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Mapping the Climate Finance Tracking Knowledge Frontier

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Climate FIGS

Understanding the Allocation of
Climate Finance in the Global South

Mapping the Climate Finance Tracking Knowledge Frontier

18 March 2025

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About this report

This report is based on a workshop on climate finance tracking held at the University of Amsterdam's (UvA) Institute for Advanced Study in Amsterdam on 3 December 2024. The workshop was organized by ClimateFiGS, a five-year research project hosted by the Amsterdam Institute for Social Science Research at the UvA.

ClimateFiGS is funded by the European Union (European Research Council, ClimateFiGS, 101117670). Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the European Research Council. Neither the European Union nor the granting authority can be held responsible for them. This disclaimer also applies to the organizations that participated in the workshop.

The report draws on detailed notes prepared by Jacob Baraza. Gabriela Alberola led the conceptualization and writing. Ruth Carlitz, Wangui Kagumba, Tendai Kasinganeti, and Tessa Tutschka reviewed multiple drafts and provided key inputs.

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- Climate Policy Initiative (CPI)
- Eindhoven University of Technology
- German Institute for Development Evaluation (DEval)
- INKA-Consult
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- Organization for Economic Cooperation and Development (OECD)
- Oxfam
- Publish What You Fund
- Stockholm Environment Institute
- University of Amsterdam (UvA)

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Letter from Dr. Ruth Carlitz, ClimateFiGS PI

18 March 2025

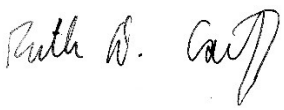
In April 2024, thanks to a generous grant from the European Research Council, I launched ClimateFiGS, a 5-year project that aims to develop new theory on the allocation and spending of climate finance within Global South countries. The project first takes a global view, mapping and explaining variation in the extent to which climate finance aligns with local needs. The project also aims to shed light on climate finance allocation within recipient countries, investigating what gets prioritized and where money is spent, as well as the associated decision-making processes.

In September 2024, ClimateFiGS moved into a new and exciting phase with the arrival of three additional core team members: postdoctoral researcher Dr. Gabriela Alberola, and PhD researchers Wangui Kagumba and Tendai Kasinganeti. As we began working to map out research directions and opportunities, we quickly saw the need for a holistic understanding of extant climate finance datasets and tracking methodologies. To facilitate this understanding, we conceived of a workshop that would bring together researchers and practitioners involved in reporting and tracking international climate finance across and within recipient countries.

On 3 December 2024, we hosted 23 participants at the UvA's Institute for Advanced Study, who shared insights and experience related to public and private climate finance tracking, from the perspective of both contributors and recipients. The workshop concluded with an engaging discussion of key challenges in climate finance tracking; the theories of change guiding the work of different actors and organizations in this space; and finally, innovations in methodology, policy, or technology that will shape the future of field.

In what follows, we distill the key lessons and calls to action that emerged from the workshop. We are excited to heed these calls, and work to fill critical knowledge gaps and generate policy-relevant insights in the coming years. We hope that by sharing what we learned we can also strengthen the work of others in this space.

Happy reading!



Abbreviations

AI	Artificial Intelligence
BNEF	Bloomberg New Energy Finance
CPI	Climate Policy Initiative
DAC	Development Assistance Committee
DEval	German Institute for Development Evaluation
EMDE	Emerging Market and Developing Economy
FAQ	Frequently Asked Questions
IRENA	International Renewable Energy Agency
KfW	German Development Bank (Kreditanstalt für Wiederaufbau)
MDB	Multilateral Development Bank
NAP	National Adaptation Plan
NCQG	New Collective Quantified Goal
NDC	Nationally Determined Contribution
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
UNFCCC	United Nations Framework Convention on Climate Change
UvA	University of Amsterdam

1. Background

The 2009 Copenhagen Accord marked a pivotal moment in global efforts to combat climate change: Recognizing their greater responsibility for greenhouse gas emissions, developed countries committed to mobilizing US $100 billion annually in climate finance[1] to support developing countries in their mitigation and adaptation efforts. This commitment, which has been reaffirmed in subsequent agreements, was recently increased to $300 billion annually at the 2024 United Nations Climate Change Conference (COP29) in Baku, Azerbaijan.

Climate finance is widely recognized as essential for achieving global climate targets. One of the most significant of these targets is the 2015 Paris Agreement's goal of limiting global warming to well below 2°C above pre-industrial levels, with efforts to stay within 1.5°C whenever possible. In addition to its role in meeting global temperature targets, climate finance is also essential for national and local-level climate action, for both mitigation and adaptation.

Following the 2009 Copenhagen Accord, the amount of climate finance provided and mobilized has significantly increased, leading to the creation of new organizations and mechanisms for mobilizing, distributing, and tracking funds. Currently, multiple entities are responsible for monitoring and reporting these flows, including the Organization for Economic Co-operation and Development (OECD), the United Nations Framework Convention on Climate Change (UNFCCC), multilateral development banks (MDBs), dedicated climate funds, non-governmental organizations, private entities, and various governmental ministries and evaluation agencies in both contributor and recipient countries.

Such diversity of actors and organizations has resulted in a rich but fragmented climate finance arena with discrepancies in definitions, methodologies, and findings. These challenges make it difficult to assess how far we have come in achieving collective quantified goals, such as the $100 billion target, which in turn will impact progress towards meaningful adaptation and emissions reductions.

The following chapters dig into these challenges and proceed as follows: Chapter 2 covers methodologies and datasets used to assess progress towards climate finance goals, Chapter 3 summarizes the outstanding challenges discussed during the workshop, Chapter 4 highlights the importance of "going beyond the numbers," and Chapter 5 presents implications and recommendations for future research and policy.

[1] The United Nations Framework Convention on Climate Change (UNFCCC, n.d.) defines climate finance as "local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change."

2. Datasets and methodologies

A central focus of the workshop was exploring the various climate finance datasets and methodologies used by different organizations and researchers to evaluate progress toward the $100 billion goal and other climate-related targets. This chapter provides an overview. It begins with a description of the OECD datasets, followed by a summary of additional datasets used by participating organizations. The final section summarizes insights from three participating organizations on how they track and evaluate private sector contributions.

Datasets

OECD Climate Finance and Climate-Related Development Finance datasets

The OECD collects and publishes datasets that serve as one of the primary references for tracking financial flows for climate action. These datasets are compiled using self-reported data from contributors and are among the most widely used and cited sources for climate finance analyses.

While the term 'climate finance' is often used in practice—including in this report—to refer broadly to financial flows mobilized for climate action, the OECD uses specific language to refer to different measures captured in their datasets. In particular, the OECD differentiates between two distinct but interconnected measures: “climate finance” and “climate-related development finance,” with the former referring specifically to finance provided and mobilized for developing countries toward the $100 billion goal.[2] Although both measures present similar trends and aggregate values, their methodologies differ, leading to variation in reported figures.

Another important difference is how bilateral and multilateral contributions are calculated. Bilateral contributors[3] mostly use the Rio Markers, a set of indicators that climate finance providers use to identify development activities based on their climate relevance as “principal,” “significant,” and “not targeted”. Each bilateral country contributor then estimates what percentage of the activity, based on their assigned Rio Markers, counts towards mitigation and adaptation.[4] Multilateral contributors, on the other hand, primarily use the Joint MDB Methodologies on Tracking Climate Finance[5] (or “climate component” methodology) to identify the share of an activity that contributes directly to climate change adaptation or mitigation. As we will discuss in further detail in Chapter 3, the distinct methodologies used by bilateral and multilateral contributors can present challenges for aggregation and comparison.

[2] For additional information about the difference between the two types of climate-related finance, please see OECD (2024).
[3] We refer here to bilateral contributors who are members of the OECD Development Assistance Committee (DAC).
[4] The application of Rio Markers is at the discretion of the provider country and so varies to an extent across countries. Typically, activities classified as principal are assigned a coefficient in the range of 85% and 100% whereas those classified as significant are assigned a coefficient between 30% and 50%.
[5] Additional information on these methodologies can be found in EIB (2023).

The OECD data does not include funds from developing countries that are used domestically, or that are provided by developing countries to other developing countries (sometimes referred to as 'South-South' flows), as these are not part of the $100 billion goal. In addition, the majority of climate finance flows tracked and reported toward the $100 billion goal come from public sources. Private climate finance, on the other hand, remains less consistently tracked.

In terms of trends, the OECD reports that 2022 was the first year that the $100 billion goal was met (and exceeded). OECD reporting indicates that mitigation represented the majority of the total mobilized, compared to adaptation, and that climate finance is mostly concentrated in the energy sector and in upper-middle income countries.

Additional sources of data

In addition to the OECD datasets, organizations and individuals compile datasets for various purposes and from different sources, some of which become primary data for others, creating a layered data ecosystem. Additional datasets mentioned by workshop participants included:

- Bloomberg New Energy Finance (BNEF)
- Climate Bonds Initiative
- Climate Funds Update
- Climate Policy Initiative (CPI) Global Landscape reports
- International Aid Transparency Initiative (IATI) d-portal
- IJGlobal
- International Energy Agency (IEA)
- UNFCCC Climate Finance Data Portal
- World Bank Private Participation in Infrastructure

Participants also reported using data from country- or region-specific sources, including domestic budget datasets, surveys, interviews, and project-level data from bilateral and multilateral organizations. In addition to tracking financial flows, participants also discussed the need for tracking non-financial flows. To that effect, participants from the CPI shared their recent efforts to track guarantees,[6] by collecting data from multilateral development aid providers, export credit agencies, and specialized institutions (CPI, 2024a).

Tracking private climate finance

Private climate finance refers to equity instruments (such as shares) and debt instruments (such as export credits and loans) from private actors that are used to finance mitigation and adaptation activities. Despite the key role that private climate finance plays in meeting global, national, and local climate targets, it remains more difficult to compile, harmonize,

[6] Guarantees broadly refer to "legally binding agreements under which guarantors agree to pay part or the entire amount due on a loan, equity or other instrument in the event of non-payment, or a loss of value in the case of an investment" (Sial & Chandrasekhar, 2024).

and analyze compared to public finance, leading many organizations and researchers to develop their own bespoke datasets and tracking methodologies.

Private climate finance tracking presents particular challenges due to its fragmentation across various databases and methodologies. Thus, we devoted a dedicated panel to explore how private climate finance is variously defined, the challenges of data collection and validation, and innovations in policy and technology. Participants from the German Institute for Development Evaluation (DEval) shared their experience tracking private climate finance within German development cooperation; the International Renewable Energy Agency (IRENA) explained how they compile private finance data to assess global energy transition trends; and CPI described their approach to tracking private climate finance, particularly for adaptation.

Blended climate finance

Blended finance refers to the strategic use of development finance to mobilize private finance for sustainable development (OECD, 2018a). A key goal of blended climate finance is to reduce financial risks for private investors, making climate-related projects more attractive. In 2023, private investments in climate blended finance saw a significant increase globally, rising nearly 200% compared to the prior year to a record $6 billion (Convergence Blended Finance, 2024).

Representatives from DEval shared their ongoing work to track blended climate finance mobilized with official development assistance (ODA) from the German Development Bank (KfW). This exercise was motivated by high reported mobilization figures, noting that reported mobilized private capital appears to be too high and varies depending on the method applied. DEval cited the OECD Development Assistance Committee (DAC) guidelines (OECD, 2018b), which note two main methods for measuring private capital mobilization. In the first, all private capital used for development purposes is measured; other funding or the investment risk is not taken into account. Alternatively, the donor-specific share of absolute private capital mobilization is calculated. DEval is working to harmonize data from various datasets and use Rio Markers to identify the portion of an investment that should count towards private mitigation finance. Key challenges include inconsistencies in the application of the Rio Markers, lack of information on the timing of investments, and the fact that results vary significantly based on the methodology applied. As we discuss in further detail in the next chapter, there is also a need to verify assumptions regarding the reported private capital mobilized by a given public investment. A ratio of up to 1:7 is widely assumed but this was questioned by multiple participants.

Private (and public) climate finance for renewable energy

IRENA shared how they combine data from multiple sources, including BNEF,[7] OECD, CPI, the International Energy Agency (IEA), and individual country data (especially for data from non-OECD countries such as China) for their analyses and reports. They merge both public and private finance data and produce the IRENASTAT[8] database, which is publicly available.

[7] https://about.bnef.com/
[8] https://www.irena.org/Data/Downloads/IRENASTAT

They also publish an annual report on energy transitions trends called the World Energy Transitions Outlook (IRENA, 2024) and a biannual publication with CPI, the Global Landscape of Renewable Energy Finance (IRENA & CPI, 2023).

In their 2024 report, IRENA found that global energy transition investments from both public and private sources reached $2.1 trillion in 2023. However, to stay on track for the Paris goal of limiting global temperatures to below 1.5°C, they estimate that over $5 trillion in annual investments will be required between 2024 and 2050. In terms of global distribution, they found that in 2023, emerging markets and developing economies (EMDEs) were the destination for over half of global investments. However, excluding China, the EMDE share dropped to 14%, and when Brazil and India were also excluded, it fell further to 10%. In contrast, Sub-Saharan Africa, despite its abundant potential and vast energy access deficit, received less than 1% of global energy transition related total investments.

Private climate finance tracking for mitigation, adaptation, and dual-purpose investments

In the final session, CPI participants shared recent findings from their private climate finance tracking for mitigation, adaptation, and dual-purpose investments (that is, "cross-cutting" investments that tackle both mitigation and adaptation), reporting that annual average flows reached $625 billion in 2021–2022, comprising $235 billion from commercial flows, $192 billion from corporations, $184 billion from households and individuals, $6 billion from various funds, and $6 billion from institutional investors (CPI, 2023). Key data sources used in the analysis include aggregated data on specific sectors, and data from BNEF, IEA, IJGlobal,[9] OECD, and from the World Bank Private Participation in Infrastructure.[10] However, data availability at the project level continues to prevent a full account of private investment in sectors other than energy.

A key focus of CPI's work on tracking private climate finance has been developing a methodology specifically for tracking private adaptation finance tracking (CPI, 2024b). This represents a significant advancement, as their new approach—featuring a customized taxonomy and a machine learning model to assess the adaptation relevance of private investments—enhances the accuracy of private finance estimates. Previous work by the Global Center on Adaptation and CPI estimated that private flows for adaptation accounted for less than 2% of all adaptation finance (GCA & CPI, 2024). However, with CPI's improved methodology, they identified annual average private sector flows of $4.7 billion to adaptation-relevant activities from 2019 to 2022, compared to the previous estimate of only $1 billion for the same period.[11]

[9] https://www.ijglobal.com/about
[10] https://ppi.worldbank.org/en/ppi
[11] Other efforts in the private adaptation finance tracking space mentioned in the workshop were those by advisory and investment firm Tailwind (https://www.tailwindclimate.com/taxonomy/) and the nonprofit Climate Bonds Initiative (https://www.climatebonds.net/adaptation-and-resilience).

To summarize this chapter's insights, the OECD remains the primary source of data for tracking public climate finance, particularly in relation to the UNFCCC's global mobilization goals. However, differences in methodologies lead to differences across datasets, requiring careful interpretation by users. Tracking private finance remains particularly challenging due to data gaps and inconsistencies, leading many organizations and researchers to develop bespoke methodologies. While improved tracking efforts have found that private finance for adaptation is slightly higher than previously estimated, they also underscore that private investment remains insufficient to meet global climate goals. Additionally, the precise amount of private funding mobilized through blended finance remains difficult to estimate. In the next chapter, we expand on these discussions, highlighting outstanding challenges in collecting, harmonizing, and validating climate finance data.

3. Outstanding challenges

Workshop participants identified several challenges in tracking climate finance—particularly in relation to progress toward the $100 billion goal. These challenges are summarized under five themes: data validity, private climate finance tracking, climate finance within recipient countries, adaptation finance tracking, and sequencing. A key issue that emerged during these discussions was the need to "go beyond the numbers" to assess the impact, quality, and equity of climate finance allocation. We explore this further in Chapter 4.

Data validity

What "counts" as climate finance remains a key challenge. The application of the Rio Markers has been criticized for overestimating climate-relevant funding. Differences in reporting practices between bilateral and multilateral contributors further complicate comparisons. One key difference is that multilateral institutions reporting to the UNFCCC bifurcate mitigation and adaptation finance, whereas the OECD system for reporting bilateral flows allows for the accounting of "cross-cutting" flows. While this overlap category captures initiatives that genuinely provide dual benefits, it also creates a risk of over-reporting if adaptation and mitigation funding are counted under multiple objectives.

Regarding the quality of data reported by climate finance contributors, OECD shared that they conduct integrity checks, including reviews based on Artificial Intelligence (AI), but ultimately accept submissions confirmed by providers. While the OECD provides guidance to providers to further standardize and improve submissions, participants noted that the climate-relevance of some of the reported activities is still contested.[12]

Challenges in tracking private climate finance

Tracking private climate finance faces many of the same challenges as public finance, including incomplete data and difficulties integrating datasets from disparate sources. However, private finance tracking faces additional obstacles given fewer guidelines and a lack of standardized reporting, due at least in part to confidentiality concerns on the part of providers.

Key challenges that emerged included difficulties in measuring the additionality of private climate finance.[13] Participants also highlighted difficulties in assessing how much private investment would occur without public funding. DEval and other participants discussed efforts to use quasi-experimental methods and counterfactual analyses to estimate public-

[12] Participants discussed a 2023 Reuters investigation reporting that a portion of funds tagged as climate-relevant went towards non-climate relevant projects (Rumney et al., 2023).

[13] "Additionality" is a contested term that has been variously defined. A recent OECD working paper introduces the concept as meaning "that an intervention will lead, or has led, to effects which would not have occurred without the intervention" (Winckler Andersen et al., 2021, p. 9).

to-private finance leverage ratios but noted that data and methodological limitations still hinder assessments at a larger scale.

Challenges in tracking climate finance within recipient countries

Tracking climate finance—whether public or private—*within* recipient countries (also referred to as subnational tracking) emerged as another key challenge. Participants shared existing and emerging methodologies for how recipient countries track both international and domestic climate finance, with a focus on case studies from Tanzania and South Africa.

Tracking climate finance in recipient countries is complicated by domestic budget systems that were not built for this purpose. To address this challenge, participants shared how recipient countries are developing and implementing methodologies to track climate finance within their budget systems. However, such methodologies are at different stages of progress, with varying levels of access, granularity, and reliability. Efforts like the Climate Public Expenditure and Institutional Review aim to provide guidance, but adoption and standardization remain inconsistent.

Tracking climate finance in recipient countries typically involves two main approaches: (1) monitoring national budgets to track climate-related allocations across different sectors and (2) tracking external financial flows from multiple sources. In the case of Tanzania, a participant shared that the government is actively working to improve climate finance tracking through national budgets. Efforts include the creation of a dedicated climate finance department within the Ministry of Finance, the development of improved budget indicators, and initiatives to enhance transparency and public access to financial data. While these steps mark progress, significant challenges remain, particularly in data collection, public accessibility, and analysis. Nonetheless, participants shared that the use of technology and AI is expected to play a crucial role in addressing many of these challenges.

Participants also noted that accessing climate finance data from non-state actors is more challenging compared to public institutions. Furthermore, large climate resilience projects tend to be funded through loans, not grants.

Another challenge discussed was the alignment of international climate finance taxonomies with domestic green taxonomies.[14] Participants highlighted that there is a strong push from national governments, treasuries, and central banks to develop and use taxonomies in reporting practices. However, a key question remains in how existing international climate finance tracking systems align with national green finance

[14] Green taxonomies are systems that help categorize activities based on their contribution to specific goals, including climate mitigation, adaptation, and sustainability. Different jurisdictions, whether regional, national, or global, use different taxonomies, leading to harmonization problems for recipients and contributors. Climate Bonds Initiative (2022) describes current challenges in alignment and implementation of green taxonomies.

taxonomies, and the repercussions that misalignment between these systems have for evaluation and tracking.

Finally, tracking within countries poses challenges that are more political in nature. For example, managing financial flows across different levels of government becomes more difficult when political control of different subnational units is divided along partisan lines, hindering data sharing and broader cooperation. Additionally, in countries with economies reliant on fossil fuels, competing interests can slow progress toward a green transition. For instance, in South Africa's Just Energy Transition Partnership, concerns over job protection contributed to resistance against reducing coal use.

Adaptation finance tracking

Although tracking climate finance for both mitigation and adaptation presents similar challenges, the workshop included discussions about the particular difficulties encountered in adaptation finance tracking. Defining what "counts" as adaptation has proven particularly difficult, primarily due to the absence of standardized methodologies and indicators. A recent development at COP29 in Baku, however, was seen as a significant step to help standardize efforts and better assess progress towards the Global Goal on Adaptation.[15] As part of the UAE-Belém Work Programme,[16] technical experts are now developing a set of up to 100 standardized, globally applicable adaptation indicators. Crucially, these new indicators will include measures to assess the "means of implementation," i.e., the broader set of enabling factors that facilitate the achievement of adaptation goals. Participants noted a potential challenge, however: as the definition of adaptation evolves and becomes more stringent, adaptation flows may appear smaller in the coming years compared to previous years, and this should be considered when making comparisons over time.

Sequencing challenges

Participants also highlighted challenges related to climate finance sequencing. These include the relative ease of tracking climate finance commitments versus disbursements. Commitments refer to the formal pledge to allocate specific funds to a project, while disbursements refer to the actual payment of these funds to the project. This means that a commitment will appear as a single amount in a given year, whereas on the ground, those funds may not reach the recipient country all at once but rather over several years. This in

[15] Article 7 of the Paris Agreement established "the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2." Over the years, developments related to this goal have advanced its implementation, with the most recent at COP29 being the convening of experts to develop indicators for measuring progress toward this goal.

[16] The Conference of the Parties, under Decision 2/CMA.5 at COP28 in 2023, launched the United Arab Emirates–Belém Work Programme. Named in reference to the UAE, the host of COP28, and Belém, Brazil, the host for COP30, this two-year initiative focuses on developing indicators and potential quantified elements to measure progress toward the Global Goal on Adaptation targets.

turn has repercussions for impact assessments based on commitment data due to time lags between the recorded commitment year, and the actual implementation of activities.

It is generally easier to track commitments given more comprehensive data—especially funds committed by OECD country providers—but tracking disbursements leads back to the challenges encountered in tracking climate finance within countries. While some bilateral providers report their disbursements to the UNFCCC as part of the biennial reporting cycle, there is a lack of consistent data across various sectors and regions. Moreover, commitment data is generally seen as more reliable than disbursement data, partly because disbursements take many years and can be challenging to link back to the initial commitments.

Participants also highlighted the issue of deciding at which stage investments in renewable energy projects should be recorded. Investments are primarily tracked at the financial close stage, defined as the point when funds are legally committed, and project implementation can begin. However, for certain sectors, such as hydrogen, investments are mainly recorded once projects have been operationalized. This difference in the timing of recording investments can have repercussions for assessments of financial flow trends and for conducting impact assessments.

Summarizing this chapter's insights, key challenges discussed included issues with the quality of climate finance data, difficulties in tracking private climate finance due to a lack of standardization, and limited data access. We also note promising advancements in developing standardized indicators for adaptation finance, and the importance of considering the timing of climate finance disbursements. The next chapter expands on these discussions, exploring outstanding gaps and challenges in evaluating climate finance beyond numerical commitments.

4. Going beyond the numbers

Across all sessions, workshop participants highlighted the need to "go beyond the numbers"—in particular, beyond the $100 billion goal, redirecting focus to the quality and impact of investments. Key discussions included the distinctions between debt and grant instruments, alignment of international finance with national priorities, the prevalence of fossil fuel subsidies, and distributional equity. This section details these discussions and outlines frontiers in climate finance tracking and evaluation, forming the foundation for the recommendations presented in Chapter 5.

Grants, loans, grant equivalence, and debt

Participants discussed the need to evaluate the effects of various financial instruments, especially distinguishing between loans—which recipients must repay with interest—and grants, which do not require repayment. Participants also discussed the prevalence of non-concessional loans, as well as the imbalance between loans and grants, with grants representing a smaller share of tracked climate finance. Some participants advanced the term, "negative climate finance," to describe how repayments, interest, and fees, rather than outright grants, can exacerbate the debt burden of developing countries. Participants also noted that currently, little systematic research has focused on estimating the debt burden associated with climate finance, and that this challenge is even more acute when it comes to private finance because such flows are typically harder to track.

Along these lines, several participants emphasized the importance of assessing loans based on their grant-equivalent value rather than on their face value. The grant-equivalent value of a loan is the 'grant' portion within a loan that makes it more favorable than a commercial loan.[17] The difference between climate finance at face value compared to its grant equivalent can be quite significant. Recent independent research by Oxfam (2024) estimates that out of the $116 billion mobilized by developed countries for climate finance in 2022, only between $28 billion and $35 billion represent grant-equivalent value.

Currently, the OECD dataset primarily reports climate finance at face value, with only about one-third of contributors providing grant-equivalent values. However, OECD representatives stated that future dataset editions will include improved grant-equivalent data, using methodologies established under the Enhanced Transparency Framework.[18]

[17] Oxfam's (2023) definition of grant-equivalence is the "amount that reflects the difference between a loan with preferential terms (such as low interest) once repayments, grace periods and other factors are taken into account, and a loan at market rates."

[18] The Enhanced Transparency Framework provides guidelines for countries on reporting their greenhouse gas emissions, progress in achieving their NDCs, and support they have mobilized and received, among other metrics related to the Paris Agreement. Additional information can be found the UNFCCC's website: https://unfccc.int/enhanced-transparency-framework

Alignment between country-level priorities, global goals, and climate finance flows

An important blind spot that emerged across multiple discussions was the (mis)alignment between country-specific needs and global climate finance flows. Recent research by DEval and ClimateFiGS (Wencker & Carlitz, 2024) found limited alignment between the sectoral needs for mitigation expressed by recipient countries in their nationally determined contributions (NDCs) and ODA provided with a mitigation objective. An independent evaluation by Publish What You Fund (Tilley, 2022) further highlighted the discrepancy between funds requested and funds received with a case study of Kenya's National Adaptation Plan (NAP). The study found that although Kenya's NAP identified a $15 billion adaptation finance need between 2015 and 2021, only $2.23 billion was received, covering just 14.8% of the required funds.

Discussions around recipient needs and priorities also highlighted the need for further research to understand the process through which NDCs and NAPs are developed, how inclusive they are, and how politicized they can be. Participants discussed how competing national interests can influence the level of ambition and the specific actions that countries are willing to commit to in their NDCs. The outsize role of international consultants in preparing these documents was also noted. However, participants highlighted the need to explore variation in such processes rather than assume local actors have limited involvement in all contexts.

Participants also noted that many NDCs have limited or no cost estimate information; as an advocacy tool, a stronger financial section could help not only signal needs but also highlight disparities with what is being mobilized. These issues speak to the need for further research to understand whether certain features of NDCs, such as the use of vague language or the omission of important information, are strategic decisions, or whether they stem from limited institutional capacity, technical expertise, or resources.

Fossil fuel subsidies and investments

Discussions highlighted the need to look beyond quantified climate finance goals and focus more on Article 2.1(c) of the Paris Agreement, which calls for aligning financial flows with low-carbon and climate-resilient development.[19] The emphasis on meeting the $100 billion climate finance goal (and its $300 billion successor) has the potential to overshadow the continued rise in fossil fuel investments and persistent government subsidies for the oil and gas sectors. One participant suggested that compared to public expenditure on fossil fuels, climate finance is just "a drop in the ocean."

Moreover, participants noted that the $100 billion goal was never intended to be the total finance required to limit global warming to 1.5–2°C, but rather to support developing countries in implementing the Paris Agreement or the UNFCCC in general.

[19] Article 2.1(c) of the Paris Agreement outlines the goal of "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" (UNFCCC, 2015).

Shifting the focus to Article 2.1(c) raises new questions for research and advocacy, which we turn to in the next chapter.

Contributor countries and expanding the climate finance base

Participants also highlighted imbalances in terms of which countries are considered to be "developed" and thus obligated by the UNFCCC to provide climate finance to "developing" countries. Since 1992, climate finance has been provided by 23 countries plus the EU.[20] There is a need to consider under what circumstances additional countries could be included as contributors. This issue was raised at COP29 in Baku, but no concrete decisions were made regarding expanding the base of contributor countries. Rather, under the decision espousing the new collective quantified goal (NCQG) of $300 billion, developing countries are encouraged to contribute, but this remains voluntary. The extent to which MDB outflows can count as developing country contributions also remains unclear, given that developing countries contribute to MDBs as well as benefiting from their investments (Watson et al., 2024).

Evaluating emissions reductions and climate resilience

Evaluating the quality and impact of climate finance is improving at the micro level, particularly for mitigation impacts. However, while many participants described progress towards estimating the effectiveness of climate finance in reducing emissions and increasing resilience, a significant "impact gap" remains. That is, there remains limited understanding of the quantifiable short- and long-term social and environmental impacts of financial investments. One of the biggest challenges discussed was coordinating among entities to use comparable evaluation approaches. The private sector's direct interventions are easier to assess, while technical cooperation and regulatory support may have long-term transformative impacts that are harder to measure. Advanced methods, like satellite tracking and geospatial analyses, help assess emissions reductions but cannot fully capture long-term systemic changes.

Equitable distribution of climate finance

Finally, a key issue was raised regarding how little systematic research has examined equity and justice in the distribution of climate finance, particularly in relation to its ultimate beneficiaries at national and subnational levels. Participants emphasized the need for a better understanding of how climate finance is allocated, especially at the subnational level, to ensure that funds reach the areas and communities that are most in need. An example from recent research in Central America and the Caribbean suggests that

[20] Türkiye was initially listed as an Annex II or climate finance contributor country but was formally removed from this list after COP25 in Marrakech in 2001, citing 'special conditions' to distinguish it from other contributors (Talu & Kocaman, 2019).

adaptation finance within countries generally favors poorer areas but does not consider differences in climate-related risks within those areas (Alberola, 2025). The risk of allocating funds without a comprehensive assessment of vulnerability is that it may neglect the most vulnerable communities, which face both socioeconomic hardship and future climate risks. Participants noted that evaluating the subnational allocation of climate funds is particularly challenging due to the lack of geolocated data for climate-related projects.

Summarizing the key complexities in climate finance beyond the numbers—focusing on the quality, impact, and fairness of financial flows—this chapter highlighted challenges related to funding structures, (mis)alignment in global and national priorities, continued prevalence of fossil fuel subsidies, and challenges in evaluating an equitable distribution of climate finance. Moving to the final chapter, Chapter 5 shifts focus to the broader implications for research and policy, examining how these insights can inform future studies, enhance transparency, and support more just and effective climate finance mechanisms.

5. Implications for research + policy

Beyond highlighting the current state of climate finance tracking and its challenges, a particularly valuable outcome of the workshop was the collective identification of key policy implications and urgent areas for research. This chapter highlights eight key themes and concludes with broader recommendations.

Lifting the curtain on national action plans

Several key gaps were identified at the intersection of climate finance and national action plans such as NDCs and NAPs. These include questions about how well these documents reflect local and national needs, the extent to which climate finance has supported such plans so far, and how prior receipt of climate finance has influenced the development of new action plans.

The second area concerns the process of generating these plans, highlighting the need for systematic research on how these plans are developed, how inclusive and representative of local needs they are, and the political dynamics that shape their design.

Finally, questions emerged regarding the strategic choices of different actors. For example, questions arose about whether certain features of national action plans—such as the limited availability of cost information or static levels of ambition—are deliberate strategic decisions, the result of capacity constraints, or a combination of these and other factors.

Subnational climate finance tracking

Persistent constraints hinder subnational climate finance tracking within recipient countries. The first concerns domestic budgets, where challenges remain in developing, implementing, and assessing standardized taxonomies and tagging systems that enable effective climate finance tracking within national budgets. This applies to both internationally and domestically sourced climate finance.

The second issue relates to the alignment between subnational needs and the distribution of climate finance. Spatial analyses, including the geolocation of funding, can provide insights into whether climate finance reaches the subnational areas most in need or those with the highest potential impact.

Finally, there is a need to assess the ultimate impact of climate finance, particularly how effectively it may be supporting local adaptation and mitigation efforts.

Improving private climate finance tracking

Private finance has been heralded as a means to fill critical gaps in climate action funding that public finance has yet to address. However, further research is needed to critically assess assumptions about the mobilizing potential of public finance for private climate investment and to examine the conditions under which this mobilization is most effective.

Moreover, the lack of transparency and standardized frameworks to track and evaluate private climate finance flows were consistently cited as needing urgent attention.

Using AI for data collection and analysis

The need for more and higher-quality data was a recurring theme. In this context, the use of AI for extracting and analyzing information from existing documents emerged as a promising approach, particularly for text-heavy data sources such as project evaluations and financial disclosures from investment firms.

Potential applications include extracting cost estimates from country action plans, geolocating subnational projects, tracking private climate finance, developing standardized taxonomies, and aligning taxonomies across different sources. At the same time, limitations in the quality of source data, such as inconsistencies in the underlying reports and data, still present a significant challenge even when AI approaches allow for data extraction. As one participant noted, “at this stage we have to work out whether [AI] creates more work than it saves.”

Assessing impact and effectiveness

Beyond tracking financial flows, it is essential to assess the direct impact of climate finance on mitigation and adaptation efforts. Significant gaps remain in understanding how different types of funding instruments and projects contribute to reducing greenhouse gas emissions. Similarly, for adaptation, evaluating the resilience-building effects of various types of climate finance, particularly at local levels and in relation to intersecting vulnerabilities, remains a key area for research. A promising approach discussed in the workshop involves using satellite imagery to quantify impacts after climate-related events in areas with and without climate adaptation investments.

Additionally, assessing climate finance effectiveness must also include measuring its unintended negative impacts. Some projects may contribute to mitigation while simultaneously undermining local resilience or exacerbating vulnerabilities. For example, hydropower projects may reduce emissions but disrupt ecosystems, displace communities, or create new risks for local populations.

Estimating “negative” climate finance

The concept of “negative” climate finance emerged in two key areas: (1) the debt burden associated with climate finance, and (2) development finance directed toward activities that counteract climate goals, such as fossil fuel subsidies. Further research is needed to estimate the scale of debt burdens linked to different climate finance flows and to assess the extent to which financial flows supporting carbon-intensive projects undermine particular climate objectives.

Voluntary carbon markets and their interaction with NDCs

As voluntary carbon markets expand, the interaction between these markets and NDCs raises questions about their role in global carbon trading. COP29 was a milestone for operationalization of Article 6 of the Paris Agreement,[21] with the adoption of long-pending rules (Mahul & Azizova, 2024). With an increasing number of countries expressing their intent to utilize carbon markets to meet their commitments under the Paris Agreement, it is crucial to understand the role of carbon markets in financing NDCs. Realizing the full potential of Article 6 mechanisms depends on effective research-to-policy translation, ensuring these frameworks are transformed into concrete actions that achieve equitable and impactful climate outcomes while maintaining the highest possible ambition, particularly in the Global South.

Barriers to climate finance in fragile and conflict-affected settings

Delivering climate finance in fragile and conflict-affected settings presents unique challenges. Expanded research is needed to identify and address how constraints such as conflict, governance instability, and limited institutional capacity impact the delivery of climate finance to urgently needed regions. Within this area, there is a need to explore how compounded vulnerabilities, such as those at the intersection of gender and conflict, impact the access and effectiveness of climate finance allocations.

Engagement beyond climate finance tracking

Two overarching recommendations emerged from the workshop discussions. First, there is a growing need for research and policy discussions to move beyond the $100 billion goal (and its $300 billion successor) and consider broader dimensions of climate finance quality, effectiveness, and equitable distribution. This includes examining how climate finance can better support the implementation of Article 2.1(c) of the Paris Agreement, particularly through improved taxonomies and increased engagement with financial institutions such as central banks, commercial banks, and insurers.

Second, and finally, we closed the workshop with a call to move off the sidelines. Researchers have an important role to play in shaping climate finance agendas by critically assessing existing approaches, contributing to policy innovation, and ensuring that discussions remain aligned with long-term climate goals.

[21] Article 6 of the Paris Agreement provides a framework for voluntary cooperation between parties to achieve NDCs through market and non-market approaches: Article 6.2 enables the transfer of Internationally Transferred Mitigation Outcomes (ITMOs); Article 6.4 Mechanism generates and trades emission reduction credits; and Article 6.8 covers non-market approaches. For outcomes from COP29, see UNFCCC (2024).

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