

Enhancing Vietnam's financial policies for climate change response: Gaps, challenges, and legal recommendations

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ABSTRACT

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This article investigates Vietnam's financial policies in the context of climate change response, focusing on their objectives, methodologies, and outcomes. The primary aim is to analyze the use of fiscal tools such as carbon taxes and financial instruments like green bonds to support climate adaptation and mitigation efforts. Employing a qualitative approach, the study integrates doctrinal legal analysis and comparative methods to evaluate Vietnam's regulatory frameworks against international best practices. The findings indicate significant limitations, including the lack of a dedicated carbon tax and underdeveloped guidelines for green bond issuance, particularly for local authorities. These gaps hinder Vietnam's ability to mobilize financial resources effectively and address climate-related challenges. The study concludes by offering targeted recommendations, such as implementing a carbon tax policy aligned with global standards and strengthening regulations on green bonds to ensure transparency and accountability. These improvements are crucial for enhancing Vietnam's resilience to climate change and achieving sustainable development goals.

1. Introduction

Climate change refers to alterations in the climate system, directly or indirectly triggered by human activities that modify the composition of the global atmosphere, supplementing natural climate variability observed over comparable periods (United Nations Framework Convention on Climate Change [UNFCCC], 1992, Clause 2, Article 1). Put differently, climate change represents changes in the climate system - comprising the atmosphere, hydrosphere, biosphere, and lithosphere - over specific timeframes, whether in decades or millions of years, due to natural or artificial causes (Committee on Science, Technology and Environment of the National Assembly, 2017, p. 6). Numerous studies confirm that climate change has profoundly impacted the quality of life, human health, and economic stability of nations worldwide (Do, n.d.; Sheffield et al., 2014, p. 114).

In light of these adverse effects, proactive measures are necessary to mitigate the impacts of climate change, which has led to the concept of "climate change response." Fundamentally, this concept encompasses human activities to adapt to and mitigate climate change (Committee on Science, Technology and Environment of the National Assembly,

2017, p. 7). From a legal perspective, Article 3, Clause 32 of the Law on Environmental Protection 2020 defines “Climate change response” as human activities aimed at adapting to climate change and reducing greenhouse gas emissions (National Assembly of Vietnam, 2020). Each country, depending on its financial and technological resources, may pursue various measures to respond effectively (Committee on Science, Technology and Environment of the National Assembly, 2017, p. 158):

- **Mitigation:** Primarily focusing on reducing greenhouse gas emissions across all societal sectors, such as energy production, transportation, and construction. This approach can involve carbon taxes (Steier, 2018, p. 346), emission caps, and trade mechanisms similar to those in the Kyoto Protocol (Posner & Sunstein, 2008, p. 1,574).

- **Adaptation:** Ensuring resilience by protecting critical assets, such as power plants, transportation networks, and residential areas, from flooding, rising temperatures, and rising sea levels.

- **Geoengineering:** Employing technology to slow global temperature increases by directly removing CO₂ from the atmosphere or by reflecting solar radiation into space.

Countries with substantial resources may adopt all three approaches concurrently. However, for many developing nations, implementing all three strategies poses considerable financial and technological challenges. Regardless of the approach taken, sound financial policy remains essential to enable countries to achieve their climate goals. Therefore, rather than addressing the full range of climate response strategies, this paper focuses on the financial policies employed by various nations to mitigate the adverse effects of climate change.

2. Theoretical basis

The financial policy response to climate change has been shaped by an evolving body of research that highlights the intersection of environmental law, economic policy, and sustainable development. Foundational theories in environmental economics, such as the “polluter pays” principle and the use of fiscal tools to drive behavioral change, inform the current understanding of climate-focused financial strategies. Studies indicate that carbon taxation and other financial instruments play critical roles in encouraging reduced emissions, promoting sustainable business practices, and generating revenue for climate resilience projects. Additionally, international frameworks, including the Kyoto Protocol and the Paris Agreement, provide guiding principles for national-level financial policies aimed at mitigating climate impacts through economic incentives.

Building on this theoretical foundation, this research develops an analytical framework that focuses on two key areas: (i) fiscal tools like carbon taxes, designed to reduce greenhouse gas emissions, and (ii) financial mobilization mechanisms, including green bonds, to support infrastructure and adaptation projects. This framework is proposed to address gaps in Vietnam’s policy landscape, providing a structured approach to evaluating how these financial instruments can be optimized for greater effectiveness. The study hypothesizes that a well-integrated financial policy framework - aligned with international standards and tailored to Vietnam’s specific economic and environmental conditions - will enhance the nation’s resilience to climate change.

3. Methodology

This study employs a qualitative approach, combining doctrinal legal analysis and comparative methods to evaluate Vietnam's financial policies in addressing climate change. The doctrinal analysis focuses on examining Vietnam's legal provisions, regulations, and fiscal instruments related to climate response, with particular attention to carbon taxes and green bonds. Comparative analysis is used to contextualize Vietnam's policies within international standards, drawing on examples from jurisdictions with established climate finance frameworks.

Data for this study were sourced from legal texts, government reports, and policy documents, as well as relevant academic articles and research studies. Additionally, international treaties and agreements, such as the Kyoto Protocol and the Paris Agreement, were analyzed to assess alignment with global best practices. This research also examines secondary data from reputable sources, including reports by international organizations like the United Nations and the World Bank, to support the evaluation of policy effectiveness. By integrating these methods, the study aims to provide a comprehensive understanding of Vietnam's climate finance policies and identify areas for improvement in alignment with global standards.

4. Results and discussion

4.1. Results

The analysis reveals both progress and challenges in Vietnam's financial policies aimed at climate change mitigation and adaptation. Vietnam has made notable strides in utilizing fiscal instruments, such as environmental protection taxes and preferential policies, to incentivize environmentally responsible practices. However, a key finding is the absence of a dedicated carbon tax, which limits the country's ability to directly curb emissions and generate revenue specifically for climate initiatives. While environmental taxes are in place, they do not fully address the unique impact of carbon emissions, highlighting an area for potential development within Vietnam's fiscal policy.

In terms of financial mobilization, Vietnam has established foundational policies for green bonds, allowing the government and eligible enterprises to raise capital for climate-related projects. Despite this progress, regulatory gaps persist. For example, the procedures and incentives for local authorities to issue green bonds are underdeveloped, limiting the participation of local governments in financing regional adaptation projects. Additionally, the lack of a cohesive reporting and transparency framework for green bond usage hinders efforts to track the effectiveness of such investments in achieving sustainable outcomes.

The comparative analysis with other countries reveals that Vietnam's framework could benefit from adopting a more structured carbon tax policy and enhancing its green bond regulations. By doing so, Vietnam would not only improve its alignment with international practices but also create a more robust financial base to address climate risks. These findings underscore the need for Vietnam to strengthen its fiscal policy framework to support a comprehensive and sustainable response to climate change.

4.2. Discussion

4.2.1. Theory for financial policy in response to climate change

Broadly, a nation's financial policy involves strategies for mobilizing funds through taxes and borrowing, followed by the allocation of these resources toward planned and unplanned expenditures (Sharma, 2020). In this context, a country's financial policy for responding to climate change encompasses the measures employed to raise and utilize funds specifically aimed at combating climate-related challenges.

From this perspective, governments can pursue the following approaches to implement financial policies for climate change response:

i) Utilizing tax instruments to influence environmental attitudes and behaviors: Financial tools like taxes can shape consumer behavior by introducing economic consequences for environmentally harmful activities. Many countries now recognize taxes as effective mechanisms for encouraging producers to adopt sustainable practices (Nguyen, 2022). Taxes that address climate change can include excise taxes, environmental protection taxes, and carbon taxes. Among these, carbon taxes are widely considered a powerful tool for climate action, as they impose a levy on the carbon content of fuels or CO₂ emissions resulting from fossil fuel combustion (Zimmer, 2008, p. 67). Research suggests that carbon taxes are advantageous because they are administratively manageable, facilitate strict oversight (Kerr, 2010, p. 93), and encourage producers to consider sustainable materials and site locations (Zimmer, 2008, p. 67). Additionally, carbon tax revenue can be directed toward investments in climate resilience projects. While critics argue that energy and carbon taxes may increase social costs and reduce employment opportunities (Christian, 1992, p. 226), the predictable and transparent nature of carbon taxes has led many nations to adopt them (Kerr, 2010, p. 93). Such taxes also enhance consumer awareness of social responsibility, as people increasingly support businesses committed to environmental and social ethics (N. T. H. Nguyen, n.d.).

ii) Implementing financial policies to attract capital for climate adaptation infrastructure: Climate change imposes serious adverse effects on human health, living conditions, and economic stability, altering production structures and raising material costs. Reducing these impacts requires infrastructure investments tailored to resilience and adaptation. Different countries vary in their infrastructure needs and financial capabilities, which shape their approach to climate-related investments. In October 2020, for instance, the UK government announced a £160 million (USD 207 million) investment to expand wind energy capacity fourfold by 2030, aiming for net-zero emissions by 2050. Similarly, the European Union launched the LIFE Programme for the Environment and Climate Action (2021 - 2027) with a €5.4 billion budget, allocating €1.9 billion to climate initiatives (P. T. Nguyen, n.d.). In Southeast Asia, Singapore's \$2 billion Green Investment Programme supports the development of carbon markets, sustainable consulting services, and environmental risk management (Phan, 2021). These efforts underscore that, even amid global economic challenges such as the Covid-19 pandemic, governments prioritize climate adaptation infrastructure. Funding for these investments can come from multiple sources, including Climate Change Response Funds contributed by corporations, government loans supported by green bonds, and direct allocations from national budgets. Notably, green bonds

¹have gained traction as an effective tool to mobilize capital for climate resilience projects, attracting a wide range of investors (Park, 2018, p. 08; Pham & Le, 2019).

4.2.2. Current status of Vietnam's financial policy for climate change response

In Vietnam, Article 63 of the Constitution 2013 establishes that the State shall have policies for environmental protection, efficient and sustainable management and use of natural resources, conservation of nature and biodiversity, proactive disaster prevention, and response to climate change (National Assembly of Viet Nam, 2013). The Law on Environmental Protection 2020 dedicates Chapter VII specifically to climate change response (National Assembly of Vietnam, 2020). Although this chapter addresses climate change, it does not extensively cover financial policies for climate response. This omission is understandable, as the Environmental Protection Law primarily focuses on environmental issues, whereas financial policies for climate response fall under the purview of public finance regulations, including tax laws and state budget legislation.

4.2.2.1. Current status of tax tools used to influence environmental attitudes and behaviors

Currently, Vietnam does not have a dedicated carbon tax to regulate activities contributing to CO₂ emissions, unlike some other countries. One of the key reasons many developing countries, including Vietnam, have yet to implement a carbon tax is the concern over its impact on the competitiveness of domestic enterprises compared to wealthier foreign corporations. Developed countries often possess superior financial and technological resources, enabling them to adapt more readily to emission reduction measures than developing nations. Consequently, the introduction of a carbon tax could impose additional financial burdens on Vietnamese enterprises, particularly small and medium-sized businesses, thereby weakening their ability to compete in international markets. Furthermore, the establishment of a carbon tax in Vietnam requires compliance with a complex legislative process. This includes drafting the legislation, soliciting public and stakeholder feedback, and submitting the proposed law to the National Assembly for review and approval. Such a process demands significant time and resources, particularly to ensure that the tax policy is not only legally feasible but also aligns with the country's socio-economic context. Nevertheless, in light of Vietnam's commitment to achieving net-zero emissions by 2050, the implementation of a carbon tax is essential for gradually reducing reliance on fossil fuels and transitioning toward sustainable energy sources. While developing alternative energy sources, such as nuclear power and renewable energy, may mitigate CO₂ emissions, a carbon tax remains a critical tool for incentivizing businesses and consumers to adopt environmentally responsible practices. Combining a carbon tax with other supportive measures, such as improving infrastructure, enhancing public services, and fostering an investment-friendly environment, can help balance the goals of sustainable development and international competitiveness. These policies not only enhance the effectiveness of climate mitigation efforts but also align Vietnam with global trends toward sustainability.

The Environmental Protection Tax Law 2010 (Article 2, Clause 1) specifically targets products and goods that negatively impact the environment during usage, regardless of whether their production involves fossil fuels (National Assembly of Vietnam, 2010). For example, coal (including brown coal, anthracite, coking coal, etc.), which contributes to carbon emissions, falls under this category.

¹Green bonds are a type of debt security issued by the government, local authorities, or a company to raise capital from investors for projects that contribute to a low-carbon economy and climate adaptation.

The excise tax targets luxury goods and services (Ho Chi Minh City University of Law, 2015, p. 155) that are considered non-essential, impacting public health and promoting environmental consciousness. For instance, excise taxes on gasoline and passenger vehicles with fewer than 24 seats aim to shape consumer behavior. The tax on gasoline serves to discourage usage that pollutes the environment, while different tax rates on passenger vehicles (National Assembly, 2008, Article 7), depending on engine type and fuel, encourage consumers to consider more eco-friendly options.

The resource tax is designed to contribute a portion of income derived from natural resource exploitation to the national budget, regulating resource extraction activities within Vietnam's territory (Ho Chi Minh City University of Law, 2015, p. 382). While it does influence behavior regarding resource extraction, it is not yet a primary tool for climate change mitigation.

Among these taxes, the corporate income tax indirectly encourages environmentally friendly business practices. Vietnamese law allows a preferential tax rate of 10% for up to 15 years for income derived from new investment projects in environmental protection² (Ministry of Finance, 2014c, 2014d). This includes producing pollution treatment equipment, environmental monitoring devices, and waste management solutions. A permanent 10% rate applies to income from "socialized"³ activities in areas such as education, health, culture, sports, and environmental protection (Ministry of Finance, 2014c, 2014d).

These tax policies have influenced consumer awareness and investment choices toward environmental protection and climate action. However, these impacts are not yet strong enough to produce the desired effectiveness. Introducing a carbon tax into Vietnam's tax system could create a clearer regulatory basis to control fossil fuel use and CO₂ emissions. This would provide an additional financial tool to fund environmental improvement and climate response activities. Carbon taxes are already widely recognized globally as one of the most effective solutions for controlling annual carbon emissions, in alignment with the Paris Agreement 2015 (Ho, n.d.). However, the level of regulation and tax rates vary by country, as each nation adapts its approach based on its unique context and goals.

²See Point c, Clause 1, Article 19 of Circular No. 78/2014/TT-BTC dated June 18, 2014, issued by the Ministry of Finance, guiding the implementation of Decree No. 218/2013/ND-CP dated December 26, 2013, of the Government, which stipulates and guides the implementation of the Law on Corporate Income Tax, amended and supplemented by Clause 1, Article 11 of Circular No. 96/2015/TT-BTC, guiding corporate income tax under Decree No. 12/2015/ND-CP dated February 12, 2015, of the Government, which provides detailed regulations on the implementation of the Law amending and supplementing a number of articles of various Tax Laws, and amends and supplements a number of articles of Decrees on taxes, and amends and supplements a number of articles of Circular No. 78/2014/TT-BTC dated June 18, 2014, Circular No. 119/2014/TT-BTC dated August 25, 2014, and Circular No. 151/2014/TT-BTC dated October 10, 2014, issued by the Ministry of Finance.

³Point a, Clause 3, Article 19 of Circular No. 78/2014/TT-BTC dated June 18, 2014, issued by the Ministry of Finance, guiding the implementation of Decree No. 218/2013/ND-CP dated December 26, 2013, of the Government, which stipulates and guides the implementation of the Law on Corporate Income Tax, amended and supplemented by Clause 3, Article 11 of Circular No. 96/2015/TT-BTC, guiding corporate income tax under Decree No. 12/2015/ND-CP dated February 12, 2015, of the Government, which provides detailed regulations on the implementation of the Law amending and supplementing a number of articles of various Tax Laws, and amends and supplements a number of articles of Decrees on taxes, and amends and supplements a number of articles of Circular No. 78/2014/TT-BTC dated June 18, 2014, Circular No. 119/2014/TT-BTC dated August 25, 2014, and Circular No. 151/2014/TT-BTC dated October 10, 2014, issued by the Ministry of Finance.

Table 1*Carbon Tax Rates in some European Countries*

	Carbon Tax Rate (per ton of CO ₂)		Year of Implementation
Denmark	€23.77	\$ 26.00	1992
Estonia	€ 1.83	\$ 2.00	2000
Finland	€ 62.18	\$ 68.00	1990
France	€ 44.81	\$ 49.00	2014
Iceland	€ 27.43	\$ 30.00	2010
Ireland	€ 25.60	\$ 28.00	2010
Latvia	€ 9.14	\$ 10.00	2004
Liechtenstein	€ 90.53	\$ 99.00	2008
Norway	€ 48.46	\$ 53.00	1991
Poland	€ 0.09	\$ 0.10	1990
Portugal	€ 23.77	\$ 26.00	2015
Slovenia	€ 17.37	\$ 19.00	1996
Spain	€ 14.63	\$ 16.00	2014
Sweden	€ 108.81	\$ 119.00	1991
Switzerland	€ 90.53	\$ 99.00	2008
Ukraine	€ 0.37	\$ 0.40	2011
United Kingdom	€ 20.12	\$ 22.00	2013

Note. The data are from “Carbon taxes in Europe” by E. Asen, 2020 (<https://taxfoundation.org/carbon-taxes-in-europe-2020/>).

As of 2024, according to the World Bank, 39 countries and regions have implemented a carbon tax (Nguyen, 2024, p. 11). With over 30 years of development, the experiences of countries worldwide with carbon taxation have provided a wealth of diverse information for the formulation and implementation of this policy. These experiences demonstrate that a carbon tax can be tailored to suit various political and national objectives. To date, carbon taxes have been adopted by countries across different continents. The long-term implementation and application of carbon taxes serve as evidence that the practical enforcement of this tax can yield positive environmental outcomes and influence national tax policies (Nguyen, 2024, p. 11).

A carbon tax is regarded as one of the most effective tools for directly reducing greenhouse gas emissions. This mechanism provides clear economic incentives for businesses and consumers to decrease their reliance on fossil fuels while encouraging the use of renewable energy and the adoption of environmentally friendly technologies. Revenue generated from a carbon tax can be reinvested in critical projects, such as the development of clean energy infrastructure and climate adaptation programs. Furthermore, a carbon tax raises social and corporate awareness of environmental protection responsibilities, contributing to the establishment of a more sustainable economy. However, implementing a carbon tax in

Vietnam poses significant challenges. Firstly, energy-intensive industries, such as steel and cement production, may face substantial cost increases, reducing their competitiveness in the international market. Secondly, consumers could experience higher costs for goods and services due to the tax's impact. Finally, the introduction of a carbon tax requires a complex legislative process, involving extensive stakeholder consensus and significant time for drafting, approval, and implementation. Despite these challenges, a carbon tax aligns with Vietnam's net-zero emissions commitment and represents a crucial tool for transitioning towards a low-carbon economy.

Alongside the carbon tax, green bonds are a promising financial instrument for mobilizing long-term capital for sustainable projects. This tool not only provides the necessary funding for climate mitigation and adaptation initiatives but also enhances Vietnam's international reputation in climate finance. Particularly, green bonds attract investors focused on Environmental, Social, and Governance (ESG) criteria, creating opportunities to mobilize private capital and reduce fiscal pressures on the state budget. Nonetheless, the use of green bonds in Vietnam faces several limitations. A key issue is the lack of clear regulations governing the issuance of green bonds, especially at the local government level, which restricts their ability to raise funds for regional climate adaptation projects. Additionally, the absence of robust transparency and oversight mechanisms increases the risk of inefficient or inappropriate use of funds. These shortcomings not only erode investor confidence but also limit the potential growth of the green bond market in Vietnam.

4.2.2.2. Current status of financial policies for attracting investment capital in climate change adaptation infrastructure

In addition to tax revenue, particularly from environmental-related taxes that embody the "polluter pays" principle (Vo, 2014), the State has another tool for raising funds to support environmental projects and investments that contribute positively to climate change adaptation: green bonds. According to Clause 1, Article 150 of the Environmental Protection Law 2020 stipulates that green bonds are bonds issued by the government, local authorities, or enterprises following bond regulations to raise capital for environmental protection activities and environmentally beneficial investment projects (National Assembly of Vietnam, 2020). Under this provision, three entities are eligible to issue green bonds: the government, local authorities, and enterprises that meet regulatory conditions. Specifically, green bonds can be issued by the government for projects aimed at environmental protection under the Environmental Protection Law (referred to as "green projects") and included in the list of projects eligible for public investment funds under the Public Investment Law and the State Budget Law (National Assembly of Vietnam, 2020). In contrast, "corporate green bonds" are bonds issued by enterprises to finance projects in the field of environmental protection, bringing environmental benefits in line with the Environmental Protection Law 2020 (National Assembly of Vietnam, 2020).

The regulatory framework for green bonds issued by enterprises and the government is largely established under Article 5.3, Article 19.1.b, and Article 21.2.d of Decree No. 153/2020/ND-CP (Government of Vietnam, 2020) on the private offering and trading of corporate bonds in the domestic and international markets, and Article 21 of Decree No. 95/2018/ND-CP (Government of Vietnam, 2018) on the issuance, registration, depository, listing, and trading of government debt instruments in the securities market. These efforts

reflect the State's commitment to improving the legal framework for green bonds, aiming to make them an effective tool for mobilizing funds for climate adaptation projects, as the demand for capital in this area is substantial⁴ (Pham & Le, 2019). However, certain limitations in these regulations need to be addressed:

Firstly, there is a lack of specific regulations regarding the entities eligible to issue green bonds. Clause 1, Article 150 of the Environmental Protection Law 2020 clearly identifies three issuers of green bonds: the government, local authorities, and enterprises (National Assembly of Vietnam, 2020). However, the implementing guidelines do not clarify the procedures for local authorities to issue green bonds. This omission represents a legal gap, as local authorities (provincial level) are also empowered to issue bonds to meet their capital needs, which aligns with Clause 1, Article 150 of the Environmental Protection Law 2020 (National Assembly of Vietnam, 2020).

The absence of clear regulations detailing the conditions, procedures, and issuance process for green bonds at the local level restricts provincial governments from actively participating in climate finance initiatives. Without explicit guidance, local authorities face challenges in mobilizing funds specifically designated for environmental protection and climate adaptation projects within their jurisdictions. This gap not only limits the effectiveness of local governments in responding to climate change but also prevents them from fully leveraging the financial tools available to the central government and enterprises.

Moreover, the lack of specific provisions for local authorities can create disparities in climate finance mobilization across different regions. Provinces with a higher demand for climate adaptation infrastructure but fewer resources may struggle more without a streamlined framework to issue green bonds. A comprehensive regulatory framework for green bond issuance by local governments would promote more equitable access to climate finance and empower localities to contribute meaningfully to national climate targets. Filling this regulatory gap is essential for building a cohesive and inclusive financial strategy for climate action in Vietnam, ensuring that all levels of government are equipped to tackle the urgent environmental challenges they face.

Secondly, Currently, although Vietnamese law includes basic provisions on reporting and information disclosure for corporate green bonds under Decree No. 153/2020/ND-CP (Government of Vietnam, 2020), similar requirements for government-issued green bonds have not been specified in Decree No. 95/2018/ND-CP (Government of Vietnam, 2018), which regulates the issuance, registration, depository, listing, and trading of government debt instruments on the securities market. This lack of clarity creates a gap in the regulatory framework for green bonds issued by the government, potentially hindering transparency and accountability in the management of green bond proceeds.

Some may argue that since green bond proceeds collected by local authorities are considered part of the state budget, they fall under the strict regulations on revenue and expenditure established by state budget laws, thus rendering separate reporting and management requirements unnecessary. However, this approach overlooks the unique purpose of green bonds, which are specifically aimed at financing environmental protection and

⁴According to research by international organizations and Vietnamese authorities, Vietnam requires approximately USD 21.2 billion over the next 10 years (post-2020) to promote sustainable economic growth.

climate adaptation projects. Without specific guidelines for reporting and managing green bond funds, there is a risk that these funds may not be used as effectively as intended or may even be diverted to other areas.

Moreover, green bonds often attract investors who are motivated by the opportunity to support climate initiatives, often accepting lower returns in exchange for contributing to environmental goals. For this reason, the government has a responsibility to ensure that the funds raised are managed transparently and that they are allocated strictly to climate and environmental projects. Clear, specific regulations on reporting, oversight, and accountability for green bond funds would not only enhance public trust but also encourage future investment in green projects. Transparent management of these funds will lay a foundation for building a robust market for green bonds, enabling Vietnam to meet its climate commitments and secure ongoing community support for environmental sustainability efforts.

5. Conclusions and recommendations

A nation's financial policy for addressing climate change encompasses the measures and methods it employs to mobilize and allocate funds for climate adaptation and mitigation activities. While financial policies may vary from country to country, they generally focus on using tax instruments to influence consumer behavior, production, and investment practices of businesses, and on utilizing green bonds to raise capital for infrastructure projects that mitigate the negative impacts of climate change, thereby protecting human health and the environment.

Vietnam's financial policy in this area also aims to achieve these objectives through similar tools. However, to enhance the effectiveness of these policies, Vietnamese law needs to supplement and strengthen the foundational frameworks for implementing a reasonable carbon tax policy and improving regulations on green bonds. These measures will provide a robust basis for incentivizing effective climate action.

To ensure that Vietnam's financial policies for climate change can achieve their intended goals, and based on an analysis of the current state and existing gaps in Vietnam's legal framework, the authors propose several recommendations as follows:

Firstly, Vietnam should consider implementing a carbon tax to regulate consumer behavior and reduce greenhouse gas emissions. A carbon tax would serve as a direct financial tool to discourage the use of fossil fuels and other carbon-intensive activities, thereby aligning consumer and business behaviors with Vietnam's environmental goals. By putting a price on carbon emissions, the government can create a financial incentive for individuals and businesses to reduce their carbon footprint. This policy would not only promote energy efficiency and encourage the adoption of renewable energy sources but also contribute to raising funds that could be reinvested in climate adaptation and mitigation projects.

While Vietnam already employs certain environmental-related taxes, such as the environmental protection tax, resource tax, and excise tax, these are not specifically designed to target CO₂ emissions directly. A dedicated carbon tax would fill this gap, providing a clearer mechanism to influence the consumption patterns of consumers and the operational decisions of businesses. For example, a carbon tax on fuels would likely lead consumers to consider more sustainable transportation options, while businesses might invest in greener technologies to reduce their tax liabilities.

However, to ensure the successful implementation of a carbon tax, Vietnam's legal framework must address key issues, such as setting an appropriate tax rate that reflects the social cost of carbon emissions, ensuring alignment with existing environmental taxes to avoid redundancies, and establishing clear guidelines for tax collection and revenue allocation. Moreover, transparency in the use of carbon tax revenue is essential to gain public support and build trust in this new fiscal measure. By directing carbon tax revenues toward environmental projects and climate resilience infrastructure, the government can demonstrate the tangible benefits of this policy, further encouraging public and business engagement in Vietnam's climate goals.

Implementing a carbon tax as a foundational element of Vietnam's financial policy for climate change would represent a significant step toward a more sustainable and climate-resilient economy.

Secondly, the key considerations for implementing a carbon tax.

Despite the broad consensus among experts and nations on the importance of a carbon tax in combating climate change, the government should carefully consider the following factors before implementing such a tax:

To ensure alignment with other environmental taxes. A carbon tax should be harmonized with existing environmental-related taxes to maximize its effectiveness in regulating emissions and safeguarding the environment. Currently, there are several taxes, such as the environmental protection tax, resource tax, excise tax, and corporate income tax, that already impact environmental factors to varying degrees. Each of these taxes has distinct objectives and different effects on environmental protection. Therefore, before implementing a carbon tax, the government should conduct thorough research to ensure compatibility with existing taxes. This alignment will help avoid overburdening businesses, prevent excessive production costs, and mitigate any adverse impact on consumer behavior.

To develop supporting tools for accurate emissions measurement. It is essential to establish and enhance tools that can accurately measure emissions from fossil-based products. Accurate measurement tools allow for greater transparency and clarity in determining carbon tax obligations. With such tools in place, opposition to the carbon tax is likely to be reduced, while accountability for environmental responsibility among both producers and consumers is reinforced.

To recognize that a carbon tax is one of multiple tools for climate action. The carbon tax should not be viewed as the sole instrument for addressing climate change. Alongside the carbon tax, additional mechanisms - such as emissions trading markets, incentive policies, subsidies, and public-private partnerships - can be implemented to complement climate action efforts. These tools provide businesses with various options to achieve their objectives while also minimizing potential economic impacts.

To promote international cooperation. Implementing a carbon tax requires a global perspective, especially in light of increasing free trade and the need for investment in developing economies. Without international coordination, a carbon tax applied solely at the national level may lead to "carbon leakage," where some countries attract investments by choosing not to impose carbon taxes. In such cases, businesses may continue using low-cost, fossil-based technologies in countries without carbon taxes, thereby undermining global efforts to reduce emissions.

By addressing these considerations, Vietnam can implement a well-structured carbon tax that aligns with its broader environmental policies, supports sustainable economic growth, and contributes effectively to the fight against climate change.

Thirdly, there is a need to supplement regulations regarding the entities eligible to issue green bonds in the legal system.

Current legislation in Vietnam outlines the general framework for green bond issuance; however, specific guidelines regarding the entities eligible to issue green bonds are still lacking. According to Clause 1, Article 150 of the Environmental Protection Law, the government, local authorities, and enterprises are permitted to issue green bonds (National Assembly of Vietnam, 2020). However, the legal framework does not provide clear procedures or requirements, particularly for local authorities, to carry out green bond issuance effectively. This gap in regulations limits the ability of local authorities to mobilize funds for climate adaptation and environmental projects in their regions.

To address this issue, it is essential to develop comprehensive guidelines that define the eligibility, conditions, and procedures for green bond issuance by each authorized entity. Clear regulations will enable local authorities to participate more actively in climate finance initiatives, supporting Vietnam's broader environmental goals. Additionally, specifying these requirements will help create a more robust legal foundation for green bond issuance, fostering transparency and accountability in the use of funds raised for environmental projects.

Fourthly, it is essential to supplement regulations that provide guidance on reporting mechanisms and information disclosure related to the issuance and management of green bond funds for green projects, as well as mechanisms for the issuance, management, and supervision of green bond funds utilized by the government and local authorities.

Currently, while some basic regulations exist for corporate green bonds, specific provisions for government and local authority-issued green bonds remain insufficient, particularly regarding transparency, reporting, and accountability. Clear guidelines on the reporting and disclosure of green bond proceeds would ensure that funds are effectively used for environmental projects, enhancing public trust and supporting climate initiatives.

This responsibility is crucial because it reflects the State's accountability to its citizens, who purchase green bonds at lower interest rates to contribute to the national climate change response efforts. Effective oversight and transparent management of green bond funds not only fulfill this responsibility but also create a solid foundation for encouraging further public participation in future green bond issuances. When citizens see their investments being managed transparently and effectively, it builds trust and reinforces the success of calls for a "community commitment to a green earth," establishing a strong and sustained support base for environmental initiatives.

SCIENTIFIC CONTRIBUTION

The manuscript clearly identifies a research gap; the manuscript introduces or improves research methods; the manuscript introduces or improves research methods; the manuscript offers policy/managerial/technological implications; the manuscript opens new directions for further research.

AUTHOR CONTRIBUTIONS

CRedit: **Phan Phuong Nam**: Conceptualization, Methodology, Supervision, Writing Review and Editing; **Nguyen Van Duong**: Formal Analysis, Investigation, Data Curation, Writing Original Draft, Visualization.

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All authors declare that they have no conflict of interest.

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