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The Global Landscape of Climate Finance 2013

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CPI Report

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About Climate Policy Initiative

Climate Policy Initiative (CPI) is a team of analysts and advisors that works to improve the most important energy and land use policies around the world, with a particular focus on finance. An independent organization supported in part by a grant from the Open Society Foundations, CPI works in places that provide the most potential for policy impact including Brazil, China, Europe, India, Indonesia, and the United States.

Our work helps nations grow while addressing increasingly scarce resources and climate risk. This is a complex challenge in which policy plays a crucial role.

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Executive Summary

In May 2013, the world crossed a symbolic threshold when observed concentrations of the main atmosphere-warming greenhouse gas, CO₂, exceeded 400 parts per million for the first time. Understanding where the world stands in relation to its low-carbon and climate-resilient investment goals is a more urgent task than ever.

Landscape 2013 finds that global climate finance flows have plateaued at USD 359 billion, or around USD 1 billion per day – far below even the most conservative estimates of investment needs. On one hand, there is some cause for optimism: Although private investment has declined in general terms, technology costs for large-scale renewable energy have fallen further, perhaps as economies of scale start to take hold. On the other hand, climate related investments have fallen well short of even the most conservative needs estimates for successive years, making the requirement of ‘catch up’ very real. For policymakers already under pressure to demonstrate value for money, there is renewed urgency to deliver precious public resources in ways that level the carbon playing field and create incentives for private investors to significantly accelerate their investment in low-carbon and climate-resilient growth options.

The challenge is that private investors, who can and should provide the lion’s share of global climate finance for good reason — as asset owners (project developers) and end users (households, corporate manufacturers) of renewable technologies — only invest their money when the returns on offer outweigh the costs.

Landscape 2013 confirms that public policies, resources, and money are the ‘engine room’ of the climate finance system, and can alter the balance between risk and return in ways that drive the supply and demand for finance. Private capital flows into climate investments when public incentives and money make them commercially attractive by taking-off risk and reducing incremental costs. While many countries have policy frameworks that provide such incentives, significant capacity and incentive gaps remain.

We offer the following findings as action points for policymakers:

1. **Develop well-articulated domestic enabling environments to encourage further private investment.** Seventy six percent of global climate finance originated in the same country it was spent (this was true for 72% of investments in developing countries, and 81% in developed countries). The

Global climate finance has plateaued at levels below what is needed to limit warming to 2° Celsius

striking domestic preference of climate finance emphasizes the potential influence of appropriate domestic incentives and regulatory frameworks in unlocking further private investment. For example, *Landscape 2013* highlights the significance of direct investments of public money in renewable energy, using a combination of financial instruments including grants and concessional loans, to promote the diffusion of new technologies. In terms of public actors, we highlight the positions adopted by some key government-backed players as potential game changers. For example, National Development Banks were responsible for distributing 57% of total public investments in renewable energy, bridging critical funding gaps at the domestic level in pursuit of their national development mandates.

2. **Recognize that private actors prefer familiar policy environments where the perception of risk is lower.** The importance of well-articulated policy environments is bolstered by the finding that the 24% of climate finance that flowed between countries in 2012 was dominated by mostly publicly funded North-South flows. Of private flows, the vast proportion was invested in developed countries where policies are often underpinned by similar legal and regulatory frameworks. This highlights a key opportunity for policymakers, to encourage more international investment by tackling the perception of risk for overseas investors, particularly in developing countries where the perception of risk is higher.
3. **Continue to invest in, and ensure effective use of, international public resources, which play a critical role in facilitating low-carbon and climate-resilient investments, particularly in developing countries.** About half of the climate finance flows that flowed internationally flow from North to South. However, based on the data we were able to identify in *Landscape 2013*, the vast majority of the USD 39-62 billion in North-South flows originated from public sources. Climate finance for adaptation provides an example of the importance of these public sources. Of the adaptation flows captured in this Landscape, 100% were publicly funded (20-24

billion) and mostly invested as international climate finance in developing countries (around 65% of the total). These resources are subject to some of the most political public policy debates, in both the domestic and international context. Ensuring that policymakers understand how these resources are being used to underpin sustainable transitions to self-reliant, low-carbon and climate-resilient economies in the long-term, will help to ensure they are delivered through appropriate instruments and targeted in line with national development priorities.

4. Encourage demand for and assess the effectiveness of financing instruments offered by domestic and international public intermediaries such as Multilateral, Bilateral, and National Finance Institutions.

Development Finance Institutions (DFIs) channeled about one third of total climate finance flows. Their investments can be both public and private in nature, and their tool box of instruments blending loans and grants can cover risks and lower incremental costs. Work to prioritize the creation of stronger domestic enabling environments in developing countries and emerging markets could help unlock further demand for these resources. Additionally, while DFIs occupy a central role in the landscape, more harmonized reporting and tracking of climate finance would improve the ability to evaluate the true volume and impact of their resources.

5. Address risk, which lies at the heart of private investment decisions.

The role of public money and institutions ultimately, is to cover the increment that makes low-carbon investment decisions uneconomic, and to alter the distribution of risks and returns in ways that reduce costs, improve returns, or cover risk. For example, direct investments can help reduce incremental costs or assume significant financial risk, thus improving the prospect of returns for private actors. Indirect approaches, such as shareholdings in private companies, can reduce the amount of capital investment required to make businesses economic. Redirecting resources through incentives such as feed-in-tariffs can eliminate cost distortions between high and low-carbon alternatives and make projects more viable for project developers. Risk coverage instruments and guarantees can help to unlock finance, including from new classes of

investors, such as institutional investors. However, important risk gaps remain, particularly in respect to policy and financing risks, and key investors remain on the sidelines.

There is potential for government-backed sponsors to scale up the provision of new and improved risk mechanisms.

Landscape 2013 highlights the potential of government-backed sponsors such as DFIs, a coalition of like-minded governments and potentially, the Green Climate Fund (GCF), in scaling up provision of new and improved risk instruments. Ongoing efforts to design the GCF's Private Sector Facility represent an important opportunity for policymakers to trial new approaches and instruments to address liquidity and policy risks, which governments have difficulty addressing on their own. However policymakers must take care to ensure the GCF adds value to the existing architecture, leveraging and complementing what is already working well. At the same time, the fund design must be internally coherent – allowing appropriate specialization of and good linkages between the GCF's mitigation and adaptation windows and the private sector facility, optimizing the potential of the GCF to add meaningfully to the global climate finance architecture.

6. Close important knowledge gaps that continue to impede our ability to track or evaluate climate finance flows. In particular there are large knowledge gaps about adaptation finance; private sector finance; the role of the private sector in financing, among the others, adaptation, energy efficiency and REDD+; flows between and within countries; public support of incremental investment costs and revenue support; and comparable data between current finance and the global need. On the private finance tracking side, for example, policymakers could develop methods to require the disclosure of project details, without impairing confidential or commercially sensitive information. In terms of adaptation, agreement on the sectoral boundaries for defining adaptation would improve the ability to mark, track, and monitor the effectiveness of these flows.

CPI remains committed to improving the understanding and transparency of today's climate finance landscape in support of these efforts.

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1. Introduction

In May 2013, the world crossed a symbolic threshold when observed concentrations of the main atmosphere-warming greenhouse gas, CO₂, exceeded 400 parts per million for the first time. The International Energy Agency indicates that at least USD 5 trillion additional investment is required to 2020 in the energy sector only, to limit warming to two degrees Celsius (IEA, 2013). Understanding where the world stands in relation to its low-carbon and climate-resilient investment goals is a more urgent task than ever.

The Landscape of Climate Finance 2013 (Landscape 2013) report is the third edition of Climate Policy Initiative's (CPI) annual inventory of the climate finance that is flowing in, to, and between countries each year. These inventories have gained international recognition as the most comprehensive overviews of global climate finance, and are a cornerstone of CPI's ongoing efforts to analyze the relationship between public policy and resources, and private investment.

This year's report aims to provide public policymakers,¹ in particular, with **more tangible insights into the levers that could stimulate the transition towards a low-carbon, climate-resilient future.** *Landscape 2013* therefore zooms in on a narrow group of public and private actors that have emerged as cornerstone players, either for their role in mobilizing private finance, or as potential sources of additional investment. The group includes Development Finance Institutions (DFIs), government bodies and UN organizations, climate funds, utilities and independent power producers, households, and institutional investors. Based on this analysis, and early lessons and examples from related CPI work, *Landscape 2013* identifies five entry points for public money, ranging from direct investments in low-carbon, climate-resilient projects, active shareholding, and provision of financial incentives, to covering relevant risks, or

paying for incremental costs, viability gaps, knowledge and capacity. Finally, *Landscape 2013* offers suggestions on how to close the current financing gaps, and explores the implications of its findings for the international policy agenda.

Chapter 2 provides an overview of what type of finance is being made available, the actors and instruments involved in its management and delivery, and how it is being used.

In subsequent chapters, we seek increasingly to link our findings to concrete examples drawn from CPI analysis of climate finance investments. We do so to provide policymakers with a useful tool that informs their efforts to develop policies that ensure public resources are spent wisely, and that private actors have the right incentives to play a major role in transitioning the world to a low-carbon, climate-resilient future.

Chapter 3 zooms in on a small group of key actors, public and private, that have emerged as cornerstone players either because of their role in mobilizing private actors, or as potential sources of additional climate finance.

Chapter 4 details the ways in which public finance played a critical role in, and opportunities for, enabling private finance through incentives, low-cost loans, risk coverage mechanisms, direct project investment, and technical support.

Chapter 5 considers our findings in the context of the world's estimated climate finance needs. It highlights where gaps in our knowledge continue to impede understanding of the climate finance gap and what can be done to close it, and discusses opportunities to improve understanding about international climate finance.

Chapter 6 concludes with a brief discussion of trends and open issues identified in *Landscape 2013* and offers ways forward for policymakers.

¹ While *Landscape 2013* is designed to appeal to investors and users of climate finance in both the public and private sectors, it is particularly targeted to domestic policymakers with responsibility for managing national finances, development aid, and domestic and international climate policy; Development Finance Institutions; and the climate finance tracking community.

1.1 Methodological Approach

Compared to previous reports, *Landscape 2013* improves the understanding of global climate finance in several ways. **It provides a deeper level of granularity in the representation of flows; a better understanding of private finance flows and what's behind them; and extended coverage of Development Finance Institutions.** Its increased scope further advances our understanding of the **actual ownership of flows**, type of instruments, uses by sector and technology, as well as geographical origin and destination of funds.

Landscape 2013 aims to capture the most recent global, annual climate finance flows supporting emission reductions, climate resilience, and enabling environment projects based on empirical data from a wide range of sources.² To do this, we build on past reports' definitions and methodologies and adopt the same two-dimensional framework. First, we categorize flows alongside their life cycle (sources and intermediaries, instruments, disbursement channels, and final sectoral uses / geographic destination of finance). Second, we categorize flows depending on whether they originate from public or private sources. As with previous reports, the figures identified in the *Landscape 2013* should not be confused with amounts that count towards the USD 100 billion developed countries committed to mobilize in the Copenhagen Accord, but instead should be compared with estimates of global financing needs that are consistent with the goal of keeping the global temperature rise to no more than 2° Celsius.

In the absence of an internationally-acknowledged definition of what qualifies as climate finance, we limit finance flows to **'climate-specific finance,' referring specifically to capital flows targeting low-carbon and climate-resilient development with direct or indirect greenhouse gas mitigation or adaptation objectives/ outcomes.**³ We capture upfront capital investment costs and grants, all expressed as commitment data. As

Landscape 2013 does not track lifetime inflows (revenues) or outflows (costs), our estimates of finance only include policy incentives provided as grants or concessional loans, excluding the value of policy-induced revenues, such as feed-in tariffs or carbon market payments. It also excludes potential guarantee payments that may be made over projects' lifetimes as such risk management instruments are only exercised in particular circumstances. Difficulties in estimating the grant element of low cost debt mean that we are unable to accurately quantify the incremental⁴ component of investment costs. Indeed, all finance in the landscape is captured on a gross rather than net basis.⁵

Landscape 2013 concentrates on new money coming into the system that is targeting climate change. We therefore **focus on project-level primary financing data** and exclude secondary market transactions, which rather represent money changing hands. Building on the methodology in *Landscape 2012*, we capture flows **among actors and to projects**. In this year's edition, we also deepen our understanding of who the ultimate owners of finance are.

Private finance is typically harder to track than public resources. To obtain a deeper understanding of these flows, *Landscape 2013* increases the geographic scope and project coverage from *Landscape 2012*. This is particularly evident in our tracking of private investment in large-scale renewable energy projects. This year, we individually analyze project-level data from a sample of 2,016 large-scale renewable projects based in 19 countries (retrieved from the Bloomberg New Energy Finance database). This is an increase from last year when we considered 1,636 projects in nine countries. While these

2 The *Landscape 2013* uses a mix of 2011 and 2012 data. Public budgets data and the EU Institutions climate financing derived from OECD's Creditor Reporting System Aid Activities database refer to 2011. Other figures represent 2012 data, or the fiscal year 2012 (e.g., July 2011-June 2012). For the sake of simplicity, we refer from now on to 2012.

3 Climate-specific finance excludes a broader set of capital from developed to developing countries that may influence, directly or indirectly, emissions and/or vulnerability to climate change in developing countries, and which is typically referred to as 'climate-relevant' finance (see Corfee-Morlot et al., 2009, Buchner et al., 2011, and Clapp et al. 2012). Our boundaries for mitigation and adaptation are based on those used by the OECD-DAC CRS (OECD, 2011), the Joint MDBs' tracking (IDB et al. 2012, AfDB et al. 2012) as well as IDFC (IDFC-Ecofys, 2012). This also applies for the breakdown by sectors, which is still under discussion.

4 Incremental investment costs refer to the difference in investment cost between cheaper, more polluting options and costlier, climate-friendly ones.

5 Gross flows represent total face value of financial flows (including grants, low cost and market rate debt, equity and balance sheet finance). Net flows on the other hand deduct money that has to be repaid by recipient countries (e.g. repayments of loan principal, repatriation of capital).

Box 1: Comparing the *Landscape* results over the years

	LANDSCAPE 2011	LANDSCAPE 2012	LANDSCAPE 2013
Global total	Not estimated	USD 364 bn (on average)	USD 359 bn (on average)
Total money deployed in developing countries (Landscape 2011 methodology)	USD 97 bn (on average)	USD 112 bn (restated using Landscape 2011 methodology)	Not estimated
Total money deployed in developing countries (Landscape 2012 & 2013 methodology)	Not estimated	USD 182 bn	USD 182 bn
North-to-South total (i.e. excludes domestic sources of finance and money from foreign developing countries)	Not estimated	Not estimated	USD 39-62 bn

In *Landscape 2011*,¹ we estimated that an average USD 97 billion of climate finance flows were deployed in developing countries. This included domestic and foreign sources of money (both from developed countries and other developing countries). Data and methodological limitations prevented us from estimating the North-South flow.

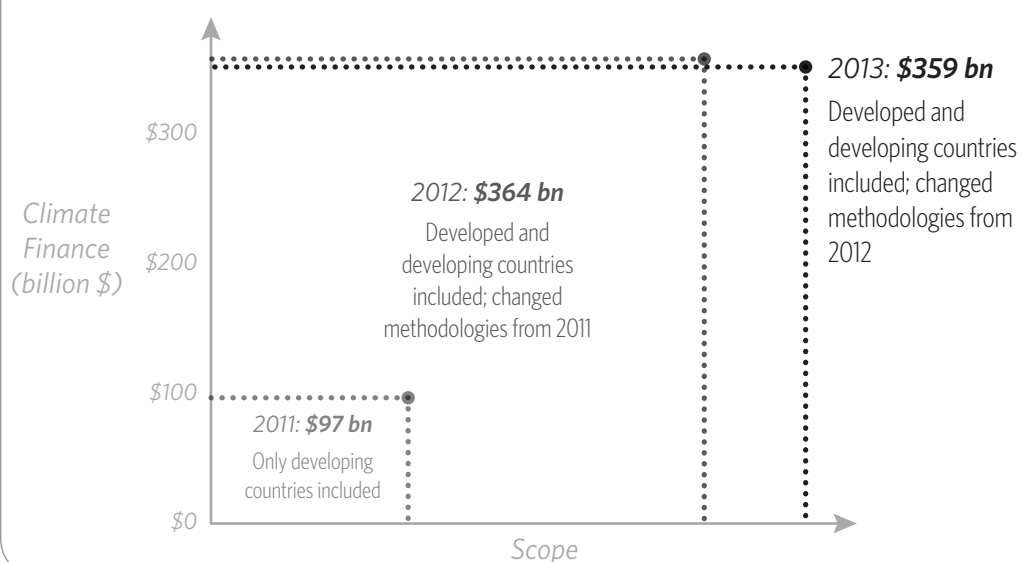
In *Landscape 2012*, we increased the scope of covered entities and databases to provide an even more thorough estimate of climate finance flows. We estimated an average USD 364 billion of global climate finance flows. To compare this figure with the previous year's *Landscape*, we restated the number using the *Landscape 2011* scope and methodology and found an average USD 112 billion of climate finance flows deployed in developing countries. This again included domestic and foreign sources of money but the same data and methodological limitations prevented us from estimating the North-South flow.

In *Landscape 2013*, we have again extended our scope. We estimate USD 359 billion of global climate finance flows. Changes in methodologies allow us to provide a more refined breakdown of developed/

developing countries flows. We find USD 182 billion of climate finance flows deployed in developing countries. However, this figure is **not directly comparable** with the USD 97 billion and USD 112 billion figures from *Landscape 2011* and *Landscape 2012*.²

How has the Landscape's estimates and methodology changed over time?

CPI has increased the scope and improved the methodologies used to estimate flows each year. These changes mean previous estimates are not directly comparable with each other.



- 1 The methodologies used in our reports to calculate global finance flows are not intended to imply which (or which proportion) of these contributions to climate finance should count toward the goal to mobilize USD 100 billion per year by 2020 to assist developing countries' climate responses, and which (or which proportions) should not. Nothing in this report is meant to infer that the goal (of mobilizing USD 100 billion per year by 2020 to assist developing countries' climate responses) has already been achieved.
- 2 This is because of an increased scope of final uses covered (small-scale renewable energy among others), changes in methodologies, and access to new data sources. These changes make it impossible to restate Landscape 2013 using Landscape 2011 methodology. More fundamentally, the picture provided by the new methodology reflects actual flows with more accuracy.

2,016 projects cover only 63 GW (in 19 countries) of the 70 GW total of new large-scale renewable energy capacity financed in 76 countries in 2012 (according to the BNEF database), the data captured allows us to apply detailed assumptions and extrapolations for the remaining 7 GW. We also improve the understanding of which actors stand behind seemingly private investments by investigating not only the visible investor (e.g. US private project developer), but who ultimately owns these projects (e.g. US project developer with public and private shareholders). Additional private finance data for small-scale household and other corporate investment was gathered from Mauthner and Weiss (2013) and Frankfurt School-UNEP (FS-UNEP, 2013).⁶ Lastly, we have not captured private finance targeting energy efficiency and adaptation investment due to data limitations.

With regard to public flows, *Landscape 2013* covers a larger number of Development Finance Institutions (DFIs) than last year's report (see Annex A), thanks to an initiative of **15 of the world's biggest bilateral DFIs from developed countries** aimed at enhancing their collective efforts to support low-carbon and climate-resilient investments.⁷ CPI supported this initiative through analysis based on a financial survey, combining **qualitative insights on participating DFIs' approaches to scale up climate financing and mobilize private sector investment, with quantitative information about their 2012 climate finance commitments**. We coupled this quantitative survey with one dedicated to Multilateral Development Banks (MDBs) and National Development Banks (NDBs).⁸ We also relied on data collected

⁶ Due to data limitations, Foreign Direct Investment (FDI) data was not used since it is reported at the company, not project-level. See Box 2 for more information.

⁷ Low-carbon and climate-resilient in the context of this initiative refers to financial flows targeting mitigation, adaptation and other environmental activities encouraging sustainable development. Annex A lists the participating DFIs. See Buchner et al. 2013, <https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/Environment-and-climate/Konferenzen-und-Veranstaltungen/Scaling-up-Green-Economy-2013/> and <http://climatepolicyinitiative.org/event/development-finance-organizations-announce-collaboration-on-scaling-up-the-green-economy/> for more information on the initiative.

⁸ The data retrieved via the surveys we conducted between July and September 2013, and the IDFC initiative, were adjusted to exclude climate finance commitments towards the set of activities out of the *Landscape 2013*'s scope (e.g., "other environmental" activities or lower carbon energy generation project). When we lacked primary data, we allocated financing to the various breakdowns presented in the report according to weights computed on available data, and/or assumptions based on publicly available information or secondary data sources. In some cases, when the information at our disposal was not satisfactory, we refrained from making

through the International Development Finance Club's (IDFC) initiative to map and provide transparency on NDBs' climate finance flows.

Thanks to these surveys we gleaned greater details about DFIs' climate financing, particularly with regard to the following:

- the type of renewable energy technologies financed;
- the type of financial instruments used to support mitigation and adaptation projects;
- the type of recipients (e.g., public versus private recipients); and
- DFIs' climate finance accounting practices.

We also gained insights about constraints these institutions' face when seeking to increase climate investments. This information has increased our understanding of DFIs' actual and potential role in enabling low-carbon and climate-resilient investments.

Landscape 2013 uses the same sources as *Landscape 2012* for tracking other public flows. That is:

- data from the OECD's Creditor Reporting System (CRS) to track Official Development Assistance (ODA) that is not provided by surveyed DFIs;
- fast-start finance reports to identify government flows beyond ODA;
- the Climate Funds Update website and official documents for data on climate funds;
- and the Bloomberg New Energy Finance database for private finance to track government investments in renewable energies.

***Landscape 2013* classifies all flows as either mitigation or adaptation finance.** DFIs were asked to attribute all flows to one of these two uses in the survey, allocating activities that contribute to both 50% to mitigation and 50% to adaptation. In the case of ODA commitments with both mitigation and adaptation as objective, the finance was attributed to the use marked as 'principal' objective.⁹

In *Landscape 2013*, dedicated analysis and specific information provided by DFIs has also improved our

any assumptions.

⁹ In case where both mitigation and adaptation were marked as principal objective (or both were marked as 'significant', and not 'principal' objective), the reported commitment was equally (50:50) split between mitigation and adaptation.

understanding of energy efficiency finance, particularly in terms of the level of private investment in this sector. Nonetheless, data and information on these flows is not tracked consistently, which ultimately restricts a clear view of global energy efficiency-dedicated climate finance.

2. The Current Climate Finance Landscape

In 2012, annual global climate finance reached approximately USD 359 billion (range of 356-363 billion). The private sector continued to provide the lion's share, contributing USD 224 billion, or 62% of the total. The public sector contributed USD 135 billion (range of 132-139), or around 38% of global climate finance.

Landscape 2013 estimates that in 2012, annual global climate finance flows totaled USD 356-363 billion, or USD 359 billion on average.¹⁰ This figure represents little change from last year's report, which identified USD 364 billion in climate finance in 2011. In general terms, private investment has slowed, but a further complication is that the exact magnitude of the slowdown is obscured by the expanded sample that underpins this year's study, which captures more actors and projects, and more investments in more countries than previous reports. Despite uncertainties, *Landscape 2013* suggests that in global terms, climate finance levels have fallen short of estimated investment needs for a further successive year, making the goal of shifting the global economy onto a below 2° stabilization pathway more challenging.

Figure 1, *The Climate Finance Flows Diagram 2013*, also known as the 'spaghetti' diagram, illustrates the landscape of climate finance flows along their life cycle for the latest year available, mostly 2012. The width of the arrows in the diagram represents the relative size of the flows.

In this chapter, we describe how climate finance breaks down along the life cycle of financial flows from sources to end uses. For each stage of global climate finance represented by the columns in Figure 1 — main actors, including sources and intermediaries; instruments; and final uses — we highlight ranges of finance, key reasons and motivations behind finance, where the money is coming from (geographies, specific actors, etc.), where it is going (geographies, specific actors, technologies, etc.), and any issues specific to each life cycle stage. We end the chapter with a discussion of climate finance by geography.

¹⁰ While our estimates for some public flows contain ranges, our estimates for private flows do not. The estimates in this section therefore represent a combination of absolute flows for private investment, and average estimates for public investment in 2011 (ODA) and 2012. We provide ranges for sources where appropriate in detailed discussions through the *Landscape 2013*.

2.1 Main Actors

2.1.1 Public Sector

The public sector contributed between USD 132 and 139 billion (on average USD 135 billion), or around 38% of overall global climate finance flows in 2011/2012.

Developed country governments committed between USD 4-11 billion in climate-marked flows to developing countries, 45-56% of which was channeled through government bodies such as bilateral aid agencies and UN organizations. This amount excludes flows via climate funds and development aid contributed by Development Finance Institutions, which we account for separately. In total, public sector finance committed by developed countries to developing countries totaled about USD 35-49 billion, and represented 80-90% of USD 39-62 billion in North-South climate finance identified by *Landscape 2013*.

As with last year's report, we find that in 2012, governments were the ultimate owners of seemingly private investment structures that contributed USD 42 billion to climate finance. We categorize only USD 5 billion of this as public climate finance in *Landscape 2013*, as the public sector expenditure is responsible for primary financing of climate-specific activities. The rest, USD 37 billion, is classified as private investment, as the public sector is just a stakeholder of private sector entities. Among other things, these investments helped to support and accelerate local deployment of renewable energy measures.

Landscape 2013 confirms that public sector intermediaries, with their array of financial instruments and specialized knowledge, are a cornerstone of efforts to manage and distribute global resources for low-carbon and climate-resilient development. In 2012, DFIs committed around one third, or USD 121 billion of total climate finance flows, more than half in the form of low-cost loans. National Development Banks (NDBs) and Bilateral Finance Institutions (BFIs) distributed the majority, or about 69% (USD 84 billion), of intermediated climate finance. Renewable energy and energy

THE FLOWS OF CLIMATE FINANCE 2013

The Flow of Climate Finance 2013, also known as the 'spaghetti' diagram, illustrates the landscape of climate finance flows along their life cycle for the latest year available, mostly 2012.

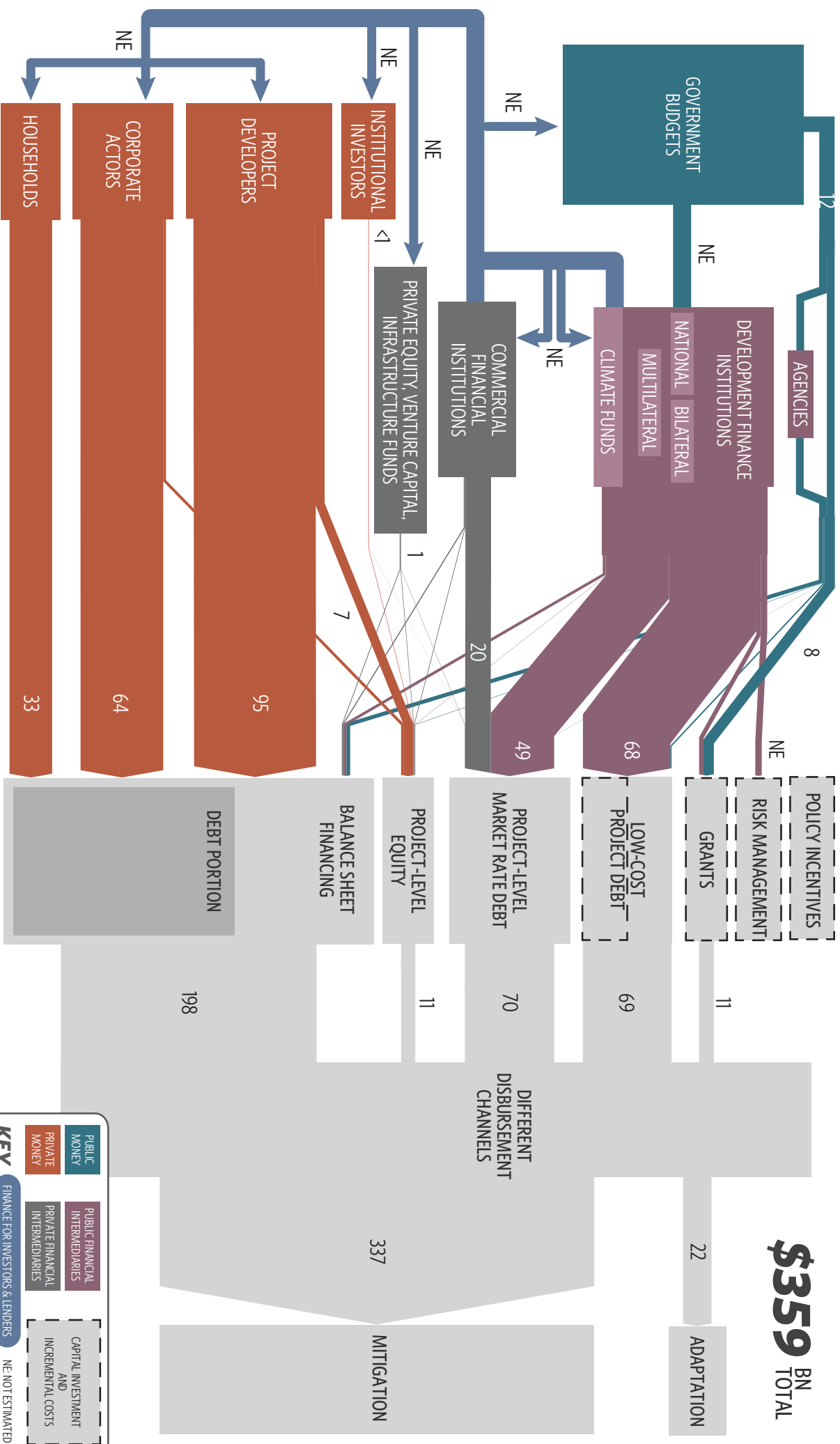


SOURCES AND INTERMEDIARIES

INSTRUMENTS

CHANNELS

USES



Notes: Figures are indicative estimates of annual flows for the latest year available, 2011 or 2012 (variable according to the data source). Flows are expressed in USD billions and rounded to produce whole numbers. Where ranges of estimates are available, the mid-point is presented. All data presented relates to commitments in a given year due to the limited availability of disbursement data. The diagram captures upfront capital investment costs of low carbon, climate resilient activities plus grants for e.g. capacity building and enabling environment activities. The diagram highlights with a dotted line those financial resources which contribute to paying for upfront incremental investment costs, that is the difference in investment cost between cheaper, more polluting options and costlier, climate-friendly ones. This includes some portion of low cost debt. As Landscape 2013 only tracks upfront investments and not lifetime inflows (revenues) or outflows (costs), our estimate of finance only includes policy incentives provided as grants or concessional loans, excluding the value of policy-induced revenues, such as feed-in-tariffs or carbon market payments.

KEY

- PUBLIC MONEY
- PRIVATE MONEY
- PUBLIC FINANCIAL INTERMEDIARIES
- PRIVATE FINANCIAL INTERMEDIARIES
- FINANCE FOR INVESTORS & LENDERS
- CAPITAL INVESTMENT AND INCREMENTAL COSTS
- NE: NOT ESTIMATED

efficiency interventions attracted 65% of these flows. Multilateral Development Banks (MDBs) contributed the remaining 31% (USD 38 billion) of the total, 28% of which were in support of sustainable transport projects. DFIs also provided critical support to adaptation measures, contributing about USD 18 billion and by also managing and implementing some of the relevant adaptation funds. In addition to DFIs, a range of multilateral and national **climate funds** approved approximately USD 1.6 billion of funding for climate interventions.

2.1.2 Private Sector

Private actors again contributed the lion's share of climate finance in 2012 with investments totaling USD 224 billion, much of which was enabled by public investments. The overall amount of private investment has fallen from 2011, despite an increase in overall renewable energy deployment. Because of data limitations, it is not possible to attribute this decline unequivocally to any one factor: possible explanations range from falling technology costs and thus increased deployment, to real declines in investment activity (possibly due to a range of causes such as reduced investor appetite, declining incentives, etc.). BNEF large-scale renewable energy investment data (BNEF, 2013) suggests declining investment in a smaller number of large-scale renewable energy projects. The increase in deployed capacity (from 67 GW in 2011, to 70 GW in 2012) at lower unit costs (falling from USD 2.6 million/

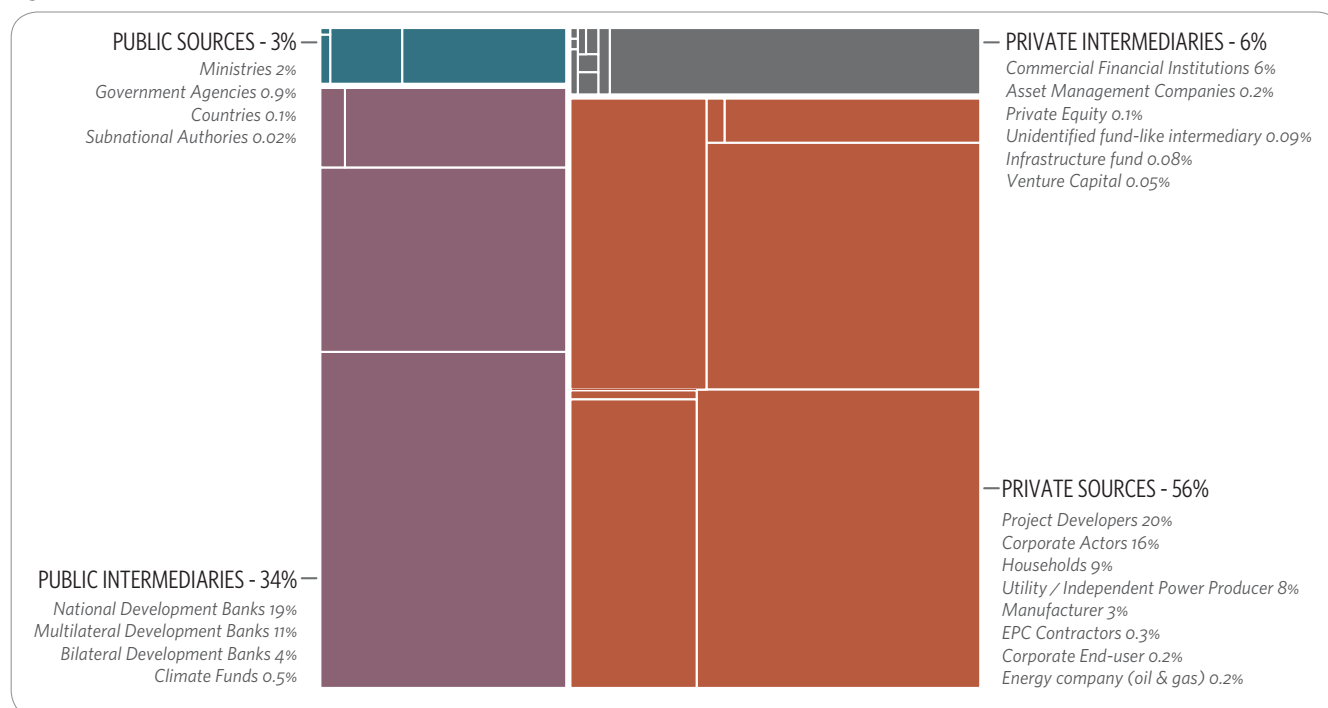
MW installed in 2011, to USD 2 million/MW in 2012) implies that private investors might have achieved better cost efficiency, possibly from growing economies of scale.

Within the private sector, project developers made up of established national/regional energy utilities, independent power producers, and project developers specializing in renewable energy represented the largest single class of investors in *Landscape 2013*, with renewable energy investments totaling **USD 102 billion (28% of the total)**. **Corporate actors** including manufacturers and corporate end-users contributed USD 66 billion, or 19% of overall flows. We estimate that **households including family-level economic entities, high net worth individuals, and their intermediaries** contributed around USD 33 billion, or 9% of global climate finance flows.

Commercial financial institutions (USD 21 billion), venture capital, private equity and infrastructure funds (USD 1 billion) together intermediated about 6% of global climate finance and played an important role by providing financial structures to address specific investor needs.

Landscape 2013 tracked only **USD 0.4 billion of primary institutional investment in developed countries**, illustrating that to date, the participation of this potential pool of actors is hampered by barriers which remain unaddressed at scale.

Figure 2: Main actors / sources



2.2 Instruments

Private and public investors channel investments to low-carbon and climate-resilient projects via a range of economic and financial instruments. While we strive to capture data about these instruments at the initial financing stage of individual projects, data restrictions including confidentiality issues, and the lack of comprehensive databases, hamper our efforts. As a consequence, *Landscape 2013* does not necessarily capture climate finance arrangements such as refinancing activities, support over projects' lifetimes (through revenue support mechanisms, for example), the entirety of support to countries, or project promoters' own financial resources (rather than the projects). Building upon previous *Landscape* reports, we consider five major categories of instruments: (i) policy incentives; (ii) risk management; (iii) grants; (iv) low-cost debt; and (v) capital instruments, including project-level market rate debt, project-level equity, and balance sheet financing. To avoid double counting and also due to lack of data, we do not capture policy incentives and risk management quantitatively. Given their central role in enabling investments, we do however discuss their role in enabling and driving investments in Section 4.

The breakdown per instrument category is similar to *Landscape 2012*. Mitigation projects tend to be financed with a mix of equity and loan instruments (both concessional and non-concessional) supported by various types of policy incentives. On the other hand, investments in climate resilience tend to be supported with grants and low-cost loans due to the generally higher incremental cost component.

Policy incentives and risk management instruments play a critical role in climate finance project investment decisions. Policy incentives include income-enhancing mechanisms, such as feed-in tariffs, tradable certificates, tax incentives, and clean energy subsidies. Risk management instruments including guarantees, help mitigate the risks associated with low-carbon, climate-resilient investments (see Section 4). As *Landscape 2013* tracks upfront investments and not lifetime inflows (revenues) or outflows (costs), our estimate of finance includes policy incentives provided as grants or concessional loans, but excludes the value of policy-induced revenues, such as feed-in tariffs or carbon market payments. It also excludes potential guarantee payments that may be made over projects' lifetimes as such risk management instruments are only exercised in particular circumstances (see Section 1).

In *Landscape 2013*, USD 8-14 billion, or USD 11 billion on

average (3% of total climate finance), was delivered in the form of grants. Grants include cash transfers or the provision of in-kind support for which recipients incur no legal debt (OECD, 2007) and can play an important role reducing upfront project investment costs and viability gaps. Of these, government bodies' North-South flows (USD 4-10 billion), DFIs (USD 2 billion¹¹), and climate funds (USD 1 billion) contributed the major part. Domestic grant-making activities made up the remainder, but the lack of a global information source makes it difficult to properly measure this type of financing support.

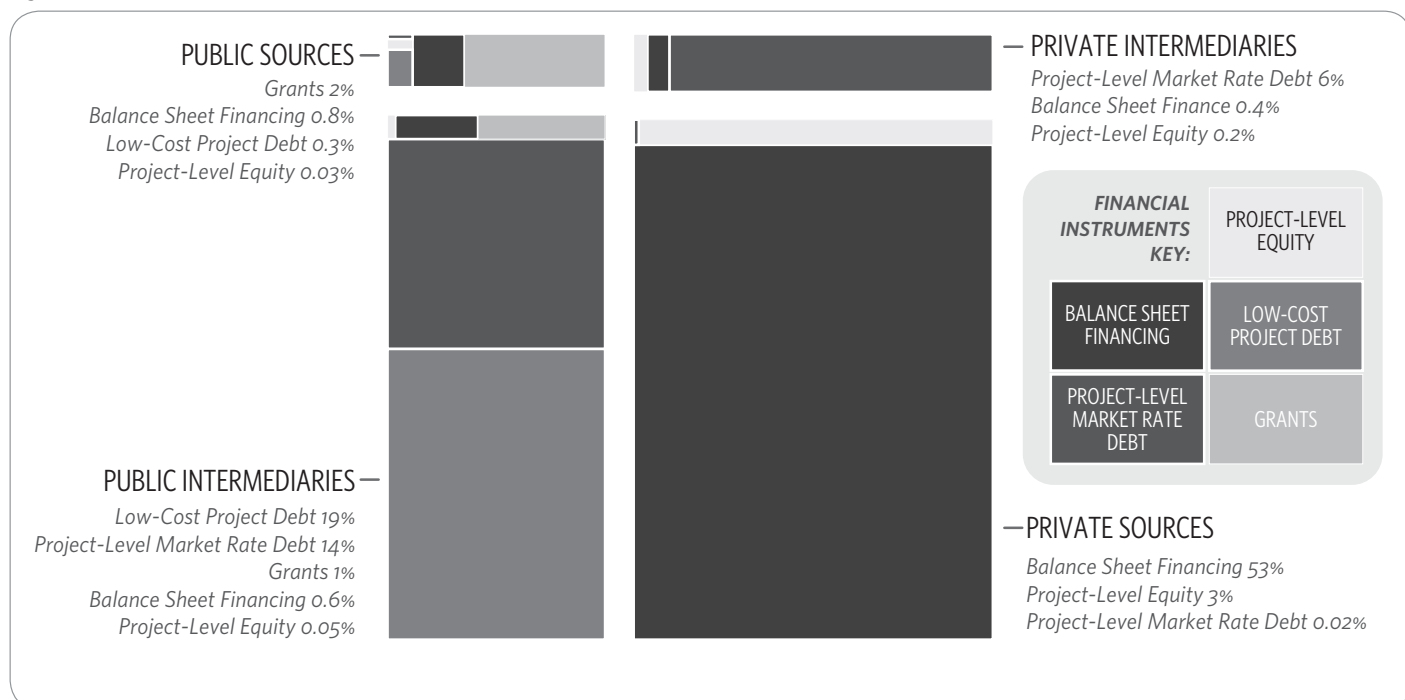
USD 69 billion (19% of total climate finance flows in 2012) were committed in the form of low-cost debt, which we define as financing provided at terms preferable to those prevailing on the market including, for example, longer loan tenor, grace periods, or lower interest rates. Low-cost debt includes concessional loans. Of the low-cost debt provided for climate finance, DFIs contributed USD 67 billion, 85% of which went to support of mitigation projects.

Grants plus the grant element of low-cost debt cover incremental costs associated with low-carbon, climate-resilient activities, that is the difference in investment cost between cheaper, more polluting options and costlier, climate-friendly ones. However, it is not possible to accurately estimate the grant element of low-cost debt due to the highly variable terms provided by investors.¹² We can therefore only state that a minimum of USD 8-14 billion (grants) of the total is covering incremental costs.

In 2012, USD 279 billion was committed as investment expecting market rate returns. Such finance includes the transformation of capital contributions into shareholder ownership (equity), creditor claims (debt, loans, bonds,

- 11 Due to limitations in the tracking system, one DFI reported grants within the low-cost debt category. Therefore, this figure could be higher.
- 12 Concessional loans are extended at terms preferable to those prevailing on the market. The concessionality is delivered through e.g., interest rates below those available on the market and/or longer loan tenor, grace periods or a combination of those. The OECD, whose definition of concessionality is an international point of reference applied by all DAC members, considers the grant element of a loan to be nil for a loan carrying an interest rate of 10 % or more, 100 % for a grant and somewhere in between these two limits for a concessional loan. One of OECD's criteria for a loan to qualify as Overseas Development Aid is a minimum grant element of 25% (OECD, 2013a). Meanwhile, for example, Climate Investment Funds' low cost debts have a calculate grant element ranging between 45% and 75%, maturities between 20-40 years, a grace period of 10 years and 0.10%-0.25% service charge (CIF 2010a, CIF 2010b, CIF 2011a). IDA's loans stretch over 25 to 40 years, including a 5- to 10-year grace period, with little or no interest and charges (IDA, 2013).

Figure 3: Climate finance instruments



etc.), and hybrid capital instruments. In *Landscape 2013*, we categorized capital according to three instruments:¹³

- Project-level market rate debt worth USD 70 billion (19% of total climate finance) went toward emissions reduction projects in 2012. The private sector provided 29% of this amount, while the public sector provided the remaining (mainly through Multilateral Finance Institutions with USD 30 billion).
- Project-level equity worth USD 11 billion (3% of total climate finance) went toward emissions reduction projects in 2012 and originated almost exclusively from the private sector.
- Balance sheet financing (or sponsor-level financing) worth USD 198 billion (55% of total climate finance) went towards emissions reduction projects in 2012. This category

corresponds to investment capital raised at the sponsor level rather than at the project level, and also originated almost exclusively from the private sector.

2.3 Final Uses

In 2012, **USD 337 billion out of the total USD 359 billion was invested in mitigation, while USD 20-24 billion, or USD 22 billion on average, went toward adaptation interventions.** Table 1 provides a detailed breakdown of the sources and uses of flows directed toward mitigation and adaptation.

2.3.1 Mitigation Finance

As in previous studies, *Landscape 2013* highlights that the vast bulk of climate finance, or 94% of total flows, went to support **mitigation**. Figure 4 shows that investments in renewable energy generation alone attracted 74% of total climate finance flows with USD 137 billion going toward solar (including PV, thermal, and households' investments), followed by USD 85 billion for wind (onshore and offshore). We have better information about energy efficiency and find that public actors invested **USD 32 billion (9% of the total amount) in energy efficiency**.¹⁴

¹³ The relative share of the different capital instruments categories shouldn't be interpreted too hastily as it mainly reflects data sources we had access to. In particular, the relative share of "balance sheet financing" to "project-level financing" could be closer to 50%-50% according to some reviewers. This boils down essentially to data sources: (1) when tracking DFIS lending activities, the equity portion that goes against a specific project-level loan is not captured, (2) likewise, whenever it is unclear how a specific large-scale renewable asset has been financed, the BNEF default financing assumption is to consider a "balance sheet financing". In addition to this, the *Landscape* is capturing direct primary financing and is therefore not capturing tax equity consistently for U.S. large-scale renewable energy projects as it typically happens after the initial financing.

¹⁴ For the purpose of *Landscape 2013*, energy efficiency measures include mainly demand-side and transmission investment. We also looked at the literature and data sources on energy efficiency finance, but were unable to find a global estimate of total energy efficiency finance compatible with

Other mitigation measures amounted to USD 40 billion, including among others¹⁵ sustainable transport modes resulting from modal shift (USD 19 billion), and agriculture, forestry, land use, and livestock management. The broad range of activities needed to tackle the drivers of deforestation and support transitions to more sustainable economic development pathways render it difficult to establish definitions and track finance towards these types of outcomes. A large portion of public finance captured in *Landscape 2013* as “agriculture, forestry, land use and livestock management” (USD 3 billion) could be expected to be of relevance. However, levels of REDD+¹⁶ financing reported by funders and recipients through the Voluntary REDD+ database¹⁷ are considerably lower.¹⁸

Investment in non-renewable energy projects in the Clean Development Mechanism are not included in the *Landscape 2013* because data limits the extent to which we can attribute this investment to a specific year, nor are we able to determine who invested in the project or what the financial instruments were used. In addition

our definitions. Some sources captured only a subsector (project financing for digital energy, energy storage and supply-side efficiency projects estimated at USD 5 bn. according to the BNEF database in 2012), others looked as specific final uses for a single country (U.S. project financing for energy-efficient goods and services for USD 574 bn., incl. USD 90 bn. of incremental costs, according to ACEEE, 2013), and others looked at public spending towards energy efficiency for a selection of countries only (USD 90.7 bn., ACEEE, 2012). The most comprehensive estimate we found is the 2012 IEA's estimate for global incremental project costs (new equipment, facilities and buildings and improvements in existing end-use and sectoral energy performance) for USD 180 bn. International Energy Agency (2012c)

- 15 Also included are investments in: process emissions in industry and fugitive emissions; waste and waste water, and; capacity-building (if not included in the sectors above).
- 16 REDD+ (Reducing Emissions from Deforestation and forest Degradation, the sustainable management and conservation of forests, and the enhancement of carbon stocks) is a mechanism that has been proposed under the UN Framework Convention on Climate Change (UNFCCC).
- 17 The Voluntary REDD+ database can be found at: <http://www.reddplusdatabase.org/>
- 18 Funders have reported cumulative REDD+ financing (for activities restricted to those active in 2012) of USD 3 billion while recipients reported USD 5 billion

Table 1: Climate finance: breakdown of finance sources into mitigation and adaptation uses (averages in USD billion)

SOURCES & INTERMEDIARIES		MITIGATION (USD BILLION)	ADAPTATION (USD BILLION)	TOTAL
PRIVATE FLOWS	Project developers	102	NE	102
	Corporate actors	66	NE	66
	Households	33	NE	33
	Institutional investors	0.4	NE	0.4
	Commercial financial institutions	21	NE	21
	VC, PE, and infrastructure funds	1.2	NE	1.2
PUBLIC FLOWS	Governments budgets	9	3	12
	National Development Banks	61	8	69
	Multilateral Development Banks	31	7	38
	Bilateral Finance Institutions	12	3	15
	Climate Funds	1.0	0.6	1.6
TOTAL		337	22	359

Notes: NE: not estimated; VC: Venture Capital; PE: Private Equity Figures represent annual flows for the latest available year (2011/2012), variable according to the data sources (2011 for part of Government Budgets flows retrieved from the OECD-CRS database; 2012 for all the other organizations). Data presented refers to commitments in the given year. The figures may not add up to the total exactly because of rounding.

to this, we do not capture investment in clean fossil fuel generation projects.

Most mitigation finance was invested in China, the EU, and the U.S. Based on the data captured in *Landscape 2013*, **the private sectors' entire USD 224 billion contribution toward climate finance funded renewable energy generation projects** according to the breakdowns noted above. In terms of regional breakdowns, private investment into renewable energy projects in Europe **totaled USD 73 billion, while investment in China was USD 68 billion, the U.S. USD 27 billion, Latin America USD 7 billion, and India USD 5 billion.**

The largest private contributors to mitigation investment were project developers (USD 102 billion), corporate actors (USD 66 billion), and commercial financial institutions (USD 21 billion). Private sector investment relied on contributions from public sources and intermediaries, through instruments addressing incremental costs, but also debt financing both at the project level and at the sponsor level.

The public sector also strongly focused its support on mitigation measures, with 84% of its investments flowing toward mitigation, and 16% toward adaptation. This mainly reflects low-carbon development ambitions and commitments to support structural changes in energy systems, which developing countries

in particular see as engines of economic growth. **DFIs played a pivotal role in this context, contributing USD 103 billion to mitigation, or 91% to the overall public mitigation support.**¹⁹ DFIs allocated USD 36 billion to renewable energy, USD 31 billion to energy efficiency and USD 37 billion to other mitigation investments.²⁰ The latter two are significant because they represent 66% of DFIs' overall mitigation support, but also, around 94% of total public investments in energy efficiency and other measures. DFIs supported energy efficiency interventions in many ways, through targeted facilities funds like the International Finance Corporation's (IFC) Clean Production Lending Facility, and CAF's Andean Energy Efficiency Fund, dedicated credit lines such as the Brazilian Development Bank's (BNDES) PROESCO, and programs targeting companies and households such as those of the Germany's KfW Development Bank.

Climate finance activities from NDBs highlight their domestic emphasis, which is driven by their responsibility for delivering low-carbon development strategies of countries in which they operate. About USD 48 billion (or 70% of their total climate finance) was committed to renewable energy and energy efficiency measures. We estimate that around 81% of NDBs' finance was committed to projects in East Asia, mainly China, and Europe, reflecting the relevant weights of China Development Bank (CDB) and the German Development Bank (KfW) in this category. MDBs and BFI also strongly oriented their mitigation investments towards renewable energy sources and energy efficiency measures, to which they directed 23% (about USD 12 billion) and around 12% (about USD 6 billion) of their respective total climate finance commitments, respectively. Both actors allocated a significant share to other mitigation measures, with MDBs contributing almost USD 18 billion, and BFIs about USD 6 billion.

About 50-59% of governments' North-South contributions beyond DFIs went to climate mitigation (USD 2.5-6 billion).²¹ Agriculture, forestry, land use and live-

19 DFIs also supported large-hydro projects (with capacity higher than 50 MW) with about USD 2 billion, and lower-carbon energy generation projects with USD 1 billion, but these flows are not included in the total captured by the *Landscape 2013*, as they are excluded from our scope of climate finance.

20 Other mitigation measures include investment in the following areas: process emissions in industry and fugitive emissions, sustainable transport modes, agriculture, forestry, land use and livestock management, waste and waste water, capacity building and others.

21 This excludes contributions from DFIs to mitigation measures. See Section 3.1 for public climate finance. Annex B presents the sectoral breakdown of countries' bilateral aid, including Fast-Start finance and DFIs' support targeting climate change mitigation activities. It also includes the estimated

stock management, and renewable energy generation from hydro, geothermal, solar, and wind sources captured each 19% of the mitigation-directed part.

We have noted the importance of public shareholding above (see Section 2.1). At least USD 42 billion of public money ultimately sits behind large-scale, private investment. While this is the case in many countries, the importance of public shareholding is particularly marked in China where 84% of the investments tracked have some degree of public shareholding, and notable in the U.S. (68%) and Germany (54%). This money was directed to support and accelerate local deployment of renewable energy, reflecting amongst others, the effect of domestic policies incentivizing uptake.²²

2.3.2 Adaptation Finance

Landscape 2013 identified **around USD 20-24 billion, or USD 22 billion on average, going towards activities with adaptation objectives, mostly through international finance invested in developing countries. DFIs contributed 81% of this amount, while government bodies beyond DFIs provided 16% and climate funds 3%.** The predominance of the public sector in delivering adaptation finance stems from its long-standing expertise in providing development assistance in areas with relevance to adaptation. Forty-eight percent of flows through government bodies (see Paragraph 3.1.2) went toward funding adaptation.

Figure 4 provides the breakdown of adaptation finance. The majority of adaptation support, USD 10 billion or 44%, went to activities related to water supply and management, followed by USD 3 billion (16%) that went to agriculture, including livestock and fishing, forestry, land use management, and natural resource management.

There is a large knowledge gap about the role of the private sector in financing adaptation due to huge deficiencies in tracking private sector adaptation finance. A number of related qualitative difficulties complicate the issue. For example, there is still little agreement on what qualifies as adaptation finance or, more narrowly, what qualifies as an adaptation intervention. As a result, most institutions do not yet have a proper methodology for measuring adaptation finance, although relevant efforts to establish tracking and reporting approaches are currently underway (see Section 3.1.1). Thus while studies

portion of public funds tracked from project finance reporting in the BNEF database, which was entirely directed towards renewable energy projects.

22 Tax measures, including credits and equity, such as those used in the U.S. to incentivize renewable energy investment are not captured in these data.

have repeatedly highlighted that businesses, households, and other private actors have a vested interest in making adaptation investments, particularly when climate change may directly affect their assets and revenues,²³ and large climate-proofed infrastructure investments are likely taking place, these are not marked as “adaptation finance”. As a consequence, our understanding of adaptation finance flows is still poor.

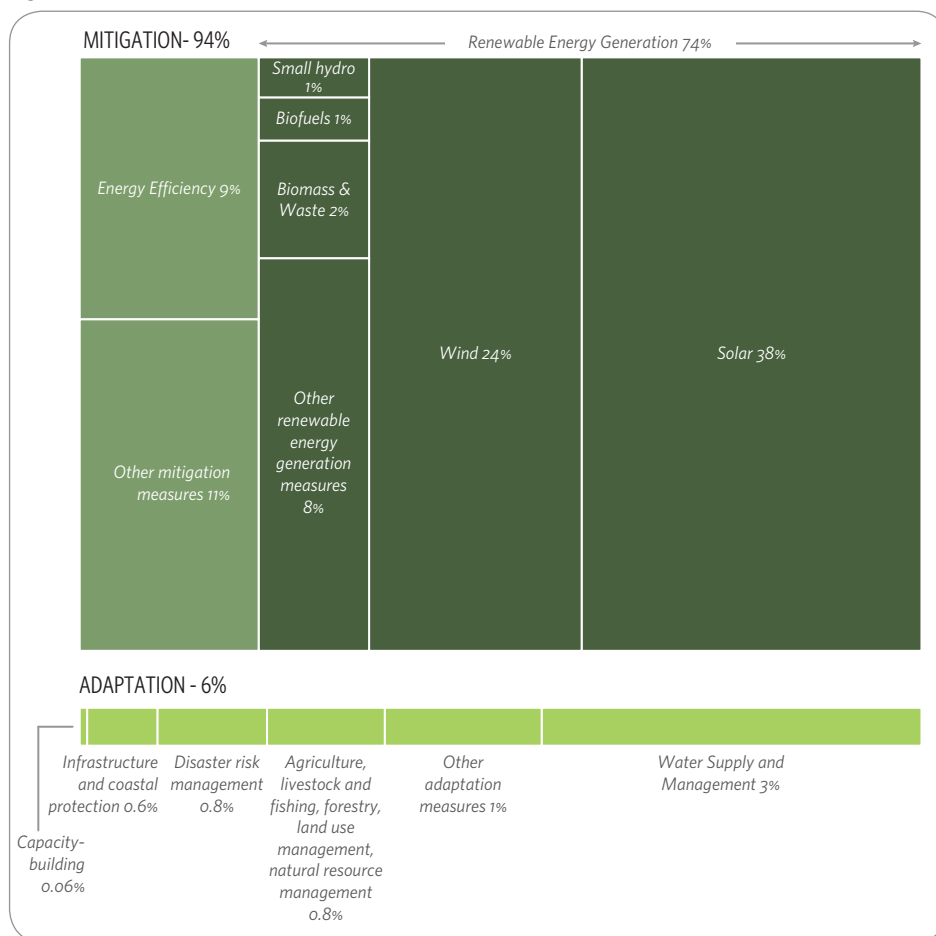
2.4 Geographies

In this section, we categorize global finance flows according to geographies by considering where finance originates (i.e. which countries provide climate finance), and where investments are actually made (i.e. which countries host climate finance projects). In *Landscape 2013*, we estimate that **USD 177 billion was invested in developed countries (49% of the global total) and USD 182 billion was invested in developing countries (51%)**.

Climate finance has a strong domestic preference: the majority of global climate finance investments are made in the same country from which they originate.

Of the USD 177 billion invested in developed countries, **USD 144 billion (81%) originated domestically**. The largest proportions of these investments went toward small-scale renewable and heat projects (approximately USD 68 billion), and large-scale renewable energy projects (USD 44 billion). National Development Banks (NDBs) contributed a significant share of these flows. Of the total USD 177 billion invested in developed countries, 18% (USD 32 billion) originated in other developed countries. DFIs played a significant role for these North-North flows, contributing USD 18 billion, while USD 14

Figure 4: Uses of climate finance



billion came from supporters of large-scale renewable energy project financing. USD 2 billion (1%) of climate finance investments in developed countries originated in developing countries.²⁴

Similarly, **of the USD 182 billion invested in developing countries, USD 131 billion (72%) stemmed from domestic sources**. The two largest shares were invested in large-scale renewable energy projects (USD 74 billion), and small-scale renewable and heat (USD 22 billion). NDBs again contributed the largest single proportion of domestic investment in developing countries, with USD 34 billion, the majority of which originated from the China Development Bank.

The more detailed breakdown of developed / developing countries flows in *Landscape 2013* allows us for the first time to estimate climate finance flows from developed to developing countries (i.e., the “North-South flow”), though data issues mean that our understanding of these flows is still limited. In total, at least **USD 39-62**

23 Private support can take the form of investments aimed at climate-proofing businesses and assets, corporate social responsibility initiatives, and philanthropic contribution. The UNFCCC maintains a database of private sector action on adaptation (PSI), aimed to raise awareness about climate change adaptation in the private sector. It also responds to the mandate given to the secretariat by the Parties of the Convention to engage stakeholders in enhancing the response to climate change. For additional information see UNFCCC.int.

24 We acknowledge that this is can be a lower bound estimate as, for instance, DFIs like the China Development Bank supported PV project developers in the EU. Nevertheless, due to data availability issues we have not been able to carve this out.

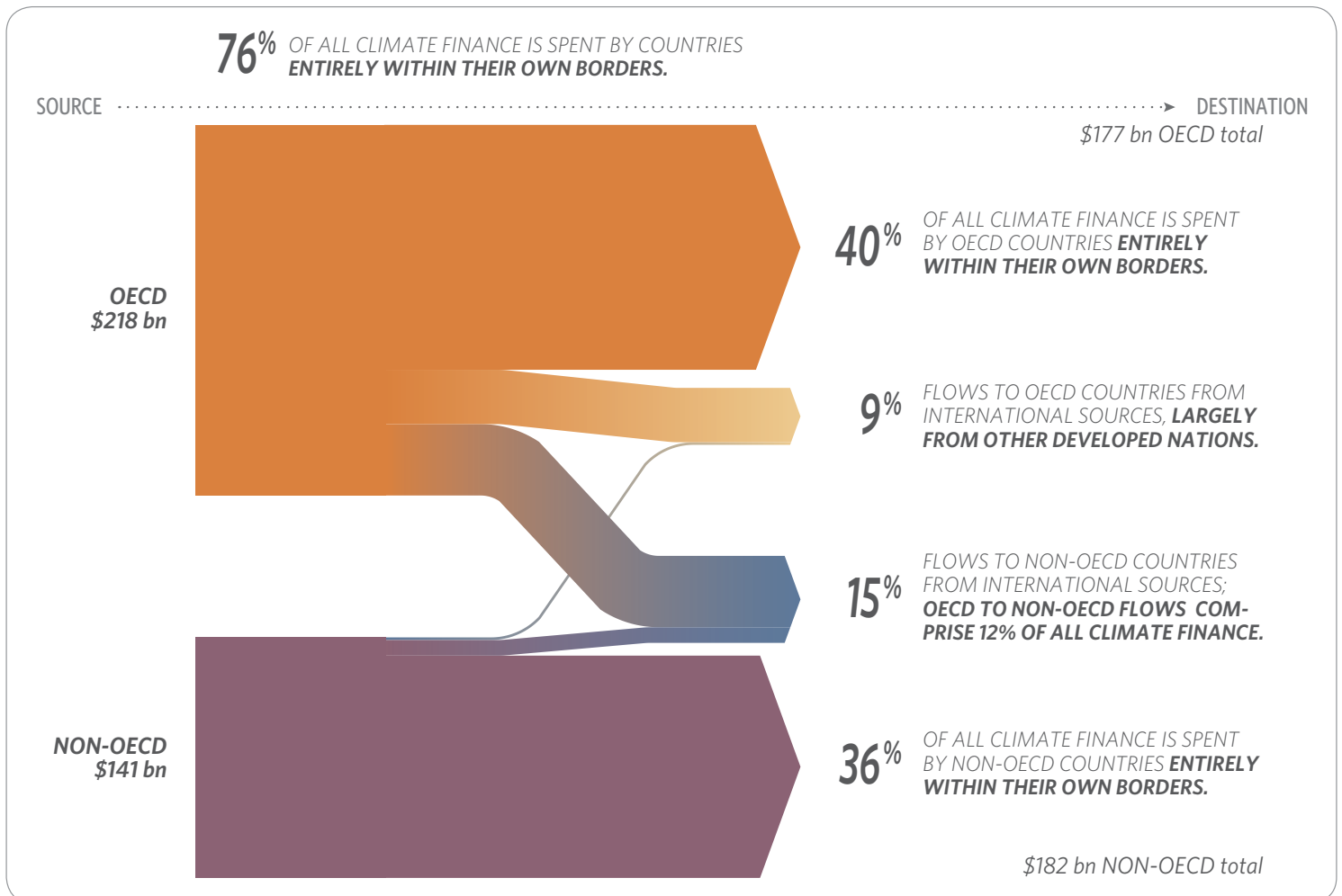
billion of overall investments in developing countries originated in developed countries. Box 2 provides an overview and discussion of these results, highlighting some caveats around our figures.

The domestic versus international character of climate finance has some striking implications for policymakers. On one hand, domestic investment made up USD 275 billion (76%) of total climate finance invested. On the other, of the 24% (USD 84 billion) in international investments, 43-51% flowed from North to South. Based on the data we were able to capture in *Landscape 2013*, a vast majority of this North to South flow originated with developed country governments. This suggests that in general, when private actors weren't investing domestically, they were investing in the North where familiar policy environments offer legal and business certainty,

clear incentive packages, and thus, relative investment stability. This highlights the importance of enabling environments and new risk mechanisms to deal with conventional barriers (real and perceived) to international investment in some developing and emerging economies (for example, political risk, currency risk, etc.), as well as new costs and risks associated with renewable technologies.

The top three regional recipients of climate finance in 2012 were Western, Northern and Southern Europe (32%), East Asia and Pacific (29% including China), and North America (9%). The three same regions were also the largest sources of climate finance, with each respectively contributing 31%, 28% and 12%. The regionality of climate investments emphasizes the domestic focus described above.

Figure 5: Geographic flows



Box 2: 2012 North-South flow estimate

In *Landscape 2013*, we estimate for the first time 'North-South' climate finance flows from developed to developing countries in 2012, which reached at least USD 39-62 billion:

	LOW ESTIMATE	HIGH ESTIMATE	COMMENTS / SCOPE / CAVEATS
BILATERAL FINANCE INSTITUTIONS	USD 14 bn.		Public - Capital investment costs and grants For Multilateral Development Banks, the numbers correspond to an estimated range of North-South commitments based on (1) ownership structure i.e. a mix of South and North ownership for the low estimate and (2) MDBs' total climate commitments to developing countries, ¹ for the high estimate. In <i>Landscape 2013</i> , the lower estimate for MDBs' North-South flows (USD 15 billion) is used. For BFIs, the number is the total climate commitments to developing countries.
MULTILATERAL DEVELOPMENT BANKS	USD 15 bn.	USD 22 bn.	Please note that these numbers are remarkably lower than the total finance provided by DFIs (USD 121 bn. for 2012). This highlights that a large share of DFIs finance is deployed domestically, and includes significant South-South flows. The numbers featured in this table capture DFIs' commitments, and not the finance that was attracted thanks to the provision of specific instruments. ²
GOVERNMENT BODIES	USD 4 bn.	USD 11 bn.	Public - Capital investment costs and grants The low estimate excludes ODA where climate change is marked as a "significant" objective, but includes assistance marked as the "principal" objective. The high estimate includes both. Both ranges include fast start finance and exclude ODA reported by surveyed DFIs.
CLIMATE FUNDS	USD 1.4 bn.		Public - Capital investment costs and grants
PRIVATE INVESTMENT IN LARGE-SCALE RENEWABLES	USD 4 bn.	USD 13 bn.	Private - Capital investment costs only The low estimate is based on data from the BNEF database. For the high estimate, we used the 2012 North-South FDI (Foreign Direct Investment) flow for Alternative / Renewable Energy. <i>Landscape 2013</i> does not include the FDI number. ³
TOTAL ⁴	USD 39 bn.	USD 62 bn.	The North-South number used in <i>Landscape 2013</i> is USD 39-46 billion, as the lower estimate is used in case of MDBs and private investments.

This estimate of North-South flows is not a proxy for the Copenhagen USD 100 billion for several reasons. The methodologies used in our reports to calculate global finance flows are not intended to imply which (or which proportion) of public and private sector contributions to climate finance should, or should not count toward the goal to mobilize US 100 billion per year by 2020 to assist developing countries. Nothing in this report is meant to infer that the goal (of mobilizing US 100 billion per year by 2020 to assist developing countries' climate responses) has or has not been achieved.

Other factors affecting our calculations of climate finance flowing from the North to the South include:

- **Different definitions of climate finance:** we consider mainly capital investment costs but also grants. We consider both public and private finance. Other definitions might be more restrictive. We did not include the notional amount of loan guarantees as this is not a finance flow.
- **Different definitions of North and South countries:** we used OECD countries and non-OECD countries respectively. Other organizations might apply different country groupings.

- **Information gaps:** climate finance tracking, although improving, remains imperfect. This is all the more important on the private finance tracking side where tracking ultimately relies on voluntarily-disclosed data (press releases, financial statements, presentations, etc.) or the existence of public support mechanism that require disclosure of project details (clean development mechanism, renewables tender, etc.). Beyond this coverage remains imperfect for confidentiality reasons. If we were able to fill this information gap, we believe that climate finance flows, including the North-South flow, would increase.
- **Double counting:** we believe that the ability to fully resolve double counting issues (where the same project is captured in two or more databases we are using), would slightly to reduce our North-South flow estimate.
- **Different sets of assumptions used:** in particular regarding categorization of actors, public / private ownership, etc.
- **Missing sectors and final uses:** a couple of sectors and final uses are not yet entirely covered in this latest installment of the *Landscape* report (e.g. energy efficiency, agriculture, forestry, adaptation, water, etc.). We believe that most of this sector-level activity takes place at the domestic level. We currently believe that the inclusion of these extra investments is not likely to increase significantly our North-South flow estimate.

For further information see Annex D.

1 Due to data availability issues, to estimate DFIs' financing to developing countries - non-OECD countries according to our approach - we considered financial resources committed to the following country groupings as per the information retrieved via the surveys: East Asia and Pacific, Latin America & the Caribbean, Middle East and North Africa (MENA), Sub-Saharan Africa, South Asia and Central Asia and Eastern Europe. We acknowledge that these flows may include resources directed to OECD countries such as Chile, Mexico and Turkey, which we have not been able to fully exclude.

2 In particular, the provision of project-level debt (both low-cost and commercial) implies that the recipient of the debt is providing 20-40% of total capital cost in the form of project-level. Based on our understanding of project financing, we assume that this is mostly domestic equity - so this should not impact the North-South flows estimates. We cannot reasonably indicate whether public or private entities provide the equity portion of those investments.

3 We do not include the FDI figure. We only use flows that correspond to the deployment of low-carbon and climate-resilient projects. In addition to these, FDI definitions also cover R&D, manufacturing, or secondary transactions, and possibly include public money. As we do not have access to flow-level details for FDIs data, we are unable to disaggregate these flows in a way that is comparable with our approach (i.e., capturing private project financing data only).

4 The total also includes an estimated portion of North-South commitments by one OECD institution within the groups of NDBs and one Sub-Regional Development Bank, which accounts for about USD 0.4 billion.

3. Key Actors and their Potential to Scale up

Building on detailed information presented in the previous section, *Landscape 2013* is focused on helping public policymakers, in particular, to understand more about the actors that are really driving and delivering climate finance action, how and why they engage, and how they might be encouraged to further scale-up their engagement in the future. We have chosen to examine the following six groups of public and private actors more closely because between them they represent a large portion of available finance flows (development finance institutions - DFIs, households, and utilities), possess tools that enable private investments (DFIs, government bodies, climate funds), and might be used to even greater effect to unlock potential new sources of capital (institutional investors). In each case, we combine the best available data with findings from relevant CPI analytical work to highlight particular lessons that may help policymakers as they work to replicate and scale up successful approaches.

3.1 Public Actors

Key public actors responsible for contributing and intermediating climate finance on behalf of governments include development finance institutions, other government bodies, and climate funds.

3.1.1 Development Finance Institutions

Landscape 2013 reveals that DFIs, which include Multilateral, Bilateral, and National Finance Institution,²⁵ play a significant role intermediating one of the largest streams of public finance. Their interventions target both public and private actors. Compared to last year's study, *Landscape 2013* captures climate finance flows from a larger number of Bilateral DFIs from developed countries (see Section 1.2 and Annex A).

In 2012, DFIs committed around one third of total global climate finance flows, reaching USD 121 billion.²⁶

The majority of their commitments was in the form of low-cost loans (56%), and focused on European countries (excluding Eastern Europe²⁷) (37%), East Asia and Pacific (26%), and the Latin America and the Caribbean

region (15%). DFIs, mainly MDBs, also distributed third party resources valued at USD 2 billion, mainly from multi-donor climate funds such as the Climate Investment Funds (CIF), and the Global Environmental Facility.²⁸ Blending grants and loans at concessional terms from these funds or other donors with DFIs' commercial financing has become a common practice in international climate finance. DFIs' use of these resources can take the form of technical assistance, interest rate subsidies, or direct investment grants to buy down the costs of projects that would not otherwise happen.

The resources raised and channeled by DFIs can be both of public and private nature. DFIs, in fact, do not only operate by channeling public budgets' resources (i.e. direct contributions from donor countries), but can also raise funds on the capital markets, reinvest earnings, and mobilize additional funds through co-financing (either with commercial banks, financial institutions, development partners, or other international finance institutions). While government backing underpins DFIs' ability to raise funds and offer otherwise unavailable financing products, their ability to generate resources via other venues allows them to support a greater volume of investments than inflows from public budgets could provide alone.

DFIs can facilitate mitigation and adaptation actions both directly and indirectly. Based on available data, in 2012 they delivered about 65% of their climate finance directly to public sector entities and 14% to private sector ones. They channeled the remainder indirectly, through local financial institutions (11%), other development banks (1%), and private equity, venture capital and infrastructure funds (1%).²⁹ By operating indirectly through other development or commercial finance institutions, DFIs contribute to strengthening these entities' capacity in the preparation, evaluation and monitoring of mitigation or adaptation projects, and allow better targeting of actors' specific needs such as those of small businesses or households.

As was the case in 2011, **National Development Banks (NDBs) and Bilateral Finance Institutions (BFIs) distributed the majority, or about 69% (USD 84 billion), of intermediated climate finance.** Multilateral Development Banks (MDBs) contributed the remaining

25 The group of National Development Banks also includes Sub-Regional ones such as the Development Bank of Latin America (CAF) and the BCIE/CABEI Central American Bank for Economic Integration.

26 The USD 121 billion includes USD 660 million of financing to other development banks who might be included in the group of institutions covered by the *Landscape 2013*.

27 Developing Eastern European Countries as per World Bank classification (see data.worldbank.org).

28 To avoid double counting, third party resources are excluded from DFIs' financial flows.

29 Due to data availability issues, this breakdown reflects only part (about USD 58 billion) of DFIs total 2012 climate finance commitments.

Box 3: DFIs' climate finance tracking and reporting

Tracking and reporting systems have evolved substantially since the *Landscape 2011*.

Landscape 2011 highlighted important deficiencies in the tracking and reporting of climate finance by DFIs. Notably, MDBs are now collaborating on a joint approach for tracking climate change mitigation and adaptation projects (AfDB et al. 2012; IDB et al. 2012)¹ aiming to achieve increased accuracy in identifying those components and sub-components within all projects that are intended to deliver mitigation and adaptation co-benefits (rather than 100% or a standard fraction – frequently 50% or 40% – of the project investment costs for all projects with climate as a main or significant objective, as within the Rio markers). Discussions between MDBs, bilateral DFIs, OECD, UNFCCC and others to work further on harmonization and improve knowledge sharing on the issues around climate finance tracking are on-going. Recent meetings in 2013 (see e.g. OECD 2013b) have raised several issues which will need to be discussed further in early 2014 (e.g. the categorization of multi-objective initiatives with both mitigation and adaptation co-benefits, the improvement of the accuracy and consistency of application of both the Rio marker and the MDB approach and the incorporation of MDBs' flows in the DAC CRS).

- 1 At the time of writing (October 2013) work is ongoing to consolidate 2012 climate finance data and prepare the 2013 Joint MDB Climate Finance Report with 2012 data, to be presented at COP 19 in Warsaw. The forthcoming report is expected to present an extended sectoral breakdown, distinct for renewable energy and energy efficiency, transport, waste, and AFOLU (agriculture, forestry and other land use) sectors. Further, it is expected to introduce a sectoral breakdown on adaptation finance, covering water supply and sanitation, agriculture and ecological resources; industry, extractive industries, manufacturing and trade, infrastructure, energy and built environment and others. The report will also include a more detailed explanation on the methodology used to classify adaptation projects and an initial regional breakdown (van de Ven 2013, and personal communications with MDBs' staff between July-September 2013).

31% (USD 38 billion). While the increase observed with respect to *Landscape 2011*³⁰ partly reflects our broader coverage of their flows, some institutions signaled intentions to increase their involvement in climate finance thereby highlighting an upward trend. For instance, the World Bank Group and the European Investment Bank recently pledged to limit or cease funding for coal-fired power generation projects, while committing to reinforce support for renewable and energy efficiency investment (WBG 2013, EIB 2013). The majority of surveyed DFIs also have a strategy to limit, or selection criteria to guide, investment in fossil fuel extraction, processing, and use, and have quantitative targets for financing climate-relevant projects (see also Buchner et al. 2013).

While DFIs play a significant role in scaling-up climate finance, potential challenges exist about whether they use public resources most effectively. In executing their business models, there is a real risk that without proper consideration of local circumstances they could hinder the involvement of private actors, potentially competing (crowding out) private sector lending or investment.

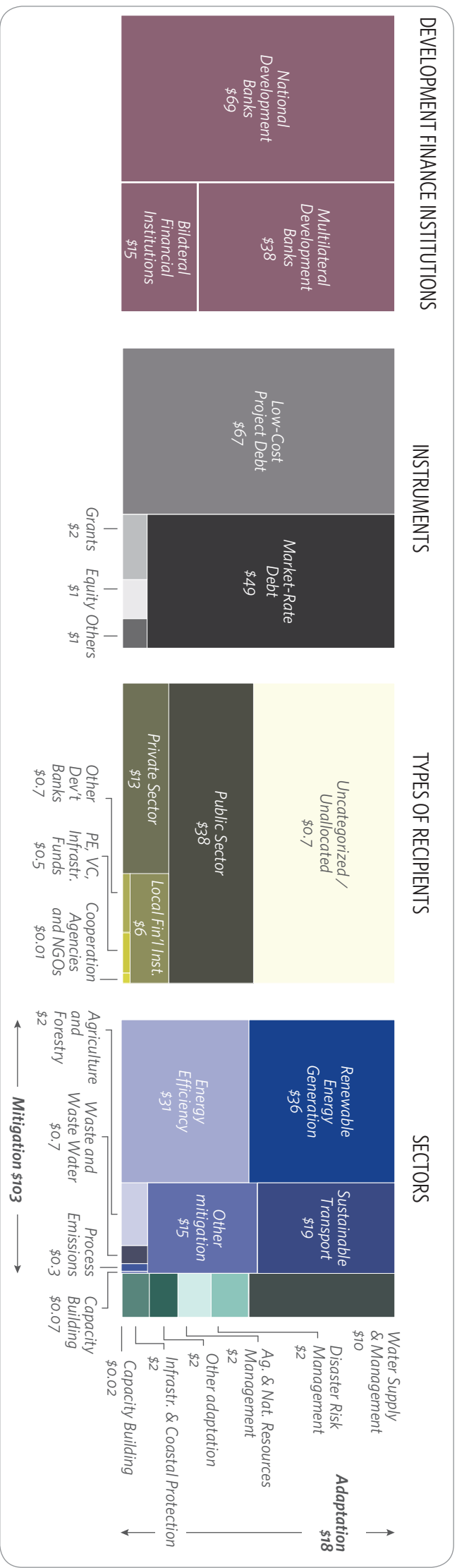
- 30 Due to our increased scope of DFIs, changes in accounting and reporting approaches, data on DFIs' 2011 commitments presented in the *Landscape 2012* and the 2012 data presented in *Landscape 2013* are not fully comparable.

The lack of data tracking DFIs' activities wherever they are operating makes it difficult to assess this issue.

DFIs' potential to play an even greater role in scaling up climate investments is constrained by a number of factors. These include the limited availability of financially viable, bankable projects, and the uncertain bankability of particular technologies such as prototype or start-up technologies. Partner countries' unfavorable regulatory environment and policies, organizational constraints, and a shortage of human and dedicated financial resources, represent other obstacles to their more effective engagement. In addition, some DFIs aim to limit their exposure to certain risks related to currency, start-up businesses, and prototype technologies (Buchner et al. 2013).

The lack of a fully harmonized approach to track and report climate finance across the entire spectrum of DFIs, still hampers understanding about the true volume and nature of the climate finance they provide, and impedes comparability. While DFIs' tracking of climate finance has significantly improved, and DFIs have come a long way in collecting and sharing climate finance data, definitional issues remain, and several DFIs still do not have a methodology in place. Our 2012 estimates may be inflated, for example, because some

Figure 6: DFIs' 2012 Climate Finance Flows (USD billion)



Notes: Values presented in the graph may not match because of data availability issues. (*) The category "other instruments" includes flows that could not be categorized in the main categories used in the Landscape 2013. In the "spaghetti" diagram these flows are included in the category "balance sheet financing". Risk management instruments are not counted against total DFIs' commitments. (**) The category "other adaptation" includes e.g. activities such as prevention of groundwater salinity through improved waste water infrastructure and waste management or health-related products. (*) The category "other mitigation" includes e.g. sectoral or national budget support to climate change mitigation policy, budget support for energy efficiency promotion, support to financial intermediaries, and carbon credits. Please note: Although not displayed in the diagram, DFIs may provide funding via Climate Funds e.g. KfW with the Amazon Fund.

DFIs that did not have a methodology in place reported the whole value of projects rather than only components with climate co-benefits. In addition, we lack details on major players such as the China Development Bank. Until we can overcome these issues, we cannot fully understand the picture. More consistent information about relevant financial flows across activities, recipients, and instruments, down to final uses, would help to ensure a more transparent, comparable, and comprehensive view of DFIs' collective financial commitments.

3.1.2 Government Bodies

In 2011/2012,³¹ government bodies, such as environment ministries or development agencies, contributed between USD 9-16 billion, or USD 12 billion on average, toward low-carbon and climate-resilient activities. This number excludes government funding provided by BFIs or channeled through climate funds.

The largest part of this government finance flowed from developed to developing countries. **In 2011, developed country governments' ministries and agencies channeled an estimated USD 4-11 billion to developing countries.³²**

Our estimate for government flows to developing countries mainly captures the portion of governments' budgets that qualifies as Official Development Assistance (ODA), and is hence reported in the OECD's Creditor Reporting System (CRS) database.³³ The lower bound of this estimate (USD 4 billion) includes only aid marked in the OECD's CRS database with climate change mitigation or adaptation as its 'principal' objective, while the upper bound (USD 11 billion) also takes into account ODA marked with a 'significant' climate change objective.³⁴ This amount excludes ODA

provided by the BFIs AFD, Finnfund, JICA, and KfW (USD 5-7 billion in 2011, see OECD, 2013c), or channeled through climate funds (USD 1 billion in 2011), which are tracked in different sections of *Landscape 2013*. The total amount of climate-marked ODA in 2011, including BFIs and climate funds, amounted to 9-17 billion (OECD, 2013c, OECD 2013d), and the top providers were Japan, Germany, EU institutions, and Norway.³⁵

Estimates for government flows to developing countries also include USD 1.5 billion of U.S. grant-based Fast-Start Finance (FSF) that was identified as additional to climate-specific development assistance.³⁶ Overall, we considered ODA and FSF commitments in 2011 from 30 OECD countries, plus Bulgaria, Cyprus, Latvia, Liechtenstein, Lithuania, Malta, Romania and the United Arab Emirates. We were unable to identify any data for OECD countries Chile, Israel, Mexico,³⁷ or Turkey.

The USD 4-11 billion estimate for 2011 is almost equal to the comparable amount provided in 2010 (USD 5-11 billion). Of the overall amount, USD 2.5-6 billion went to mitigation activities, mostly to renewable energy (19%), agriculture and forestry (19%), and energy efficiency (11%). USD 1.8-6 billion was directed to adaptation, mostly for agriculture and forestry (31%), and disaster risk management (7%).

Of the flows from developed country governments to developing countries, 38-49% was channeled through national government bodies (such as bilateral cooperation agencies) and 7% through UN institutions. The remainder flowed through various organizations and institutions, such as non-government organizations (7-13%), and non-UN multilateral entities (12-15%). Governments also channeled a portion of about 1-3% in support of private sector and public-private partnerships.

31 Data used to calculate governments' contributions includes 2011 and 2012 data. 2011 is the newest year for which data on climate-marked ODA is available.

32 This includes USD 0.1 billion flowing to OECD countries that are also ODA recipients.

33 The OECD Development Assistance Committee (DAC) monitors aid targeting the objectives of the Rio Conventions through its "Creditor Reporting System" using the so called "Rio markers". Since 1998, the OECD has monitored climate change mitigation-specific aid using this policy marker system. In 2009 the DAC approved and introduced a new marker to track contributions aimed at adaptation interventions, which have been applied from 2010 onwards.

34 To be consistent with the overall definition of climate finance in *Landscape 2013*, we excluded climate-marked ODA for fossil fuel energy generation and nuclear safety, which together accounted for only USD 0.03 billion in 2011.

35 These four remain the most important contributors when excluding climate funds and BFI but Japan moves from 1st to 4th place.

36 In the 2011 fiscal year, the U.S. provided USD 1.9 billion of U.S. FSF to developing countries on grant basis, according to a project list compiled by the World Resources Institute and Climate Advisers, sent by Taryn Fransen, World Resources Institute by email on the 9th August, 2013. At the same time, the U.S. reported USD 0.4 billion in climate-specific development assistance to the OECD. We only included U.S. FSF in *Landscape 2013*, while excluding the USD 0.4 billion of ODA reported as climate-specific. We did not include other countries' 2011 FSF in our calculations, as their FSF commitments (UNFCCC, 2013) were roughly equal to or lower than their reported climate-specific development assistance. FSF contributions of 11 countries not reporting ODA was only USD 0.01 billion in 2011. U.S. FSF provided as loans is either channeled via development finance institutions (OPIC) or via export credit agencies (U.S. Export-Import Bank).

37 Mexico is a member of the OECD with Development Assistance Country observer status.

Box 4: Climate-specific domestic budgets

Knowledge about climate-specific domestic budgets is scarce, but growing.

Several Asian and Pacific developing countries have recently carried out a 'Climate Public Expenditure and Institutional Review' (CPEIR) to code climate activities funded through national budgets. Based on a range of differing budget years in the period 2010-2012, CPEIR studies estimate that the governments of Bangladesh, Indonesia, Nepal, and Thailand, jointly channeled around USD 4 billion, through government budgets toward climate activities.¹ If we also include CPEIRs of Cambodia and Samoa,² for these governments climate change spending ranged from around 1% of total government expenditure to 16%, and averaged around 8%. CPEIR data are indicative rather than statistically accurate estimates owing to difficulties involved in defining and tracking climate finance.

Estimates for the amount that flows through developed country government budgets are even more scarce. The European Commission (2013) plans to spend USD 23.2 billion (13%) out of a total budget of around USD 182 billion on climate-related activities in 2014, and aims to reach a climate budget share of 20% over the period 2014-2020. A CPI study estimates that in 2010, the German Government's domestic climate budget was around USD 1.6 billion, of which USD 1 billion was channeled through domestic public banks such as KfW (Juergens et al., 2012).³

- 1 Government of Indonesia (2012), Government of Nepal (2011), Government of Thailand (2011), Government of the People's Republic of Bangladesh (2012).
- 2 Government of Samoa (2012), UNDP (2012)
- 3 USD figures were derived from the EUR figures in Juergens et al. (2012), using the average 2010 exchange rate from Oanda.com.

Bilateral cooperation agencies and UN institutions are significant because their responsibility for managing and distributing bilateral climate-marked aid goes beyond pure intermediation. By working closely with recipient governments to develop and implement national strategies and policy frameworks conducive to investment, they help generate future demand for climate finance (UN AGF, 2010). UN institutions also have specific sectoral or geographical competencies and serve as implementing agencies for major climate funds. For example, the United Nations Development Program (UNDP) has served as the implementing agency for more than 50% of approved funding channeled via the Adaptation Fund and the Least Developed Countries Fund. DFIs often partner with these agencies to coordinate interventions.

Beyond aid flows, governments from both developed and developing countries also direct climate funding towards domestic interventions. *Landscape 2013* captures only the portion of government budgets that government bodies invested directly in renewable energy projects in 2012, estimated at USD 5 billion. This estimate is based on domestic funds for mainly larger-scale investments reported in the Bloomberg New Energy Finance database (USD 1.5 billion, BNEF, 2013), which mostly originate from the U.S., China, and the UK. It also

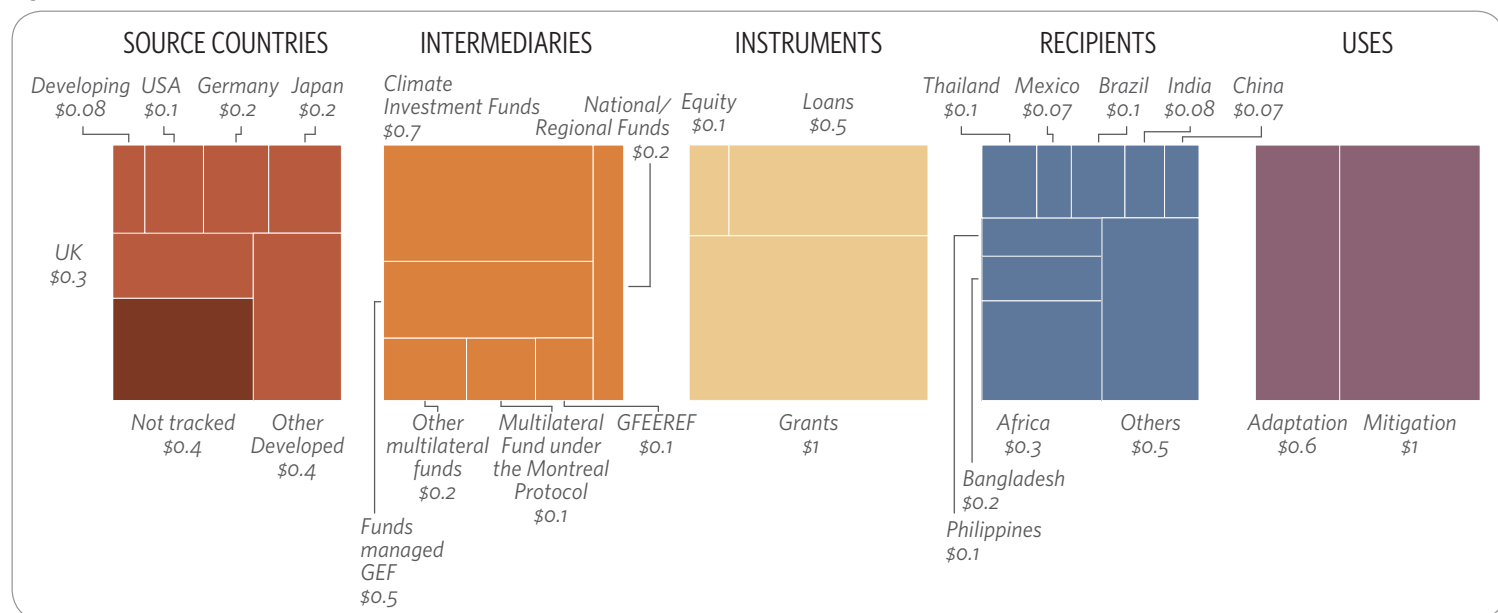
includes USD 3 billion of small-scale investments over the same period from FS-UNEP and BNEF (2013) and Mauthner and Weiss (2013).

Finally, governments also provide support for exports of low-carbon technologies. Based on data retrieved from the BNEF database, *Landscape 2013* captures USD 0.3 billion in loans by export credit agencies (see section 4.3).

3.1.3 Climate Funds

In 2012, a range of multilateral and national climate funds approved approximately USD 1.6 billion of funding for climate interventions. Our analysis includes a selection of funds which receive resources from several donor countries and / or domestic resources, and channel these to low-carbon and climate-resilient investments (see Annex C). **Climate funds are relatively new players on the global landscape and do not yet channel a large pool of resources, but are likely to increase in importance, with the emergence of the Green Climate Fund (GCF).** *Landscape 2013* includes 15 multilateral and five national climate funds including one domestically-funded national fund, the Bangladesh Climate Change Trust Fund. Several additional national funds are in development or active but are either too

Figure 7: Climate funds finance flows (USD billion)



new to have approved projects or do not provide good data on project approvals.³⁸

Comparing the funds included in *Landscape 2012*, the overall value of approved projects in 2012 is slightly lower than in 2011 (8% reduction). Large changes on the individual fund level are due to replenishment timing and fund lifetimes rather than other specific drivers of inter-annual changes. In particular the Amazon Fund, and two funds managed by the Global Environment Facility, the Least Developed Countries Fund and the Special Climate Change Fund,³⁹ saw large increases

38 No qualitative information was found on 2012 approvals under the China CDM Fund, Brazil National Fund on Climate Change, the Maldives Climate Change Trust Fund (launched by the vice-president on 19 September 2012), Thailand Energy Efficiency Revolving Fund (according to Frankfurt School- UNEP Collaborating Centre for Climate & Sustainable Energy Finance (2012) the fund invested 15,959 million baht in 294 projects between 2003 and 2011). In 2012, the Ecuador Yasuni ITT Trust Fund Steering Committee Conditionally approved the Huapamala Hydroelectric Project, subject to submission of the financial terms of this project (MTFO, 2013). This is not included in the USD 1.6 billion. There are a number of additional national funds and some long standing environmental and conservation trust funds that also channel climate related resources but data was not readily available. We exclude bilateral donor funds from our landscape to avoid double counting with other bilateral donor data.

39 Increased funding approvals under the LDCF were due to increased donor pledges in 2011, which allowed countries to prepare larger project proposals. This in turn enabled the fund to approve larger volumes of finance in shorter time frames. 2012 also saw a marked improvement in country capacity and ability to access resources and prepare project proposals quickly. For SCCF on the other hand, the demand for resources continues to far exceed supply, and the funds approved are consistently matching the funds available at a given time (personal communication from Global Environment Facility, September 2013).

while the Scaling-up Renewable Energy Program and Clean Technology Fund (CTF) saw a significant decline in the overall value of project approvals between 2011 and 2012. Analyzing cumulative contributions to five of the largest funds tracked,⁴⁰ the largest contributors to climate funds are the UK, Japan, Germany and the U.S. while developing countries contributed at least 5%, almost exclusively through national climate funds in Bangladesh and Brazil.

Of the USD 1.6 billion approved by climate funds in 2012, 63% went toward mitigation projects and 37% to adaptation projects (See Figure 7). This is largely due to the existence of two large funds focused on mitigation – the CTF and Global Environment Facility Trust Fund – and several smaller funds with a focus on REDD+.⁴¹

Top recipient regions of climate fund money in 2012 were South Asia, East Asia and the Pacific, and Latin America. The top four recipients were Bangladesh, the Philippines, Brazil, and Thailand. Most funding was directed to activities related to agriculture, forestry, land use and livestock management, and renewable energy. Lesser but still significant amounts were directed to disaster risk management, transport, energy efficiency and, through the Multilateral Fund under the Montreal Protocol, to industrial process emissions. Almost all

40 Including Climate Investment Funds, GEF Trust Fund 5th replenishment, Least Developed Countries Fund, Amazon Fund, Bangladesh Climate Change Trust Fund), which together accounted for 75% of finance approved in 2012. Our analysis applies cumulative contribution shares to annual project approvals in 2012.

41 The total value of approved projects in 2012 related to REDD+ type activities by the funds included in the analysis is USD 202 million.

funds direct significant sums to the agriculture, forestry, land use and livestock management sectors, in particular the Amazon Fund, PPCR and the Adaptation Fund. Meanwhile the CTF is the biggest supporter of renewable energy and energy efficiency projects.

Climate funds delivered finance to projects mainly in the form of grants (66%), low-cost debt (33%) and equity (less than 1%). Market-rate debt instruments were not used, while only the European Global Energy Efficiency and Renewable Energy Facility made direct equity investments (USD 13 million).

3.2 Private Actors

As with previous landscape studies, we find that in 2012, private actors, ranging from single households to multinational corporations, made the lion's share of climate finance investments. While private investors have multiple reasons for investing, they are typically related to profit or cost-savings and are thus influenced in large part by the incentives on offer.

3.2.1 Project Developers

Landscape 2013 finds that in 2012, project developers⁴² contributed by **far the largest single share, approximately USD 102 billion or 28%, of total global climate finance flows**. This group of actors played a particular role in developing countries, where approximately 61% of the USD 102 billion investments were made.

Scaled-up renewable energy generation is an important mitigation measure, and is central to reducing the carbon intensity of economies while meeting growing energy demand, particularly in developing countries. **In 2012, 76 countries added 70 GW of large-scale renewable energy** according to BNEF (43.6 GW of which is based in developing countries). As in *Landscape 2011* and *2012*, this group of actors' significance derives from their responsibility for executing the majority of new large-scale renewable energy investments (approximately 63%). Current imbalances in incentives for investing in low-carbon and climate-resilient measures, as opposed to business-as-usual investments, mean that while this group comprises the largest private providers of climate finance, they are also the main contributors of global emissions.

42 Project developers include energy utilities, independent power producers and specialist project developers (those who only undertake large-scale renewable energy projects). For the purposes of *Landscape 2013*, this set of actors that are fully- or partially-owned by public sources are still defined as 'private' actors since they typically have similar investment approaches and are profit-driven.

For the first time, **our analysis identifies the multiple levels and depth of entity ownership(s), allowing us to more precisely identify the so-called 'ultimate' owners of renewable energy finance investments**. This is important because while, on the surface, most project developers appear to act like profit-driven private investors, a substantial portion actually have significant degrees of state-ownership.⁴³

Fully or partially state-owned energy actors deployed approximately USD 66 billion of the total large-scale renewable energy investment (or 73%). This type of investment was mostly confined to developing countries (approximately 66%), and was especially important in China where entities with some degree of state-ownership carried out approximately 83% of USD 43 billion in domestic investment.

Private project developers were typically more active in regions where political and regulatory arrangements allowed for, or could incentivize, such involvement: In developed countries, these actors performed 22% of their investments internationally (in 37 countries), compared to only 4% for developing country actors (in 6 countries). In general, we find that project developers preferred to invest locally, with approximately 89% of renewable energy investment in 2012 executed domestically (78% in developed, and 96% in developing countries). One driver of this outcome is that established energy utilities are naturally tied to their country of origin because of the location of their existing assets, in contrast to pure project developers, who, without long-term asset ownership, can more easily invest elsewhere.⁴⁴

Project developers are well placed to invest in renewable energy technologies across and within countries. This is largely because they benefit from a competitive advantage compared with other actors. They are well integrated in the country and sector, and have experienced staff with the expertise to successfully manage complex projects while maximizing returns. However, as a diverse family of investors with elements of private and state-ownership, their **investment approaches differ across geographies and technologies and are impacted by a range of technology, financial, and**

43 This is common in many countries as a result of the evolution of the national energy sector, while privatization has increased steadily since the 1990s, particularly in Europe and the US.

44 Project developers' business model (namely to develop, arrange financing, and build new renewable energy capacity, before selling the project to long-term owners) appears to be relatively easily applied to other, even non-domestic, regions. Data limits the extent to which we can test this assumption, but warrants further analysis.

Box 5: Climate finance from German households in 2010

Germany is a leader in the European transition to a decarbonized economy, and has set some of the most ambitious targets for increasing renewable energy and reducing emissions. CPI found (Juergens et al., 2012) that **German private households made the largest single contribution to overall German climate finance in 2010**, totaling USD 18.6 billion, or 38% of total German climate finance flows (USD 49 billion) in 2010.¹ We attributed this to households investing in small-scale or building-integrated renewable energy (USD 13 billion²), with the remainder paying for incremental energy efficiency investment in buildings (USD 5.4 billion).

Crucially, although the private sector contributed more than 95% of overall climate finance in Germany in 2010, almost half of this was supported by concessional or low-cost loans from national development banks such as KfW.³ This highlights the importance of public finance instruments other than grants and subsidies as mobilizers of private investment. In 2010, KfW concessional loans supported approximately 43% of all renewable investment, and 72% of all incremental energy efficiency investments.

- 1 The CPI Landscape of Climate Finance in Germany (Juergens et al., 2012) tracked climate finance flows in Germany in 2010. For the purposes of that study, renewable energy investment was assumed as equal to total capital investment (i.e. the full investment amount), while energy efficiency investment was assumed to be the incremental amount (i.e. the difference in investment that could be associated to climate finance).
- 2 It was not possible to comprehensively track 2012 figures due to data limitations. Since total investment in renewable energy reduced 27% from 2010 to 2012, and assuming that investment shares are likely similar, we estimate 2012 household investment in renewable energy is around USD 10 billion.
- 3 Kreditanstalt für Wiederaufbau.

policy risks. Typically, they are at the frontline of national energy system transformations and are greatly affected by policy changes, but at the same time face major financing challenges associated with restricted balance sheets following economic recession.⁴⁵

Their decisions to invest in renewable energy, rather than traditional energy generation, depend on their ability to manage risks and balance costs and returns, and often require positive government incentives and favorable policies. It is therefore important to note that despite their significance in the climate finance *Landscape*, **this is the same group of actors that accounts for the majority of investments resulting in emissions**, such as new fossil fuel generation (BNEF, 2013). CPI is conducting ongoing analysis to better understand how to shift this group's existing financial resources towards low-carbon, climate-resilient investments.

3.2.2 Households

The Households category includes family-level economic entities, high net worth individuals, and their intermediaries. Households contribute to climate finance as end users of mitigation technologies,

⁴⁵ The on-going economic recession has a direct impact on the growth of renewable energy investment, which has slowed globally, and even decreased in some regions (FS-UNEP, 2013).

opportunistic investors, and as funders of revenue support mechanisms that pay for incremental costs (as taxpayers and ratepayers). Their money stems from income and savings, including inherited or entrepreneurial wealth.

Households contributed a significant share of global climate finance in 2012 (9%), investing **USD 33 billion in distributed energy and heat for their own use.**

Of this amount, around USD 24 billion went toward purchases of small-scale solar PV systems and USD 9 billion went toward solar water heaters. As end users, household investment was exclusively domestic. We estimate that 83% of household investment took place in developed countries, particularly in Germany (see Box 5), Japan and Italy. The remaining 17% of investments were made in developing countries, in particular China.

The main incentives for households' investments were expected cuts in energy and heating bills. Such investments were either paid for on the household budget, in which case they were often complemented by a dedicated loan, or with more elaborate schemes involving leasing arrangements.

The main challenge households face in investing in distributed energy and heat is the relatively higher

upfront cost of solar technologies compared to more conventional and more carbon-intensive alternatives. Even though solar PV systems costs have declined dramatically in recent years, public support still plays a major role here by providing revenue support mechanisms (feed-in tariffs, etc.), tax savings, or cheap debt. Austerity measures and changing PV system economics have resulted in recent tariff cuts which are likely to impact the level of future household investment in renewable technologies.

Households also act as retail investors of renewable energy, thanks to the emergence of new renewable energy investment vehicles and business models: Examples include crowd funding,⁴⁶ solar leasing in California,⁴⁷ and publicly-traded investment funds.

It is critical to keep in mind that as taxpayers and rate-payers, households typically bear the burden of revenue support mechanisms. Any 15-year feed-in tariff payment to a large-scale renewable asset creates a liability burden that is either paid out of a country's budget (such as in Spain), or by electricity consumers paying a surcharge for renewable energy on their electricity bills (as in Germany and Italy). As the economics of mitigation technologies improve, there is potential to reduce the incremental burden on households, possibly allowing them to dedicate a higher portion of their savings to investing in new emissions-reduction projects.

Apart from solar technologies, households also invested in energy efficiency (retrofitting of existing houses and apartments, high thermal efficiency new buildings, and dedicated appliances), electric and hybrid vehicles, and adaptation to climate change. Unfortunately, the lack of comparable global numbers for these final uses makes it impossible for us to provide an estimate for these investments.

3.2.3 Institutional Investors

Institutional investors include insurance companies, pension funds, and foundations and endowments. This group manages more than USD 70 trillion⁴⁸ in assets,

46 For instance, Mosaic in the U.S. and Abundance Generation in the U.K.

47 See recent CPI Report by Hobbs et al. (2013).

48 Nelson and Pierpont (2013) estimate that institutional investors in OECD countries (insurance companies, pension funds, foundations, endowments, sovereign wealth funds, and investment managers) manage USD 71 trillion of assets. This estimate is in the ballpark of other work. IMF (2011) counts USD 60.3 trillion in institutional assets, but excludes pension assets that sit outside of pension funds. Kaminker and Stewart (2012) at the OECD count USD 71.1 trillion in assets.

and on the surface, has risk and return requirements that appear to align with clean energy projects.

However, current contributions to climate finance are far below the potential. In 2012, **institutional investors contributed approximately USD 0.4 billion of total global climate finance flows**, largely to new renewable energy projects. They invested directly into project debt or project equity, always accompanied by some form of public backing or support.

In our sample, all institutional investors' money went to developed countries (including USD 280 million to Europe). Most contributions from institutional investors were sourced domestically and the remainder came from developed countries other than the project host country.

There are some important roles that institutional investors play in climate projects that we were not able to capture because of data and tracking gaps. These include:

- Institutional investors have an important role at the refinancing stage of projects and in investing in corporate issues, which is critical for recycling capital. However, as in Landscape 2010 and 2011, **our figure excludes reinvestment, secondary transactions, and quoted securities investment** - which comprise the bulk of insurance company and other institutional investor activity. In other words, the institutional investors' amount we capture is just a small portion of their involvement in low-carbon and climate-resilient projects.
- Institutional investors are an important investor for government and corporate bonds, and therefore provide finance for low-carbon and climate-resilient investments indirectly as well as directly. Their indirect contribution via ownership of parent companies could represent their most important role in climate finance - however data limitations (detailed holdings, holding structures, confidentiality, etc.) prevented us from estimating this amount.

Still, institutional investors' contribution in 2012 was low compared with expectations. This is partly a result of methodological issues: the lack of transparency on institutional investors' involvement, the fact that our representative sample only covers the largest host countries for mitigation and adaptation, and our focus on primary equity stakes instead of reinvestment and secondary market transactions. In addition, there are some real

constraints on how institutional investors may manage their portfolios which restrict their ability to support low-carbon and climate-resilient investments (Nelson and Pierpont, 2013). The estimated maximum potential for institutional investment in renewable energy is thus smaller than suggested, and amounts to USD 39 billion a year.

Better enabling environments that address true investor needs could help to unlock scaled up investment by these actors in the financing of emission reduction projects, both in developed and developing countries. Potential avenues to encourage greater levels of investment from institutional investors include (Nelson and Pierpont, 2013):

- Action by policymakers to carefully **dismantle policy barriers** that discourage institutions from investing;
- **Improvements in institutional investor practices**, including better treatment of illiquid assets, more specialized investment expertise for renewable energy, and asset allocation approaches that capture the risk and return characteristics of renewable energy assets;
- **Action by policymakers to modify financial regulations affecting renewable energy investment**, if it can be done without negatively impacting institutional investors' financial security, solvency, or operating costs;
- **Work to develop better pooled investment vehicles** that create liquidity, increase diversification, and reduce transaction costs while maintaining the link to underlying cash flows from renewable energy projects.

Box 6: Walney and Jädraås - highlighting the potential role of institutional investment in renewable energy

CPI has analyzed two renewable energy projects that attracted finance from non-traditional institutional investors, identifying the public policies or measures that encouraged their participation, and examining the potential to replicate and scale similar approaches.

Commissioned in the United Kingdom in 2012, Walney Offshore Windfarms¹ project developers had difficulty attracting financing from traditional sources because of significant technology risks and the escalating European debt crisis. The government's renewable electricity certificate scheme provided a future revenue stream over a 20-year horizon, and enabled project developers to secure a 25% investment from private equity fund minority investors. By engineering the financial arrangements to shield minority investors from construction and operating risks, developers provided fixed future revenue in line with investors' expectations.

In Sweden, Jädraås Onshore Windfarm² project developers were able to secure approximately USD 140 million from a pension fund after they received a state-backed loan guarantee from the Danish export credit agency, allowing the pension fund to earn returns above those of government bonds without accruing additional risks. At the same time, a renewable policy incentive providing renewable electricity certificates for a long-term revenue stream assured commercial viability.

1 For further information see: <http://climatepolicyinitiative.org/sgg/publication/san-giorgio-group-case-studies-walney-offshore-windfarms/>

2 For further information see: <http://climatepolicyinitiative.org/sgg/publication/san-giorgio-case-studies-jadraas-onshore-windfarm/>

4. Entry Points for Public Money

National and international public actors have at their disposal a substantial tool box of policies and instruments that can address investor-specific needs, align public and private interests, and enable scaled-up low-carbon and climate-resilient investment.

Landscape 2013 highlights that, providing the measures adopted properly identify investment barriers, and adequately address the different risk appetites of investors, there is no single right way to deliver public resources.

For example, public actors can do the following:

- **Pay for incremental investment costs or assume significant financial risk** through equity investments at below-market returns, providing grants, concessional loans and guarantees, and through subsidizing risk insurance;
- **Pay for public goods and capital investments** with associated costs and risks that private actors are unwilling or unable to bear,⁴⁹ such as knowledge building programs; and
- **Redirect resources through policies that alter the balance of costs and returns between carbon and low-carbon investments**, including through feed-in tariffs, subsidies, carbon taxes, cap and trade systems.

4.1 Direct Investment: Paying Incremental Costs and Addressing Risks

In 2012, public sector institutions⁵⁰ contributed investments and grants of at least USD 41 billion toward renewable energy investments. While this is about 16% of the total USD 266 billion invested in renewable energy generation, these injections play an important role in addressing high technology cost barriers and private project financing risks.

The public sector's financing sits alongside traditional, profit-oriented project financing by private actors. It assists project developers in reaching financial closure by covering costs and lowering risks that would otherwise make private investment unviable. For example, grants or concessional loans can lower costs associated

with immature or higher-risk technology thereby helping address viability gaps (see Box 7). Further, public finance can take the form of technical assistance to address the knowledge and capacity gaps of policymakers and the private sector, thereby indirectly enabling renewable energies (see Section 4.5).

In 2012, we estimate that public finance for renewable energy primarily originated from public entities in Germany and China and was reinvested in these same two countries. DFIs provided approximately 86% of renewable energy public investment (NDBs 57%, MDBs 20%, and BFIs 9%), while government ministries and agencies (13%) and climate funds (less than 1%) contributed the remainder.

The choice of instruments used by public actors reflects the goals, strategies, and risk propensity of different institutions: DFIs provided mainly loans (around 96% of their overall climate finance funding), while governments and climate funds used a mix of grants, concessional loans, and equity for capacity building, reducing financing costs, and promoting early stage technologies. In addition to providing financing at attractive terms and conditions, DFIs also pooled their resources and combined their tools to finance otherwise unviable projects, including jointly with dedicated facilities⁵¹ (see Box 7).

The public sector's role in encouraging the direct deployment of renewable energy is likely larger than our estimate. Direct financing, in the form of project-specific grants and loans, and the provision of development aid in support of renewable energy projects, complement other significant tools like mandatory renewable energy targets and revenue support policies such as feed-in tariffs, which we do capture in our estimate.

CPI analysis demonstrates that public actors' decision to invest in renewable energy is motivated by a diverse range of national development concerns, including mandates to develop local industries and markets, improve national energy security, or implement sustainable development or environmental objectives (see Falconer and Frisari, 2012; Hervé-Mignucci, 2012, Trabacchi et al. 2012, Boyd and Hervé-Mignucci, 2013).

49 For more information see Buchner et al. (2012), "Effective Green Financing: What have we learned so far?", A CPI Report, available at <http://climate-policyinitiative.org/europe/publication/effective-green-financing-what-have-we-learned-so-far/>

50 This figure includes governments, UN and Bilateral aid agencies, export credit agencies, and Multilateral, Bilateral and National Development Finance Institutions. For state-owned entities and Utilities/Independent Power Producers see 3.2.1.

51 For instance, Buchner et al (2013) report that some DFIs use dedicated facilities, such as the Renewable Energy Asia Fund (REAF) to co-finance relevant renewable investment. Dedicated climate funds also play a role e.g. the Clean Technology Fund.

Box 7: The role of public money in financing CSP projects

All Concentrated Solar Power (CSP) installations financed to date have required some form of public support, either in the form of direct capital investments or subsidized revenues (CPI, 2013 forthcoming). Despite the significant growth of CSP installations in the last five years and the considerable contribution the technology is expected to make to the global energy supply in the short and medium term (IEA, 2010), cost comparisons still place CSP at a significant premium to other more established renewable energy technologies. In some cases this premium reaches 0.2 USD/kWh (IRENA, 2013).

In 2012, 20 CSP plants, representing 900 MW of installed CSP power required an estimated USD 6 billion of mobilized investment capital. **Public sources of finance contributed around 36% of overall capital, with state-owned entities, national and Multilateral Development Banks contributing an estimated USD 270 million in equity capital, and USD 1.7 billion in debt investments.** CPI case studies¹ find that DFIs often join forces to meet the capital needs of CSP plants in emerging economies.

In addition, the great majority of these plants benefited from publicly subsidized revenues in the form of fixed Feed-In-Tariffs, such as in Spain,² or in the form of above market-value power purchase agreements with state-owned utilities, awarded through competitive bidding programs (see e.g. the Moroccan Solar Plan) or reverse auctioning (see the South African Renewable Energy Independent Power Producers' Procurement Programme, and the Indian Jawaharlal Nehru National Solar Mission). CPI CSP case studies analyze the role of public finance in providing subsidies, and reducing risks associated with future revenue streams.

- 1 In 2012, CPI published a case study on the Ouarzazate I CSP Plant in Morocco (Falconer and Frisari, 2012) and is currently undertaking two case studies on the Eskom CSP Plant in Upington, South Africa and the Reliance SunTech CSP Plant in Rajasthan, India.
- 2 As of February 2012, the Royal Decree 1/2012 has replaced the previous Royal Decree 661/2007 for all CSP installations in the country, eliminating any economic incentive for newly installed CSP plants (WF&W, 2012). The Electricity Market Reform passed in July 2013 has eliminated the feed-in-tariff definitively, but introduced a complimentary retribution to allow a reasonable profitability - the reform has not yet been formalized in a royal decree and many details are yet to be defined (Gobierno de Espana, 2013).

4.2 Indirect Investment: A Shareholding Perspective

Another entry point for public money is active and strategic shareholding. This entry point is utilized when the public sector, as a partial or full owner of a project or company, influences that entity's investment decision making.

This entry point can be difficult to measure. By examining ownership layers as explained in the methodology section, **we find that the public sector invested USD 42 billion, USD 5 billion directly and at least an extra USD 37 billion indirectly that we initially classified as private sources of money.** This corresponds to a mix of active / strategic shareholding and passive shareholding via equity investment.

To illustrate what we mean by active and strategic shareholding, we categorize this entry point in four ways.

First, we identify investments in which the public sector directly provides equity to its own climate finance projects. This provides governments and other public entities with access to energy to ensure security of supply and avoid any exposure to electricity market prices among other things. For example, in 2012, the US Department of Navy invested in the 2 MW Blue Sky Norfolk Naval Base PV Plant. The benefits of these investments can be geared towards the provision of public goods and services to citizens.

Second, we highlight that public sector investment can be used to directly support third-party projects as co-investments. The public sector would inject capital to help project co-investors deploy projects by reducing the total amount of capital needed but also to reassure foreign investors that there is an alignment of interests. The South Africa Public Investment Corporation minority stake in 64 MW of solar PV developed by U.S. Project Developer Sun Edison last year illustrates this type of public investment.

Third, governments' holdings (including Ministries of Finance) engage in "active shareholding" of state-owned entities and other project investors. This often corresponds to existing and past state monopolies and typically involves the provision of strategic goods and services like electricity, water, or even development aid. This is valid in both developed (the French Government is the largest single shareholder of EDF and GDF-Suez, both developers of renewable energy projects via their subsidiaries) and developing countries (China state-level holding entity, SASAC, owns the major electricity supply companies). In cases where a government is an active strategic owner, it typically appoints some if not all board members, and can therefore influence major investment decisions taken by the company. This creates opportunities for the public sector to promote low-carbon and climate-resilient projects over carbon-intensive ones. This extends to the governance of development finance institutions.

Fourth, governments can be passive holders of securities issued from companies involved in the financing of climate finance projects. This type of investment belongs to diversified investment pools to meet return / risk requirements (funding public pensions, etc.). Portfolio management considerations prevail (for example, not including specific climate finance objectives). As an example, the Norges Bank Investment Management manages the Norwegian oil fund and, as such, invests in several European listed energy players. In cases where a government is more of an asset manager (sovereign wealth funds and publicly-managed pensions), given the diversification requirements, it is seldom the case that a government is able to alter major corporate decisions, as it is consequently a minority shareholder. Still, the very inclusion of low or high carbon companies within the portfolio remains the decision of the (public) portfolio manager.⁵²

4.3 Risk Instruments and the Role of Guarantees

To-date, some of the largest pools of capital, such as institutional investor assets (See Section 3.2.3), remain on the side lines of climate finance. **One possible solution to increase actors' green investment appetite is to address risk. Whether real or perceived, risk is the single most important factor keeping promising low-carbon, climate-resilient projects from finding**

52 Research from the Carbon Tracker Initiative and multiple asset managers indicates that investors are not properly factoring in their exposure to fossil fuel stranded assets (i.e. they lack information on potential climate policies or do not believe that ambitious climate policies will be imposed and affect their assets).

investors. CPI recently categorized the risks most associated with low-carbon infrastructure projects, matched them with available risk instruments, and identified where gaps between the supply and demand for risk mitigation continue to impede investment.⁵³ While most of these risks are not unique to green investments, particular aspects of both low-carbon and climate-resilient investments frequently increase the perception of risk. In the absence of specific measures to address these perceived risks, these investments fall outside most investors' "comfort zone."

A variety of public and private organizations already offer policies and instruments that attempt to cover risks related to low-carbon, climate-resilient investments, including both dedicated instruments that directly address specific risks and broader or more diffused instruments that address multiple risks at once.⁵⁴ However, major methodological difficulties make it complicated to capture a meaningful value for risk instruments. Quantifying future commitments related to risk instruments requires tracking potential future amounts that may be required to pay for things other than investment costs (e.g. payments for loan defaults). Calculating these values goes beyond actual flows of climate finance and carries with it the risk of double counting.⁵⁵ Furthermore, a potential gap exists between what institutions report when offering risk instruments (such as the face value of a full or a partial risk guarantee, the premium collected on such instruments, or corresponding accounting provisions) and the actual amount that may be spent in the future. In addition, some institutions do not monitor the value of guarantees related to climate finance at all. Lastly, guarantees are only exercised in particular circumstances, and there is a chance there will never be any outflow from the guarantor.

In terms of the climate finance landscape, **DFIs are key players in addressing risk gaps in both developed and developing countries**, and sometimes step in where private insurance companies and investors are not yet able to provide appropriate risk coverage. During recent years, they have extended their activities from a primary focus on development, towards low-carbon, climate-resilient projects. Some DFIs have developed

53 All the reports of CPI's Risk Gaps series are available on <http://climatepolicyinitiative.org/publication/risk-gaps/>

54 These instruments can be categorized as bilateral contracts, credit enhancement instruments, insurance, revenue support policies, direct concessional investments, and indirect political/institutional support.

55 For example, the face value of full loan guarantees and loans with investment costs.

Box 8: World Bank Group risk mitigation instruments

The World Bank Group is a major provider of risk mitigation instruments ranging from insurance policies and guarantees aimed at improving the creditworthiness of projects, to contract-based instruments targeting the volatility of commodities and currencies. The World Bank's strategic prioritization of climate change since 2005 has translated into an increased supply of risk mitigation instruments, particularly for low-carbon technologies (although mainly mature ones). In fact the Group's provision of risk coverage for climate related projects has risen from 10% of total risk mitigation commitments in 1990, to 14% in the period 2010-2012 when annual commitments reached on average USD 570 million per year.¹

Between 2008 and 2012, the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC) led the way in terms of the volume of financial commitments, and the number of climate related projects supported (Micale et al., 2013). Despite the rising commitment to supporting climate related projects, only a few types of risk instruments appear to have been used at a significant scale. CPI finds that there is significant room to increase the availability of tools such as guarantees and insurance, to help meet growing demand for risk coverage (Micale et al., 2013; Frisari et al., 2013).

¹ This figure however is not fully comparable with figures provided in the Landscape as the latter follow different accounting methodologies for climate change projects.

specific solutions to enhance their ability to assume risk. These include structured instruments that use special vehicles, grant elements to back 'first losses' or technical assistance support, loan guarantees from partner governments, and partial loan guarantees by their home governments (Buchner et al. 2013).

Export Credit Agencies can also play a role unlocking investment flows by providing export guarantees or credits to national corporations.⁵⁶ An agreement in 2012 by OECD countries, to incentivize export credit support for climate mitigation projects (including flexible repayment structures, and longer tenors for advanced technologies and energy efficiency) while maintaining stricter financial terms and conditions for fossil-fuel based projects, further strengthens their role as it addresses specific barriers to financing (OECD, 2012). Public export credit agencies in the U.S. and Denmark alone provided at least USD 0.3 billion of loan support for renewable energy investments in 2012 (BNEF, 2013).⁵⁷

⁵⁶ Export credits can be provided by or on behalf of governments, and can take the following three forms: (i) official direct support (loans); (ii) private export credit with repayment insurance; (iii) private export credit with repayment guarantee (Buchner et al., 2011).

⁵⁷ According to BNEF, the U.S. Export-Import Bank provided USD 0.24 billion of loans for renewable energy in 2012, while U.S. Fast-Start Finance report 0.3 billion for U.S. Fiscal Year 2011. Landscape 2013 uses the BNEF number, as it represents the calendar and not the fiscal year 2012. Data on export credits is not available for other export credit agencies or other climate-specific project types.

However data on export credits is not available for other export credit agencies, or other mitigation and adaptation projects. Likewise, ministries and other agencies also support individual projects and entities developing projects by guaranteeing loans in case of default thereby reducing the overall cost of finance or enabling that lending to happen in the first place. Due to inconsistent and incomplete data sets, we have not tracked the value of these in *Landscape 2013*.

Although existing risk coverage instruments are being improved and new ones are emerging, **gaps remain in risk coverage in both developing and developed markets, particularly for policy risks** (i.e., retroactive changes to support systems for climate-friendly technologies) **and financing risks** (including access to capital and investment exit/liquidity risks). In particular, risks related to rapid and unexpected policy change around the world, the immaturity of financial markets in emerging countries, and the relative newness of clean technologies are not sufficiently covered by available risk mechanisms.

Innovative risk instruments are needed to bridge the gap between supply and demand for risk coverage, to unlock capital for green investments at scale, and to find more suitable sponsors. These could include development finance institutions backed by government mandates such as national and regional development

banks, and multilateral institutions such as the World Bank Group, and potentially, the Green Climate Fund.

4.4 Incentives

Public actors have a key opportunity to lower the incremental costs of low-carbon, climate-resilient investment by providing incentives, particularly for individual renewable energy projects. Incentives can therefore play a key role, attracting higher levels of investment in mitigation projects. Similar incentives are rarely used when it comes to adaptation, which rather requires better knowledge and risk management. *Landscape 2013* does not capture the value of incentives provided by public actors for two main reasons: (1) Our chief focus is on the primary financing of low-carbon and climate resilience projects – that is, investment costs that are financed; and (2) Data on incentives is rarely collected. Nevertheless, we consider the impact of individual incentives on project economics and financing, and also on public finance. In most cases, the burden for the liability created by incentives is borne ultimately by taxpayers or ratepayers.

It is methodologically challenging to move from project-level information to a more macro picture that would help us to estimate how much money public actors committed to pay for incentives over the course of a given year for the following reasons:

- Specific information about policies that benefit individual projects is not readily available, for example, the length of support, unit support level per MWh, etc. Moreover, project-level information is rarely compiled thoroughly, making it difficult to calculate incentives committed for any single project.
- Strong assumptions need to be made about technologies, market price developments, etc., (prevailing baseline electricity price, expected power generation over asset lifetime, expected prices for market-based revenue support mechanisms over asset lifetime, etc.).
- Policies are not set in stone. Recent history has shown that policy risk is a reality (involving retroactive tariff cuts and complex renegotiations for example) that results in reduced revenues. Therefore, calculations may only be considered as a base case and are subject to potential changes in the future.
- Likewise, it is difficult to account for the value, and impact, of fossil fuel subsidies which may equally produce incentives and disincentives for investing in climate finance. For example, removing or reducing various forms of support to fossil fuel technologies is another way to promote investment in low-carbon generation and much more difficult to model.

Table 2: Overview of incentive types

INCENTIVE INSTRUMENT	IMPACT ON INDIVIDUAL PROJECT	IMPACT ON PUBLIC FINANCE
Fixed revenue support Include feed-in tariffs, feed-in premiums, power purchase agreements in excess of market prices, auction prices, etc.	<ul style="list-style-type: none"> • Makes low-carbon projects investment competitive with conventional projects • Fixes part or all of revenues over a given horizon at a high level • Boosts net revenues and reduce price uncertainty 	<ul style="list-style-type: none"> • A multiple-year liability dependent on actual production levels • Liability typically passed on to final consumers (ratepayers) or budget lines
Market-based revenue support E.g.: green tradable certificates, carbon offsets, etc.	<ul style="list-style-type: none"> • Makes low-carbon projects investment competitive with conventional projects • Boosts net revenues • Supports instrument price risk to manage 	<ul style="list-style-type: none"> • No liability • Liability typically passed on to end users or intermediaries with renewable energy targets
Tax cost support E.g.: real estate / property tax breaks, income / revenue tax breaks, reduced or null VAT / sales tax, favorable depreciation schedule tax impacts, etc.	<ul style="list-style-type: none"> • Incentivizes investors to favor low-carbon projects over conventional projects • Lowers tax costs and boost net revenues • Generates tax assets to monetize and attract providers of finance (ex. US tax equity market) 	<ul style="list-style-type: none"> • Foregone tax revenue
Non-tax cost support E.g.: accelerated / simplified permitting procedures, etc.	<ul style="list-style-type: none"> • Addresses cost barriers to develop low-carbon projects • Reduces various costs over project lifetime • Boosts net revenues 	<ul style="list-style-type: none"> • Foregone fee collections

Box 9: The Pilot Program for Climate Resilience: Engaging the Private Sector in Nepal

In Nepal, the Pilot Program for Climate Resilience¹ contributed grant financing of USD 2 million² – within its larger funding support to the country's strategic investment plan – to fund awareness, knowledge, and capacity building activities geared toward unlocking increased private investment in climate adaptive practices. This set of activities, which are implemented by the International Finance Corporation, aim to overcome farmers' technical and capacity gaps, and increase agricultural productivity. Targeted interventions include the following:

- Improving the government's understanding about the role and importance of private sector involvement in building the country's resilience.
- Enhancing local private actors' awareness about the risks and opportunities associated with changing climate conditions.
- Involving three agribusiness companies in the project by providing training to these companies' technical teams to enable them to transfer skills on climate proofed agronomic practices to farmers, and by covering part of farmers training costs.
- Encouraging local commercial banks to provide loans to farmers for adaptation-relevant activities, by providing bank staff with training on risk management practices, and assistance in developing new financial products that cater to farmers' needs.

1 Trabacchi C, and Stadelmann M, "Making Climate Adaptation a Private Sector Business: Empirical Evidence from the Agricultural sector of Nepal". CPI report (forthcoming); CIF (2011b).

2 This value covers technical assistance activities only; it does not include the investment component of the project, nor the full value of PPCR's support to the country's strategic investment plan on climate-resilient measures.

4.5 Providing Knowledge and Capacity

Awareness and knowledge gaps, misinformation about the opportunities associated with mitigation and adaptation investments, and insufficient technical capacity, can constrain policymakers from creating enabling environments for low-carbon and climate-resilient investments, and prevent private investors from supporting promising projects. *Landscape 2013* estimates that public actors, such as governments and DFIs, committed at least USD 0.5 billion to build climate-specific capacity and knowledge.⁵⁸ Technical assistance and capacity building is often embedded within larger interventions, or part of the everyday work of public entities, and hence is not classified as a distinct category. Some DFIs and UN organizations also do not measure and/or report capacity building for climate change as a stand-alone category. This value is therefore an underestimate.

58 The USD 0.5 billion encompasses governments' climate change aid, including fast-start finance contributions (USD 0.3 billion), and climate funds' commitments (USD 0.05 billion) that can be classified as 'capacity building' or 'knowledge creation'; it also includes DFIs' commitments for capacity building activities (USD 0.09 billion).

CPI case studies provide some interesting examples of how targeted injections of public resources played a key role in, for example, making local financiers aware of commercial opportunities associated with green technologies, building consumer demand and improving the quality and reliability of installations,⁵⁹ and improving monitoring and enforcement.⁶⁰ Other examples include the following opportunities:

- Promote research, development, and the demonstration of innovative technologies.
- Develop actual and virtual knowledge platforms and centers.
- Build the awareness and capacity of key public and private stakeholders to engage
- Improve labeling and accreditation schemes (for example establish energy efficiency codes, training for suppliers).⁶¹

59 See Prosol Tunisia (Trabacchi et al., 2012),

60 See DETERing Deforestation in the Brazilian Amazon: Environmental Monitoring and Enforcement (Assunção et al., 2013),

61 Another example came from, for instance, KfW Efficiency House Standard which has now become a uniform national standard for energy efficiency (KfW, 2013).

5. The Multi-billion Dollar Question

5.1 The Financing Gap

CPI acknowledges there are significant political sensitivities and methodological challenges associated with how to account for a climate finance 'number.' **CPI's Landscape studies aim to improve understanding about where the world stands in relation to best estimates of low-carbon and climate-resilient investment needs.** We characterize the difference between needs assessments, and available finance, as the climate financing gap.

Most recent literature on investment needs focuses on additional or incremental investment needs beyond the business-as-usual baseline, and targets standard policy drivers such as economic growth and development. Seen this way, the financing gap equals the incremental costs gap. However as Table 3 illustrates, estimates vary widely depending upon the parameters and assumptions adopted in the baseline such as technology costs, geographic, sectoral, and activity coverage, the range of mitigation or adaptation responses options considered, policies, and timescale.⁶² Consequently estimates of investment needs in the literature are not fully comparable among themselves, or with our assessment of available climate finance flows.

Estimates of investment needs are relevant because they point qualitatively to the potential financing gap.

The investment needs identified in Table 3 are linked to a 450 ppm CO_{2e} stabilization scenario, the level of greenhouse gas concentrations thought consistent with limiting temperature increase to below 2° Celsius above pre-industrial levels. Recent estimates of annualized additional investments needed for mitigation range from an average of USD 490 billion per year in 2010-2020 to USD 910 billion per year in the period 2010-2050.⁶³ Estimates for adaptation investment needs are even less certain,⁶⁴ and range from USD 4 billion per year to well over USD 100 billion per year in 2030. Most adaptation costs concern infrastructure investment in developing

countries,⁶⁵ and would likely rise significantly without mitigation (UNDESA, 2011). Adding to uncertainty about where we stand in relation to these projections, estimates of climate finance directed toward adaptation are uncertain, given difficulties defining adaptation as well as large information investment data gaps, particularly in terms of private investment flows.

Despite the range of uncertainty, *Landscape 2013* shows that in global terms, climate finance has fallen short of the lower bound of annualized investment needs by some hundreds of billions, for successive years. In addition to the implication that 'catch up' is necessary to get the world on track, we note growing evidence that the world's emissions pathway already exceeds the 2° Celsius threshold.

Another way to conceive the financing gap is as a gap between incentives for low-carbon investment, and cheaper, higher carbon alternatives. *Landscape 2013* provides some insights into instruments public actors have at hand to close the incentive gap, and tracks the level of private flows toward a range of sectors. Even so, a robust leverage factor between public and private money is needed to estimate outstanding shares of public and private investment needed to close the gap.

In considering the financing gap, it is also useful to consider the scale of public support that stands behind fossil fuels production and use, which creates price distortion with clean energy alternatives. For example:

- OECD (2013e) inventoried over 550 measures that support fossil-fuel production or use in its 34 member countries and estimated these had an overall value of USD 55-90 billion per year between 2004 and 2011⁶⁶;
- IEA (2013) estimated that fossil fuel subsidies in 2011 reached approximately USD 523 billion for developing and emerging economies alone. By way of comparison, the same study estimated global renewables subsidies of USD 88 billion, including USD 20-22 billion for biofuels; and
- A forthcoming OECD study assessing tax benefits for company car use and parking across OECD countries has made a preliminary finding

65 According to UNFCCC (2007), the largest cost item seems to be infrastructure investment, which accounts for 75% of total costs in the in the upper bound estimate.

66 The OECD refers to 'support measures' rather than subsidies, in part because these measures also include tax expenditures which are not direct subsidies.

62 For example figures provided by the IEA mostly cover the energy sector.

63 This figure peaks at USD 1,165 billion if only the period 2030-2050 is considered for the calculation of the yearly investment needs (IEA, 2012b).

64 Comparability is an issue in particular for adaptation, where the wide range of estimates is indicative of the analytical difficulty of defining adaptation, and of the implementation of different estimate techniques (Grantham, 2009). Some studies focus on the cost of climate-proofing current investment flows, and other on specific sectors, while estimates also depend on the assumptions made for various levels of CO₂ atmospheric concentration and associated temperatures increase (UNDESA, 2011).

Table 3: Average annualized additional investment needs for mitigation and adaptation (USD billion/year)

	2020	2030	2035	2050	SECTOR / METHODOLOGY
MITIGATION					
IEA (2012a)			640		EE, Renewables, Nuclear, CCS, Transport
IEA (2012b)	490	655		910	EE, Renewables, Nuclear, CCS, Transport
IIASA (2012)				400-900	EE, Renewables, Nuclear, CCS, Energy infrastructures, Transport
McKinsey & Co. (2010)	610*	1076*			EE, Renewables, Low-carbon Tech., Behavioral change
WEF (2013)		700			Energy supply & demand, Transport, Forestry, Buildings and Industry
ADAPTATION					
Parry et al. (2009)		4-100			Various studies: Cost of "climate-proofing" current investment flows
UNFCCC (2007)		49-171			Agriculture, Forestry, Fisheries, Water supply, Human health, Coastal zones, Infrastructure, Ecosystems
World Bank (2010)				70-100 [^]	Agriculture, Forestry, Fisheries, Infrastructure, Water, Coastal zones, Health, Ecosystems, Weather events

Figures represent average annual additional investment requirements up to the year of reference indicated. Aggregate investment needs covering multiple years were annualized.

(*) Oanda, 2013, Average annual USD to EUR 2005 exchange rates = 1.2454 <http://www.oanda.com/lang/it/currency/historical-rates/>

([^]) Refers to public sector budgetary costs (WB, 2010)

that such benefits amount to more than USD 30 billion per year (OECD, 2013f, forthcoming).

We stress these estimates are not truly comparable either among themselves or with the *Landscape* climate finance estimates. However they illustrate that public support for fossil fuel production and use outweighs public investment in low-carbon alternatives by vast amounts. As private investors – from the largest corporate players through to individual households – will not invest in low-carbon alternatives as long as they have strong incentives to make business-as-usual decisions, continued prioritization of fossil fuels (even where growing amounts are devoted to ‘greening’ fossil fuel technologies) represents both an opportunity cost, and more importantly, an opportunity lost.

To date there has been insufficient analysis on the scale of, or interplay between, investment in conventional energy sources (i.e., ‘brown investment flows’) by both governments and private actors, and its implications for low-carbon growth in the medium to long-term. More work is needed. This work should include consideration of the investment impacts of locking in high-emissions development pathways, as well as new risks associated with stranded assets.

5.2 Opportunities to Improve Understanding about International Climate Finance

In global terms, *Landscape 2013* finds that climate finance investments have plateaued at levels well below what is needed to achieve a 2° Celsius temperature stabilization pathway. In the absence of clarity about some key factors that underpin calculations of climate finance, CPI has applied a range of appropriate definitions where these exist, and taken steps to refine these where opportunity or need emerges. Where methodological gaps exist, we have attempted to develop approaches, for example, to calculate deep ownership structures (see Methodology for examples). In the absence of agreement, and against the background of divergent domestic and international political views, it is inevitable that disagreements will arise about the methods used to calculate global climate finance flows. This section identifies some of the most important definitional and methodological issues that result in information gaps, and opportunities for policymakers to address these going forward.

5.2.1 Climate Finance Tracking Issues

The application of different definitions associated with climate finance can yield vastly different calculations

of climate finance flows and its use. The question of what constitutes climate finance should not be inherently political, even if derivative questions about which countries and sources should contribute and count, and on what basis, to whom, and for what, inevitably are. While information on climate finance has significantly improved, existing efforts to track or measure available financial resources remain incomplete and inconsistent (Buchner et. al., 2011a) which means resource and policy decisions are made on the basis of unreliable data and large information gaps. **An agreed-upon multilateral definition, or set of definitions, of 'climate finance' would encourage more consistent reporting and facilitate better analysis of the overarching landscape** (Buchner et. al., 2011a, Clapp et.al., 2012). Across three landscape studies we have observed the following:

- Restricting flows to climate specific flows, as opposed to climate relevant flows, will help to exclude investments that contribute, even indirectly, to emissions growth.
- Public and private sources are relevant and play distinctive roles toward overall investments. Both sources of investment should be tracked. In this context, a better understanding of DFI activities would help ensure effective use of their money, and help avoid potential crowding-out of private action.
- Transparent methodologies for attributing ownership of finance flows need to be developed. This is particularly so for flows contributed by DFIs, and for private companies with public shareholders.
- To help understand if investments are growing beyond business-as-usual, we need to develop approaches to calculate how much public finance is paying to cover incremental investment costs and policy-induced revenues or reduced outflows, and the amount of private finance subsequently mobilized.
- Better tracking is needed to capture equity investments that are linked to concessional financing.
- To generate a transparent basis for informing specific political questions debated domestically and internationally, the scope of tracking and monitoring must be truly comprehensive. It must include private finance flows, domestic and 'South-South' flows, the instruments used, actual disbursement levels (as compared with commitment levels) and final uses. Gaps are especially significant on the private finance tracking side where tracking ultimately relies on voluntarily-disclosed data (press releases, financial statements, presentations, etc.) or the existence of public support mechanisms that require disclosure of project details (clean development mechanism, renewables tender, etc.).
- Information gaps concerning sectors and final uses must be addressed. *Landscape 2013* reports significant information gaps that exist in respect of adaptation and energy efficiency. Sectoral boundaries need to be clarified and improvements made to how private finance is tracked through these sectors – noting that the adaptation and energy efficiency finance captured by this landscape is exclusively from public actors.

An agreed-upon definition or set of definitions might also encourage dialogue between international and domestic organizations and initiatives actively tracking and monitoring uses of climate finance. This might likewise inspire governments and institutions involved in the management and delivery of climate finance, to report financial information consistently and comprehensively.

6. Conclusions and Ways Forward for Policymakers

The amount of climate finance available to transition toward a low-carbon and climate-resilient global economy has plateaued at around USD 359 billion, or USD 1 billion per day - far below estimates of what is needed. In 2012,⁶⁷ total climate finance flows amounted to USD 356-363 billion (USD 359 billion on average), falling slightly from USD 364 billion in 2011. This is far below estimates of what is needed; the International Energy Agency projects that an additional investment of USD 5 trillion is required to 2020 for the clean energy transition consistent with limiting global warming to below 2° Celsius (IEA, 2013). And with climate finance levels falling short for another successive year, the goal of shifting the global economy onto a below 2° stabilization pathway may be slipping further away.

Public actors, resources, and money played a central role in the global climate finance system. In 2012, the public sector contributed USD 135 billion (38%) toward global climate finance, facilitating private investment.

Public investments of USD 135 billion filled significant funding gaps and provided incentives for private investments, which again provided the majority - with USD 224 billion. Even in the context of tight national budgets, public resources paid for climate-relevant public goods and services, and provided incentives that help level the carbon playing field for private investors, ranging from large project developers and corporations to individual households. *Landscape 2013* found that governments around the world invested USD 41 billion as direct investments that sat alongside private investments to lower costs, reduce risks, and speed-up the diffusion of renewable technologies. As with last year's report, we find that in 2012, governments, as the ultimate owners of seemingly private investment structures, also contributed indirectly USD 37 billion to climate finance.

67 While our estimates for some public flows contain ranges, estimates for private flows do not. Estimates that aggregate public and private flows therefore represent a combination of absolute flows of private investments in 2012, average estimates for ODA and Fast Start Finance in 2011, and investments by Development Finance Institutions and other public contributions in 2012.

Development Finance Institutions⁶⁸ played a cornerstone role, raising and channeling about one third, or USD 121 billion of global climate finance. DFIs delivered a varied toolbox of financial instruments for national and international investments. Along with government, they provided **grants and low-cost debt** to create capacity and reduce investment costs, and **equity** to promote the diffusion of early stage technology. DFIs also played an **important role in addressing risk gaps** in developed and developing countries, stepping in where private insurance companies and investors were not yet able to cover risks.

Landscape 2013 also captured government budgets' contribution of USD 9-16 billion (USD 12 billion on average) through government bodies, to support low-carbon and climate-resilient development. This figure includes USD 4-11 billion (USD 8 billion on average) of climate-marked government flows from developed to developing countries in 2011 (excluding DFI contributions). Dedicated national and multilateral climate funds contributed a further USD 1.6 billion to developing countries, mostly funded through developed country contributions. While climate funds are not currently a major player, their importance is likely to grow given the emergence of the Green Climate Fund.

Based on the data captured in *Landscape 2013*, **public resources also played fundamental roles in financing adaptation (USD 20-24 billion)**. The majority of this flow was international finance invested in developing countries. The predominance of the public sector in delivering adaptation finance stems from long standing expertise in providing development assistance, which has strong overlaps with climate resilience. That said, we acknowledge that there are serious information gaps about the role of the private sector in financing adaptation. This is due to deficiencies in tracking, but also due to deeper systemic problems around defining what qualifies as adaptation finance. *Landscape 2013* data indicates public actors also dominated energy efficiency investments (USD 32 billion), though we note that data for private investments in energy efficiency activities is not readily available.

68 Development Finance Institutions or DFIs, include Multilateral, Bilateral, and National Finance Institutions.

Whether large corporate asset owners or household users, private investors typically only invest their money when returns outweigh the costs. There are opportunities to scale-up climate finance by improving the investment incentives for a diverse group of private actors.

Of private actors, **project developers contributed the largest individual share, USD 102 billion, or more than one quarter of total global climate finance flows.** They made 38% of global investments in renewable energy, signaling their important role in transforming the world's energy supply. A range of technology, financial, and policy risks impact the investment approaches of this diverse family of actors in what is traditionally a politically sensitive sector.

Fully or partially state-owned energy actors played a very important role in helping private actors address risks and diffuse technology. Despite their government backing, they are classified as private actors, and were responsible for deploying **approximately USD 66 billion of the total large-scale renewable energy investments.** This was most prevalent in developing countries, and especially so in China where entities with some degree of state-ownership carried out 83% of the country's domestic investment (USD 43 billion).

Households in developed and developing countries contributed a significant share of global climate finance - USD 33 billion - which went toward distributed energy generation and heating for their own use (mostly small-scale solar). Public actors played an important role in unlocking households' investment appetite, mainly through revenue support mechanisms, tax savings, and cheap debt.

Landscape 2013 also indicates that currently, there is little investment from institutional investors, including insurance funds, pension funds, foundations, and endowments. While institutional investors manage more than USD 70 trillion in assets, contributions (and indeed their potential) is far below this amount. In 2012, it was possible to track only their primary investments in developed countries, which were worth **USD 0.4 billion.** Their limited engagement presents an opportunity for public actors to develop new instruments and enabling environments to tap these sources of finance, addressing their long-term investment needs.

While in general terms, private investment has slowed, there is some cause for optimism. BNEF large-scale renewable energy investment data (BNEF, 2013) suggests declining investment in a smaller number of large scale renewable energy projects in 2012. Because of data limitations, it is not possible to attribute this decline unequivocally to any one factor: possible explanations range from falling technology costs and thus increased deployment, to real declines in investment activity (possibly due to a range of causes such as reduced investor appetite, declining incentives, etc.). The increase in deployed capacity (from 67 GW in 2011, to 70 GW in 2012) at lower unit costs (falling from USD 2.6 million/MW installed in 2011, to USD 2 million/MW in 2012) implies that private investors might have achieved better cost efficiency, possibly from growing economies of scale.

Investors show a striking preference for financing domestic projects, suggesting that well-articulated national policies are critical to increasing climate finance globally.

Overarching climate finance flows were almost evenly shared between developed and developing countries. However, 76% of climate finance was domestic: It originated in the same country it was invested. This applied to 72% of finance in developing countries and 81% in developed ones. The potential for domestic policymakers to influence these flows by enabling environments that unlock private investments is therefore high — either by providing appropriate incentives and regulatory frameworks for private actors, or by investing directly alongside them in diffusing low-carbon and climate resilient options. For example, *Landscape 2013* highlights the importance of government-backed entities, such as National Development Banks (NDBs), in making direct investments in pursuit of national low-carbon development strategies. This was particularly the case in developing countries where NDBs contributed the largest share of domestic investment.

Policymakers have a critical role in influencing the risk-return equation: they can cause, control, alleviate, or help mitigate risk; at the same time, the use of public resources and policies allows to influence returns.

Risk, whether real or perceived, appears to be a critical issue in climate investments. Most investment was domestic. Of the USD 84 billion that flowed between countries, a significant amount was private money flowing between developed countries. On the other hand, public sector money made up the vast majority of developed to developing country flows. These figures illuminate a bias by private investors toward environments that are more familiar and perceived to be less risky, and suggest there are opportunities for policymakers to increase finance by alleviating or helping mitigate risk.

Ways Forward

With the global climate financing gap growing year on year, *Landscape 2013* highlights ways in which governments can make real progress in scaling up low-carbon, climate-resilient investment. There is a unique opportunity now to:

1. Develop well-articulated domestic enabling environments, to stimulate global investment flows.
2. Recognize that private actors prefer familiar policy environments where the perception of risk is lower.
3. Continue to invest in, and ensure effective use of, international public resources, which play a critical role in facilitating low-carbon and climate resilient investments, particularly in developing countries.
4. Encourage demand for and assess the effectiveness of financing instruments offered by domestic and international public intermediaries such as Multilateral, Bilateral, and National Finance Institutions.
5. Address risk at scale, including through the provision of new and improved risk instruments.
6. Close important knowledge gaps that continue to impede our ability to track or evaluate climate finance flows.

Such actions could revive efforts to scale up climate finance, mobilize more private investment in climate-related activities, and help mainstream the financing of green and low-emissions development.

CPI remains committed to improving the understanding and transparency of today's climate finance landscape in support of these efforts.

7. Index of Acronyms

ACEEE	American Council for an Energy-Efficient Economy	EXIM	Indonesia Exim Bank
AFD	Agence Française de Développement	FDI	Foreign Direct Investment
AfDB	African Development Bank	FINNFUND	Finnish Fund for Industrial Cooperation
AFOLU	Agriculture, Forestry and Other Land Use	FMO	Netherlands Development Finance Company
AsDB	Asian Development Bank	FS	Frankfurt School
BANCOLDEX	Banco de Comercio Exterior de Colombia S.A.	FSF	Fast-Start Finance
BANOBRAS	Banco Nacional de Obras y Servicios Públicos SNC	GCF	Green Climate Fund
BCIE	Banco Centroamericano de Integración Económica	GEF	Global Environment Facility
BE	Banco del Estado de Chile	GFEEREF	Global Energy Efficiency and Renewable Energy Fund
BFI	Bilateral Finance Institution	GHG	Greenhouse Gas Emissions
BIO	Belgian Investment Company for Developing Countries	GW	Gigawatt
BN	Billion	HBF	Heinrich Böll Foundation
BNDES	Brazilian Development Bank	HBOR	Croatian Bank for Reconstruction and Development
BNEF	Bloomberg New Energy Finance	IADB	Inter-American Development Bank
BSTDB	Black Sea Trade and Development Bank of Greece	IBRD	International Bank for Reconstruction and Development
CABEI	Central American Bank for Economic Integration	IDA	International Development Association
CAF	Corporación Andina de Fomento - Development Bank of Latin America	IDB	Inter-American Development Bank
CCS	Carbon capture and storage	IDFC	International Development Finance Club
CDB	China Development Bank	IDFC	International Development Finance Club
CDC	CDC Group	IEA	International Energy Agency
CDDE	Capacity Development for Development Effectiveness Facility for Asia and Pacific	IFC	International Finance Corporation
CDG	Caisse de Dépôt et de Gestion, Morocco	IIASA	International Institute for Applied Systems Analysis
CDM	Clean Development Mechanism	IIED	International Institute for Environment and Development
CIF	Climate Investment Funds	IMF	International Monetary Fund
COFIDES	Compañía Española de Financiación del Desarrollo	IRENA	International Renewable Energy Agency
COP	Conference of the Parties	JBIC	Japan Bank for International Cooperation
CPEIR	Climate Public Expenditure and Institutional Review	JICA	Japan International Cooperation Agency
CRS	Creditor Reporting System	KfW	Kreditanstalt für Wiederaufbau - German Development Bank
CSP	Concentrated Solar Power	KoFC	Korea Finance Corporation
CTF	Clean Technology Fund	KWh	Kilowatt Hours
DAC	Development Assistance Committee	LDCF	Least Developed Countries Fund
DEG	KfW Deutsche Investitions- und Entwicklungsgesellschaft	MDB	Multilateral Development Banks
DFI	Development Finance Institutions	MDG	Millennium Development Goals
EBRD	European Bank for Reconstruction and Development	MENA	Middle East and North Africa
ECA	Export Credit Agency	MTFO	Multi-Partner Trust Fund Office
EDF	Électricité de France	MW	Megawatt
EE	Energy efficiency	MWh	Megawatt hour
EIB	European Investment Bank	NADB	North American Development Bank
EPC	Engineering, procurement and construction	NAFIN	Nacional Financiera
EU	European Union	NDB	National Development Bank
EU ETS	European Union Emissions Trading System	NE	Note estimated
		NGO	Non-governmental organizations

NIB	Nordic Investment Bank
Norfund	Norwegian Investment Fund for Developing Countries
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
OeEB	Development Bank of Austria
OPIC	Overseas Private Investment Corporation
PE	Private equity
PPA	Power Purchase Agreement
PPCR	Pilot Program for Climate Resilience
ppm	Parts per million
PV	Photovoltaic
REAF	Renewable Energy Asia Fund
REDD	Reducing Emissions from Deforestation and Forest Degradation
SASAC	State-owned Assets Supervision and Administration Commission
SCCF	Special Climate Change Fund
SIDBI	Small Industries Development Bank of India
SIFEM / OBVIAM	Swiss Investment Fund for Emerging Markets
SIMEST	Società Italiana per le Imprese all'Estero
SOE	State-Owned Enterprise
TSKB	Industrial Development Bank of Turkey
UK	United Kingdom
UN	United Nations
UN AGF	UN High Level Advisory Group on Climate Change Financing
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP FS	United Nations Environment Programme - Frankfurt School
UNFCCC	United Nations Framework Convention on Climate Change
UNFCCC-PSI	United Nations Framework Convention on Climate Change - Private Sector Initiative
US	United States
USD	United States Dollars
VAT	Value added tax
VC	Venture Capital
VEB	Vnesheconombank, Russia
WB	World Bank
WBG	World Bank Group
WEF	World Economic Forum
WF&W	Watson, Farley and Williams

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Annex A. Development Finance Institutions

MULTILATERAL DEVELOPMENT BANKS		SOURCE OF DATA
AfDB	African Development Bank	Self-reporting via CPI survey
AsDB	Asian Development Bank	Self-reporting via CPI survey
IADB	Inter-American Development Bank	Self-reporting via CPI survey
EBRD	European Bank for Reconstruction and Development	Self-reporting via CPI survey
EIB	European Investment Bank	Self-reporting via CPI survey
IFC	International Finance Corporation	Self-reporting via CPI survey. (Please note: figures in the report include IFC investments activities only).
WB	World Bank (IDA and IBRD)	Self-reporting via CPI survey
NIB	Nordic Investment Bank	BNEF (2013)
BILATERAL FINANCE INSTITUTIONS		SOURCE OF DATA
AFD	- Agence Française de Développement - Proparco	Self-reporting via CPI survey
BIO	Belgian Investment Company for Developing Countries	Self-reporting via CPI survey
CDC	CDC Group plc - UK	Self-reporting via CPI survey
COFIDES	Compañía Española de Financiación del Desarrollo	Self-reporting via CPI survey
DEG	KfW Deutsche Investitions- und Entwicklungsgesellschaft	Self-reporting via CPI survey
FINNFUND	Finnish Fund for Industrial Cooperation Ltd	Self-reporting via CPI survey
FMO	Netherlands Development Finance Company	Self-reporting via CPI survey
JBIC	Japan Bank for International Cooperation	BNEF (2013)
JICA	Japan International Cooperation Agency	Self-reporting via CPI survey
KfW	KfW Entwicklungsbank	Self-reporting via CPI survey
NADB	North American Development Bank	BNEF (2013)
Norfund	Norwegian Investment Fund for Developing Countries	Self-reporting via CPI survey
OeEB	The Development Bank of Austria	Self-reporting via CPI survey
OPIC	Overseas Private Investment Corporation	Self-reporting via CPI survey
SIFEM / OBVIAM	Swiss Investment Fund for Emerging Markets	Self-reporting via CPI survey
SIMEST	Società Italiana per le Imprese all'Estero	Self-reporting via CPI survey

NATIONAL & SUB-REGIONAL DEVELOPMENT BANKS		SOURCE OF DATA
BANOBRAS	Banco Nacional de Obras y Servicios Publicos SNC	BNEF (2013)
BNDES	Brazilian Development Bank	Self-reporting via CPI survey
CAF	Development Bank of Latin America	Self-reporting via CPI survey
KfW	KfW Mittelstandsbank; KfW Privatkundenbank; KfW Kommunalbank; KfW Ipex-Bank	Self-reporting via survey; KfW Annual Report 2012; KfW Financial Report 2012
CDB	China Development Bank	Data and elaborations based on Ecofys-IDFC (2013)
BANCOLDEX	Banco de Comercio Exterior de Colombia S.A.	
BCIE/CABEI	Central American Bank for Economic Integration	
BE	Banco del Estado de Chile	
BSTDB	Black Sea Trade and Development Bank of Greece	
CDG	Caisse de Dépôt et de Gestion, Morocco	
Exim	Indonesia Exim Bank	
HBOR	Croatian Bank for Reconstruction and Development	
KoFC	Korea Finance Corporation	
NAFIN	Nacional Financiera	
SIDBI	Small Industries Development Bank of India	
TSKB	Industrial Development Bank of Turkey	
VEB	Vnesheconombank, Russia	

Annex B. Climate Finance: Breakdown into Final Uses

	PRIVATE	PUBLIC	TOTAL CLIMATE FINANCE	TOTAL %
Total renewable energy generation	224	41	265	74%
- Solar	130	6	136	38%
- Wind	81	4	84.6	24%
- Biomass & waste	8	0.8	8.8	2%
- Biofuels	3	0.2	3.5	1%
- Small hydro	2	1	3.1	1%
- Other technologies/unclassified	NE	29	29	8%
Energy efficiency	NE	32	32	9%
Other mitigation measures	NE	40	40	11%
TOTAL MITIGATION	224	113	337	94%
Water supply and management	NE	10	10	3%
Agriculture, livestock and fishing, forestry, land use management, natural resource management	NE	3	3	1%
Infrastructure and coastal protection	NE	2	2	1%
Disaster risk management	NE	3	3	1%
Capacity-building	NE	0.2	0.2	0.1%
Other adaptation measures	NE	4	4	1%
TOTAL ADAPTATION	NE	22	22	6%
TOTAL CLIMATE FINANCE 2012	224	135	359	100%

Annex C. Overview of Climate Funds

CLIMATE FUNDS	FUNDING APPROVALS (USD MILLION)			SOURCE FOR HISTORICAL CONTRIBUTIONS
	2011	2012	'11-'12 % CHANGE	
Adaptation Fund (AF)	86	69	-19%	Not tracked
Clean Technology Fund (CTF)	531	413	-22%	CIF, 2013c
Congo Basin Forest Fund (CBFF)	57	21	-63%	Not tracked
Forest Carbon Partnership - Readiness Fund (FCPF-RF)	21	7	-67%	Not tracked
Forest Investment Program (FIP)	51	18	-65%	CIF, 2013d
GEF Trust Fund (GEF 5)	170	238	40%	GEF, 2013b
Global Climate Change Alliance (GCCA)	77	48	-38%	Not tracked
Global Energy Efficiency and Renewable Energy Fund	17	13	-25%	Not tracked
Least Developed Countries Fund (LDCF)	32	167	419%	World Bank Group, 2013b
MDG Achievement Fund	15	4	-74%	Not tracked
Multilateral Fund of the Montreal Protocol	NE	118		Not tracked
Pilot Program for Climate Resilience (PPCR)	155	192	24%	CIF, 2013d
Scaling Up Renewable Energy Program (SREP)	193	28	-85%	CIF, 2013d
Special Climate Change Fund (SCCF)	18	41	127%	Not tracked
UN-REDD	35	12	-66%	Not tracked
Amazon Fund	27	89	231%	Amazon Fund, 2013b
Guyana REDD Investment Fund	0.4	12	2889%	Not tracked
Bangladesh Climate Change Resilience Fund	NE	54		Not tracked
Indonesia Climate Change Trust Fund	0	0		Not tracked
Bangladesh Climate Change Trust Fund	NE	66		Khan et al. 2012
Grand Total	1459	1610	10%	

Sources:

2011 funding approval numbers: CPI's Landscape 2012.

2012 funding approval numbers: Principal sources: ODI/HBF (2013), BCCRF (2013), Khan et al. (2012), GRIF (2012), GRIF (2013), UNEP 2012a, 2012b, 2012c. Supporting sources: Adaptation Fund (2013), Amazon Fund (2013), CIF (2012a), CIF (2012b), CIF (2013e), GEF (2013a), MDG Achievement Fund (2013), UN REDD (2013).

Notes:

The main aim of the Multilateral Fund of the Montreal Protocol is reducing the emissions of ozone-depleting substances. The Bangladesh Climate Change Trust Fund estimate is based on 'block budgetary allocation' of USD100 million in 2012, 66% of which is allocated to the implementation of projects/programmes (Khan, 2012). Co-funding, often provided by multilateral organizations, is not included in the above estimates of climate fund money. NE = not estimated.

Annex D. The Coverage of Climate Finance Flows in the Landscape 2013

The *Landscape 2013* captures financial commitments of public and private actors targeting climate change mitigation and adaptation interventions at the domestic and international level, including those directed to capacity building and enabling environment measures. Developed countries are defined as members of the OECD at the end of 2012. In the table immediately below, we define what type of flows we measure, and the geographical scope of our coverage.

TYPE OF FLOWS
<ul style="list-style-type: none"> • Public and private flows • Capital investment costs and grants • Gross flows
GEOGRAPHICAL SCOPE*
<ul style="list-style-type: none"> • Financial flows from developed to developing countries (North-South) • Financial flows from developed to developed countries (North-North) • Developed countries domestic climate finance flows (North) • Financial flows from developing to developing countries (South-South) • Developing countries domestic climate finance flows (South) • Financial flows from developing countries to developed countries (South-North)

In the tables on the following pages we also provide sectoral breakdowns for what constitute climate change mitigation and adaptation relevant actions. We define mitigation and adaptation as follows.

An activity classifies as climate change mitigation if it:

- Contributes to reducing or avoiding greenhouse gas (GHG) emissions, including gases regulated by the Montreal Protocol; or
- Enhances GHG sequestration through the enhancement of sinks and reservoirs; or
- Promotes the integration of mitigation concerns in recipient countries' development objectives through institutional development, capacity building, strengthening the policy and regulatory frameworks.

An activity classifies as climate change adaptation if it:

- Includes in the project design documentation the explicit aim of reducing the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience; or
- Aims to contribute to reducing the vulnerability or strengthening the resilience of communities, goods or ecosystems to climate variability and change, and demonstrate its potential contribution via dedicated analysis; or
- Promotes the integration of adaptation concerns in recipient countries' development objectives through institutional development, capacity building, strengthening the policy and regulatory frameworks.

*The geographical distribution of climate finance per regions build on work by the World Bank Group. See: <http://data.worldbank.org/about/country-classifications/country-and-lending-groups>

SECTORAL BREAKDOWN FOR MITIGATION-RELEVANT ACTIVITIES WITH EXAMPLES AND EXCLUSIONS

RENEWABLE ENERGY GENERATION

- Electricity (or heat) production from wind, solar, hydro, tidal, geothermal, biomass and biofuels

The category excludes renewable energy Research & Development and manufacturing, i.e. the production of equipment for renewable energy generation. The former because it might not ultimately result in emission reductions, while the latter because of double counting issues and difficulties in attributing it to a specific source of funding.

Large hydro (> 50 MW) generation is also excluded.

ENERGY EFFICIENCY

- Demand-side energy efficiency in buildings and industry (and transport if not modal shift, e.g. vehicles retrofit or replacement with efficient or electric vehicles).
- Retrofit of transmission lines, distribution systems or substations to reduce energy use or losses.

Efficiency improvements to fossil fuel-fired power plants are excluded.

PROCESS EMISSIONS IN INDUSTRY AND FUGITIVE EMISSIONS

- Reduction of non-energy GHGs emissions resulting from industrial process improvements and cleaner production (e.g. cement, chemical, etc.)
- Reduction of gas flaring or methane fugitive emissions in the oil and gas industry; coal mine methane capture.

SUSTAINABLE TRANSPORT MODES SUPPORTING MODAL SHIFT (MITIGATION-RELEVANT PROJECTS ONLY)

- Public and freight transport systems that contribute to reducing traffic and/or emissions, e.g. metro, trains, tracks, tramways, subways, buses
- Non-motorized urban transport (bicycles and pedestrian mobility).

AGRICULTURE, FORESTRY, LAND USE AND LIVESTOCK MANAGEMENT (MITIGATION-RELEVANT PROJECTS ONLY)

- Afforestation
- Reforestation
- Forest management
- Reduced deforestation
- Enhanced soil carbon sequestration
- Restoration of organic soils and degraded lands
- CO₂ / methane / N₂O reduction via improved agricultural practices
- Crop, grazing land and livestock management

WASTE AND WASTE WATER (MITIGATION-RELEVANT PROJECTS ONLY)

- Waste-to-energy projects and projects aimed at reducing methane emissions by e.g., shifting from open dumps and lagoons to municipal / industrial waste (water) treatment, including switch to composting, waste incineration, biogas plants, and landfill gas capture.

CAPACITY-BUILDING

- Enabling environment activities, awareness raising, technical assistance, planning, policy development and implementation.

SECTORAL BREAKDOWN FOR ADAPTATION-RELEVANT ACTIVITIES WITH EXAMPLES

WATER SUPPLY AND MANAGEMENT

- Improvement in catchment management planning and regulation of abstraction;
- Domestic rainwater harvesting equipment and water storage
- Rehabilitation of water distribution networks to improve water resources management to address changes in water flows, water quality, etc.

AGRICULTURE, FORESTRY, LAND USE MANAGEMENT, AND NATURAL RESOURCE MANAGEMENT

- Reforestation programs
- Provision of information on crop diversification options in order to strengthen farmers' resilience.
- Management of slopes and basins to avoid/reduce the impacts caused by soil erosion.
- Adoption of sustainable aquaculture techniques to face changes in fish stocks..

INFRASTRUCTURE AND COASTAL PROTECTION

- Building of dykes to protect infrastructure to adapt to the loss and damage caused by storms and coastal flooding, and sea level rise
- Mangrove planting to build a natural barrier to adapt to increased coastal erosion and to limit saltwater intrusion into soils caused by sea level rise
- Improving the resilience of existing infrastructures e.g., water infrastructure, transport infrastructure, energy infrastructure and human settlements.

DISASTER RISK MANAGEMENT

- Early warning or emergency response systems to adapt to increased occurrence of extreme events by improving disaster management
- Construction or improvement of drainage systems to adapt to increase occurrence in floods
- Provision of insurance mechanisms against natural disasters in order to enhance the ability to cope with extreme weather events.

CAPACITY-BUILDING

- Enabling environment activities, awareness raising, technical assistance, planning, policy development and implementation.