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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, Koteshwar 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:

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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 redefinition 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://xaydungchinhsach.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-tangkpgf6m.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 Fullfil 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 Alexande, 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.wbgkggtf.org/sites/default/files/publications/KN_GreenTransition_01_112921_0.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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