Climate Finance, Development Assistance and Domestic Resource Allocation[1]

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Abstract

With elevated debt levels, competing needs, and tight budgets in developed countries, even if development climate finance targets are met, this could be at the expense of development assistance in other areas, such as education and health, which can play an important role for the long-term economic development of the recipient countries (Burnside and Dollar, 2000). This paper fills a gap in the literature by contributing to better understanding of the climate and macroeconomic implications of the shifting composition of development assistance. It considered three important questions: (i) to what extent does development climate finance crowd out other development assistance? (ii) how does domestic resource allocation responds to the shift? And (iii) to what extent does public climate finance crowd out or in private climate finance?

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1. Introduction

Climate finance is broadly defined, covering domestic and external financing from public and private sources to support mitigation and adaptation actions that will address climate change. Estimates of climate finance or investment needs are in the trillions, though the exact number varies by source. Here we use development climate finance to specifically refers to the financial resources provided by developed countries to developing countries under common but differentiated responsibility and respective capabilities, with the purpose of supporting their mitigation and adaptation actions. In 2009, developed countries agreed to mobilize US$100 billion annually by 2020 to support climate action in developing countries, which was extended to 2015 under the Paris Agreement and was first met in 2022 (OECD, 2024). A new climate finance target, a New Collective Quantified Goal (NCQG), of US$300 billion annually by 2035 was agreed at COP29, with a broader goal US$1.3 trillion per year by 2035 to mobilize finance from all actors, both public and private, to address the growing climate needs of developing nations.

While much focus has been on the level of development climate finance and whether the target has been met, limited attention has been paid to what extent it has helped achieve the climate mitigation and adaptation objectives in developing countries and its macroeconomic implications. This paper will try to fill in this gap.

2. Conceptual issues

This paper focuses on better understanding the climate and macroeconomic implications of increasing development climate finance. More specifically:

Question 1: does climate-related development assistance crowd out other development assistance?

With elevated debt levels, competing needs (e.g., on defense) and tight budgets in developed countries, even if development climate finance targets are met, this could be at the expense of development assistance in other areas, such as education and health, which can play an important role for the long-term development of the recipient countries (Burnside and Dollar, 2000). In addition to this likely resource reallocation, there is also the possibility of greenwashing (i.e., relabeling of the same investment as

green, without making real changes). Greenwashing would have no real climate and macroeconomic impacts, maybe except providing misleading information on climate efforts.

Question 2: how does a shift in development assistance toward climate finance alter domestic resource allocation?

The climate and macroeconomic impacts would critically depend on how domestic resource allocation responds to any shift in the composition of development assistance (Eyckmansa, Fankhauserb, and Kverndokk, 2014; Chatterjee and Turnovsky, 2007).

- For countries that domestic public resources are already optimally allocated, an increase in development climate finance would lead to a shift of domestic resources away from climate investment and toward areas where development assistance has been reduced. In the case of climate mitigation, this would reduce its climate impact, while also limiting its macroeconomic impacts. The story will be more complex for climate adaptation investment, as climate adaptation can help mitigate the macroeconomic impacts of climate change.
- For countries that domestic public resources are not optimally allocated (e.g., due to capacity constraints, there is little allocation of domestic resources for climate objectives), this may lead to an increase in climate investment, including from domestic sources, and thus less resources for other development areas, particularly if combined with capacity development on climate issues.

Question 3: does public climate finance crowd out or in private climate finance?

As public climate finance, including development climate finance and domestic public climate finance, is expected to only account for a small share of total climate investment needs. Another important question is whether public climate finance crowds in or crowds out private climate finance. This will likely depend on the exact forms of public climate finance, for example, blended finance, public-private partnerships (PPPs), or direct project financing, with varying incentives for private climate finance. The climate and macroeconomic implications of each design, including fiscal impacts and risks, should be carefully assessed.

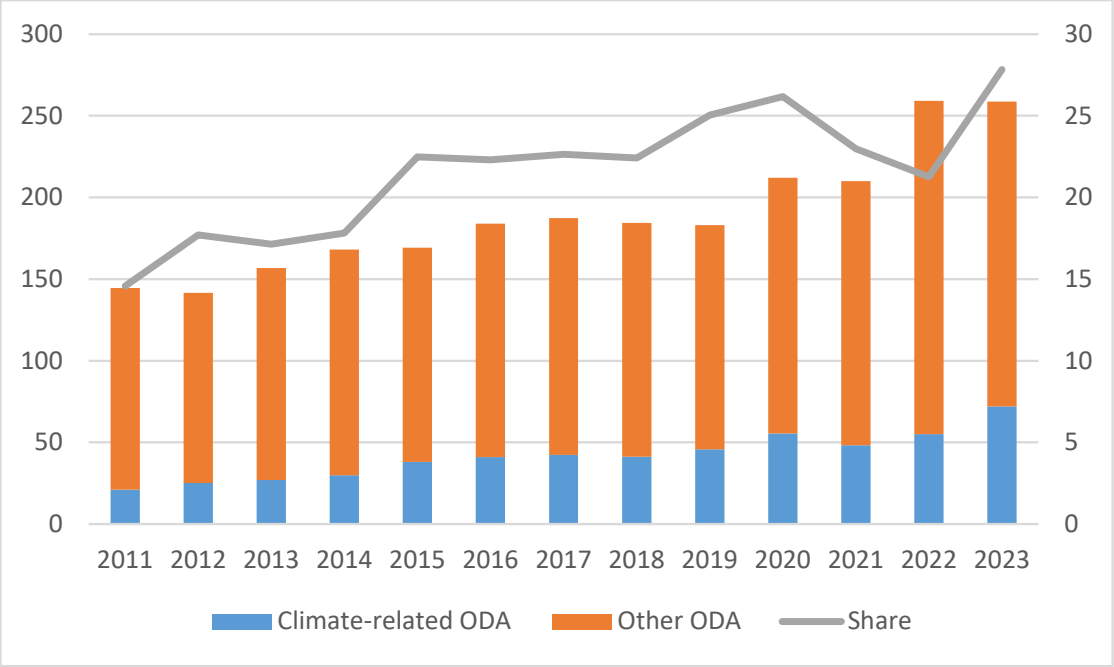
3. Measurement, data, and stylize facts

The collection of climate finance data is still evolving, and its availability is still very limited. One reason is the lack of consensus on what constitutes climate finance and the challenge of transparency and accuracy in reporting. Additional considerations arise for development climate finance, including the degree of concessionality. Two main sources for climate finance are OECD DAC and Climate Policy Initiative (CPI) (OECD, 2024; Naran and others, 2024):

- OECD Rio Markers database: The Rio markers on climate change mitigation were established by the DAC in close collaboration with the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), for climate mitigation in 1998 and climate adaptation in 2009. The markers allow an approximate quantification of aid flows that target climate objectives, with the scoring of *not targeted*, *a significant objective,* or *a principal objective*, and the estimates should be seen as the upper bound of climate-change-related aid.[2] The data are available for donor, recipient, and sector. As shown in Figure 1, the share of climate-related ODA has been increasing over recent years.
- CPI: CPI's climate finance tracking Program provides comprehensive data and insights into finance flows supporting climate change mitigation and adaptation outcomes, covering both public and private finance data and including granular data by source (e.g., public vs. private; domestic vs. external), recipient, and sector. Figure 2 indicates that both public and private climate finance are substantial.
- Public spending by sector (based on functional classification). This is available from Government Financial Statistics (GFS) and World Development Indicators (WDI).

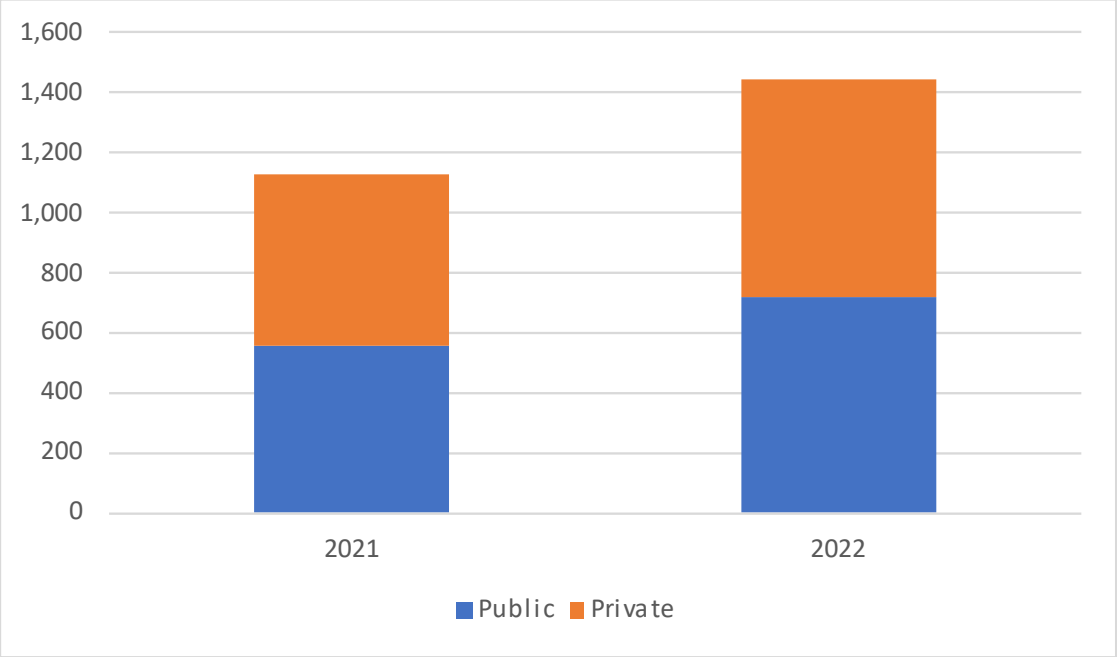
[2] A principal objective means that the objective (climate change mitigation and adaptation) must be explicitly stated as fundamental in the design of, or the motivation for, the action. Promoting the objective will thus be stated in the activity documentation to be one of the principal reasons for undertaking the action. In other words, the activity would not have been funded (or designed that way) but for that objective. A significant objective means that the objective must also be explicitly stated but is not the fundamental driver or motivation for undertaking and designing the activity. The activity has other prime objectives but has been formulated or adjusted to help meet the relevant climate concerns.

Figure 1. Climate-related development assistance and other development assistance (in billions of constant 2023 dollars and percent)



Source: OECD DAC Rio Marker.

Figure 2. Climate finance by public and private sources
(in billions of current dollars)



Source: CPI.

4. Empirical approach

Question 1: does climate-related development assistance crowd out other development assistance?

To answer this question, we start with a fixed effect specification:

$$D_{i,t} = \beta_0 + \beta_1 C_{i,t} + \beta_2 X_{i,t} + I_i + T_t + \epsilon_{i,t}$$

Here, i denotes country; t denotes year; D denotes total development assistance; C denotes climate-related development assistance; X denotes characteristics of recipient countries such as GDP per capita, occurrence of climate disasters, governance, and administrative capacity; I denotes country fixed effects; and T denotes year fixed effects. β_1 is the coefficient of interest, indicating the change in development assistance with one dollar increase in climate-related development assistance. If it is significantly less than 1, there is a crowding-out effect.

The above specification would be subject to endogeneity if there are time-varying factors that affect both climate-related development assistance and other development assistance, beyond those that are explicitly controlled. In such a case, an instrumental variable approach may be considered, with potential instruments including countries' nationally determined contributions (NDC) and vulnerability to climate change.

To further understand which sectors are most affected by the crowding out, we use the following specification to incorporate sector-level data. Essentially, it can help answer whether the crowding out is mainly from the same sector as climate-related development assistance or from other sectors (e.g., education and health).

$$D_{i,s,t} = \beta_0 + \beta_1 C_{i,s,t} + \beta_2 X_{i,t} + I_i + S_s + T_t + \epsilon_{i,s,t}$$

Here D denotes development assistance in the same sector or in other sectors; s denotes sector; and S denotes sector-fixed effects. If the crowding out is mainly in the same sector, this can be explained by both greenwashing or a real shift to climate investment. However, if the crowding out is mostly in other sectors, the likelihood of the greenwashing is small.

Question 2: how does a shift in development assistance toward climate finance alter domestic resource allocation?

Similar to the sectoral approach above, we use the following to understand how an increase in climate-related development in a sector leads to change public spending in the same sector and in other sectors:

$$G_{i,s,t} = \beta_0 + \beta_1 C_{i,s,t} + \beta_2 X_{i,t} + I_i + S_s + T_t + \epsilon_{i,s,t}$$

Here G denotes government spending in country i, sector s, and year t. If climate-related development assistance leads to a decrease in public spending in the same sector and an increase in public spending in other sectors (particularly where development assistance has been reduced), it would be consistent with domestic resource allocation tends to offset the change in the composition of development assistance. Furthermore, interacting climate-related development assistance with administrative capacity of the country can help understand if this effect varies by administrative capacity.

Question 3: does public climate finance crowd out or in private climate finance?

Take advantage of the availability of climate finance by public and private sources in the CPI data, we estimate the following specification:

$$P_{i,t} = \beta_0 + \beta_1 C_{i,t} + \beta_2 X_{i,t} + I_i + T_t + \epsilon_{i,t}$$

Here P denotes private climate finance and C denotes public climate finance. The effects may also differ by mitigation and adaptation.

5. Main findings

To be completed.

6. Conclusion

The findings would have several important implications:

- To the extent that climate-related development assistance crowds out other development assistance, this would call into question whether developed countries in fact are fulfilling their commitments under the common but differentiated responsibility and respective capabilities.

- The sector-level analysis on crowding out would help shed some light on whether greenwashing is a potential concern for climate-related development assistance and the sectors that are most affected by the crowding out (e.g., education and health).
- If domestic resource allocation effectively responds to the change in the composition of development assistance, the climate and macroeconomic impacts would likely to be limited. The extent, however, may differ by countries' administrative capacity. The design of climate-related assistance could play an important role in balancing the climate and macroeconomic impacts, for example, by requiring a matching fund from the recipient countries.
- The design of public climate finance (blended finance and PPPs vs. direct project financing) could help catalyze private climate finance. However, the tradeoff between climate and macroeconomic impacts needs to be carefully assessed.

References:

Burnside, Craig, and David Dollar, 2000, "Aid, Policies, and Growth." American Economic Review 90 (4): 847–868.

Chatterjee, Santanu and Stephen Turnovsky, 2007, "Foreign aid and economic growth: The role of flexible labor supply," Journal of Development Economics, Volume 84, Issue 1: 507-533.

Eyckmansa, Johan, Sam Fankhauserb, and Snorre Kverndokk, 2014, "Development Aid and Climate Finance," Center for Climate Change Economics and Policy, Grantham Research Institute on Climate Change and the Environment, LSE.

Hirschel-Burns, Tim, 2024, "Negotiating in the Dark? How to Account for Multilateral Development Banks in the New Collective Quantified Goal?" GEGI Policy Brief 029, Global Development Policy Center.

Koch, Svea, and Mariya Aleksandrova, 2024, "The future of climate and development finance: Balancing separate accounting with integrated policy responses," IDOS Policy Brief 19/2023, German Institute of Development and Sustainability (Bonn). ODA accounting (mitigation global, adaptation local).

Michaelowa, Katharina and Chandreyee Namhata, 2022, "Climate finance as development aid," Handbook of international climate finance (pp. 62-82). Cheltenham, UK: Edward Elgar.

Naran, Baysa, Barbara Buchner, Matthew Price, Sean Stout, Maddy Taylor and Dennis Zabeida, 2024, "Global Landscape of Climate Finance 2024," Climate Policy Initiative.

OECD, 2024, Climate Finance Provided and Mobilised by Developed Countries in 2013-2022, Organization for Economic Cooperation and Development (Paris).

Tongia, Rahul, 2024, "Why Everyone Exaggerates Climate Finance?" Commentary, Brookings Institution.