should be required to provide transparent, verifiable evidence when using such terminology. The legal framework could be modeled after international principles, such as ISO 14021:2016 (Environmental labels and declarations – Self-declared environmental claims) or the GCD Proposal, which mandates that environmental claims must be "clear, specific, truthful, and based on evidence."

Thirdly, Vietnam should establish an independent verification mechanism and require transparent disclosure of environmental claims associated with products, services, and marketing campaigns. This mechanism could be based on third-party verification systems, as outlined in ISO/IEC 17029:2019, ensuring objectivity and eliminating the risk of companies self-promoting false green images. Additionally, competent authorities should develop a national database on environmental certification and verification to facilitate public access and consumer trust.

Fourthly, greenwashing control should be mainstreamed into national sustainable development strategies and green transition programs.

Simultaneously, mechanisms should be introduced to support businesses in transitioning toward genuine green production and communication. This not only contributes to improving the legal framework, but also promotes responsible private sector participation in achieving national environmental goals.

6 | Conclusion

In the context of the global green transition, strengthening the regulation of greenwashing plays a pivotal role in safeguarding consumer rights, ensuring market transparency, and preserving public trust in sustainable development strategies. Although manifestations of greenwashing have become increasingly visible across a wide range of sectors in Vietnam – from real estate and banking to fashion, cosmetics, and fast-moving consumer goods – the existing legal framework remains insufficient to effectively identify, prevent, and sanction such practices. The absence of unified assessment criteria, clear legal definitions, and independent verification mechanisms has created regulatory gaps that allow “green” language to be used as an unaccountable marketing tool.

The legislative experience of the European Union, particularly the GCD Proposal and its three core pillars – reliable scientific evidence, life-cycle assessment, and independent verification – provides a coherent and technically robust model for governing environmental claims. However, the direct transplantation of this model into Vietnam must take into account differences in institutional capacity, enforcement conditions, and the maturity of the domestic market.

Against this backdrop, this paper advances three principal contributions. First, it systematises the conceptual underpinnings and regulatory structure of the GCD Proposal, providing clarity on key legal standards that remain fragmented across existing scholarship. Second, by comparing the EU framework with Vietnam’s current legislation, the paper identifies both points of alignment and major institutional challenges in adopting international norms for the control of greenwashing. Third, the paper proposes a set of feasible legal reforms for Vietnam – including the clarification of the legal definition and constituent elements of greenwashing, the establishment of internationally aligned verification procedures, and

the adoption of proportionate sanctions – thereby contributing directly to ongoing policy-making efforts aimed at strengthening transparency and regulatory integrity.

Looking ahead, improving Vietnam's legal framework for the regulation of greenwashing should be regarded as a strategic priority within both its consumer protection agenda and its broader national sustainable development policy. Enhancing legal clarity and enforcement capacity will not only reinforce environmental governance, but also demonstrate Vietnam's readiness for deeper integration into global green value chains. Future research may further investigate the behavioural impacts of greenwashing on consumers and explore the institutional feasibility of implementing independent verification mechanisms consistent with international standards.

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The EVFTA's Investment Protections and Emerging Legal Risks from Vietnam's Feed-In Tariff (FIT) Policy Transition

Abstract

In recent years, Vietnam has become a regional leader in renewable energy development, particularly in solar and wind power. This growth was largely driven by the adoption of the Feed-In Tariff (FIT), a fixed, preferential pricing scheme aimed at encouraging private investment in clean energy. However, since 2021, Vietnam has discontinued the FIT for new projects and shifted to alternative electricity trading mechanisms. This paper examines the legal consequences of this policy change, identifies limitations in the current Vietnam's framework, and assesses the potential risk of investment disputes under the protection mechanisms provided by the European Union – Vietnam Free Trade Agreement (EVFTA).

KEYWORDS: renewable energy, FIT, investment disputes, ISDS, international arbitration, energy policy

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1 | Introduction

It is evident that, from ancient times to the modern era, energy has always been a core factor driving the development of nations. Energy is a fundamental driving force that enables any system of science and technology to function and advance. When science and technology thrive, a nation is bound to achieve remarkable progress. Therefore, when a country attains greater prosperity than others, it is undoubtedly due to its ability to produce energy more efficiently and abundantly.^[1]

In the context of a rapidly changing world, the modern era has witnessed significant transformations, most notably the shift in many nations' perspectives on energy security. Unlike the traditional approach in which countries concentrated on the exploitation of fossil fuels such as oil, coal, and natural gas, the concept of renewable energy has become increasingly prevalent in today's global landscape, driven by its economic and environmental advantages.^[2] For the first time in global history, total energy investment has surpassed 3 trillion USD, with over 771 billion USD allocated to the renewable energy sector in 2024 alone – demonstrating the strong investment appeal of renewable energy production.^[3] This shift represents a significant effort by countries to reduce greenhouse gas emissions and combat global climate change.

In response to the urgent demands of the global energy transition and international commitments to reducing greenhouse gas emissions, Vietnam has identified the development of renewable energy as a key pillar in its strategy for ensuring energy security and promoting green growth. Since the Doi Moi^[4] policy in 1986, along with the shift from a centrally planned economy to a socialist-oriented market economy, Vietnam's energy policy framework has been gradually improved. Notably, at the COP26 Conference in 2021, Vietnam pledged to achieve net-zero emissions by

¹ Eugene A. Rosa, Gary E. Machlis, and Kenneth M. Keating, "Energy and Society" *Annual Review of Sociology*, No. 1 (1988): 150.

² Renewable energy is commonly understood as energy derived from continuous, inexhaustible sources such as sunlight, wind, rain, tides, waves, and geothermal heat.

³ International Energy Agency, *World Energy Investment 2024* (Paris: IEA, 2024).

⁴ Doi Moi (meaning "renovation" in Vietnamese) refers to a comprehensive reform policy launched by the Vietnamese government in 1986. It marked the transition from a centrally planned economy to a socialist-oriented market economy, aiming to liberalize trade, attract foreign investment, and encourage private sector development.

2050 – a commitment with significant political and legal implications, laying the groundwork for far-reaching reforms in the energy sector. In order to promote the development of renewable electricity, Vietnam has been working to improve the legal framework governing this sector, while issuing policies aimed at supporting and encouraging investment in renewable power projects. One of the most notable policies is the Feed-in Tariff (FiT) mechanism, stipulated in Decision No. 39/2018/QĐ-TTg on the support mechanism for the development of wind power projects in Vietnam. As a result, the period from 2017 to 2020 witnessed a sharp increase in renewable electricity projects – mainly in solar and wind energy – driven by the positive impact of the FiT scheme.^[5] This policy was designed to create a stable and predictable investment environment, thereby effectively attracting private capital flows, including a large number of foreign investors – such as those from the European Union (EU) – who are protected under bilateral investment treaties (BITs) and free trade agreements (FTAs) that contain investment chapters. However, since 2021, the Vietnamese government has discontinued the application of the FiT mechanism for new projects, replacing it with market-based electricity pricing methods such as competitive bidding and direct power purchase agreements (DPPA).^[6]

From a legal perspective, the change in the FiT policy may be considered a violation of Vietnam's international obligations concerning investment protection – particularly the principles of Fair and Equitable Treatment (FET),^[7] the protection of legitimate expectations,^[8] and the prohibition against arbitrary or non-transparent withdrawal of investment incentives.^[9] Under the framework of the European Union-Vietnam Free Trade Agreement (EVFTA), EU investors are strongly protected through an investment dispute settlement mechanism. Accordingly, a policy change that lacks transparency, reasonableness, and predictability may serve as

⁵ Nguyễn Chí Dũng, “Quy định về năng lượng tái tạo tại Việt Nam: So sánh với một số quốc gia trên thế giới”, *Tạp chí Luật sư điện tử*, (2024).

⁶ Mayer Brown, *Vietnam's Direct PPA Pilot Scheme – Energy Market Update* (February 2022), March 2022.

⁷ FET requires host states to treat foreign investors in a manner that is just, consistent, and non-arbitrary.

⁸ The doctrine of legitimate expectations protects the reasonable expectations of investors based on the host state's legal framework and representations at the time of investment.

⁹ The principle of non-arbitrary withdrawal of incentives prohibits states from unexpectedly or opaquely revoking investment advantages once granted, especially when such acts undermine investor confidence and legal certainty.

a legal basis for EU investors to initiate international arbitration proceedings against Vietnam, seeking compensation for damages.

Within the scope of this paper, we will analyze the legal implications of Vietnam's shift from the FiT mechanism for renewable electricity projects, in light of the investment protection provisions under the EVFTA. The analysis focuses on assessing the compatibility of the new policy with Vietnam's international obligations, as well as identifying the potential risk of international investment disputes under the investor-state dispute settlement (ISDS) mechanism. Based on this analysis, the paper offers several recommendations to improve the legal framework governing renewable electricity in a manner that ensures stability, transparency, and alignment with international legal standards.

2 | Vietnam's Feed-in Tariff Policy: Evolution and Termination

2.1. Overview of the Feed-in Tariff (FiT) Mechanism

Before the term “feed-in tariff” (FiT) became widely used, the United States had already implemented forms of price support for renewable electricity as early as the late 1970s. A notable example is the Public Utility Regulatory Policies Act (PURPA) of 1978, which is considered a precursor to the FiT mechanism. PURPA required electric utilities to purchase power from qualifying independent power producers at a price not exceeding the utility's avoided cost.^[10] Although not formally referred to as a FiT, PURPA laid the foundation for the principle of mandatory power purchase from renewable sources outside traditional utility monopolies. It reflected an early policy mindset of supporting renewable electricity generation from the private sector.

¹⁰ David Jacobs, “Policy Invention as Evolutionary Tinkering and Codification: The Emergence of Feed-in Tariffs for Renewable Electricity” *Environmental Politics*, No. 5 (2014): 755–773.

The term FiT first emerged in Germany in 1991 with the introduction of the *Stromeinspeisungsgesetz* (StrEG), or Electricity Feed-in Law.^[11] The German word “*Stromeinspeisungsgesetz*”, which refers the legislation for feeding electricity into the grid and was passed in Germany in 1991, is the etymological origin of FiT. Eventually, it became known as “feed-in tariffs” and was anglicised to “electricity feed law.” Therefore, FiT determines the amount of power sold or fed into the grid from renewable sources. Alternative names for FiT include “Renewable Energy Incentive Payments” and “Advanced Renewable Tariffs (ARTs).” Regardless of its name, FiT is universally recognised as the most efficient policy instrument for expediting the implementation of renewable energy sources.^[12] In a feed-in tariff scheme, providers of energy from renewable sources, such as solar, wind, or water, receive a price for what they produce based on the generation costs. This purchase guarantee is offered generally on a long-term basis, ranging from 5 to 20 years, but most commonly spanning 15-20 years.^[13] The cost of the tariff payments is typically shared with the electricity consumers.

With its flexible design, the FiT mechanism allows countries to tailor key components, such as eligibility criteria, contract duration, power purchase obligations, and capacity thresholds, to align with their institutional context, infrastructure capabilities, and specific development goals. The tariff rates set under a FiT scheme can be structured in tiers, differentiated by technology type, geographic location, or level of innovation. This enables a targeted and rational allocation of support within the renewable energy sector.

One of the core strengths of the FiT mechanism lies in its ability to create a stable and predictable investment environment – an essential condition for attracting private capital, especially in high-risk sectors with long investment cycles such as renewable energy. By guaranteeing profits through fixed electricity purchase prices over extended periods, FiT schemes enhance investor confidence, thereby enabling larger-scale investments, expanding domestic supply chains, and fostering the development

¹¹ Claudia Hitaj, Andreas Löschel, “The Impact of a Feed-in Tariff on Wind Power Development in Germany” *Resource and Energy Economics*, 57 (2019): 18-35.

¹² Chuan Yu, “Disentangling Legal Stability from Legitimate Expectations: Towards Greater Deference to Regulatory Changes in Renewable Energy Transition Policies in Investment Arbitration” *World Trade Review*, No. 1 (2025): 101-119.

¹³ Toby D. Couture, Yves Gagnon, “An Analysis of Feed-in Tariff Remuneration Models: Implications for Renewable Energy Investment” *Energy Policy*, 38 (2010): 955.

of local technological manufacturing capacities. Furthermore, the assurance of minimum returns acts as a catalyst for investment in research and development (R&D), promoting technological innovation and reducing production costs in the medium to long term.^[14]

From an economic – institutional perspective, the FiT mechanism offers a distinct advantage in terms of cost-effectiveness in both management and implementation, owing to its simplicity, transparency, and high degree of standardization. This model significantly reduces administrative and transaction costs for both public authorities and private actors, particularly when compared to other support schemes such as production-based subsidies, competitive bidding, or renewable energy quotas. Moreover, when properly designed, FiT can enhance market competitiveness by broadening participation to include new entrants – particularly small and medium-sized enterprises – thereby fostering the growth of a supporting industrial ecosystem.

Finally, it is important to emphasize that the strategic comparative advantage of the FiT mechanism lies in the fact that it is not merely a pricing tool, but also an institutional instrument that embodies the state's long-term commitment to partnering with the private sector in the energy transition process. As such, FiT has played a pivotal role in enabling countries to attract investment in the renewable energy sector with a view toward sustainable development.

2.2. Implementation of the FiT Mechanism in Vietnam

In Vietnam, the term “preferential electricity purchase price” (commonly referred to as Feed-in Tariff or FiT) first appeared in 2011 under Decision No. 37/2011/QĐ-TTg,^[15] and was later replaced by Decision No. 39/2018/QĐ-TTg on the support mechanism for the development of wind power projects in Vietnam.^[16] This latter decision stipulated fixed FiT rates for wind power and

¹⁴ UNESCAP, *Low Carbon Green Growth Roadmap for Asia and the Pacific: Fact Sheet – Feed-in Tariff*, 2012, <https://www.unescap.org/sites/default/files/26.%20FS-Feed-In-Tariff.pdf>.

¹⁵ Government of Vietnam, Decision No. 37/2011/QĐ-TTg of the Prime Minister on the Mechanism Supporting the Development of Wind Power Projects in Vietnam, 29 June 2011.

¹⁶ Government of Vietnam, Decision No. 39/2018/QĐ-TTg of the Prime Minister Amending and Supplementing a Number of Articles of Decision No. 37/2011/

extended the duration of power purchase agreements to 20 years. Specifically, for onshore wind power projects, the electricity selling price available to investors was set at 8.5 US cents/kWh (approximately VND 1,928/kWh). For offshore wind power projects, EVN (Vietnam Electricity) committed to purchasing electricity at a preferential rate of 9.8 US cents/kWh (approximately VND 2,223/kWh). These preferential rates remained in effect until 31 October 2021.

For solar power, the Vietnamese government introduced the FiT mechanism through Decision No. 11/2017/QĐ-TTg^[17], later replaced by Decision No. 13/2020/QĐ-TTg^[18]. Specifically, Decision No. 11/2017/QĐ-TTg set the FiT rate for solar power at 9.35 US cents/kWh (approximately VND 2,086/kWh), applicable until 30 June 2019.

Subsequently, Decision No. 13/2020/QĐ-TTg introduced a differentiated FiT scheme based on the type of solar installation, effective until 31 December 2020. The revised rates were as follows:

- Rooftop solar: 8.38 US cents/kWh (approximately VND 1,943/kWh);
- Ground-mounted solar: 7.09 US cents/kWh (approximately VND 1,644/kWh);
- Floating solar: 7.69 US cents/kWh (approximately VND 1,783/kWh).

As a result of these incentive policies, Vietnam's renewable electricity sector has undergone significant, positive developments. The following chart and table illustrate the increase in renewable electricity generation from 2016 to 2023, based on data published by EVN (Vietnam Electricity) in its annual reports^[19]:

QĐ-TTg on the Mechanism Supporting the Development of Wind Power Projects in Vietnam, 10 September 10, 2018.

¹⁷ Government of Vietnam, Decision No. 11/2017/QĐ-TTg of the Prime Minister on the Mechanism Supporting the Development of Solar Power Projects in Vietnam, 11 April 2017.

¹⁸ Government of Vietnam, Decision No. 13/2020/QĐ-TTg of the Prime Minister on Incentive Mechanisms for Solar Power Development in Vietnam, 6 April 2020.

¹⁹ Vietnam Electricity (EVN), *EVN Annual Report*.

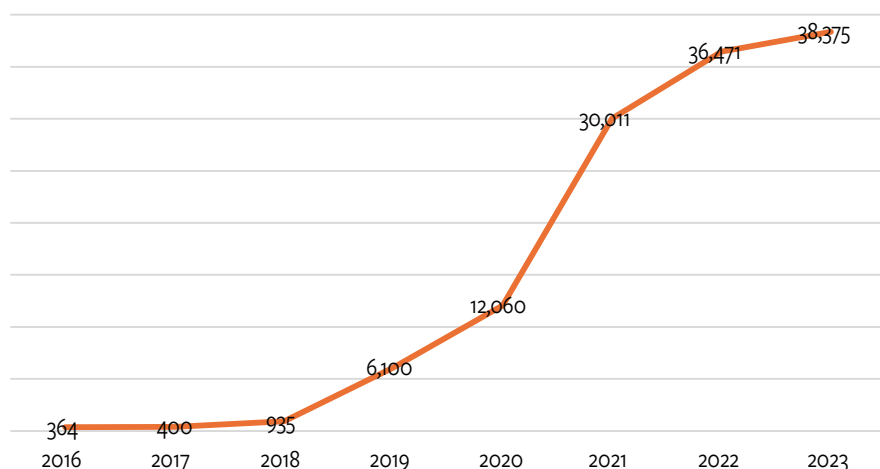


Figure 1: Production of Renewable Electricity in Vietnam (2016–2023)

Table 1: Annual Increase in Renewable Electricity Output in Vietnam (2016–2023)

Time	Increase in output (million kWh)	Increase in output (%)
2016–2017	164	45.05%
2017–2018	535	133.75 %
2018–2019	5165	552.4 %
2019–2020	5960	97.7 %
2020–2021	17951	148.84 %
2021–2022	6460	21.25 %
2022–2023	1904	5.22%

It is evident that, during the period from 2016 to 2017, the growth in renewable electricity generation was minimal, with an increase of only 36 million kWh. This slow progress can be attributed to the limited number of regulatory incentives available at the time, the novelty of the renewable energy sector in Vietnam, and the fact that the preferential FiT rates had yet to become truly attractive to foreign investors. Domestic investors, meanwhile, continued to face significant challenges, particularly in terms of access to appropriate technologies. However, from 2017 onwards, the issuance of additional legal instruments and policies to encourage investment in wind and solar power led to a substantial and consistent rise in Vietnam's annual renewable electricity generation.

The growth in renewable electricity generation in Vietnam during the period 2018-2021 highlights the pivotal role of the FiT mechanism in promoting investment and the development of renewable energy projects. The two most notable surges in capacity (in 2019 and 2021) coincided with the issuance and implementation of Decision No. 39/2018/QĐ-TTg (for wind power) and Decision No. 13/2020/QĐ-TTg (for solar power), respectively. In both cases, the FiT mechanism served as a tool to guarantee investor returns and mitigate investment risks. As a result, by 2022, Vietnam had become the leading country in the ASEAN region in terms of renewable electricity generation, accounting for as much as 69% of the region's total solar and wind power output.^[20] These outcomes reaffirm the role of feed-in tariffs as a strategically effective tool in shaping Vietnam's renewable energy market during its formative growth period.

Although the FiT mechanism has played a critical role in attracting investment into Vietnam's renewable electricity sector, its implementation has also revealed several notable shortcomings. The application of relatively high preferential tariffs – particularly during the 2017-2019 period (9.35 US cents/kWh under Decision No. 11/2017/QĐ-TTg) triggered an overwhelming wave of investment that exceeded the government's planning and regulatory capacity. As a result, there was a sudden surge in installed solar capacity, which led to transmission grid congestion and an imbalance in the power generation mix. Many completed projects were unable to connect to the grid, causing financial losses and exposing parties to potential contractual disputes.^[21]

In response to this situation, the government discontinued the FiT mechanism and transitioned to market-based pricing models such as competitive bidding and price negotiation, in accordance with the orientation set out in Power Development Plan VIII (Decision No. 500/QĐ-TTg dated May 15, 2023).^[22] However, this shift has also triggered significant reactions from investors, indicating that the post-FiT period presents considerable

²⁰ Ember, *ASEAN's Solar and Wind Growth Slowed Last Year, Despite Huge Potential*.

²¹ Nguyen Thi Thu Minh, Nguyen Le Hoa, and Le Thi Thanh Truc, "Cơ chế mua bán điện mặt trời và điện gió trong thị trường điện cạnh tranh tại Việt Nam [Trading Mechanism for Solar and Wind Power in the Competitive Electricity Market in Vietnam]" *Tạp chí Khoa học Đại học Mở Thành phố Hồ Chí Minh – Khoa học Xã hội*, No. 1 (2024): 46–59.

²² Government of Vietnam, Decision No. 500/QĐ-TTg of the Prime Minister Approving the National Power Development Plan for the Period 2021–2030, with a Vision to 2050 (PDP VIII), 15 May 2023.

challenges in terms of policy stability and market confidence within the renewable electricity sector.

2.3. Post-FiT Policy Landscape

Following the expiration of the main FiT mechanisms at the end of 2020 for solar power (pursuant to Decision No. 13/2020/QĐ-TTg) and in October 2021 for wind power (under Decision No. 39/2018/QĐ-TTg)-Vietnam entered a prolonged period of regulatory transition. Many renewable energy projects completed after these deadlines were unable to sign PPA with EVN. Additionally, a large number of projects, though completed before the FiT expiration dates, were rushed in order to qualify for the preferential tariffs. In doing so, many investors violated legal requirements related to planning, land use, and construction investment procedures. As a result, these projects failed to meet the necessary legal conditions. Despite being asked to provide supplemental documentation, many investors have been unable to comply, preventing them from entering into price negotiations with EVN.^[23]

For example, the Ca Mau Wind Power Projects 1A, 1B, 1C, and 1D were delayed by more than 22 months due to administrative and procedural bottlenecks. As a result, the projects missed the deadline for eligibility under the preferential FiT scheme.^[24] At the same time, the absence of a stable electricity pricing mechanism following the expiration of the FiT scheme has prevented investors from finalizing power selling prices with EVN. A notable example is the Trung Nam – Thuan Nam solar power project (located in Ninh Thuan province), which was suspended by EVN in September 2022. The project was deemed ineligible for the FiT due to violations during its implementation, including the lack of legal land-use rights, failure to conduct an environmental impact assessment, and the absence of fire safety inspection and approval.^[25]

²³ Nhat Minh, “Renewable Energy Investment Challenges in Vietnam: Risks and Delays” *Vietnam Investment Review*, <https://vir.com.vn/renewable-energy-investment-challenges-in-vietnam-risks-and-delays-102339.html>.

²⁴ Le Nguyen, *Dự án điện gió ở Cà Mau chậm triển khai, nhiều đơn vị tham mưu bị nhắc nhở*. <https://baoxaydung.vn/du-an-dien-gio-o-ca-mau-cham-trien-khai-nhieu-don-vi-tham-muu-bi-nhac-nho-192494676.html>.

²⁵ Phuong Dung, *Trung Nam kêu cứu về dự án điện mặt trời tại Ninh Thuận*. <https://vnexpress.net/trung-nam-keu-cuu-ve-du-an-dien-mat-troi-tai-ninh-thuan-4740092.html>.

In response to these challenges, the Ministry of Industry and Trade of Vietnam issued Decision No. 21/QĐ-BCT on Electricity Price Framework for Transitional Solar and Wind Power Projects in January 2023,^[26] introducing a new pricing framework for solar and wind power projects in the transitional phase. This important regulation affirms the authority of EVN to negotiate power purchase agreements with renewable energy developers. Under this new mechanism, transitional solar and wind projects are subject to maximum tariff ceilings, ranging from VND 1,185 to 1,508 per kWh for solar power, and from VND 1,587 to 1,816 per kWh for wind power, depending on project classification. Investors must negotiate PPAs with EVN based on these ceiling prices. However, because the final prices are determined primarily through bilateral negotiations between EVN and each investor, the process has been criticized for its lack of transparency and predictability, raising serious concerns among investors. Notably, this shift from a fixed FiT scheme to a pricing model based on capped tariffs has led to a reduction of approximately 21-29% compared to the previous preferential FiT levels.

The fact that these temporary tariff ceilings are significantly lower than the previous fixed rates under the FiT scheme has led to a substantial reduction in investors' expected returns. This outcome not only poses challenges to the financial viability of renewable energy projects but also raises serious legal concerns when assessed under the framework of international investment protection principles – particularly the principle of legitimate expectations. This principle is widely recognized in BITs and free trade agreements with investment chapters, to which Vietnam is a party, most notably the EVFTA.

²⁶ Ministry of Industry and Trade (Vietnam), Decision No. 21/QĐ-BCT on Electricity Price Framework for Transitional Solar and Wind Power Projects, 7 January 2023.

3 | ISDS Disputes over FiT Schemes: From Spain under the ECT to Vietnam under the EVFTA

In fact, numerous countries adopted FiT schemes. However, after a period of implementation, some of them decided to terminate these preferential mechanisms for renewable electricity, resulting in a decline in investor revenues, and subsequently triggering a wave of investor-state dispute settlement (ISDS) claims. For instance, Spain alone has faced approximately 50 ISDS cases arising from its modifications to incentive schemes for electricity producers using renewable energy sources—including the repeal of the FiT mechanism. Similarly, countries such as the Czech Republic, Romania, Italy, Germany, Ukraine, Bulgaria, Japan, and Argentina have also faced ISDS claims on comparable grounds.^[27]

In the same vein, the shift from a FiT mechanism to a more market-based electricity pricing framework in Vietnam has also resulted in significant losses for foreign investors in the renewable electricity sector, thereby raising concerns over potential violations of Vietnam's investment protection obligations under the EVFTA and other international investment agreements (IIAs), to which Vietnam is a party.

3.1. Disputes against the Kingdom of Spain under the ECT

In FiT scheme-related cases against Spain, the alleged breaches often involve the host state's obligations to "encourage and create stable, equitable, favourable and transparent conditions" and to "accord at all times to investments of investors of other Contracting Parties fair and equitable treatment." Specifically, investors may allege that the host State's changes to the FiT regime violate the Fair and Equitable Treatment (FET) obligation, particularly when such changes undermine the investors' legitimate expectations.

For example, in *Cube Infrastructure Fund SICAV and others v. Kingdom of Spain*, the investors argued that Spain's regulatory changes violated

²⁷ Marcella Giacomarra, Filippa Bono, "European Union Commitment towards RES Market Penetration: From the First Legislative Acts to the Publication of the Recent Guidelines on State Aid 2014/2020" *Renewable and Sustainable Energy Reviews*, Vol. XLVII (2015): 218.

their legitimate expectations regarding photovoltaic (PV) and hydroelectric investments. Particularly, between 2008 and 2012, Cube Infrastructure Fund SICAV, Cube Energy SCA, and Cube Infrastructure Managers SA (collectively referred to as Cube), along with Demeter 2 FPCI and Demeter Partners SA (collectively, Demeter), invested in Spain's PV and hydroelectric sectors on the basis of guarantees established in Royal Decree 661/2007 (RD661/2007), which formed part of Spain's incentive framework for energy sector investments.

However, in 2010 and again between 2013 and 2014, Spain enacted modifications to this framework, introducing changes such as tariff reductions and new limitations on eligibility for incentives. In response, Cube and Demeter initiated arbitration proceedings against Spain, alleging violations of Article 10 (concerning the promotion and protection of investments) of the Energy Charter Treaty (ECT).

In this case, the tribunal found that Spain had breached the FET obligation by undermining legitimate expectations created through the enactment of a special regulatory regime. It concluded that RD661/2007 established a clearly defined framework of benefits and incentives, deliberately designed to attract investment in the renewable energy sector. According to the tribunal, in the context of a highly regulated industry, it is not necessary for the State to extend individualized commitments to each investor in order to create legitimate expectations. Rather, such expectations may arise from a regulatory regime that, by its structure and stated objectives, holds out a clear and advantageous policy intended to be relied upon by investors. As the tribunal noted: "to the extent that those expectations are objectively reasonable, they give rise to legitimate expectations when investments are, in fact, made in reliance upon them."^[28]

The tribunal further held that, under RD661/2007, Spain made a binding policy commitment to apply a preferential regime to qualifying power plants. While the 2010 policy changes were viewed as adjustments that did not fundamentally alter the regime, the 2013-2014 measures were found to have dismantled the regime's essential components, including

²⁸ Cube Infrastructure Fund SICAV and Others v. Kingdom of Spain, ICSID Case No. ARB/15/20, Decision on Jurisdiction, Liability and Partial Decision on Quantum, para. 388.

key economic advantages, thereby frustrating the core expectations of the investor.^[29]

In another one, *Masdar*, a company constituted in the Netherlands, initiated arbitration proceedings against Spain, on the grounds that its legitimate expectations as an investor had been fundamentally undermined. The legal basis for its investment was Royal Decree 661/2007 (RD661/2007), a policy adopted by Spain to promote renewable energy development. Under this regime, renewable energy producers were entitled to a FiT consisting of a government-set premium above the wholesale market price. Crucially, Article 44.3 of RD661/2007 included a stability clause, which *Masdar* interpreted as a commitment that any future regulatory changes would not affect installations registered and commissioned before 1 January 2012. Relying on this guaranteed framework, *Masdar* invested in three concentrated solar power plants. However, between 2012 and 2014, Spain implemented a series of disputed regulatory reforms which, according to *Masdar*, abolished the RD661/2007 regime and replaced it with a less favorable remuneration scheme. These new measures applied retroactively, including to projects that had qualified under the original RD661/2007 system. Claiming that these reforms violated its legitimate expectations and had a detrimental impact on the value and profitability of its investments, *Masdar* alleged that Spain had breached the FET obligation under Article 10(1) of the ECT. In addressing the alleged breach of the FET obligation under the ECT, the tribunal in the *Masdar* case adopted a nuanced approach that engaged with competing doctrinal views on the formation of legitimate expectations. *Masdar* argued that the adoption of the disputed regulatory measures led to the dismantling of the RD661/2007 incentive regime, upon which it had relied when making its investments, thereby removing the stability it had reasonably expected. In contrast, Spain invoked the tribunal's reasoning in *Charanne v. Spain*^[30], contending that general legislations or public communications do not give rise to legally protected expectations unless accompanied by explicit and individualized commitments. The tribunal reaffirmed the general principle that States retain the sovereign right to modify their legislation, and that FET does not entail an absolute guarantee of regulatory or economic stability,

²⁹ *Cube Infrastructure Fund SICAV and Others v. Kingdom of Spain*, ICSID Case No. ARB/15/20, Decision on Jurisdiction, Liability and Partial Decision on Quantum, para. 476.

³⁰ *Charanne and Construction Investments v. Spain*, SCC Case No. V 062/2012.

unless specific undertakings have been made directly to the investor.^[31] Nevertheless, the tribunal emphasized that this regulatory discretion is not without limit and must be exercised consistently with the principle of legitimate expectations. To determine whether Spain breached the principle of legitimate expectations, the tribunal considered the two opposing views from Charanne: the majority required specific commitments, while the dissent accepted general laws if the investor had conducted sufficient due diligence. In Masdar, the tribunal found that the investor had met the due diligence standard and could rely on general law. Additionally, the tribunal identified specific commitments made directly to the investor, concluding that both general and specific assurances had independently created legitimate expectations.^[32]

As demonstrated in the two aforementioned cases, the arbitral tribunals affirmed that, when host states modify or terminate preferential FiT schemes for renewable energy, such actions may deprive foreign investors of their legitimate expectations, thereby constituting a violation of the FET obligation. However, regarding the question of what investors can legitimately expect, tribunals have adopted divergent approaches. Under a broader interpretation, investors may reasonably expect a generally stable and predictable regulatory framework, even in the absence of explicit commitments.^[33] By contrast, some tribunals apply a narrower view, holding that legitimate expectations can arise only from specific, individualized assurances made by the host state to the investor.^[34]

Another important factor in assessing the legitimacy of an investor's expectations in FiT scheme-related disputes is whether the investor conducted proper due diligence. Specifically, in some cases, arbitral tribunals have held that conducting due diligence is a necessary condition for an investor's legitimate expectations to be protected under the FET standard.^[35] For example, in *Stadtwerke v. Spain*, the Tribunal determined

³¹ *Masdar Solar & Wind Cooperatief U.A. v. Kingdom of Spain*, ICSID Case No. ARB/14/1, Final Award, para. 485.

³² *Ibidem*, para. 520-521.

³³ See *E.g. Cube v. Spain*, para. 388; *Eiser v. Spain*, para. 382; *SolEs v. Spain*, para. 313.

³⁴ See *E.g. RREEF v. Spain*, para. 321; *BayWa r.e. v. Spain*, para. 472; *Infracapital v. Spain*, para. 565.

³⁵ Yulia Levashova, "Fair and Equitable Treatment and Investor's Due Diligence under International Investment Law," *Netherlands International Law Review*, 67 (2020): 233-255.

that the evidence presented by the Claimants failed to demonstrate that the Spanish authorities had provided any binding guarantee of fixed or unreduced remuneration for the electricity generated by the Andasol 3 Plant. In evaluating the reasonableness of the investor's expectations, the Tribunal emphasized that a prudent investor, acting with appropriate due diligence, would not have reasonably assumed a legally guaranteed and stable income stream over the entire operational life of the plant. Accordingly, the Tribunal found that the Claimants' expectations lacked both reasonableness and legitimacy, and ultimately dismissed their allegation that Spain had breached the obligation to provide fair and equitable treatment under Article 10(1) of the Energy Charter Treaty.^[36]

3.2. Potential Disputes against Vietnam under EVFTA?

Drawing from the experience of the aforementioned cases against Spain, the changes to Vietnam's FiT mechanism for renewable electricity appear to exhibit indicators of a potential breach of the FET standard.

Following the expiration of the FiT mechanisms under Decision No. 13/2020/QĐ-TTg and Decision No. 39/2018/QĐ-TTg, foreign investors are expected to face significant challenges in implementing renewable electricity projects in Vietnam, while also being exposed to considerable legal and financial risks. Notably, the short six-month window of the FIT scheme (effective from 22 May 2020 to 31 December 2020) created substantial pressure on developers to obtain land permits and secure critical equipment within an unreasonably tight timeframe, further complicated by supply chain disruptions caused by the Covid-19 pandemic. Investors, aware of the decreasing trend in FIT rates, perceived this program as the final opportunity to benefit from attractive tariffs. This perception, combined with the rushed implementation timeline, could be interpreted as undermining the stability and predictability that underpins legitimate expectations.

Besides, investors reasonably expect that once a FIT policy is announced and investments are committed based on it, the terms will not be subject to sudden or arbitrary change. If the government alters or withdraws these incentives prematurely or without transparent justification, especially

³⁶ Stadtwerke München GmbH, RWE Innogy GmbH, and Others v. Kingdom of Spain, ICSID Case No. ARB/15/1, Final Award, para. 308.

amid ongoing restructuring of the national budget, such actions may constitute a breach of the FET standard and the frustration of legitimate expectations, opening the door to potential ISDS claims. Although Decision No. 21/QĐ-BCT on Electricity Price Framework for Transitional Solar and Wind Power Projects has addressed the gap in electricity pricing for transitional projects by introducing new tariff ceilings, resolving policy delays, and establishing a clearer regulatory framework—thereby reducing the risk of potential ISDS claims – the decline in investor profitability (as discussed in Part II) remains a persistent concern. This ongoing loss continues to serve as a latent trigger for future claims by foreign investors. Moreover, the pricing negotiation mechanism under PPAs with EVN, as provided for in Decision No. 21, introduces additional legal and commercial risks. This is primarily because, subject to certain exceptions, EVN currently functions as the exclusive off-taker for all renewable energy projects in Vietnam, thus preserving the country's single-buyer electricity market structure. At present, corporate renewable power purchase agreements are not feasible, thereby limiting the bargaining power of investors acting as electricity sellers. Consequently, any attempt to impose fixed tariffs unilaterally may be viewed as arbitrary or potentially unfair.

In addition, in *Charanne and Construction Investments v. Spain* case, a criterion proposed by the Charrane Award offers investors a framework to persuade a tribunal to reevaluate the measures implemented by the host State. This criterion centers around the principle of proportionality, which the tribunal interprets as a requirement that any alterations in policy or legal frameworks instituted by the government must not be arbitrary or unwarranted.^[37] Specifically, these changes should not abruptly and unpredictably strip away the fundamental characteristics of the existing regulatory framework. For example, the expected operational lifespan of solar power plants is typically accepted to be around 30 years, while the useful life of wind farms is generally determined to be approximately 20 years. Therefore, the FiT and policy stability must be upheld over a long-term commitment, as this stability is essential for ensuring ongoing and efficient performance from investors in these sectors. Any unreasonable delays, restrictions, or outright cancellations of the FiT and any changes to the commissioning deadlines necessary to benefit from the FiT could violate the FET standard. However, it should be noted that these are merely

³⁷ *Charanne and Construction Investments v. Spain*, SCC Case NoV 062/2012, Final Award, para.515.

preliminary indications of potential conflict between foreign investors and the Government of Vietnam. The risk of disputes concerning fair and equitable treatment (FET) ultimately depends on the specific provisions contained in the relevant international investment agreements (IIAs).

Accordingly, when analyzing the actions of the Vietnamese Government related to the FiT mechanism within the scope of the FET standard under the EVFTA (specifically, the EU-Vietnam Investment Protection Agreement, or EVIPA), the legal outcomes may differ from those seen in the Spanish cases. In fact, the provisions of the EVFTA/EVIPA represent a new generation of investment protection standards, and this approach constitutes a significant departure. It could be a revolution from the traditional framework found in agreements such as the Energy Charter Treaty (ECT).^[38]

In the Preamble of the EVIPA, the Parties explicitly emphasize that: “This Chapter shall not be interpreted as a commitment from a Party that it will not change its legal and regulatory framework, including in a manner that may negatively affect the operation of investments or the investor’s expectations of profits.”^[39]

This provision is fully consistent with the prevailing trend in international investment arbitration, which recognizes that investors cannot expect absolute legal stability or that the host state’s legal system will remain unchanged. For example, in *EDF v. Romania*, the tribunal held that recognizing an investor’s expectation of an “immutable” legal and business environment would unduly restrict a state’s right to regulate, and would be incompatible with the normal prerogatives of a sovereign nation.^[40] Other provisions in the EVIPA also affirm the host state’s right to regulate, in order to ensure a proper balance between investor interests and broader public interests. However, the state’s right to change its policies and legal framework is only recognized where such changes are proportionate and reasonable. Therefore, these provisions do not preclude investors from initiating FET claims if government measures modifying investment incentives are found to be unreasonable.

³⁸ See United States-Mexico-Canada Agreement (USMCA), Annex 14-B; see also: Vy Thảo Nguyen Ngô, Hy Thái Hoàng Nguyễn, Hiền My Xuân Nguyễn, “Remarks for European Renewable Energy Investors in Vietnam under EU-Vietnam Investment Protection Agreements” *International Business Law Journal* 2020, No. 5-6 (2020): 667.

³⁹ European Union and the Socialist Republic of Vietnam, EU-Vietnam Investment Protection Agreement (EVIPA), signed June 30, 2019, Preamble; art. 2.2.

⁴⁰ *EDF (Services) Limited v. Romania*, ICSID Case No. ARB/05/13, Final Award, para. 217.

Specifically, Article 2.5 of the EVIPA provides that: “Each Party shall accord fair and equitable treatment and full protection and security to investors of the other Party and covered investments in accordance with the Agreement”. Article 2.5 further clarifies the types of conduct by a host State that may be alleged to breach the FET obligation, including: (1) a denial of justice in criminal, civil, or administrative proceedings; (2) a fundamental breach of due process in judicial or administrative proceedings; (3) manifest arbitrariness; (4) targeted discrimination on manifestly wrongful grounds, such as gender, race, or religious belief; (5) abusive treatment, including coercion, abuse of power, or similar bad-faith conduct; or (6) a breach of any further elements of the FET obligation adopted by the Parties in accordance with paragraph 3.1. Notably, paragraph 4 of Article 2.5 provides that where the host State makes specific commitments but fails to honor them in a way that frustrates an investor’s legitimate expectations, such conduct will be considered a violation of the FET obligation. In other words, arbitrary or abusive measures that defeat legitimate expectations grounded in specific assurances may be alleged as an FET breach under the EVIPA. This approach differs from that of the CPTPP. Under the CPTPP, a Party’s action or inaction that does not align with an investor’s expectations does not, by itself, constitute a breach of the FET standard—even where the investment suffers loss or damage as a result.^[41] Accordingly, foreign investors cannot rely solely on the frustration of their legitimate expectations to establish an FET violation under the CPTPP.

This marks a key point of divergence between the EVFTA/EVIPA approach and that of the CPTPP. Under the CPTPP, a Party’s action or inaction that may not accord with an investor’s expectations does not, in and of itself, constitute a breach of the FET standard – even where such conduct results in loss or damage to a covered investment. Accordingly, foreign investors cannot rely solely on the frustration of their legitimate expectations to establish a violation by the host State.

In summary, following the termination of Vietnam’s FiT scheme, the absence of a standardized pricing model or a model power purchase agreement (PPA) has compelled investors to negotiate directly with EVN on uncertain and inconsistent terms, relying on temporary tariff caps issued by the Ministry of Industry and Trade. These caps are substantially lower than the previously guaranteed FiT rates, thereby undermining

⁴¹ Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), art. 9.6(4).

the economic viability of projects that were developed, financed, and approved on the assumption of a stable and predictable tariff regime. Against this backdrop, abrupt and unilateral policy reversals, particularly where unaccompanied by clear justification, transparency, or stakeholder consultation, may amount to arbitrary, unreasonable, and disproportionate conduct. Where investments were made in good faith in reliance on the then-applicable legal and regulatory framework, and where those expectations were objectively legitimate, the frustration of such expectations may, under the EVFTA's investment protection chapter, constitute a breach of the FET standard.

4 | Recommendations for Policy Reform and Dispute Prevention

Although preliminary warning signs have emerged, Vietnam has not, to date, recorded any formal disputes arising from the changes to the FiT mechanism for renewable electricity. Most disputes in renewable energy projects (e.g., delays, curtailment, or the application of temporary tariffs in lieu of FiT rates stipulated in PPAs) continue to be addressed primarily through internal administrative processes, petitions to state regulators, or negotiated settlements between the parties. In many instances, despite causing actual losses to investors, these disputes have not yet reached the threshold for initiating ISDS proceedings; where they have, the parties remain in pre-arbitration negotiations or are still assessing the feasibility of litigation.

However, assuming that proceedings were brought under the EVFTA (EVIPA), investors would still be more constrained in pursuing damages claims based on alleged FET violations than in, for example, the Spanish cases. The FET clause in the Energy Charter Treaty is often understood to couple notions of “stability” and “fair and equitable treatment” more closely. By contrast, most other investment agreements do not expressly impose an obligation of regulatory stability within their FET provisions, even though some tribunals have recognized that investors may reasonably expect a stable legal environment. As discussed, the EVFTA/EVIPA narrows investors’ expectations of absolute legal stability. This reflects

a broader global trend toward recalibrating the balance between investment protection and the host state's right to regulate. While this approach may be viewed as potentially discouraging foreign investment, it is necessary in the context of addressing environmental and climate-change challenges. For a developing country like Vietnam, strengthening the host state's authority to adjust policies and laws to address environmental and economic concerns—including those relating to renewable energy—is essential. Accordingly, the EVFTA/EVIPA approach should be regarded as a foundation for the design of future bilateral and multilateral investment protection agreements.

However, the EVIPA still permits investors to bring claims against the host state for breaches of the FET obligation, where changes to the legal framework are carried out in an arbitrary or unreasonable manner. One of the principal sources of potential FET violations in Vietnam's renewable electricity sector lies in the absence of a clear transitional regime when policies are changed—particularly in the shift from FiT pricing to competitive auctions or negotiated tariffs. Absent transparency, a defined roadmap, and a reasonable justification, such policy adjustments may be deemed arbitrary, disproportionate, and infringing upon investors' legitimate expectations, as recognized in cases such as *Stadtwerke München v. Spain*^[42] and *Isolux v. Spain*^[43]. To avoid similar risks, Vietnam should adopt legally effective transitional provisions that safeguard the rights of existing investors, coupled with a consistent framework for public consultation and policy justification. This is a crucial foundation to ensure that the State's right to regulate does not overstep the limits permitted under international investment agreements, such as the EVFTA and the EVIPA.

5 | Conclusion

This paper elucidates Vietnam's transition from a FiT framework to market-based pricing in the renewable energy sector, positioning it as a necessary reform to rectify systemic inefficiencies within the power grid, while

⁴² *Stadtwerke München GmbH, RWE Innogy GmbH, and Others v. Kingdom of Spain*, ICSID Case No. ARB/15/1.

⁴³ *Isolux Netherlands, B.V. v. Kingdom of Spain*, SCC Case No. V2013/153.

also presenting potential avenues for international investment disputes under the EVFTA/EVIPA framework. The analysis underscores that sudden, opaque policy alterations lacking sufficient transitional provisions may affect fundamental investment protection standards-especially FET and the protection of legitimate expectations. A critical legal and policy recommendation emerges: Vietnam must create a transparent, stable, and predictable legal environment, supplemented with robust transitional mechanisms, to balance the state's regulatory prerogatives with investors' legitimate rights. However, this study is constrained to a comparative legal framework, relying on case law from other jurisdictions and not incorporating an in-depth empirical evaluation of the financial implications for investors within Vietnam. Future research should, therefore, broaden its focus to include empirical assessments of renewable energy projects, analyze the perspectives of European investors, and examine the efficacy of alternative dispute resolution mechanisms beyond the ISDS framework.

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Significant Changes in Vietnamese Policy and Law on Foreigners' Land Use Rights*

Abstract

The Law on Foreign Investment of 1987 and the Law on Land of 1993 marked a significant turning point, officially recognizing the right to lease land from the State for investment projects. The next phase (with the Law on Land, 2003) led to continuous sound improvements in regulations on land leasing and capital contribution through land use rights. At the same time, the Law on Housing 2005 opened up the possibility for foreigners to purchase houses, although with many limitations. The most significant breakthrough came with the Law on Land 2013 and the Law on Housing 2014, when regulations on foreign homeownership were significantly relaxed, creating more favorable conditions for foreigners to live and work in Vietnam. The Law on Land 2024 continues to clarify related mechanisms, demonstrating consistency in Vietnam's land policy and legislation regarding land use rights for foreigners – relaxation, but with characteristic limitations. This paper examines the evolution of land policy and legislation in Vietnam regarding land use rights for foreigners to promote sustainable socio-economic development. Beginning with the pre-Renovation (Đổi Mới) period, when regulations were restrictive and almost entirely barred foreign access to land, Vietnam has undergone a gradual transformation. The analysis reveals that this policy shift is a testament to the flexibility and adaptability of Vietnamese law, which significantly contributes to attracting foreign investment, stimulating the real estate market,

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and promoting international economic integration. However, the paper also highlights existing challenges and provides several recommendations to further enhance policy in the future.

KEYWORDS: foreigner, investor, land, land use right, Vietnam

1 | Introduction

Vietnam has established a system of all-people ownership of land, and this ownership regime serves as the essential basis for shaping land law, which differs significantly from the usual law of real property. Under that ownership regime, Vietnamese people are not considered land owners, despite being constituent stakeholders of “the true owner is the whole people.”^[1] However, the regime of all-people ownership of land does not deny the land use rights of other subjects.^[2] Replacing the old legal thinking established by the 1980 Constitution and the Law on Land 1987 (hereinafter referred to as “LOL”), Vietnamese lawmakers officially recognize and grant Vietnamese people land use rights for transferred and used land, as outlined in the 1992 Constitution and the LOL 1993.^[3] Outstandingly, under the public ownership system, senior leaders began to “recognize the transferability of land use rights under a public ownership land system,”^[4] even though the abstract phenomenon manifests “different legal positions

¹ Cuc Nguyen, “Làm Rõ Thêm Nội Hàm Sở Hữu Toàn Dân về Đất Đai [Further Clarifying the Content of All-People Ownership of Land],” *Political Theory*, 1 (2014): 14.

² Thi Minh Chau Tran, “Phê Phán Những Quan Điểm Sai Lầm về Chế Độ Sở Hữu Đất Đai ở Việt Nam [Criticizing the Wrong Views on Land Ownership in Vietnam]” *Communist Review*, 957 (2021): 55.

³ Thi Bich Loan Hoang, “Quan Điểm Đất Đai Thuộc Sở Hữu Toàn Dân Do Nhà Nước Đại Diện Chủ Sở Hữu và Thống Nhất Quản Lý – Nhận Thức và Thực Tiễn [The View of All-People Ownership of Land Presented and Uniformly Managed by the State – Perception and Practice]” *Political Theory*, 8 (2018): 24-25.

⁴ Toan Le, “Interpreting the Constitutional Debate Over Land Ownership in the Socialist Republic of Vietnam (2012–2013),” *Asian Journal of Comparative Law*, No. 2 (2016): 293.

for different actors.”^[5] As a derivative right of ownership,^[6] the land use rights are property rights attached to land; and Vietnamese landholders have property rights to such properties.^[7] That reasoning also began to recognize land and land use rights as commodities,^[8] as a premise for the formation and development of the real estate market later.^[9]

Different from the “closed” and “static” economic development policies in the previous period, the renovation process opened up in the late 1980s (“Doi Moi” in Vietnamese), offering a new and open approach in policy and law-making in Vietnam. The most significant aspect of Vietnam’s partially “open” economy during the early stages of reform was its focus on attracting foreign direct investment (hereinafter “FDI”), primarily due to the country’s weak domestic financial capital potential at the time. FDI and even foreign indirect investment (hereinafter “FII”) are always considered essential factors for Vietnam to take advantage of and exploit in realizing economic development goals. Creating a favorable and open legal environment has therefore become an urgent task for Vietnam to achieve the desired FDI targets.

As part of the renovation,^[10] the improvement of land policies and laws has also become a crucial component in that chain of actions. This partly stems from the aforementioned sustainable development goals, and partly from the fact that, after more than a decade of implementing the planned economic development policy since the day of the country’s reunification,

⁵ Martin Gainsborough, “The Myth of a Centralised Socialist State in Vietnam: What Kind of a Myth?” *Journal of Current Southeast Asian Affairs*, No. 3 (2017): 79.

⁶ Quang Tuyen Nguyen, “Vài Suy Nghĩ về Sở Hữu Toàn Dân Đối Với Đất Đai [Some Thoughts on the All-People Ownership of Land]” *State and Law Review, Vietnam*, 1 (2016): 15.

⁷ Van Cap Chu, “Chế Độ Sở Hữu Toàn Dân về Đất Đai [All-People Ownership of Land]” *Natural Resource and Environment*, 4 (2015): 11.

⁸ Hong Hanh Le, “Bản Chất Pháp Lý Của Quyền Sử Dụng Đất Trong Pháp Luật Việt Nam. [Legal Nature of Land Use Rights in Vietnamese Law]” *Democracy and Law*, 8 (2017): 21, 24.

⁹ Van Thao Nguyen, “Nắm Vững và Xử Lý Tốt Mối Quan Hệ Giữa Nhà Nước, Thị Trường và Xã Hội Trọng Phân Bố và Sử Dụng Nguồn Lực Đất Đai Phát Triển Kinh Tế – Xã Hội ở Nước Ta Hiện Nay [Grasp and Handle Well the Relationship between the State, the Market, and Society in the Allocation and Use of Land Resources for Socio-Economic Development in Our Country Today]” *Communist Review*, 1 (2021): 67.

¹⁰ Van Ha Tran, “Mâu Thuẫn Đất Đai và Quan Hệ Dân Tộc ở Vùng Đông Bắc Từ Đổi Mới (1986) Đến Nay [Land Conflicts and Ethnic Relations in the Northeast Region from Renovation (1986) to the Present]” *Journal of Social Science in Vietnam*, 5 (2020): 83.

the most valuable asset of Vietnam's economy is still land. In the first pilot joint ventures, Vietnamese enterprises mainly still contribute capital with land use rights and achieve a small proportion of capital holdings in joint ventures from the value of such land use rights. Among the tasks that need to be implemented, Vietnam's land law needs to create a solid legal foundation to contribute to the liberation of land resources. Expanding opportunities for FDI to flow into the land economy and ensuring foreign investors can maintain long-term stability in their investments in Vietnam is a key objective. As a result, it is undeniable that the interaction between the legal adjustments to land use rights of foreigners and Vietnam's sustainable economic development policy, along with the controversy it causes, especially in relation to the theory of all-people ownership of land in Vietnam.^[11] These changes are part of the policy aimed at attracting foreign investment and leveraging it to continue activating foreign investment capital in Vietnam. In particular, the most notable is FDI in the real estate sector, as foreign investors undertake numerous large-scale real estate projects. Obviously, in a market economy, the benefits from land use determine the method of land use, which does not wholly depend on the ownership regime for land.^[12]

Vietnam's reforms in socio-economic development led to the LOL 2003, which officially expanded the subjects of land use rights in Vietnam. The law presented more protection mechanisms for land tenure.^[13] In addition to domestic subjects, overseas Vietnamese and foreigners are allowed to use land in some cases. It should be recalled that, like the Vietnamese, these subjects only have property rights – land use rights for the land they are using, not ownership rights.

To further strengthen the mutual relationship between land laws and economic development policies, Vietnam has made adjustments and improvements to the land use rights of foreigners in the recent LOL 2013 and

¹¹ Van Phuc Vu, "Sở Hữu Toàn Dân về Đất Đai: Tất Yếu, Nhưng Cần Đổi Mới về Nội Dung Trong Cơ Chế Hiện Thực Hoá [The Whole People's Ownership of Land: Inevitable, but Needs Innovation in the Content of the Realization Mechanism]" *Political Theory*, 4 (2012): 24, 25.

¹² Thi Minh Chau Tran, "Quan Hệ Giữa Cơ Quan Quản Lý Nhà Nước và Người Sử Dụng Đất Trong Chế Độ Sở Hữu Toàn Dân về Đất Đai ở Nước Ta [The Relationship between State Management Agencies and Land Users in the Regime of All-People Ownership of Land in Our Country]" *Communist Review*, 835 (2012): 56.

¹³ Thanh-Huyen Do, "Land Conflicts in Emerging Suburban Areas in Viet Nam: Causes and Effects" *Local Administration Journal*, No. 4 (2020): 320.

LOL 2024. Relevant legal documents, like the Law on Housing (hereinafter “LOH”) and the Law on Real Estate Business (hereinafter “LOR”), have also been amended to supplement and strengthen the general legal framework on real estate. However, some legal issues related to the use of land by foreigners have not been addressed clearly and thoroughly, thereby creating gaps and even contradictions between relevant legal documents. The most typical is the land use rights of foreign individuals.

This paper analyzes the significant amendments to Vietnamese law regarding land use rights for foreigners. In addition to studying the content of the adjustment and the positive impact of the new legal policy, the paper also analyzes the existing inadequacies. First of all, after the Introduction, the next part of the paper will clarify the new economic development policy and the demand for FDI capital in Vietnam’s economic development. Accordingly, the following content will analyze the changes in Vietnamese legal regulations on land use rights of foreigners through versions of the LOL and related documents, as well as their impact on economic development and codification. The conclusion will summarize the paper, incorporating the comments and reviews.

2 | The New Vietnamese Economic Development Policy and the Foreigners’ Demands for Using Land in Vietnam

Vietnam built a centrally planned economy from a very early stage. This model began to be established after 1954 in the North, and developed throughout the country after 1975. It is undeniable that this economic model has numerous advantages, having brought about significant achievements, including the reconstruction and development of post-war infrastructure, social stability, and the provision of basic welfare, particularly by concentrating resources on strategic objectives for post-war economic recovery. However, after less than a decade of expansion to the whole country, this economic model has revealed many limitations, stagnation of the economy, and the development of society. Vietnam’s economy during this period developed unbalanced, failed to promote comparative advantages, and eroded personal motivation and competitiveness, particularly due to the policy of

equalizing resource and income distribution. One of the characteristics and causes of the economic crisis is the public ownership of means of production, including land, which enables the allocation of resources according to a plan or the management of the economy through orders, decisions, or principles. It is undeniable that the improper awareness and application of the all-people ownership regime for land has created certain doubts about the ownership regime, even a controversial debate on the recognition of private or public ownership of land.^[14]

In addition to impacts from outside in the post-Soviet system,^[15] the Communist Party of Vietnam at the Sixth Congress (1986) officially launched an innovative initiative to transform the economy after properly assessing the role and mission of the planned economic model in a particular historical period. The concept of a market economy, which regulates the economy according to market rules, has been recognized (and clarified) in the Vietnamese steps in the familiar “transition.”^[16] Notable are the changes in foreign policy and investment. Specifically, according to the “Doi Moi” policy, Vietnam develops an open economy, diversifies relationships instead of being closed within the bloc of socialist countries, moves to join regional and global organizations, and breaks the siege and embargo. Immediately afterwards, Vietnam promulgated the Law on Investment 1987 and, through it, created an initial legal corridor to attract FDI as well as initiate trade integration.^[17] However, changes in administrative institutions, such as the implementation of management by economic and legal tools, management decentralization, and streamlining of the administrative apparatus, have also contributed significantly to a new economic institution – a socialist-oriented market economy.

¹⁴ This also becomes a counter-argument for maintaining the regime of public ownership of land. Vu, “Sở Hữu Toàn Dân về Đất Đai: Tất Yếu, Nhưng Cần Đổi Mới về Nội Dung Trong Cơ Chế Hiện Thực Hoá [The Whole People’s Ownership of Land: Inevitable, but Needs Innovation in the Content of the Realization Mechanism],” 24; Le, “Interpreting the Constitutional Debate Over Land Ownership in the Socialist Republic of Vietnam (2012–2013),” 294–295; Minh Tuan Nguyen, “Chế Độ Sở Hữu Toàn Dân về Đất Đai – Một Số Vấn Đề Cần Kiên Quyết Thực Hiện [The Regime of All-People Ownership of Land – Some Issues Need to Be Resolutely Implemented]” *Communist Review*, 846 (2013): 59.

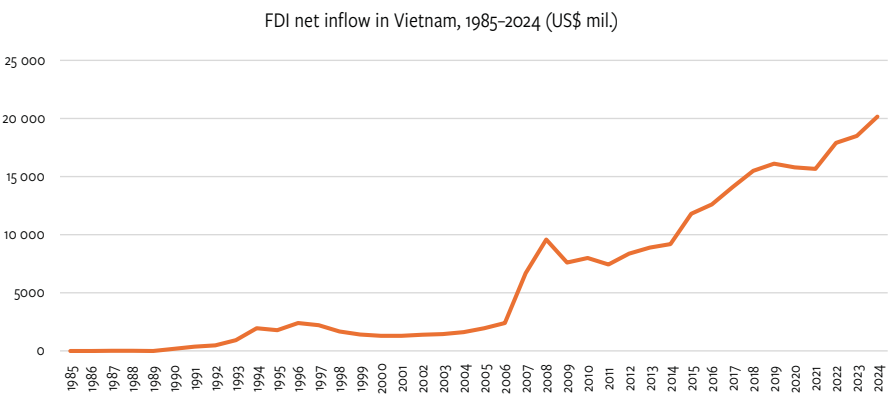
¹⁵ Martin Gainsborough, “The Myth of a Centralised Socialist State in Vietnam: What Kind of a Myth?” *Journal of Current Southeast Asian Affairs*, No. 3 (2017): 17.

¹⁶ Gainsborough, “The Myth of a Centralised Socialist State in Vietnam,” 17.

¹⁷ Anja Baum, “Vietnam’s Development Success Story and the Unfinished SDG Agenda” *Working Paper*, No. 031 (2020): 8.

Naturally, the economic renewal from the 1980s has led to an experimental model where Vietnam practices, learns from experience, and refines its approach. It is undeniable that, after a short period of drastic implementation, the FDI attraction policy has been remarkably effective. Based on the attraction policy, focusing on tax incentives and land, applied to many priority sectors and economic regions to mobilize capital, technology, jobs, and management experience, in the first period (1985-1995), the amount of FDI reached nearly 1.8 billion USD, according to the World Bank. The legal adjustments in the versions of the Law on Investment that have been amended or renewed over the years continue to create a significant push for Vietnam to expand investment fields and forms. From the joint venture company model, Vietnam expanded to the 100% foreign-owned enterprise model and other forms of business cooperation.

For its part, FDI has constantly contributed significantly to the development of Vietnam. FDI is indeed an essential source of additional capital in the total investment capital of Vietnam's economy. According to the World Bank's DataBank, FDI contributes to the expansion of capital and production, and naturally promotes GDP economic growth, accounting for more than 32% of GDP each year on average from 2005 to 2024. In addition to short-term and medium-term impacts, FDI contributes to bringing Vietnam out of the crisis period, approaching the goals of sustainable economic development, most notably: (i) rational economic restructuring; and (ii) job creation and improving the quality of human resources.^[18]



Source: World Bank Databank, 2025

¹⁸ Ibidem, 5-6, 8.

It is undeniable that FDI also creates many challenges. One of those challenges is how to ensure that Vietnam continues to maintain an effective and sustainable source of FDI. In other words, Doi Moi is under significant pressure to achieve the goal of developing a sustainable open dualism economy.^[19] In response, the Central Committee of the Communist Party of Vietnam and the Central Government of Vietnam have clearly defined the strategic orientation of constantly encouraging the private economy, and the Resolution on Private Economic Sector Development once again articulates this, which was adopted this year. By emphasizing the importance of the state-owned and collective economy, Vietnam has undertaken significant reforms and restructuring of SOEs. It has also changed land policies to effectively develop the agricultural economy, encompassing land contracting, allocation, lease, and granting land use rights to individual households.^[20]

Innovation thinking is considered a key factor in helping Vietnam succeed in the innovation process. Acknowledging the multifaceted ownership of means of production, the development process has been guided by building a multi-component commodity economy that operates according to the market mechanism.^[21] After the initial successes, Vietnam has consistently promoted the development and improvement of synchronous institutions, particularly legal institutions, to foster the growth of capital, labor, and land markets. The stock market has also officially operated since 2000, along with reasonable easing for FDI in the new period. Stepping into the global playing field after formally becoming a member of the WTO (2007), according to Prime Minister at that time Nguyen Tan Dung, Vietnam officially positioned its economy with the following goals: (i) deep integration into the world economy, (ii) focus on sustainable development, and (iii) improve the quality of growth. Developing knowledge and a high-tech economy, promoting sustainable development and a green economy,

¹⁹ Ibidem, 6.

²⁰ Thi Thanh Huyen Phan and Tien Sy Nguyen, “Nâng Cao Hiệu Quả Giao Đất, Cho Thuê Đất Phù Hợp Với Chế Độ Sở Hữu Toàn Dân về Đất Đai [Improving the Efficiency of Land Allocation and Land Lease under the Regime of All People’s Ownership]” *Natural Resource and Environment*, 23 (2015): 11; Chu, “Chế Độ Sở Hữu Toàn Dân về Đất Đai [All-People Ownership of Land],” 10.

²¹ Thanh Tung Tran, “Những Yếu Tố Tác Động Làm Thay Đổi Quan Hệ Sở Hữu Của Việt Nam Trong Thời Kỳ Quá Độ Lên Chủ Nghĩa Xã Hội [Factors Affecting Changes in Ownership Relations in Vietnam during the Transition Period to Socialism]” *Political Education*, 319 (2021): 56-57.

actively participating in global value chains, and continuing administrative reform are key actions to achieve these goals.^[22]

Obviously, during the journey of economic renewal up to this point, land policies and laws have a significant foothold. From a domestic perspective, the process of land coordination and granting land use rights to domestic land users opens up great opportunities to effectively release and exploit land resources. Regulations on the expansion of land use rights contribute to the development of the land use right market and the real estate market, promote the capitalization process, bring land into circulation, improve value, create a strong motivation, and promote agricultural production and industrial development. Changes in policy and practical land economic activities have created a premise for the development of other sectors, such as construction, finance, banking, and services.

It is undeniable that the adjustments in Vietnam's land policies and laws have a reciprocal relationship with FDI growth in this country. FDI provides capital, driving growth in the real estate market and other business activities. On the contrary, Vietnam, in the goal of institutional reform, has also developed land laws in the direction of contributing to creating a legal corridor that contributes to attracting FDI. The changes have been implemented step by step and include: (i) recording the land use rights of foreign investors, (ii) creating land funds for production and business, (iii) expanding and ensuring land use rights for investors, and finally (iv) for investors to stabilize their residence and long-term investment. From the initial adjustments applied to investors, experts, and high-tech workers, the land law extends home ownership to all foreigners. Naturally, investment opportunities of foreign investors have also been adjusted from foreign-invested enterprises to foreign-invested economic organizations. The specific content of these legal changes continues to be analyzed in the following section.

²² Nguyen Tan Dung, "Gia nhập Tổ chức Thương mại Thế giới: Cơ hội, thách thức và hành động của chúng ta [Joining the World Trade Organization, Opportunities, Challenges and our actions]" *Baochinhpheu.vn*, 7 November 2006.

3 | Changing Laws on Foreigners' Land Use Rights and Their Impacts

3.1. Revolution of Law on Land 2003: Foreigners as Land Users as Vietnamese

After many patchwork amendments to the LOL 1993, as well as the previous first version, the LOL 2003 was passed by the National Assembly. This can be considered a revolutionary version of the LOL for the whole process of codifying land law, the most complicated legal field in Vietnam. Firstly, the LOL 2003 is a unified document, resolving the issue of multiple partially amended versions, which previously led to a large number of legal documents guiding implementation. Secondly, the LOL 2003 is built on an almost complete economic reform policy. Clearly, it shows the legal reforms that have been the foundation for the codification of land law processes until now. In other words, the LOL 2003 has also introduced many new legal ideas, particularly breakthrough developments in land use regulations. And, therefore, finally, and most importantly, the LOL recognizes the right to use land and the legal status of land users of many subjects: religious entities, residential communities, overseas Vietnamese, and especially foreign organizations and individuals.^[23]

Recognizing the land use rights of foreigners is a breakthrough legal solution. It may be necessary to solve a significant number of theoretical problems, but recognizing foreigners as land users as Vietnamese reflects a shift in thinking and efforts to exploit land effectively, serving the socio-economic development process opened up by the Doi Moi movement. It is worth noting that when foreigners are recognized as land users, they are also granted certificates of land use rights, allowing them to record their land use rights like Vietnamese citizens. Land use right certificates are an essential legal basis for recording legal land use rights, ensuring conditions for exercising rights, and obtaining the protection of the Vietnamese state for such lawful property rights.

In addition, the LOL 2003 shapes an open legal framework, creating a premise for bringing land into the market and developing the economy. Nearly all transactions on land use rights are recorded by the LOL 2003, although they may have previously been restricted or even prohibited. These

²³ Art. 9 Law on Land (2003).

transactions include exchanges, transfers, donations, inheritances, leases, capital contributions, mortgages, and guarantees with land use rights. More importantly, almost all land users, including overseas Vietnamese or foreigners, can make transactions. This is a remarkable development point in terms of legal thinking. Theoretically, the right to conduct transactions on land use rights is widened and “exceeds the original land use rights” of land users, such as using, disposing, benefiting, and even occupying a part of the right to compensation when the state recovers land and such land use rights.^[24] Some of those rights are familiar with the full proprietary rights or even the land owner’s title.^[25] for the fact that, under the current ownership of land system, “because the people are the main subjects, not the State,” who “retain the majority of their rights and only hand over a limited number of rights to the State.”^[26]

The opportunity to implement is also widely applicable to various types of land, forms of land use, and situations that meet different transaction conditions, in addition to what happens in the relevant contract law.^[27] For example, the LOL 1987 strictly prohibits land buyers and sellers in any form, while the LOL 1993 allows the transfer or inheritance of land use rights in some cases. Through the improvements of the LOL 2003, the transfer of use rights has become a pillar transaction that almost all land users have the right to perform. The right to leave inheritance of individuals and members of households using land is also extended to all types of land.

For the first time, the LOL 2003 is also quite flexible, opening up opportunities to access land for this group of investors. In principle, although it is rare, foreigners can also be allocated land by the state without paying land use levies.^[28] However, according to the LOL 2003, foreign organizations

²⁴ Tran, “Quan Hệ Giữa Cơ Quan Quản Lý Nhà Nước và Người Sử Dụng Đất Trong Chế Độ Sở Hữu Toàn Dân về Đất Đai ở Nước Ta [The Relationship between State Management Agencies and Land Users in the Regime of All-People Ownership of Land in Our Country],” 60.

²⁵ Van Cap Chu, “Phải Chẳng Sở Hữu Xã Hội Chủ Nghĩa Là Mục Tiêu Của Xây Dựng Chủ Nghĩa Xã Hội [Is Socialist Ownership the Goal of Building Socialism?],” *Communist Review*, 943 (2020): 66; Quoc Suu Nguyen, “Tiếp Tục Cải Cách Chế Độ Sở Hữu về Đất Đai Nhằm Nâng Cao Hiệu Quả Quản Lý, Sử Dụng Nguồn Lực Đất Đai” *Legislative Studies*, 17 (2021): 32.

²⁶ Vu Van Phuc, “People’s Land Ownership with State Representing Land Owners in Vietnam” *Vietnam Social Sciences*, No. 4 (2022): 15.

²⁷ This partially explains why the land law is complex and more complicated. See more. Martin Dixon, *Modern Land Law*, 6th ed. (London: Routledge, 2009), 3.

²⁸ Art. 33 Law on Land.

and individuals lease land to implement investment projects. More specifically, foreigners are allowed to lease land for production, business, or construction of public works for business purposes; building infrastructure for transfer or lease, mineral activities, production of building materials, or making pottery. In particular, foreign organizations and individuals are also leasing land from the state to build houses for sale or lease.^[29] Importantly, organizations and individuals that use land leased from the state and have paid the full land rent fee have the right to transfer, contribute capital, mortgage, guarantee, and sublease such land use rights. In cases where foreigners use land leased and pay an annual land rent fee, transactions may be made concerning assets on the land. Particularly, in the case of implementing a housing business project, the right to sell the house of the foreign investor is almost the same as the legal regime applicable to domestic investors.^[30] In addition, Vietnamese law at that time also had guarantees for organizations and individuals to fully exercise the above-mentioned rights in the case of using leased land in industrial parks, hi-tech parks, and economic zones.^[31] However, this regulation enables foreign investors to access land and implement direct FDI projects in Vietnam to some extent. In other words, the rules on recording land use rights of foreign organizations and individuals also consider foreign individuals using land as land use investors, as land use organizations. The legal thinking becomes more evident when the LOL 2013 stipulates limited land use rights for foreign-invested enterprises,^[32] and the 2024 LOL identifies this subject as a foreign-invested economic organization.^[33]

What is special is that Vietnam developed the LOL 2003 at a stage when there were specific reforms in the law-making process, and building a synchronous legal framework on land and the real estate market. As a result, from this period, Vietnam has consistently made efforts to develop and pass three laws on real estate simultaneously, including the LOL, the LOR, and the LOR. Up to now, this goal of legislation has at least repeated three cycles: 2003, 2013, and, more recently, 2023-2024. In the recent legal adjustment, although the LOR and the LOR were prepared almost simultaneously,

²⁹ Art. 35 Law on Land.

³⁰ Art. 119 Law on Land.

³¹ Art. 120 Law on Land.

³² In Vietnamese, it is provided that “doanh nghiệp có vốn đầu tư nước ngoài”. Art. 5 Law on Land (2013).

³³ In Vietnamese, it is provided that “tổ chức kinh tế có vốn đầu tư nước ngoài”. See. Art. 4 Law on Land (2024).

they were passed by the National Assembly in 2023. The passage of the amended LOL was intended to be postponed due to its new requirements and inherent complexity. However, to ensure synchronization of the real estate legal framework as mentioned, the National Assembly's unfavorable session approved the amended LOL at the beginning of 2024, allowing new regulations to be applied simultaneously with the corresponding provisions in the LOH and the LOR that have been passed. It should also be noted that in Vietnam, legal proposal is mainly prepared with sector regulators, even though the Central Government officially plays a role in submitting bills to the National Assembly. In particular, the land bill is prepared by the Ministry of Natural Resources and Environment, and the Ministry of Construction is the agency in charge of developing the LOH and the LOR.

Returning to the LOL 2003, both the LOR 2005 and the LOR 2006 were also passed by the National Assembly of Vietnam, respectively, and have unambiguous provisions supporting the LOL. The latter two bills that have been passed have introduced a specific mechanism for foreigners to own houses and implement real estate business projects. This includes regulations on commercial housing projects and housing ownership under projects built by foreign investors, as well as regulations on real estate business and other real estate services.^[34] Among the long list of foreign real estate companies and their projects, CapitaLand (Singapore) with the D1 Mansion, Vista, and The Krista (in Ho Chi Minh city) or Lotte Land (Korea) with Diamond Plaza, La Premier (in Ho Chi Minh city), and Lotte Center (in Hanoi) can be presented as a feasible illustration. However, similar to the LOL 2003, the housing law in Vietnam in this period only allows foreign investors to rent houses for living, including detached dwellings or self-contained apartments.^[35] By contrast, the legal regulations applicable to overseas Vietnamese in this period are more open. Through it, they have the right to purchase and own houses in Vietnam, and in some cases, they are not limited to renting houses like foreigners.^[36] In practice, overseas Vietnamese succeeded in recovering their houses left behind when they had immigrated to other countries. Take an interesting case of Mr. Kha and Ms. Khanh's claim for instance. After four years of preparation and

³⁴ Art. 10 Law on Real Estate Business (2023).

³⁵ Art. 131-132 Law on Housing (2005).

³⁶ In Vietnamese, it is provided that “người Việt Nam định cư ở nước ngoài mua nhà ở gắn liền với quyền sử dụng đất ở tại Việt Nam có các quyền và nghĩa vụ sau đây.” Art. 121 Law on Land, 2003; Art. 126 Law on Housing, 2005.

submission, under the attorney's consultation, in 2011, they recovered the homeownership of the valuable property in District 3, Ho Chi Minh City.^[37]

3.2. Ongoing Improvements and Positive Impacts

As mentioned, the reform provisions on land use rights of foreigners from the LOL 2003 continue to be partially maintained, and part of it continues to be developed in subsequent versions of the LOL, including the LOL 2013 and the 2024 LOL. Naturally, the amended and supplemented LOL continues to meet the needs of adjusting the law, the context, and the orientation in Vietnam's "open" economic development policy. Some adjustments are highly appreciated, contributing to effective law enforcement and, of course, having a positive impact on the investment and business environment. However, there are also inappropriate adjustments and issues that need to be addressed to meet the fluctuating reality, which the drafting committee of the LOL 2013 has overlooked. For example, the provisions on capital contribution with land use rights in the LOL 2013 inadvertently exclude the case of parties contributing capital to business cooperation, but not establishing enterprises, even though this form has been mentioned previously in the LOL 2003 and even before. Naturally, this has been overcome by the adjustments of the LOL 2024.

It is worth noting that Vietnam has made specific adjustments to the land use rights of foreigners, while it has not adjusted the regulations on land use rights of overseas Vietnamese. Most typically, unlike the LOL 2003, the LOL 2013 only records the land use rights of foreign-invested enterprises. In other words, foreign individuals do not have land use rights and are not land users in Vietnam. However, the ownership of houses for living by foreigners is recorded. More specifically, in addition to housing in housing projects, the 2014 LOR allows foreign individuals allowed to enter Vietnam to buy, lease, purchase, donate, and inherit commercial houses, including apartments and detached homes, in housing construction investment projects similar to the relaxations applicable to overseas Vietnamese.^[38]

³⁷ Thanh Phuong, "Luật gia thắng kiện, thân chủ buộc phải trả 68 tỷ đồng hứa thưởng [Lawyer wins lawsuit, client forced to pay 68 billion VND promised reward]" *VietNamNet News*, 31 May 2022. <https://vietnamnet.vn/luat-gia-thang-kien-than-chu-buoc-phai-tra-68-ty-dong-hua-thuong-2025211.html>.

³⁸ It is provided that: "1. Foreign entities eligible for the homeownership in Vietnam include: a) Foreign entities who invest in project-based housing construction

The LOL 2013 does not limit the establishment of property ownership rights and even accepts the issuance of house ownership certificates for them (in Vietnam, land management agencies have carried out this activity since the LOL 2013). Foreigners continue to make transactions and receive house ownership certificates. Yet, they may not be aware of the legal distinction between the provisions of the LOL and the LOR. Therefore, there is an opinion that when foreigners are allowed to own houses in Vietnam, they also have the right to use the land in Vietnam.^[39]

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in Vietnam as prescribed in this Law and corresponding regulations of law; b) Foreign-invested enterprises, branches, representative offices of foreign enterprises, foreign-invested funds and branches of foreign banks operating in Vietnam (hereinafter referred to as foreign organization); c) Foreign individuals who are allowed to enter Vietnam. 2. The foreign entities eligible for the homeownership in Vietnam if they: a) Invest in project-based housing construction in Vietnam as prescribed in this Law and corresponding regulations of law; b) Buy, rent and purchase, receive, or inherit commercial housing including apartments and separate houses in the project for housing construction, except for areas under management relating to national defense and security as prescribed in regulations of the Government.” Art. 159 Law on Housing (2014).

³⁹ Thi Nga Nguyen, “Bất Cập Trong Các Quy Định về Chủ Thể Sử Dụng Đất Của Luật Đất Đai Năm 2013 [Inadequacies in Regulations on Land Users of the Law on Land 2013]” *State and Law Review, Vietnam*, 12 (2018): 74. \\uco\\u8221 {\\i} State and Law Review, Vietnam} 12 (2018

⁴⁰ It is provided that: “1. Foreign entities eligible for the homeownership in Vietnam include: a) Foreign entities who invest in project-based housing construction in Vietnam as prescribed in this Law and corresponding regulations of law; b) Foreign-invested enterprises, branches, representative offices of foreign enterprises, foreign-invested funds and branches of foreign banks operating in Vietnam (hereinafter referred to as foreign organization); c) Foreign individuals who are allowed to enter Vietnam. 2. The foreign entities eligible for the homeownership in Vietnam if they: a) Invest in project-based housing construction in Vietnam as prescribed in this Law and corresponding regulations of law; b) Buy,

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Secondly, when having land use rights, foreigners are also entitled to exercise almost all the rights of property rights holders. The most important recognition of Vietnamese law is the right to perform land use right transactions. Similar to domestic land users, foreigners have the right to conduct transfers, leases, mortgages, and capital contributions with land use rights. This provision applies when foreigners use land allocated by the State with the collection of land use levies, or lease land with a lump-sum land rent payment.^[42] It is applied to the case of receiving capital contributions with land use rights.^[43] Particularly for the case of using land leased with an annual fee, foreigners are entitled to sell or transfer assets on the land. Depending on each case, the buyer or transferee of the property may continue to lease the land, or the state shall issue a decision to lease the land or switch to land allocation.^[44] A significant difference compared to domestic land users is that foreigners do not have the right

rent and purchase, receive, or inherit commercial housing including apartments and separate houses in the project for housing construction, except for areas under management relating to national defense and security as prescribed in regulations of the Government.” Art. 159 Law on Housing (2014).

⁴¹ Thi Nga Nguyen, “Bất Cập Trong Các Quy Định về Chủ Thể Sử Dụng Đất Của Luật Đất Đại Năm 2013 [Inadequacies in Regulations on Land Users of the Law on Land 2013]” *State and Law Review, Vietnam*, 12 (2018): 74. \u8221\} {\i}State and Law Review, Vietnam\} 12 (2018

⁴² Art. 41 Law on Land, 2024.

⁴³ Art. 42 Law on Land, 2024.

⁴⁴ It is provided that “c) Right/obligation to make capital contribution with privately owned property affixed to the leased land within the land lease term; the recipient of such contributed capital may continue leasing the land for the intended purpose within the remaining lease term; d) Right/obligation to sell privately owned property affixed to the leased land, or to sell privately owned property affixed to the leased land and the right to lease in the land lease contract if the lessee meets the requirements prescribed in Article 46 of this Law. A purchaser of the property affixed to the leased land and the right to lease in the land lease contract may continue leasing the land for the intended purpose within the

to donate land use rights. This likely stems from Vietnam's system of all-people ownership of land, where the whole people (and not the state) hold ownership rights to land.^[45] It is admitted that the land ownership system in Vietnam meant the "ownership of the entire Vietnamese people of land and natural resources."^[46]

Vietnamese law has flexibly expanded and adjusted the land use rights of foreigners. First of all, the provisions of the LOL create conditions for foreign-invested enterprises to access land through many different forms.^[47] Secondly, foreigners are permitted to exercise rights and engage in transactions related to land use rights and land under their use rights. Thirdly, Vietnam has also made appropriate adjustments to expand the opportunity to own a house for any individual, who is allowed to enter Vietnam without many binding conditions, such as having to invest and live in Vietnam for a long time, as before.

As a result, an increasing number of foreigners are buying houses in Vietnam. According to the Vietnam Association of Realtors (VARs)'s statistics, the number of foreigners buying houses in Vietnam in the period 2018-2022 accounted for 0,53%. More interestingly, the market started to boom at the beginning of 2023.^[48] By the end of the third quarter of 2023, following over 8 years of the 2014 Housing Law, more than 3,035 foreigners had purchased apartments in Vietnam, primarily in projects located in major cities and provinces: Hanoi (1,765 apartments), Ho Chi Minh City (850 apartments), Bac Ninh (110 apartments), Binh Duong (210 apartments), and Ba Ria - Vung Tau 950 apartments). Most of the buyers came from

remaining land use term, and have the rights and obligations of the land user (lessor) according to this Law and other relevant laws." Art. 41 Law on Land, 2024.

⁴⁵ Phuc, "People's Land Ownership with State Representing Land Owners in Vietnam," 12; Chu, "Chế Độ Sở Hữu Toàn Dân về Đất Đai [All-People Ownership of Land]," 910.

⁴⁶ Do, "Land Conflicts in Emerging Suburban Areas in Viet Nam," 324; Phuc, "People's Land Ownership with State Representing Land Owners in Vietnam," 12.

⁴⁷ Quang Huy Tran, "Hoàn Thiện Quy Định Pháp Luật về Quyền và Nghĩa vụ Của Chủ Thể Có Yếu Tố Nước Ngoài Sử Dụng Đất Tại Việt Nam [Improving Legal Provisions on Rights and Obligations of Entities Involving Foreign Elements Using Land in Vietnam]" *Hanoi Law Review*, 4 (2023): 38.

⁴⁸ Ngọc Ngan, "Ngày càng nhiều người nước ngoài mua nhà ở Việt Nam [More and more foreigners are buying houses in Vietnam]" *Vnexpress.net*, 11 December 2024, <https://vnexpress.net/ngay-cang-nhieu-nguoi-nuoc-ngoai-mua-nha-o-viet-nam-4812691.html>.

China, Korea, Singapore, the US, Australia, Japan, and Malaysia.^[49] A report from the Ministry of Construction said that in the first half of 2024, more than 1,000 properties were sold to foreigners in the Hanoi market alone, accounting for a third of the total number in the previous 5-year period. Particularly, more than 90% cases bought apartments.^[50] Besides, data from CBRE Vietnam shows that in the past 10 years, with almost 5,000 transactions carried out by CBRE, up to 45% belonged to foreign customers, with the highest demand coming from customers from Hong Kong, Taiwan, Korea, and Singapore, followed by Europe and the US. The Ministry of Construction estimates that nearly 4 million foreigners and overseas Vietnamese need to buy houses in Vietnam.^[51]

Legal adjustments to land use rights of foreigners have a positive impact on the implementation of economic development policies in Vietnam. First of all, the recognition of land use rights and house ownership by foreigners contributes to increasing demand and thereby activating the vibrant real estate market in Vietnam, especially in the luxury or medium segments. Naturally, legal adjustments also contribute to strengthening the legal environment to continue to attract foreign investment, including FDI for the real estate sector. In other words, the improvement of land law and policy always contributes to the incentive for FDI and enhances economic development in Vietnam.^[52]

⁴⁹ Mai Ban, “Tạo điều kiện thuận lợi cho người nước ngoài được sở hữu nhà ở [Facilitate foreign home ownership]” *VnEconomy*, December 2, 2024. <https://vneconomy.vn/tao-dieu-kien-thuan-loi-cho-nguoi-nuoc-ngoai-duoc-so-huu-nha-o.html>.

⁵⁰ Ngọc Ngan, “Ngày càng nhiều người nước ngoài mua nhà ở Việt Nam [More and more foreigners are buying houses in Vietnam].”

⁵¹ Mai, “Tạo điều kiện thuận lợi cho người nước ngoài được sở hữu nhà ở [Facilitate foreign home ownership].”

⁵² Dang Xuan Huy, “Dòng vốn đầu tư trực tiếp nước ngoài vào Việt Nam: Thực trạng năm 2024 và dự báo xu hướng năm 2025 [Foreign Direct Investment Flows into Vietnam: Current Situation in 2024 and Forecasted Trends in 2025],” *Journal of State Management*, 9 April 2025. <https://www.quanlynhanuoc.vn/2025/04/09/dong-von-dau-tu-truc-tiep-nuoc-ngoai-vao-viet-nam-thuc-trang-nam-2024-va-du-bao-xu-huong-nam-2025/>.

3.3. Obstacles and Challenges

In addition to reasonable adjustments to legal regulations on land use rights of foreigners, inconsistent regulations on home ownership of foreigners have caused many controversies. Especially in the case of foreigners owning apartments, they will still use the land together with other apartment owners on different floors of the building. The fact that the law does not recognize their right to use land does not deny it. More importantly, because it is assumed that there is no land use right, foreigners will also have no rights and obligations to that property right before the state, as well as the parties to the transaction. This is very absurd when, in fact, they still use land, and more importantly, this regulation creates an imbalance between foreigners and Vietnamese citizens who own houses in that apartment.

This legal issue has therefore been proposed to the Drafting Committee of the amended LOL 2024. There are two main options to be discussed. First, the law needs to recognize the land use rights of foreigners, particularly in cases involving residential land purchases, if foreigners are still allowed to buy and own houses in Vietnam. This opinion is mainly supported by the desire to develop “demand” for the real estate market. Of course, it contributes to creating a transparent mechanism that makes foreign investors feel comfortable when choosing Vietnam as an investment destination.^[53] Theoretically, the discussions also said that house ownership must be associated with land use rights.^[54] Secondly, foreigners are not allowed to buy houses or own houses in Vietnam if they continue to fail to exploit Vietnam’s land use rights. In this case, foreign investors stay in Vietnam by renting houses, which is a fairly common practice. They attempt to find more solutions, such as marrying a Vietnamese person, which can lead to troubles or even conflicts.^[55] This option puts pressure on lawmakers to

⁵³ Nguyen Hoang Nam, “Quy định pháp luật của một số quốc gia về sở hữu đất đai, sở hữu nhà ở với người nước ngoài và một số khuyến nghị cho Việt Nam [Some international regulations on foreigners’ land and housing ownership and recommendations for Vietnam]” *Journal of Environment*, 4 (2023): 24.

⁵⁴ Tran, “Hoàn Thiện Quy Định Pháp Luật về Quyền và Nghĩa vụ Của Chủ Thể Có Yếu Tố Nước Ngoài Sử Dụng Đất Tại Việt Nam [Improving Legal Provisions on Rights and Obligations of Entities Involving Foreign Elements Using Land in Vietnam],” 36.

⁵⁵ Nguyen Thi My Hanh and Nguyen Hoang Minh Hai, “Foreign Ownership Restriction to Real Estate in Vietnam,” *International Journal of Science, Technology and Society*, No. 4 (2023): 154.

solve theoretically, as well as shape a legal framework to ensure proportionality and fairness between the parties involved.

Interestingly, the LOH 2023 continues to recognize the home ownership rights of foreigners “allowed to enter Vietnam.” However, it imposes a slight limitation on the scope of house ownership, specifically through “buying, leasing, and purchasing houses of foreign organizations and individuals who have owned houses” in Vietnam before.^[56] Although there are certain constraints on the number of houses and the term of ownership, the rights of property owners, especially the right to sell assets, of foreigners are still guaranteed by Vietnamese law.^[57] Meanwhile, the LOL 2024, which was passed shortly afterwards, continues not to recognize the land use rights of this subject. This means that foreigners are still allowed to buy houses (and currently use land) and be granted certificates even though they do not have the legal name of land users.

As mentioned above, foreigners still buy and own houses in many commercial housing projects. The transaction price is also comparable to that of buying a home by a domestic individual, as the purchase price of a domestic individual’s house includes the value of land use rights. More seriously, unlike domestic individuals, foreigners are not obliged to pay non-agricultural land use tax, even though they are still using land when owning houses. According to the current tax calculation method, apartment owners only pay tax at the rate calculated according to the total number of floors. This means that apartment owners in the same land area will jointly perform tax obligations for the same residential land area. As a result, the state will not collect enough tax on the residential land area that needs to be taxed because foreigners are not obliged to pay taxes. Apartment owners on other floors are only obliged to pay taxes at the household tax payment rate, but cannot pay the tax obligation of foreigners on their behalf. The non-recognition of land use rights for foreigners therefore not only does not exclude their actual ability to use land but also loses budget revenues. This tax base also completely disappears in the case of foreigners who own individual houses and are the only subjects who use the land.

As analyzed above, the continued recognition of home ownership by foreigners contributes to activating the housing market. However, this regulation not only fails to solve the problem of ensuring the similarity of

⁵⁶ Art. 17 Law on Land, 2024.

⁵⁷ It is provided that “the State shall protect legal rights to use land and property affixed to the land of land user.” Art. 17 and 20 Law on Land, 2024.

rights and obligations of the subjects, but also poses a theoretical challenge. On the one hand, this regulation creates a lack of consistency between legal documents. On the other hand, this regulation inadvertently flawed the legal basis for the state to exercise its property rights to land. It is worth noting that finding a rationale for the actual land use rights of foreigners is challenging, as they continue to use land despite the law not recognizing their land use rights.

4 | Conclusion

Vietnam has adopted a relatively open-minded approach to developing legal regulations governing the land use rights of foreigners in Vietnam, as a result of implementing the country's new economic development policy, which is characterized by speed, strength, and sustainability. FDI is considered one of the critical factors for Vietnam to develop its capital, in line with its development goals. Land is also capital, and Vietnam has implemented appropriate legal reforms to liberate production capacity and effectively exploit this resource. Land policies and laws partly open up channels for foreign investors to invest in real estate and production and business activities that have land use needs, ensure property ownership, and provide a legal basis for preserving property rights of investors over land use rights, and partly for foreign investors to stabilize their lives in the process of investing in Vietnam.

The land law, therefore, supplements regulations on the accommodation of foreigners. In addition to the method of using rental houses, Vietnam has allowed foreigners to buy and own homes. The only bottleneck is the inconsistency between the land law and the housing law, specifically in how house ownership rights for foreigners are recorded, excluding land use rights. Naturally, this is a legal issue that Vietnam needs to address, particularly in terms of legal reasoning, as foreigners can still purchase and own houses, exercising their property rights without significant practical issues.

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Class Actions in Environment Disputes: Lessons from the United States and Prostects in Vietnam

Abstract

Decision No. 1658/QĐ-TTg dated October 1, 2021, of the Prime Minister approving the National Strategy on Green Growth for the 2021-2030 period, with a vision to 2050, has identified the green economy as a strategic orientation that Vietnam must aim for. To ensure the success of this strategy, the State must use many tools as driving forces, such as finance, technology, communication, and education, and especially indispensable legal tools. The law, on one hand, must have a guiding effect through regulations paving the way to encourage investment and development, and, on the other hand, must have a higher deterrent effect through strengthening and >facilitating litigation mechanisms towards sustainable environmental protection. A class action is a legal mechanism that allows a group of people with similar interests to jointly sue a defendant through common representation. This model is particularly effective in environmental cases, where the damage is often widespread and affects a large community. In some countries, class action with an opt-out mechanism has been recognized for a long time, but in Vietnam, the current law has not yet fully recognized the right class action mechanism, especially in the environmental field. In fact, the 2015 Civil Procedure Code and the 2020 Environmental Protection Law have some fundamental provisions on

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collective lawsuits that, however, need to be improved. Learning from the United States' legal model will help Vietnam perfect the class action model in the future, aiming to protect the environment more effectively and fairly. The paper uses the methods of analysis, comparison, and synthesis to achieve the above research objectives.

KEYWORDS: sustainable development, environmental dispute, class action, opt-in, opt-out

1 | Introduction

The global environment, including Vietnam, faces serious issues that affect people's lives. Air pollution in major cities is a particularly alarming problem^[1]. Moreover, rivers and canals are also seriously polluted by untreated wastewater, threatening clean water sources for humans. The problem of soil pollution due to agrochemicals and plastic waste is also one of the top concerns of Vietnam today.^[2] Living in polluted conditions affects both individuals and future generations, impacting their material and spiritual lives. As environmental changes lead to resource depletion and a conflict between protection and economic development, the need for sustainable practices has become urgent. Vietnam is working to address these challenges, aiming for net-zero emissions by 2050.^[3]

In examining the causes of this issue, large-scale projects and industrial parks are significant polluters, and marginalized groups often struggle to seek justice due to limited resources. The class action mechanism has emerged as a vital tool for empowering communities to address complex disputes and pursue social justice. Cases in Vietnam in the past, like Vedan (2008) and Formosa (2016), illustrate how the lack of this mechanism complicates the resolution of environmental disputes and hinders individuals

¹ Angela Pratt, Ramla Khalidi, "Vietnam's Heavy Air Pollution Needs Stronger Action" *United Nations Development Programme Vietnam*, 5 June 2024.

² "Environmental Pollution Remains Big Challenge for Hanoi" *Vietnam News*, 7 June 2024.

³ Thuy Dung, "Vietnam on path to achieve its net - zero emissions goal" *Government News*, November 30, 2023.

from reclaiming their public rights.^[4] Since then, despite numerous revisions to the legal system, class action mechanisms in Vietnam's environmental law remain relatively new. This area needs further study to enhance the development and implementation of class actions for dispute resolution, aiming to improve efficiency and minimize resource wastage in legal proceedings.^[5]

Research on class action lawsuits within Vietnam is therefore still limited, primarily focusing on general class action lawsuits and specifically on those concerning labor and consumer rights protection. In the environmental sector, research efforts in Vietnam have primarily focused on promoting the right to file class actions, introducing foreign legal frameworks, providing a brief overview of Vietnam's procedural law, and addressing only disputes related to environmental damage compensation. These discussions suggest that Vietnam should recognize the initiation of class action lawsuits for resolving environmental disputes. Therefore, this paper endeavors to clarify how class action lawsuits contribute to settling environmental disputes to promote the implementation of class action for the environmental sector in Vietnam, specifically:

- (i) Distinguish the features of class action lawsuits compared to lawsuits under the authorized representative mechanism, as well as explain environmental disputes. This will help determine the necessity of recognizing the class action lawsuit mechanism in resolving environmental disputes.
- (ii) Investigate the legal framework for class action lawsuits in Vietnam, particularly for environmental disputes. It will analyze the interplay between various legal documents and regulations, including the Civil Procedure Code, the Law on Environmental Protection, the Labor Code, and the Law on Protection of Consumer Rights, which has never been done in previous studies.
- (iii) Examine foreign law related to class action lawsuits in greater detail, particularly focusing on their operation, applicable requirements, and compare it with Vietnamese law to see the legal gaps that Vietnam needs to fill, especially the opt-out mechanism and litigation

⁴ Do Hung, "Around the Vedan case: Justice has won" *People's Police Newspaper*, 12 August 2010.

⁵ Nguyen Minh Duc, "It's Time for a Class Action Lawsuit" *Thanh Nien Newspaper*, 19 October 2019.

funding. The foreign law used in the paper is that of the United States (the U.S.), for its long and successful history of class action lawsuits that could offer important insights for Vietnam.

- (iv) And propose recommendations for class action lawsuits for environmental disputes in Vietnam, ultimately contributing to a sustainable living environment and fostering a fair and civilized society.

2 | Theoretical Framework

2.1. Concept of Environmental Dispute

Environmental disputes stem from international practices in adjudicating environmental lawsuits since the early twentieth century. Although the term first appeared in Vietnam in the 1980s, it currently lacks a specific legal definition, leading to various interpretations. Scholar Vu Thu Hanh said that “Environmental disputes are conflicts between organizations, individuals, communities, and countries arising in the process of exploiting and using natural resources and the environment towards environmental protection and sustainable development”^[6]. However, this perspective may be somewhat limited, as state agencies can also serve as participants in these disputes, representing collective interests in class actions. Author Pham Van Vo notes that environmental disputes arise from contradictions and disagreements over the exploitation, use, and protection of environmental resources.^[7] This author has a more comprehensive overview of the subject, rather than directly stating which subjects of environmental disputes include. Vietnam’s Law on Environmental Protection 2020, specifically Article 162, defines environmental disputes as conflicts over the rights and responsibilities related to environmental protection, including pollution sources, environmental degradation, and liability for remediation.

⁶ Vu Thu Hanh, *Environmental Law Textbook* (Vietnam National University of Hanoi Press, 2021), 356. “Environmental disputes are conflicts between organizations, individuals, communities, and countries arising in the process of exploiting and using natural resources and the environment towards environmental protection and sustainable development.”

⁷ Pham Van Vo, *Lecture on Environmental Law* (National Political Truth Publishing House, 2023), 199.

These disputes can arise among individuals, state agencies, enterprises, and non-governmental organizations, typically involving rights and obligations concerning environmental issues. Claims for damages are just one aspect of these broader disputes.

For us, environmental disputes have unique characteristics, primarily focusing on environmental issues. They involve diverse participants, including communities and nations, and center around infringed or threatened environmental rights and interests. The damages can impact both individual and community interests, which may often lead to class action claims. Moreover, the term “environmental dispute” also covers a wide range of contexts, including administrative, civil, and criminal matters. An administrative environmental dispute arises between competent authorities when announcing policies that are contrary to regulations or violate environmental principles. Civil disputes over the environment relate to environmental pollution and environmental damage. Class action lawsuits for environmental issues are often used in this field. Finally, in the criminal field, criminal sanctions are applied to environmental crimes^[8]. Therefore, within the scope of this paper, the authors would like to mention only environmental civil disputes.

2.2. Concept of Class Action Lawsuit

Class action lawsuits originated from medieval English law’s Bill of Peace, aimed at preventing overlapping trials. This idea spread to North America, with Congress allowing collective lawsuits in 1842. The U.S formally recognized class actions in 1938 through Rule 23 of the Federal Rules of Civil Procedure (FRCP).^[9] The historical development of class action lawsuits traces back to representative lawsuits, seen as precursors to modern class actions. Many jurisdictions, including Vietnam, allow state agencies to sue citizens. In Germany and Switzerland, private associations could file public interest lawsuits since the early nineteenth century, while Canada permits individuals to informally act in the public interest.^[10] According to the Cambridge

⁸ Chapter XIX stipulates 12 articles as environmental crimes (Articles 235 to 246).

⁹ Marcin Raymond, Searching for the Origin of the Class Action” *Catholic University Law Review*, 23 (1974): 515.

¹⁰ Debora Hensler, “The Globalization of Class Actions” *Annals of the American Academy of Political and Social Science*, Vol. 622 (2009): 662.

Dictionary, a class action is a case decided in a court and organized by a group of people who all have the same legal problem. In the American Dictionary, it is a legal action for the benefit of a large group of people claiming to have suffered similar harm.^[11] As featured in Black's Law Dictionary, a class action is said as a legal action involving a large group or class of people, without having every member of the class join the action, in which a few individuals initiate a court case, becoming representatives of the group.^[12]

From a legal standpoint, class action regulations exist in many countries. In Thailand, a class action lawsuit enables a plaintiff to sue a defendant to safeguard their own interests and those of others with similar damages.^[13] In the U.S, class actions are recognized at both the state and federal levels. They allow one or more members of a class to sue or be sued as representatives for all members if specific requirements are met^[14]. In Australia, class actions, or "representative proceedings," are governed by Part IVA of the Federal Court of Australia 1976. This legal process allows a small group, known as class representatives, to represent a larger group, or "class," in a lawsuit. A minimum of seven individuals must be involved.^[15] In Indonesian law, class action lawsuits are governed by civil procedural law, specifically in the Environmental Management Law (No. 41 of 1999), Forestry Law (No. 41 of 1999), Consumer Protection Law (No. 8 of 1999), and Indonesian Supreme Court Regulation No. 1 of 2002 on class action procedures.^[16]

In Taiwan, class action was first recognized in the 1935's revision of the Civil Procedure Code, permitting parties with shared interests to designate representatives to sue or be sued on their behalf.^[17] In 1994, the Consumer Protection Act strengthened consumer rights by allowing class actions. This enables affected parties to join lawsuits when they suffer similar damages, as publicized by the Court under Article 41 of the Civil Procedure Code.^[18] If goods or services endanger consumers' health or safety, authorities can

¹¹ "Class action," [in:] *Cambridge Dictionary*, <https://dictionary.cambridge.org/dictionary/english/class-action>. [accessed: 3.10.2025].

¹² "Class action," [in:] *The Law Dictionary*. <https://thelawdictionary.org/class-action/>. [accessed: 3.10.2025].

¹³ Article 222 Thailand Civil Procedure Code in English: Class action is a type of civil proceedings involving several injured persons who are affected by the same facts and legal principle or the same ground of damage.

¹⁴ Rule 23 Federal Rules of Civil Procedure.

¹⁵ Federal court of Australia.

¹⁶ Indonesia Supreme Court.

¹⁷ Article 41 Code of Civil Procedure 1930 (amended in 1935).

¹⁸ Article 54 Taiwan Consumer Protection Act 2015.

suspend the business and ask representative groups to file lawsuits on behalf of consumers.^[19]

Through our study, there are key differences between class action lawsuits and ordinary lawsuits. Class actions involve a group of individuals with a common claim from a specific event, while ordinary lawsuits typically have one or a few plaintiffs with individual claims, requiring separate legal actions. Class actions require a “class recognition/certificate” to be qualified to pursue the lawsuit under a specific procedure, whereas ordinary lawsuits do not have such required criteria. Additionally, ordinary lawsuits are more common, while class actions are often used in some specific legal areas affecting large groups, like consumer protection and environmental issues. To highlight the distinctive features of class action lawsuits and compare them with other types, the following summary table can provide a clear overview.

Table 1: Comparison of class action lawsuit and ordinary civil lawsuit

	Ordinary civil lawsuit	Class action lawsuit	Legal standing ^[20]
Philosophy	Individualistic	Collectivist/ Distrust of individualism ^[21]	Non-Government Organizations (NGOs) as guardians
Concept	Civil lawsuit	Group representative lawsuit	NGOs Standing
Relationship Interests	Direct Interest (real/ tangible)	Direct Interest (real/ tangible)	Does not have Direct Interest (real/ tangible)
Claims	Material compensation and certain action	Material compensation and certain action	Certain action and out of pocket expenses
Subjects	People who directly harmed	Class representatives, class members	Organizations that fulfill the requirements
Notifications	Not required	Class representatives and class members	Not required

To conclude, class actions for environmental disputes allow one or more members to sue, or to be sued, on behalf of all, if they meet specific

¹⁹ Article 60 Taiwan Consumer Protection Act 2015.

²⁰ The author further compares legal standing to show a form of representative organizations filing lawsuits to resolve the issue of litigation costs – one of the barriers will be analyzed below.

²¹ Author Dhabi K.Gumarya argues that class action is a distrust of individualism, but the authors argue that class action is a complementary method, a community-based approach rather than a complete rejection of individualism.

requirements to protect collective rights impacted by environmental violations. Given the unique nature of these disputes, it's crucial to research and develop class action lawsuits to promote a sustainable environment. Individuals must be cautious to prevent litigation, whereas leveraging collective action can be more effective.

2.3. Vietnamese Legal Framework

The Vietnamese Constitution affirms the principle of the right to live in a healthy environment for human beings.^[22] Individuals in a healthy living environment have the right to report any unlawful actions by other agencies, organizations, or individuals to seek accountability and justice.^[23] However, this regulation only addresses the right to complain and report individually, without granting the right to a collective lawsuit.

In contrast, for some areas, the state allows organizations to file lawsuits on behalf of affected groups, aiming to protect community interests and individual rights.^[24] In marriage and family law, Article 187 of the 2015 Civil Procedure Code allows state agencies, like those responsible for family affairs and children's welfare, as well as the Vietnam Women's Union, to initiate legal actions related to marriage and family. Individuals can also file lawsuits to protect the rights of others according to the Law on Marriage and Family. This means the right to file for divorce extends beyond the involved parties, emphasizing the principle of voluntariness in marriage. Additionally, relatives can petition for a divorce under certain legal circumstances.^[25] Although not a class action lawsuit, the regulation underscores lawmakers' recognition of individuals' and organizations' rights. It allows them to initiate legal actions to protect the rights of others, marking a significant step in defining who has standing to file lawsuits in environmental disputes. In the field of consumer rights protection, social organizations are also allowed to stand up to protect the interests of consumers when requested.^[26] Vietnam has three main organizations for consumer protection: the Department of Competition and Consumer

²² Article 43 of the 2013 Constitution.

²³ Article 30 of the 2013 Constitution.

²⁴ Article 187 of the Civil Procedure Code 2015.

²⁵ Clause 2, Article 51 of the Law on Marriage and Family 2014.

²⁶ Clause 7, Articles 4, 49, 50 of the Law on Consumer Protection 2023.

Protection (VCCA) under the Ministry of Industry and Trade, the Vietnam Association of Standards and Consumer Protection (VINASTAS) that helps consumers safeguard their rights, and the Vietnam Consumer Protection Association (VICOPRO), which focuses on specific areas like functional foods, cosmetics, and household appliances.

Class action lawsuits in labor have been recognized for a long time, since the implementation of the 1994 Labor Code (Article 157).^[27] This reflects Vietnamese society's ongoing concern for and protection of stable labor relations. Organizations representing employees have been granted specific rights, including the right to represent lawsuits and participate in court proceedings.^[28] The representative organization of the labor collective can initiate a lawsuit to protect the group's rights and interests, either when designated by an employee or when acting on behalf of one or more employees.^[29] Trade unions represent the working class and employees, with grassroots unions seen as legitimate representatives of labor. They have the authority to engage in civil procedures and act as representatives in court for labor disputes.^[30] Vietnamese law effectively supports collective lawsuits for labor disputes, empowering workers to unite and address grievances more forcefully.

The concept of class action lawsuits for environmental issues in Vietnam is not yet clearly defined by lawmakers. In fact, Article 186 of the Civil Procedure Code 2015 only allows individuals, agencies, and organizations to file civil lawsuits independently or through representatives. It also permits representative bodies to initiate lawsuits for public interest or on behalf of a collective group.^[31] Clause 2 of Article 188 of the 2015 Civil Procedure Code allows multiple parties to jointly file a lawsuit concerning related legal relationships. The Court may also consolidate many related cases into one, following legal requirements.^[32] This provision clearly demonstrates the Court's discretion, not the plaintiff's intent.

From the above information, we can see that although the current Vietnamese law recognizes the initiation of a lawsuit through a representative, clear procedural guidance for pursuing class action lawsuits – particularly

²⁷ Clause 2, Articles 57, Constitution 2013.

²⁸ Clause 3, Article 85 of the Civil Procedure Code 2015.

²⁹ Clause 2, Article 187 of the Civil Procedure Code 2015.

³⁰ According to Guidance No. 92/HD-TLD dated August 31, 2023 of the Vietnam General Confederation of Labor.

³¹ Article 187 of the Civil Procedure Code 2015.

³² Article 42 of the Civil Procedure Code 2015.

in environmental matters – remains absent from both the 2014 and 2020 iterations of Vietnam's Law on Environmental Protection. The complexity arises from challenges in assessing damages and the widespread impact on many people and areas, as seen in incidents like the Formosa case in 2016,^[33] which was governed by the Law on Environmental Protection 2014. Subjects who wanted to protect their rights had to file their own lawsuits, leading to a large number of applications accepted by the Court.^[34] The Court, after that, rejected the individuals' petitions due to their failure to provide documentation of damages. This issue was later addressed in Decision 1880 by the Prime Minister on October 13, 2016, which set the compensation standard.^[35]

In this case, the affected individuals had the right to sue, but individually limiting their ability to leverage community strength and complicating damage assessment. The State's role in negotiations with Formosa Company was mainly administrative, and there was currently no clear mechanism defining the State's involvement as a party in this issue. The Law on Environmental Protection 2020 introduces more detailed provisions than the 2014 version, focusing on compensation for environmental damage and assessing harm. Responsibility for claims and data collection falls on the People's Committees of all levels and the Ministry of Natural Resources and Environment.^[36] This regulation shows that lawmakers are increasingly aware of contemporary environmental issues. Assessing environmental damage requires specialized scientific expertise and financial resources. Affected organizations and individuals have the right to seek compensation independently or empower others to pursue it on their behalf when sufficient evidence is available.

Those new provisions may pave the way for similar class action lawsuits, enabling representatives to file civil claims in defense of community

³³ "Formosa blamed for fish death" *Vietnam News*, 30 June 2016. <https://vietnamnews.vn/society/298928/formosa-blamed-for-fish-death.html>.

³⁴ Khanh Hoan, "The Court Returns 506 Formosa Petitions of People" *Thanh Nien Newspaper*, 18 October 2016.

³⁵ The compensation norm under this Decision is 500 million USD. This is the result achieved according to the negotiation between the Vietnamese Government and Formosa Company. This amount is then allocated to the people who suffer losses according to the Government's assessment based on many different criteria, ensuring publicity, transparency and supervision of State agencies. Hieu Chi, Anh Vu, "How is the 500 Million USD Compensation for Formosa Spent?" *Thanh Nien Newspaper*, 2 July 2017.

³⁶ Article 131 of the Law on Environmental Protection 2020.

environmental interests, a right previously limited to other areas. Accordingly, it gives State agencies the competence and responsibility to address environmental signs of pollution and to initiate legal proceedings, but there is no sanction for failing to do so, potentially making the regulation ineffective in practice. This regulation should therefore require more careful review and adjustment.

Particularly, Article 131 of the Law on Environmental Protection assigns commune-level People's Committees the duty to seek compensation for environmental damage within their areas. They are, nevertheless, responsible for requesting assistance from the district-level People's Committee to gather and assess evidence of pollution and degradation. Furthermore, the Ministry of Natural Resources and Environment claims compensation for damages and coordinates with provincial-level People's Committees on data collection related to environmental harm across multiple provinces. But currently, Vietnam is restructuring State agencies for a streamlined approach as outlined in Resolution No. 18 of the Party Central Committee from October 25, 2017.^[37] District-level local governments will cease operations, and the Ministry of Natural Resources and Environment will merge with the Ministry of Agriculture and Rural Development to form the Ministry of Agriculture and Environment starting from July 1st, 2025. After the merger, the responsibility for initiating lawsuits related to compensation for damages will move to the Ministry of Agriculture and Environment. Therefore, the disposition relating to the authority of commune-level and district-level People's Committees needs to be updated to align with the new State structure.

Besides, the Law on Environmental Protection 2020 mandates that environmental disputes must also follow civil law, civil procedure law and related regulations. It highlights that court settlements should align with compensation guidelines for non-contractual damages and civil litigation laws.^[38] According to Article 133 of the Law on Environmental Protection 2020, damaged parties can initiate lawsuits themselves or authorize others to do so. While the provision aligns with the Civil Procedure Code, the allowance for class action lawsuits is still ambiguous, although it is clearly stated that affected individuals can authorize a representative to act on

³⁷ Resolution No. 18 of the Sixth Meeting of the XII Central Committee on a number of issues on continuing to renovate and reorganize the apparatus of the lean political system, effective and efficient operation on 25 October 2017.

³⁸ Articles 133 and 162 of the Law on Environmental Protection 2020.

their behalf in a single case.^[39] The reason is that, as highlighted in the characteristics section, environmental class actions possess distinctive features that cannot be adequately addressed through the proxy representative mechanism alone.

More on this issue, Vietnamese Courts have differing views on the acceptance of lawsuit petitions initiated through proxy. While Article 186 allows agencies, organizations, and individuals to file lawsuits directly or via legal representatives, many courts may reject petitions by proxy due to its lacking the plaintiff's signature, requested by Clause 2, Article 189 of the Civil Procedure Code 2015.^[40],^[41] The Court therefore tends to only accept authorization to submit a lawsuit petition, not to initiate a lawsuit with the full meaning. This means class action lawsuits using the authorized representative mechanism can face significant challenges if there is no official regulations. And last but not least, although Vietnamese law has quite progressive provisions on the burden of proof in environmental protection field, by providing that organizations and individuals that fully comply with the provisions of the law on environmental protection, have a qualified waste treatment system and can prove that they do not cause environmental damage shall not have to compensate for environmental damage,^[42] and that the burden of proof relating to the causal relationship between the violation of environmental laws and the damage caused is on the organization or individual that violates or causes environmental pollution,^[43] the law however does not state clearly who is responsible to prove first the violation act, the plaintiff or the defendant when the case starts. This can create confusion for the litigants when filing a lawsuit and for the court when solving the case.

From this analysis, the authors can identify some key observations as below:

Firstly, with respect to the regulations surrounding the initiation of class action lawsuits, in general, and specifically for environmental disputes,

³⁹ Article 85 of the Civil Procedure Code 2015; Article 138 of the Civil Code 2015.

⁴⁰ Clause 2, Article 189 of the Civil Procedure Code 2015: "Individuals with full capacity must either file personally or authorize another person to file the application, ensuring that their name and address are included and signed or fingerprinted at the end of the application."

⁴¹ See also Nguyen Van Tien, "Discussing the Authorization to Initiate Lawsuits in Civil Procedures" *Electronic People's Court Magazine*, 8 February 2023.

⁴² Clause 4 Article 130 Law on Environment Protection 2020.

⁴³ Clause 2 Article 133 Law on Environment Protection 2020.

Vietnamese law currently lacks specific and clear provisions. While there are regulations concerning the merger and separation of cases, as well as those regarding the authorization to initiate lawsuits, the application of those rules still largely relies on the competence of the Court. Consequently, many limitations persist in practice, creating challenges for both the public and the agencies responsible for enforcing the law.

Secondly, the current opt-in mechanism, based on the authorization process, needs to be reviewed for clarity. There is no opt-out mechanism to promote maximum social justice. The authors will analyze this mechanism in detail in the upcoming United States' lesson.

Thirdly, the psychology surrounding the reluctance to accept risks, particularly when the law lacks clarity, may cause the Court to hesitate in applying class action lawsuits through existing legal provisions for cases merging or authorized lawsuits,^[44] although Vietnam's Criminal Code states well that illegal decision-making is also subject to corresponding criminal sanctions.^[45] Furthermore, there exists a fear of managing high-profile cases, particularly environmental ones that can impact hundreds or even thousands of individuals across large and complex areas. This historical backdrop complicates procedural processes, requiring more time and manpower to navigate. Additionally, many Vietnamese courts are not equipped to handle a significant volume of trials. The unique characteristics of environmental disputes necessitate a high level of professional expertise, which leads judges to be more cautious in accepting such cases. They are acutely aware that an inappropriate judgment could result not only in criminal sanctions and disciplinary measures as prescribed by law but also in political instability and public outrage – consequences that no judge wishes to face.

And, lastly, the fear of litigation among Vietnamese individuals still exists, reflected in the proverb “Vô phúc đáo tụng đình – Unfortunate to be in court.” This is exacerbated by a lack of access to information, particularly for those in rural areas dependent on agriculture and fisheries, making them vulnerable to environmental impacts. The cultural emphasis on “Dĩ hoà vi quý- precious peace” often leads people to avoid confrontation, seeking legal action only when absolutely necessary. Additionally, socio-economic practices in rural Vietnam can hinder access to accurate

⁴⁴ Hai Duyen, “Chief Justice of Ho Chi Minh City People's Court: Many Pending Cases Due to Judges Fearing Incorrect Rulings” *VNExpress*, 30 July 2015.

⁴⁵ Article 371 and 372 Criminal Code 2015.

information, especially in today's digital age, where inadequate infrastructure contributes to the spread of unverified content. Financial barriers also deter individuals from initiating lawsuits, as Article 146 of the Civil Procedure Code 2015 and Resolution No. 326/2016 outline various costs associated with legal proceedings, including evidence collection and damage assessments,^[46] with the main principle that the plaintiff is obliged to prove.^[47] In addition, there may be additional lawyer costs.^[48] Litigation costs significantly impact the decision to sue individually, particularly for low-income people in rural areas who rely on their environment for living and working.

3 | Comparative Lesson

The article explores the U.S class action lawsuit law as a case study for Vietnam for three main reasons. Firstly, the U.S has a rich history in this area, inheriting early British regulations like the “Bill of Peace” from the seventeenth century, then refining this mechanism, and leading to its widespread adoption today. Notably, the first-class action lawsuit was recognized by the U.S Federal Court in 1842 through Equity Rule 48.^[49] It was outlined in Rule 23 of the Federal Rules of Civil Procedure, and state laws, including precedents. The authors of the research paper focused on analyzing the issue at the federal level for a comprehensive perspective.^[50] Secondly, in the U.S, class action lawsuits have both “opt-out” mechanisms (automatic participation unless you refuse) and “opt-in” mechanisms

⁴⁶ Chapter IX, Section 1 of the Civil Procedure Code 2015.

⁴⁷ Article 91 of the Civil Procedure Code 2015.

⁴⁸ Article 168 of the Civil Procedure Code 2015.

⁴⁹ In 1842, the Supreme Court promulgated Equity Rule 48, “officially recognize representative suits where the parties were too numerous to be conveniently brought before the court but refused to bind absent parties to any resulting judgments.”

⁵⁰ Coming from the federal state, the US legal system is relatively complicated. Each state has a separate legal system. At the same time, the federal government maintains a system of federal courts along with first-instance courts in each state. Naturally, each state and federal legal system has its own procedural rules. States enact regulations in areas that federal law does not regulate. Therefore, class actions can be applied differently from state to state.

(voluntary participation). Finally, the U.S litigation financing mechanisms are quite flexible.

3.1. Rule 23 of the Federal Rules of Civil Procedure

According to Rule 23, a lawsuit must meet four prerequisites^[51] to be considered a class action and governed by this provision. The first point is that the class is so numerous that including all members is impractical. In 2011, the U.S District Court for the Northern District of California acknowledged *Wal-Mart v. Dukes* as a class action lawsuit, noting that the number of female employees involved was nearly 1.5 million, marking the highest count since that time.

The second consideration is whether there are common legal or factual questions among the class. This requirement enhances efficiency by allowing the court to address multiple lawsuits together, preventing conflicting judgments and maintaining public confidence in the judicial process. This is especially important for vulnerable groups who may struggle to engage in individual lawsuits. There are many cases of significant harm to communities that may not be recognized as collective, hindering the ability to pursue class actions. A relevant example is the 2013 Pegasus pipeline rupture in Mayflower, Arkansas, where, despite evacuating over twenty households and harming local wildlife, the U.S District Court for the Eastern District of Arkansas reversed its approval of class-action status. In 2017, the U.S Court of Appeals for the Eighth Circuit also affirmed this decision^[52] and the Court's reasoning was that it failed to prove generality. In other words, the Eighth Circuit determined that Exxon managed the pipeline through separate entities, necessitating an evaluation of each property to assess the damages experienced by each plaintiff.

The third is that claims or defenses of the representative parties are typical of the claims or defenses of the class. This principle of typicality is essential to prevent the abuse of class action lawsuits, ensuring there are no conflicts between the interests of the representative and those of the group. Consequently, the plaintiff must experience the same type of harm

⁵¹ Rule 23 (a) Prerequisites.

⁵² Emily Holtzman, "Widening the Power Gap: The Eighth Circuit's Stringent Requirement for Class Actions in Environmental Contamination Cases" *Missouri Law Review*, No. 2 (2019): 537-560.

and the same legal basis for their claims as the other class members. This not only promotes fairness and upholds the collective interests of the group, but also allows the Court to resolve the case more efficiently, rather than addressing each case individually. The last is that the representative parties will fairly and adequately protect the interests of the class. The adequacy of representation is crucial for class action lawsuits, ensuring that the representative parties and their attorneys have the capacity and resources to pursue the case effectively. This prioritizes group interests, particularly for vulnerable entities that may struggle to sue independently. With knowledgeable representatives and counsel, the Court can be confident that the claim is legitimate and will be thoroughly addressed, minimizing resource waste. The conditions are merely the first requirement for recognizing a class action. Additionally, the Court cannot acknowledge a class action if it does not meet one of the following three categories:^[53]

The first type: Prosecuting separate actions by or against individual class members risks inconsistent adjudications and incompatible standards for the opposing party. These individual cases could also affect the interests of non-parties, making it difficult for them to protect their rights. This approach is often seen in lawsuits involving common property, funds, or collective contracts, aiming to reduce class distinctions and avoid varied outcomes. Class actions are generally more effective than individual lawsuits, as the damages for each person are typically too small to justify separate legal proceedings.

The second type: The party opposing the class has acted or refused to act on grounds that apply generally to the class, so that final injunctive relief or corresponding declaratory relief is appropriate respecting the class.

The third type: The court determines that common questions of law or fact among class members outweigh individual issues, making a class action the superior method for fairly and efficiently resolving the controversy. Key factors include the class members' interest in controlling separate actions, existing litigation on the matter, the appropriateness of the chosen forum, and the challenges in managing a class action. This type is relatively common for seeking monetary damages when legal issues or common questions arise. Most environmental disputes that require compensation focus on this type.

When the conditions for a class action are met, the proceedings can only move forward if the Court certifies it as a class action. According to

⁵³ Rule 23 (b) Type of Class action.

Rule 23(c), the court must promptly determine whether to certify the action after a class representative is involved. This certification order must define the class, its claims, issues, or defenses, and appoint class counsel under Rule 23(g). Certification is crucial as it affirms the commonality among plaintiffs and ensures they are represented and protected by appointed counsel. In case this certification is not achieved, the plaintiff cannot continue as his class representative; however, the plaintiff can still participate in the proceedings as an individual. Therefore, the denial of class certification has been called the “death knell” of the lawsuit.

After issuing the certification, the notification to the other parties is conducted. The remaining group members can choose to participate or not, based on their individual preferences and aspirations^[54]. If a member opts out of the class action, they will not be bound by the judgment and will forfeit any benefits from a favorable outcome for the class. Reasons for opting out may include a desire for independence, lack of interest in participation, or belief that the potential damages are inadequate. Opting out is a right specific to class action lawsuits in the U.S, and such provisions are not found in Vietnamese law.

3.2. Opt-In and Opt-Out Mechanisms

As previously mentioned, the United States also employs another mechanism known as opt-out, in addition to opt-in. With the opt-in mechanism, individuals within a group must take the initiative to register in order to access legal remedies or compensation if they prevail in a lawsuit. This approach ensures the right to individual self-determination; however, it may lead to a limited number of participants, which could weaken the collective strength in litigation.

The opt-out mechanism, introduced in the U.S in 1966, automatically includes group members in a lawsuit class unless they actively choose to opt out within a set timeframe. This process is praised for increasing group size, enhancing the ability to sue, and improving chances of winning, thus promoting social justice. However, if individuals are unaware of this and miss the opt-out deadline, they are automatically included and bound by the court’s ruling. Therefore, the U.S courts must notify

⁵⁴ See FED.R. CIV.P. 23(c)(2).

potential members to protect their right to opt out.^[55] From this information, the opt-in mechanism emphasizes voluntary participation, but the fear of legal repercussions may hinder social justice. Conversely, the opt-out model could help victims navigate this obstacle, though it raises concerns about coercing individuals who prefer not to join the lawsuit.^[56] We totally disagree with this perspective because, with opt-out, victims retain their right of self-determination in civil proceedings, which includes the ability to exit the lawsuit.

Upon comparing the current landscape of Vietnamese law to that of the U.S, one can observe notable similarities between the opt-in and opt-out mechanisms prevalent in the U.S law and certain Vietnamese legal provisions. Specifically, in Vietnam, the mechanism for initiating a lawsuit through authorized representation aligns closely with U.S opt-in model. Conversely, when a state agency or social organization initiates a civil lawsuit with the intent of protecting public interests, it parallels the opt-out model in terms of determining both the subjects of the lawsuit and those participating in it. Article 131 of the Law on Environmental Protection, 2023, states that organizations and individuals who suffer damages to their life, health, property, or legitimate interests due to environmental degradation may either pursue claims independently or authorize state agencies, organizations, or other individuals to assess the damages and seek compensation. In this context, when multiple entities collectively authorize another party to initiate a civil lawsuit, it is akin to the choice to participate in the U.S opt-in mechanism.

Under the aforementioned law, if a state agency is responsible for initiating a lawsuit to seek compensation for damage caused by environmental pollution to the community, that agency will serve as the plaintiff in accordance with Article 68 of the Civil Procedure Code 2015. However, the right of the community is not well defined. This lack of specification distinguishes the Vietnamese legal framework from that of the U.S. In the U.S, there is an opt-out mechanism whereby members of the group or community can

⁵⁵ Selma Mezetovic Medic, "Collective Redress is There Way for Both Opt-In and Opt-Out?" *South East European Law Journal*, 9 (2022): 62-81.

⁵⁶ Scott Dodson, "An Opt-in Option for Class Actions" *Michigan Law Review*, No. 2 (2016): 171-214. "It is unfair to a defendant opposing [an opt-out] class, so the argument goes, to subject him to possible liability toward individuals who remain passive after receiving notice or who may, indeed, have had no notice of the proceeding; under the previous law, some, perhaps many, of those persons might simply have foregone any claims against the defendant; they might in fact have remained ignorant of having any possible claims."

choose not to participate in the lawsuit from the beginning. In contrast, Vietnamese law does not provide a similar provision. Consequently, if the Court accepts a claim for damages in the public interest made by a state agency or social organization, the amount of damages will be allocated to those victims affected by the environmental harm basing on principles formulated at a later stage. Although victims retain the right to decide whether to accept this compensation, this situation may lead to arbitrariness and a lack of transparency in determining compensation amounts and affected individuals, largely due to the absence of clear regulatory guidance from the outset of the lawsuit.

3.3. Litigation Costs Financing

Procedural costs are a significant barrier that needs attention. In the U.S, litigation costs for class actions are manageable, with various options available to support legal expenses. Litigation funding is quite typical for class action lawsuits^[57] and is the most common method used in the U.S.^[58] This is financial assistance from a third party unrelated to the lawsuit to fund litigation costs in exchange for a portion of the award if the case is won.^[59] During certification of a class action, the litigation funding may be required to be disclosed to ensure transparency and avoid conflict of interest.^[60] In environmental disputes, NGOs or community funds can act as funding intermediaries. Lawyers can access a common pool for upfront litigation costs and receive a percentage of awarded damages if the case is successful, unless they get nothing. This approach encourages lawyers to assess the

⁵⁷ See: Mark Behrens, “Third Party Litigation Funding: A Call for Disclosure and Other Reforms to Address the Stealthy Financial Product That Is Transforming the Civil Justice System” *Cornell Journal of Law and Public Policy*, No. 1 (2024): 1-30.

⁵⁸ Some class actions are also financed by public-interest groups or are undertaken by law firms on a pro bono (the law firm waives its fee, undertaking the case pro bono publico, for the public good).

⁵⁹ Francesca Pellegrini, *Understanding Litigation Funding: Comparative Perspectives on Regulation, Market Behaviour and Economic Consequences*. Milano: Angeli, 2025.

⁶⁰ Federal Rule of Civil Procedure 23 does not explicitly require disclosure of third-party litigation funding in class actions, however, rule 23(e)(2) states that “If the proposal would bind class members, the court may approve it only after a hearing and only on finding that it is fair, reasonable, and adequate,” and to make this determination, courts often examine the costs, risks, attorney’s fee, which entails disclosure of litigation funding.

lawsuit's legal aspects, helping to prevent frivolous claims and promoting diligent work for both the collective and their interests, like the U.S class action lawsuits, where representatives must protect the class's interests.

One-way fee shifting is a legal method typically used in cases with limited financial compensation. Under this system, the attorney can only collect fees if the plaintiff wins, and only the plaintiff has this right. Additionally, court approval is required for statutory attorneys' fees, which the defendant must pay along with any remediation costs. This approach is often used in consumer and environmental protection cases.^[61] In stark contrast to the "loser-pays" principle, the U.S. operates under a framework known as the "American rule." Under this rule, regardless of whether the plaintiff or the defendant prevails, each party is responsible for covering its own procedural fees. This principle enhances access to class action lawsuits, particularly for vulnerable groups, as it eliminates the risk of having to pay the defendant's attorneys' fees in the event of an unsuccessful lawsuit. Notably, this approach aligns closely with Vietnamese law. Article 168 of the Civil Procedure Code 2015 stipulates that legal fees are to be paid according to an agreement between the parties involved and their lawyer, in accordance with the regulations set forth by the law-practicing organization and relevant legal provisions. Generally, these expenses are to be borne by the requester unless the parties agree otherwise. It should also be added that, in the domain of intellectual property, the losing party is responsible for the lawyer's fees,^[62] which means that it does not apply to the environmental field. Various financial support methods, particularly the recognition of litigation funding, could serve as optimal solutions to facilitate class action lawsuits, which Vietnam can study, develop, and implement.

⁶¹ The most important of these statutes is the Civil Rights Attorney's Fees Awards Act, 42 U.S.C. sec. 1988, which authorizes the award of reasonable attorney's fees to the prevailing plaintiffs in litigation under 42 U.S.C. sec. 1983.

⁶² Clauses 4 and 5, Article 198, Clause 3, Article 205 of the 2005 Law on Intellectual Property amended and supplemented.

4 | Conclusion and Lessons for Vietnam

Sustainable development requires long-term efforts and effective regulations to prevent and address environmental pollution while ensuring social justice for future generations. Class action lawsuits can serve as both a legal tool for dispute resolution and a deterrent against environmental violations. The analysis of the U.S approach can provide valuable insights for Vietnam.

Based on our research, we conclude that to effectively build and develop a model of class action for resolving environmental disputes in Vietnam, it is essential to amend the law. This amendment should establish a more open and supportive mechanism for the involvement of the public.

Firstly, the Civil Procedure Code and the Law on Environmental Protection should explicitly acknowledge the ability to initiate class action lawsuits for environmental disputes in Vietnam. This can be achieved by stating that “state management agencies responsible for the environment and socio-professional organizations can file a class action lawsuit to address collective environmental issues.”

Secondly, it is important to clearly define the criteria for a lawsuit to be recognized as a class action. This will ensure that the appropriate procedures for class actions can be applied. The criteria can be inspired by the U.S model, which outlines four conditions: enough subjects, a shared fact, typical claims, and adequate representation.

Thirdly, once a class action lawsuit for environmental disputes is confirmed to meet these conditions, the Civil Procedure Code and the Law on Environmental Protection should include special procedural activities and support mechanisms tailored for this type of lawsuit. Specifically, the recognition of the Court is needed for the class action procedure, followed by mechanisms of representation with opt-out and opt-in choices. This would allow relevant entities to have more options for their rights and interests relating to environment to be more effectively protected.

Fourthly, financial barriers often prevent individuals from pursuing class action lawsuits. To address this, it’s proposed that the Civil Procedure Code and the Law on Environmental Protection implement financial mechanisms to assist vulnerable groups in filing collective environmental lawsuits. The U.S model, which includes a general fund for environmental disputes and recognizes litigation funding, can serve as a helpful reference.

And lastly, it relates to the burden of proof in environmental disputes. To enhance support for resolving environmental disputes, consideration should be given to applying the principle of proof from labor dispute

resolution or consumer rights protection cases, where the defendant is responsible for proving first their innocence^[63], by stating well in the Law on Environment Protection and in the Code of Civil procedure that in environmental disputes, the plaintiff has no obligation to prove the fault of the presumed violators, and the defendant should be obliged to prove that they have not caused environmental pollution.

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Towards Sustainable Development: Responses of Vietnam to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes*

Abstract

Vietnam acceded to the Basel Convention on the control of transboundary movements of hazardous wastes in 1995 and has since undertaken substantial efforts to harmonize its domestic policies with international standards on hazardous wastes management. The country maintains stringent controls over the transboundary movement of hazardous waste, not only through strict regulatory oversight but also by imposing a complete ban on the import of hazardous waste for any purpose. In alignment with international obligations and to deter environmental violations, Vietnam has also criminalized the illegal importation of such waste, incorporating specific penalties and sanctions within its legal framework. These measures reflect the country's commitment to safeguarding environmental and public health while fulfilling its responsibilities as a party to the Basel Convention. To ensure alignment with the Convention's provisions, Vietnam has incorporated its core principles into the Law on Environmental Protection – specifically through the versions enacted in 2005, 2014, and 2020 – as well as into other relevant legal and

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regulatory frameworks governing hazardous waste management. This paper examines Vietnam's legislative and institutional implementation of the Basel Convention, highlighting the country's adherence to international commitments aimed at mitigating the environmental and health impacts associated with hazardous wastes and its transboundary movement. In particular, the paper analyzes Vietnam's compliance with key obligations under the Convention, including the Prior Informed Consent procedure and the submission of annual national reports. Additionally, we also explore Vietnam's participation in international and regional cooperation initiatives aimed at controlling hazardous wastes and mitigating its environmental and health impacts. While these efforts reflect Vietnam's commitment to contributing to global sustainable development, several challenges remain. Notably, limitations in enforcement mechanisms hinder full compliance with international and regional regulatory frameworks. Accordingly, the paper proposes strategic orientations tailored to Vietnam's current context, with the aim of enhancing the effectiveness of hazardous wastes management and minimizing its adverse impacts nationwide.

KEYWORDS: hazardous wastes, the Basel Convention, environmental protection, Vietnam

1 | Introduction

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (hereinafter referred to as the Basel Convention) is a global environmental treaty adopted on 22 March 1989, under the United Nations Environment Programme.^[1] It officially came into force on 5 May 1992, with the primary objective of regulating the international movement of hazardous waste. The Convention was established in response to concerns that industrialized nations were exporting hazardous waste to developing countries with weaker environmental regulations, creating serious health and environmental risks. The main goals of the Basel Convention are to reduce hazardous waste generation, ensure environmentally sound waste management, and regulate transboundary movements of hazardous waste. It also seeks to prevent illegal trafficking of hazardous materials and encourages international cooperation through

¹ Basel Convention, Overview. <https://www.basel.int/theconvention/overview/tabid/1271/default.aspx>. [accessed: 7.7.2025].

technical assistance and training programs. By implementing these objectives, the Convention aims to minimize environmental and human health risks associated with hazardous waste disposal.

One of the key provisions of the Convention is the Prior Informed Consent Procedure, which requires any country exporting hazardous waste to first obtain consent from the receiving country before the shipment takes place.^[2] Additionally, hazardous waste can only be traded between countries that are parties to the Basel Convention unless there is a separate bilateral or regional agreement. Another important requirement is the Environmentally Sound Waste Management (hereinafter referred to as ESWM) principle,^[3] which mandates that all hazardous waste must be treated, recycled, or disposed of in a manner that does not harm the environment or public health. The Convention also enforces strict regulations against illegal traffic of hazardous waste, holding exporting countries responsible for addressing any violations.^[4] Historically, a significant development within the Basel Convention is the Basel Ban Amendment, which was adopted in 1995 and officially enforced in December 2019.^[5] This amendment prohibits the export of hazardous waste from OECD countries (developed nations) to non-OECD countries (developing nations) for final disposal or recycling. The ban was introduced to prevent developing nations from becoming dumping grounds for hazardous waste from wealthier countries.

Recently, the Conferences of the Parties (hereinafter referred to as COP) to the Basel Convention have addressed a wide range of hazardous waste streams through technical, legal, and collaborative measures. Key waste categories include e-waste, waste batteries, waste tyres, plastic waste, mercury wastes, POPs wastes, and household waste, each supported by technical guidelines, working groups, meetings, and specific projects or partnerships.^[6] Specialized areas such as ship dismantling and specially

² Overview. <https://www.pic.int/TheConvention/Overview/History/Overview/tabid/1360/language/en-US/Default.aspx>. [accessed: 6.9.20203].

³ United Nations Environment Programme (UNEP), *Environmentally Sound Management of Hazardous Wastes*. 1987.

⁴ Basel Convention, Cases of Illegal Traffic. <https://www.basel.int/Implementation/LegalMatters/IllegalTraffic/CasesofIllegalTraffic/tabid/3424/Default.aspx>. [accessed: 2.12.2024].

⁵ Basel Convention, Ban Amendmen. <https://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx>. [accessed: 7.3.2025].

⁶ Basel Convention, Cases of Illegal Traffic.

engineered landfill and incineration are also covered through capacity building, legal aspects, and technical standards. On the one hand, legal matters under the Convention include the Ban Amendment, compliance mechanisms, enforcement against illegal traffic, legal clarity, and frameworks related to trade and ship regulation. On the other hand, technical matters focus on developing and updating guidelines, including those on hazard characteristics. Additionally, harmonized system codes are used to ensure standardized classification and reporting, supported by progress reports and calls for information.

Despite its positive impact, the Basel Convention faces several challenges. Illegal waste trafficking continues to occur due to weak enforcement mechanisms^[7] and mislabeling of waste shipments.^[8] For example, the e-waste loophole is a major issue, as many old electronic products are shipped to developing countries under the label of “second-hand goods” rather than hazardous waste, leading to unsafe recycling practices.^[9] Additionally, differences in national implementation mean that some countries lack the necessary resources or infrastructure to fully enforce the Convention’s provisions. Overall, the Basel Convention remains a crucial international agreement for protecting both human health and the environment from hazardous waste. By promoting strict regulations, strengthening international cooperation, and encouraging sustainable waste management, the Convention plays a vital role in reducing the global risks associated with hazardous waste disposal and trade.

⁷ Karola Maxianova, “Shipments of Electronic Waste: Providing the Right Incentives through Regulation and Enforcement” *Review of European Community & International Environmental Law*, No. 3 (2008). <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-9388.2008.00612.x>. [accessed: 9.7.20205].

⁸ Katharina Kummer, “The International Regulation of Transboundary Traffic in Hazardous Wastes: The 1989 Basel Convention” *International and Comparative Law Quarterly*, No. 3 (1992): 530-562.

⁹ Michikazu Kojima, *Chapter 1: Issues Relating to the International Trade of Second-Hand Goods, Recyclable Waste, and Hazardous Waste* (2013), 1.

2 | Vietnam's Commitment to the Basel Convention and its Response in Practice

Vietnam became a party to the Basel Convention in 1995 and has since made significant efforts to align its policies with international regulations.^[10] The country enforces strict control over the import and export of hazardous waste, requiring prior informed consent from relevant authorities before any transboundary movement occurs. To ensure compliance, Vietnam has integrated the Convention's principles into its Law on Environmental Protection and other regulatory frameworks governing hazardous waste management.^[11] Additionally, as a member to the Basel Convention, Vietnam is committed to strengthening monitoring and enforcement measures to prevent illegal dumping and improper handling of hazardous materials. The government also promotes waste reduction, recycling, and the use of sustainable disposal methods to minimize environmental risks.^[12] By adhering to the Basel Convention, Vietnam aims to balance industrial development with environmental sustainability while contributing to global efforts in responsible hazardous waste management.

As a party to the Basel Convention since 1995, Vietnam has actively fulfilled its obligations by submitting required reports and documents to the Basel Convention Secretariat. Under Article 13(3) of the Basel Convention, all Parties are required to submit annual national reports to monitor the implementation of the Convention and track the transboundary movement of hazardous and other wastes.^[13] These reports help the Conference of the Parties assess compliance and make informed decisions.

¹⁰ "Vietnam Join Basel Convention: Managing Hazardous Waste Movement", 20 September 2024. <https://znorecycle.com/vietnams-participation-in-the-basel-convention-controlling-hazardous-waste-transboundary-movements/>.

¹¹ From 1999, after 4 year of ratification of the Basel convention, Vietnam had its own regulation on controlling HW shipment (to guiding the Law on environmental protection 1993). See some regulations Vietnam had reported to the Basel convention at: Basel Convention, National Legislation. <https://www.basel.int/countries/nationallegislation/tabid/1420/default.aspx>. [accessed: 9.7.2025].

¹² "Thúc đẩy tái chế chất thải tại Việt Nam" *Môi Trường Á Châu*. <https://moi-truongachau.com/vn/thuc-day-tai-che-chat-thai-tai-viet-nam.html>. [accessed: 9.7.2025].

¹³ Basel Convention, "Coming Soon: New Improved Electronic Reporting System for the Basel Convention". <https://www.basel.int/?tabid=2314>. [accessed: 10.7.2025].

Besides, reporting activities help ensure transparency in hazardous waste management, compliance with international regulations, and alignment with global environmental protection efforts. The reports must include detailed information, such as the names and contacts of national focal points and competent authorities, data on waste exports and imports (including transit routes and disposal methods), and any discrepancies from agreed disposal procedures. Beside the annual reporting on issues mentioned above, Parties to the Basel Convention must report on national measures for implementing the Convention, incidents or accidents related to waste movement or disposal, and efforts to reduce waste generation.^[14] Specifically, the information on environmental and human health impacts, domestic disposal infrastructure, and any bilateral or multilateral agreements concerning hazardous waste management is also required. The Secretariat issues an annual reminder, and countries complete a standardized questionnaire. Since 2013, Parties have used the Electronic Reporting System to submit data.^[15] Then, the Secretariat reviews submissions for quality control and may follow up with Parties to clarify or complete missing information. The collected data is made publicly available through an interactive online dashboard, allowing users to view, filter, and download reports by country, region, or year. Parties can also cross-check import/export data with other countries for consistency. A Compliance Committee of the Basel Convention monitors reporting practices and identifies Parties that fail to report on time or in full.^[16] Persistent non-compliance may lead to formal classification and public disclosure, prompting corrective measures. To assist countries, the Secretariat provides guidance documents, templates, and reporting manuals in all six UN languages.^[17] This robust reporting mechanism promotes transparency, supports global decision-making, and reinforces accountability in the environmentally sound management of hazardous waste.

¹⁴ Basel Convention, Cases of Illegal Traffic.

¹⁵ Basel Convention, Electronic Reporting System. <https://www.basel.int/Countries/NationalReporting/ElectronicReportingSystem/tabid/3356/Default.aspx>. [accessed: 10.7.2025].

¹⁶ Basel Convention, Mandate. <https://www.basel.int/TheConvention/ImplementationComplianceCommittee/Mandate/tabid/2296/Default.aspx>. [accessed: 11.8.2024].

¹⁷ Basel Convention, Reports. <https://www.basel.int/TheConvention/ImplementationComplianceCommittee/Reports/tabid/2289/Default.aspx>. [accessed: 10.7.2025].

In response, Vietnam had its first report in 2002, which provided detailed information on its regulatory and administrative framework for managing hazardous and other wastes. The designated Competent Authority and Focal Point is the Ministry of Natural Resources and Environment (MONRE), represented by the Vietnam Environmental Protection Agency (VEPA).^[18] Vietnam has established national definitions of both waste and hazardous waste. Waste is broadly defined as any material discarded from households, production processes, or other activities, while hazardous waste includes substances that are flammable, explosive, toxic, corrosive, infectious, or otherwise harmful to human health and the environment.^[19] Although Vietnam had not formally ratified the Basel Ban Amendment (Decision III/1) by 2002, its Law on Environment Protection at that time strictly prohibited the import and export of hazardous waste. The country positively imposed comprehensive restrictions on the transboundary movement of such waste for both final disposal and recovery, including import, export, and transit. Some exceptions were allowed for specific categories of cleaned and treated scrap materials intended for industrial reuse. Vietnam used the Basel Convention's notification and movement document forms for controlling transboundary waste movement and accepted documentation in both Vietnamese and English. However, a full border control system was still under development at the time.^[20]

Furthermore, to reduce hazardous waste generation, Vietnam had adopted several legislative and policy measures, including mandatory treatment of toxic substances and requirements for industrial compliance with environmental standards. Key regulations included the Law on Environment Protection (1994),^[21] and decisions on hazardous waste management and the use of treated scrap as industrial input.^[22] Entities responsible for environmental harm were subject to economic penalties under national legislation. In the first report, in 2002, Vietnam also recorded the generation of approximately 160,000 metric tons of hazardous waste and

¹⁸ FeedbackServer Administration. <https://ers.basel.int/ERS-Extended/FeedbackServer/fsadmin.aspx?fscontrol=respondentReport&surveyid=58&voterid=40854&readonly=1&nomenu=1>. [accessed: 10.7.2025].

¹⁹ Ibidem.

²⁰ Ibidem.

²¹ Luật Bảo vệ Môi Trường 1993 29-L/CTN, Thư Viện Pháp Luật, 10 January 2025. <https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Luat-Bao-ve-moi-truong-1993-29-L-CTN-38694.aspx>.

²² FeedbackServer Administration.

12.8 million metric tons of other waste, but no hazardous waste was imported or exported, and no accidents or disruptions in disposal were reported.^[23] The report noted the absence of bilateral or multilateral agreements under Article 11 and indicated that no domestic facilities treated imported hazardous waste. Technical assistance was available through national agencies such as the National Environment Agency and ministries responsible for industry, agriculture, and construction. However, no financial assistance institutions were listed.

The last report of Vietnam was submitted in 2020, showing its continued efforts to implement the Basel Convention through updated legislation, institutional structures, and waste management policies. The MONRE and its agencies remain the country's designated Competent Authority and Focal Point.^{[24][25]} Key updates include reaffirming strict bans on the import, export, transit, or re-export of hazardous and other wastes, with limited allowances for specific pre-approved scrap materials for industrial use. Besides, Vietnam still has its national definitions for both waste and hazardous waste, with criteria rooted in toxicity, radioactivity, flammability, and other hazardous traits. Moreover, Vietnam now uses its own waste list aligned with EU classifications and has developed regulations and technical standards to manage such waste in the Circular No. 36/2015 and national technical regulations define hazardous waste thresholds and control procedures.^[26] In terms of legal enforcement, Vietnam's Law on Environmental Protection (2020) – effective from January 2022 – prohibits all transboundary movements of hazardous waste, unless it falls within narrowly permitted categories like cleaned and sorted scrap.^[27] This law imposes fines, license revocations, and mandatory re-export for violations and considers illegal traffic a criminal offense. The important thing was Vietnam has ratified the Ban Amendment in practice, even if not formally under international treaty law. In brief, Vietnam uses Basel Convention

²³ Ibidem.

²⁴ Ibidem.

²⁵ However, from 01 July 2025, due to changes in the structure of the state apparatus, it has now been restructured and changed to the Ministry of Agriculture and Environment; see more at: Công, Bộ Nông nghiệp và Môi trường. <https://mae.gov.vn/?>. [accessed: 14.7.2025].

²⁶ FeedbackServer Administration.

²⁷ Luật Bảo vệ Môi Trường 2020 Số 72/2020/QH14 Mới Nhất Áp Dụng Năm 2025 Mới Nhất. Thư Viện Pháp Luật. <https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Luat-so-72-2020-QH14-Bao-ve-moi-truong-2020-431147.aspx>. [accessed: 10.7.2025].

notification and movement documents, accepts submissions in English, and has added national information requirements. There are total bans on the import and transit of hazardous wastes for final disposal, and partial restrictions on imports for recovery, especially concerning used seagoing vessels and specific types of industrial scrap. Also, to reduce hazardous waste generation, Vietnam has developed multiple national strategies and legal instruments, including support for a circular economy and Extended Producer Responsibility policies.^[28] Laws in Vietnam now mandate waste separation at source, eco-design, recycling targets, and integration of environmental requirements into business licensing. For example, Vietnam encourages cleaner production practices and ISO 14001 adoption in industries,^[29] particularly for facilities handling hazardous waste. Additionally, Vietnam reported the generation of over 1.13 million metric tons of hazardous waste in 2020 – its highest recorded amount.^[30] While some hazardous waste was exported, no imports, accidents, illegal traffic, or failed disposals were reported. Data on waste management impacts on human health and the environment is limited but available through official State of the Environment Reports (2011, 2017, 2019, 2020) published by MONRE and the World Bank.^[31] It is obvious that Vietnam's 2020 report shows strong institutional and legislative progress, with a focus on enforcement, waste reduction, and movement control, aligned with Basel Convention obligations.

Following the enforcement of the Basel Ban Amendment in 2019, Vietnam has strengthened its legal measures to prohibit the import of hazardous waste from developed countries. To demonstrate compliance, Vietnam submits updates on its legal enforcement actions, monitoring activities, and challenges faced in implementing the Basel Ban. The Law on Environmental Protection 2020, which took effect on 1 January 2022, includes clear provisions to prohibit hazardous waste imports and regulate scrap material imports. Vietnam has shown a clear commitment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, particularly by strictly prohibiting the import, temporary import, re-export, and transit of waste from foreign countries

²⁸ FeedbackServer Administration.

²⁹ Ibidem.

³⁰ Ibidem.

³¹ Ibidem.

in any form, as stated in Article 6 of the Law on Environmental Protection.^[32] These measures align with international commitments, such as the Basel Convention, to prevent Vietnam from becoming a dumping ground for global waste. One of the most critical aspects of the law is the prohibition of hazardous waste imports. This regulation is accompanied by strict monitoring and enforcement mechanisms, ensuring that illegal hazardous waste shipments do not enter Vietnamese territory. Violators face severe penalties, including fines and revocation of business licenses. Furthermore, Clause 5, Article 83 of this Law assigns the Ministry of Natural Resources and Environment the authority to provide technical guidance on hazardous waste management, including registration and transboundary movements in accordance with Basel standards.

To implement these obligations, Circular 02/2022/TT-BTNMT was issued, with Article 38 specifically regulating hazardous waste exports from Vietnam – affirming that Vietnam participates in the Basel Convention as an exporting country, not as an importer or transit state.^[33] This Article also incorporates the official Basel technical guidelines on notification procedures, with direct reference to the Convention's forms and standards.^[34] Importantly, the regulation requires compliance with the Prior Informed Consent procedure, meaning any export of hazardous waste from Vietnam must obtain formal approval from both the importing and any transit countries before shipment can occur, reinforcing Vietnam's strict adherence to international environmental commitments and legal enforcement. These efforts help Vietnam align with global commitments to reduce hazardous waste trade and promote sustainable waste management. Although Vietnam permits the import of certain recyclable materials, these activities are strictly regulated. Only businesses with proper environmental protection measures are allowed to import scrap for production purposes. These businesses must obtain an import license from the Ministry of Natural Resources and Environment and comply with environmental standards. Additionally, any waste materials that fail to

³² Luật Bảo vệ Môi Trường 2020 Số 72/2020/QH14 Mới Nhất Áp Dụng Năm 2025 Mới Nhất.

³³ Thông Tư 02/2022/TT-BTNMT Hướng Dẫn Luật Bảo vệ Môi Trường Mới Nhất, Thư Viện Pháp Luật. <https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Thong-tu-02-2022-TT-BTNMT-huong-dan-Luat-Bao-ve-moi-truong-500694.aspx>. [accessed: 8.7.2025].

³⁴ <http://www.basel.int/Portals/4/Basel%20Convention/docs/techmatters/forms-notif-mov/vCOP8.doc>.

meet Vietnam's strict regulations must either be re-exported or properly treated. Government Decree No. 08/2022/ND-CP further details the responsibilities of businesses engaged in scrap imports, ensuring proper waste management.^[35] In brief, Vietnam maintains a strict ban on the import of household waste, mixed municipal waste, and non-recyclable materials. This prevents pollution and reduces the risk of environmental degradation caused by poor waste management. Additionally, the country restricts the export of hazardous waste, ensuring that it is treated domestically under safe and controlled conditions rather than being sent to other nations.

In addition to reporting and compliance, Vietnam actively participates in Basel Convention regional meetings. These events allow Vietnam to discuss policy updates, share best practices, and report on its progress in implementing the Convention's regulations. In the ASEAN region,^[36] the Basel and Stockholm Conventions Regional Centre in Indonesia, known as the Basel Convention Regional Centre and Stockholm Convention Regional Centre Indonesia, is located in Jakarta, Indonesia.^[37] The Basel Convention Regional Centre was established through a Framework Agreement in October 2004, while the Stockholm Convention Regional Centre was officially nominated in August 2011.^[38] This centre is hosted by the Ministry of Environment of Indonesia and serves ten countries in the Southeast Asian region: Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Malaysia, Myanmar, Indonesia, Singapore, the Philippines, Thailand, and Viet Nam.^[39] The centre's areas of expertise include the environmentally sound management and inventory of electronic waste, the management

³⁵ Nghị Định 08/2022/NĐ-CP Hướng Dẫn Luật Bảo vệ Môi Trường Mới Nhất. Thư Viện Pháp Luật. <https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Nghi-dinh-08-2022-ND-CP-huong-dan-Luat-Bao-ve-moi-truong-479457.aspx>. [accessed: 14.3.2025].

³⁶ The Association of Southeast Asian Nations, known as ASEAN, was founded on 8 August 1967 in Bangkok, Thailand, through the signing of the ASEAN Declaration, also referred to as the Bangkok Declaration. The founding members of ASEAN were Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Brunei Darussalam became a member on 7 January 1984, followed by Viet Nam on 28 July 1995. Lao People's Democratic Republic and Myanmar joined on 23 July 1997, and Cambodia became the tenth member on 30 April 1999. Together, these countries form the current ten Member States of ASEAN. See more at: About ASEAN, n.d. <https://asean.org/about-asean/>. [accessed: 13.7.2025].

³⁷ *About Us – Basel & Stockholm Conventions Regional Centre for Southeast Asia in Indonesia*, n.d. <https://rc-sea.org/about-us/>. [accessed: 12.7.2025].

³⁸ Ibidem.

³⁹ Ibidem.

of hazardous waste, the updating of National Implementation Plans, and other related activities. As a member of ASEAN Regional Centre, Vietnam has actively participated in various center's activities such as workshops and trainings to reach the common goals of the Center.^[40] Furthermore, Vietnam benefits from technical assistance and capacity-building programs offered by Regional center and the Basel Convention Secretariat, which help strengthen Vietnam's waste management capabilities and enforcement mechanisms.^[41]

Besides, in order to enforce the requirements stipulated in the Basel Convention, Vietnam has strengthened border control measures and customs inspections. Authorities work closely with international organizations to monitor and prevent illegal waste trade. For example, Vietnam has its National Training in Vietnam helps to implement the Basel Convention for plastic waste in 2021.^[42] Additionally, within the framework of the

⁴⁰ Basel Convention Regional Centre for South-East Asia in Indonesia (BCRC Indonesia). <https://www.basel.int/?tabid=4845>. [accessed: 14.7.2025].

⁴¹ For example, the current actions bring benefits to Vietnam include the implementation of a full-sized project aimed at reducing the use and release of chemicals of concern, including persistent organic pollutants, in the textiles sector. The Centre is also engaged in the development of regional standard requirements for the transboundary movement of plastic waste into the Association of South-east Asian Nations region, along with a pilot study focused on the optimisation of domestic plastic waste utilisation. Additionally, the Centre is implementing a project under the pilot project programme of the Basel Convention Partnership on Plastic Waste. Capacity building efforts are further supported through the organisation of workshops on the response to hazardous chemicals and waste emergencies, as well as on the prevention of illegal transboundary movement of hazardous waste under the Asian Network. Research activities include the study of mercury fate from seawater flue-gas desulphurisation. Moreover, the Centre is conducting training and capacity building in continuous emission monitoring and emission monitoring, as well as in the utilisation of fly ash, including the recovery of rare earth elements. See more at: Basel Convention Regional Centre for South-East Asia in Indonesia (BCRC Indonesia).

⁴² As part of the Asia Pacific Border Management Waste Project, the World Customs Organization held a virtual workshop on plastic waste for Vietnamese authorities from 25 to 27 October. The workshop supported the General Department of Vietnam Customs and the Vietnam Environment Administration, aiming to strengthen their capacity to manage legal plastic waste trade, combat illegal shipments, and raise awareness of the Basel Convention's plastic waste amendments effective from 1 January 2021. Training was provided on customs enforcement, the role of World Customs Organization standards, and advance information exchange. The United Nations Office on Drugs and Crime–World Customs Organization Container Control Programme also shared its efforts in preventing illegal cross-border

Container Control Program, in cooperation with the United Nations Office on Drugs and Crime, the General Department of Customs, in collaboration with United Nations Office on Drugs and Crime has organized a practical training course on combating illegal transportation of hazardous waste in 2023.^[43] Besides those actions, the Vietnam government has also introduced harsh penalties for violators, including heavy fines, business shutdowns, and even criminal prosecution in severe cases.

Specifically, according to Article 27, Decree No. 45/2022/ND-CP on Penalties for Administrative Environmental Protection Offences, the fine for illegal import of hazardous wastes can be reached at VND 500,000,000 (equivalent to USD 20,000).^[44] For special types of wastes such as persistent pollutants, raw materials, fuels, materials, products, goods and equipment containing persistent pollutants, the fine can be double (equivalent to USD 40,000), according to Article 28 Decree No. 45/2022/ND-CP.^{[45][46]} More strictly, such activities can be the subject of criminal law. Under Article 239 Criminal Code 2015, the fine might reach USD 25,000. However, the fine has been changed under the new regulation amended the Article 239 above, in 2025, the current fine may reach USD 560,000 and

waste movement. Participants took part in practical exercises on targeting, inspection, and investigation. A National Implementation Plan for Vietnam, developed after a 2020 Diagnostic Mission, was presented and discussed, with the outcomes to be shared at a regional conference in February 2022. See more at: World Customs Organization. <https://www.wcoomd.org/en/media/newsroom/2021/november/national-training-in-vietnam-helps-to-implement-the-basel-convention-for-plastic-waste.aspx>. [accessed: 14.7.2025].

⁴³ “Hải quan Đà Nẵng tập huấn về chống vận chuyển trái phép chất thải nguy hại” *Tạp chí Tài chính*, 27 October 2023. <https://tapchitaichinh.vn/hai-quan-da-nang-tap-huan-ve-chong-van-chuyen-trai-phep-chat-thai-nguy-hai.html>. [accessed: 27.10.2023].

⁴⁴ Nghị Định 45/2022/NĐ-CP Xử Phạt vi Phạm Hành Chính Lĩnh Vực Bảo vệ Môi Trường Mới Nhất. Thư Viện Pháp Luật. <https://thuvienphapluat.vn/van-ban/Vi-pham-hanh-chinh/Nghi-dinh-45-2022-ND-CP-xu-phat-vi-pham-hanh-chinh-linh-vuc-bao-ve-moi-truong-484772.aspx>. [accessed: 21.5.2025].

⁴⁵ Ibidem.

⁴⁶ Vietnam government always pays attention on regulating strictly the penalties or illegal transboundary movement of hazardous wastes; see more at: In enforcement, there are some cases relating to implementation of those regulations. For example, Ho Chi Minh City People’s Committee has fined a company VND450 million for violations in scrap export in 2020; see more at: “Xuất chất thải nguy hại, một doanh nghiệp bị phạt 450 triệu đồng” *Tạp chí điện tử Hải quan Online*, 11 December 2020. <https://haiquanonline.com.vn/xuat-chat-thai-nguy-hai-mot-doanh-nghiep-bi-phat-450-trieu-dong-138465.html>.

the criminals have to permanently shut down their business. In brief, Vietnam's regulations on environmental protection with a robust legal framework to prohibit hazardous waste trade, control waste imports, and enforce strict environmental protections help the country safeguard its natural resources, protect public health, and ensure compliance with global waste management standards.

In addition to Legal Integration and Policy Alignment mentioned above, Vietnam has its own Institutional Implementation Mechanisms. In Vietnam, the MONRE (the current name is MAE as explained above) holds the primary responsibility for overseeing hazardous waste management nationwide. MAE is tasked with formulating policies, drafting legislation, and establishing technical regulations and standards related to hazardous chemicals and wastes. The Ministry leads the implementation of key environmental laws, including the Law on Environmental Protection, 2020, which mandates the classification, treatment, and tracking of hazardous wastes.^[47] MAE also issues licenses for hazardous waste treatment facilities and transporters, maintains the national hazardous waste inventory, and ensures Vietnam's compliance with international agreements such as the Basel, Rotterdam, and Stockholm Conventions. It works through agencies to guide industries in the environmentally sound management of hazardous substances and conduct monitoring and reporting activities. Also, the coordination between national and local authorities is crucial for the effective enforcement of hazardous waste regulations in Vietnam. While MAE develops and oversees national-level policies and guidance, provincial Departments of Natural Resources and Environment (now Departments of agriculture and environment-DsAE- is due to change of Vietnam government structure) are responsible for implementing these regulations locally. Provincial DsAE are empowered to inspect waste-generating facilities, issue environmental permits, enforce penalties for violations, and provide technical support to industries and communities.^[48] Collaboration also extends to other state agencies, such as customs departments, environmental police, and the Ministry of Public Security, especially in controlling illegal

⁴⁷ Luật Bảo vệ Môi Trường 2020 Số 72/2020/QH14 Mới Nhất Áp Dụng Năm 2025 Mới Nhất.

⁴⁸ Thông Tư 19/2025/TT-BNNMT Chức Năng Cơ Quan Chuyên Môn Nông Nghiệp Môi Trường Thuộc Ủy Ban Tỉnh Mới Nhất. Thư Viện Pháp Luật. <https://thuvienphapluat.vn/van-ban/Bo-may-hanh-chinh/Thong-tu-19-2025-TT-BNNMT-chuc-nang-co-quan-chuyen-mon-Nong-nghiep-Moi-truong-thuoc-Uy-ban-tinh-662421.aspx>. [accessed: 1.7.2025].

waste imports and unauthorized dumping. The national hazardous waste tracking system, developed under MAE supervision, supports coordination efforts by enabling real-time reporting and traceability of hazardous waste movements.^[49] These multi-tiered coordination mechanisms help ensure that national regulations are effectively enforced at the grassroots level.

3 | Challenges and Opportunities for Strengthening the Enforcement of the Basel Convention in Vietnam

Similar to neighbour countries in the ASEAN area, Vietnam has to face common obstacles to effectively implement the Basel Convention. Those include the lack of transparency, enforcement limitations, monitoring gaps, financial and technical constraints as follows:

According to Vietnam's national reports submitted to the Basel Convention Secretariat, the country has generally fulfilled its obligations regarding national reporting on hazardous waste. Reports covering the years from 2002 to 2023 indicate that Vietnam has consistently participated in the reporting process. However, the information presented reveals a lack of transparency in the documentation of transboundary movements of hazardous waste. Specifically, the reports for the years 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2014, 2015, 2016, 2017, 2018, and 2020 do not record any imports or exports of hazardous waste.^[50] Additionally, Vietnam did not submit national reports for the years 2008, 2010, 2011, 2012, 2013, 2021, 2022, and 2023.^[51] In 2019, although a report was submitted, it did not include any declaration regarding transboundary movements of hazardous waste.^[52] Generally, the data in Vietnam's reports lack transparency, especially when compared to figures published in the media, which report thousands of tons of waste entering the country each year.^[53] Notably, following China's

⁴⁹ Công, Bộ Nông nghiệp và Môi trường. <https://mae.gov.vn/?>.

⁵⁰ FeedbackServer Administration.

⁵¹ Ibidem.

⁵² Ibidem.

⁵³ “Việt Nam là điểm đến hàng đầu của rác thải” *BBC News Tiếng Việt*, 2 May 2024.

import ban on waste in 2018, Vietnam was reported to have returned several waste shipments to their countries of origin, underscoring the gap between official records and actual waste movements.^[54] Therefore, in its national reports, Vietnam should provide more detailed and comprehensive information to enable an objective assessment and to facilitate potential support from Basel Convention bodies in preventing the illegal transboundary movement of hazardous waste. Although Vietnam has officially banned the import of hazardous waste, documented cases of illegal imports and exports indicate that such incidents must be fully reported. Accurate and transparent reporting is essential to properly evaluate the effectiveness of the Basel Convention's implementation in the country.

Furthermore, there are some enforcement limitations for ASEAN countries, including Vietnam. In the latest plan of the Basel Convention Regional Centre for South East Asia and the Stockholm Convention Regional Centre Indonesia (hereinafter referred to as BSCRC-SEA) for the period from 1 January 2024 to 31 December 2027 submitted by Dr. Anton Purnomo, Director of the Centre, on 29 September 2023, the plan reflects the Centre's continued commitment to supporting the implementation of the Basel and Stockholm Conventions in the Southeast Asian region.^[55] It details the Centre's objectives, key focus areas, and operational strategies to address regional challenges related to the environmentally sound management of hazardous chemicals and wastes. Through this plan, BSCRC-SEA aims to strengthen regional cooperation, build national capacities, and promote compliance with the conventions among its member countries. However, the implementation of the planned activities is expected to face several constraints, as there may be difficulty in obtaining information or collecting data from government institutions and industries, and there may also be challenges in communication or arranging meetings with government bodies.^[56] In addition, the internal affairs and sudden commitments of the beneficiary parties may interfere with the project timeline. Moreover, there is often a lack of available data within the beneficiary parties to support the planned activities, and national inventories of hazardous chemicals and wastes – such as persistent organic pollutants, plastic waste, electronic

⁵⁴ Dean Doun, "Vietnam Rejected over 500 Containers of Waste in First-Half of 2019" *Vietnam Insider*, 5 September 2019.

⁵⁵ Basel Convention Regional Centre for South-East Asia in Indonesia (BCRC Indonesia).

⁵⁶ *Ibidem*.

waste, mercury, and mercury-containing wastes – are scarce. Furthermore, industries and associations may be reluctant to share or publish data, and gaps in national regulations and policies, as well as the absence of national standards regulating chemicals and hazardous wastes under the conventions, may hinder progress. Finally, the lack of response from countries or stakeholders in returning questionnaires further complicates the effective implementation of the project.

Based on the business plan of BSCRC-SEA with the regulations in the Law on environmental protection 2020 of Vietnam, this country may participate in a wide range of regional and international initiatives aimed at enhancing the management of chemicals and hazardous waste in accordance with the Basel Convention. These initiatives include the full-sized project titled “reducing uses and releases of chemicals of concern, including persistent organic pollutants, in the textiles sector,” as well as the development of regional standard requirements for the transboundary movement of plastic waste into the Association of Southeast Asian Nations region, along with a pilot study on the optimisation of domestic plastic waste utilisation.^[57] In addition, Vietnam was involved in a project under the pilot programme of the Basel Convention Partnership on Plastic Waste, and took part in a workshop focused on emergency responses to incidents involving hazardous chemicals and wastes.^[58] The country also contributed to a workshop organised by the Asian Network for the Prevention of Illegal Transboundary Movement of Hazardous Waste, and participated in scientific research on the fate of mercury derived from seawater flue-gas desulphurisation systems.^[59] Furthermore, Vietnam engaged in training and capacity building related to continuous emission monitoring systems, as well as in the utilisation of fly ash, including the recovery of rare earth elements. By the way, Vietnam should update information on its Designated Focal Point to the Basel Convention from Ministry of Natural Resources and Environment (MONRE) to Ministry of Agriculture and Environment (MAE), due to the change of authority’s names in Vietnam from 1 July 2025.^[60]

⁵⁷ Ibidem.

⁵⁸ Ibidem.

⁵⁹ Ibidem.

⁶⁰ NGHỊ QUYẾT SỐ 76/2025/UBTVQH15 SẮP XẾP ĐƠN VỊ HÀNH CHÍNH NĂM 2025. <https://xaydungchinhsach.chinhphu.vn/nghi-quyet-so-76-2025-ubtvqh15-sap-xep-don-vi-hanh-chinh-nam-2025-119250415130519882.html>. [accessed: 14.7.2025].

Vietnam also faces persistent challenges in detecting and preventing illegal transboundary movements of hazardous and non-hazardous waste, despite its commitments under the Basel Convention. Weak customs inspection procedures, insufficient border monitoring equipment, and the lack of an integrated, real-time waste tracking system hinder the country's ability to control cross-border waste flows. Cases of mislabeled or concealed shipments of plastic waste, e-waste, and other hazardous materials have been reported, especially following the 2018 regional waste import surge after China's National Sword policy.^[61] According to the provisions of Decree No. 45/2022 of Vietnam Government, illegal shipments of waste must either be returned to the country of origin or destroyed. However, a key challenge lies in Vietnam's limited capacity to accurately determine the origin of such shipments.^[62] As a result, in cases where the waste cannot be sent back, the shipments must be disposed of domestically. This outcome inadvertently fulfills the original objective of the illegal importers, as the waste is ultimately discarded within a country other than its source, effectively shifting the burden of disposal to Vietnam. To minimize risks related to detecting and preventing illegal transboundary shipments, Vietnam Customs needs to enhance its capacity to avoid receiving and storing shipments of hazardous waste at ports in Vietnam.

Moreover, one of the challenges Vietnam has to face is in adopting advanced technologies and developing a skilled workforce for hazardous waste treatment. Many existing technologies, such as incinerators and recycling equipment, are imported from countries like Japan, Germany, and Spain.^[63] However, these technologies often do not align well with the specific characteristics of Vietnam's waste streams, leading to inefficiencies and increased costs.^[64] For instance, in Ho Chi Minh City, a high-tech

⁶¹ Greenpeace Malaysia, *Southeast Asia's Struggle Against the Plastic Waste Trade*. <https://www.greenpeace.org/malaysia/publication/1905/southeast-asias-struggle-against-the-plastic-waste-trade/>. [accessed: 27.7.2024].

⁶² "Loay hoay trả lại 600 container phế liệu độc hại vì chủ hàng đã bỏ chạy" *Tuoi Tre Online*, 28 September 2020. <https://tuoitre.vn/loay-hoay-tra-lai-600-container-phe-lieu-doc-hai-vi-chu-hang-da-bo-chay-20200927233045145.html>. [accessed: 28.9.2020].

⁶³ "City Uses High-Tech to Treat Hazardous Waste" *Vientnam News*, 2 May 2018. <https://vietnamnews.vn/environment/427098/city-uses-high-tech-to-treat-hazardous-waste.html>. [accessed: 14.7.2025].

⁶⁴ "Outdated Waste Treatment Technology in Vietnam" *Báo Sài Gòn Đầu Tư Tài Chính*, 29 August 2022. <https://dttc.sggp.org.vn/outdated-waste-treatment-technology-in-vietnam-post97464.html>. [accessed: 14.7.2025].

incineration plant treats hazardous medical and industrial waste, but the city anticipates the need for additional capacity and private investment as public funding diminishes.^[65] Financial constraints are also a major barrier to the development and implementation of effective hazardous waste management programs in Vietnam. The government has allocated substantial funds for waste treatment infrastructure; for example, Hanoi's first waste-to-energy plant, utilizing Japanese technology, was built with an investment exceeding VND 645 billion, of which over VND 472 billion was non-refundable aid from Japan's New Energy and Industrial Technology Development Organization.^[66] However, such investments are not widespread, and many regions still lack adequate facilities. Additionally, the reliance on public funding is unsustainable. In Ho Chi Minh City, the municipal budget initially covered 70% of the costs for hazardous waste collection, transport, and treatment, but this subsidy is expected to decrease to zero by 2020.^[67] This shift underscores the urgent need for private sector involvement and innovative financing models to ensure the continuity and expansion of hazardous waste management services.

To deal with these problems and address the shortage of skilled personnel and technical constraints in hazardous waste management, Vietnam should implement a comprehensive strategy that combines education, policy reform, international cooperation, and private sector engagement. This includes developing specialized training programs through universities and vocational centers, offering scholarships and incentives to attract talent, and integrating practical skill development in partnership with industry. The government should also leverage international cooperation – such as technical assistance and knowledge exchange with countries like Japan or Germany – to strengthen capacity. Investing in scalable, locally-adapted technologies and supporting domestic innovation will help align treatment systems with Vietnam's waste characteristics. National policies should mandate ongoing training and certification for waste management personnel, supported by the creation of a national center for research and workforce development. Encouraging public-private partnerships and offering incentives for investment in both infrastructure and human

⁶⁵ “City Uses High-Tech to Treat Hazardous Waste.”

⁶⁶ *Policy Support Necessary to Facilitate Energy-from-Waste Development*. <https://xaydung.gov.vn/en/news/47506/policy-support-necessary-to-facilitate-energy-from-waste-development.aspx>. [accessed: 14.7.2025].

⁶⁷ *Ibidem*.

resources can enhance sector resilience. Finally, raising public and industrial awareness about the importance of skilled waste handling, particularly in high-risk areas like ports and industrial zones, is essential for sustainable and safe hazardous waste management.

4 | Conclusion

Vietnam has demonstrated strong commitment to fulfilling its obligations under the Basel Convention through both legislative measures and practical enforcement. One of the most notable legislative actions is the explicit prohibition of the importation of hazardous waste, as well as the importation of waste in general. In cases where hazardous waste is exported from Vietnam, the exporting entities are required to strictly comply with the Prior Informed Consent procedure, as stipulated by the Basel Convention. Furthermore, Vietnamese law provides for robust sanctions and penalties for violations related to the illegal importation of waste, which stands out as a significant strength in the legislative framework. In terms of practical implementation, Vietnam has made considerable efforts to enforce the Basel Convention effectively. The country has consistently fulfilled its obligation to submit national reports and has actively participated in the activities organized by the Regional Centre for the Basel Convention. These actions collectively reflect Vietnam's ongoing efforts to prevent itself from becoming a dumping ground for hazardous waste.

Nevertheless, as a developing country, Vietnam faces a dual challenge: promoting economic development while ensuring environmental protection and sustainable growth. Compared to developed countries, Vietnam encounters more complex and resource-intensive obstacles in achieving the targets set out in the Sustainable Development Goals. Among these challenges, addressing the illegal transboundary movement of hazardous waste remains particularly critical. In order to effectively tackle this issue, Vietnam must further enhance its institutional capacity, strengthen international cooperation, and improve enforcement mechanisms. These efforts are essential not only for fulfilling its international commitments under the Basel Convention, but also for supporting long-term sustainable development.

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The Blue Economy in International Law: Opportunities and Challenges for Vietnam

Abstract

The concept of a blue economy, focused on the sustainable and regenerative use of ocean resources, has emerged as a strategic pathway for balancing economic growth, environmental protection, and social development, particularly for coastal communities. This transformation is essential to address the escalating economic and ecological challenges in these areas. As a maritime nation with significant natural advantages and a strategic geopolitical location, Vietnam's pursuit of the blue economy requires effective engagement with a multilayered legal framework, comprising international law and its domestic legal system. This paper examines how existing international legal regimes, particularly under the 1982 United Nations Convention on the Law of the Sea, respond to the evolving demands of the blue economy and climate-responsive development. The paper also analyzes the international legal framework to identify key legal principles underpinning the blue economy, including the principle of sustainable development, intergenerational equity, equitable benefit-sharing, the no-harm principle, and the principle of international cooperation. These principles serve as foundational norms for guiding national legislation and international engagement in marine resource governance. By focusing on Vietnam's legal system and policies, the study argues that realizing a sustainable blue economy demands not only legal reform but also improved inter-agency coordination, institutional consolidation, and international cooperation. The paper advocates for harmonizing national and international legal standards, and enhancing legal capacity for implementation.

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This approach supports Vietnam's efforts to fulfill Sustainable Development Goal 14, reinforcing the need for inclusive and adaptive legal governance of the ocean in the era of the twin transition.

KEYWORDS: UNCLOS, Vietnam, blue economy

1 | Introduction

Vietnam, as a coastal nation with a shoreline over 3,260 kilometres and an extensive maritime region in the East Sea surpassing 1 million square kilometres, possesses significant potential for advancing a blue economy, supported by its rich and diverse marine ecology. In evaluating worldwide trends in mobility and progress, Resolution No. 09/NQ-TW/2007 of the Communist Party of Vietnam affirmed that “the 21st century is the century of the seas and oceans.” To actualise the blue economy model, Vietnam has developed a robust and suitable legal framework for implementation, alongside the international legal framework, including United Nations Convention on the Law of the Sea (UNCLOS) and new treaties concerning biodiversity and marine environmental protection, particularly the Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement).

After more than a decade, the 8th Plenary Session of the 12th Central Committee issued Resolution No. 36-NQ/TW, dated 22 October 2018, which outlines both general and specific objectives aimed at establishing Vietnam as a robust maritime nation with sustainable and prosperous development, while ensuring the security and safety of its marine economy. It stipulates that, by 2030, exclusively marine economic sectors will contribute roughly 10% to the national GDP; the economies of the 28 coastal provinces and centrally governed cities are anticipated to represent 65–70% of national GDP; marine economic sectors will evolve sustainably in alignment with international standards; and the extraction of marine resources will be more rigorously regulated in conjunction with safeguarding the resilience of marine ecosystems.

Vietnam encounters substantial opportunities and challenges in cultivating a sustainable blue economy within the framework of UNCLOS and

domestic regulations, necessitating extensive legal reforms, improved integration of climate resilience, and strategic policy enhancements to actualise its maritime economic potential while addressing the requirements for climate change adaptation.

2 | The Concept and Principles of the Blue Economy

Countries employ various approaches regarding the blue economy, especially in defining its goals. Indonesia emphasises its blue economy by advancing marine fisheries, marine transportation, tourism, and energy and material production industries aligned with blue economy principles; enhancing and coordinating national policies for marine and terrestrial economies; creating blue economy demonstration zones; reinforcing connections between trade and infrastructure; and fostering technological and human resource development. In East Asia, China initially established short-term objectives for its marine economy strategy leading up to 2020, via the Shandong Peninsula Blue Economic Zone, which aims to evolve into a blue economic zone distinguished by an advanced marine economy, an optimised industrial structure, harmonious coexistence between humanity and nature, and serving as a pioneer in the fundamental attainment of modernization.^[1] This demonstrates that there is no single, universally accepted definition of the blue economy. The authors do not use the conceptual framework of any one country; instead, the paper relies on the views of international organisations, because the oceans are a subject that is covered by a wide range of international legal instruments.

¹ Lu Wenhai et al., “Successful Blue Economy Examples With an Emphasis on International Perspectives” *Frontiers in Marine Science* 6 (2019): policy makers and research institutions worldwide concerned with ocean and coastal regions are demanding further and improved analysis of the Blue Economy. Particularly, in terms of the management connotation, data access, monitoring, and product development, countries are making decisions according to their own needs. As a consequence of this lack of consensus, further dialogue including this cases analysis of the blue economy is even more necessary. This paper consists of four chapters: (I 3-4.

2.1. The Concept

International organisations have also acknowledged differences in perspectives on the concept of the “blue economy.” At the Rio+20 Conference in 2012 in Brazil, the concept of the blue economy was introduced, even under the umbrella of a broader term, “green economy,” which indicates a sustainable economic model in the Earth’s ecosystem, not only focusing on the marine environment. Regarding this context, the blue economy is an economic development model focused on contributing to poverty eradication, economic growth, food security, sustainable livelihoods, and decent work, while protecting biodiversity, the marine environment, and addressing climate change.^[2] The Rio+20 Sustainable Development Conference program highlighted that oceans, seas, and coastal regions are vital and fundamental elements of the Earth’s ecosystem, significantly contributing to the sustenance of life. The concept of blue economy gained significant momentum at Rio+20, where nations committed to sustainable blue growth.

Relying on the aftermath of the Rio Conference, the Food and Agriculture Organisation (FAO) has also proposed its perspective on the blue economy. The FAO asserts that the blue economy encompasses productive, responsible, and sustainable fisheries and aquaculture sectors, characterised by good governance and management of aquatic ecosystems to conserve biodiversity and habitats while empowering communities.^[3]

The World Bank has also actively defined this term. The concept is broader than the definition of ocean economy, which indicates an economic system where activities require products from the ocean, and then provide inputs back to the ocean.^[4] It is defined by a concept coined by the Economist Intelligence Unit, which describes an ocean economy that is sustainable and planned, with long-term capacity for the sea ecosystem.^[5]

² United Nations, *The Future We Want: Outcome Document of the United Nations Conference on Sustainable Development, Rio de Janeiro, Brazil, 20–22 (June 2012)*, 41. <https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf>.

³ Devin Bartley et al., *The FAO Blue Growth Initiative: Strategy for the Development of Fisheries and Aquaculture in Eastern Africa*, FAO Fisheries and Aquaculture Circular, No. 1161 (Food and Agriculture Organization of the United Nations, 2018), 1.

⁴ Kwang Seo Park, Judith T. Kildow, “Rebuilding the Classification System of the Ocean Economy” *Journal of Ocean and Coastal Economics*, No. 1 (2014).

⁵ Pawan G. Patil, John Virdin, Sylvia Diez, Julian Roberts, Asha Singh, *Toward A Blue Economy: A Promise for Sustainable Growth in the Caribbean. An Overview* (Washington: The World Bank, 2016), 5.

Another report by The World Bank defines the term broadly, in which the blue economy should be understood as an economy encompassing the economic sectors and policies that collectively shape the sustainability of ocean resource use.^[6] Accordingly, the economic activities categorised as components of blue economy are harvesting and trade of marine living resources, Extraction and use of non-renewable marine nonliving resources, Use of renewable non-exhaustible natural forces, Commerce and trade in and around the oceans and Indirect contribution to economic activities and environments.^[7]

For the purpose of this paper, the approach that focuses only on some sectors is not sufficient to examine the emergence of the blue economy in the Vietnamese legal system. Table 1 systemises major sectors in the blue economy.

Table 1: Sectors in the blue economy and key legal instruments

Category	Sector	Key legal instruments
Traditional Sectors	Fisheries & Aquaculture	- 1946 International Convention on the Regulation of Whaling - 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) - 1976 Convention on Migratory Species UNCLOS - FAO Agreements: Agreement on Port State Measures (PSMA) and International Plan of Action to Prevent, Deter and Eliminate IUU Fishing (IPOA-IUU) - 1992 Convention on Biological Diversity (CBD) - UN Fish Stocks Agreement (UNFSA)
	Maritime Transport & Shipping	- International Convention on Loadlines, 1966 (LOADLINE) - International Maritime Organization (IMO) conventions: International Convention for the Safety of Life at Sea, 1974 (SOLAS) - International Convention for the Prevention of Pollution from Ships, 1973/1978 (MARPOL) - Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREG) - UNCLOS - The International Ship and Port Facility Security Code, 2002 (ISPS) - The International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW Convention)
	Tourism	- UNCLOS

⁶ World Bank and United Nations Department of Economic and Social Affairs, *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries* (Washington, DC: World Bank, 2017), vi.

⁷ Ibidem, vii-viii.

Category	Sector	Key legal instruments
Emerging Sectors	Renewable Energy	- UNCLOS - UNFCCC 1992 - Paris Agreement 2016
	Marine Biotechnology	- UNCLOS (marine scientific research provisions) - BBNJ Agreement - Convention on Biological Diversity (CBD)
	Carbon Sequestration	- London Protocol (1996) with amendments on the London Convention 1972) - UNCLOS - Kyoto Protocol 1997 - UNFCCC 1992
Resource Extraction	Oil & Gas	- UNCLOS
	Minerals	- UNCLOS

The blue economy encompasses a range of sectors, from traditional to emerging ones. Consequently, the authors define the blue economy as the sustainable exploitation of marine and ocean ecosystems to provide economic value for everyone. Therefore, the committee will examine Vietnam’s legal framework for all aspects affecting the marine environment and environmental standards to guarantee the sustainable utilisation of these resources.

2.2. The Legal Principles of the Blue Economy

Table 1 demonstrates that the blue economy is not merely about the efficient exploitation of marine resources; it operates within a complex, multi-layered legal framework spanning international and regional levels. Among them, three major legally binding instruments have shaped foundational principles: UNCLOS, BBNJ Agreement, and UNFCC. This economy is tied to five foundational principles: (i) Sustainable Development; (ii) Intergenerational Equity; (iii) Equitable Benefit-Sharing; (iv) the Principle of No Harm; and (v) Compliance with International Law and International Cooperation.

2.2.1. Sustainable Development

In its 2025 advisory opinion about state obligations concerning climate change, the International Court of Justice (ICJ) delineated the evolution of the idea of sustainable development since the late twentieth century. This principle was initially acknowledged as a guiding norm in the United

Nations Framework Convention on Climate Change (UNFCCC) and has since been reiterated in various instruments, including UNFCCC, Article 3, paragraph 4; the Kyoto Protocol, Article 2, paragraph 1; and the Paris Agreement, Article 2, paragraph 1. The latest instrument referencing this idea is General Assembly resolution 70/1, adopted on 25 September 2015, which endorses the Sustainable Development Goals. The ICJ recognises this principle as a legal source regulating governmental commitments regarding climate change. While the advisory opinion is not legally binding on states, the Court has recognised concerns regarding the environmental consequences of economic exploitation since the 1997 *Gabčíkovo-Nagymaros Project* (Hungary/Slovakia) judgement, making it likely that this principle will be utilised to ascertain states' obligations in contemporary cases.^[8]

This concept was first articulated in the landmark 1987 United Nations report, "Our Common Future," also known as the Brundtland Report, issued by the World Commission on Environment and Development, which laid the foundation for the notion of sustainable development. In its broadest sense, sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This principle is also embedded in Articles 192 and 193 of the UNCLOS. Article 192 stipulates that States have the obligation to protect and preserve the marine environment. In conjunction with Article 193, which recognizes the sovereign right of States to exploit their natural resources, UNCLOS confers not only rights but also corresponding obligations on States in resource exploitation.

The principle of sustainable development reflects the quintessential principle of "rights accompanied by obligations." If the exploitation of marine resources results in the degradation of marine ecosystems, such conduct, regardless of whether it occurs within waters under national sovereignty (internal waters, archipelagic waters, or the territorial sea), constitutes a breach of international obligations in the field of marine environmental protection and preservation. Accordingly, States cannot invoke sovereignty or sovereign rights as a means to evade their responsibilities to protect and preserve the environment. This represents a core element of sustainable development: refraining from sacrificing the environment and marine ecosystems for short-term economic gain, thereby making

⁸ International Court of Justice, *Obligations of states in respect of climate change*. Advisory Opinion. (July 23, 2025), para. 147. <https://www.icj-cij.org/sites/default/files/case-related/187/187-20250723-adv-01-00-en.pdf>.

a tangible contribution to preventing the adverse impacts of contemporary climate change.

At the request of the Commission of Small Island States (COSIS), on 21 May 2024, the International Tribunal for the Law of the Sea (ITLOS) issued Advisory Opinion No. 31 to clarify two questions: “What are the specific obligations of State Parties to the UNCLOS.

1. to prevent, reduce, and control pollution of the marine environment about the deleterious effects that result or are likely to result from climate change, including through ocean warming and sea level rise, and ocean acidification, which are caused by anthropogenic greenhouse gas (GHG) emissions into the atmosphere.
2. to protect and preserve the marine environment about climate change impacts.”^[9]

Regarding the initial question, ITLOS concluded that GHG emissions into the atmosphere qualify as “pollution” under Article 1(4) of UNCLOS, as they directly or indirectly inflict damage on the marine ecosystem through temperature alteration, acidification, and sea level increase. Meanwhile, ITLOS underscored that States must implement all requisite steps to prevent, reduce, and control pollution from GHG. Moreover, ITLOS confirmed that this constitutes a binding international legal requirement of due diligence, which is interpreted under the International Law Commission regarding international environmental law, requiring states to act reasonably about the rights and interests of others in the international community, mainly to prevent transboundary environmental harm.^[10] This duty is governed by a rigorous norm due to the potential for substantial and permanent damage, as evaluated by the Intergovernmental Panel on Climate Change (IPCC). In particular, using the scientifically evaluated risks of serious and irreversible harm by the IPCC, ITLOS illustrates that greenhouse gas emissions into the atmosphere qualify as pollution under Article 1(4) of

⁹ International Tribunal for the Law of the Sea, Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law: Advisory Opinion. Case No. 31. Hamburg: ITLOS. (May 21, 2024), 5.

¹⁰ Penelope Ridings, „Annex II: Due Diligence in International Law,” [in:] *Report of the International Law Commission: Seventy-fifth session (29 April–31 May and 1 July–2 August 2024)* (United Nations, 2024), para. 2. <https://legal.un.org/ilc/reports/2024/english/annex2.pdf>.

UNCLOS, as they directly or indirectly adversely affect the marine environment through temperature alteration, acidification, and sea level rise.

The obligation under Article 194(2) of UNCLOS mandates the prevention of transboundary pollution from greenhouse gases, imposing a more stringent standard due to its cross-border implications, encompassing land-based sources (Article 207), vessel-based sources (Article 211), and atmospheric sources (Article 212). Furthermore, ITLOS mandated that States enact legislation and implement it via international organisations; States are also obligated to collaborate, by Articles 197, 200, and 201 of UNCLOS, encompassing cooperation in scientific research, standard-setting, and data exchange. Furthermore, ITLOS mandated the provision of technical and financial assistance to developing nations, especially vulnerable States, by Articles 202 and 203 of UNCLOS. It also necessitated monitoring, assessment, reporting, and environmental impact assessments of activities that may lead to GHG pollution, as stipulated in Articles 204, 205, and 206 of UNCLOS. Article 194 requires states to pursue all necessary measures to mitigate and regulate pollution, with the ultimate goal of entirely preventing its occurrence; however, they are not mandated to achieve an immediate cessation of marine pollution resulting from anthropogenic greenhouse gas emissions. ICJ's 2025 advisory opinion determines that the definition of a "necessary measure" as per Article 194, paragraph 1, of UNCLOS must be evaluated based on objective criteria, considering the best available scientific evidence, international regulations and standards regarding climate change, as well as the resources and capabilities of the relevant States, including their distinct national contexts.^[11]

Regarding the second question, ITLOS confirmed that Article 192 of UNCLOS, relevant to all concerns including climate change and acidification, mandates both protection (preventing damage) and preservation (restoring degraded ecosystems). This commitment entails a rigorous standard of due diligence, necessitating proactive measures in response to foreseeable threats. Article 194(5) of UNCLOS addresses the safeguarding of rare or delicate ecosystems, particularly ice-covered regions as specified in Article 234 of UNCLOS, and the habitats of endangered species, as indicated by the CITES, by adaptable yet rational and scientifically-informed approaches. Articles 61 and 119 of UNCLOS mandate that management measures for the conservation of living resources in the exclusive economic zone (EEZ) and the high seas be grounded in the best scientific evidence, utilising

¹¹ Supare note 6, para. 347.

precautionary and ecosystem approaches, while considering the effects of climate change, including migratory fish stocks. Articles 63, 64 and 118 of UNCLOS mandate good faith consultations for international cooperation in the preservation of migratory species and shared resources, necessitating coordination of measures to adapt to distributional changes induced by climate change. Article 196 of UNCLOS prevents the introduction of non-native species due to climate change, such as alterations in ocean currents caused by rising sea temperatures, employing the criteria of "significant harm" and the precautionary principle. Concerning area-based management instruments, ITLOS advocated for the implementation of marine protected areas (MPAs) and marine spatial planning, drawing upon regional practices (such as the Convention for the Protection of the Marine Environment of the North-East Atlantic) and the BBNJ Agreement, as strategies for adaptation and mitigation.

The concept of sustainable development within the blue economy framework is established by the regulations of UNCLOS, endorsed in various international conventions, and acknowledged by international adjudicatory organisations. The principle mandates the obligations of prevention, precaution, and remediation of anticipated dangers with the commercial exploitation of the sea to ensure sustainability. This commitment is established on robust scientific evidence and is demonstrated via the substantive and good-faith actions of States, rather than anticipating quick results. Specific obligations are assigned to states concerning their capacity and influence on economic benefits and vulnerabilities related to the marine ecosystem, including ocean warming, sea level rise, and ocean acidification, within the limits of sovereign rights, rather than territorial boundaries.

2.2.2. Intergenerational Equity

The principle of intergenerational equity is fundamental to sustainable development, as articulated in the 1992 Rio Declaration on Environment and Development, Principle 3: "The right to development must be fulfilled to equitably meet the developmental and environmental needs of present and future generations."^[12] International law contains several references to future generations. Obligations to future generations are present in the Convention on Biological Diversity, the World Heritage Convention, and

¹² United Nations, *Rio Declaration on Environment and Development*, A/CONF.151/26 (Vol. I) (1992).

the United Nations Economic Commission for Europe Water Convention, among others.^[13] The use and adherence to this idea aim to guarantee that resource extraction does not exhaust resources for future generations. This principle ensures that current generations use natural resources and the environment sustainably, without compromising the capacity of future generations to meet their own demands for marine resources and the oceans. Morgera and Lennan approach the principle under the lens of children's rights and illustrate the intergenerational impact of adverse climate change on the ocean towards human rights.^[14] The warming and acidity of the oceans caused by climate change are causing many marine animals to move towards the poles or into deeper waters. The IPCC has said that changes in the distribution of fish in the future will hurt the income, livelihoods, and food security of communities that depend on these resources.^[15] The UN Special Rapporteur on Climate Change and Human Rights has also talked about how coastal states that depend on migratory stocks like tuna will lose money.^[16] The fact that catches are decreasing in the tropics, where people depend on seafood the most, and increasing in higher latitudes, exacerbates global inequalities. Adaptation efforts must involve vulnerable people, such as children, because acidification harms plankton and coral reefs, which are important parts of marine food chains. This puts the ocean's long-term role in nutrition and children's right to health in danger. It underscores the obligation of the present generation to safeguard the environment, natural resources, and ecosystems for the benefit of future generations.

The idea of intergenerational equity mandates that States, in resource exploitation, must prioritise sustainability and accountability. The exploitation of resources, particularly marine resources, must consider the rights

¹³ Lydia Slobodian, "Defending the Future: Intergenerational Equity in Climate Litigation" *Georgetown Environmental Law Review*, No. 3 (2019): 569-590, 572

¹⁴ Elisa Morgera, Mitchell Lennan, "Strengthening Intergenerational Equity at the Ocean-Climate Nexus: Reflections on the UNCRC General Comment No. 26," *Environmental Policy and Law*, 24 November (2022).

¹⁵ *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, eds. Hans-Otto Pörtner, Debra C. Roberts, Valérie Masson-Delmotte, Panmao Zhai, et al. (Cambridge: Cambridge University Press, 2019), chap. 5, 12

¹⁶ United Nations General Assembly, Promotion and Protection of Human Rights in the Context of Climate Change Mitigation, Loss and Damage and Participation: Report of the Special Rapporteur on the Promotion and Protection of Human Rights in the Context of Climate Change. A/77/226, 26 July 2022, para 57.

and livelihoods of future generations, ensure the sustainable management of resources, and adhere to the principles of fostering international cooperation, safeguarding the marine environment, and preserving peace and stability in the utilisation of marine resources. Intergenerational equality is a crucial element of international environmental law, especially in the contemporary context of maritime environmental protection. While UNCLOS does not directly state the principle of intergenerational justice, one of the most prominent environmental law scholars, Edith Brown Weiss, identifies three core principles of intergenerational justice. They are the conservation of options, which requires each generation to preserve the diversity of natural and cultural resources so that future generations have choices to meet their needs and values, thereby avoiding irreversible harm such as species extinction or permanent environmental degradation; the conservation of quality, which obliges each generation to maintain the planet's ecological integrity and environmental quality so that it is passed on in no worse condition than it was received, encompassing measures such as pollution control, climate change mitigation, and the preservation of clean air, water, and soil; and the conservation of access, which demands that equitable opportunities to use and benefit from Earth's resources be ensured both within the present generation and between present and future generations, linking environmental protection with fairness and justice by guaranteeing access to resources, technology, and knowledge, particularly for disadvantaged groups and developing countries.^[17]

From this point of view, UNCLOS can be seen to have provided the legal basis for this principle through its stipulations about the sustainable use of maritime resources and the safeguarding of the marine environment. In which the authors argue that Articles 61, 119, 192, 193 and 194 are the most relevant articles.

Article 61 mandates the preservation of marine living resources inside the exclusive economic zone (EEZ). According to this provision, UNCLOS mandates coastal States to establish the permissible catch for living resources within their Exclusive Economic Zones (EEZs) (paragraph 1); to implement suitable conservation and management measures to avert over-exploitation of these resources; and for coastal States and relevant international, subregional, regional, or global organisations to collaborate in this

¹⁷ Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Dobbs Ferry: Transnational Publishers, 1989), 26.

matter (paragraph 2). These commitments aim to preserve marine living resources, avert overfishing, and sustain fish stocks for future generations. Article 119 of UNCLOS mandates States to prioritise the restoration and maintenance of fish populations in the high seas, considering ecological and economic factors, fishing methods, and stock interdependence, while ensuring that conservation measures do not significantly jeopardise associated species (paragraph 1). These provisions create a framework for collaboration in the conservation and management of high seas living resources, ensuring that species are not threatened by over-exploitation.

Articles 192 and 193 of UNCLOS delineate the overarching duty to safeguard and maintain the maritime environment, which inherently includes pollution prevention and the conservation of marine ecosystems. Article 194 mandates actions to avoid, mitigate, and regulate marine pollution, obligating States to implement all essential measures to tackle pollution from various causes, including terrestrial pollution, vessels, and resource extraction.

The authors assert that the aforementioned provisions of UNCLOS encapsulate the principle of intergenerational equity by obligating States to reconcile current marine resource exploitation with their preservation for future generations, thereby safeguarding the marine environment from contemporary activities. The principle of intergenerational equity under UNCLOS provides the legal basis for attaining the targets of SDG 14, including the reduction of marine pollution (SDG 14.1), the protection of marine ecosystems (SDG 14.2), and the assurance of sustainable fisheries (SDG 14.4), thereby enabling current and future generations to utilise and manage marine resources sustainably.

2.2.3. Equitable Benefit-Sharing

The notion states that countries, especially those that can't directly use global resources, should fairly share in both the economic and non-economic benefits that come from using such resources. Part XI of UNCLOS, Articles 136, 137, and 140, says that everyone should get a fair share of the benefits. Article 136 says that "the Area and its resources are the common heritage of mankind." Consequently, the international seabed and its subsoil are not under the authority of any State, nor are they owned by any organisation or individual; the exploitation of resources therein must benefit the collective interests of all humanity.

Article 137 stipulates the legal status of the Area: “No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized” (paragraph 1). Furthermore, “All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority” (paragraph 2). At the same time, “No State or natural or juridical person shall claim, acquire or exercise rights with respect to minerals recovered from the Area except in accordance with this Part. Otherwise, no such claim, acquisition, or exercise of rights shall be recognized.”

Article 140 provides that activities in the Area shall be carried out for the benefit of mankind as a whole, irrespective of the geographical location of States, giving particular consideration to the interests and needs of developing States, including landlocked countries (paragraph 1). The International Seabed Authority (ISA) is tasked with distributing the financial and other economic benefits derived from such activities, ensuring that developing States benefit through financial assistance, technology transfer, and development programs.

Furthermore, Article 162(2)(o)(i) mandates that the Council, the executive organ of the ISA, propose to the Assembly rules, regulations, and procedures concerning the equitable sharing of financial and other economic benefits derived from activities in the Area. The Assembly retains the authority to review and adopt these proposals. The 1994 Agreement further stipulates that decisions of the Assembly and Council on benefit-sharing must take into account recommendations of the Finance Committee (FC). Consequently, the FC bears the primary responsibility for drafting such rules and procedures. Alongside the ongoing development of the Mining Code since 2018, the FC has initiated work on rules regarding equitable benefit-sharing. To support this process, the Secretary-General prepared a report identifying key elements requiring clarification.^[18] The FC also

¹⁸ International Seabed Authority, *Rules, Regulations and Procedures on the Equitable Sharing of Financial and Other Economic Benefits Derived from Activities in the Area*, Report of the Secretary-General to the Finance Committee (ISBA/24/FC/4), 24th session, Kingston, 18 May 2018.

requested a report on the criteria for equitable distribution, which was considered at a joint meeting with the Legal and Technical Commission on 9 July 2019. A subsequent report presented three different allocation formulas for distributing royalties, accounting for widely recognized global inequality and welfare indicators. The ISA also developed an online model to visualize the impact of each formula on different Member States under various scenarios.

The FC has also explored alternative or supplementary approaches to direct financial distribution, recommending the establishment of a global fund to support public purposes, such as investment in human capital, infrastructure, or deep-sea research. This proposal, developed in the ISA Technical Study No. 31, culminated in July 2023 with a draft proposal for the establishment of a “Common Heritage Fund.”^[19] The Fund is designed to invest in capacity-building, knowledge, and ocean-related skills, thereby enhancing the ISA’s contribution to the 2030 Agenda for Sustainable Development and the SDGs. It aims to create and preserve long-term value for future generations. The Council and Assembly expressed support for this initiative and invited the FC to refine further both the equitable distribution formulas and the plan for the Fund’s development.

In addition, Article 82 of UNCLOS establishes a mechanism for sharing revenues between coastal States and the international community. Coastal States must make payments or contributions in kind when exploiting non-living resources of the continental shelf beyond 200 nautical miles. Under Article 82(4), the ISA is responsible for distributing these payments and contributions to States Parties based on equitable criteria, taking into account the interests and needs of developing States, in particular the least developed and landlocked States.

In practice, implementation of Article 82(4) began in 2009 with workshops in London (2009) and Beijing (2012) to address legal and technical issues. The FC has examined Articles 140 and 82(4) in parallel. While both embody the spirit of distributive justice, Article 82(4) provides corrective benefits of a geographical and socio-economic nature, especially for landlocked States without continental shelf rights. Unlike Article 140, however,

¹⁹ International Seabed Authority, *Report of the Secretary-General: Development of Rules, Regulations and Procedures on the Equitable Sharing of Financial and Other Economic Benefits Derived from Activities in the Area pursuant to Section 9, Paragraph 7(f), of the Annex to the 1994 Agreement, ISBA/28/FC/4, Finance Committee, twenty-eighth session, Kingston, 5–7 July 2023, 11 May 2023.*

only States Parties to UNCLOS are eligible for benefits under Article 82, and ISA's role here is limited to administering transfers, rather than redistributing benefits. Nevertheless, the FC noted that the formulas developed under Article 140 could also apply to Article 82(4). At its July 2023 meeting, the FC decided to retain Article 82(4) on its agenda with the aim of producing concrete recommendations.

The authors contend that the principle of equitable benefit-sharing represents a major development in international law, embodying fairness and global solidarity. The concept of the "common heritage of mankind" extends beyond the international seabed to other domains, such as outer space (as recognized in the 1967 Outer Space Treaty). This principle is especially significant for developing States, including Vietnam, as it guarantees their opportunity to benefit from global resources, even without the means for direct exploitation, thereby helping to reduce global economic inequality. It also prevents unilateral appropriation by powerful States or organizations, ensuring that deep-sea resources are utilized for the long-term benefit of humankind, including future generations.

In practice, the ISA has developed the Mining Code, which obliges contractors to contribute part of their profits to support developing States. Part of the proceeds is directed towards marine scientific research and deep-sea environmental protection. The ISA has issued 31 exploration contracts to States and companies as of 2025, including China, Russia, Japan, and India, in areas such as the Clarion-Clipperton Zone and the Indian Ocean Ridge. China holds the largest number of licenses (five), raising concerns about its dominance.^[20]

On technology transfer, some developed States such as Japan and Germany have provided training programs and shared geological data, but the actual transfer of mining equipment and technology remains limited. Developed nations, such as the United States, Japan, and European countries, have advanced technologies like underwater robots and unmanned submersibles.^[21] On the other hand, developing nations, like Vietnam,

²⁰ International Seabed Authority, FAQs for the Media: FAQs for the Media about the International Seabed Authority and Deep-Sea Mining, May 28, 2025, International Seabed Authority, [accessed: 14.8.2025].

²¹ International Seabed Authority, *Technical Study No. 31: Equitable Sharing of Financial and Other Economic Benefits from Deep-Seabed Mining* (Kingston, Jamaica: International Seabed Authority, 2021).

don't have the resources to compete, which could lead to unfair sharing of benefits, which goes against the principle itself.^[22]

The ISA also lacks sufficient financial and human resources to monitor large-scale activities. Reports indicated that some Chinese companies engaged in unreported mining, in violation of ISA regulations, while enforcement against violators has proven difficult given ISA's limited international legal authority.^[23] Moreover, distribution of profits has lacked transparency, with developing States often receiving indirect rather than direct economic benefits (such as research funding). Deep-sea mining further risks environmental catastrophe, disrupting deep-sea food chains and degrading marine ecosystems. Recent studies show that mining in the Clarion-Clipperton Zone could destroy habitats of millions of deep-sea species, many not yet discovered.^[24]

Finally, geopolitical competition threatens to undermine the principle. China's expansionist strategy in the South China Sea and international seabed may enable it to exert disproportionate influence over the ISA, limiting the opportunities of smaller States such as Vietnam and the Philippines. Nonetheless, as a coastal State, Vietnam can invoke this principle to seek ISA's support in areas such as technology transfer and financial assistance for participation in seabed resource exploitation.

In conclusion, the principle of equitable benefit-sharing under UNCLOS provides an essential legal foundation to ensure that resources in the international seabed are exploited for the benefit of humankind as a whole, preventing unilateral appropriation. Yet, implementation faces challenges including technological inequality, weak governance, geopolitical rivalry, and environmental risks. For Vietnam, this principle presents opportunities to protect its interests in the South China Sea and to engage in deep-sea mining, but requires strengthening technological capacity, enhancing international cooperation, and actively participating in ISA mechanisms. To make the principle truly effective, the international community must improve governance, safeguard the environment, and ensure genuine fairness for developing States.

²² Michael Lodge, "The International Seabed Authority and Deep Seabed Mining" *United Nations Chronicle*, May (2017). [accessed: 14.8.2025].

²³ Tom LaTourrette, Fabian Villalobos, Elisa Yoshiara, Zohan Hasan Tariq, *The Potential Impact of Seabed Mining on Critical Mineral Supply Chains and Global Geopolitics* (Santa Monica: RAND Corporation, 2025).

²⁴ Zhu Deng et al., "Global Carbon Emissions and Decarbonization in 2024" *Nature Reviews Earth & Environment*, No. 4 (2025): 231-233.

2.2.4. Principle of No Harm

This concept stipulates that a State is prohibited from conducting or permitting activities within its jurisdiction or control that inflict harm on the environment of other States or on places beyond national authority. This idea is codified in the 1972 Stockholm Declaration (idea 21) and the 1992 Rio Declaration (Principle 2). Specifically, it is included in Article 194 of UNCLOS, which addresses ways to avoid, mitigate, and control marine pollution. Article 194 mandates States Parties to: (1) adopt all requisite measures to avert, diminish, and regulate marine pollution (paragraph 1); (2) guarantee that activities within their jurisdiction or control do not inflict pollution damage upon other States and their environments, and that pollution resulting from accidents or activities under their jurisdiction or control does not extend beyond areas where they possess sovereign rights (paragraph 2); and (3) execute comprehensive and effective strategies to prevent, reduce, and manage pollution from terrestrial, atmospheric, and marine sources (paragraphs 3, 4, and 5).

Consequently, the no-harm principle creates a distinct connection between national sovereignty and international legal accountability, underpinning the necessity for transboundary environmental impact assessments (EIA/SEA). Accordingly, States Parties to UNCLOS are obligated to: (1) avert marine pollution through legal frameworks, monitoring systems, and risk assessments; (2) mitigate and regulate marine pollution by implementing technical standards and governing the actions of entities within their jurisdiction; and (3) prevent the transference of pollution, ensuring that they do not displace or alter pollution from one area or form to another in a manner that exacerbates harm. Simultaneously, States are mandated to participate in international cooperation, which encompasses conducting scientific research and disseminating marine environmental data, formulating regional international legal frameworks, and offering technical and financial support to developing nations.

The execution and adherence to this principle are ineffective due to the lack of enforcement mechanisms for violations, challenges in establishing the causal relationship between polluting activities and marine environmental harm, and insufficient capacity for monitoring and ensuring environmental transparency.

2.2.5. Principle of International Cooperation

According to this principle, States are under an obligation to cooperate with one another in good faith and on the basis of sovereign equality in order to protect and preserve the environment as well as to achieve the objectives of sustainable development. This principle is enshrined in the 1972 Stockholm Declaration (Principle 24: “International cooperation is essential to effectively control, prevent, reduce and eliminate adverse environmental effects”), the 1992 Rio Declaration (Principles 7 & 27 on “common but differentiated responsibilities” and “the spirit of global partnership”), and is codified in UNCLOS. Specifically, Article 197 of UNCLOS prescribes cooperation on a global or regional scale, whereby States cooperate regionally or globally, either directly or through competent international organizations, by developing international law (treaties, agreements) consistent with UNCLOS to protect and preserve the marine environment, taking into account regional characteristics. This constitutes a foundational principle with binding legal force, emphasizing the positive duty of States to engage in cooperation through information-sharing, establishing joint mechanisms, and coordinating actions to prevent, reduce, and control marine pollution and related environmental harm.

The scope of the principle covers:

1. Scientific and technical cooperation: including the exchange of marine environmental data; the development and transfer of environmental protection technologies; and the establishment of early-warning systems and assessments of transboundary environmental impacts.
2. Cooperation in international law-making: to harmonize international standards for pollution control (e.g., the 1972 London Convention; the 1973/1978 MARPOL Convention; the 1992 Convention on Biological Diversity; the 1995 UN Fish Stocks Agreement; the 2023 BBNJ Agreement), as well as the adoption of regional treaties (such as the 1976 Barcelona Convention for the Mediterranean; the 1985 Nairobi Convention; the 1995 South Asian Seas Convention; and the 1994 Northeast Asia Oil Spill Preparedness and Response Convention).
3. Cooperation in enforcement: including joint patrols and inspections of ship-source marine pollution; investigations and responses to oil spills and transboundary marine plastic waste; and the development

of financial and monitoring mechanisms (such as the IMO Marine Pollution Compensation Funds, and UNEP's SEA Circular Program).

The principle of international cooperation provides the legal basis for the implementation of numerous other provisions of UNCLOS, notably those on marine scientific research (Article 200), the transfer of marine technology (Article 201), and the assessment and monitoring of pollution risks and effects (Articles 204–206). In practice, no State can unilaterally address land-based sources of ocean pollution, marine plastics, or ocean acidification.^[25] International cooperation is therefore indispensable for the protection and preservation of the marine environment. This principle is intrinsically linked to United Nations Sustainable Development Goal 14 (SDG 14) on “Conserving and sustainably using the oceans, seas, and marine resources for sustainable development.”

3 | Policies and Laws on Blue Economy of Vietnam

3.1. Policies to Develop the Sustainable Blue Economy

Guided by the overarching perspective of developing a sustainable blue economy, based on blue growth and the conservation of marine biodiversity and ecosystems, Vietnam aims to ensure harmony between economic and natural ecosystems, between conservation and development; to build a society connected to and friendly with the sea; to protect the marine environment and conserve marine biodiversity and natural ecosystems; to proactively respond to climate change and sea level rise; to preserve and enhance biodiversity values and restore degraded marine ecosystems; and to safeguard the integrity of ecosystems from land to sea. This vision also includes integrating marine environmental protection with the prevention and mitigation of pollution and environmental incidents, while strengthening regional and global cooperation. The objective is coined in the Resolution No. 36-NQ/TW, by 2030, with a vision to 2045, Vietnam will

²⁵ United Nations Environment Programme, *From Pollution to Solution: A Global Assessment of Marine Litter and Plastic Pollution* (Nairobi: United Nations Environment Programme, 2021).

become a strong maritime nation, with the marine economy contributing 10% or more to GDP, achieving effective marine ecosystem conservation, and restoring degraded areas.

To realize the policies and targets set for the blue economy, Decision No.1658/QĐ-TTg issued on 1 October 2021 on Approval for national green growth strategy for 2021-2030 period, with a vision by 2050 demonstrates Vietnam's commitment to developing marine tourism and services along blue, high-quality lines; harnessing renewable marine energy (such as offshore wind and solar power); engaging in sustainable fisheries and aquaculture; linking marine economic development with resource and environmental protection by expanding marine protected areas; applying blue and circular technologies in marine exploitation industries; and strictly managing waste generated from marine economic activities.

The above policies and guiding perspectives on the marine economy, in general, and the blue economy, in particular, represent a foundational strategic breakthrough in Vietnam's approach to marine economic development, with a sustainability framework that closely integrates blue economic growth with marine environmental protection. They serve as a compass for transitioning from a short-term, single-sector resource exploitation mindset to a long-term, integrated, and multi-sector approach centered on the "blue economy," developed within the limits of ecological carrying capacity. At the same time, these guiding perspectives shape the trajectory of Vietnam's blue economy development and form the basis for the formulation of a national marine master plan aimed at protecting Vietnam's marine environment in both the present and the future.

3.2. Vietnamese Legal Framework for Blue Economy

Vietnam's current legal system on economy in ocean is relatively comprehensive, with numerous laws addressing issues related to the blue economy, centered on the 2012 Law of the Sea of Vietnam and complemented by specialized laws, including the 2015 Law on Marine and Island Resources and Environment, the 2017 Law on Fisheries, and the 2020 Law on Environmental Protection.

3.2.1. Law of the Sea

The 2012 Law of the Sea of Vietnam clearly stipulates that the management and protection of the sea shall be carried out in accordance with Vietnamese law, consistent with the Charter of the United Nations and other international treaties to which Vietnam is a party. It also affirms that all state agencies, organizations, and Vietnamese citizens have the responsibility to protect marine resources and the marine environment. This reflects Vietnam's commitment to developing a sustainable blue economy while safeguarding the environment.

In particular, with regard to the preservation and protection of marine resources and the environment, the Law of the Sea of Vietnam provides that, when operating in Vietnamese waters, all vessels, organizations, and individuals must comply with the relevant provisions of Vietnamese law and applicable international law concerning the conservation and protection of marine resources and the marine environment. Any vessel, organization, or individual violating Vietnamese law and relevant international law, thereby causing harm to marine resources and the marine environment within Vietnam's waters, seaports, anchorages, or sheltering areas, shall be dealt with in accordance with Vietnamese law and the international treaties to which the Socialist Republic of Vietnam is a party. Where damage occurs, the violator must clean up, restore the environment, and provide compensation in accordance with the law. Furthermore, in exercising the freedom of navigation and overflight in Vietnam's exclusive economic zone and continental shelf, organizations and individuals must not engage in activities that cause marine pollution or unlawfully store or use weapons, explosives, or hazardous substances.

The 2012 Law of the Sea of Vietnam is a significant law that guides, protects, and encourages the growth of Vietnam's blue industry. It gives the legal basis for the legal and regulated use of marine resources to help blue economic growth, stop IUU fishing, and make sure that using and exploiting marine resources goes hand in hand with protecting the environment and preserving biodiversity, in line with the idea of sustainable development. The Law also sets up a strong legislative framework for safeguarding marine resources and the marine environment, which are necessary for the blue economy. It also brings in blue investment into the maritime sector and encourages sustainable marine economic growth. The 2012 Law of the Sea of Vietnam is a very essential legal foundation and an institutional

cornerstone for the growth of the blue economy, which is a key aspect of Vietnam's current and future development strategy.

3.2.2. Law on Natural Resources and Environment of Sea and Islands

As a specialized law, this Act contains relatively comprehensive provisions forming an important legal framework for the blue economy, focusing on ensuring sustainability, environmental protection, and international cooperation in the exploitation and governance of marine and island resources and the marine environment. Specifically, in terms of policy, the State guarantees the management, protection, rational, efficient, and sustainable use of marine and island resources in accordance with strategies, plans, and programs serving socio-economic development, national defense, and security. At the same time, it encourages scientific research, prioritizes deep-sea, offshore, and island areas, and promotes international cooperation.

These provisions lay the foundation for the blue economy by emphasizing sustainability and national security; however, their effectiveness depends on specific mechanisms and the availability of practical resources. Regarding the principles for managing marine and island resources, the Law stipulates that management must be based on the national marine spatial planning and sea use plans, ensuring a balance among economic, social, environmental, national defense, and security interests, while prioritizing biodiversity conservation and climate change adaptation. These principles orient the blue economy by integrating key development factors.

In terms of strategies for resource exploitation and use, and marine and island environmental protection, the Law affirms the priority of developing the marine economy in association with environmental protection, pollution control, and the restoration of marine ecosystems. These provisions demonstrate a commitment to developing the blue economy in close connection with marine environmental protection.

Furthermore, the Law addresses blue economy-related issues in scientific research on marine resources and the marine environment, support for socio-economic development, sustainable exploitation, and climate change response; it also regulates the issuance of permits for sea dumping, requiring that such activities do not harm human health, the environment, or ecosystems, and that they achieve socio-economic efficiency in order to control pollution in line with the blue economy concept, although such activities require close monitoring to prevent abuse. Finally, the Law

encourages international cooperation on marine and island resources and the environment in activities involving the sustainable use of resources, environmental protection, and the development of the blue economy through the exchange of advanced and modern technologies.

It can be affirmed that the 2015 Law on Marine and Island Resources and Environment has established an important legal framework for the blue economy, emphasizing sustainability, environmental protection, and international cooperation. However, its provisions remain largely policy-oriented and lack specific enforcement mechanisms, resulting in limitations in pollution control and sustainable exploitation. Therefore, continued research, amendment, and supplementation to concretize and quantify enforcement mechanisms, so that this important law better aligns with practical realities, is an essential and urgent legislative task at present.

3.2.3. Law on Fisheries

On 23 October 2017, the European Union formally issued a “yellow card” warning to Vietnam regarding its seafood exports, citing inadequate compliance with EU regulations designed to combat illegal, unreported, and unregulated (IUU) fishing. In order to react to this issue. The National Assembly of Vietnam passed the revised Fisheries Law on 21 November 2017, which includes two chapters specifically addressing the management of fishing activities and fishing vessels. The 2017 Law on Fisheries regulates a wide range of issues relevant to the legal framework for the blue economy, including sustainable development, the protection of aquatic resources and ecosystems, combating IUU fishing, and international cooperation. Specifically, the Law stipulates that fisheries activities must ensure sustainable development, protect aquatic ecosystems, link exploitation with the conservation of aquatic resources, comply with the requirements of international integration, and adhere to the international treaties to which Vietnam is a party. Within Chapter IV, Section 4, Articles 60 and 61 are dedicated to illegal fishing, enumerating fourteen specific acts classified as illegal. It also establishes provisions concerning certification of the origin of fishery products derived from exploitation activities.^[26]

²⁶ Vietnam Association of Seafood Exporters and Producers, *White Book on Combating IUU Fishing in Vietnam*, January 2018. <https://seafood.vasep.com.vn/combat-iuu-fishing/white-book-on-combating-iuu-fishing-in-vietnam>. [accessed: 22.9.2025].

The author argue that, this provision forms the foundation of the blue economy by requiring sustainable fisheries development that balances exploitation with the protection of aquatic resources, consistent with Vietnam's international commitments under UNCLOS and the 2009 FAO Agreement on Port State Measures (PSMA), as well as non-binding FAO instruments (soft law) such as the 1995 FAO Code of Conduct for Responsible Fisheries (CCRF) and the IPOA-IUU.

In terms of policy, the State will concentrate resources on research, surveys, assessment, protection, and regeneration of aquatic resources; restoration of aquatic ecosystems; conservation of indigenous and rare aquatic species; development of infrastructure for marine protected areas; installation of vessel monitoring systems; development of a national fisheries database; and establishment of environmental and disease warning systems for aquaculture. These provisions reflect Vietnam's strong commitment to advancing the blue economy through investment in scientific research, resource regeneration, and ecosystem protection.

One of the provisions directly linked to the substance of the blue economy is the Law's identification of prohibited acts in fisheries activities aimed at protecting the environment, biodiversity, and marine ecosystems within areas under Vietnam's sovereignty, sovereign rights, and jurisdiction, as well as in international waters. These include prohibitions against:

- (i) using banned chemicals, antibiotics, and microorganisms in aquaculture, feed production, or environmental adjustment;
- (ii) destroying aquatic resources, aquatic ecosystems, spawning grounds, and habitats;
- (iii) engaging in illegal fishing outside Vietnam's waters; and
- (iv) discharging waste improperly at fishing ports or storm shelters.

These prohibitions are designed to protect the marine environment and aquatic resources, core elements of the blue economy.

On international cooperation in fisheries, the 2017 Law on Fisheries encourages cooperation in:

- a. human resource training, scientific research, technology transfer, and the exchange of information and experience in fisheries;
- b. conservation and management of aquatic resources in international waters in accordance with the rules of regional fisheries organizations (e.g., SEAFDEC) and UNCLOS; and

- c. inspection and enforcement against IUU fishing within and outside Vietnam's territory pursuant to the international treaties to which Vietnam is a party, within the frameworks of the FAO, the PSMA, and the 1995 UN Fish Stocks Agreement. Such cooperation helps Vietnam improve its position in the global seafood market.

From a state management perspective, the granting of fishing licenses must be based on the results of resource surveys and assessments, trends in resource fluctuations, maximum sustainable yields, and the structure of fisheries, species, and fishing grounds. This provision applies a science-based management approach, grounded in survey data and maximum sustainable yield, consistent with the blue economy, ensuring that exploitation does not exceed the regenerative capacity of aquatic resources. This helps maintain long-term sustainable yields, supports fishers' livelihoods, and sustains related economic sectors.

3.2.4. Law on Environmental Protection

As the specialized legislation in the environmental field, the Law on Environmental Protection affirms the principle that socio-economic development must be linked with environmental protection. This includes prioritizing the prevention and control of pollution and environmental restoration, while ensuring a balance among economic, social, environmental, national defense, and security interests. This principle constitutes the legal foundation for the development of the blue economy in parallel with marine environmental protection, prioritizing pollution prevention and the restoration of marine ecosystems, ensuring harmony, and aligning with Vietnam's international commitments under the 2015 Paris Agreement (45% emissions reduction by 2030) and Sustainable Development Goal 14 (SDG 14 – conserving oceans).

In terms of State policy on environmental protection, the Law provides that the State shall prioritize investment in: (a) preventing and controlling marine and ocean pollution; (b) protecting marine and island biodiversity and ecosystems; (c) developing blue technologies, recycling, and waste treatment in marine economic activities; and (d) supporting coastal communities in adapting to climate change. These provisions demonstrate a strong commitment to supporting the blue economy through concrete

measures aimed at climate change adaptation and ensuring sustainable livelihoods for local communities.

Regarding environmental impact assessments for marine economic projects, the 2020 Law on Environmental Protection stipulates that such projects must conduct environmental impact assessments prior to implementation, including an analysis of effects on marine ecosystems, measures to mitigate pollution, and environmental restoration plans. Marine economic projects must also prepare environmental protection plans during operation, including pollution mitigation measures, waste management, and restoration activities, in order to minimize environmental risks arising from marine economic activities.

Article 82 of the Law and Decree No. 08/2022/NĐ-CP, issued 10/01/2022, on elaboration of several articles of the Law on environmental protection regulate about how to deal with ordinary industrial solid waste, which is waste that comes from production, business, and service activities. This includes hazardous waste, controlled industrial waste, and ordinary industrial solid waste. Facilities that make regular industrial solid waste, like factories, businesses, service providers, concentrated industrial zones, industrial clusters, agencies, or organisations, must either reuse, recycle, recover energy, or treat the waste themselves, or send it to qualified groups for treatment. This rule is meant to protect the marine environment, which is an important part of the blue economy. It does this by strictly controlling the waste that comes from economic activities, like oil-free metal scraps, clean paper, plastic and fabric packaging, preservative-free wood scraps and sawdust, heavy-metal-free boiler ash and slag, old construction materials from factories and organic waste from shrimp farming.

On international cooperation in environmental protection, the 2020 Law on Environmental Protection expands and specifies the principles of integration and international cooperation in environmental protection, under a consistent approach and in compliance with international commitments, while affirming Vietnam's responsibility and role in addressing global environmental issues. Participation in international treaties, fulfillment of international obligations, and the receipt of technical, technological, and financial support illustrate Vietnam's proactive and deepening integration in environmental protection generally, and marine environmental protection in particular. These provisions also provide a crucial legal basis for Vietnam to implement its commitments to bluehouse gas reduction, blue transition, and climate change adaptation in accordance with international standards. They broaden opportunities for international

cooperation, an important element of the blue economy, through scientific research, technology transfer, biodiversity conservation, and pollution control, in line with Vietnam's commitments under UNCLOS and other relevant international agreements, thereby enhancing Vietnam's access to international technology and financing for blue economy development.

It can be affirmed that the 2020 Law on Environmental Protection provides an important legal framework for the blue economy, with provisions focusing on pollution prevention, biodiversity conservation, waste management, and international cooperation. However, its implementation effectiveness is constrained by the lack of specific monitoring mechanisms, insufficient financial and human resources, and sanctions that are not sufficiently deterrent. To promote the blue economy, it is necessary to issue detailed implementing decrees, invest in waste treatment technologies and infrastructure, strengthen inspection and enforcement capacity, and increase penalties to ensure the strict application of the law.

3.2.5. Petroleum Law

The 2022 Petroleum Law was revised and supplemented to improve the management of petroleum resources, promote investment, and safeguard national interests at sea. A review of the full text of this important legislation reveals the following provisions relevant to the blue economy: On the principles of petroleum activities, the Law stipulates that petroleum activities must comply with the international treaties to which the Socialist Republic of Vietnam is a party (Clause 2, Article 6); protect the environment; respond to climate change; address oil spill incidents; and safeguard resources (Clause 3, Article 6). Accordingly, the 2022 Petroleum Law contains several provisions supportive of the blue economy, such as requirements for environmental protection, encouragement of advanced technology, and promotion of international cooperation.

Based on the above examination of Vietnam's laws related to the blue economy, the paper finds that, overall, these legal instruments have not yet formed a coherent legal framework for blue economy development. Fragmentation, overlapping mandates among ministries, sectors, and local authorities, as well as the absence of specific legal tools, such as provisions on blue finance or mechanisms for benefit-sharing from the exploitation of marine genetic resources, remain major bottlenecks for Vietnam at present. The development of Vietnam's oil and gas sector faces notable constraints that have delayed key projects such as gas Block B and Ca Voi

Xanh. Foreign investment in new field development and exploration has stagnated due to both policy restrictions and broader global economic uncertainties. Additionally, state-owned enterprises (SOEs) encounter procedural and bureaucratic challenges that hinder timely and effective investment in oil and gas operations as well as related sectors. These factors collectively slow down sectoral growth and delay the unlocking of Vietnam's hydrocarbon potential.^[27]

4 | Recommendations for Enhancing the Legal Framework Governing Vietnam's Blue Economy

As analyzed in Section 2 of this paper, in addition to UNCLOS, Vietnam is also subject to numerous emerging international instruments and legal frameworks, including the 2023 BBNJ Agreement, which introduces requirements for establishing benefit-sharing regimes and governance mechanisms for areas beyond national jurisdiction; agreements under the IMO framework on maritime safety, pollution prevention, and the development of blue shipping; SDG 14 under the 2030 Agenda for Sustainable Development, which calls on states to formulate ocean policies in line with global standards; and the Paris Agreement on climate change, which relates to the development of marine energy and adaptation to sea-level rise. These international legal frameworks place proactive obligations on Vietnam to incorporate international commitments into domestic law, while creating opportunities to access blue finance and technical assistance for developing the blue economy. Accordingly, this paper proposes the following four groups of solutions:

First, develop an integrated legal framework for the blue economy, including specific measures: (i) formulate and promulgate legal provisions on the blue economy or an integrated ocean governance framework, incorporating principles of sustainable development, ecosystem protection, and efficient resource use; and (ii) incorporate the contents of UNCLOS,

²⁷ United Nations Development Programme (UNDP), *Blue Economy Scenarios for Viet Nam* (UNDP Vietnam, 2025), 50. <https://www.undp.org/vietnam/publications/blue-economy-scenarios-viet-nam>. [accessed: 22.10.2025].

the 2009 PSMA, the 2023 BBNJ Agreement, the 2001 IPOA-IUU, and SDG commitments into national legislation to ensure coherence between domestic and international law.

Second, strengthen intersectoral and interregional ocean governance institutions, including specific measures: (i) establish a national coordinating body for blue economy development to unify policy, budgeting, and implementation oversight; and (ii) enhance modern management tools, such as Marine Spatial Planning (MSP), Strategic Environmental Assessment (SEA), benefit-sharing mechanisms, and public-private partnerships (PPP) in the exploitation, governance, and use of marine resources. For MSP, at its 7th session on June 28, 2024, the 15th National Assembly adopted Resolution No. 139/2024/QH15, which establishes the National Marine Spatial Planning covering the period from 2021 to 2030 and providing a vision to 2050.^[28] As this mechanism is new to Vietnam, its effectiveness could be enhanced through further observation and refinement, in line with the model adopted from IOC – UNESCO.^[29]

Third, to enhance international cooperation and the capacity for incorporating international commitments into domestic law, including specific measures: (i) conduct studies to accede to the 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement), the 1995 UN Fish Stocks Agreement (UNFSA), and the 2023 BBNJ Agreement, thereby demonstrating commitment to and fulfilling obligations under the “UNCLOS system” on the protection and preservation of the marine environment, as well as ensuring access to and equitable benefit-sharing from resources in areas beyond national jurisdiction; and (ii) build scientific, legal, and maritime diplomacy capacities to support negotiations, implementation, and the safeguarding of national interests at sea.

In conclusion, the blue economy presents a strategic development pathway for Vietnam in the context of globalization and climate change. However, to seize the opportunities and minimize the challenges, Vietnam must establish a coherent legal framework closely aligned with international law, particularly the international law of the sea. Integrating the principles of

²⁸ United Nations Development Programme (UNDP), *Charting the course: 12 lessons drawn from Viet Nam's marine spatial planning process* (February 24, 2025) <https://www.undp.org/vietnam/publications/charting-course-12-lessons-drawn-viet-nams-marine-spatial-planning-process>. [accessed: 22.10.2025].

²⁹ Ibidem, 5.

sustainable development, benefit-sharing, and environmental protection into specialized laws will be the key to achieving an effective, lawful, and long-term blue economy. This will not only serve the objective of economic growth, but also reinforce Vietnam's position as a responsible coastal state in the international community.

To efficiently implement the "blue economy," Vietnam needs to speed up the completion of its comprehensive legal system, particularly its maritime law framework. It should also work to get Vietnam to sign and ratify international treaties and other useful international agreements, especially the 2001 IPOA-IUU, to make sure that the blue economy's legal framework is in line with and works well with the international legal system. This will also show that Vietnam is trustworthy and responsible on the world stage when it comes to protecting and conserving the oceans and marine ecosystem.

5 | Conclusion

Vietnam's current legal framework relevant to the blue economy is underpinned by a range of specialized laws, including the 2012 Law of the Sea, the 2015 Law on Marine and Island Resources and Environment, the 2017 Law on Fisheries, the 2020 Law on Environmental Protection, and the 2022 Petroleum Law. Collectively, these laws reflect Vietnam's recognition of sustainability, environmental protection, and international cooperation as core principles for ocean governance. They also incorporate obligations under key international instruments while addressing pressing challenges such as IUU fishing, pollution control, biodiversity conservation, and sustainable resource use.

However, despite this progress, the legal framework remains fragmented, with overlapping mandates among institutions, a lack of coherence in policy integration, and the absence of specific legal tools, such as blue finance provisions or benefit-sharing mechanisms for marine genetic resources. Moreover, enforcement is often constrained by limited resources, insufficient monitoring mechanisms, and inadequate sanctions.

Ultimately, to transition toward a truly integrated and effective blue economy governance system, Vietnam must consolidate its legislative instruments into a coherent legal framework that harmonizes domestic law with international commitments, including the BBNJ Agreement 2023,

the Paris Agreement, and the SDGs. Strengthening intersectoral coordination, adopting modern management tools such as marine spatial planning and strategic environmental assessments, enhancing scientific and legal capacity, and fostering international cooperation will be essential. To make the blue economy work for Vietnam's economy and protect the marine environment for future generations, all sectoral laws must include the principles of sustainable development, fair benefit-sharing, and environmental protection. They must also be strictly enforced.

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