

TASK FORCE ON CLIMATE, DEVELOPMENT AND THE INTERNATIONAL MONETARY FUND

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The Fiscal Implications of Climate Transitions THE IMPORTANCE OF IMF SURVEILLANCE





INTERGOVERNMENTAL GROUP OF TWENTY FOUR









北京大学国家发展研究院 National School of Development







TCD TASK FORCE ON CLIMATE, DEVELOPMENT AND THE INTERNATIONAL MONETARY FUND

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About the Task Force on Climate, Development and the International Monetary Fund

The Task Force on Climate, Development and the International Monetary Fund is a consortium of experts from around the world utilizing rigorous, empirical research to advance a development-centered approach to climate change at the IMF. The Task Force believes it is imperative that the global community support climate resilience and transitions to a low-carbon economy in a just manner. As the only multilateral, rules-based institution charged with promoting the stability of the international financial and monetary system, the IMF has a vital role to play in supporting a globally coordinated response.

MEMBER ORGANIZATIONS

- Intergovernmental Group of Twenty-Four (G24)
- Vulnerable Group of Twenty (V20) Ministers of Finance
- African Economic Research Consortium
- Boston University Global Development Policy Center
- National School of Development, Peking University
- Centre for Social and Economic Progress
- Financial Futures Center
- United Nations Economic Commission for Latin America and the Caribbean



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EXECUTIVE SUMMARY

Within the multilateral system, the International Monetary Fund (IMF) is the institution tasked with maintaining the stability of the international financial system, while also promoting longrun growth. Given this mandate, the IMF has identified climate change as a macro-critical challenge that poses serious threats to global economic and financial stability (IMF 2021a).

This policy brief highlights three technical papers from members of the Task Force on Climate, Development and the IMF, a consortium of experts utilizing rigorous, empirical research to advance a development-centered approach to climate at the IMF. The findings of these papers emphasize the fiscal implications of transitions to net-zero due to the significant impacts on countries' fiscal positions and implications for debt sustainability.

Bhandari and Dwivedi (2022) provide an analysis of the revenue India is currently collecting from fossil fuel related taxes and duties, and how the transition will impact those revenue streams. Under all three scenarios, public revenue drops significantly from current levels. Notably, the study finds that policies such as carbon taxes or removal of fossil fuel subsidies would add less revenue than what is already being collected from other fossil fuel taxes and duties.

A paper from Titelman et al. (2022) highlights the fiscal situation of six major hydrocarbon producers in Latin America and the Caribbean, and the implications of a transition to net-zero for revenue streams and debt sustainability. The study underlines the magnitude of the fiscal challenges that the countries face, especially as they deal with growing social and investment spending needs to achieve sustainable and inclusive development.

In a third paper, Maldonado and Gallagher (2022) experiment with incorporating both physical climate risks as well as the fiscal needs for financing a green transition into the IMF's framework for debt sustainability analyses (DSAs) for two countries, Colombia and Peru. The authors attempt to incorporate the fiscal impacts of both physical and transition risks into current IMF models for DSAs. Under various scenarios, they find that Colombia would push on debt thresholds, but Peru would not. More importantly, the paper shows that the IMF will have to accelerate its data analytic capacities to generate reliable estimates of the fiscal needs and impacts of climate change policy and climate change itself.

These technical papers deploy a variety of approaches that can help the IMF identify issues and methodologies that can be used in its research and surveillance work.

In that light, the Task Force outlines four policy recommendations for the IMF to advance its mandate to address the macro-critical aspects of a just transition to an inclusive and resilient net-zero economy:

 Re-evaluate 'green fiscal consolidation' measures, acknowledging the link of that approach to underdevelopment and low investment levels. Structural transformation towards a netzero economy requires large levels of investment globally, at a time when many countries are already facing fiscal pressures.

- Expand country-specific data on resource mobilization needs, economic impacts of
 physical risk, and the direct and indirect impacts of green investment in the economic for
 Article IV reports, DSAs, FSAPs and across the surveillance and advice toolkit. Climate
 risks and other related considerations were not contemplated when original IMF models
 were adopted, and these tools must be reflective of these new needs.
- Help member states make a stepwise increase in investment for inclusive, resilient and low-carbon economies, particularly for carbon-intensive countries. Green public investments have large multiplier effects, and the IMF should experiment with building such multipliers into its analytic work and advising countries on how to identify and budget for these green public investments.
- Tailor advice to support reforms that increase tax revenue and improve tax structure, favoring progressive tax instruments. This effort should be complemented by coordinated international measures, especially by multilateral lenders, to ensure countries have sufficient access to financing to undertake net-zero transitions and achieve sustainable development.

INTRODUCTION

Within the multilateral system, the International Monetary Fund (IMF) is the institution tasked with maintaining the stability of the international financial system, while also promoting longrun growth. Given this mandate, the IMF has identified climate change as a macro-critical challenge that poses serious threats to global economic and financial stability (IMF 2021a). To formalize its engagement on climate-related matters, the IMF's executive board adopted a strategy document in 2021 that commits to incorporating climate into a series of IMF instruments, including the lending toolkit, capacity development, multilateral and Article IV surveillance, Financial Sector Assessment Program (FSAPs) and models used to assess debt sustainability (IMF 2021a).

The IMF board also made commitments on climate change in its Comprehensive Surveillance Review (CSR) that will guide changes in Article IV assessments and other surveillance activity (IMF 2021b). The CSR sets out a plan for the IMF to incorporate fiscal and financial aspects of climate adaptation and resilience, as well as in mitigation and transition management, into a number of Article IV reports each year (IMF 2021b).

The fiscal implications of managing the transitions are significant, especially considering the reality that fossil fuels are a major source of revenue for some member countries. Furthermore, the revenue raised from carbon pricing, which has proven to be politically difficult to enact, may be insufficient to finance or incentivize the low-carbon transition. This means the IMF has a key role to play in helping countries innovate to improve domestic resource mobilization and access to quality external financing.

This policy brief highlights three technical papers from members of the Task Force on Climate, Development and the IMF, a consortium of experts utilizing rigorous, empirical research to advance a development-centered approach to climate at the IMF. The findings of these papers emphasize the fiscal implications of transitions to net-zero due to the significant impacts on countries' fiscal positions and implications for debt sustainability. These technical papers deploy a variety of approaches that can help the IMF identify issues and methodologies that can be used in its research and surveillance work. In that light, this policy brief outlines four policy recommendations for the IMF to advance its mandate to address the macro-critical aspects of a just transition to an inclusive and resilient net-zero economy.

SUMMARY: INDIA'S ENERGY AND FISCAL TRANSITION

Despite being a net importer of energy, a structure of taxes and duties elevated fossil fuels into a major revenue stream for India's government. Bhandari and Dwivedi (2022) show that in 2019, 13.3 percent of government revenues were collected through tax and non-tax revenues from fossil fuels. In fact, the authors calculate that revenues from fossil fuels are more than double that of India's entire defense expenditure, three times the health expenditure of the Central and State governments, and comparable to the entire public sector expenditure on education, sports, art and culture. This share is higher for the central government, where fossil fuel revenues made up 20.8 percent of all revenue, compared to 8.3 percent for state governments. This dependency on fossil fuels highlights the key challenge for India's government to find alternative sources of revenue.

Over the following decades, these revenues are expected to significantly decline both as a share of total government revenue and gross domestic product (GDP). The paper assesses three possible scenarios from the International Energy Agency (IEA) for India's energy transition and estimates the impact each would have on revenues. The first scenario, a base case, is based on the current policy framework. The 'India Vision' Case reflects the commitments made by India for its transition path, while the 'Sustainable Development' Case explores a longer-term drive to net zero (by 2070), along with efforts to accelerate progress towards other sustainable development goals.

	BASE CASE - Stated Sustainable Policy Scenario Development Case		India Vision Case	
2019	13.3	13.3	13.3	
2030	7.6	7.6	8.2	
2040	4.1	3.8	4.7	

TABLE 1 Income from Fossil Fuels as a Share of Central and State Government Revenue (%)

Source: Bhandari and Dwivedi (2022).

Table 1 illustrates the changes in income from fossil fuels as a share of government revenue. Under all scenarios, the share of revenue drops significantly from 13.3 percent in 2019. By 2040, the share of revenue from fossil fuels would be 4.1 percent under the base case, 3.8 under the sustainable development case, and 4.7 percent under the India Vision Case. The India Vision Case proposed a reduction in coal and oil but an increase in use of natural gas, which is taxed at higher levels. Thus, under that scenario, revenues from taxes would drop slightly less than for the other cases.

The authors apply the framework from the IMF publication by Parry et al. (2017) to estimate the potential for revenue collection from the introduction of a carbon tax.

TABLE 2 Revenue from Carbon Tax (% of GDP)

	2019	2030	2040
Revenue from Existing Tax Sources	3.2	1.8	1.0
Coal	0.5	0.2	0.1
Oil and Natural Gas	2.7	1.6	0.9
Revenue from Carbon Tax	1.4	2.3	1.2
Coal	0.6	0.8	0.4
Oil and Natural Gas	0.7	1.5	0.8

Source: Bhandari and Dwivedi (2022).

For 2019, a carbon tax would have only collected about 1.4 percent of GDP, compared to 3.2 percent collected under the current framework. The carbon tax would collect more revenue in 2030 and 2040 from coal but still less from oil and natural gas. This is mainly due to coal being taxed less than oil and gas in current schemes.

When it comes to spending on energy subsidies, the authors note that most of such spending is currently associated with liquified petroleum gas and cooking gas, and only added up to 0.5 percent of GDP in 2020. Removing this subsidy would do very little in terms of making up for the shortfall in revenue from taxes collected on fossil fuels but would nonetheless have broad implications for equity.

The bottom line: Central, State and Union Territory (UT) governments will be required to depend less on fossil fuels relative to the size of their budgets. It will be crucial to explore other sources of revenue, and the overall impact across India's states will vary widely, needing separate, targeted energy transition strategies.

SUMMARY: THE FISCAL IMPACT OF NET-ZERO FOR HYDROCARBON PRODUCERS IN LATIN AMERICA

The transition to net-zero emissions (NZE) will be particularly challenging for hydrocarbon producers that face the added pressure of diversifying their economies and reducing their own emissions while dealing with large losses of revenue. Titelman et al. (2022) examines the fiscal implications of this scenario for a group of major producers in Latin America and the Caribbean, that includes Bolivia, Brazil, Colombia, Ecuador, Mexico and Trinidad and Tobago (LAC6). Hydrocarbon activities play an important role in LAC6 countries. Their impact on fiscal accounts is profound, with revenues from oil and gas exploration and production accounting for a significant share of total revenues, even in the latest period when international crude oil prices plummeted (Table 3).

TABLE 3 LAC6: General Government Fiscal Revenues from Oil and Gas Exploration and Production as a Share of Total Revenues, 2010-2019 (*Percentages*)

	Country						
Period	Bolivia (Plur. State of)	Brazil	Colombia	Ecuador	Mexico	Trinidad and Tobago	
2010-2014	29.7	2.0	13.6	34.9	32.9	41.0	
2015-2019	16.7	2.2	5.6	24.2	11.7	16.7	

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from the *Fiscal Revenues from Non-Renewable Natural Resources in Latin America and the Caribbean* database of the Fiscal Affairs Unit of the Economic Development Division of ECLAC.

As the paper highlights, fiscal conditions in LAC6 were challenging before the COVID-19 pandemic, with falling hydrocarbon revenues contributing to growing fiscal deficits and higher debt levels. Several countries were pursuing fiscal consolidation measures, typically cuts in public investment, to address debt sustainability concerns. The COVID-19 crisis amplified this situation, with a historically large increase in expenditure and diminished revenues that exacerbated fiscal imbalances and pushed public debt to the highest levels observed during this century.

Against this backdrop, the NZE transition represents an extraordinary challenge for fiscal policymakers. Restructuring the energy matrix and reducing emissions will require significant investments, especially in less diversified countries where the productive structure would undergo a profound restructuring. LAC6 countries are also facing growing social pressure to expand public spending on education, healthcare and pensions. At the same time, revenues from oil and gas would dwindle in line with production and prices during the NZE transition.

The paper presents the results of a series of scenarios based on fiscal models to provide insights into long-run revenue, expenditure, fiscal balance and debt dynamics for the period ending in 2050 (Figure 1). Under a business-as-usual (BAU) scenario, debt levels would be manageable if policymakers exercise fiscal restraint, which would likely be politically unfeasible in light of growing investment and social needs. Addressing these needs under a BAU scenario would lead to large deficits and place debt on an unsustainable trajectory, particularly in countries with lower levels of public expenditure.

Fiscal modeling for an NZE scenario, based on the underlying assumptions from the IEA (2021) and IMF (2021c) suggests that a sharp fall in hydrocarbon revenues and the pursuit of crucial social and investment objectives would result in explosive growth of public debt – relative to the corresponding BAU scenario – in all LAC6 countries except Brazil and Colombia (Figure 1). This is particularly the case for countries where hydrocarbon revenues make up a significant share of total revenues (Figure 2). At the same time, results from the fiscal model suggest that carbon taxes would provide little revenue relief for Bolivia, Ecuador, Mexico and Trinidad and Tobago.





Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Note: In the "Deficit Anchor" scenario, expenditure for 2021-2026 is such that the debt path in this period equals that of the IMF's April 2021 WEO; for the longer term, forecasts assume total expenditures are adjusted to maintain historical gap to income levels (stable fiscal balance). For the "Investment and Social Needs" scenario, total government expenditures grow linearly to reach the 25th percentile of the OECD (39.5 percent of GDP).

FIGURE 2 LAC6: General Government Hydrocarbon-related Revenue (Percentage of GDP)



b. Brazil

c. Colombia







f. Trinidad and Tobago



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Note: Revenue in the NZE scenario is the sum of hydrocarbon related revenue (gray bar) plus revenue from the carbon tax (black bar).

The bottom line: A fiscal sustainability framework to support pro-growth and development-centered fiscal policies will be crucial to support LAC6 countries during the NZE transition. It will require efforts at both the national and international levels to be successful. At the national level, carbon taxes cannot raise the needed revenue. Domestic resource mobilization must favor progressive instruments, including tackling rampant tax evasion, and should be accompanied by international support.

SUMMARY: CLIMATE CHANGE AND IMF DEBT SUSTAINABILITY ANALYSIS

Maldonado and Gallagher (2022) experiment with incorporating climate-related risks and a stepwise mobilization of resources in support of a transition to a low-carbon economy into the IMF's existing DSA framework. Using Peru and Colombia as examples, two climate-related scenarios are introduced: a Physical Risk Scenario and "Greener" Transition Scenario. Figure 3 illustrates the short- and medium-run assumptions for each scenario.





Source: Maldonado and Gallagher (2022).

A physical shock is followed by increased fiscal outlays as a response. For the purpose of this exercise, the estimates on damage, economic impact and scale of response are based on most recent experience with a climate shock in both Peru and Colombia. For both countries, a physical shock would raise the debt stock without significantly changing the debt sustainability profile.

For the "Greener" Transition Scenario, investment needs are based on a World Bank study by Rozenberg and Fay (2019) and consider three scenarios of annual increases in spending: low, at 2.2 percent of GDP; preferred, at 3.7 percent of GDP; and high, at 8.3 percent. Introducing this scenario increases public debt-to-GDP ratio and puts Colombia above the IMF's recommended threshold of 70 percent (IMF 2021). In a scenario where the countries experience both Physical Risk while mobilizing resources for a "Greener" Transition, the probability of a stress event increases in both cases. This is illustrated in Figure 4 below. FIGURE 4 Physical Risk and "Greener" Transition Scenario - Probability of Stress Event



Source: Maldonado and Gallagher (2022).

Such findings could vary widely across different countries and circumstances depending upon the incidence of climate shocks and the country-specific levels of financing needed for green structural transformation.

The bottom line: These two test cases show how climate shocks might significantly affect the countries' public debt trajectory, making debt converge to a higher level and, in some cases, increase the countries' probability of incurring a stress event. It is imperative for the IMF to rapidly start an effort to generate reliable country-specific data, estimates of the fiscal impacts of shocks and the level of resource mobilization required over the coming decades.

POLICY IMPLICATIONS FOR THE IMF AND BEYOND

The papers discussed in this policy brief provide evidence and insight towards a development-centered approach to climate policy at the IMF. The papers suggest that the IMF must reconsider its approach to carbon pricing and 'green fiscal consolidation,' obtain better data on country-specific climate risks and resource mobilization requirements, and make resource mobilization more central to its surveillance and advisory work.

Carbon Pricing and 'Green' Fiscal Consolidation

Carbon pricing has been at the core of IMF advice on climate change mitigation strategies, on the grounds that it would promote efficiency, shift demand towards cleaner alternatives, raise revenue for green investments and offer support to those likely to be disproportionately impacted by higher energy prices (IMF 2021a). The results of Bhandari and Dwivedi (2022) and Titelman et al. (2022) highlight the limitations and risks of relying solely on this strategy both to lower demand for fossil fuels and generate revenue.

In the case of energy producers and exporters, even without accounting for possible negative feedbacks, carbon taxes will far from offset associated revenue losses. Bhandari and Dwivedi (2022) illustrate that, even though in India fossil fuels are already subject to taxes, this had no major implications on reducing demand, especially in sectors like transportation where demand is less price-sensitive. This supports existing scholarship about how carbon prices may be too low to yield the desired reductions in carbon emissions (Narassimhan et al. 2019) and point to the practical challenge of finding a carbon price level that can steer a transition away from fossil fuels, while not causing major disruptions to economic activity or fiscal positions.

The IMF has often advised countries to remove fossil fuel subsidies. The IMF considers such rationalization to be successful in improving fiscal health (IMF 2021a). Bhandari and Dwivedi (2022) show that, in India, the removal of subsidies does not bring substantial savings and carries equity concerns. Furthermore, the advice to remove fossil fuel subsidies can trigger social unrest and uneven impacts that have resulted from prior attempts at fossil fuel subsidies for large firms.

Findings from Titelman et al. (2022) provide additional support for a re-evaluation of what the IMF refers to as 'green fiscal consolidation' measures, acknowledging the link of that approach to underdevelopment and low investment levels. Structural transformation towards a netzero economy requires large levels of investment globally, at a time when many countries are already facing fiscal pressures.

Data and Analytics

Maldonado and Gallagher (2022) illustrate one way to incorporate climate-related risks into the IMF DSAs, and also highlight the the need for more robust country-specific data on resource mobilization needs, the economic impacts of physical risk, and the direct and indirect impacts of green investment in the economy for Article IVs, DSAs, FSAPs and across the surveillance and advice toolkit.

More fundamentally, the three papers highlight the need for greater caution and introspection in the application of in-house models and standard prescriptions to novel climate change-related scenarios – including country-specific physical risk, transition risk, adaptation imperatives, resource mobilization needs and the like – which were not contemplated when these models and prescriptions were adopted and which are only now being studied in earnest.

More caution about the promise of carbon taxes as a mitigation strategy, for instance, or on the applicability of the short-term early warning systems embodied in the DSAs to situations where adaptation investments are an imperative. The IMF itself notes its record of underestimating the negative effects of fiscal consolidation and overestimating the benefits of standard reforms (IMF 2019), which supports this call for caution.

Moreover, the short-term time horizons of the current DSA and other surveillance frameworks may not be fit to analyze the long-term fiscal costs and benefits of green investments, as well as the costs of climate inaction. Furthermore, with an established track record of underestimating the negative effects of fiscal consolidation and benefits of reforms (IMF 2019), more caution on predictions about carbon taxes and market signals is warranted.

Resource Mobilization

The research featured underscores the urgent need to help member states make a stepwise increase in the scale of investment needed for transitions into inclusive, resilient and low-carbon economies—which are particularly challenging for fossil fuel dominated countries. Failure to decisively act will only increase the costs and needs for investment in the future, while also causing irreversible damage to the planet. Short-term concerns over stability or fiscal balances must be aligned with long-term consequences of delaying climate action.

IMF research has repeatedly shown the positive impact of green public investments, which have large multiplier effects, and can lead on structural transformations (Batini et al. 2017). The IMF should experiment with building such multipliers into its analytic work and advise countries on how to identify and budget for such green public investment.

At a national level, the IMF should tailor its advice to support reforms to increase tax revenue and improve its structure, favoring progressive tax instruments. These efforts should be accompanied by measures at the international level, especially by multilateral lenders such as the IMF, to ensure that countries have sufficient access to financing to undertake the net-zero transition and achieve sustainable development.

With a better granular view of the financing needs and implications for member states, the IMF will need to provide and be a voice for low-cost, quality financing for countries seeking to transition to net-zero and adapt to climate change.

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