POLICY DIALOGUES

Managing Macroeconomic Vulnerabilities in Vietnam's Energy Transition: A Multidimensional Policy Framework

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INTRODUCTION

Can Vietnam achieve a low-carbon transition by 2050 while maintaining its growth trajectory? With a real GDP growth rate of 8% in 2025 and a government target of 10% for 2026, Vietnam is one of the world's fastest-growing economies. This growth has been accompanied by a significant expansion of the energy sector, marked by universal electrification and a 10% annual increase in electricity use.

However, this economic growth and energy expansion have come with significant emissions growth. In 2021, per capita emissions reached 4.8 tons CO2e -a fourfold increase since 2000, while total emissions, with 470 million tons CO2e, rank Vietnam as the world's 18th largest emitter. Under current policies, emissions are projected to rise to 592-692.

CONTEXT & MOTIVATION

To meet the 2050 carbon neutrality commitment, Vietnam requires a profound transformation of its economic development model, reversing East Asia's most carbon-intensive growth trajectory while sustaining economic growth momentum. The required emissions reductions in 2030 show the pace and scale of the commitment in the short term. Under 1.5°C pathways, Vietnam should reduce its emissions to approximately 350 MtCO2e, nearly a 50% decrease compared to current projections. Such a target requires transforming the energy system and restructuring of Vietnam's industrial and macro-financial framework.

The revised Power Development Plan 8 (PDP8) lays the foundation for transforming the energy system. It targets a rapid expansion of renewable energy capacity. In 2030, it expects to move from 12.8GW to 73GW for solar and double wind capacity to reach 38GW. But the energy shift is a first layer. Industry accounted for 27% of total CO2 emissions in 2023. Cement production and other heavy industries must confront technological challenges to reduce carbon intensity while preserving their contribution to Vietnam's manufacturing-driven growth model.

Achieving net-zero requires $2.4 trillion investment through 2050, including $642.9 billion for power generation/transmission and $233 billion for adaptation (1). This significant financial requirement—needed to expand clean energy and deploy clean industrial technologies— implies managing emerging vulnerabilities across financial, industrial, and social systems.

METHODS

This brief applies the multidimensional macroeconomic vulnerability framework developed by Moreno et al. (2) to assess risks associated with low-carbon transitions. The method relies on an indicator-based approach that classifies vulnerability across four dimensions: external, fiscal, financial, and social. By capturing key aspects of vulnerability—exposure to transition shocks, structural fragilities, and resilience— these indicators show channels through which risks materialise, such as reliance on imported clean technologies, potential fiscal pressures from green investment, financial-sector risk revaluation, and labour market or structural changes linked to industrial reconfiguration. The analysis maps how macro-financial drivers—policy shifts, technology adoption, and changes in investment patterns—affect these indicators and the interactions among them. This approach provides a coherent, economy-wide diagnosis of where vulnerabilities may arise during the transition and where policy interventions are most needed.

RESULTS

External Dimension: Electricity supply must double every 10 years to meet

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demand, requiring investments of 6.8% of GDP to fully decarbonize energy production and build climate-resilient infrastructure (1). Vietnam's high import intensity of green infrastructure creates balance-of-payments pressures, indicating that 90% of imports serve production and capital goods (3). The transition's import content could initially impact the current account by 3.9% of GDP. Despite manageable external debt and a current account surplus, the scale of required green imports calls for careful management of external balances.

Fiscal Dimension: Large-scale investments of 6% of GDP require significant fiscal policy changes, increasing public debt and deficits, particularly foreign currency debt. Public sector coverage of 35% of financing needs requires an increase of up to 2.4% in government spending. Despite low public debt at 33.5% of GDP, rapid green investment scaling could strain fiscal capacity if not supported by appropriate revenue mobilization mechanisms.

Financial Dimension: Potential greenfield FDI flows of around 1% of GDP will only partially offset the negative upfront impact of higher imports on external debt. This will initially increase private-sector indebtedness as net private savings decline due to lower net income flows from abroad. Private sector mobilization of 73% of energy investments may further pressure private debt.

Social Dimension: The transition must address distributional impacts across sectors and skill levels. Manufacturing firms employing 1.3 million workers face climate-related risks, while the country has already generated 1.7 million green jobs with significant expansion potential through job greening (1). Transport electrification mandating 100% electric buses requires workforce development to shift from combustion-engine to electric-vehicle maintenance.

While this indicator-based assessment offers diagnostic insights, it does not capture dynamic feedback loops across fiscal balances, external accounts, and investment pathways, nor does it account for non-linear transition dynamics. The GEMMES Vietnam project addresses these limitations by developing a stock-flow consistent macroeconomic model calibrated for Vietnam. This forthcoming framework will enable quantitative assessment of vulnerability over time and systematic stress-testing of alternative transition pathways.

RECOMMENDATIONS

To prevent the green transition from triggering external and fiscal imbalances, a well-coordinated policy mix of trade, industrial, and financial measures is necessary.

- **External Balance Management**: Facilitate local production of renewable energy technologies through targeted tax breaks, preferential financing, domestic content requirements, and dedicated green manufacturing zones to reduce import intensity and improve external balance during the investment phase. Establish credible regulatory frameworks, including long-term power purchase agreements (PPAs), streamlined permitting, and investment protection, to attract greenfield FDI in clean energy, thereby reducing foreign-exchange-denominated borrowing while enhancing technology transfer.
- **Fiscal Framework**: Scale up green bonds, sustainability-linked loans, and concessional climate finance to mobilise domestic savings and reduce project risk. Leverage existing fiscal space for targeted subsidies to vulnerable households and firms while preparing for eventual tax base transformation.
- **Financial System Development:** Implement green taxonomies, climate disclosure standards, and risk-weighting reforms to guide capital towards net zero-aligned investments and strengthen climate risk assessment capabilities.
- **Social Cohesion:** Deploy an integrated just transition strategy combining industrial policy, sector-specific retraining programs, and targeted subsidies for affected workers and communities. Support firm-level energy efficiency improvements to protect employment and ensure decarbonisation costs don't disproportionately burden the most vulnerable.

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