# Climate Debt Instruments in Vietnam: Evaluating Green Finance Landscape and Innovation towards Climate Resilience

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## Abstract

Vietnam is among the top five nations most vulnerable to climate change, suffering annual economic losses of 0.8% to 1.2% of gross domestic product from natural disasters. The development highlights the acute need for a green finance framework supporting the country's goal of a net-zero emissions target by 2050. This current policy-relevant study examines Vietnam's green finance activities between 2015 and 2025, focusing on regulation frameworks, green bond growth, investor behavior, and the role of catastrophe bonds (CAT bonds) as a potential tool for building climate resilience. Using a mixed-methods approach involving qualitative policy analysis, quantitative trend review, case studies of two state-owned enterprises, and global market benchmarking, the research finds that green credit comprises just 4 to 5% of total loans and green bonds only 1.5% of the domestic bond market in 2023, limited by a missing green taxonomy, insufficient incentives, and low consumer engagement. It also uncovers behavioral barriers to adopting green financial products and recommends CAT bonds to mitigate climate risks. The study concludes that Vietnam should pursue regulatory reforms, market innovation, capacity building, and institutional collaboration to expand green finance, providing a model for other climate-vulnerable economies aiming for sustainability.

***Keywords****: Green finance, green bonds, catastrophe bonds, policy evaluation, ESG, climate risk, Vietnam, financial innovation, behavioral finance.*

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# Introduction

Vietnam's high exposure to climate change, as evidenced by estimated annual losses from natural hazards between 0.8% to 1.2% of GDP (Dinh & Nguyen, 2020; Dione, 2018), is a reflection of the need for its shift toward a sustainable financial paradigm aligning with its vision of becoming a net-zero carbon country, as set out by the National Green Growth Strategy 2021-2030, with a vision toward 2050 (The Prime Minister, 2021). In its National Green Growth Strategy, the development of sustainable energy, low-carbon agriculture, and resilience of infrastructure have been highlighted as key drivers of Vietnam's shift toward green growth. However, while witnessing a clear leap globally toward green finance, recorded from USD 37 billion worth of green bonds issued in 2014 up to USD 600 billion by 2021 (Climate Bonds Initiative, 2024), its green finance market is still relatively underdeveloped. Green credit made up only 4 - 5% of total lending as of 2023, whereas the issuance of green bonds amounted to USD 1 billion, representing only a humble 1.5% of Vietnam's bond market (Tuoi Tre News, 2024; VietnamPlus, 2023). This gap highlights the need for Vietnam to better link its initiatives with current international trends as well as strengthen its sustainable finance paradigm. Additional, still prevalent, risks from climate-driven hazards including floods, typhoons, and droughts further demonstrate the limitation of conventional funding mechanisms, hence triggering calls for alternative tools, such as catastrophe bonds (CAT bonds), that have shown successful implementation cases in Jamaica, Mexico, as well as the Philippines for enhancing climate adaptation, as well as fiscal resilience (Ando et al., 2022; OECD, 2024).

Against this backdrop, this paper evaluates Vietnam’s green finance policy framework and market evolution from 2015 to 2025, aiming to propose strategies for scaling green investments. The study addresses four key questions: (1) To what extent have Vietnam’s green finance policies driven green credit and bond growth?; (2) What lessons of green finance can Vietnam learn from international models?; (3) What

behavioral barriers impede the adoption of green financial products among Vietnamese investors and consumers?; (4) How can CAT bonds be integrated to mitigate climate risks and support long-term sustainability in Vietnam? From there, the analysis focuses on four interconnected pillars: (1) the evaluation of policy and instruments which are used by the State Bank of Vietnam[3] and Ministry of Finance[4], against foreign benchmarks such as China's Green Finance Pilot Zones and the EU's Sustainable Finance Taxonomy (Climate Bonds Initiative, 2024; European Commission, 2022); (2) Vietnamese green bond development, through case studies of two state-owned enterprises, compared to French and Chinese ones (World Bank, 2024); (3) investor and consumer behavior, using surveys to uncover barriers such as low awareness (International Finance Corporation[5], 2023; Edwards et al., 2023); and (4) the integration of and comparative perspective for scalable solutions of CAT bond, drawing on global best practices (Ando et al., 2022; Diep & Yen, 2024; Pham et al., 2025).

This paper shall be organized into six cohesive sections. Following this Introduction, the 'Literature Review' section synthesizes theoretical and empirical insights on climate debt instruments such as green bonds and catastrophe bonds, while pinpointing critical gaps specific to Vietnam's context. Next, the 'Methodology' section outlines a robust mixed-methods approach, incorporating policy analysis, case studies of two state-owned enterprise (specifically the Bank for Investment and Development of Vietnam[6] and EVN[7] Finance), and comparative benchmarking, to thoroughly evaluate Vietnam's green finance landscape. The 'Results and Comparative Analysis' section then presents key findings on policy effectiveness, green bond market trends, investor behavior challenges, and the potential for CAT bond integration. Thereafter, the 'Discussion' section further develops such findings by analyzing Vietnam's role within the world of green finance as well as emphasizing the decisive role of financial

[3] Hereinafter referred to as SBV
[4] Hereinafter referred to as MOF
[5] Hereinafter referred to as IFC
[6] Hereinafter referred to as BIDV
[7] Stands for Vietnam Electricity

innovation in building climate resilience. Finally, the 'Recommendations' and 'Conclusion' sections put forward realistic suggestions, including the establishment of a green taxonomy as well as issuance of CAT bonds, while providing concluding remarks with a view to developing Vietnam's sustainable finance framework.

## Literature Review

This literature review synthesizes theoretical and empirical insights to contextualize Vietnam's green finance landscape, focusing on green finance, ESG investing, financial behavior, and catastrophe bonds (CAT bonds), while identifying critical gaps that this study aims to address. Environmental finance theory posits that externalities can be internalized through mechanisms like green bonds and ESG strategies, with financial institutions playing a pivotal role in reallocating capital toward sustainability, a concept central to Vietnam's policy efforts; such an example is the directive No. 03/CT-NHNN on promoting green credit growth and environmental-social risk management in credit extension (State Bank of Vietnam, 2015; Weber, 2010; Barberis & Shleifer, 2003). This perspective is complemented by ESG frameworks, which demonstrate a positive financial performance link in 60% of over 2,000 studies (Friede et al., 2015), and sustainability transition theory, specifically Geels' Multi-Level Perspective, which positions green finance as a catalyst for low-carbon transitions, directly relevant to Vietnam's nascent green bond innovations (Geels, 2002). However, behavioral finance reveals significant challenges, including cognitive biases and information asymmetries that undermine green investment uptake, a barrier starkly evident in Vietnam's market dynamics (Lo, 2005; OECD, 2020).

On a global scale, green finance has seen substantial growth, with bond issuance reaching USD 600 billion in 2021, driven by robust frameworks in the EU and China (Climate Bonds Initiative, 2024). Within ASEAN, countries like Indonesia and Thailand have progressed through sovereign green bonds and taxonomies (World Bank, 2022). Additionally, nations such as Jamaica and Mexico have pioneered the use of CAT

bonds, issuing USD 185 million and USD 485 million respectively, to transfer disaster risk and bolster fiscal resilience against climate-induced events (Ando et al., 2022). As a climate debt instruments, CAT bond provide parametric payouts following extreme weather events, offering a vital tool for climate adaptation and disaster risk financing, with their success in climate-vulnerable economies like Jamaica, Mexico, and the Philippines demonstrating their potential to manage the fiscal stress of natural disasters (Ando et al., 2022; OECD, 2024; Reitmeier, 2024; Figure 1).

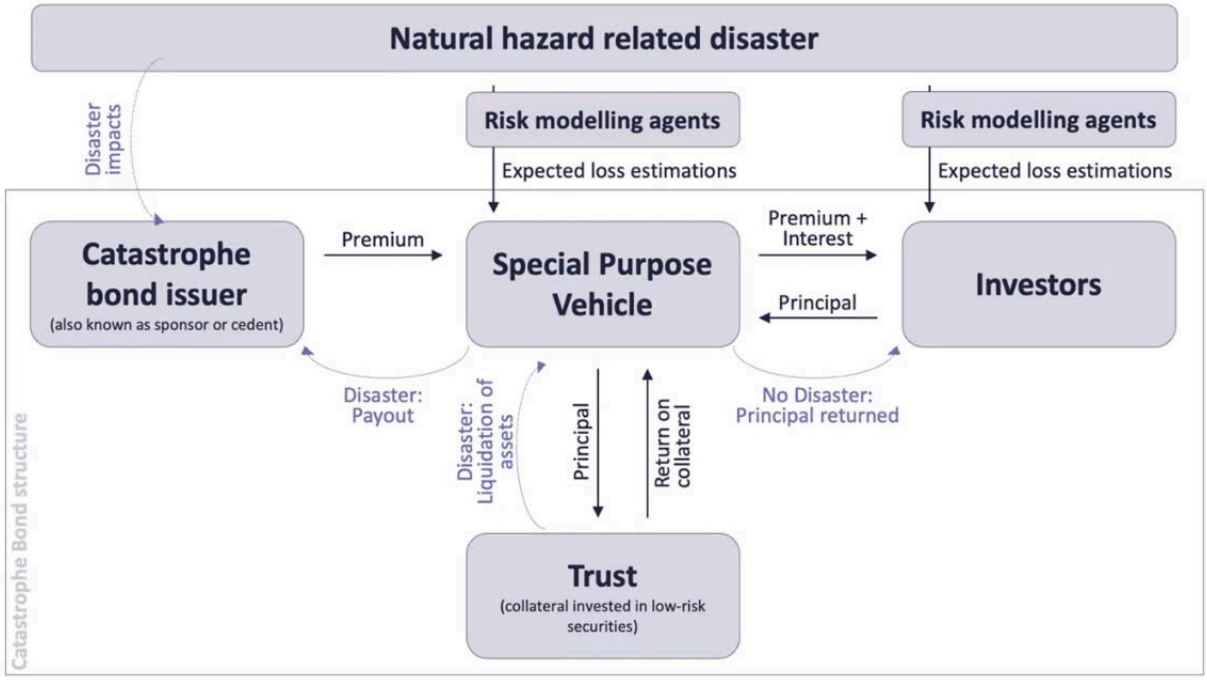


***Figure 1.*** *Structure of a typical catastrophe bond (Sources: Reitmeier, 2024)*

In contrast, Vietnam faces persistent barriers to green finance, including limited policy coherence, a narrow product range, and weak institutional capacity (Nguyen et al., 2018). Green loans disproportionately favor large enterprises, leaving SMEs struggling with access due to information gaps, a problem worsened by the absence of a standardized green taxonomy that heightens greenwashing risks (Nguyen et al., 2024; VietnamPlus, 2023). Despite these challenges, leading financial institutions like BIDV and EVN Finance have emerged as pioneers, with BIDV's green loan portfolio reaching

VND 71,000 billion and EVN Finance issuing a USD 75 million verified green bond, both adopting international ESG standards; however, broader market participation remains limited (World Bank, 2024). In addition, surveys further reveal significant hurdles, with only 30% of SMEs aware of green credit and just 15% of retail investors trusting green bonds, driven by regulatory uncertainty and risk aversion (Diep & Yen, 2024; IFC, 2023; Edwards et al., 2023).

One of the key shortcomings of Vietnam's green finance system is the notable lack of catastrophe (CAT) bonds, especially considering the country's increased exposure to climate risks. Unlike countries like Jamaica and the Philippines, which have issued CAT bonds to reduce fiscal natural disaster-related burdens (Ando et al., 2022), Vietnam has not yet utilized this climate-focused debt management tool. The main challenges preventing the introduction of CAT bonds in Vietnam, according to Truong and Hang (2023), are incomplete legal frameworks, a lack of information infrastructure, and the absence of investor backing. This shortfall is especially apparent considering Vietnam's exposure to climate-related disasters, namely floods, typhoons, and droughts, totaling USD 2.5 billion for 2017 alone (General Department of Disaster Prevention and Control, 2019). The Philippines' issuance of a USD 225 million CAT bond, guaranteed by the World Bank, demonstrates the effectiveness of these instruments in providing prompt post-disaster liquidity; however, Vietnam remains institutionally ill-prepared to implement equivalent financial instruments, thus limiting its climate adaptability and highlighting a general underuse of innovative financial instruments in its green finance initiatives (Ando et al., 2022).

Applying the Multi-Level Perspective alongside behavioral finance, Vietnam's green finance landscape reflects niche experimentation but lacks the regime-level shifts needed for systemic change, constrained by both behavioral and regulatory hurdles (Geels, 2002; Lo, 2005). Consequently, this review identifies three primary research gaps essential for advancing Vietnam's green finance ecosystem. First, there is a notable lack of empirical studies evaluating the effectiveness of green finance policies,

such as the directive No. 03/CT-NHNN, with existing research being largely descriptive or anecdotal, offering limited evidence on their impact on investment growth or emissions reduction, thus impeding a comprehensive understanding of policy outcomes crucial for Vietnam's sustainability ambitions (Nguyen et al., 2018; Nguyen et al., 2024). Second, there is minimal exploration of investor psychology and behavior, particularly among retail investors and SMEs, despite surveys indicating low awareness and trust in green finance products; the influence of cognitive biases, risk perceptions, and behavioral barriers remains understudied, a significant oversight given their role in scaling market participation (Diep & Yen, 2024; IFC, 2023; Lo, 2005; OECD, 2020). Lastly, despite Vietnam's vulnerability to climate-induced disasters, there are no studies on the feasibility or design of CAT bonds in this context, unlike in countries like Jamaica and the Philippines, with legal, institutional, and market readiness deficits further exacerbating this gap and limiting Vietnam's potential to utilize innovative financing for climate adaptation (Ando et al., 2022; Dinh & Nguyen, 2020). These gaps set the stage for this study's contributions to Vietnam's green finance development.

# Methodology

This study employs a mixed-methods policy research design, integrating qualitative policy analysis, quantitative trend review, comparative benchmarking, and scenario modeling to evaluate Vietnam's green finance landscape and propose strategies for scaling investments through climate debt instruments like green bonds and CAT bonds. This approach addresses the complexity of Vietnam's green finance ecosystem, including the regulation, market behavior, and climate risk innovation; while enhancing internal validity and practical applicability for policy recommendations (Creswell & Plano Clark, 2017; Brewer & Hunter, 2006; Greene, Caracelli, & Graham, 1989).

## Data Sources and Collection Strategy

Due to limited primary data, the study uses secondary data from authoritative sources (SBV, MOF, The Prime Minister, World Bank), BIDV/EVN Finance disclosures, peer-reviewed articles, and reports (2015–2024). This choice suits Vietnam's constrained data environment, ensuring transparency, replicability, and rigor through cross-validation (for example, SBV versus World Bank data) (Johnston, 2014; Bryman, 2016).

## Analytical Framework and Justification

The framework comprises five methods, each addressing specific research questions and building on the previous to cohesively evaluate Vietnam's green finance ecosystem. Firstly, the qualitative policy analysis evaluates Vietnam's green finance policies, like Directive No. 03/CT-NHNN, using international financial standards: clarity, coherence, transparency, and scalability. Specifically, it assesses clarity in defining green projects, coherence with sustainability goals, transparency in reporting, and scalability for broader implementation, providing a structured evaluation of policy effectiveness (Climate Bonds Initiative and the UNEP Inquiry, 2015; World Bank, 2021; OECD, 2023). Secondly, the quantitative trend analysis examines green credit/bond growth (2015–2023) using descriptive statistics, suitable for Vietnam's data scarcity (Aerts & Cormier, 2009; McKenzie, 2012). Also, the case studies of BIDV and EVN Finance, selected for their pioneering roles and international compliance, provide depth on green bond development (Yin, 2018). Comparative benchmarking against China, EU/France, Jamaica/Mexico, and Indonesia/Thailand employs a structured framework using OECD metrics to facilitate policy learning, addressing the second research question on international best practices (Rose, 2005; George & Bennett, 2005). Specifically, China is examined for its centralized green finance regulation and bond market scale, offering insights into top-down policy enforcement; the EU and France are analyzed for their advanced ESG integration and sovereign bond issuance, highlighting robust taxonomy frameworks; Jamaica and Mexico provide lessons on CAT bond issuance under fiscal

stress, demonstrating disaster risk financing; Indonesia and Thailand showcase ASEAN taxonomies and public-sector innovation, relevant to Vietnam's regional context (OECD, 2024; World Bank, 2022). Subsequently, behavioral analysis leverages secondary survey data from McKinsey Sustainability (Edwards et al., 2023), IFC (2023), and Diep & Yen (2024) to assess investor behavior, focusing on financial literacy, green product awareness, risk perception, and trust in ESG instruments, thereby addressing the third research question on investor barriers. This analysis adopts a 2x2 segmentation model, derived from psychological profiling techniques in behavioral economics, to categorize investors into groups based on knowledge and trust levels, such as low knowledge-low trust (rural SMEs) and high knowledge-high trust (institutional investors), enabling tailored policy responses to enhance market participation (Thaler & Sunstein, 2008; Diep & Yen, 2024).

## Scenario Modeling for Catastrophe Bonds

CAT bond feasibility is assessed through three carefully designed scenarios, each tailored to Vietnam's institutional and market context to address the fourth research question on CAT bond integration (Ando et al., 2022). The sovereign scenario envisions issuance through the World Bank or Southeast Asia Disaster Risk Insurance Facility[8] to protect public infrastructure, leveraging international expertise to overcome Vietnam's legal and institutional barriers, benchmarked against the Philippines' 2019 issuance of CAT bond, and Mexico's FONDEN model to cover earthquake and storm risks (Ando et al., 2022). The corporate scenario involves BIDV and EVN Finance sponsoring CAT bonds for renewable energy assets, building on their successful green bond issuances, with Jamaica's 2021 issuance and Mexico's 2020 corporate models serving as benchmarks (Ando et al., 2022). The regional scenario proposes a pooled facility under ASEAN+3 or SEADRIF to reduce premiums through risk-sharing, drawing inspiration from the Caribbean Catastrophe Risk Insurance Facility (CCRIF), which has effectively

[8] Hereinafter referred to as SEADRIF

supported small states against climate risks (Ando et al., 2022). This method, suitable for contexts with limited historical data, tests conceptual throughbility by adapting parameters from real-world CAT bonds to Vietnam's risk profile and legal environment, ensuring practical relevance for climate resilience financing (Varian, 1992; Ando et al., 2022; Dinh & Nguyen, 2020).

### Limitations and Mitigation Strategies

The study acknowledges three key limitations, each addressed with targeted mitigation strategies to maintain analytical rigor and policy relevance (Johnston, 2014; Bryman, 2016; Maxwell, 2012). Firstly, the absence of primary interviews due to resource constraints and Vietnam's limited data access is mitigated by triangulating multiple credible secondary datasets such as policy documents, financial reports, and peer-reviewed articles while leveraging case studies of BIDV and EVN Finance for depth, thus ensuring a robust evidence base despite the lack of direct data collection (Johnston, 2014). Secondly, incomplete firm-level transaction data, which is a common challenge in Vietnam's emerging market, is addressed by relying on aggregate financial reports and macro trends from sources like SBV and World Bank with clear disclosure of data boundaries to maintain transparency and credibility (Bryman, 2016). Thirdly, the lack of emission reduction quantification, which restricts the ability to directly assess environmental impact, is flagged as a direction for future research, thereby allowing the study to focus on financial and policy scalability in the current scope (Maxwell, 2012).

## Results and Comparative Analysis

The research explains the current state of Vietnam's green finance, starting with policymaking effectiveness, followed by the development of green bonds, investor outlook, and CAT bond feasibility.

Firstly, in terms of the policy effectiveness, Vietnam’s green finance landscape has evolved progressively with instruments like the directive No. 03/CT-NHNN, which mandated environmental and social risk screening in lending, the 2018 Green Banking Scheme aimed at aligning banking practices with global standards, and Circular No. 101/2021/TT-BTC, which reduced green bond issuance fees by 50% (SBV, 2018; MOF, 2021). Additionally, Circular No. 155/2015/TT-BTC and No. 96/2020/TT-BTC, issued by the Ministry of Finance, introduced ESG disclosure requirements for listed companies, reflecting alignment with ASEAN and EU frameworks (MOF, 2015; MOF, 2020; OECD, 2024). By 2023, green credit had grown 22–26% annually, reaching 4–5% of total lending across 47 financial institutions (VietnamPlus, 2023). However, unlike China’s top-down mandates or the EU’s legally binding taxonomy, Vietnam’s policies remain largely voluntary, lacking enforcement mechanisms and a formal taxonomy, which increases greenwashing risks and limits systemic impact (OECD, 2024; European Commission, 2022). For instance, China’s 2015 green bond catalogue and Green Finance Pilot Zones drove USD 180 billion in issuance by 2023, while the EU’s Taxonomy under the SFDR ensures transparent asset classification (OECD, 2024).

Looking forward, Vietnam's green bond market, although growing, is still in its embryonic phase, with total issuances of more than USD 1 billion by 2023; however, this figure only accounts for 1.5% of the country's total bond market (Tuoi Tre News, 2024). The nascent market is defined by a narrow investor base, largely comprising institutional investors, with limited involvement from retail investors, reflecting its early stage and the need for greater participation (Tuoi Tre News, 2024). Against these challenges, Vietnamese financial institutions, including the Bank for Investment and Development of Vietnam (BIDV) and EVN Finance, have taken on leadership roles, leveraging green bond issuances to build credibility and consolidate the green finance market in Vietnam. Particularly, in 2023, BIDV issued green bonds worth VND 2,500 billion (USD 104 million), certified under Moody's SQS2 framework, marking a material step forward in Vietnam's green bond market development (World Bank, 2024). As of

September 2023, BIDV's green portfolio stands at VND 71,000 billion (USD 3 billion), with 97% disbursed towards renewable energy projects, comprising wind and solar projects (World Bank, 2024). However, Moody's noted definitional risks stemming from the absence of overarching sectoral classifications, reflective of Vietnam's early-stage market that lacks standardized taxonomies (World Bank, 2024). Moreover, in partnership with EVN Finance, this financial institution launched VND 1,725 billion (USD 75 million) worth of green bonds in 2022, verified by GuarantCo and responsAbility Investment AG, dedicated to energy sector assets that received strong international backing (World Bank, 2024). Despite these positives, scalability is constrained by the lack of systemic policy frameworks, such as tax incentives or protection for investors, which is a key impediment within Vietnam's nascent green bond market (World Bank, 2024). Additionally, in comparison with global benchmarks, advanced nations like France and Indonesia illustrate the benefits of carefully designed regulations and broad investment strategies. Particularly, France has led the issuance of EUR 45 billion in sovereign green bonds to fund low-carbon projects, thus showcasing the success of well-designed policy support. Similarly, Indonesia has effectively issued a green sukuk aimed at retail investors, which has consequently expanded market participation and enhanced financial inclusion (OECD, 2024). On the contrary, Vietnam requires similar improvements in policymaking, such as the creation of ESG reporting obligations and tax rebates, to help resolve its current foundational issues and attain sustainable growth in its green bond market.

Next, investor behavior further constraints green finance growth, marked by low awareness and trust due to informational gaps and regulatory uncertainty. Surveys by Diep & Yen (2024) and IFC (2023) reveal that only 30% of SMEs are aware of green credit products, while just 15% of retail investors trust green bonds, primarily due to fears of greenwashing. Furthermore, although urban consumers exhibit growing sustainability awareness, their financial decisions remain driven by yield, liquidity, and risk aversion, as noted by Edwards et al. (2023). To address these challenges,

behavioral segmentation from Diep & Yen (2024) identifies four distinct groups, each requiring tailored policy interventions. In particular, the Low Knowledge-Low Trust segment, including rural SMEs and the informal sector, needs financial literacy programs to build foundational understanding. Conversely, the High Knowledge-Low Trust group, comprising fintech-savvy youth, would benefit from green bond labeling and digital ESG platforms to enhance transparency. The Low Knowledge-High Trust segment, such as middle-income consumers banking with state institutions, requires targeted green banking outreach to leverage their existing trust. Finally, the High Knowledge-High Trust group, including institutional investors like AIA and Prudential, seeks greater product diversity and tax incentives to deepen engagement. In contrast, EU investors benefit from standardized ESG products under the SFDR, while Thailand's SEC-mandated disclosures have bolstered confidence, offering potential models for Vietnam to reduce ambiguity and foster trust (World Bank, 2022).

Furthermore, Vietnam's acute exposure to climate risks such as Typhoon Damrey in 2017, which caused US$1 billion in economic losses (Reinsurance News, 2017). In addition, climate change-driven disruptions, such as heavy rainfall leading to flooding and landslides, cost businesses US$280 million annually and caused widespread socioeconomic interruptions (Gallagher & Lin, 2021). Projections for 2030 warn of worsening extreme weather, with Ho Chi Minh facing heatwaves and Hanoi experiencing heavier rainfall, amplifying economic and health challenges (World Bank, 2021). However, Vietnam has issued no CAT bonds, in contrast to Jamaica's USD 185 million bond in 2021, which saw 60% participation from European ILS funds, Mexico's USD 485 million FONDEN-backed bond in 2020, and the Philippines' USD 225 million bond through SEADRIF in 2019 (Ando et al., 2022). Along with barriers such as the absence of a legal framework for special purpose vehicles (SPVs) or parametric triggers, inadequate disaster modeling infrastructure, and low investor awareness, the progress of mitigating fiscal stress from climate-induced disasters is hindered (Ando et al., 2022). To address these challenges, a scenario assessment proposes three tailored

strategies for CAT bond issuance in Vietnam, including a sovereign bond issued via the World Bank to protect flood-prone areas like the Mekong Delta, leveraging international expertise, a corporate bond sponsored by BIDV or EVN Finance for energy infrastructure, building on their green bond experience, and a regional pool under SEADRIF or ASEAN+3 to reduce premiums through risk-sharing, modeled on the CCRIF (Ando et al., 2022). These scenarios, which are currently at varying stages of feasibility, offer actionable pathways to overcome institutional and legal barriers, with recommendations such as enhanced coordination between the Ministry of Finance and the World Bank, leveraging existing green bond frameworks, and joining regional risk-sharing initiatives to lower costs (Ando et al., 2022).

In short, Vietnam's green finance ecosystem is poised with policy innovations and trailblazing efforts by EVN Finance and BIDV, but is faced with great challenges: the lack of obligatory policies, immature market emergence, skepticism from investors, and untapped potential of cat bonds.

## Discussion

Reflecting on the findings, Vietnam has made notable strides in building its green finance ecosystem. Despite this progress, structural limitations, including regulatory ambiguity, shallow market depth, limited investor confidence, and the absence of climate resilience tools like catastrophe bonds (CAT bonds), constrain its development. Consequently, Vietnam’s policy framework reveals significant gaps that hinder transformative impact. The country’s green finance policies adopt a normative and voluntary approach, in stark contrast to the prescriptive models of the EU and China, which dilutes enforcement and fosters inconsistent interpretations of "green" investments, thereby fueling investor skepticism (Diep & Yen, 2024; Climate Bonds Initiative, 2024). A critical bottleneck is the absence of a green taxonomy; as demonstrated in the EU, taxonomies enhance transparency, comparability, and trust,

reducing greenwashing risks that Vietnam currently faces due to its lack of such a framework. Additionally, while Circular No. 101/2021/TT-BTC introduced transaction cost incentives, Vietnam lacks broader fiscal tools, such as tax credits, green loan guarantees, or blended finance, widely used in peer economies like Indonesia and France (OECD, 2024).

Moreover, institutional leadership from BIDV and EVN Finance underscores Vietnam's potential but also exposes systemic inertia. These first-movers have innovated within regulatory gray zones, adopting international standards like Moody's ratings and ICMA frameworks to attract impact investors. However, their institution-led model lacks scalability without systemic support, as evidenced by the absence of replication by other banks and underdeveloped secondary markets, a dynamic that aligns with Auld et al.'s (2008) caution against over-reliance on voluntary initiatives without public policy support.

Transitioning to investor dynamics, behavior poses a critical constraint to scaling green finance in Vietnam. Low awareness and trust, with only 30% of SMEs understanding green credit and 15% of retail investors trusting green bonds, reflect ambiguity aversion and financial illiteracy, consistent with behavioral finance literature (Lo, 2005; Thaler & Sunstein, 2008). The study's segmentation model shows that uniform policies are insufficient; institutional investors may respond to ESG ratings and tax incentives, but retail and SME segments require financial education, product simplicity, and trust-building measures. Thailand's targeted ESG mandates provide a model for Vietnam to address these heterogeneous barriers through tailored engagement strategies, such as simplifying products and enhancing awareness campaigns to unlock demand and align financial culture with sustainability goals.

Equally concerning is the absence of CAT bond infrastructure, a significant blind spot in Vietnam's financial ecosystem, despite its acute vulnerability to climate-induced disasters, with USD 2.5 billion in damages in 2017 and a 2.3% insurance penetration

rate (General Department of Disaster Prevention, 2019; Swiss Re, 2022). Global examples, like Jamaica's USD 185 million CAT bond (2021) and the Philippines' USD 225 million issuance (2019), demonstrate the feasibility of CAT bonds in climate-vulnerable economies (Ando et al., 2022). Vietnam's barriers are primarily institutional and legal, not financial, highlighting a policy oversight in disaster risk financing. Incorporating CAT bonds could reduce fiscal pressure, attract yield-seeking investors, and fund adaptation infrastructure, complementing the current mitigation focus and addressing Vietnam's overemphasis on energy transitions at the expense of resilience.

Reflecting further on Vietnam's global standing, the country is at a pivotal juncture in its green finance journey, balancing promising advancements with persistent hurdles. It has demonstrated political will, early institutional experimentation through entities like BIDV and EVN Finance, and rising investor interest. Yet, it struggles with fragmented policies, underdeveloped markets, and a lack of investor confidence. Compared to global leaders, China excels with its unified policy framework and robust taxonomy, while the EU, particularly France, leads with legal frameworks and ESG-driven bonds; Jamaica's CAT bonds and Indonesia's retail green bonds further reveal Vietnam's gaps in innovation and retail engagement. Nevertheless, Vietnam's strengths, including flexible institutions and robust international ties, provide a foundation for progress.

# Recommendations

To effectively meet Vietnam's goal of achieving net-zero emissions by 2050, several critical and timely policy actions must be prioritized strategically, drawing upon successful international precedents and tailored to Vietnam's specific market and institutional readiness.

Firstly, establishing a clear and comprehensive national green taxonomy within 12 to 18 months is critical. This revised timeline allows sufficient duration for thorough stakeholder consultations, aligning closely with experiences from the European Union and ASEAN nations, which took similar timeframes to carefully implement detailed classification systems (European Commission, 2022; World Bank, 2022). Given Vietnam's current fragmented policy landscape and growing market urgency, this period provides a realistic yet ambitious schedule for comprehensive sectoral engagement and legislative approval. Rapid adoption and clear communication are essential to minimize market confusion, reduce greenwashing risks, and facilitate accelerated private sector investment. Metrics such as institutional adoption rates and reduced greenwashing cases will provide tangible measures of the taxonomy's effectiveness.

Secondly, diversifying financial mechanisms by introducing catastrophe bonds is recommended within the next 24 to 36 months. This timeline reflects the inherent complexities associated with developing robust legal frameworks, investor awareness campaigns, and necessary disaster-risk modeling infrastructures. International experiences, notably from the Philippines (SEADRIF-backed CAT bond in 2019) and Jamaica's successful 2021 CAT bond issuance, illustrate that thorough preparation and market education are paramount and typically require around two to three years for full implementation (Ando et al., 2022; OECD, 2024). Given Vietnam's substantial exposure to climate-driven disasters, investing in these preparatory steps now ensures significant long-term fiscal resilience, providing measurable reductions in post-disaster financial strain.

Thirdly, the introduction of targeted fiscal incentives for green finance should occur within the next 18 to 24 months. This schedule strikes a balance between immediate market stimulation and the realistic pace of legislative processes and institutional capacity building, following effective global examples such as the EU's Green Deal fiscal frameworks and tax incentive systems (Schratzenstaller, 2023; MOF, 2021). Clear

timelines for the rollout of incentives such as tax rebates, SME loan guarantees, and concessional financing are pivotal. Their timely introduction will stimulate short- to medium-term private sector involvement, critical in meeting Vietnam's longer-term green finance needs.

Fourthly, institutionalizing mandatory ESG reporting standards is feasible within the next 12 to 18 months. This timeline is chosen based on successful precedents such as Thailand's mandated ESG disclosures, which required approximately 18 months from inception to full compliance (World Bank, 2023). Rapid implementation and rigorous enforcement of these standards are necessary to build investor confidence quickly and provide transparent metrics that align corporate activities with Vietnam's long-term sustainability targets. The effective implementation of ESG frameworks will attract international investors increasingly prioritizing ESG criteria, thereby deepening Vietnam's green finance market.

Finally, enhancing outreach and education initiatives to improve financial literacy on green finance among SMEs and retail investors should ideally occur within the next 12 to 18 months. This timeline considers the necessary planning, coordination among SBV, commercial banks, fintech partners, and educational institutions, and the launch of comprehensive, targeted campaigns. Research by McKinsey and the IFC highlights that effective awareness-building programs generally require around one to two years to achieve meaningful behavioral changes and substantial improvements in consumer understanding of complex financial instruments (Edwards et al., 2023; IFC, 2023). Timely implementation will ensure sustained investor engagement and broaden market participation significantly ahead of 2030, enabling robust financing capacity for Vietnam's green transition toward its 2050 net-zero objective.

A primary limitation of this research is the absence of primary data, which restricts the ability to conduct causal analyses and limits the depth of insights into Vietnam's green finance ecosystem (Maxwell, 2012). This reliance on secondary data hinders the direct

measurement of environmental impacts, particularly in quantifying emission reductions, an area critical for assessing the true efficacy of green finance initiatives. Future research should prioritize collecting primary data to enable more robust causal relationships and to accurately measure emissions, thereby providing a clearer picture of the environmental outcomes of Vietnam's green finance policies and supporting more effective strategies for achieving the country's net-zero 2050 target.

## Conclusion

In conclusion, while institutional pioneers like BIDV and EVN Finance show promise (World Bank, 2024), Vietnam's green finance ecosystem remains constrained by regulatory ambiguity, shallow markets, and behavioral inertia, needing USD 368 to 380 billion by 2040, with CAT bonds addressing underfunded resilience (Vietnam Investment Review, 2024). Coordinated reforms can position Vietnam as a regional leader, offering a replicable model for developing, climate-vulnerable economies through collaborative partnerships.

## References


- Aerts, W., & Cormier, D. (2009). 'Media legitimacy and corporate environmental communication'. *Accounting, Organizations and Society*, 34(1), pp.1–27. https://doi.org/10.1016/j.aos.2008.02.005
- Ando, S., Fu, C., Roch, F. and Wiriadinata, U. (2022). *Sovereign climate debt instruments: An overview of the green and catastrophe bond markets* (IMF Staff Climate Note 2022/004). International Monetary Fund. Available at: https://www.imf.org/en/Publications/staff-climate-notes/Issues/2022/06/29/Sovereign-Climate-Debt-Instruments-An-Overview-of-the-Green-and-Catastrophe-Bond-Markets-518272 (Accessed: 20 March 2025).

- Auld, G., Bernstein, S. and Cashore, B. (2008). 'The new corporate social responsibility', *Annual Review of Environment and Resources*, 33, pp. 413–435. https://doi.org/10.1146/annurev.environ.32.053006.141106
- Barberis, N. and Shleifer, A. (2003). 'Style investing', *Journal of Financial Economics*, 68(2), pp. 161–199. https://doi.org/10.1016/S0304-405X(03)00064-3
- Brewer, J. and Hunter, A. (2006). *Foundations of multimethod research: Synthesizing styles*. Thousand Oaks, CA: SAGE Publications.
- Bryman, A. (2016). *Social research methods*. 5th ed. Oxford: Oxford University Press.
- Climate Bonds Initiative (2024). *Sustainable debt market summary report: Q1 2024*. Available at: https://www.climatebonds.net/files/reports/cbi_mr_q1_2024_01e_1.pdf (Accessed: 20 March 2025).
- Climate Bonds Initiative and the UNEP Inquiry (2015). *Scaling up green bond markets for sustainable development: A strategic guide for the public sector to stimulate private sector market development for green bonds*. Available at: https://www.climatebonds.net/files/files/GB-Public_Sector_Guide-Final-1A.pdf (Accessed: 20 March 2025).
- Creswell, J.W. and Plano Clark, V.L. (2017). *Designing and conducting mixed methods research*. 3rd ed. Thousand Oaks, CA: SAGE Publications.
- Diep, N.T.N., Yen, V.T.H. (2024). 'Research on factors affecting green financial development in Vietnam'. *Salud, Ciencia y Tecnología - Serie de Conferencias*, 3(1259). https://doi.org/10.56294/sctconf2024.1259
- Dinh, D.T., Nguyen, D.H. (2020). 'Natural disaster insurance in Vietnam: A review', t*he 12th International Conference on Socio-economic and Environmental Issues in Development*. National Economics University, 16 July. Available at: https://khoamoitruongdothi.neu.edu.vn/Resources/Docs/SubDomain/khoamoitruongdothi/ICSEED/97.%20Natural%20Disaster%20Insurance%20in%20Vietnam%20-%20A%20Review.pdf (Accessed: 20 March 2025).

- Dione, O. 2018. *Vietnam National Conference on Disaster Risk Management*. [Online]. 29 March, Hanoi, Vietnam. [Accessed: 20 March 2025]. Available at: https://www.worldbank.org/en/news/speech/2018/03/29/vietnam-national-conference-on-disaster-risk-management.
- Edwards, W., Jain, R., Nadeau, M., Soehner, C., and Stephens, D. (2023). *Green growth: Unlocking sustainability opportunities for retail banks*. Available at: https://www.mckinsey.com/capabilities/sustainability/our-insights/green-growth-unlocking-sustainability-opportunities-for-retail-banks#/ (Accessed: 20 March 2025).
- European Commission (2022). *EU taxonomy for sustainable activities*. Available at: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en (Accessed: 20 March 2025).
- Friede, G., Busch, T. and Bassen, A. (2015). 'ESG and financial performance: Aggregated evidence from more than 2000 empirical studies', *Journal of Sustainable Finance & Investment*, 5(4), pp. 210–233. https://doi.org/10.1080/20430795.2015.1118917
- Gallagher, E. & Lin, J. (2021). 'What Businesses Operating in Vietnam Can Do about Climate Risk', *Business for Social Responsibility*, 22 April. Available at: https://winrock.org/what-businesses-operating-in-vietnam-can-do-about-climate-risk/#:~:text=The%20financial%20impacts%20from%20climate,hardship%20of%20at%2Drisk%20communities (Accessed: 20 March 2025).
- Geels, F.W. (2002). 'Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study', *Research Policy*, 31(8–9), pp. 1257-1274. https://doi.org/10.1016/S0048-7333(02)00062-8
- General Department of Disaster Prevention and Control (2019). *Damage statistics*. Available at: http://phongchongthientai.mard.gov.vn (Accessed: 20 March 2025).
- George, A.L. and Bennett, A. (2005). *Case studies and theory development in the social sciences*. Cambridge, MA: MIT Press.

- Greene, J.C., Caracelli, V.J. and Graham, W.F. (1989). 'Toward a conceptual framework for mixed-method evaluation designs', *Educational Evaluation and Policy Analysis*, 11(3), pp. 255–274. https://doi.org/10.3102/01623737011003255
- International Finance Corporation (2023). Challenges of Green Finance: Private Sector Perspectives from Emerging Markets. Available at: https://www.ifc.org/content/dam/ifc/doc/2023/challenges-of-green-finance.pdf (Accessed: 20 March 2025).
- Johnston, M.P. (2014). 'Secondary data analysis: A method of which the time has come', *Qualitative and Quantitative Methods in Libraries*, 3(3), pp. 619–626. Available at: https://www.qqml-journal.net/index.php/qqml/article/view/169 (Accessed: 20 March 2025).
- Lo, A.W. (2005). 'Reconciling efficient markets with behavioral finance: The adaptive markets hypothesis', *Journal of Investment Consulting*, 7(2), pp. 21–44. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1702447#
- Maxwell, J.A. (2012). *A realist approach to qualitative research*. Thousand Oaks, CA: SAGE Publications.
- McKenzie, D. (2012). 'Beyond baseline and follow-up: The case for more T in experiments', *Journal of Development Economics*, 99(2), pp. 210–221. https://doi.org/10.1016/j.jdeveco.2012.01.002
- Ministry of Finance (2015). *Circular No. 155/2015/TT-BTC on guiding the disclosure of information on the securities market*. Available at: https://english.luatvietnam.vn/circular-no-155-2015-tt-btc-dated-october-06-2015-of-the-ministry-of-finance-guiding-the-disclosure-of-information-on-the-securities-market-99216-doc1.html (Accessed: 20 March 2025).
- Ministry of Finance (2020). *Circular No. 96/2020/TT-BTC providing guidelines on disclosure of information on securities market*. Available at: https://thuvienphapluat.vn/van-ban/EN/Chung-khoan/Circular-96-2020-TT-BTC-providing-guidelines-on-disclosure-of-information-on-securities-market/460833/tieng-anh.aspx (Accessed: 20 March 2025).

- Ministry of Finance (2021). *Circular No. 101/2021/TT-BTC on prescribing prices of services in the field of securities applicable to the Stock Exchanges and the Vietnam Securities Depository and Clearing Corporation*. Available at: https://thuvienphapluat.vn/van-ban/Chung-khoan/Thong-tu-101-2021-TT-BTC-gia-dich-vu-linh-vuc-chung-khoan-tai-So-giao-dich-chung-khoan-495549.aspx (Accessed: 20 March 2025).
- Nguyen, P.H., Nguyen, L.A.T., Le, H.Q., Tran, L.C. (2024). 'Navigating critical barriers for green bond markets using A fuzzy multi-criteria decision-making model: Case study in Vietnam', *Heliyon*, 10(13). https://doi.org/10.1016/j.heliyon.2024.e33493
- Nguyen, T.C., Chuc, A.T., and Dang, L.N. (2018). *Green Finance in Viet Nam: Barriers and Solutions*. ADBI Working Paper No. 886. Available at: https://www.adb.org/sites/default/files/publication/466171/adbi-wp886.pdf (Accessed: 20 March 2025).
- OECD (2020). *Green budgeting and tax policy tools to support a green recovery*. Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2020/10/green-budgeting-and-tax-policy-tools-to-support-a-green-recovery_c5842256/bd02ea23-en.pdf (Accessed: 20 March 2025).
- OECD (2023). *Green, Social and Sustainability Bonds in Developing Countries: The case for increased donor coordination*. Available at: https://www.oecd.org/en/publications/green-social-and-sustainability-bonds-in-developing-countries_1cce4551-en.html#:~:text=It%20highlights%20five%20major%20policy%20areas%20in,three%20over-arching%20recommendations%20for%20increased%20donor%20co-ordination (Accessed: 20 March 2025).
- OECD (2024). *Fostering catastrophe bond markets in Asia and the Pacific*. Available at: https://www.oecd.org/en/publications/fostering-catastrophe-bond-markets-in-asia-and-the-pacific_ab1e49ef-en.html (Accessed: 20 March 2025).

- Pham, K.D., Trinh, Y.H., Anh, T.T.V., Anh, T.V.T., Bao, T.N.T., Uyen, P.H.M. (2025). 'Green Credit and Bank Performance: The Case of Vietnam'. In: Nam, P.K., Heshmati, A. (eds) Green Economic Development and Transition to Low-Carbon Economy in the East and Southeast Asia. Frontiers in South and Southeast Asian Development Research. Springer, Singapore. Available at: https://doi.org/10.1007/978-981-96-0628-3_6 (Accessed: 20 March 2025).
- Reinsurance News (2017). 'Typhoon Damrey drives $1 billion loss in Vietnam', *Reinsurance News*, 14 December. Available at: https://www.reinsurancene.ws/typhoon-damrey-drives-1-billion-loss-vietnam/ (Accessed: 20 March 2025).
- Reitmeier, L. (2024). *What role do catastrophe bonds play in managing the physical risks from climate change?*. Available at: https://www.lse.ac.uk/granthaminstitute/explainers/what-role-do-catastrophe-bonds-play-in-managing-the-physical-risks-from-climate-change/ (Accessed: 20 March 2025).
- Rose, R. (2005). *Learning from comparative public policy: A practical guide*. Abingdon: Routledge.
- Schratzenstaller, M. (2023). 'Elements of a European Green Fiscal Policy', *Intereconomics*, 58(6), pp. 300–304. https://www.intereconomics.eu/contents/year/2023/number/6/article/elements-of-a-european-green-fiscal-policy.html
- State Bank of Vietnam (2015). *Decision No. 03/CT-NHNN on promoting green credit growth and environmental-social risk management in credit extension*. Available at: https://english.luatvietnam.vn/tai-chinh/directive-03-ct-nhnn-2015-promote-green-credit-growth-93343-d1.html (Accessed: 20 March 2025).
- State Bank of Vietnam (2018). *Decision No. 1604/QD-NHNN on approving the scheme for green banking growth in Vietnam*. Available at: https://thuvienphapluat.vn/van-ban/Tien-te-Ngan-hang/Quyet-dinh-1604-QD-NHN

N-2018-phe-duyet-De-an-phat-trien-ngan-hang-xanh-tai-Viet-Nam-411378.aspx (Accessed: 20 March 2025).

- Thaler, R. H. and Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven, CT: Yale University Press.
- The Prime Minister (2021). *Decision No. 1658/QD-TTg approving the National Strategy for Green Growth for the 2021-2030 period, with a vision toward 2050*. Available at: https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Decision-1658-QD-TTg-2021-National-green-growth-strategy-for-2021-2030-period-504659.aspx (Accessed: 20 March 2025).
- Tuoi Tre News (2024). 'Vietnam's banks spearhead green credit initiatives', *Tuoi Tre News*, 8 May. Available at: https://news.tuoitre.vn/vietnams-banks-spearhead-green-credit-initiatives-10379752.htm (Accessed: 20 March 2025).
- Varian, H. R. (1992). *Microeconomic analysis*. 3rd edn. New York: W. W. Norton.
- Vietnam Investment Review (2024). 'New policy promotes green banking development in Vietnam', *Vietnam Investment Review*, 27 August. Available at: https://vir.com.vn/new-policy-promotes-green-banking-development-in-vietnam-113914.html (Accessed: 20 March 2025).
- VietnamPlus (2023). 'Insiders seek solutions to promote green credit', *VietnamPlus*, 4 December. Available at: https://en.vietnamplus.vn/insiders-seek-solutions-to-promote-green-credit-post275684.vnp (Accessed: 20 March 2025).
- Weber, O. (2010). 'Social banking: Products and services', in Bouma, J. J., Jeucken, M. and Klinkers, L. (eds.) *Sustainable banking: The greening of finance*. Abingdon: Routledge, pp. 77–94.
- World Bank (2021). *Sustainable Development Bond Framework*. Available at: https://thedocs.worldbank.org/en/doc/43b360bfda1e6e5b8a094ef2ce4dff2a-03400

12021/original/World-Bank-IBRD-Sustainable-Development-Bond-Framework.pdf (Accessed: 20 March 2025).

- World Bank (2021). *Vietnam - Country Summary*. Available at: https://climateknowledgeportal.worldbank.org/country/vietnam (Accessed: 20 March 2025).
- World Bank (2022). *Sovereign Green, Social and Sustainability Bonds: Unlocking the Potential for Emerging Markets and Developing Economies*. Available at: https://thedocs.worldbank.org/en/doc/4de3839b85c57eb958dd207fad132f8e-0340012022/original/WB-GSS-Bonds-Survey-Report.pdf (Accessed: 20 March 2025).
- World Bank & Institute of Finance and Sustainability (2022). Unleashing Sustainable Finance in Southeast Asia. Available at: https://documents1.worldbank.org/curated/en/099310011232220307/pdf/P177802011f7760130bc49083a7beb1ef43.pdf (Accessed: 20 March 2025).
- World Bank (2023). *ESG Disclosure Assessment of Thailand's Listed Companies and Recommendations for Policy Development*. Available at: https://documents1.worldbank.org/curated/en/099032624052515227/pdf/P1795971dc58270671bd9e1114d45321c25.pdf (Accessed: 20 March 2025).
- World Bank (2024). *Viet Nam's Oldest Bank BIDV Issues Green Bond and Sustainability Bond in the Domestic Market*. Available at: https://thedocs.worldbank.org/en/doc/34f66dd99b83f50d8ec797a1ba686b38-0340012024/original/Case-Study-Viet-Nam-BIDV-green-bond-TA.pdf (Accessed: 20 March 2025).
- Yin, R. K. (2018) *Case study research and applications: Design and methods*. 6th edn. Thousand Oaks, CA: SAGE Publications.