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ENVIRONMENTAL PROTECTION LAWS IN CONSTRUCTION ACTIVITIES IN VIETNAM – CURRENT SITUATION AND RECOMMENDATIONS FOR IMPROVEMENT

TRAN LINH HUAN
Ho Chi Minh City University of Law, Vietnam
Email: tlhuan@hcmulaw.edu.vn
LE PHAM ANH THO
Phu Gia Cat Investment Consulting Co., Ltd, Vietnam
Email: lephamanhtho@gmail.com

Abstract

Construction activities are vital to the national economy, as they contribute to the creation of fixed assets through new projects, renovations, repairs, and the restoration of damaged infrastructure. However, these activities also pose environmental challenges. To address this, the government has implemented specific legal measures to mitigate environmental impacts and prevent degradation and pollution caused by construction. Although these regulations have yielded positive results, the environmental protection legal framework in the construction industry still has significant shortcomings and limitations that notably affect the efficacy of environmental safeguarding measures in construction projects. This article aims to provide a thorough analysis and evaluation of the environmental protection laws applicable to construction activities, identifying existing gaps and proposing improvement solutions.

Keywords: *environmental protection, construction activities, legal framework, current situation, recommendations*

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With Vietnam's increasingly developing socio-economic situation, the demand for construction activities is growing rapidly, leading to increased environmental pollution potential and environmental incidents. However, the current legal system for environmental protection in construction activities in Vietnam still poses several shortcomings, limiting the enforcement of environmental protection laws in construction activities. Therefore, establishing a solid legal framework for environmental protection in construction activities is the key to achieving the dual goal of promoting socio-economic development while ensuring environmental issues in the current context.

1. Impacts of construction activities on the environment and the role of environment protection regulations

Construction activities are inherently distinct from other economic endeavours, as the final product of construction holds a unique and individualized nature tailored to the specific requirements of certain entities. According to the regulations outlined in Article 21.3 of the 2014 Construction Law, amended and supplemented in 2020, construction activities

encompass various stages, including construction planning, investment project development, construction survey, design, construction execution, construction supervision, project management, contractor selection, acceptance, project handover for operation, warranty, maintenance of construction works, and other related activities. The product of construction activities is the infrastructure built through a defined process, spanning from investment and design to construction, as regulated by legal provisions.

Despite positive impact to the nation's economic development, construction activities also pose significant and harmful environmental impacts, particularly in densely populated urban areas where numerous structures are built often. Recent studies in Vietnam indicate that the construction industry accounts for 23% of air pollution, 50% of the factors contributing to climate change, 40% of drinking water pollution, and 50% of landfill waste.[1] In Vietnam, specifically in major cities such as Hanoi and Ho Chi Minh City, environmental quality has declined severely, primarily due to construction activities. The current proliferation of construction projects, on the rise like mushrooms, has resulted in heavy air pollution. The processes involved in construction, such as earth excavation, pile driving, foundation digging, transportation, material stockpiling, and construction execution, generate significant environmental pollutants, including dust, hazardous gases, and noise.

Furthermore, during construction, the volume of airborne dust increases due to transportation and stockpiling activities involving hundreds of large-scale vehicles. Moreover, residents in the neighborhood of construction sites are consistently exposed to prolonged and severe noise pollution, significantly affecting their quality of life. Construction activities also give rise to various other forms of pollution, such as water pollution, soil contamination, and visual pollution. Construction activities generate organic and solid waste, which, when washed into rivers by rain, pollutes water. Solid waste, including iron, steel, aluminum, bricks, stones, and wood, adversely affects soil structure, leading to soil pollution. Petroleum-based materials and machinery used in construction produce excess oil waste, contributing to pollution in surface water, groundwater, soil, and air if not properly treated and discharged.

Moreover, illegal activities in the construction sector have emerged as a serious source of environmental pollution. According to observations from residents near Binh Phuoc 1 Bridge in An Phu Dong, District 12, Ho Chi Minh City, a large construction material stockpile and continuous

1 Linh N. (2021), 'Các nhà hoạt động môi trường tiếp tục điểm danh ngành xây dựng', *Tạp chí Kinh tế Môi trường* [trans: 'Environmental activists continue to criticize the construction industry', *Journal of Environmental Economics*]. Retrieved from: https://kinhtemoitruong.vn/cac-nha-hoat-dong-moi-truong-tiep-tuc-diem-danh-nganh-xay-dung-60134.html [accessed 26 November 2023].

operations, including the direct discharge of wastewater into the Saigon River, have resulted in severe environmental pollution of a broad section of the river.[2] This has caused significant environmental pollution, while regulatory authorities have yet to take decisive action to address the situation, causing frustration among the local population. As a result, the impact of construction activities on the environment is substantial, resulting in severe negative consequences for people's right to live in a clean and healthy environment.

In this regards, construction environmental regulations, issued by state authorities, are essential for ensuring long-term environmental protection during construction activities. These regulations aim to manage construction impacts and reduce associated negative environmental effects. Enforcing adherence to environmental protection standards and regulations ensures control over waste discharge into the environment, including emissions, noise, dust, light, wastewater, and other materials, thereby safeguarding human and animal health and the environment. Furthermore, environmental protection laws ensure compliance with regulations and standards throughout the construction process. They also play a role in training contractors and workers on environmental protection measures, including handling construction waste and sustainable resource use. This fosters awareness and responsibility among contractors and workers, minimizing negative environmental impacts during construction. Individuals and organizations involved in construction must adhere to these regulations to prevent adverse impacts on human health and wildlife.

Upon the understanding of impacts from consutrction activities and the role of environment protection regulations, the article explores Switzerland's accountability-oriented approach and Japan's comprehensive approach to environmental management in construction, drawing upon an understanding of environmental protection laws. It concludes by offering recommendations tailored to Vietnam's context.

2. Comparative overview of environmental protection legislation in construction in Switzerland and Japan

2.1. Switzerland's accountability-oriented approach to environmental protection in construction

Switzerland is one of the advanced countries in developing and enforcing a legal framework for environmental protection in construction

2 An B. (2021), 'TP. HCM: Bãi vật liệu xây dựng gây ô nhiễm môi trường nghiêm trọng!', *Tạp chí* điện *tử Môi trường và* Đô *thị Việt Nam* [trans: 'Ho Chi Minh City: Construction material site causing serious environmental pollution!', *Vietnam Environment and Urban Electronic Magazine*]. Retrieved from: https://www.moitruongvadothi.vn/tphcm-bai-vat-lieu-xay-dung-gay-o-nhiem-moi-truong-nghiem-trong-a93825.html [accessed 26 November 2023].

activities. The Federal Constitution of the Swiss Confederation lays the foundation for environmental regulations, harmonizing Swiss environmental laws with European Union (EU) regulations. Protection of natural resources and the environment is addressed through a series of Federal Acts, supplementary ordinances, and various regulations at the cantonal and communal levels.[3] Key Swiss federal laws on the environment include: (i) Environmental Protection Act (Umweltschutzgesetz); (ii) Water Protection Act (Gewässerschutzgesetz); (iii) the CO2 Act on reducing CO2 emissions (CO2-Gesetz); (iv) Nature and Cultural Heritage Protection Act (Natur und Heimatschutzgesetz).

Switzerland's environmental protection laws in construction encompass stringent measures controlling chemical and material usage, monitoring emissions and waste, and safeguarding ecological areas. Project owners bear strict responsibility for environmental impacts, funding remediation efforts as mandated by the Environmental Protection Act. This accountability-driven approach fosters proactive environmental practices, minimizing pollution risks. Additionally, the Swiss Civil Code (Articles 679 and 684) and the Liability Act (Article 58) extends legal responsibilities to property owners beyond project completion, ensuring ongoing environmental protection. In contrast, Vietnamese regulations, such as Decree No. 06/2021/NĐ-CP, primarily assign project owners a coordinating role in environmental remediation. Switzerland's transparency measures include public disclosure of environmental information via a government-maintained register, aiding stakeholders in assessing environmental conditions and prioritizing pollution remediation efforts. This proactive disclosure framework enables informed decision-making for investors and residents alike.

The "polluter pays principle" (PPP) is extensively defined in Article 2 of Switzerland's Environmental Protection Act, encompassing the obligation to pay fees for behaviors causing pollution and exploiting natural resources. Specifically, Article 2 of Switzerland's Environmental Protection Act stipulates that entities engaging in behaviors according to the PPP principle must bear the cost, including taxes on gasoline, taxes on motor vehicles, distance-related taxes for large transport vehicles, and carbon taxes (CO_2) for fuels used for heating and production. In Switzerland, taxes are focused on heavy-duty transport vehicles, especially those transporting construction materials, which causes severe air pollution. Notably, taxes related to waste have been prominent since 2000, when Switzerland banned the landfilling of easily combustible and urban waste that can undergo

3 Lenz & Staehelin (2023), 'Switzerland Environment', *The Legal 500 Country Comparative Guides*, p. 1.

biological degradation.[4] This experience provides valuable lessons for Vietnam in effectively managing and treating waste in construction projects and urban areas, transitioning from waste landfilling to recycling through levies, and reviewing the use of heavy taxes targeted at vehicles transporting construction materials, contributing effectively to environmental protection.

In conclusion, Switzerland's approach demonstrates a robust and effective model, primarily due to its comprehensive legal framework and the direct financial responsibilities imposed on project owners. For countries like Vietnam, adopting similar stringent measures could not only enhance their environmental protection efforts but also contribute more effectively to global sustainability goals.

2.2. Japan's comprehensive approach to environmental management in construction

In Japan, environmental issues consistently rank as the top priority for the government and society. Consequently, air pollution and waste treatment in urban construction projects are of great concern, with stringent standards imposed. Adequate measures have been taken to address general air pollution, particularly in construction zones. Japan has actively participated in international agreements such as the United Nations Framework Convention on Climate Change and the Kyoto Protocol, committing to reducing greenhouse gas emissions. Locally, in autonomous cities with delegated powers, efforts have been made to establish and implement stricter emission standards in construction beyond national regulations, aiming to maintain local environmental cleanliness and maximize control over environmental pollution in construction.

In addition to national and municipal regulations, independent pollution control agreements are signed between project developers and local authorities to ensure compliance with specific construction projects. These agreements cover air pollutants, water pollutants, vibrations, noise, and waste generated from construction activities, often including specific limits on emissions, the use of best technologies in construction waste management, and reporting obligations.[5] Furthermore, in Japan, numerous non-governmental organizations and environmental newspapers are highly active. Their direct and extensive impact has helped raise public awareness of the environment. The involvement of society as a whole in

4 Ministry of Finance's electronic portal (2018), 'Chính sách tài chính thúc đẩy bảo vệ môi trường: Kinh nghiệm của Thụy Sỹ và bài học cho Việt Nam' [trans: 'Financial policies promoting environmental protection: Switzerland's experience and lessons for Vietnam']. Retrieved from: https://mof.gov.vn/webcenter/portal/tttc/pages_r/l/chi-tiet-tin-tin-tuc-tai-chinh?dDocName=MOFUCM141053 [accessed 26 November 2023].

5 Welch E. W. and Hibiki A. (2022), 'Japanese Voluntary Environmental Agreements: Bargaining Power and Reciprocity as Contributors to Effectiveness', *Journal Policy Science*, Vol. 35, No. 4, p. 401, 424.

environmental protection in construction has helped Japan successfully implement environmental regulations, efficiently address environmental pollution issues, and handle environmental incidents.

The legal system governing the environment in construction activities in Japan is managed by various functional agencies, including the government, relevant ministries, research organizations, and organizations representing industries and other areas related to the environment. The legal system governing the environment in construction activities in Japan is regulated by several basic laws, including: (i) the Environmental Protection Act,[6] which is a fundamental law on environmental protection in Japan, including general provisions on environmental protection, pollution prevention measures, and waste management regulations; (ii) the Building Standards Act, one of the most important legal documents in Japan's legal system of construction. The Building Management Act in Japan regulates construction standards and technical safety, construction permit procedures, and project quality management and ensures user safety. (iii) The Building Material Recycling Act (effective since 2002) mandates on-site classification of specific construction materials (concrete, wood construction materials, and asphalt concrete) used in buildings larger than a certain level when they are dismantled; (iv) Regulations on air pollution,[7] which regulate standards for air quality, measurement and monitoring of air emissions, and measures to prevent air pollution; (v) Regulations on water pollution,[8] which regulates standards for water quality, measurement and monitoring of wastewater, and measures to prevent water pollution. Moreover, strengthening the inspection, examination, and supervision of environmental management by state environmental organizations in construction aims to reduce environmental pollution problems, protect the environment in projects effectively, and minimize environmental control costs to ensure project progress and handover.

In short, Japan's approach to environmental protection in construction is a comprehensive and multifaceted strategy that combines stringent legal regulations with proactive societal involvement. The government's prioritization of environmental issues is reflected in its participation in international agreements and the implementation of rigorous national and local standards for air pollution, waste treatment, and emissions control in construction projects. The innovative use of independent pollution control agreements between developers and local authorities further ensures

6 Ministry of the Environment, 'The Basic Environment Law'. Retrieved from: https://www.env.go.jp/en/laws/policy/basic/index.html [accessed 26 November 2023].

7 Japanese Law Translation, 'Air Pollution Control Act'. Retrieved from: https://www.japaneselawtranslation.go.jp/en/laws/view/3561 [accessed 26 November 2023].

8 Ministry of the Environment, 'Water Pollution Control Law'. Retrieved from: https://www.env.go.jp/en/laws/water/wlaw/index.html [accessed 26 November 2023].

adherence to these standards, highlighting a unique collaborative model. Thus, Japan's model, emphasizing prevention, collaboration, and societal engagement, offers valuable insights for other countries looking to balance construction development with environmental sustainability.

3. The current situation of Vietnamese environmental protection regulations in construction activities

At present, the legal framework regulating environmental protection in construction activities in Vietnam has been fundamentally established and continuously improved.[9] However, alongside the positive outcomes achieved, there persist several limitations and deficiencies[10] that significantly impact the effectiveness of environmental management and protection in construction activities. This is evident in the following aspects:

3.1. Legal provisions

The legal framework for environmental protection in construction activities is currently specified in the 2020 Environmental Protection Law, the 2014 Construction Law, and several implementing guidelines. Under these, Article 64 of the 2020 Environmental Protection Law explicitly outlines environmental issues, conditions, and requirements during various stages of construction activities, with a particular emphasis on construction execution. Additionally, the 2014 Construction Law incorporates conditions to ensure environmental considerations in construction activities. However, despite the positive achievements, legal regulations governing environmental protection in construction still exhibit certain limitations and deficiencies, negatively affecting the effectiveness of environmental protection in construction. Specific limitations and deficiencies include:

First, there is no strict regulation binding the project owner's responsibility in cases where construction projects cause environmental pollution or environmental incidents. Currently, according to the provisions on the responsibility of the project owner in case of environmental pollution in Article 14 of the Decree No. 06/2021/NĐ-CP issued by the Government on January 26, 2021, the project owner is only obligated to suspend the project, coordinate with contractors and functional agencies to rectify and

9 For more information about Vietnam's environmental law, see Tin V. T. (2019), 'Assessing Vietnam's environmental laws and direction for improvement', *Vietnamese Journal of Legal Sciences*, Vol. 01, No. 01, pp. 64-76, https://doi.org/10.2478/vjls-2020-0004; Duong T. T. T. (2022), 'Harmonisation between trade liberalisation and environmental protection – A long way to go? An analysis of Vietnam's debris importation control in light of WTO and CPTPP rules', *Vietnamese Journal of Legal Sciences*, Vol. 06, No. 01, pp. 19-43, https://doi.org/10.2478/vjls-2022-0002; For Singapore's experience, see Yew G. C. K. (2019), 'Environmental pollution control in Singapore: The intersection of torts, statutes, regulations and community norms', *Vietnamese Journal of Legal Sciences*, Vol. 01, No. 01, pp. 77-88, https://doi.org/10.2478/vjls-2020-0005.

10 Con N. H. (2018), 'Luật xây dựng và các quy định về bảo vệ môi trường trong hoạt động xây dựng', *Tạp chí Người xây dựng* [trans: 'Construction Law and Environmental Protection Provisions in Construction,' *Journal of Builders*], No. 4, p. 39.

address environmental incidents without directly imposing responsibility on the project owner for rectifying environmental pollution issues. In practice, the project owner is the entity holding the project's finances and has the capability to provide funds for the most influential environmental remediation. Additionally, the lack of binding responsibility for the project owner puts pressure on contractors to address environmental pollution and ensure the project's timeline. This may lead to contractors neglecting environmental pollution issues to complete the project quickly.

Second, the penalties for violations of environmental protection in construction activities, as stipulated in Decree No. 45/2022/NĐ-CP, are relatively low, insufficiently deterrent, and do not effectively prevent violations. Currently, the specific administrative penalties for environmental violations are detailed in Decree No. 45/2022/NĐ-CP, with a maximum fine of 1,000,000,000 VND (equivalent to 39,288 USD) for individuals and 2,000,000,000 VND (equivalent to 78,576 USD) for organizations. The specific fine for each violator is determined based on national technical standards but cannot exceed the specified limit. This reveals several deficiencies as the current penalties are relatively low compared to the impact of environmental violations by the subjects. This leads to contractors neglecting and continuing construction without addressing environmental pollution issues adequately.

In addition, according to Article 25 of Decree No. 45/2022/NĐ-CP, fines for transporting materials without covering or allowing them to spill into the environment during traffic participation range from 2,000,000 VND (equivalent to 78.58 USD) to 4,000,000 VND (equivalent to 157.15 USD); for failing to use specialized equipment and vehicles during material transportation, leading to leaks and dispersal into the environment, the fine is from 10,000,000 VND (equivalent to 392.88 USD) to 15,000,000 VND (equivalent to 589.32 USD). The level of fines lacks sufficient deterrent force against investors and contractors who persistently violate environmental regulations during construction activities. Notably, according to statistics focused on the Vinh Phuc province, through inspection and control activities, the Traffic Police Department has identified and handled 153 cases of vehicles transporting construction materials and waste without proper covering, resulting in materials falling onto the road. The total amount fined for administrative violations is nearly 460.000.000 VND (equivalent to 18,072 USD).[11] However, it is noteworthy that despite the substantial

11 Ministry of Transport, 'Vĩnh Phúc: Xử lý nghiêm xe chở vật liệu xây dựng vi phạm quy định pháp luật' [trans: 'Vinh Phuc Province Takes Strict Measures against Construction Material Transport Vehicles Violating Legal Regulations']. Retrieved from: https://mt.gov.vn/vn/tin-tuc/74908/vinh-phuc--xu-ly-nghiem-xe-cho-vat-lieu-xay-dung-vi-pham-quy-dinh-phap-luat.aspx [accessed 15 December 2023].

number of violations in Vinh Phuc province alone, such violations persist not only there but also across various provinces and municipalities nationwide. Furthermore, establishing such low penalty levels also influences the environmental protection awareness of the entities involved.[12]

Third, there is currently no specific policy to encourage using environmentally friendly materials in construction activities. The Government currently stipulates the regulations on the use of construction materials in construction activities in Article 7 of the Decree No. 09/2021/NĐ-CP dated February 9, 2021, on the management of construction materials. According to this decree, the Government currently only encourages using economically efficient construction materials and establishes a roadmap for using environmentally friendly construction materials. However, there is no specific policy to encourage using cost-effective materials and restrict materials that adversely affect the environment. Moreover, if project owners and contractors use materials that impact the environment, there are no regulations for handling; measures are only taken after environmental pollution has occurred. Consequently, this non-binding regulation allows project owners to neglect environmental concerns and continue using materials that are detrimental to the environment to save costs and expedite construction progress, resulting in environmental threats and increased risks of environmental incidents and pollution in the construction area.

Fourth, environmental factors are still not adequately addressed in the specified fees for various types of vehicles involved in construction activities. Currently, the fees for road use by toll-collectible vehicles are regulated in Appendix I issued with the Circular No. 70/2021/TT-BTC dated August 12, 2021, by the Ministry of Finance, which defines the levels, regimes, collection, exemption, management, and use of road use fees. Accordingly, the fees are based on vehicle type, seating capacity, and load capacity without considering the environmental impact of each type of vehicle. This categorization equates various types of construction transport vehicles with a general fee. According to a report from the Inspectorate of the Hanoi Department of Transport, the careless covering of vehicles transporting sand, gravel, and construction materials, leading to spillage onto roads, remains prevalent. On several routes, such as National Highway 32, Cau Dien, Ho Tung Mau, Tay Tuu, Hoang Tang Bi, Tan Xuan, and Vo Chi Cong, there are still

12 Hang L. T. (2018), 'Các hạn chế về xử lý vi phạm hành chính trong lĩnh vực bảo vệ môi trường ở Việt Nam hiện nay', *Tạp chí Pháp luật và Thực tiễn* [trans: 'Limitations in Current Legal Regulations on Administrative Sanctions in Environmental Protection', *Journal of Law and Practice*], No. 01, p. 44.

instances of uncovered trucks or inadequately secured loads causing material spillage and mud on the road. Similarly, on the section of the Kieu Mai road (Bac Tu Liem district), there are frequent cases of trucks transporting construction materials without proper covering, causing pollution.[13] Residents in the area have to close their doors tightly to prevent dust, yet they still endure the noise from heavy-duty trucks weighing over 20-30 tons running noisily day and night, causing long-standing grievances among the local population[14].

Fifth, technical standards in construction activities are still incomplete. In construction activities encompassing various operations, technical standards are currently primarily focused on construction execution activities. The regulations lack specificity and sanctions, particularly in construction standards, issuance, and application. While technical standards exist for air quality (QCVN 05:2023/BTNMT), noise (QCVN 24/2016/BTNMT), and vibration (QCVN 27:2016/BTNMT), heat and light standards are absent, hampering appropriate measures. Wastewater regulations, such as QCVN 40:2011/BTNMT, primarily address industrial wastewater, neglecting construction wastewater. The distinction between domestic and industrial wastewater remains ambiguous, impeding the application of suitable standards. With no separate standards for construction wastewater, controlling discharge is challenging. This oversight is critical as construction wastewater contains metal components and hazardous substances, necessitating stringent regulation to mitigate environmental harm.

3.2. Law enforcement

An assessment of environmental law enforcement in construction activities reveals lax compliance and implementation of legal provisions, marked by numerous shortcomings and limitations.

First, public awareness, as well as that of enterprises, regarding compliance with environmental laws in construction activities is not sufficiently high. Currently, construction businesses consider environmental protection merely as a regulatory obligation to obtain construction permits. During the construction phase, they often fail to adhere to the approved environmental protection plan, neglect to build or operate environmental protection facilities as committed, violate

13 Vu K. (2023), 'Xe chở vật liệu làm rơi vãi hoành hành nhiều tuyến đường' [trans: 'Vehicles carrying construction materials cause widespread debris on many roads']. Retrieved from: https://hanoimoi.vn/xe-cho-vat-lieu-lam-roi-vai-hoanh-hanh-nhieu-tuyen-duong-645191.html [accessed 15 December 2023].

14 Hung L. D. (2021), 'Xe chở vật liệu xây dựng gây ô nhiễm' [trans: 'Construction material transport trucks contribute to environmental pollution']. Retrieved from: https://hanoimoi.vn/xe-cho-vat-lieu-xay-dung-gay-o-nhiem-466962.html [accessed 15 December 2023].

regulations on hazardous waste management during construction, fail to contain construction sites, improperly dispose of construction waste, and transport materials and construction waste without adequate precautions, causing pollution.[15] Many enterprises only comply to a relative extent or even intentionally disregard legal regulations, violating laws without investing in or prioritizing environmental protection efforts, thereby failing to minimize their environmental impact. A notable example is the case of Hoang Thang Construction Limited Liability Company in Cao Bang Province, which deliberately ignored state regulations and public health, causing severe environmental pollution to nearby residents due to the unrestricted transportation of construction materials, leading to soil and dust dispersion over a large area.[16] Furthermore, when fined by local authorities, the company openly ignored the penalty notice, neither paying the fine nor taking any corrective actions.[17]

Second, the enforcement and penalties for legal violations related to environmental protection in construction activities are inadequate. Currently, administrative penalties pursuant to Decree No. 45/2022/NĐ-CP are relatively lax and lack precision and stringency. Regarding issues such as air pollution from emissions and dust, noise pollution, and vibration, widespread violations still occur in many construction areas, particularly in suburban areas, without strict penalties. Specifically, in major cities like Ho Chi Minh City and Hanoi, air pollution due to construction activities has reached alarming levels due to the extensive construction projects underway.[18] This situation has led to public dissatisfaction in many districts, and local authorities have repeatedly proposed to higher authorities, but the situation remains complex and unresolved.[19] Penalties for transporting materials without proper cover, causing spillage and environmental pollution,[20] are specified under Article 25 of Decree No. 45/2022/NĐ-CP,

15 Electronic portal of Tra Vinh Provincial Police (2017), 'Xây dựng cơ bản và những vi phạm pháp luật về bảo vệ môi trường phổ biến trong lĩnh vực xây dựng cơ bản' [trans: 'Basic construction and common legal violations in basic construction in terms of environmental protection']. Retrieved from: https://congan.travinh.gov.vn/ch26/264-Xay-dung-co-ban-va-nhung-vi-pham-phap-luat-ve-bao-ve-moi-truong-pho-bien-trong-linh-vuc-xay-dung-co-ban.mhtml [accessed 26 November 2023].

16 VNEWS (2020), 'The construction company disregards governmental regulations and consistently causes environmental pollution'. Retrieved from: https://www.youtube.com/watch?v=CTeZeCnMGE8 [accessed 26 November 2023].

17 *Ibid*.

18 Vietnam Television (2017), 'Gia tăng ô nhiễm không khí từ hoạt động xây dựng' [trans: 'Increasing air pollution from construction activities']. Retrieved from: https://vtv.vn/trong-nuoc/gia-tang-o-nhiem-khong-khi-tu-hoat-dong-xay-dung-20170724205854154.htm [accessed 26 November 2023].

19 *Ibid*.

20 *Ibid*.

yet enforcement remains inadequate, allowing violations like uncovered transport to persist unchecked.[21]

Third, the investment capital for construction activities remains relatively low, failing to meet the demands of environmental protection and the remediation of environmental pollution incidents. Currently, funding for environmental protection efforts is limited and does not correspond to the economic development pace of the market. There is a lack of policies encouraging construction project owners to address environmental protection concerns. According to the Decree No. 08/2022/NĐ-CP, guiding the implementation of the Environmental Protection Law, the privileged and supported activities in the environmental protection field are classified into three groups: projects investing in waste collection, treatment, recycling, or reuse; enterprises producing, supplying technology, equipment, products, and services meeting environmental protection requirements; and environmental protection activities not constituting business investment. Consequently, project owners continue to prioritize economic development over environmental protection. Local and regional environmental protection funds are insufficient to develop waste treatment and recycling technologies suitable for current economic and social conditions.

Fourth, local authorities' participation in issuing technical standards at each locality faces difficulties and delays. According to Article 32 of the 2006 Law on Standards and Technical Regulations, responsibilities for establishing, issuing, and inspecting national technical standards are divided between two entities: (i) Ministers and heads of ministerial-level agencies responsible for construction and issuing national technical standards within their assigned sectors; and (ii) Provincial People's Committees under central authority responsible for construction and issuing local technical standards. Empowering local authorities to set independent standards could improve environmental pollution management in construction, aligning with unique local regulations and conditions. Despite their delegated authority, local entities face challenges and delays in enacting such standards, hindering effective implementation. Evidently, recognizing the importance of local standards aligned with urban planning goals, pollution levels, and socio-economic conditions, the Ho Chi Minh City People's Committee proposed the development of the city's environmental

21 Electronic portal of Thanh Hoa City (2021), 'Nỗi lo mất ATGT từ xe tải làm rơi vãi vật liệu xây dựng xuống đường' [trans: 'Concerns about traffic safety due to trucks dropping construction materials on the road']. Retrieved from: https://tpthanhhoa.thanhhoa.gov.vn/web/gioi-thieu-chung/tin-tuc/noi-lo-mat-atgt-tu-xe-tai-lam-roi-vai-vat-lieu-xay-dung-xuong-duong.html [accessed 26 November 2023].

technical standards for the period 2021–2025 to relevant ministries in 2020.[22] However, as of now, Ho Chi Minh City has not yet established and issued any environmental technical standard. This delay renders legal provisions redundant and impractical, exacerbating environmental pollution at construction sites due to the absence of applicable standards.

4. Recommendations for improving Vietnamese environmental protection laws in construction activities

First, there is a need to supplement provisions regarding the financial responsibility of investors in cases where construction projects cause environmental pollution or environmental incidents, as stipulated in Article 14 of the Government Decree No. 06/2021/NĐ-CP dated January 26, 2021. This supplementation is necessary as currently, Article 14 only mandates investors to coordinate with construction contractors and state agencies in addressing pollution and environmental incidents. Such a provision does not tightly bind the responsibility of investors, nor does it provide sufficient impetus for investors to actively and diligently ensure the fulfillment of environmental protection requirements during the construction process. When a construction project results in pollution or environmental incidents, the direct responsibility for implementing corrective measures lies with the construction contractor. In contrast, investors are only obligated to coordinate and report to state agencies. This places a financial burden on construction contractors in cases of insufficient funds for remediation or pressure to meet project completion deadlines from the investor. To address this issue, it is necessary to draw upon Switzerland's experience regarding stringent investor responsibility regulations in construction activities tailored to the socio-economic conditions of Vietnam. Such regulations in Switzerland have contributed significantly to the country's considerable success in environmental protection in construction.

Second, it is necessary to adjust the penalties for violations of environmental protection in construction activities as specified in the Decree No. 45/2022/NĐ-CP to increase the responsibility of violators. Raising monetary penalties would motivate investors to prioritize noise and vibration reduction measures from the start, as it would be more cost-effective than intentionally breaking the law and incurring hefty fines. It is also crucial to specify additional penalties for non-compliance with corective measures and establish a more rigorous monitoring and enforcement mechanism by

22 Ho Chi Minh City People's Committee (2020), 'Quy chuẩn kỹ thuật môi trường TP giai đoạn 2021 – 2025' [trans: 'Environmental technical standards of the City for the 2021 – 2025 period']. Retrieved from: https://hochiminhcity.gov.vn/thong-tin-chi-dao-dieu-hanh/-/asset_publisher/pcoYAr5aCkog/content/quy-chuan-ky-thuat-moi-truong-tp-giai-oan-2021-2025 [accessed 26 November 2023].

authorized authorities. For instance, under Articles 1, 2, and 3 of Articles 22 and 23, of the Decree No. 45/2022/NĐ-CP if additional penalties such as suspending activities causing vibration or noise pollution are not applied, the decree should stipulate the implementation of corrective measures and clearly state that a failure to implement these measures to mitigate noise and vibration will result in the imposition of additional penalties, including the suspension of activities causing noise and vibration.

Third, there is a need to establish specific and clear financial policies to encourage businesses to use environmentally friendly materials in construction activities. The government should implement practical, specific financial policies to support and incentivize businesses. These policies could encompass tax incentives, fee reductions, financial support, and similar measures. Moreover, boosting the allocation of funds, grants, and favorable central bank policies for investors employing environmentally friendly materials is crucial.

Fourth, environmental impact factors should be incorporated into the regulation of vehicle type fees as outlined in the Circular No. 70/2021/TT-BTC of the Ministry of Finance dated August 12, 2021, which specifies the collection, regime, payment, exemption, management, and use of road use fees. In determining road use fees for fee-paying vehicles according to Appendix I accompanying the Circular No. 70/2021/TT-BTC, in addition to considering vehicle type, seating capacity, and load capacity, it is essential to include criteria based on the environmental impact of each vehicle type. Learning from Switzerland's experience, substantial fees on construction material transport vehicles based on environmental criteria can be instrumental in effectively minimizing severe air pollution and traffic congestion.

Fifth, the government should promptly issue supplementary technical standards in the construction sector to ensure effective management and control of environmental issues in construction activities, pursuant to Article 64, Point A, clause 5 of the 2020 Environmental Protection Law. Establishing specific technical standards for construction wastewater will enhance the competent authority's strict control and management of construction wastewater. Learning from Japan's approach, independent pollution control agreements between project owners and local authorities, surpassing national or municipal regulations, establish a robust responsibility framework for construction environmental protection. These agreements demand stricter compliance and offer an effective means for the government to address environmental issues when legal provisions are inadequate. ●

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Author Contribution

All authors contributed to the study conception and design. All authors read and approved the final manuscript.

Declarations

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