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The Landscape of Climate Finance 2012

Climate Policy Initiative

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Preface

Mapping the landscape of climate finance across the world is a work in progress – we aim to provide the best possible information, but cannot claim to have captured everything. Comments and clarifications on the numbers, tracking methods, and sources are very welcome.

Executive Summary

Climate finance has been a key topic in recent international climate negotiations. Understanding how much and what type of finance is available to advance low-carbon growth and combat climate change at a global level is critical to scaling up finance and ensuring that resources are used effectively.

The *Landscape of Climate Finance 2012* estimates that annual global climate finance flows reached approximately USD 343-385 billion, on average USD 364 billion, in 2010/2011. This figure represents an increase from last year's report, mostly because of the expanded scope of this year's study (See Box ES-1), but still falls short of the investment required to limit global temperature rise to below two degrees Celsius. To achieve this goal, the International Energy Agency projects that incremental investment in the energy sector will need to reach USD 36 trillion over the period of 2012-2050 – or approximately USD 1 trillion each year.

The private sector contributed the majority of finance (USD 217-243 billion), mostly from developed country actors. The public sector (USD 16-23 billion) acted as a catalyst for private finance as well as providing bilateral aid to other developing countries. A large proportion of public finance reflected domestic government support toward structural changes in energy systems as engines of economic growth.

Public and private intermediaries, especially national development banks and commercial banks, played an important role raising and channelling global climate finance (USD 110-120 billion), as well as supporting the creation of an environment conducive to private sector investment.

Emerging economies were key recipients of climate finance, but were also important sources. Roughly one third of global mitigation investments were located in China, Brazil, and India. A significant share of this was raised domestically and invested in pursuit of national development mandates.

The following provides more detailed findings for each stage of the lifecycle of climate finance flows – from public sources, private sources, through to intermediaries, instruments, and uses.

Public Sources

Public sources ranged at least between USD 16-23 billion, or 5-6%, of the total amount. A large proportion of this amount reflects domestic government support to renewable energy projects and related infrastructure, as engines of economic growth.

Notwithstanding fiscal austerity and the tightening credit context, the **public sector increased funding for low-carbon, climate-resilient development.** Notably, bilateral Official Development Assistance grew from USD 9.5 billion in 2009 to an estimated USD 23 billion in 2010, reflecting the impact of fast-start finance pledges, which we estimate accounted for around 36% of Official Development Assistance in 2010. A large portion of this Official Development Assistance was subsequently intermediated by Bilateral Finance Institutions.

The *Landscape 2012* captures a broader range of public domestic flows in developed and developing countries. We found that **almost USD 11 billion was spent to support domestic renewable energy projects.** This spending was largely related to the tail end of the U.S. 'green' economic stimulus packages.

Furthermore, our investigation of the ownership structures of seemingly private investments indicates that **a large portion of these investments could be classified as governments' direct and indirect shareholdings and lending to private investment structures.** While we have not included these types of government investments in this year's finance flows diagram, our preliminary investigation identified **USD 51 billion** of public money sitting behind private investments, mostly in developing countries and in particular, China.

Box ES-1: Building an understanding of climate finance

CPI's *Landscape of Climate Finance 2011* represented the first attempt to map the lifecycle of climate finance flows across the globe. This year's study, the *Landscape 2012*, builds and improves upon our previous work using data from the latest year available, mostly 2011.

Compared with the *Landscape 2011*, the *Landscape 2012* aims to provide, to the extent possible: an expanded geographical scope, covering more flows between and within countries; expanded coverage of players, including broader coverage of private and public actors; a more detailed representation of private sector flows, with a better picture of sources and uses; an improved representation of uses by economic sector, including flows toward adaptation, improving land use, and preventing deforestation; and a better understanding of the final users of climate finance.

While the *Landscape 2012* provides real insights about global climate finance, this exercise is still a work in progress. External factors continue to hinder our collective understanding of the scope, true magnitude, nature, and effectiveness of global climate finance flows.

Future steps need to resolve the following key issues to build an understanding of climate finance:

- **Further expansion of scope and coverage.** Climate finance configurations differ by country and circumstance and a variety of actors with distinctive responsibilities exist. There needs to be a better understanding of the different actors, including the various players in the private sector, and Development Finance Institutions at the international, national and local levels. To inform the debate on climate finance effectiveness, better sectoral and geographic information on the uses of money is also required.
- **A net perspective.** The *Landscape 2012* takes both incremental costs and investment capital into account, and focuses on gross flows due to the difficulty of calculating incremental cost and net values of all finance flows. To create a more precise picture, we need more information about net flows and incremental costs compared to business-as-usual, or 'brown', investments.
- **A sound understanding of how effectively financial flows are being used, and whether they address the challenges posed by climate change and global needs.** In addition to CPI's effort to build up an evidence-based, bottom-up database of success and failure stories related to climate finance (the San Giorgio Group case studies*), there is a need to explore whether finance flows represented in the *Landscape* have been effective.
- **A benchmark on business-as-usual, or 'brown', finance flows.** To put climate finance estimates into perspective, comparable estimates of traditional polluting investments are a useful benchmark to check whether there is real progress towards a low-carbon, climate-resilient future.

A comprehensive picture of climate finance flows is essential to ensure that governments and policymakers have the knowledge and tools to spend their money most effectively. CPI remains committed to improving the understanding and transparency of today's climate finance landscape to help countries learn how to spend money wisely.

* The San Giorgio Group is a working group of key financial intermediaries and institutions actively engaged in green, low-emissions finance. Led by CPI, the World Bank Group, OECD, and CLP, the mission of the Group is to provide valuable insights on how to scale up climate finance and spend available resources more wisely. To this end, CPI is examining a series of case studies to determine how public money can catalyze and incentivize private investment in low-carbon technologies, and to provide lessons for scaling up green finance.

Private Sources

Private finance continued to represent the lion's share of total climate finance flows with USD 217-243 billion, or 63% of the total. Close to two-thirds of private finance came from developed countries.

In developed countries, private actors contributed USD 143 billion, with USD 68-70 billion in asset finance. Fifty-five percent of projects were financed on a balance sheet basis while 45% were funded through project-level finance. Commercial banks were the leading providers of project-level debt (77%), while domestic public budgets contributed around 17%, and corporate players contributed around 6%. In developed countries, **domestic private actors contributed the most to overall asset finance investment flows (84%).** Investment by private actors from other OECD members (almost exclusively developed countries) represented around 12% of investment, and investment by private actors from non-OECD countries made up the remaining 4%.

In developing countries, private actors contributed USD 85 billion, with USD 64-87 billion in asset finance. Four out of five projects were financed on a balance sheet basis. This headline obscures important country-specific trends, such as the role of National Development Banks in encouraging private investments at the local level. In particular, the Brazilian National Development Bank (BNDES) played a central role in financing wind power generation in Brazil. **We estimate that domestic private actors contributed up to 83% of private investments in developing countries.** Private investors from OECD countries contributed 15% while non-OECD actors made up the remaining 2%.

The **inclusion of small-scale renewable energy finance** (almost exclusively in developed countries) in the *Landscape 2012* highlights the significant contribution of households and corporate actors (USD 83 billion).

Intermediaries

Public and private financial institutions played an important role in the climate finance landscape, raising and channelling USD 110-120 billion. Public intermediaries (such as Multilateral, Bilateral, and National Development Banks) distributed USD 77 billion, or about 67% of these resources. **Public intermediaries can also enable private investment and help make projects viable.**

Development Finance Institutions (multilateral, bilateral, and national) continued to play a pivotal role, distributing climate finance of around USD 77 billion. This represented about 21% of global climate finance flows. In addition, domestic and international development agencies played a critical role in channeling bilateral aid.

Increased international focus on the role of **National and Sub-regional Development Banks** made it possible to gather more detailed information about the climate finance flows and the role of these intermediaries in managing and disbursing funds. **Together with Bilateral Finance Institutions, these banks distributed the majority of intermediated climate finance (USD 54 billion)** and played a growing role enabling the transition to low-carbon and climate resilient development in the countries where they operate. In fact, 89% of total climate finance from National and Sub-regional Development Banks was invested in the country in which these institutions are located.

National Development Banks in emerging economies, such as the Brazilian and the Chinese development banks, channeled the largest share. Local budget contributions to climate compatible activities in these countries was particularly evident in Brazil where the Brazilian Development Bank's concessional support to renewable power generation projects reflected the government's backing for the Bank's operations, in the pursuit of its policy targets.

It is important to acknowledge the **complex interplay between actors at different stages of the lifecycle of climate flows.** Multilateral and bilateral entities tend to rely on national actors' closer proximity and knowledge of the local market, with the objective of channeling money more effectively. National actors, on the other hand, benefit from the expertise of international intermediaries to develop their capacity to assess, analyze, and structure green investment projects, or appraise the

risk profiles of developers. In turn, this allows national institutions to pass knowledge to the local banking system to unlock its financing potential and exploit its ability to reach a wide group of recipients.

Dedicated Climate Funds typically managed by multilateral, bilateral, and national intermediaries contributed at least USD 1.5 billion to overall flows.

Their importance is likely to grow given their capacity to catalyze and coordinate resources for co-financing, including at national levels.

Private commercial banks and infrastructure funds intermediated around USD 38 billion, including project-level debt and direct investments. Private intermediaries played a particularly critical role by providing the scale of finance and financial toolboxes able to address the specific needs of 'green' and innovative investment interventions (e.g. concentrated solar power, etc.). On the other hand, project developers provided equity capital and know-how.

Instruments

Our analysis of instruments indicates that most climate finance, USD 293-347 billion out of USD 364 billion, can be classified as investments in which public or private financial institutions had an ownership interest or claim – that is, money which has to be paid back – rather than as contributions to incremental costs.

Public intermediaries enabled otherwise unviable projects through the use of instruments such as concessional loans and grants.

Around USD 293 billion was in the form of market rate loans and equity, of which USD 262 billion had been made by the private sector. Green credit lines as well as support for institutional development were also intended to attract local financial institutions to on-lend to projects that would not otherwise be implemented and to favor private sector investment.

Public intermediaries enabled investments by filling capacity and viability gaps that prevented private investors from engaging in capital-intensive, riskier, and in the short-term, less profitable ventures. Public intermediaries delivered more than 60% of their financing through concessional loans and about 7% in grant form. Lowering the cost of debt in this way is essential

for low-carbon technologies to compete with traditional, fuel-based alternatives.

Beyond grants, loans, equity, and debt finance, **a variety of risk management instruments help to overcome risk barriers and encourage low-carbon technologies to scale up.** Public-private facilities and guarantees to assume regulatory, credit, or perceived technology risks, are just some of the instruments that can remove the risks private actors are not willing or capable of bearing.

Uses

Mitigation activities attracted USD 350 billion, mostly related to renewable energy and energy efficiency. Emerging economies were key recipients of climate finance. Close to 33% of mitigation-related finance was invested in China, Brazil, and India.

The majority of funding captured by the *Landscape 2012* was spent on mitigation activities. Compared to the *Landscape 2011*, there was progress in understanding adaptation finance due to increased tracking efforts. However, weaknesses in defining and tracking adaptation finance, partial reporting by some multilateral players, and the inability of existing efforts to capture private flows dedicated to such activities hampered our understanding of adaptation finance flows.

The bulk of financing captured went to renewable energy generation projects and energy efficiency, accounting for 85% and 4% of the total respectively. This reflects governments' low-carbon growth ambitions, the commercial viability of a broad range of proven technologies, the profit-driven character of private investments, and the data sources we had access to.

This report confirms that public financial institutions are playing an essential role in financing clean energy, allocating more than 60% of their intermediated financial flows to renewable energy and energy efficiency. They are also essential for financing adaptation measures, contributing up to USD 11 billion and, even more importantly, managing and implementing some of the relevant adaptation funds.

The allocation of climate finance between developed and developing countries was relatively balanced, with USD 193 billion, or 53%, going to projects in developed

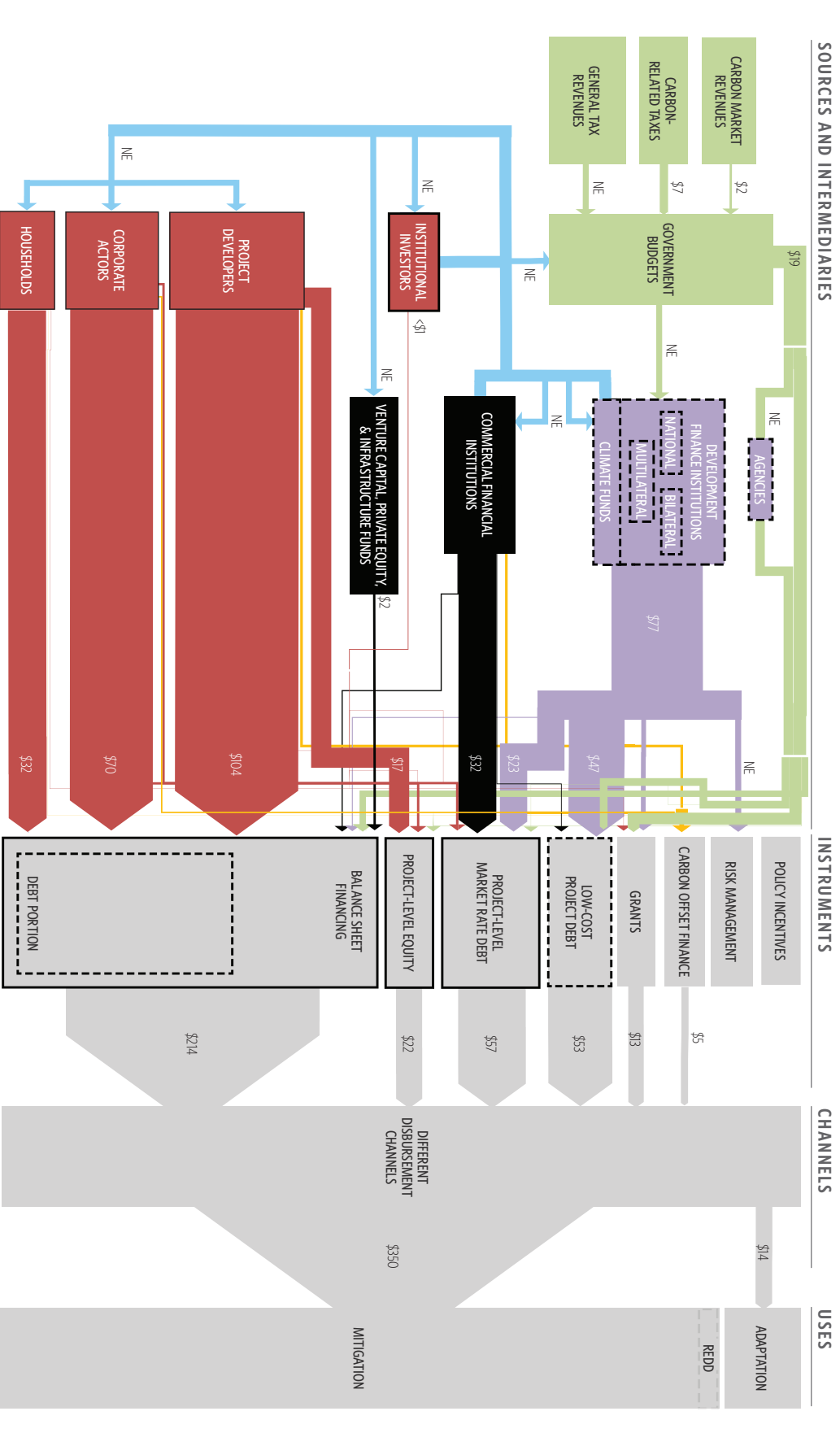
countries and USD 172 billion, or 47%, to projects in developing countries.

Emerging giants such as China, Brazil, and India were the largest recipients of global mitigation-directed climate finance flows, with USD 171 billion, close to 33% of the total. This implies that investments have been made where they are needed most and where mitigation potential is the greatest. Notably, a significant share of this was raised domestically and invested in pursuit of development mandates.

Figure 1: Climate Finance Flows Diagram 2012* (in USD billions)

THE CLIMATE FINANCE FLOWS DIAGRAM 2012

The Climate Finance Flows Diagram 2012, also known as the 'spaghetti' diagram, illustrates the landscape of climate finance flows along their life cycle for the latest year available, mostly 2011. The width of the arrows in the diagram represents the relative size of the flows.



*Notes: Figures are indicative estimates of annual flows for the latest year available, 2010 or 2011 (variable according to the data source). Flows are expressed in USD billions and rounded to produce whole numbers. Estimates spanning multiple years are adjusted to produce annual equivalent estimates. Where ranges of estimates are available, the mid-point is presented. The diagram distinguishes between incremental costs, that is, financial resources that cover the price difference between a cheaper, more polluting option and a cleaner, climate-friendly (renewable) alternative that do not need to be paid back – and capital investment, which are tangible investments targeted at adaptation projects that need to be paid back through a revenue stream, such as a toll, or a commercial investment that is expected to generate a profit over its lifetime. The group of national finance institutions includes SIFs, SIFs entities. Most data presented refers to commitments in a given year due to limited availability of disbursement data.



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KEY

- PUBLIC MONEY
- PRIVATE MONEY
- PUBLIC FINANCIAL INTERMEDIARIES
- PRIVATE FINANCIAL INTERMEDIARIES
- OFFSET MONEY
- FINANCE FOR INVESTORS & LENDERS
- CAPITAL INVESTMENT
- CAPITAL INVESTMENT AND INCREMENTAL COSTS
- NE: Not estimated

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1 Introduction

Climate change is a global challenge that requires a global response. Failure to comprehend the global context of the financing challenge will undermine our ability to accurately assess whether current investments are on track and made where they can deliver the greatest impacts to limit global temperature rise to below two degrees Celsius. To achieve this temperature goal, the International Energy Agency projects that incremental investment in the energy sector alone will need to reach USD 36 trillion over the period of 2012-2050 – or approximately USD 1 trillion each year (IEA, 2012).

The aim of this study is to contribute understanding on how much and what type of financial support is available globally to advance action on low-carbon, climate resilient development. Ultimately, building this understanding is essential for ensuring that governments and investors everywhere have the knowledge and tools to spend their money in ways that optimize prospects for achieving the transition.

The first *Landscape of Climate Finance*, published in 2011 (*Landscape 2011*), was the most comprehensive overview of the global climate finance landscape to-date.

This year's study (*Landscape 2012*) aims to improve on last year's estimates and add deeper insight into the nature of global climate finance. It provides a more detailed breakdown of flows and sheds light on the latest trends.

The *Landscape 2012* aims to provide, to the extent possible:

- An **expanded geographical scope**, covering **flows between developing countries** ('South-South'), from developed to developing countries and domestic climate finance flows;
- An **expanded coverage of national, sub-regional, regional, and international public actors**;
- A more detailed representation of **private sector climate finance flows**, with a better picture of sources and uses;
- An improved representation of **climate finance uses by sector (sectoral uses)**, including flows to adaptation and to reducing emissions from deforestation and forest degradation, "plus" the sustainable management and conservation of forests, and the enhancement of carbon stocks in developing countries (known as REDD+ schemes); and

- A better understanding of the recipients and final uses of climate finance, both in terms of sectoral uses and of geographical destination.

This report has three main sections. Section 2 outlines our methodology including key definitions and differences compared to the *Landscape 2011*. Section 3, the main body, describes the current landscape of climate finance flows along their lifecycle, from sources through to intermediaries, instruments, channels, and end uses. Section 4 summarizes our findings and provides brief recommendations to improve existing climate finance tracking efforts.

2 Methodology

This study, the *Landscape 2012*, aims to capture the most recent annual climate finance flows supporting (1) emission reductions, (2) climate resilience, and (3) enabling environment projects.¹

Building upon the *Landscape 2011*, we adopt a two-dimensional framework for this study: First, flows are categorized alongside their lifecycle (sources, intermediaries, instruments, disbursement channels, and final sectoral uses / geographic destination of recipients). Second, flows are categorized depending on whether they originate from public or private sources (see taxonomy section in the *Landscape 2011*).

We gathered empirical data on climate finance flows from a wide range of sources (main assumptions and sources are listed in Appendix A and the References section), relying on (1) readily-available data, (2) datasets we analyzed and (3) our own estimates. We also drew upon expert opinions to estimate certain flows.

2.1. Definitions

Climate-specific versus climate-related investments

The lack of an internationally-acknowledged definition of what qualifies as climate finance, or even more narrowly what qualifies as a climate *project*, presents a major challenge to understanding the scale of financial flows; **there is no established basis for a methodology or measurement system for tracking climate finance flows** (Buchner et al., 2011a,b). This is particularly challenging in the context of adaptation.

For the purposes of this study, finance flows are limited to 'climate-specific finance,' referring specifically to capital flows targeting low-carbon and climate-resilient development. It can have direct or indirect greenhouse gas mitigation or adaptation objectives/outcomes. Note that 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,

1 "Enabling environment projects" typically include efforts to strengthen institutions, to establish policies, regulations or laws and to remove technical, legal and administrative barriers to investment. The *Landscape 2011* included some climate finance targeting enabling environment projects, but was not labelled as such. The *Landscape 2012*, instead, explicitly captures financing for capacity building and technical assistance measures, such as, for instance, the financing of feasibility studies for projects, and the development of local financial institutions' capacity.

and which is typically referred to as 'climate-relevant' finance (see Corfee-Morlot et al., 2009, and Buchner et al., 2011).

Tangible versus intangible investments

In the *Landscape 2012*, we included, to the extent possible (depending on the granularity of data available) only investment flows made toward tangible physical assets like, for instance, wind farms. We excluded, to the extent possible, investment in measures such as research and development, manufacturing, or deployment, because these might not ultimately result in emission reductions and to reduce the risk of double counting money going to specific emission reductions.²

The *Landscape 2012*'s focus on money for emission reductions, climate resilience, and enabling environment projects in the year 2010/2011 excludes future commitments, such as policy incentives (that are not upfront capital grants) or risk management instruments (loan guarantees or insurance policies). The rationale is that we are tracking money actually in the system, rather than potential future amounts that may pay for things other than investment costs (e.g. premiums for green electricity, carbon credit purchases, payments for loan defaults).³ The objective is to avoid double counting for example, the face value of full loan guarantees and loans, or discounted expected feed-in tariff payments, with the investment cost.⁴ The general roles of current policy mechanisms and risk management instruments are represented in the *Climate Finance Flows Diagram 2012* as they play a central role in the investment and financing decision-making process, but we do not estimate flow values for them.

- 2 Examples such as Chinese solar panels that are deployed in Italy indicate the difficulty in attributing a specific technological breakthrough or spillover effects to R&D expenditures in a given country or year.
- 3 The methodologies used in this report 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 US 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 US 100 billion per year by 2020 to assist developing countries' climate responses) has already been achieved.
- 4 Furthermore, there is a potential gap between what institutions report at the time of offering risk management 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.

Incremental costs versus investment capital

Incremental cost and investment capital are both important lenses for climate finance flows.

Incremental cost refers to financial resources provided to compensate for the difference between a less costly, more polluting option and a costlier, more environmentally-friendly and/or climate-resilient one. Investment capital refers to tangible investment in mitigation or adaptation projects. Whereas investment capital is paid back to the investor, incremental costs often are not and are thus often funded with public climate funds, either through policy support or concessional finance.⁵ Whether incremental costs are covered by public support often make the difference in whether the private sector invests in a project. Almost all costs associated with REDD+ measures are incremental costs.

Our work captures mostly investment capital rather than incremental support (see previous sub-section). In order to get to the incremental cost value of emission reductions, climate-resilience, and enabling environment projects, we need assumptions for baselines against which we measure the incremental cost. Such baselines are project-specific and would require us to make debatable assumptions on what fair baselines would be. More efforts are needed to address this issue in-depth.

Gross value versus net value

Climate finance can be measured in terms of 'gross' or 'net' metrics (AGF, 2010).⁶ The *Landscape 2012* focuses on gross flows, which reflect the full volume of financial flows delivered through all instruments, rather than net flows, which provide an indication of the final net contribution of investors and countries. Gross flows include money that has to be paid back by recipients, i.e. concessional and non-concessional loans and equity. Nonetheless, they shed light on the level of mobilized international investments and the net contribution of countries.

More efforts are needed to break down contributions by gross or net value. As a first step into this direction,

- 5 In the case of energy efficiency the additional upfront costs do need to be paid back, but are expected to be compensated with energy savings over time. Also, they can be paid for by private investors since they do get paid back.
- 6 Under the approach, flows would represent the financial flows transferred to countries in any given year (these include grants, concessional and non-concessional loans mobilised through the bilateral and multilateral institutions, private capital flows and flows from GHG offset projects). Under the approach, amounts repaid by the recipient countries would be deducted (e.g. repayments of loan principal, repatriation of capital).

section 3.5 on climate finance sectoral uses specifies this information whenever available.

Mixed reporting years

Our estimates of climate finance are based on the most recent data available. The *Landscape 2012* uses a mix of 2010 and 2011 data.⁷

We used different sources of information to map existing flows of climate finance. We had a choice of using 2010 data only or reporting 2011 data for a significant part of the *Landscape* (most importantly, Bloomberg New Energy Finance data on private flows). We selected the latter option in order to (1) highlight the most current trends in financing despite reporting delays in some areas, and (2) provide consistency from year to year, so that the *Landscape 2012* picks up where the *Landscape 2011* left off. Where flows span several years, we annualized them to make them compatible with other data sources.

Commitment versus disbursement data

We report committed finance rather than disbursed finance. New commitment signifies the concrete commitment of money by the means of a closure of a financing contract, board decisions on investment, loan award announcements or similar actions. Commitment finance does not imply that money will immediately flow as a lump sum to project developers.⁸ There might be a time lag between commitments and disbursement. **But, while disbursement information provides a more accurate picture of actual climate finance flows than commitment information, disbursement data is not as universally available.**⁹ In addition, 2010/2011 disbursement data can reflect commitments spanning several years for projects with long construction periods. Disbursement data would therefore require further refinement. For these reasons, we mostly use commitment data in the *Landscape 2012*.¹⁰

7 Data derived from OECD's Creditor Reporting System Aid Activities database (OECD CRS), namely public budget and the EU Institutions' climate finance data, refer to 2010, while the others are all 2011 data, or presenting the fiscal year 2011 (e.g., July 2010-June 2011, depending on the accounting methodologies). Philanthropy data, instead, refer to 2008/2009.

8 A complicating factor is that there is a range of interpretations of what commitment actually constitutes.

9 In "The German Landscape of Climate Finance" (CPI, 2012), the granularity of data at the national level allowed the authors to rely on disbursement data to a greater extent.

10 Where available, we used disbursement figures. In the case of Climate Funds, we include annual commitments approved for specific projects rather than total pledges to the Funds which are disbursed over a number

Reporting currency

All the flows in this report have been converted to USD billion when reported in other currencies. Appendix A provides more details on the exchange rates used.

2.2. Analytical focus

The Landscape of climate finance focuses on tangible, project-level primary financing flows.

Project-level primary financing

The gold standard in our analysis is project-level financing data. Project-level financing data is as close as we can get to emission reductions, enhanced climate resilience, and a stronger enabling environment. In the instrument section we therefore define “instruments” as the instruments covering project costs in the reporting year, or primary financing instruments. We exclude instruments that cover financing costs, that is, secondary market instruments¹¹. The exception to this rule relates to Development Finance Institutions, whose flows can include instruments that cover committed money to a specific sector, or actor.

Secondary market transactions do not represent new money targeting climate finance but rather money changing hands. Focusing on primary tangible investments allows us to more accurately estimate financing that supports low-carbon, climate-resilient activities.

Finance flows

This year, we have solely captured flows among actors rather than (1) any ownership or claims one actor may have on another and (2) readily-available resources (net income, debt secured and shareholders' equity from prior years)¹².

The flow-only representation has strong implications on what is being covered and represented in the Climate

of years. Likewise, for DFIs we include annual commitments i.e. funds approved for projects in a given budget year (UNEP 2011 presents what different BFIs mean as “committed” funds). Only one organization surveyed provided disbursement data rather than commitments.

- 11 For example, consider a project in which a utility invests money from its own balance sheet to finance a new onshore wind farm. With our focus on project-level financing, we would categorize this investment as balance sheet financing. We do not examine where the corporate money is coming from (borrowing programmes, on-going activities, capital increase or sale of non-strategic assets).
- 12 In this sense, we are also capturing payments (or estimates of payments) for carbon finance.

Finance Flows Diagram 2012 (also known as the ‘spaghetti’ diagram) compared to the Climate Finance Flows Diagram 2011. In particular, inflows need not match outflows. For example, a development bank may have committed USD 3 billion in 2011 even though it only received USD 500 million of aid contribution the same year from public budgets — this doesn’t mean this bank is particularly good at leveraging money or in the opposite case, that it is wasting money because the flows do not capture other ownership and assets. By capturing flows in this way, we are also able to highlight where money may be sitting with a given actor within the landscape of climate finance.

The linearity of the lifecycle of flows is however a simplification. Flows are categorized alongside the lifecycle of flows (sources, intermediaries, instruments, disbursement channels and uses / recipients) as though the lifecycle was a linear path. In reality, pathways for finance are more complex and involve (1) feedback loops, i.e. money can go back and forth between different actors, (2) multiple layers and cascades of equity ownership, and (3) intermediate layers of instruments, e.g. between government budgets and National Finance Institutions.¹³

Ranges for estimated values

Given the uncertainty surrounding some data sources, the multiple potential approaches to estimating specific climate finance flows, and the lack of agreement on climate finance definitions and boundaries, we opted to represent climate finance flows as ranges whenever possible, rather than conveying a single-point estimate. For example, data ranges for renewable energy asset finance depends on data sources for non-domestic money (either Bloomberg New Energy Finance or UNCTAD Foreign Direct Investment data). For the sake of readability, the numbers reproduced on the *Climate Finance Flows Diagram 2012* correspond to mid-points.

- 13 Depending on where you draw the line, you could have many layers of source to instrument to recipient, with each recipient becoming a source itself.

2.3. Innovations in this year's study

The *Landscape 2012* improves on the *Landscape 2011* by including a broader geographic scope that covers developed as well as developing countries, and domestic flows; **better categorization of the actors involved**; a **better understanding of what's behind private finance flows**; and **extended coverage of Development Finance Institutions**.

While this implies that data from *Landscape 2012* is not directly comparable to *Landscape 2011*, it provides more detail and **sheds light on how global finance flows match global financing needs** to support a low-carbon, climate-resilient transition.

Global geographical scope

The *Landscape 2011* focused on climate finance flows from developed to developing countries, and included some developing countries and domestic sources, although to a limited extent and independent of their origin (domestic money, money from other developing countries or from developed countries). To shed more light on where we stand compared to global financing needs to stabilize average temperature to below 2 degrees, in the *Landscape 2012* we extend the geographical coverage to feature estimates of climate finance flows to and in developed countries (domestic money, and money from other developed countries or developing countries). The figures identified in the *Landscape 2012* should therefore not be confused with amounts that count towards the USD 100 billion promised by developed countries in the Copenhagen Accord, but rather as indications compared to global financing needs to meet the two degrees goal.

We categorize actors providing climate finance (lenders, investors, guarantors, etc.) as domestic or foreign entities and as hailing from developing or developed countries using the best information available. This extended coverage allows us to map both sources and destinations more precisely and to compare financing trends in different regions. Domestic finance coverage was improved by investigating the contribution of National Finance Institutions.

More detailed representation of private sector climate finance flows

With a more informative categorization of private climate finance flows, the *Landscape 2012* sheds more

light on private finance flows. In the *Landscape 2011*, private flows were captured in two categories, "global capital markets" and "private finance." In the *Landscape 2012*, we strove to better categorize private flows. The *Landscape 2011* "global capital markets" category has been broken down into "commercial financial institutions," "institutional investors," and "venture capital, private equity, and infrastructure funds." Likewise, "private finance" was broken down into "corporate actors," "project developers," and "households."

We started from the global private climate finance numbers and broke them down in distinctive geographical and technology subgroups to the extent possible. When we could not categorize any further, we looked at individual projects from a representative sample and categorized them along three dimensions: category of actor, geography of origin, first degree - ultimate degree ownership.¹⁴

We used these dimensions to create a set of weights and applied those weights to the global numbers to obtain dollar values for different dimensions of the global figures.

Extended coverage of public intermediaries

The *Landscape of Climate Finance 2012* covers the following Development Finance Institutions (DFIs):¹⁵

- **Four Bilateral Finance Institutions (BFI):** French Development Agency with Proparco (AFD), Japan International Cooperation Agency (JICA), KfW Entwicklungsbank and DEG, and Overseas Private Investment Corporation (OPIC);
- **Nine Multilateral Finance Institutions (MFI):** World Bank, International Finance Corporation (IFC); EU Institutions¹⁶, European Investment Bank (EIB), European Development Bank for Reconstruction and Development (EBRD), Asian Development Bank (AsDB), African Development Bank (AfDB), Inter-American Development Bank (IDB), and Nordic Development Fund (NDF);

¹⁴ In addition to small-scale asset financing, we covered 1,636 individual projects from the Bloomberg New Energy Finance database representing 82% of the extra capacity in developed countries and 89% of the extra capacity in developing countries (53.9 GW in total).

¹⁵ We opted to refer to the broad group of institutions covered in the report as Development Finance Institutions (DFI) given their development mandates, but we acknowledge that the term DFI is here used with a broad meaning.

¹⁶ The European Commission and EU Development Fund.

- Nineteen National Finance Institutions:** Brazilian Development Bank (BNDES), Development Bank of Latin America (CAF), Nacional Financiera (Nafin), Fideicomisos Instituidos en Relacion con la Agricultura (Fira), Agencia Financiera de Desarrollo, Development Bank of Southern Africa (DBSA), Indian Renewable Energy Development Agency (IREDA), Banco del Estado de Chile, Central American Bank for Economic Integration (BCIE/CABEI), Bancoldex Colombia, Black Sea Trade and Development Bank of Greece (BSTDB), China Development Bank (CDB), Caisse de Dépôt et de Gestion of Morocco (CDG), Eximbank Indonesia, Croatian Bank for Reconstruction and Development (HBOR), Korea Finance Corporation (KoFC), Industrial Development Bank of Turkey (TSKB), Small Industries Development Bank of India (SIDBI), and Vnesheconombank of Russia (VEB).

These institutions' climate financing data were retrieved from a blend of primary and secondary data sources. Sixteen organizations out of the 32 covered in the report provided their data for mitigation and adaptation activities directly, by the means of a financial survey.

Acknowledging the challenges in determining what qualifies as mitigation or adaptation, and to unequivocally attribute specific investments to only one of these two themes, mitigation and adaptation were broken down by sectors. The choice of the sectors was guided and informed by other methodologies and accounting practices (e.g., OECD/CRS, UNEP-SEI, 2011). In those cases where respondents provided different sectoral breakdowns, the project/category description was considered for allocating data against the chosen categories. In the presence of activities with multiple objectives (both mitigation and adaptation), this amount was allocated according to the weights of mitigation and adaptation on the given total of climate finance¹⁷. To the extent possible, data were adjusted to exclude interventions not in line with our definition of climate finance (e.g., we carved out financing for R&D, manufacturing or lower carbon energy generation projects, the latter because they may have included fuel-to-fuel

switch project such as fuel to gas and coal to gas, and fossil fuel based co-generation). We acknowledge the uncertainties associated with what qualifies as climate finance and what does not, and the "immaturity" of some institutions' tracking and reporting methodologies, which affects our understanding on the real magnitude and nature of the climate finance delivered by these institutions.

Extended coverage of sectoral uses

The *Landscape 2011* focused on renewable energy. While we did our best to capture energy efficiency, energy smart technologies and infrastructure, industrial processes, transportation, and other sectors, reliable data sources in these fields that fit within our framework were limited. Some of these missing data sources are now available at national levels and we therefore managed to include a broader sectoral coverage in the *Landscape 2012*.¹⁸

Note that coverage for climate-resilience is even patchier due to reporting and categorization issues, which hamper our understanding of what constitutes adaptation finance.

Other changes

The capital boxes in the *Landscape 2011* have been recategorized into "market rate project-level debt," "project-level equity", and "balance-sheet financing" for the *Landscape 2012*. We also mapped primary carbon offset flows differently, attributing flows directly to the actors involved in the acquisition of primary offsets. Apart from these changes, several categories have been renamed for the *Landscape 2012*: government budgets (previous: domestic public budgets), Development Finance Institutions including bilateral, multilateral, and national financial institutions (previous: bilateral / multilateral agencies and banks), carbon offset finance (previous: carbon offset flows), and low-cost project-level debt (previous: concessional loans).

17 For instance, of the USD 9.6 billion ODA marked as climate finance in the OECD CRS database and not channelled by AFD, JICA or KfW, USD 4.2 billion is marked as mitigation only, USD 3 as adaptation only and USD 2.4 billion as both mitigation and adaptation related. We allocated the dual purpose money according to the distribution between mitigation only and adaptation only projects (59% vs. 41%). For DFIs, e.g. in the case of EU Institutions, dual purpose money (USD 264 million) was allocated according to the share of mitigation and adaptation projects (55% vs. 45%).

18 Note that nuclear was not included in either the *Landscape 2011* or in the *Landscape 2012*, as we could not identify data sources highlighting financing directed to this type of projects. None of the DFIs surveyed included in their climate finance reporting financing for nuclear projects, nor did donors in their reporting to the OECD DAC.

Box 1 - The Landscape 2012 compared to the Landscape 2011

CPI's *Landscape of Climate Finance 2011* represented the first comprehensive review of the global climate finance landscape. The study focused on climate finance flows from developed to developing countries, with limited coverage of developing countries and domestic sources.

Due to divergent definitions and data gaps, we faced a number of methodological difficulties, some of which we were able to account for (e.g. double counting of the same flows), others less so (e.g. differing definitions and time periods).

Based on this methodology, we estimated total global climate finance flowing to the developing world at on average USD 97 billion a year in 2009/2010. Appendix B summarizes the *Landscape 2011*.

When we apply the *Landscape 2011* methodology and focus to the *Landscape 2012* data to highlight as much comparability among flows as possible, total climate finance flows predominantly directed towards developing countries in 2010/2011 is USD 112 billion. The increase is a result of the following main factors:

- a 78% increase in bilateral ODA climate finance flows from developed to developing countries in 2010 compared to 2009, partly reflecting the impact of Fast-Start finance pledges and partly the new OECD Rio marker to track aid targeting climate change adaptation objectives;
- a 47% increase in financial flows from the Multilateral Finance Institutions considered in the *Landscape 2011*;
- a more than doubling of carbon offset finance reflecting almost doubled issuance of CERs in 2011 compared to 2010 (although there were lower prices) and improved data visibility on ERU issuance.

An optimist might suggest that USD 112 billion in climate finance overachieves the USD 100 billion promised by developed countries in the Copenhagen Accord. Yet, we have to recognize that this might not be correct for multiple reasons, mostly related to our scope. We aim to provide a comprehensive overview of all the current financial resources for climate change action. Consequently, not all of the USD 112 billion counts as additional climate finance from what was available prior to the Copenhagen Accord. The reality is that while climate finance has increased quickly over the past 10 years, a significant share of the USD 112 billion provided in 2010/2011 was already committed prior to the Accord. Further, like in the *Landscape 2012*, the USD 112 billion total includes some developing countries and domestic sources, although to a limited extent, and considers both incremental cost and investment capital.

In other words, our climate finance estimates cannot, and should not be compared with the USD 100 billion of the Copenhagen Accord. The methodologies used in both the *Landscape 2011* and *Landscape 2012* 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. Nothing in this report is meant to infer that this goal has already been achieved.

3 The Current Landscape of Climate Finance Flows

In this section, we describe how climate finance breaks down along the lifecycle of financial flows from sources to end uses. For each stage of global climate finance, we aim to highlight the key reasons and motivations for finance flows, ranges of finance involved, 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 lifecycle stage.

3.1 Sources and intermediaries

The sum of climate finance flows from all sources totals **USD 343-385 billion**. **The dominant source is the private sector, which provides as much as USD 250-286 billion** in climate finance, or **74% of total climate finance** (out of **USD 364 billion** on average). Of private actors, **project developers provide USD 122 billion, or 34% of total climate finance**, while other corporate actors provide USD 75 billion, or 21% of total climate finance. Contributions from government budgets ranged between USD 16 and 23 billion including direct public investments and north-south aid flows. Development Finance Institutions along with Climate Funds provided USD 77 billion.

Current sources of climate finance include:

These various sources have multiple connections to each other. There is also a strong interrelation between public and private sources of finance.

Not captured in these figures are governments' direct and indirect shareholdings and lending to private investment structures as well as private contributions to International Financial Institutions (public contributions to Development Finance Institutions are captured only to a limited extent).

In the *Landscape 2012*, we have highlighted the contribution of several categories of private stakeholders acting in the global landscape of climate finance, namely corporate actors, project developers, households, and institutional investors.¹⁹ The contribution of public and private intermediaries (USD 110 – 120 billion) is discussed in section 3.2.

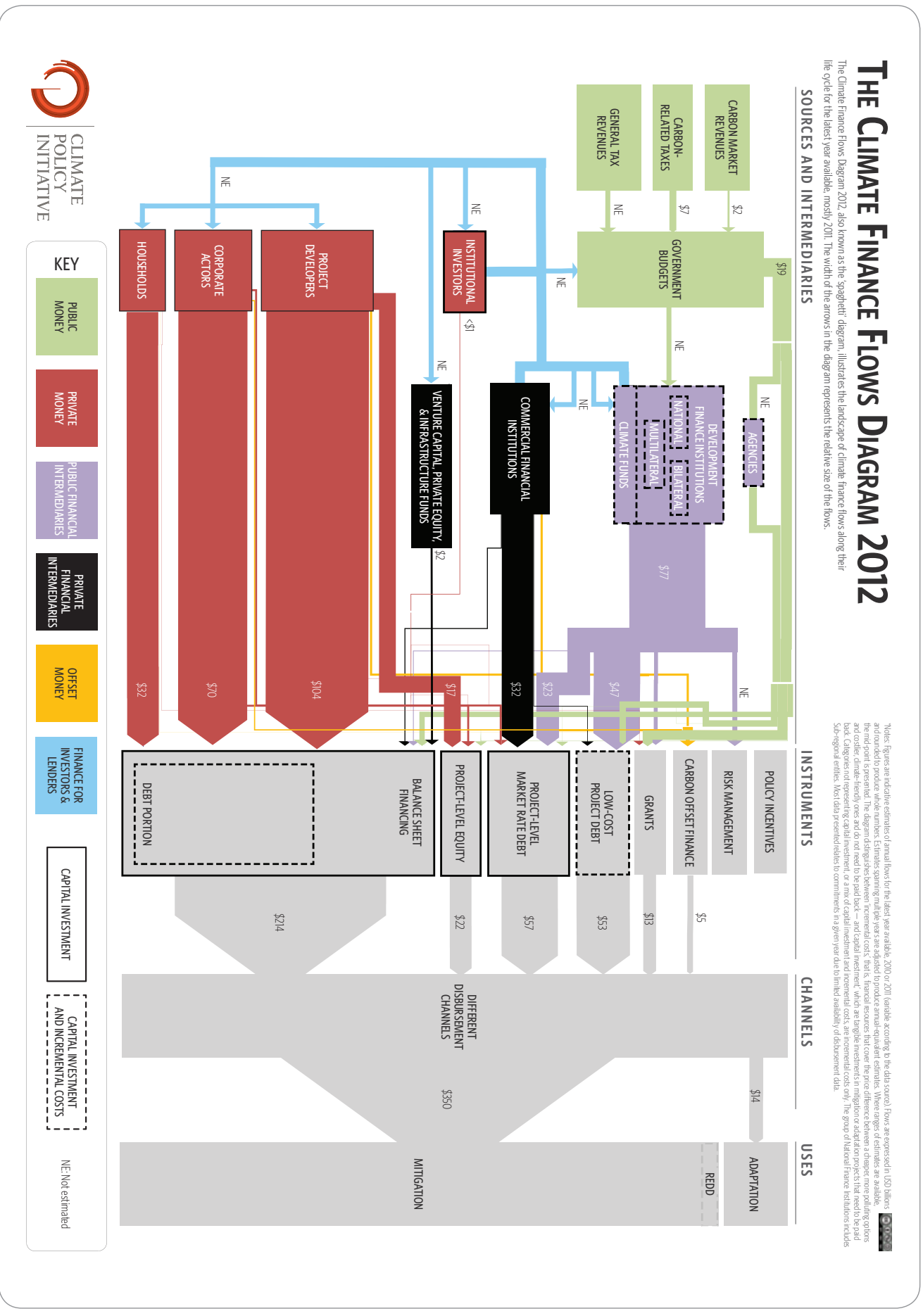
Carbon-related mechanisms

Carbon-related mechanisms are comprised of (1) carbon market revenues and (2) all climate-related taxes raised by governments (ranging from explicit and implicit carbon taxes). Money collected from carbon markets and carbon-related taxes flows to government budgets, though it is not clear how much is earmarked

¹⁹ Potential future sources of climate finance discussed in international forums are not mapped in the Landscape. These include revenues from taxation of international aviation and shipping emissions, revenues generated by removing fossil fuel subsidies, revenues generated by fossil fuel extraction royalties/licenses, revenues from a financial transaction tax (FTT) or allocation of Special Drawing Rights, etc.

SOURCES & INTERMEDIARIES (*)		ANNUAL FLOWS OF DIRECT CLIMATE FINANCE (2010 / 2011, USD BILLION)
PUBLIC	Government budgets (5%)	16.0 - 22.6
	Development Finance Institutions* (21%)	76.8
	• Climate Funds* (<1%)	1.5
	Sub-total public (26%)	92.7 - 99.3
PRIVATE	Corporate actors (21%)	69.3 - 80.5
	Institutional investors (<1%)	> 0.6
	Project developers (34%)	115.0 - 129.3
	Households (9%)	32.3
	Commercial financial institutions* (10%)	30.7 - 40.4
	Venture capital, private equity & infrastructure funds* (1%)	2.4
	Sub-total private (74%)	250.3 - 285.5
TOTAL	Total	343.0 - 384.8
	• Sub-total sources (68%)	233.2 - 265.3
	• Sub-total intermediaries (32%)	109.9 - 119.6

Figure 2 - 2010/2011 climate finance flows (in USD billions)



SOURCES		ESTIMATED VALUE	DESTINATIONS
EXTERNAL	<ul style="list-style-type: none"> • Auctioning of European Union Allowances (EUAs): USD 1.62 billion • Auction of allowances on the Regional Greenhouse Gas Initiative (RGGI): USD 0.17 billion • Transaction of Kyoto Assigned amount units (AAUs): USD 0.24 billion 	USD 2.0 BILLION	OTHER ACTORS <ul style="list-style-type: none"> • Government budgets: USD 2.0 billion
DESCRIPTION	<p>Proceeds from sales and auctions of carbon assets to cap-and-trade compliance buyers. Originate from carbon constrained economic sectors or countries. In particular:</p> <ul style="list-style-type: none"> • Transactions of Kyoto assets between governments; • Sale of carbon allowances to cap-and-trade market participants in Europe and in the US; 		
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> • World Bank State and Trends of the Global Carbon Markets • European Energy Exchange (EEX) data • European Commission DG CLIMA 		
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> • No specific earmarking of the proceeds towards emission reductions projects 		

for climate finance purposes (i.e. how much will be spent by governments towards climate finance).

CARBON MARKET REVENUES

Carbon market revenues comprise proceeds from sales and auctions of carbon assets to cap-and-trade compliance buyers, and originate from carbon constrained economic sectors or countries. The current scale of these revenues can be estimated, taking into account auctions organized in countries with cap-and-trade systems (most importantly the EU Emissions Trading System) and sales from Assigned Amount Units (AAUs) between countries bound by the Kyoto Protocol. The Landscape 2012 figure is identical to the Landscape 2011, but sub-components changed significantly. Notably, EU ETS prices have come down but corresponding carbon allowances auctioned have increased 50%.

CARBON-RELATED TAXES

In 2010, **revenues generated by carbon taxation** in selected European countries – Finland, Norway, Sweden, Denmark, Switzerland, and Ireland – accounted for approximately **USD 7.3 billion** (Elbeze and Perthuis, 2011). This possibly represents a lower-bound estimate, as it does not cover the revenues generated by carbon tax schemes in a number of other jurisdictions such as, for instance, the Canadian provinces of Quebec and British Columbia, the San Francisco Bay Area Air Quality Management District (BAAQMD), or India. Australia recently introduced a carbon pricing scheme, which came into force in July 2012, while other countries

have planned to introduce one after 2013 (e.g., South Africa)²⁰.

The associated revenues from these programs, which are potentially considerable²¹, are not necessarily earmarked for climate finance, but are often distributed for other purposes. Specifically, proceeds from carbon taxation can be returned to taxpayers in the form of targeted or lump sum compensation for households and business (e.g. Switzerland)²² or to reduce income tax (e.g., Finland), or fund general government budgets (e.g., Sweden and Norway); in some cases revenues can also contribute to fiscal consolidation to reduce budget deficits (Vivid Economics, 2012; Elbeze and de Perthuis, 2011). Some countries allocate funds to support environmental policy measures. Denmark, for instance, has allocated around 40% of carbon tax revenues to

20 The tax base and rates differ considerably between countries. Most commonly, carbon taxes are placed on fossil fuels such as coal, gasoline or natural gas. Several European countries combine carbon levies applied to CO₂ emissions with resource taxes, that is targeting energy consumption (e.g., Denmark, Sweden and Finland). The highest rates (USD 150/ton of CO₂) are paid in Sweden, while the lowest (USD 0.045/ton CO₂) in California (Climate Commission, 2012; NREL, 2009).

21 The European Commission, in its proposal for the Energy Taxation Directive, estimated that a minimum carbon tax of USD 28 (EUR 20) per ton of CO₂ common in all 27 Member States would generate revenues in the order of USD 56 billion (or EUR 40 billion). Estimates are based on total CO₂ emission of sectors not covered under the EU ETS scheme (e.g., households and services; transport; agriculture; small installation). For additional information see EC (2011).

22 Until 2010 Switzerland returned all carbon taxes to households and businesses, but since 2011 a third has been spent on financing emission reduction projects (Elbeze and de Perthuis, 2011).

support emission reduction projects, while 60% is returned to industry; Boulder, Quebec and BAAQMD also use proceeds to support climate mitigation programs (NREL, 2009).

The estimated USD 7.3 billion is not counted against the total climate finance presented in the *Landscape 2012*. Our intent is to highlight the contribution of this mechanism as a source of finance for government budgets.

SOURCES		ESTIMATED VALUE	DESTINATIONS
<ul style="list-style-type: none"> Taxes levied on households and businesses 		USD 7.3 BILLION	<ul style="list-style-type: none"> Government budgets: USD 7.3 billion
DESCRIPTION	<ul style="list-style-type: none"> Taxes applied on CO₂ or GHG emissions and/or on the amount of energy consumed. For energy-related taxes, only the share accruing to carbon taxes was retained in the estimate. 		
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Elbeze and de Perthuis (2011) based on data from the Ministries of the Environment of the covered countries. The European Commission statistical office Eurostat maintains a database covering environmental tax revenues from energy,^a transport, and pollution, and resource taxes. CO₂ taxes are included in the energy taxes category, but cannot be differentiated. The OECD and the European Environment Agency (EEA) maintain a database on environmentally-related taxes,^b fees, and charges. 		
ISSUES AND/OR FUTURE ANALYSIS	<ul style="list-style-type: none"> Incompleteness: Our estimate covers only selected European countries. The portion devoted to climate finance cannot be easily estimated: Tax revenues can be distributed in several ways e.g., returned to tax payers, used to reduce levies from labor or capital, or put toward general government budgets. Only some countries use carbon-related tax revenues for carbon mitigation programs. Tracking gaps: A single repository of data or recurrent effort to aggregate figures on carbon tax revenues has not been identified so far. 		

a Energy taxes include those applied on energy products used for stationary (e.g., coal, electricity, natural gas, fuel oils) as well as transport purposes. In 2010 energy taxes levied in the 27 Member States of the European Union amounted to USD 291 billion, 1.8% of the Union GDP (Eurostat 2012; 2011a).

b For additional information see the OECD/EEA database web page.

General tax revenues

It is challenging to calculate precisely the extent of general tax revenues directed towards climate finance, as they generally pass through domestic public budgets before being allocated to particular programs and purposes. Given the strong hypothesis that should be applied, and in line with the approach adopted the *Landscape 2011* report, this study refrains from providing an estimate for this source.

Evaluating the volume of general tax revenues associated with climate-specific activities would be easier if sources of funding were specifically earmarked to climate change objectives.

In Tunisia, for instance, revenues from a tax levied on the first license registration of vehicles and custom duties on air conditioning equipment are devoted by law to the National Fund for Energy Conservation (FNME). This Fund sustains renewable and energy efficiency measures in the country.²³ In 2009, in the Tunisian

budget, around USD 21 million were allocated against the Fund (INS, 2010).

Another example can be found in Brazil, where the resources collected via the National Fund on Climate Change (FNMC), which is partly financed with a levy on the profits made by the oil industry, are earmarked to support mitigation and adaptation projects and studies on climate change and its adverse effects. The resources of the Fund can also be used to leverage international public and private climate finance to support the mitigation and adaptation activities laid out in the country's Policy on Climate Change. In 2011, the initial budget of the Fund was estimated for USD 132 million (R\$ 226 million) (BNDES, 2011; UNDP, 2011; BNDES.gov.br; Brasil.gov.br).

23 Law 2005-82, Official Printing Office of the Republic of Tunisia.

GOVERNMENT BUDGETS

SOURCES		ESTIMATED VALUE	DESTINATIONS
INTERNAL	<ul style="list-style-type: none"> Carbon market revenues: USD 2 billion Carbon taxes: USD 7.3 billion General tax revenues: NE 	USD 16-23 BILLION	<ul style="list-style-type: none"> Policy incentives: NE Risk management: NE Carbon offset finance: USD 0.1 billion Grants: USD 4.2 - 9.9 billion Low cost debt: USD 5.9 - 6.5 billion Project-level market rate debt: USD 0.2 billion Project-level equity: USD 0.2 - 0.5 billion Balance sheet financing: USD 5.4 billion Uses: <ul style="list-style-type: none"> USD 14.9-18.2 billion mitigation USD 1-4.4 billion adaptation
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt from third-party: NE 		OTHER ACTORS <ul style="list-style-type: none"> Development Finance Institutions: NE Climate Funds: NE Ownership of other actors of the landscape: NE
DESCRIPTION	Domestic and international government climate finance expenditures, fed by conventional tax revenues, ownership earnings or sovereign bond issuance as well as, in some cases, revenues raised from carbon pricing mechanisms.		
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> OECD Development Database on Aid Activities: Creditor Reporting System Fast Start Finance Reporting to the UNFCCC Bloomberg New Energy Finance database 		
ISSUES AND FUTURE ANALYSIS	There is a lack of information on the extent of government contributions to Development Finance Institutions' climate finance, as well as domestic and developing country sources of climate finance. General budget support is, by definition, not earmarked in any way but may be another source of climate finance not currently tracked.		

Note: Carbon market revenues and taxes, while included in this table, are discussed in detail in previous sections and tables.

Contributions from government budgets are estimated at between USD 16 and 23 billion in 2010/2011. The estimate includes USD 11.1 - 11.2 billion of domestic funds for project finance reported in the Bloomberg New Energy Finance database, largely originating from developed countries for small-scale investments (USD 2.8 billion), larger-scale investments (USD 8.3 billion) and carbon offset finance (USD 0.1 billion). A large part relates to the U.S. government's 'green' economic stimulus packages.

The estimate also includes contributions from developed country governments to developing countries of between USD 4.8 and 11.4 billion in 2010, excluding reporting of finance channelled through AFD, JICA and KfW as discussed below. The lower bound of this estimate considers only aid marked as "principally" climate change-related in the OECD's Creditor Reporting System (CRS) database. The upper bound of the range includes an additional USD 1.8 billion of money identified in Fast-Start Finance reporting for the same year. The range includes bilateral Overseas Development

Assistance (ODA) and Fast-Start Finance commitments in 2010 from 28 OECD countries plus Cyprus, Latvia, Liechtenstein, Lithuania, Malta and the UAE. Notably, no data was available in the sources consulted for OECD countries such as Chile, Estonia, Hungary Israel, Mexico²⁴ or Turkey.

For our estimates of government budget contributions, we exclude government contributions (including ODA) delivered through national, bilateral, and multilateral intermediaries and funds, due to the current lack of data required to do so across the full range of actors, and to avoid double counting with other flows captured separately (see Intermediaries section). Our estimate is therefore conservative and can be considered as a minimum. Further discussion on government contributions to Development Finance Institutions (DFIs) is included in Box 3, which attempts to highlight the extent of **public sector contributions to funding for**

24 Mexico is a member of the OECD with DAC observer status. Latt (2011) discuss Mexico's role as an "emerging donor", conducting technical and scientific cooperation projects in developing countries to a value of around USD 16 million in 2009.

low-carbon, climate-resilient development in recent years, in spite of fiscal austerity and the tightening credit context.

Indeed if we were to include these amounts, we see that more than half – USD 11.6 billion of USD 23 billion – of bilateral ODA commitments in 2010 were reported as being delivered by just three Bilateral Finance Institutions (AFD, KfW, and JICA). **We also see that climate-related bilateral Official Development Assistance grew from USD 9.5 billion in 2009 to an estimated USD 23 billion in 2010, reflecting the impact of Fast-Start finance pledges, which we estimate accounted for around 36% of Official Development Assistance in 2010, as well as the introduction of the marker for adaptation finance in the OECD CRS database.** The top providers of bilateral ODA were Japan, Germany, France and the United States.

Export credits, which support export transactions by hedging risks for investors, are excluded from our estimate of government contributions because the instruments may not be called upon and may not therefore represent a true flow. They may however play a key role in stimulating private low-emission investments in developing countries (see Instrument section for further information).

Grants (USD 4.2-9.9 billion), low-cost debt (USD 5.9-6.5 billion) and “balance sheet” financing of owned emission reductions projects (municipalities, public schools, military installations, etc.) (USD 5.4 billion) are the most common forms of financing provided using government money. Flows to policy incentives and risk management instruments are expected to be very large but are not quantified in the study.

We find that 64%-72% of that deployment occurs in developed countries and 28%-36% in developing countries.

Example

The **U.S. Government’s many roles** in solar project financing include: (1) federal and state-level policy incentives to promote the renewable energy deployment, (2) risk management instruments such as U.S. Department of Energy partial or full loan guarantees, (3) project-specific grants^a and (4) low cost debt, such as the U.S. Department of the Treasury’s Federal Financing Bank loans to some of the largest projects financed in 2011. These various roles highlight the diversity of financing instruments available.

a American Reinvestment and Recovery Act grants, Georgia Environmental Finance Authority grants, Voluntary Airport Low Emission grants, State of Pennsylvania solar program grants, Rhode Island Economic Development Corporation grants, etc.

Box 3. The role of Development Finance Institutions

Development Finance Institutions play a complex and crucial role in the climate finance landscape, operating as a pivotal link between public and private finance.

Preliminary investigation of the ownership structure of private investments mapped in the climate finance landscape indicates that a large portion of these investments could be classified as governments' direct and indirect shareholdings in, and lending to, private investment structures (see Box 5 for more information). Public finance institutions add significant value to financing packages by subsidizing interest rates, transforming the maturity of loans to long-term, and absorbing a share of the risks of the loans handed out to the private sector. Without public backing, many of these packages would be unviable.

Likewise, government backing of Development Finance Institutions underpins their ability to raise funds and provide a range of instruments specially tailored to the delivery of low-emissions, climate-resilient finance.

The ownership structure of DFIs is typically dominated by national/member governments that initially capitalized the institutions' capital base and govern their activities.

Net budget inflows to Development Finance Institutions in a given year, on the other hand, are mainly driven by their own financial activities (for instance their equity holdings and earmarked returns on investments) and finance raised on capital markets and/or borrowings from governments. With high financial security profiles (AAA credit rating), DFIs are able to refinance their activities via very low interest rate bonds.

Also thanks to their capital structure and high financial security, DFIs can deliver a range of concessional and non-concessional instruments to finance investments in developing countries. Budget inflows may also include specific grant contributions from governments or trust funds that can either be passed on directly or used to further soften lending conditions (the grant element) of low-cost debt in order to deliver loans with deep concessions adapted to recipient needs, e.g. poor financial capacity or for projects with long-term economic returns. The average level of grant element in concessional loans provided by DFIs varies considerably depending on institutional mandates.

Given the complexities laid out above, this study does not yet provide an estimate of the level of government contribution to DFIs. The foremost difficulty encountered relates to quantifying the costs to governments of absorbing the risks associated with backing DFI activities. In terms of budget flows, on the other hand, transparent reporting is not always available due to confidentiality requirements, and the fact that finance is disbursed over a period of years rather than at the time of commitment also presents difficulties.

Discussions with just three DFIs included in this study suggest average grant elements of concessional loans of between 12% and 20%, but with a range up to 70% for individual, loans with deep concessions. If we were to assume that all grants are provided using 100% contributions from government sources and an average grant element contribution from governments to low-cost debt of 17%, we would estimate a contribution of government budgets to all DFI activities captured in the Climate Finance Flows Diagram 2012 of USD \$10,924 million (15% or 1:7 leverage). This estimate is not included in the Climate Finance Flows Diagram 2012 at present due to the lack of detailed information available for the full range of institutions included in the study, and the difficulties outlined above.

Thus, while annual government budget contributions to DFIs may be relatively low, finance provided by DFIs is generally considered to be public. For example, in the case of bilateral ODA according to the OECD DAC's reporting directives where *"Official transactions are [defined as] those undertaken by central, state or local government agencies at their own risk and responsibility, regardless of whether these agencies have raised the funds through taxation or through borrowing from the private sector."*

Box 4 – Supporting Renewable Energy in the U.S.

U.S. federal tax incentives, cash grants, and loans sustained a boom in renewables investment through the depths of the worst financial crisis since the Great Depression.

The U.S. public and private sectors invested a total of USD 143 billion in renewable energy projects and installed 34 GW of new solar and wind capacity between 2008-2011 – with over USD 50 billion and 9 GW in 2011 alone. While the bulk of the financing for these projects came from the private sector, growth was underpinned by stable renewable deployment support policies at both the state and federal level.

With relatively low U.S. electricity market prices, **most renewable projects built over the last four years would not have attracted investors without additional support from governments or ratepayers. Aggressive, long-term, state-level renewable energy obligations** (such as California's requirement that 33% of its electricity be generated from non-hydroelectric renewable energy sources by 2020) **have driven demand.** However, as the recession squeezed state and ratepayer budgets, federal government supports became more important.

Prior to the financial crisis, two primary federal policies were available – a USD 22/MWh production tax credit for wind and a 30% investment tax credit (ITC) for solar. But tax incentives require substantial and predictable tax liabilities from profits to be useful – and once the crisis hit, these were in short supply. Twenty or so large financial firms had provided over USD 6 billion in tax equity financing for renewable projects in 2007. About half of them – including AIG, Lehman Brothers, Citi, and John Hancock – had exited the tax equity market by 2009. Further, the financial crisis left banks less willing and able to provide long-term, low-cost debt for capital-intensive projects such as wind and solar farms.

The U.S. economic stimulus in early 2009 addressed these issues. Instead of tax credits, wind and solar projects starting construction by the end of 2011 could choose a 1603 Cash Grant equal to 30% of eligible project costs. So far, the program **has provided USD 13 billion (USD 4.7 billion in 2011) to support renewable investment. The federal government also offered direct federal loans and partial guarantees of private loans to address tightness in debt markets;** a total of USD 8.6 billion in direct loans (USD 7 billion in 2011) and USD 5.7 billion in partial guarantees (USD 4.2 billion in 2011) to date.

These and other measures leveraged enough private investment to double U.S. non-hydroelectric renewable energy generating capacity in four years. And as the financial crisis has eased, the tax equity market has recovered, hitting the \$6 billion level in 2011.

The two stimulus programs ended in 2011, and the production tax credit for wind expires at the end of 2012. The cost of extending the production tax credit now stands as a significant barrier to continued renewable energy growth. However, there are ways to make these important federal policies more cost-effective. Policies that expand the pool of investors could reduce costs for developers and for taxpayers. CPI work suggests that replacing the current tax incentives with smaller cash incentives could provide the same benefits to projects at just over half the cost to government.

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Based on Varadarajan et al., "Supporting Renewables while Saving Taxpayers Money," CPI Report (2012)

Corporate actors

In the *Landscape 2012*, we have been better able to highlight the contribution of corporate actors in the global landscape of climate finance. We find that **corporate actors contributed 21% of global climate finance**.

Corporate actors, unlike project developers, do not sell green electricity or related products and services. We identified two main categories of corporate actors.

First, some **non-energy corporate actors** are eager to deploy emissions reduction assets to reduce their energy bills or meet voluntary commitments. These include technology companies (e.g., Google), and companies with large warehouses, installations or factories (e.g., IKEA). The estimate of contributions from non-energy corporate actors includes a very large share of small-scale renewable energy (solar PV and solar water heating & cooling) of more than USD 51 billion. Sometimes, the investor is an industrial conglomerate for which it is hard to be able to identify a specific set of activities. Apart from investing in emissions reduction

projects, some of these corporate actors might be required to comply with GHG emissions cap-and-trade scheme allowing for the use of offsets.

Second, some **manufacturers of (renewable) energy systems** financed the deployment of their own systems (pilot & demonstration plants, vendor financing, etc.). Examples include wind turbine manufacturers (such as China’s Goldwin and Spain’s Gamesa), solar PV and thermal systems manufacturers (Japan’s Sharp, Spain’s Gestamp, USA’s MEMC, India’s Moser Baer and China’s CHINT Group), and electricity generation technology providers (USA’s GE financial services, India’s Crompton Greaves, and South Korea’s Samsung C&T Corp).

We find that 80-93% of corporate actors’ contributions are sourced domestically, 6-14% in other developed countries than the emissions reduction project host country and the remaining 2-6% in other developing countries than the emissions reduction project host country (technology developers notably). We find that

SOURCES		ESTIMATED VALUE	DESTINATIONS	
INTERNAL	<ul style="list-style-type: none"> Reinvested earnings from recurrent and exceptional income: NE 	USD 69.3 - 80.5 BILLION	INSTRUMENTS	<ul style="list-style-type: none"> Carbon offset finance: USD 1.2 billion Project-level market rate debt: USD 1.5 - 2.6 billion Project-level equity: USD 1.5 - 2.6 billion Balance sheet financing: USD 65.0 - 74.1 billion
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt and equity from third-party:^a NE 		OTHER ACTORS	<ul style="list-style-type: none"> Ownership of other actors of the landscape: NE
DESCRIPTION	Corporate actors whose activity cannot be categorized as “project developers”, comprised of: <ul style="list-style-type: none"> Non-energy corporate actors; Manufacturers of renewable energy systems; 			
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Bloomberg New Energy Finance and UNCTAD FDI data Frankfurt School - UNEP Collaborating Centre for Climate & Sustainable Energy Finance Global Trends in Renewable Energy Investment 2012 REN21 Renewables 2012 - Global Status Report Weiss & Mauthner, Solar Heat Worldwide report (edition 2012) Ecosystem Marketplace State of the Voluntary Carbon Markets Report 			
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Motivation for investment: The main driver for investment (energy savings, opportunism, synergies with other corporate activities, promoting own technologies, etc.) is not always clear. Access to capital: Sometimes, corporate money helps overcome difficulties in accessing more traditional sources of capital, such as banks. Definitional issues: Boundaries with households can be difficult to delineate in the case of small family-based corporate actors. Likewise, geographical origin of corporate actors can be hard to identify in the case of multinational groups. 			

a This corresponds to the net value of debt raised minus debt repaid for a given year. This relates to commercial financial institutions mostly. Please note that other actors of the landscape, such as institutional investors, can be interested in corporate debt issues (bonds, medium-term notes, etc.) as an investment vehicle. The same logic is applied to changes in net equity.

13-22% of the corporate actors' money went to developing countries and 78%-87% went to developed countries (notably, small scale PV in Italy and Germany).

Example

In 2009, Ferrari installed a rooftop PV system at one of its factories in Italy. Large warehouses such as those for automotive factories are natural candidates for laying out solar panels on rooftops (General Motors did the same for one of its factory in Spain in 2008 with a total capacity of 12 MW). The main motivation is energy savings (expected savings of 200,000 kWh per year) and potential return from installing a rooftop PV system. Investment money was sourced from Ferrari's own balance sheet and revenues and would be used to pay for the system and its installation.

Example

Siemens Financial Services and **Siemens Bank**, the lending arms of the German technology manufacturer Siemens, would be categorized as corporate actors. Money would be sourced from the company balance sheet of parent companies and from their own revenues. Money is then lent against projects using Siemens wind turbines. For instance, Siemens Financial Services provided a share of project-level market rate debt to the **272 MW Seigneurie de Beaupre onshore wind farms in Canada** and **phase I of the 288 MW Meerwind Sud und Ost offshore wind farm in Germany** last year.

Institutional investors

We find that the direct contribution of institutional investors to emissions reduction projects is in excess of USD 620 million for the year 2011. This number seems low compared to expectation but given the lack of transparency on institutional investors' involvement, the fact that our representative sample excludes many countries where institutional investors have been active these last years (notably some North European countries), and our focus on primary equity stakes and not stakes taken in projects already running (secondary market transactions representing only money changing hands), this appears as a reasonable lower bound.

In 2011, institutional investors have been active on both the debt and equity side. For example, on the debt side²⁵ U.S. insurance company Metlife provided debt to U.S. onshore wind (EnXco Lakefield) and U.S. solar (Webberville PV Plant) projects. In Canada, the Great-West Life Assurance Company and Ontario Pension Board provided debt to Sprott & Firelight Amherst wind farm. On the equity side, Allianz and Munich Re invested in European solar and wind assets while Brazil's workers' severance fund provided equity to more than 200 MW of domestic onshore wind projects.

²⁵ Whenever project bonds have been issued (U.S. solar projects), there's a possibility that institutional investors purchased such issues and therefore contribute to providing debt to emissions reduction projects.

We find that nearly 37% of institutional investors' contributions are sourced domestically and the remainder in developed countries other than the project host country. We find that approximately 11% of institutional investors' money went to developing countries and 89% to developed countries (Europe and the U.S.).

SOURCES		ESTIMATED VALUE	DESTINATIONS	
INTERNAL	<ul style="list-style-type: none"> Reinvested earnings from recurrent and exceptional income: NE 	> USD 0.6 BILLION	INSTRUMENTS	<ul style="list-style-type: none"> Project-level market rate debt: > USD 0.2 billion Project-level equity: > USD 0.2 billion Balance sheet financing: > USD 0.2 billion
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt and equity from third-party: NE 		OTHER ACTORS	<ul style="list-style-type: none"> Ownership of other actors of the landscape: NE
DESCRIPTION	They're comprised of: <ul style="list-style-type: none"> Insurance companies Pension funds Foundations & endowments 			
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Bloomberg New Energy Finance and UNCTAD FDI data 			
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Improving coverage: a more systematic and in-depth tracking of contributions to the landscape will be useful as more deals (both on the debt and the equity side) involve institutional investors. Indirect investment channels: institutional investors also invest in emissions reduction projects via infrastructure & private equity funds. Improving definitions: distinguishing by sub-categories of institutional investors as they have different objectives and constraints. 			

Project developers

We highlight project developer contributions in the Landscape 2012 and find that they contributed 34% of global climate finance.

We define project developers as dedicated entities with the ability to design, commission, and operate and maintain emissions reduction projects. These include power and gas utilities and independent power producers (Spain’s EDP, France’s EDF, U.S. Duke Energy, China Datang and Guodian for instance), energy companies (France’s Total, UK’s BP or Brazil’s Petrobras), and engineering procurement construction contractors and independent developers of projects (NRG Energy in the U.S., smaller Spanish and Italian project developers).

We find that 83-94% of project developers’ contributions are sourced domestically, 6-16% from other developed countries other than the emissions reduction project host country, and the remaining 0-1% from other developing countries other than the emissions reduction project host country. We find that 50-56% of the project developers’ money went to developing countries and 44%-50% went to developed countries.

Example

NRG Energy is a U.S. project developer that has deployed roughly 1.5 GW of solar PV capacity in the U.S. in 2011 directly and via its subsidiaries. NRG Energy is able to invest thanks to its expertise, own resources, and ability to secure project finance and attract external equity investors (such as MidAmerican Energy Holdings Co.) for its larger projects.

Likewise **EDF**, a French energy group/power and gas utility, invested in solar and wind projects throughout the world in 2011 (U.S., Germany, etc.) directly and via its subsidiaries (EDF Energies Nouvelles, EnXCo Inc., etc.). Money comes from its own resources and project-level financing (tax equity arrangement in the U.S. for instance).

SOURCES		ESTIMATED VALUE	DESTINATIONS	
INTERNAL	<ul style="list-style-type: none"> Reinvested earnings from recurrent and exceptional income: NE 	USD 115.0 - 129.3 BILLION	INSTRUMENTS	<ul style="list-style-type: none"> Carbon offset finance: USD 1.2 billion Project-level equity: USD 16.4 - 18.4 billion Balance sheet financing: USD 97.4 - 109.7 billion
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt and equity from third-party: NE 		OTHER ACTORS	<ul style="list-style-type: none"> Ownership of other project developers: NE
DESCRIPTION	Emissions reduction project developers including: <ul style="list-style-type: none"> Dedicated project developers & EPC contractors; Utilities and independent power producers; Energy companies; 			
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Bloomberg New Energy Finance and UNCTAD FDI data Frankfurt School - UNEP Collaborating Centre for Climate & Sustainable Energy Finance Global Trends in Renewable Energy Investment 2012 REN21 Renewables 2012 - Global Status Report Weiss & Mauthner, Solar Heat Worldwide report (edition 2012) Ecosystem Marketplace State of the Voluntary Carbon Markets Report 			
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Definitional issues: The boundaries of specific sub-categories and potential overlap with corporate actors (conglomerates for instance) needs to be easier to identify to better understand underlying drivers for investment. Non-energy projects: the contributions of non-energy project developers is hard to assess. 			

Households

Households represent a source of money that we did not explore in the *Landscape 2012*. We define households as (1) family-level economic entities, (2) high net worth individuals, and (3) their intermediaries, whether they are family offices investing on their behalf or dedicated foundations operating philanthropic programs. Their money stems from income and savings including inherited or entrepreneurial wealth. They are also able to borrow to invest into emissions reduction assets or support such investment via grants. We find that households contributed 8-10% of global climate finance.

Households' asset finance - USD 32.3 billion - corresponds 99.3% to small scale installations: USD 22.6 billion of solar PV in developed countries and USD 7.9 billion of solar thermal heating and cooling in developing countries (mainly China) are the largest contributors. A small share of households' contribution to climate finance flows in 2011 relates to grants from U.S. and European philanthropic programmes and an even smaller portion of it relates to voluntary carbon offsetting.

As expected, all of households' contributions were sourced domestically. We find that 75% of the households' contributions were in developed countries and 25% were in developing countries.

SOURCES		ESTIMATED VALUE	DESTINATIONS
INTERNAL	<ul style="list-style-type: none"> Income and savings: NE 	USD 32.3 BILLION	INSTRUMENTS <ul style="list-style-type: none"> Grants: USD 0.2 billion^a Carbon offset finance: < USD 0.1 billion Balance sheet financing: USD 32.1 billion
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt: NE 		OTHER ACTORS <ul style="list-style-type: none"> Ownership of other actors of the landscape: NE
DESCRIPTION	Households and wealthy individuals involved in philanthropy and their intermediaries (family offices and dedicated foundations).		
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Bloomberg New Energy Finance and UNCTAD FDI data Frankfurt School - UNEP Collaborating Centre for Climate & Sustainable Energy Finance Global Trends in Renewable Energy Investment 2012 REN21 Renewables 2012 - Global Status Report Weiss & Mauthner, Solar Heat Worldwide report (edition 2012) Ecosystem Marketplace State of the Voluntary Carbon Markets Report 		
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Households' contribution is hard to measure. Figures are estimates only. Sources of finance for households need to be better understood. The contribution of households in the field of energy efficiency and electric vehicles investments is not measured here. 		

^a This relates to philanthropy and is discussed in the dedicated instrument section.

Box 5 - Who actually sits behind the money?

In the *Landscape 2012*, we explored **who actually “sits behind” climate finance actors**. That is, a project developer can actually be the subsidiary of an entity located in another country or categorized as an actor. The “project developers” category is the one for which this information is most interesting and revealing. The impact of such re-categorization is explored in more detail in the uses section of this report. In particular, we find that:

- **Close to USD 41.0 billion of 2011 project developers investment flows (31%-35%) could be categorized as domestic public budget instead.** The largest contributor to this phenomenon is People’s Republic of China’s direct and indirect ownership of solar, wind, waste, and biomass project developers.
- Close to USD 6.0 billion of 2011 project developers investment flows (around 5%) is actually funded by (in almost equal parts) (1) venture capital, private equity, and infrastructure funds on the one hand and (2) corporate actors on the other hand.

Examples

Change in the geographical origin of money - In 2011, **EDP Renewables North America LLC** financed three onshore wind farms in the U.S. for a cumulative capacity of close to 600 MW. Categorizing the project based on first degree ownership implies that project has been financed by a **domestic project developer**. As we dig into the cascading ownership structures of the equity holders and categorize the project based on the ultimate ownership, we determine that project has been actually financed by a **foreign project developer**.¹

Change in the type of actor - In 2011, **China Datang Corp Renewable Power Co Ltd** financed more than 1.5 GW of onshore wind farms in mainland China. At first sight, we would categorize the equity holder of the project as a domestic project developer. It turns out that the developer is owned by one of the large state-owned power generation entities and therefore should be categorized as being financed by the **Chinese domestic public budget**.²

1 EDP Renewables North America LLC is owned by EDP Renovaveis SA (Spain) in turn owned by EDP - Energias de Portugal SA (Portugal).

2 China Datang Corp Renewable Power Co Ltd is owned by China Datang Corp which is held by the State-owned Assets Supervision & Administration Commission of the State Council (SASAC), the People’s Republic of China holding for State-Owned Entities (SOEs).

3.2 Intermediaries

INTERMEDIARIES		ANNUAL FLOWS OF DIRECT CLIMATE FINANCE (2010 / 2011, USD BILLION)
PUBLIC	Development Finance Institutions (67%)	76.8
	▪ National and Sub-Regional Finance Institutions (37%)	42.7 ^a
	▪ Bilateral Finance Institutions (10%)	11.3
	▪ Multilateral Finance Institutions (18%)	21.2
	▪ Climate Funds (1%)	1.5
	Sub-total public (67%)	76.8
PRIVATE	Commercial financial institutions (31%)	30.7 - 40.4
	Venture capital, private equity & infrastructure funds (2%)	2.4
	Sub-total private (33%)	33.1 - 42.8
TOTAL	Total	109.9 - 119.6

Note: To avoid double counting only USD 1.5 billion of the USD 2.5 billion Climate Fund money is included in the total Climate Finance (we excluded developed to developing countries bilateral funds, which we assume are accounted for in bilateral reporting in the OECD-CRS database). We acknowledge that Climate Funds are not generally associated to Development Finance Institutions; here are included in this category as typically managed by DFIs, or operating in closed relationship with them.

a Total National and Sub-regional institutions' climate financing differs from that presented in the Ecofys-IDFC report (2012). See Appendix D for details.

The Landscape 2012 seeks to present a comprehensive picture of public and private intermediaries. While several initiatives track climate finance that flows through public intermediaries, there is less information about climate finance distributed through private intermediaries. Their engagement is critical to identify and finance climate projects, particularly small-scale ones, thereby to unlock private resources and scale-up finance.²⁶

Public and private financial institutions **play an important role in climate finance flows, raising and channelling USD 110-120 billion** of global climate finance. Public intermediaries such as Multilateral, Bilateral, National and Sub-Regional Development Banks distribute USD 76.8 billion, or about two-thirds of these resources.

Public sector intermediaries

DEVELOPMENT FINANCE INSTITUTIONS

In the *Landscape 2012*, the public intermediaries category covers a broad range of Development Finance Institutions (DFIs) including Multilateral, Bilateral, Sub-Regional and National Finance Institutions. The climate

26 The San Giorgio Group "Prosol Tunisia" case study presents insights on this aspect. See Trabacchi et al., (2012). See also, for instance, the Turkish Sustainable Energy Finance initiative established by EBRD to help drive the transformation in the private banking sector in supports of small and medium sized energy efficiency and renewable energy investments. For more information see (Ebrd.com and Turseff.org).

finance flows of the last two, in particular, were partially captured and the category not specifically featured in the *Landscape 2011*²⁷.

While, until recently, the role played by NFIs and Sub-Regional Development Banks in the climate finance architecture has received limited attention, international donors are increasingly aware of their privileged position in, knowledge of, and relationship with local markets. This increased international focus, the International Development Finance Club's (IDFC) mapping initiative (Ecofys-IDFC, 2012) and their direct disclosure of data made it possible to gather more detailed information about NFIs' and Sub-Regional Banks' climate finance flows, and have lent visibility to their contribution to a wide range of climate-compatible activities.

Although we have more information on intermediaries' climate finance than we did in the *Landscape 2011*, our estimate still represents an incomplete figure due to the partial reporting²⁸ of some entities and our inability to capture other players' flows due to data constraints.

27 The Landscape 2011 included the Brazilian BNDES, IREDA, and the China Development Bank's climate financing, featuring these entities among Bilateral Finance Institutions. This year we have broadened the coverage, capturing a wider range of National players as well as Sub-Regional ones such as the Development Bank of Southern African (DBSA), the Development Bank of Latin America (CAF) and the BCIE/CABEI Central American Bank for Economic Integration. See Appendix D for details.

28 A number of MDBs currently engaged in a joint initiative aimed at harmonizing mitigation and adaptation finance reporting, did not disclose their adaptation finance data as yet. The Joint MDB Report on Mitigation

UN agencies as well as countries' cooperation agencies are also active intermediaries in the climate finance architecture²⁹; the flows managed and distributed by these entities have not been included in this section to avoid double counting. Their resources – the portion complying with ODA criteria and hence reported in the OECD-CRS database – are in fact captured in the Governments' budgets data. An ad-hoc study should be pursued to highlight their actual contribute, which typically goes beyond pure intermediation. By working closely with recipient governments on national strategies and policy frameworks conducive to investment, in fact, these entities help develop demand for climate finance (AGF, 2010). With the objective to enhance the effectiveness of their actions, DFIs often partner with these agencies to coordinate interventions.

The resources raised and channelled by DFIs can be both of public and private nature. DFIs, in fact, do not only operate through public budget 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 from commercial banks, financial institutions, development partners or other international finance institutions). This allows them to support investments that are much greater than public funds can provide alone.

Sources of finance vary from bank to bank, depending on their structure and mandates.³⁰ It is difficult to determine the portion of public budgets flowing to DFIs each year in the pursuit of development cooperation activities or specific mandates. It is also difficult to quantify how much global capital markets contribute

Finance 2011 (IDB et al., 2012) released for Rio+20 provides preliminary insights on the methodology developed and the resulting mitigation figures. A new version of the report, with revised and more disaggregated data, is planned to be released at COP 18, in Doha. The release of a report describing the jointly agreed methodology for adaptation is also planned at the same time.

29 Agencies like DIFID, NORAD and USAID in 2010 channelled possibly up to USD 9.6 billion of the bilateral climate-marked aid featured in the OECD CRS database (OECD, 2010). They also played a role in the delivery of Fast-Start Finance. USAID, for instance, serviced 27% of the U.S. Fast-Start Finance over the FY2010/2011 (Fransen, 2012).

30 For instance, the International Development Association (IDA) – the largest multilateral channel of concessional financing to the poorest countries – is largely funded through donor contributions. The International Bank for Reconstruction and Development (IBRD), on the other hand, obtains most of its funds by issuing bonds in international capital markets. In addition to general bond issuance, some institutions have also initiated the issuance of climate themed bonds, so called "green bonds". The World Bank Group, for example, has issued over USD 3.3 billion in green bonds since the inaugural issue in 2008 (Treasury.worldbank.org).

to DFIs' climate financing in a given year. Clarifying this could shed light on the extent of the so-called "leverage effect" exerted by these entities to public money.

Box 3 on government contributions to DFIs presents additional insights on this aspect.

NATIONAL FINANCE INSTITUTIONS

The NFIs category in the *Climate Finance Flows Diagram 2012* reflects a variety of players, including:

- Some of the largest National Development Banks such as the Brazilian BNDES³¹ and the Chinese Development Bank (CDB), which contribute more than 80% of NFIs' finance;
- Sub-Regional Development Banks like the Development Bank of Latin America (CAF); and
- Relatively smaller players, such as the Mexican Nacional Financiera (NAFIN), whose involvement and expertise in the climate finance arena are growing rapidly.

With 42.7 billion³², **NFIs represented around 56.7% of the total climate finance distributed by public actors (DFIs) in 2011.**

Although diverse, and at various stages of institutional readiness for climate finance, NFIs have key characteristics in common. They bridge critical funding gaps, perform in areas underserved by the private sector, and implement national strategies set by their governments. By partnering with MFIs and/or BFI, National entities can acquire relevant experience in the preparation, risk assessment, evaluation and monitoring of climate projects³³.

NFIs can have general mandates to foster broad economic and social development objectives, or they can have mandates focused on specific niches – such as financing small- and medium-sized enterprises, encouraging infrastructure development, or supporting a country's agribusiness sector (IDFC, 2012).

31 In 2011 BNDES had a capital base of nearly USD 33 billion (BNDES, 2012b).

32 Data refers to funds committed in 2011, except for one institution that reported its annual disbursement instead of commitments. To minimize potential double counting, the climate finance flows of the Indian Renewable Energy Development Agency (IREDA) were reduced by 40% since, as reported in IREDA (2012), the institution's resource base for 2010/2012 draws approximately 40% on international assistance.

33 For instance, the Sustainable Project Directorate of NAFIN – the bank's unit dedicated to support climate-related projects, received technical assistance from the World Bank, and uses its methodology and manuals to manage the risks associated with renewable energy projects (IDB, 2011).

SOURCES		ESTIMATED VALUE	DESTINATIONS
INTERNAL <ul style="list-style-type: none"> • Proceeds from operations: NE 	USD 75.3 BILLION	INSTRUMENTS AND USES <ul style="list-style-type: none"> • Risk management: NE^a • Carbon offset finance: USD 0.07 billion • Grants: USD 4.01 billion • Low-cost debt: USD 46.6 billion • Project-level market-rate debt: 23.4 billion • Project-level equity: USD 0.37 billion • Balance sheet financing: USD 0.78 billion^b Uses: <ul style="list-style-type: none"> • USD 64.4 billion mitigation (86%) • USD 10.9 billion adaptation (14%) 	
EXTERNAL <ul style="list-style-type: none"> • Public Budgets: NE • Capital markets: NE • Other Development Finance Institutions^d 		OTHER ACTORS <ul style="list-style-type: none"> • Public finance institutions • Commercial financial institutions • Funds (e.g., climate funds, carbon funds, venture capital and private equity funds)^c • Ultimate beneficiaries 	
DESCRIPTION <p>The Development Finance Institutions featured in this study include:</p> <ul style="list-style-type: none"> • National Finance Institutions (NFIs) i.e. entities typically owned, funded and governed by a single national government with local development mandates. The climate finance flows of this players also include Sub-Regional Development Banks, i.e. those generally supported by a group of countries in the pursuit of sub-regional mandates.^e • Bilateral Finance Institutions (BFIs) i.e. an individual country with the aim of providing aid, contributing technical support, or investing in selected development activities in developing or emerging countries. • multiple countries, encompassing both developing borrower countries and developed donor countries, with the aim to provide financial and technical support to developing and emerging countries and/or coordinate support among their member countries: Multilateral Finance Institutions (MFIs).^f 			
PRIMARY DATA SOURCES <ul style="list-style-type: none"> • Self-reporting via CPI survey • IDFC Green Finance Work Program (Ecofys-IDFC, 2012) • UNEP Bilateral Financial Institutions Climate Change Working Group (UNEP, 2011) • Joint MDB Climate Finance Tracking Initiative (IDB et al., 2012) • OECD Creditor Reporting System Aid Activities Database (OECD, 2010) • Bloomberg New Energy Finance Desktop Analysis 			
ISSUES AND/OR FUTURE ANALYSIS <ul style="list-style-type: none"> • Non comparability: The reported estimate is derived from institutions' self reporting and secondary data sources. Given the various approaches currently in place for accounting and tracking climate finance, finance flows cannot be fully compared amongst this diverse group of institutions.^g • Incompleteness: To capture the true magnitude of DFIs involvement in the global climate finance landscape, additional entities should be included in the analysis as well as the entire spectrum of their mitigation and adaptation financing. Our estimate, in fact, reflects partial reporting from some MFIs, which disclose mitigation finance data only.^h • Confidentiality concerns or lack of transparency impede actual understanding on some institutions' flows. • Double-counting: Cross financing between institutions may occur, possibly resulting in double counting; more research is needed to ensure that presented flows are not inflated by such cross flows.ⁱ 			

a The portion of climate finance distributed in the form of risk management instruments is not included in the total actually reaching mitigation and/or adaptation projects (see the Landscape 2012 methodology in Section 2).

b The total climate finance retrieved from the Ecofys-IDFC (2012) report for a group of NFIs, was broken down against our categories of instruments according to (1st) the share stated in the report itself (i.e., 95% to loans and 5% to "other instruments"), (2nd) the weights observed in the financing modalities applied by the NFIs and BFIs for which we had data. Due to data availability issues, we allocated half of the estimated equity portion to "project-level equity" and the other half to "balance sheet financing".

c The BFIs' volume of climate finance includes investments in carbon funds and investment funds for renewable energy and clean technology projects. OPIC, in particular, provides support to private equity funds aimed at developing nations. Bancóldex, for instance, made an investment in a relatively small venture capital fund, called 'Progresia Capital' which focuses in the area of, inter alia, alternative energy (Smallridge et al., 2012)

d The Mexican Nafin, for instance, has access to lines of credit from the World Bank and the Inter-American Development Bank (TNC, 2012).

In 2011, NFIs and Sub-Regional Development banks supported key low-carbon development sectors: renewable energy projects and energy conservation accounted in fact for 50.9% and 26.2% of their mitigation financing respectively. Projects spanned from wind farms, large-scale hydro, and sustainable transport modalities or infrastructures (10%) to those aimed at reducing land-use emissions via re-forestation and afforestation (2.3%). BNDES funding to wind projects in 2011 was remarkable; with USD 2 billion approved (investments of USD 3.2 billion) for 43 wind parks, its support to the sector increased by almost three times compared to 2010 levels (BNDES, 2012; see Box 7).

NFIs and Sub-Regional Development Banks also played a role in building countries' resilience to climate change, devoting 12% (or USD 5.2 billion) of their support to measures contributing to adaptation objectives; 31.3% of this in infrastructure improvements and 30.9% in the agriculture and forestry sector.

e NFIs and Sub-Regional Development Banks' climate finance data are presented jointly as the data retrieved for some of these entities was in an aggregated form and sourced from the Ecofys-IDFC (2012) report. This prevented us from associating financing to a single entity or re-allocating the related financing to a different category. Sub-Regional Banks e.g. the Development Bank of America Latina CAF, in fact, can be seen as multilateral institutions. For details on the institutions included in our estimates see Appendix D. We acknowledge the presence of private players amongst banks' shareholders. CAF, for instance, has 18 shareholder countries and 14 private banks.

f This definition follows that of, amongst others, Atteridge et al. (2009), the World Bank (see WB website), and the UNFCCC (see UNFCCC website).

g MDBs are currently developing a joint approach for climate finance tracking, which has been implemented and applied to the data we received from some of the institutions covered in the study. According to IDB et al. (2012) - the first outcome of the MFIs' work with a focus on mitigation finance - the newly developed approach strives to capture only the components of a project with climate co-benefits. This might not be the case as yet for other intermediaries, which may account for the whole value of the project. Additional work is needed to harmonize accounting methodologies enabling comparability between flows across the entire spectrum of DFIs.

h Both comprehensiveness and comparability issues will partially be addressed in the future as MFIs have harmonized their adaptation and mitigation finance tracking, and will jointly report their climate finance numbers. Some BFIs are engaged in the discussions, and hopefully, these approaches will be transferred to NFIs too.

i In the Landscape 2012 we tried to minimize double counting to the maximum extent possible, depending on the granularity of data available. Nafin, for instance, in 2011 financed renewable energy generation projects with USD 7.1 million of KfW resources. This resources were not included in the total to avoid double counting. In addition, we were ensured that cross financing did not occur between the institutions covered in the Ecofys-IDFC report (2012), used as a source for some NFIs' data.

NFIs and Sub-Regional Development Banks financed these activities mainly through loans at interest rates below those charged by commercial banks. Low interest rate loans represented 86.6% of NFI's climate financing. BNDES stands out as a major provider of concessionary credit, that accounted for 99.7% of its lending. This practice has helped to lower the cost of debt in Brazil; the cost of debt is relatively higher in other emerging countries, where NFIs such as the South African DBSA and the Indian Renewable Energy Development Agency (IREDA), financed mostly at market rates³⁴.

Unsurprisingly, NFIs tend to invest domestically. In fact, 89% of their total climate finance was invested in the country where they are located. Climate finance originating from NFIs and Sub-Regional Development banks based in non-OECD countries (96% of the total) was mostly (90%) directed toward domestic actions, in the home country of the institution. The remaining went to other non-OECD countries.

BILATERAL FINANCE INSTITUTIONS (BFIs)

The BFIs considered in the study include: Agence Française de Développement and Proparco (AFD), KfW Entwicklungsbank and DEG (KfW), Japan International Cooperation Agency (JICA), and Overseas Private Investment Corporation (OPIC). Each of these BFIs have different structural characteristics and mandates. AFD, KfW and JICA are chiefly responsible for allocating their countries' bilateral ODA contributions to other countries, whereas OPIC provides financing and insurance to private sector investors that may help recipient countries' businesses, while favouring U.S. business interests³⁵.

In 2011, BFIs channelled about USD 11.3 billion in support of mitigation and adaptation interventions.

Comparisons between BFIs' outflows reported in the *Landscape 2012* and the *Landscape 2011* should be made with caution, because data were obtained from different

34 The South African Government is committed to expand concessionary finance to boost investment and influence the direction of the economy (Pinheiro, 2012). BNEF (2011) states that the interest rates applied by IREDA are more or less in line with those of commercial lenders, and that it cannot be viewed as a source of "subsidised" lending. To estimate its portion of low-cost debt versus market-rate debt, we associated to the former the total amount of finance committed to those sectors that in 2011 received the interest rate subsidies provided by the Indian Ministry of New and Renewable Energy to the Agency (IREDA, 2012). To market-rate debt, we allocated the remaining portion. With regard to the high cost of debt issue see Box 9 on "The India's experience in Financing Renewables".

35 OPIC typically supports companies/projects that are at least 25% U.S.-owned (OPIC.gov).

Box 6 – How do NFIs finance their operations? The case of BNDES

NFIs have a diversified funding sources that include long-term sources of reimbursable and non-reimbursable public resources, public deposits, other Development Finance Institutions' resources, and capital market bonds. Funding diversification and the possibility of blending market and concessional resources from different actors, enables NFIs to establish more attractive financing conditions for projects that are in the public's best interest.

The weight of the various sources of capital can vary between the Banks' capital structure and the annual inflow of resources used to finance operations.

In the case of BNDES, for instance, the **Government of Brazil funded the predominant share of the Bank's total capital, 81.7%** as of the end of 2011. This share is comprised of resources from: the National Treasury, which contributes 49.7% and has been the Bank's main creditor since 2010; another 28.5% of the total is financed by the Workers' Assistance Fund (FAT), a special payroll tax (the PIS-PASEP), the Audiovisual Sectorial Fund and the National Climate Change Fund. Further 3.4% comes from other governmental sources. These funds are complemented by resources raised in the foreign market, through financial market activities as well as operations with international institutions such as the Japan Bank for International Cooperation (JBIC) and the European Investment Bank (EIB). In 2011 foreign fundraising represented 3.6% of the Bank's financing structure. The remaining 14.7% is related to assets monetization and other obligations (BNDES, 2012).

In recent years, there has been a noticeable increase in the funds that BNDES receives from the Treasury, while the amount of funding from international institutions has decreased steadily.

In terms of capital flows, over the course of 2011, **75.6% of BNDES' total net resources** (USD 85 billion) **came from return on credit operations**, while 19.2% came from the National Treasury. The remaining was sourced from the Workers' Assistance Fund and other sources.

Pinheiro (2012) reports that the Bank received an annual contribution of about USD 10 billion from the Brazilian Government, which is then channelled to recipients to achieve the Bank's mandate.

sources and categorized in a different manner³⁶. When looking at equivalent data self-reported by the institutions, the year-to-year variation highlights a 23% drop³⁷. This could be because of contingency factors and/or fewer projects in the pipeline. The sector that experienced the most significant reduction in funding was the sustainable transport sector, which received almost USD 3 billion less than in 2010 (a 78% decrease, mostly due to the fact that some investments have been postponed to the beginning of next year). The agriculture, forestry and land use sector and the energy efficiency sector also experienced reduced support, with a 34% and 20% decrease respectively. On the other hand, certain adaptation measures saw increased funding, such as those related to infrastructure development³⁸

and disaster risk reduction which, in total, received approximately USD 337 million more than in 2010.

BFI's proved significant in channelling Fast-Start Finance contributions to developing countries. AFD, for instance, implemented 69% of France's Fast-Start Finance commitments in 2011 (USD 585 million), and also a portion of the European Commission ones (EC, 2012; Minefi, 2011). KfW was entrusted with 19% of Germany's Fast-Start Finance (Vieweg et al., 2012)³⁹, while OPIC in FY 2011 delivered 36% of the U.S. total (USD 3.1 billion), notably increasing its share as compared to the previous year (8% in 2010). In a period of budget pressures, OPIC – which operates at no net cost to the American taxpayer – helped the U.S. meet its commitments at no expense to the public budget (Fransen et al., 2012).

36 In last year's study data were compiled from various second-party sources, and BNDES, CDB, and IREDA were included in this category.

37 DEG has not been included in the year-on-year comparisons due to data availability issues.

38 Projects in these categories include, for example, water infrastructure, measures to improve dikes but also projects to plant or restore "green"

infrastructure such as mangroves.

39 KfW Fast-Start Finance refers to 2010-2011. Germany committed USD 473 million in 2010 and USD 603 million in 2011. Actual allocation was higher, by USD 7 million in 2010 and USD 89 million in 2011.

BFI also operate through a range of dedicated Climate Funds⁴⁰ and are also active in carbon markets, playing a “carbon brokering role” through carbon investment funds⁴¹. The KfW Carbon Fund, for instance, promotes the use of carbon credits for compliance with the obligation under the UNFCCC, while enabling and simplifying access to the market for buyers and sellers. It also assumes or mitigates market risks (e.g., EU ETS III). As of December 2011, the KfW Carbon Fund contracted credit of over USD 55.7 million (Suennen, 2012; UNEP-SEI, 2011).

MULTILATERAL FINANCE INSTITUTIONS (MFIs)

MFIs include:

- Global players like the World Bank Group;
- Regionally-oriented agencies such as the African Development Bank (AfDB) and the Asian Development Bank (ADB); and
- Entities without a banking basis such as the EU Institutions, generally identified as multilateral bodies⁴².

MFIs' financial support to climate change activities amounted to about USD 21.2 billion in 2011.

The list of MFIs covered in the *Landscape 2012* is the same as in the *Landscape 2011*, but our current estimate reflects better data quality, made possible by the improved data gathering approach we adopted (i.e. direct reporting from the majority of the institutions, 6 out of 9) and the improvements in MFIs' reporting. Comparisons with last year study, however, are not possible as we relied on different data sources, with difference in scope. Self-reporting data for 2010 and 2011 have not been made consistently available, in some cases due to changes implemented in the accounting methodologies.

In 2011 MFIs proved critical in supporting renewable energy generation projects, which received 51.8% of

their total mitigation finance (approximately USD 9.5 billion). The other two sectors that benefitted the most were energy efficiency and sustainable transport, which received 19.4% and 18.4% respectively. In terms of adaptation financing, MFIs' support was mainly directed to interventions in the agriculture and forestry sector and to capacity building/technical assistance measures, which received 27.8% and 12.7% of their total support to adaptation (USD 2.9 billion)⁴³. Among DFIs, MFIs are the ones that devoted the highest share to capacity building measures.

Market rate debt was the dominant means used by MFIs for distributing climate finance (78%).

Asian and European countries were the principal recipients, receiving 37% (or USD 7.8 billion) and 27.1% (USD 5.8 billion) of the total MFIs' climate finance respectively.

The European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB) provided the greatest support to Europe (73.4%)⁴⁴. These lenders have been particularly important at a time when a deteriorated financing environment has threatened the European Union's low-carbon transition. The higher cost of borrowing experienced by commercial banks has, in fact, hampered lending, which is unfortunate in times when investment needs are significant⁴⁵ and action cannot be delayed (BNEF, 2012b).

40 In 2011, for instance, KfW and the German Federal Ministry for the Environment launched the Global Climate Change Partnership Fund (GCCPF), a public-private initiative focused on energy efficiency and renewable energy investment for SME and private households. The Danish Government, IFC, and Deutsche Bank also committed financing to the partnership over the course of the year (GCCPF website).

41 Last April AFD - along with other partners - announced the upcoming launch of a Carbon Fund for Africa (CDC Climat, 2012).

42 The EU Institutions, namely the EU Commission and the EU Development Fund, are treated as multilateral bodies in the OECD DAC statistics. Their climate finance data included in the *Landscape 2012* refer only to their direct (“bilateral”) contributions to developing countries (OECD, 2011d).

43 Activities with adaptation co-benefits in the transportation sector also received significant support. Among the measures supported e.g. development of climate-resilient design standards, upgrade of existing roads and highways to climate resilient design standards, etc.

44 Germany's KfW Group has also been a lead lender in the European clean energy sector (see Box 12).

45 For instance, BNEF (2012b) states that investments in renewable energy capacity amount to more than USD 600 billion between the 2011-20 period in European Union countries alone.

Box 7 - Brazil's experience in financing renewable energy, with a focus on wind power

The Brazilian development bank BNDES is essential to Brazil's renewable energy, energy efficiency, and deforestation financing.

The total amount of BNDES' approved financing for wind power has been dramatically increasing in recent years, reaching USD 2 billion (R\$ 3.4 billion) in 2011, which represents a **173% increase compared to 2010** (BNDES, 2011).

According to US PEF (2012), **BNDES reduces borrowing costs for eligible wind projects by roughly 40%**. BNDES' favourable financing conditions also apply to other alternative technologies, like biomass and small hydro, and have been improving, particularly since 2006,¹ as part as BNDES' mandate to incentivize "green" sources of electricity. According to BNDES' analysis, its financing offerings have contributed to a **25% decrease in renewable electricity tariffs** during the 2003-2011 period.

In general, BNDES' loans to **renewable power generation projects have interest rates at 1.4% below those practiced for coal or oil thermal plants**. They also have longer repayment terms: 16-20 years for renewable energy versus 14 years for conventional plants. Moreover, BNDES' participation in renewable energy projects can reach, at maximum, 70%-90% while, for coal or oil thermoelectric plants it is at 50% (IDFC, 2012).

Further, by keeping fossil fuel based generation, like coal and fuel oil fired thermal plants, under stricter loan terms, BNDES provides a competitive edge to renewable energies.

Given the favourable financing environment for clean projects, wind is not the only renewable resource that has experienced growth. Overall, BNDES' disbursements to all renewable energy technologies supported by Brazil's national policy have showed an upward trend in the 2003-2011 period, which reflect the significant increase in BNDES' volume of disbursements in the same period.

In 2011, **BNDES' disbursements to renewable energy and energy efficiency reached about USD 7.2 billion** (R\$ 12.3 billion), **31% higher than in 2008**.

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Based on a forthcoming CPI Report on policy approaches for promoting onshore wind power in Brazil.

¹ By looking at the financing conditions applied by the Bank over the 2003-2011 period, we noted that in 2006, for instance, the amortization period increased from 12 to 14 years, and then, in 2007, to 16 years. Moreover, the Bank lowered its basic return requirement from 2.5% to 1.5% in 2006, decreasing this further in 2007, to 1%, and 2008, to 0.9%.

CLIMATE FUNDS

SOURCES		ESTIMATED VALUE	DESTINATIONS
INTERNAL	<ul style="list-style-type: none"> Government Budgets: NE 	USD 1.5 BILLION	INSTRUMENTS AND USES <ul style="list-style-type: none"> Grants: USD 1,446 million Low-cost debt: USD 8 million Project-level equity: USD 17 million Uses: <ul style="list-style-type: none"> USD 1,142 million mitigation (76%) USD 352 million adaptation (24%)
EXTERNAL	<ul style="list-style-type: none"> Government Budgets: NE Commercial financial institutions: NE Institutional investors: NE Bilateral and Multilateral Financial Institutions: NE 		OTHER ACTORS <ul style="list-style-type: none"> Channels: multilateral, regional and national implementing entities End recipients: governments, NGOs and the private sector
DESCRIPTION	<ul style="list-style-type: none"> Climate funds pool resources from donors and domestic sources to support low-carbon, climate-resilient development projects. Funds usually have a finite lifetime and a specific sectoral focus, e.g. renewable energy, adaptation, forestry, etc. In many cases, multilateral financial institutions channel funds to recipients and provide financial, environmental, and social safeguards. However, there is a trend towards establishing greater national ownership and control of these funds. 		
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Self-reporting by Funds Overseas Development Institute (ODI) /Heinrich Böll Stiftung (HBF) Climate Funds Update website UNDP Multi-Partner Trust Fund Office Gateway Funds' Annual Reports 		
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Challenges in tracking climate finance delivered through climate funds remain; in particular there is a risk of double counting with reporting from bilateral and multilateral organizations. More tracking efforts are needed to unveil the current contribution and role of existing National Funds^a. 		

Note: To avoid double counting, we carry forward in our calculations only USD 1.5 billion of Climate Fund money identified (USD 2.5 billion), excluding developed to developing country bilateral funds, which we assume are accounted for in bilateral reporting and accounted for in the government budgets category. It is assumed that multilateral institutions managing funds do not include climate fund money in their climate finance reporting and hence that there is no double counting. Furthermore, co-funding, often provided by multilateral organizations, is not considered in the above estimates of climate fund money.

a For instance, Bangladesh, has two Climate Funds: the Bangladesh Climate Change Trust Fund (BCCTF) established in 2010 by the local government and funded with resources from the national budget, and the Bangladesh Climate Change Resilience Fund (BCCRF), created at the same time to pull funds from donor countries. The BCCTF is resourced entirely from the government's own budget with USD 100 million in 2009, 2010 and 2011 in the form of an endowment. Other developing countries such as the Maldives have also established similar national funds (Khan Hannan et al., 2011, Gomez-Echeverri, 2010).

In recent years, a number of climate-specific funds have been set up⁴⁶, which could also be categorized as:

- bilateral funds: financed by single donor countries with one or more recipient country;
- multilateral funds: financed by more than one donor country with more than one recipient country;
- national and regional funds: established and managed by one or more recipient countries

to channel resources from one or more donor country and / or domestic resources.

While our estimates show that Climate Funds committed USD 2.5 billion in total to projects in 2011, we include only 1.5 billion in the Landscape 2012, after deducting bilateral funds (USD 1 billion), which are already accounted for under countries' bilateral reporting. Our estimate is based on the Heinrich Böll Stiftung (HBF) and the Overseas Development Institute (ODI)'s Climate Funds Update database, reporting by the organizations managing individual Funds, as well as the UNDP Multi-Partner Trust Fund Office website. We find that existing Climate Funds mostly channel donor money, in the form of grants⁴⁷. Our estimates

46 In multiple cases pre-existing environmental and conservation trust funds are channeling climate related resources. Some such funds have even been (or are in the process of being) accredited as National Implementing Entities for the Adaptation Fund (e.g., "Protected Areas Conservation Trust" for Belize and the Micronesia Conservation Trust for the Federated States of Micronesia).

47 The Adaptation Fund is an exception in that, while it channels grants, its main source of finance is the monetization of 2% of CDM credits issued. The Amazon Fund also has a particular model for raising finance - it is a

do not include co-funding, which is often provided at the project level. A detailed breakdown of data by Fund is provided in Appendix E. The Landscape 2012 estimate represents a reduction from the Landscape 2011 estimate (upper bound: USD 3.2 billion), which is a reflection of improvements in data sources, in particular better annual project approval volume data, not a reflection of a reduction in the contribution of the funds.

Multilateral organizations such as the World Bank and other UN agencies typically provide trustee and administrative services to manage multilateral and some national funds 'off-balance sheet,' as well as act as 'Implementing Agencies' to channel funds to local recipients and monitor implementation. Bilateral funds are typically administered by donor development agencies. Recipient countries are however increasingly seeking 'direct access' to funds, both through National Implementing Entities⁴⁸ which can access project funds directly, instead of through an international implementing entity, and by setting up nationally governed Climate Funds.

The Green Climate Fund

In future years, the Green Climate Fund may become an important additional climate fund, but it is not yet operational. In 2010, Parties to the UNFCCC established the Green Climate Fund, with the aim of providing "scaled-up, predictable, and adequate funding" to support projects, programs, policies, and other climate-related activities in developing countries. In 2011, the Conference of Parties approved the governing instrument for the Green Climate Fund, and, with the Fund's first meeting in August 2012, the Board is now taking the first steps towards operationalizing the Fund. It is not yet clear, however, how much, and when, finance will actually flow through the Green Climate Fund.

Example

The Climate Investment Funds consist of two multi-donor trust funds: the Clean Technology Fund and the Strategic Climate Fund. The latter is made up of three programs: the Forest Investment Program, the Pilot Program for Climate Resilience, and the Scaling Up Renewable Energy in Low Income Countries Program. The Climate Investment Funds **are the single biggest set of Funds dedicated to climate finance, holding USD 7.2 billion in pledged funding from 14 donor countries.** So far, they have programmed over USD 6 billion for 48 developing countries, with over 200 projects already financed (Climateinvestmentfunds.org; EBRD.com).

Operational since 2008/2009 and administered by the World Bank, each Fund has a specific purpose. The Clean Technology Fund is aimed at projects with large-scale emissions reduction potential and provides loans at terms which are even more favourable than most development banks. The Forest Investment Program supports the strengthening of enabling environments and investments addressing the drivers of deforestation, in eight countries. The Pilot Program for Climate Resilience pilots and demonstrates ways in which climate risk and resilience can be integrated into core development planning and implementation. The Scaling Up Renewable Energy in Low Income Countries Program supports the deployment of renewable energy in the least developed countries. According to HBF and ODI's *Climate Funds Update*, the Clean Investment Funds have so far disbursed USD 148 million to recipients.

performance-based fund, securing contributions from donors on the basis of demonstrated reductions in the annual deforestation rate. The Climate Investment Funds, while financed mainly with grant contributions, also received donors' money in the form of capital and loans, and extend grants, concessional loans and guarantees via MFIs (Climateinvestmentfunds.org).

48 For instance, the Adaptation Fund has now accredited 12 National, 10 Multilateral, and one Regional Implementing Entities.

Private sector intermediaries

COMMERCIAL FINANCIAL INSTITUTIONS

In the *Landscape 2011*, commercial banks were categorized without any estimates of amounts involved. In the *Landscape 2012*, we've been able to estimate a portion of this category that relates to renewable energy project finance. We find that commercial financial institutions contributed 9-10% of total global climate finance.

We estimate that 38-50% of commercial financial institutions contributions come from domestic financial institutions, while 50%-62% of contributions are from institutions in foreign developed countries (European and Japanese investment banks are notable contributors to other countries). Developing countries received 23-42% of this finance, while developed countries received 58%-77%.

Examples

Close to 600 MW of Spanish solar PV and thermal capacity was financed on a project finance basis in 2011. **Spanish banks**, such as Banco Santander, BBVA, or Banco Espanol de Credito were instrumental in contributing project finance debt to solar project developers. Other European (Portugal, Germany, France, Italy, and the Netherlands) and Japanese banks played an important role as well.

For the *Landscape 2012*, we find that most of the projects developed are financed on a balance sheet basis, i.e. the project developers raise money for all their activities without specifically earmarking projects. Since we are unable to relate this funding to the emissions reduction projects and that information is scarce, we do not include this in our estimate for commercial financial institutions.

SOURCES		ESTIMATED VALUE	DESTINATIONS
INTERNAL	<ul style="list-style-type: none"> Reinvested earnings from recurrent and exceptional income: NE 	USD 30.7 - 40.4 BILLION	INSTRUMENTS <ul style="list-style-type: none"> Risk management: NE Carbon offset finance: USD 2.2 billion Low cost debt: USD 0.1 - 1.1 billion Project-level market rate debt: USD 27.4 - 35.7 billion Project-level equity: USD 0.3 - 0.4 billion Balance sheet financing: USD 0.8-1.1 billion
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt and equity from third-party: NE 		OTHER ACTORS <ul style="list-style-type: none"> Lending to all other actors of the landscape on a balance sheet basis: NE
DESCRIPTION	Commercial financial institutions, or commercial banks, include all the sources of private debt capital. These include, but are not limited to: <ul style="list-style-type: none"> Profit-driven investment banks; Carbon brokers and funds; Banks and insurance companies providing risk management solutions; 		
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Bloomberg New Energy Finance and UNCTAD FDI data Ecosystem Marketplace State of the Voluntary Carbon Markets Report 		
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Commercial financial institutions' contributions to "actor or project sponsor-level debt" are hard to measure and analyze. 		

VENTURE CAPITAL, PRIVATE EQUITY, AND INFRASTRUCTURE FUNDS

The direct contribution of venture capital, private equity, and infrastructure funds to emissions reduction projects is in excess of USD 2.4 billion for the year 2011.

We estimate that 55-56% of venture capital, private equity and infrastructure funds' contributions come from domestic sources while 44%-45% come from foreign developed countries. Developing countries received an estimated 15% of venture capital, private equity, and infrastructure climate finance, while developed countries received 85%.

Examples

Groups such as **Barclays Infrastructure Funds Management Ltd.** and **Triodos Bank** contributed to European wind and solar projects in 2011. They typically invest in a diversified portfolio of energy and / or infrastructure assets or businesses (not necessarily all related to emissions reduction) on behalf of investors into such funds. The investors behind these funds are typically institutional investors and wealthy individuals.

SOURCES		ESTIMATED VALUE	DESTINATIONS	
INTERNAL	<ul style="list-style-type: none"> Reinvested earnings from recurrent and exceptional income: NE 	USD 2.4 BILLION	INSTRUMENTS	<ul style="list-style-type: none"> Project-level equity: USD 1.0 billion Balance sheet financing: USD 1.4 billion
EXTERNAL	<ul style="list-style-type: none"> Changes in net debt and equity from third-party (investors): NE 		OTHER ACTORS	<ul style="list-style-type: none"> Investing into other actors of the landscape on a balance sheet basis (corporate actors and project developers): NE
DESCRIPTION	This category captures: <ul style="list-style-type: none"> Venture capital funds; Private equity funds; Infrastructure funds. 			
PRIMARY DATA SOURCES	<ul style="list-style-type: none"> Bloomberg New Energy Finance and UNCTAD FDI data 			
ISSUES AND FUTURE ANALYSIS	<ul style="list-style-type: none"> Private equity funds' investment into emissions reduction technology manufacturers (wind turbines, solar panels, etc.), which are also involved in the deployment and financing of projects, is difficult to estimate. 			

3.3 Instruments

Most climate finance – USD 276-310 billion out of a total USD 343-385 billion – can be classified as investment or, more generally, instruments that include ownership or claims. Key instruments delivering these investments include balance sheet financing (59%), project-level market rate debt (16%), and low-cost debt (15%). Other categories of instruments such as carbon offset flows, grants, and project-level equity make up the remainder of climate finance.

The instruments considered in our analysis correspond to all the economic⁴⁹ and financial instruments⁵⁰ used in the deployment of emissions reduction projects. Financial support can either be given directly to specific projects and/or local implementing entities, using a variety of instruments, or it can assist national policy efforts. Building upon *the Landscape 2011*, **we consider six major categories of instruments:** (i) **policy incentives;** (ii) **risk management;** (iii) **carbon offset finance;** (iv) **grants;** (v) **low-cost debt;** and (vi) **capital instruments**, including project-level market rate debt, project-level equity, and balance sheet financing⁵¹. While not necessarily comprehensive, these categories aim to capture the major instruments used to deliver climate finance.

Policy Incentives

Policy incentives include income-enhancing mechanisms, such as feed-in tariffs, tradable certificates, tax incentives, and clean energy subsidies, which are most commonly funded domestically. **Many emerging economies**, in particular, **have started to use income-enhancing mechanisms to stimulate clean energy investment.** As discussed in the methodology section, we do not report an estimate for total policy incentives finance, given the risk of double counting (both investment money and future revenues from the investment

49 “A means by which decisions or actions of government affect the behaviour of producers and consumers by causing changes in the prices to be paid for these activities.” (OECD Glossary of Statistical Terms available here: <http://stats.oecd.org/glossary/detail.asp?ID=6408>).

50 “A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity” (IFRS, IAS 32 Financial Instruments: Presentation available here: <http://www.ifrs.org/Documents/IAS32.pdf>).

51 There is a large share of debt sitting behind balance sheet financing as project sponsors often obtain corporate loans or issue corporate bonds.

to remunerate the investor). However, the category of policy incentives is included in the *Climate Finance Flows Diagram 2012*, as **policy incentives play a critical role in attracting climate finance at the investment stage.**

Risk Management

OFFICIAL LONG-TERM EXPORT CREDITS

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).

In 2009, the share of export credits available to clean energy sectors (renewable energy and co-generation/district heating) rose to **USD 0.7 billion** (OECD statistics on export credits, 2010, as cited in Buchner *et al.*, 2011). While more recent data is not yet available, we might expect the proportion of climate specific export credits to increase given an agreement this year by OECD countries to incentivise 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 (OECD, 2012).

It is worth noting that export credits of types (ii) and (iii) outlined above are paid to the exporter and therefore technically represent a developed to developed country flow. Furthermore these types of export credits may not be used and may not therefore represent a true flow of climate finance. More detailed data is therefore required to gain a better understanding of the role of export credits in stimulating private low-emission investments in developing countries.

GUARANTEES

Guarantees are used to mitigate the risks involved in clean investments. These can include risks related to non-payment, technology performance, or the fulfillment of obligations by government and affiliated agencies vis-à-vis a given project. Based on our review of DFI's flows, **we estimate annual guarantees in support of climate mitigation and adaptation to be at least USD 1.8 billion.** On top of this, government budgets contributed a non-estimated amount of climate finance for loan guarantees (for instance, through the U.S. Department of Energy loan guarantee program for U.S. solar projects in 2011).

Although money relative to guarantees is typically

INSTRUMENTS		ANNUAL FLOWS OF DIRECT CLIMATE FINANCE (2010 / 2011, USD BILLION)
INSTRUMENTS FOR INCREMENTAL COST	Policy incentives	NOT ESTIMATED
	Risk management	NOT ESTIMATED
	Carbon offset finance (1%)	4.7 - 4.8
	Grants (3%)	9.8 - 15.6
	Low-cost debt (15%)	52.7 - 54.2
	Sub-total instruments for incremental costs (19%)	67.2 - 74.7
	▪ public sources (4%)	10.2 - 16.6
	▪ private sources (1%)	2.6
INSTRUMENTS FOR CAPITAL COST	▪ public intermediaries (14%)	52.2
	▪ private intermediaries (1%)	2.3 - 3.3
	Project-level market rate debt (16%)	52.7 - 62.1
	Project-level equity (6%)	20.0 - 23.5
	Balance sheet financing (59%)	203.1 - 224.8
	Sub-total instruments for capital cost (81%)	275.8 - 310.4
	▪ public sources (2%)	5.8 - 6.1
	▪ private sources (62%)	214.5 - 240.1
TOTAL	▪ public intermediaries (7%)	24.6
	▪ private intermediaries (10%)	30.9 - 39.6
	Total	343.0 - 385.0
	▪ public sources (5%)	16.0 - 22.7
	▪ private sources (63%)	217.1 - 242.7
	▪ public intermediaries (21%)	76.7
	▪ private intermediaries (10%)	33.2 - 42.9

accounted for by financial institutions acting as guarantors⁵², **we do not report the notional amounts relative to guarantees as tangible flows** for in the course of our reporting period. Guarantees do not need to be exercised; there is a chance there will never be any outflow for the guarantor (for more details, please refer to the methodology section). **However**, guarantees **certainly play a central role in clean investment decision-making** and will be the focus of forthcoming CPI work.

CARBON OFFSET FINANCE

Carbon offsets aggregate public and private money for emissions reduction commitments or to meet voluntary objectives. Payments for carbon offsets go to various offset projects; currently most of these projects are related to the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI). Apart from actors on the smaller but growing voluntary market, main players are compliance entities and

intermediaries in regional and national systems (such as the EU Emissions Trading System - EU ETS - and the JETS) and countries with Kyoto Protocol commitments. **Offset buyers can acquire offsets directly, via carbon offset brokers or via carbon procurement funds.** This instrument category comprises all offsets markets in which primary carbon offsets can be purchased for cash.

We estimate that carbon offset flows totalled between USD 4.65 and USD 4.75 billion in 2011. Our estimate includes only the incremental cost linked to carbon offsets, not the investment costs of corresponding emissions reduction projects.

This range is based on available data from the World Bank, the UNFCCC, IGES and Ecosystem Marketplace, and is an increase compared to the *Landscape 2011* estimate (USD 1.7 - 2.0 billion), mainly thanks to the increased CER issuance by the UNFCCC (although there were lower prices) and improved data visibility on ERU issuance.

52 And they usually set aside provisions reducing their ability to invest in or lend to climate finance projects.

GRANTS

Grants are transfers in cash or in kind for which recipients do not incur any legal debt (OECD, 2007b). **Grants can play an important role in reducing upfront project investment costs and meeting viability gaps for projects that are more expensive than the business as usual.** Grants can also include support to enhance the enabling environment for investments through, for instance, knowledge management programs, technical assistance, and capacity building.

In the Landscape 2012, we find that 3.5% (USD 13 billion) of total identified climate finance flows in 2010/2011 were delivered in the form of grants. This is three times the amount of grants identified in the Landscape 2011. This figure can be considered an underestimate as it lacks data on grant contributions from developing country governments' to domestic clean energy.

In 2010, 37% (USD 7 billion) on average of direct government budget flows were delivered in the form of ODA grants. The top providers of grants, as reported in the OECD's CRS database were the UK, Japan, Norway and Germany. Combined with grants provided by DFIs and Climate Funds, we estimate on average 13% of total "public" contributions were provided in the form of grants (USD 12.5 billion). Meanwhile, just 0.2% of private finance was delivered as grants and originated from philanthropic contributions.

While there is no comprehensive overview of the global extent of philanthropic contributions to climate-specific projects, Vrana and Cracknell (2011) cite a range of studies which have reviewed environmental grant-making by foundations in the UK, the U.S., Canada, Australia, and New Zealand.

Vrana and Cracknell's (2011) review of environmental funding by European foundations suggests that climate change relevant grants reached around USD 53 million⁵³ annually over the period 2008 - 2009, an estimated 13% of which flowed to end beneficiaries in developing countries and the remainder to Europe and North America. We assume a 50:50 split between mitigation and adaptation activities for this figure⁵⁴.

Meanwhile, the Environmental Grantmakers

53 This figure is expected to be an underestimate as it was based on a limited number of foundations and excluded environmental grants which were not more specifically marked for sector relevance.

54 39% of EUR 37 million is reported as energy and transport. It is not clear what percentage of activities reported as "climate and atmosphere" are for mitigation versus adaptation.

Association (2012) estimates the contribution of U.S. foundations to the "climate and atmosphere" area in 2009 to have been between USD 158 - 215 million⁵⁵. 60% of this finance stayed in the U.S.; 6% flowed to North America and Europe; and 34% was directed to the rest of the world including Asia, Africa, Central and South America. We exclude an additional USD 150 - 165 million worth of grants to energy and transport related activities, given that there is no way to determine the share of those grants that went to fossil fuel related activities. We therefore estimate that a total of approximately **USD 211 - 268 million** in philanthropic contributions went to climate projects in 2008/2009.

Example

JICA supports a variety of climate projects around the world through grants. In Kenya, for example, JICA supports a program that helps communities adapt to floods and develop infrastructure such as evacuation facilities. In Vietnam, **JICA supports low-carbon development through integrated grant and project loan packages, and technical assistance to support physical infrastructure development, capacity building, and policy development.** JICA also provides grants that encourage infrastructure projects to engage Japanese firms: the Agency provides funding for preparatory studies and helps finance infrastructure that will be later operated by private players. Source: Inaka (2011).

LOW-COST DEBT

Low-cost debt is financing provided at terms preferable to those prevailing on the market including, for example, longer repayment terms, lower interest rates, and higher levels of participation in investments. Low-cost debt includes concessional loans.

The biggest low-cost debt providers are Development Finance Institutions and governments. Loan conditions vary greatly between individual institutions and projects. **The terms of loan repayments are important for engaging the private sector, but at the same time providers need to avoid over-subsidization and to increase the value obtained for public money.** It is not, however, possible to comment on the terms of debt due

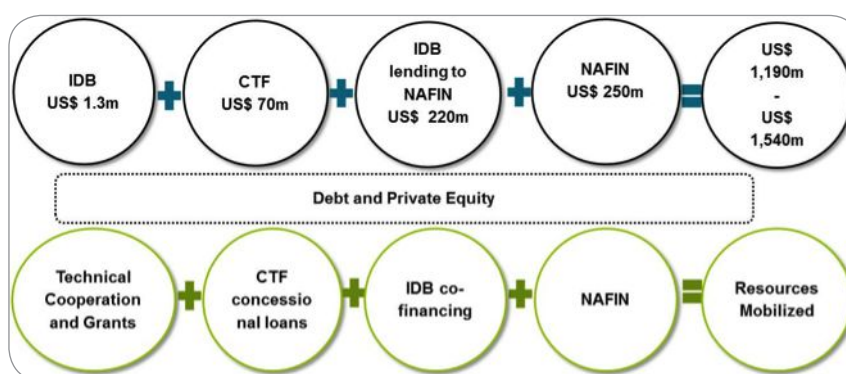
55 Lower value includes projects marked as pertaining to the specified focal area as a "primary issue" while the higher value includes overall giving (primary and secondary issue).

Examples - Mexico's Renewable Energy Financing Facility (REFF)¹

The REFF was established within the Mexican Nacional Financiera (NAFIN) to address the renewable energy financing gap by encouraging private sector investment. REFF provides:

- **direct loans with long repayment terms** (about 10-15 years) and fixed interest rates to project developers, to finance the construction of new renewable energy projects and support their financing needs during their life; and
- **contingent credit lines to cover transitory cash flow shortages during the project lifecycle** (e.g., due to lower than expected energy generation or prices) up to the volume needed to service senior debt.

As shown in the figure below, NAFIN channels international funds from the Inter-American Development Bank and the Clean Technology Fund, combining them with its own, to attract private capital. It is expected that the facility will ultimately reach a total value of USD 540 million. Providing a maximum of USD 10 million to individual projects, it is expected that the facility will contribute to investments with a total capital value of up to USD 1,540 million².



Source: Smallridge et al., (2012) based on IDB (2011).

¹ Source: Visconti et al. (2012), Smallridge et al., (2012) based on IDB (2011).

² This figure is estimated considering a total 1,000 MW of installed generation capacity and investment costs of USD 2-2.5 million per MW (IDB, 2011).

to a lack of aggregated data; figures presented here are gross rather than net flows.

Up to 14.6% (USD 53.5 billion) of total climate finance flows captured in the *Landscape 2012* are delivered in the form of low-cost debt. These flows are entirely from public sources, in particular National Finance Institutions (indeed 86.6% of their financing, or USD 37 billion, is delivered through low-cost debt), Bilateral Finance Institutions (which use low-cost debt to deliver 62%, or USD 7 billion, of their climate financing) and directly from governments (32%, or USD 6.2 billion on average, of government climate financing is delivered through low-cost debt). This compares to just USD 12.6 billion worth of concessional loans identified in the *Landscape 2011*, reflecting the extended coverage of DFIs' flows and in particular NFIs in the *Landscape 2012*.

The central role of BNDES in the rapid expansion of wind and other renewable energy sources in Brazil in

recent years is highlighted in Box 7. Here, low-cost debt has reduced borrowing costs for investors by around 40% and in turn reduced renewable electricity tariffs by around 25%.

CAPITAL INSTRUMENTS

The capital instrument category tracks the transformation of capital contributions into shareholder ownership (equity), creditor claims (debt, loans, bonds, etc.), and hybrid capital instruments. Any source or intermediary may contribute capital. Capital contributions are registered in specific mitigation and adaptation investment project balance sheets. Capital is returned to contributors in two forms: first, as dividends and changes in the market value of the shares held for equity holders, and second, as coupons or interim interest payments and return of principal for debt holders.

In the *Landscape 2012*, we split investment capital

sources into three major categories⁵⁶: project-level market rate debt, project-level equity, and balance sheet financing.

Project-level market rate debt worth **USD 52.7 - 62.1 billion** went towards emissions reduction projects in 2011. The debt is being repaid on the revenues generated by the emissions reduction project rather than its sponsor (non-recourse debt). This is mostly project finance debt but by extension, we include project bonds, lease financing, and other financing techniques in this category. Unsurprisingly, the largest contributors were commercial financial institutions (USD 27.4 - 35.7 billion). More interestingly, a significant portion of project-level market rate debt came from other actors, notably vendor financing for technology manufacturers.

We find that **project-level equity** worth **USD 20.0 - 23.5 billion** was directed to emissions reduction projects in 2011. This is the equity counterpart of project-level market rate debt.

Balance sheet financing (or sponsor-level financing) worth **USD 203.1 - 224.8 billion** went towards emissions reduction projects in the year 2011. This category corresponds to investment capital raised at the sponsor level rather than at the project level. The largest contributors to this type of instrument are project developers (USD 97.4 - 109.7 billion), corporate actors (USD 65.0 - 74.1 billion) and households (around USD 32.1 billion). From an analytical standpoint, it is impossible to determine the sources of balance sheet financing for several reasons. First, sponsor-level capital includes various sources of capital: reinvested earnings from the sponsor's activities, equity from shareholders, and debt from lenders (commercial financial institutions for loans and credit lines, institutional investors, and mutual funds for bond and notes). Second, the money raised at the sponsor level is not earmarked. Third, it is challenging to come up with a simple estimate to break down balance sheet financing into debt and equity components. Sponsor financing practices and economic circumstances vary across industries and countries. For example, in India, project developers must overcome difficulties securing corporate debt, whereas in Europe, utilities can use regular borrowing programs more easily. Moreover, we cannot merely look at sponsors' balance sheets for guidance as the mix of capital sources for emissions reduction projects will not

necessarily be the same as the mix of capital sources for all projects.

⁵⁶ In order to make the instrument categories mutually exclusive, any amount categorized as 'capital' should be free of any form of support from other instruments (subsidies, carbon offsets, etc.) and should only represent the net 'capital' dedicated to investments.

Box 9 – India’s experience in financing renewable energy

The high cost of debt is the most pressing problem currently facing renewable energy financing in India.

India, which is already the world’s fifth-largest market for wind power, has set ambitious targets for both wind and solar generation. These targets of 20 GW for solar (by 2022) and 31 GW for wind (by 2017) will require massive investment for an economy already facing competing needs for investment in energy and infrastructure more generally. **A plethora of renewable policy abounds at the state level**, and the federal government offers its own policies – such as accelerated depreciation and the renewable energy certificate (REC) market – but all of these policies are likely to be undermined by the state of Indian financial markets and their regulation.

In particular, Nelson and Shrimali et al., (2012) found that **in the short term the interest rates and terms for debt may raise the cost of renewable energy by 24-32% compared to similar projects financed in the U.S. and Europe. The high cost of debt** wipes out all, or most, of the cost advantages India might otherwise have and **makes renewable energy much less competitive against conventional alternatives**. There are also signs that, in the longer term, debt will become increasingly hard to secure, even at high costs, which could put targets beyond reach for both cost and financing reasons.

The main causes of high interest rates for renewable energy projects lie in the general financial market conditions of the country. Growth, high inflation, competing investment needs, and country risks all contribute. A shallow bond market, regulatory restrictions on foreign capital flows, and heavy government borrowing add to the problem, while the cost of currency swaps and country risk negate the advantages that could come from access to lower-cost foreign debt.

While there is agreement in India that debt markets might be a problem, there is less agreement as to the precise nature of this problem or potential solutions. Discussions with analysts operating in the country revealed the existence of a gap between risks perceptions and expected returns from renewable energy projects in India. To bridge this gap, several initiatives have been taken by multilateral banks to establish risk guarantee funds. For instance, the Asian Development Bank and the Indian Government set up a partial risk guarantee fund in which they cover all risks and pay 50% of the default value at a nominal premium. But such measures have struggled so far as project developers are unwilling to pay a high premium for such insurance coverage.

In other rapidly developing countries facing high interests and competing investment demands, such as Brazil, renewable energy investors rely partly on concessionary support from National Development Finance Institutions. However, in India, the deregulation of financial markets that occurred in the early ‘90s has, in fact, led many National Finance Institutions to convert themselves into commercial banks that cannot make concessionary loans. Further analysis is needed to evaluate what lessons can be learned from experience in places like Brazil or China and how these lessons could be adapted to the Indian context.

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Based on Nelson, Shrimali et al., (2012), “Meeting India’s Renewable Energy Targets: The Financing Challenge”, CPI Report (forthcoming).

3.4 Disbursement channels

Disbursement channels are organizations that work directly to disburse funds for climate mitigation and adaptation projects, including organizations from the public⁵⁷ and private sector, public-private partnerships (PPPs), local financial institutions and banks, multilateral organizations, non-governmental organizations, and civil society. They may be local, regional, national, or international organizations.

There is no aggregated information available on the split of finance by type of disbursement organization, but examples from specific investments or organizations can help to shed light on current patterns and best practice. For instance, Germany's KfW collaborates with a range of local financial institutions including micro-banks, commercial banks, refinancing institutions, village savings banks, non-governmental organizations, and regional and supra-regional micro-finance funds to build up micro and small enterprises.

Public climate finance from developed to developing countries is sometimes provided directly to recipient governments or government agencies for distribution to end recipients. More often, however, for efficiency and to ensure environmental, social and economic safeguards are applied, donors channel money through international organizations (e.g. UNDP, UNEP, or Multilateral Finance Institutions) or large, reputable and often international non-governmental organizations. This has also been the operational mode of many international Climate Funds. For instance, the Clean Technology Fund, the World Bank Group, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, and the Inter-American Development Bank act as implementing agencies, working alongside local executing agencies who actually implement projects. The Adaptation Fund is an exception in that a number of National Implementing Entities have been accredited to receive money directly from the Fund (see Section 3.2 on Climate Funds).

There is often a complex web of relationships involved in implementing a project. For instance, the Clean Technology Fund awarded low-cost debt to Ouarzazate I, a Moroccan Concentrated Solar Power plant. However, this debt is channeled through the African Development Bank and International Bank for Reconstruction and Development, then passed to the Moroccan Agency for Solar Energy (MASEN) which

57 Public organizations including government ministries, departments, programs and agencies.

provides debt financing to a public private partnership Special Purpose Vehicle which will build and operate the plant (see Falconer and Frisari, 2012).

Regardless of the geographic nature of climate finance flows and whether they are public or private, the types of organizations engaged to disburse and implement climate finance are of crucial importance, shaping the capacity available to implement and scale up low emissions and climate resilient activities. In particular, engagement of local organizations is important to ensure capabilities are transferred or built up locally rather than being isolated in international organizations.

3.5 Uses

In 2010/2011, **mitigation measures attracted USD 350 billion out of USD 364 billion**. This is largely the result of significant capital investments in mitigation measures like renewable energy.

Data on **REDD+** finance are poor but suggests that flows could be around USD 11.8 billion per year, predominantly from domestic government contributions.

Adaptation interventions received USD 12.3 to USD 15.8 billion, primarily in the form of incremental cost payments. While there has been some progress in tracking adaptation finance since the *Landscape 2011*, weaknesses in defining and tracking adaptation finance, partial reporting by some multilateral players, and the inability of existing efforts to capture private flows dedicated to such activities continued to hamper our understanding of adaptation finance flows.

Mitigation measures received the bulk of climate finance, around USD 350 billion. The private sector money captured in the *Landscape 2012* accounted on average for USD 268 billion, about 73% of the total, and was **directed towards renewable energy generation projects, wind and solar in particular**.

Governments' climate finance was also strongly focused on mitigation measures (87%). This reflects low-carbon development ambitions and commitment to supporting structural changes in energy systems, seen as engines of economic growth.

Public financial institutions also played a pivotal role in the support of clean energy investment, allocating more than 60% of their climate flows to renewable energy and energy efficiency measures. By packaging

Table 1: Climate finance: breakdown of sources into mitigation and adaptation funds^a

SOURCES & INTERMEDIARIES	MITIGATION (USD BILLION)	ADAPTATION (USD BILLION)	TOTAL (USD BILLION)
PROJECT DEVELOPERS	115.0 - 129.3	NE	115.0 - 129.3
CORPORATE ACTORS	69.3 - 80.5	NE	69.3 - 80.5
HOUSEHOLDS	32.3	NE	32.3
INSTITUTIONAL INVESTORS	0.6	NE	0.6
COMMERCIAL FINANCIAL INSTITUTIONS	30.7 - 40.4	NE	30.7 - 40.4
VENTURE CAPITAL, PRIVATE EQUITY AND INFRASTRUCTURE FUNDS	2.4	NE	2.4
GOVERNMENTS BUDGETS	14.9 - 18.2	1.0 - 4.4	15.9 - 22.6
NATIONAL FINANCE INSTITUTIONS	37.5	5.2	42.7
MULTILATERAL FINANCE INSTITUTIONS	18.3	2.9	21.2
BILATERAL FINANCE INSTITUTIONS	8.6	2.7	11.3
CLIMATE FUNDS	1.1	0.4	1.5
TOTAL	330.7 - 369.3	12.3 - 15.7	343.0 - 385.0

Note: Figures represent annual flows for the latest available year (2010/2011), variable according to the data sources (2010 for OECD DAC members and EU Institutions; 2011 for all the other organizations). Most data presented relate to commitments in the given year, disbursement data are included for one DFI only. The figures do not add up to the total exactly because of rounding.

a Philanthropy, which is not included in the table due to the materiality of the flow, accounts for about USD 211-268 million, which due to lack of information we assume is split equally between mitigation and adaptation (around USD 120 million to each).

financing instruments tailored to address market failures, they can close the viability gap of clean technologies, to help them mature and become self-sustaining. They can also provide access to long-term financing for these projects, otherwise not readily available in local capital markets.

Mitigation

What does the private sector finance?

We find that the private sector (both private sources and intermediaries) contributed **USD 250.3 - 285.5 billion** towards the total of global climate finance in 2010/2011 (74% of the total). **All that money went to climate change mitigation.** This reflects both the difficulties in estimating private sector adaptation finance (even though households and corporate actors do engage in autonomous adaptation activities) and the constraints of the global datasets to which we had access (Bloomberg New Energy Finance and UNCTAD Foreign Direct Investment data for renewable energy asset finance and REN21 and Frankfurt School of

Finance & Bloomberg New Energy Finance for small-scale renewable energy)⁵⁸.

The total amount breaks down into:

- **USD 83.3 billion for small-scale investment:** USD 73.7 billion for solar PV and USD 9.4 billion for solar water heaters and coolers;
- **USD 162.3 - 197.5 billion for larger renewable energy asset finance** corresponding to an extra capacity of 67 GW (more than 67% for wind and more than 20% for solar technologies); and
- The remainder to carbon offset finance.

The largest private contributors to mitigation investment were project developers (USD 116.0 - 130.3 billion), corporate actors (USD 69.3 - 80.5 billion), and commercial financial institutions (USD 30.7 - 40.4 billion). Private sector investment relied on contributions from public sources and intermediaries:

58 Please note that given the data constraints, data on energy efficiency is lacking. Ryan et al. (2012) estimate that about USD 23 billion in DFIs' financing leveraged about USD 46-184 billion in energy efficiency investments in developing countries in 2011, depending on the leverage ratio (2 or 8).

instruments addressing incremental costs but also access to debt financing both at the project level and at the sponsor level.

What does the public sector finance?

Governments and public financial intermediaries invested **USD 80.4-83.7 billion in mitigation measures in 2010/2011**. Development Finance Institutions contributed USD 64.4 billion, or 78.4% of the total. Renewable energy and energy efficiency received 54% and 18% of total public mitigation financing respectively. The sustainable transport sector received a significant amount of climate funds, 10% of the total, mainly from National Finance Institutions and Multilateral Finance Institutions.

In particular, **NFIs' climate finance activities highlight the domestic emphasis**, which is **driven by the low-carbon development strategies of the countries they operate in**, or to which they are linked to. About **USD 28.9 billion** (or 67.7% of the NFIs' total climate financing), was committed to **renewable energy and energy efficiency** measures implemented mainly domestically. We estimate that more than 80% of NFIs' finance was spent in China and Brazil, reflecting the relevant weights of CBD and BNDES in this category⁵⁹. The transport sector, of importance for socio-economic development, represented 10% of NFIs' mitigation finance. The activities supported include rail and ship transportation, waterways, Bus Rapid Transit systems, and vehicles substitution. Acknowledging that these activities may ultimately result in emission reductions, it is difficult to understand and compare them against

a business-as-usual scenario, and to understand if and what they should be qualified as climate finance⁶⁰.

MFIs' mitigation financing was also strongly oriented towards renewable sources of energy and energy conservation measures, which received more than 61.4% of their total commitments (about USD 13 billion).

This can partly be explained by the sectoral specialization of some players such as the EBRD, which devoted 93.8% of its 2011 mitigation finance to these sectors⁶¹. MFIs' resources also financed measures aimed at strengthening regulatory and institutional frameworks supportive for clean-technologies⁶². They also worked with local financial institutions to embed capacity and create specific skills in the preparation, risk evaluation, and monitoring of these types of projects, as well as in the identification of investment opportunities⁶³.

The development of the financial sector's capabilities was also one of the areas targeted by bilateral players such as KfW, which dedicated 5.6% of its 2011 climate finance to capacity building measures in the mitigation area. Overall, in 2011 the largest shares of BFIs climate spending was directed to the energy (29.2% to renewable, 13% to energy efficiency) and waste management sectors (9%). Transport and agriculture, forestry, and land use accounted for 12.2%.

The forestry sector is an area of emerging interest for some BFIs. KfW, for instance, has a 'forest and climate protection program' with Indonesia, the largest single-sum beneficiary to date of Germany's Fast-Start financing (Vieweg et al., 2012). The promotion of REDD initiatives is also an important objective for JICA and AfD (AfD, 2012; [JICA, 2012b](#)).

The largest share of bilateral ODA commitments marked as climate mitigation (38%), which represented about 60-80% of 2010 DAC members' reporting was

59 As described in Box 7, BNDES placed a particular emphasis on wind and hydropower projects in 2011. CDB too, demonstrated its commitment in the support of wind farms and large-scale hydroelectric projects, proactively implementing the government's Green Credit Policies. At year-end 2011, its outstanding loan portfolio in energy conservation, emissions reduction as well as environmental protection sectors at USD 101.8 billion (RMB 658.3 billion), up by 33% year-on-year, demonstrates its commitment. The increase observed in the Banks' support to the power sector in 2011 reflects the country's need to overcome chronic power shortages and optimize the supply mix. Worth noting that nuclear and integrated or pithead coal-based plants were also the recipients of the Banks' financing (CDB, 2012). CDB does not invest domestically only, it is also invests abroad, playing an important role in the financing of overseas activities of state-owned enterprises with the aim of creating national champions and acquire advanced technologies (e.g., Brookings.edu). The Bank also continued to provide financing to the China National Petroleum Corporation Group and SINOPEC Group, to support their overseas oil field exploration efforts. As of the end of 2011, CDBs' outstanding loan balance in this sector stood at USD 59.8 billion (RMB 386.5 billion) (CDB, 2012).

60 The World Bank identifies the activities with mitigation co-benefits in the sector e.g., modal shifts, traffic management, etc. (see [Worldbank.org](#)). Not all DFIs, however, have sophisticated systems and frameworks for accounting mitigation finance in place, and this is particularly true with regard to the majority of NFIs, whose approaches are still in their infancy (See Smallridge et al., 2012).

61 Projects supported can range from energy efficiency interventions in the industrial and residential sector, support to biomass technologies and the financing of standalone renewable energy projects such as wind and hydropower (EBRD.com, 2012)

62 In 2011, capacity building/technical assistance measures related to mitigation received 0.5 billion of MFIs' commitments.

63 See e.g., the EBRD Sustainable Energy Financing Facilities which comprises a comprehensive technical assistance program intended to provide implementation support to partner banks, sub-borrowers and project sponsors (EBRD.com).

committed to projects in the agriculture, forestry, and land use sector. Capacity building/enabling environment measures received another significant 30%, while renewable energy generation from hydro, geothermal, solar, and wind sources captured 15% (OECD, 2012)⁶⁴.

African and Asian countries accounted for almost 40% of overall bilateral spending (OECD, 2012).

This underscores the importance of addressing critical development issues jointly with mitigation measures to achieve growth in a sustainable manner.

The volume of public money we found “sitting behind” project developers’ actions (about 11 billion, see Box 5), largely originating from and delivered to developed countries (64-72% of the total) – mainly in Germany and the U.S. – was directed to support and accelerate local deployment of renewable energy measures. This reflects the large injection of funds as a result of the “green” stimulus plans, and the effect of policies incentivizing uptake. Box 3 on the U.S. Federal Tax Incentive Program provides insights on these aspects.

REDD+

The scope of activities considered “REDD+”⁶⁵ is notoriously difficult to delineate. While REDD implies efforts to reduce deforestation and forest degradation, the ‘plus’ refers to the restoration and rehabilitation of forests and to addressing the drivers of the problem. A broad range of activities is needed to tackle the drivers of deforestation and support transitions to more sustainable economic development pathways.

REDD+ finance can support the creation of enabling environments (e.g. capacity and institution building and policy and regulatory reform) and mitigation projects (e.g. creating protected areas or rehabilitating ecosystems). Transitioning from a project-by-project approach toward landscape and industry scale approaches would improve prospects of achieving reductions at scale

64 Bilateral funds’ focus are also starting to move towards Nationally Appropriate Mitigation Actions (NAMAs) as demonstrated from, for instance, the early initiative of a group of Nordic countries financing such programs in Vietnam and Peru. In Peru USD 3 million (EUR 2.2 million) will be invested in the waste management sector with bilateral funds from Nordic countries (Denmark, Finland, Iceland, Norway, Sweden via the so-called Nordic Partnership Initiative) and domestic money from Peru itself, but also from the Nordic Environmental Development Fund. In Vietnam, the USD 2.1 million (EUR 1.5 million) NAMA will focus on the cement manufacturing sector with financing from Nordic countries and Vietnam itself. For additional information see NEFCO website (NEFCO.org).

65 Reducing Emissions from Deforestation and forest Degradation, the sustainable management and conservation of forests, and the enhancement of carbon stocks.

by shifting production practices, commodity supply chains, and land use patterns across jurisdictions and geographies. For instance, programs aimed at reforming policies and creating incentives to intensify agricultural productivity, thereby reducing pressure to convert forests to achieve increased yields, and programs to create alternative livelihoods, should be considered part of an effective REDD+ strategy. A wide range of actors and sources of finance will be required to realize this broad scale transition, including national and international public and private finance.

The potentially broad scope of REDD+ activities adds to the challenges of tracking global financing flows, data on which are particularly poor (Buchner et al., 2011; Simula, 2010; Streck and Parker, 2012; ISU, 2012; PWC, 2011). Fragments of information available on current REDD+ flows suggest they are lagging far behind needs, projected by the 2008 Eliasch Review to be around USD 17-33 billion per year by 2030 for a 50% reduction in deforestation.

Current flows of REDD+ finance come largely from national and international governments with smaller but growing contributions from non-governmental organizations, philanthropic, and private sector sources. The majority of international REDD+ financing to date has focused on ‘REDD+ readiness,’⁶⁶ building capacity and institutions and some demonstration projects, while REDD+ activities at scale and ‘payment for performance’ activities have yet to gather pace.

Selected estimates of annual REDD+ finance flows are presented in Appendix F to give a sense of the possible scale of current commitments. Estimates include bilateral and multilateral flows and dedicated funds, as well as forest carbon market flows. The data suggest that **current REDD+ flows could be approximately USD 1.3 billion per year**⁶⁷. The figures highlight the dominance

66 “REDD readiness” generally means that all the preconditions – in terms of institutional, policy and regulatory frameworks – necessary to enable countries implement REDD measures are in place. Under the UNFCCC Cancun Agreements countries are requested to develop a national strategy or action plan, a national forest reference level, a robust and transparent national forest monitoring system, and a system for providing information on how the safeguards are being addressed and respected (UNFCCC, 2010 – Cancun Agreements, Art. 71).

67 Where possible the value of commitments to approved projects is counted rather than the full value of pledges to funds. Higher estimates of international public finance tend to include pledges. The International Sustainability Unit (ISU) estimates that total REDD+ financing pledges for the period 2010-2012, based on reporting by donors through the VRD of USD 4 billion. Streck and Parker (2012) estimate that international public finance currently accounts for around USD 3 billion per annum including multiannual pledges and funds.

Box 10 - Sectoral breakdown of public mitigation finance

Figure 3 presents the sectoral breakdown of countries' bilateral aid, including Fast-Start finance¹ and DFIs' support targeting climate change mitigation activities. It also includes the estimated portion of public funds tracked from project finance reporting in the BNEF database, which was entirely directed towards renewable energy projects².

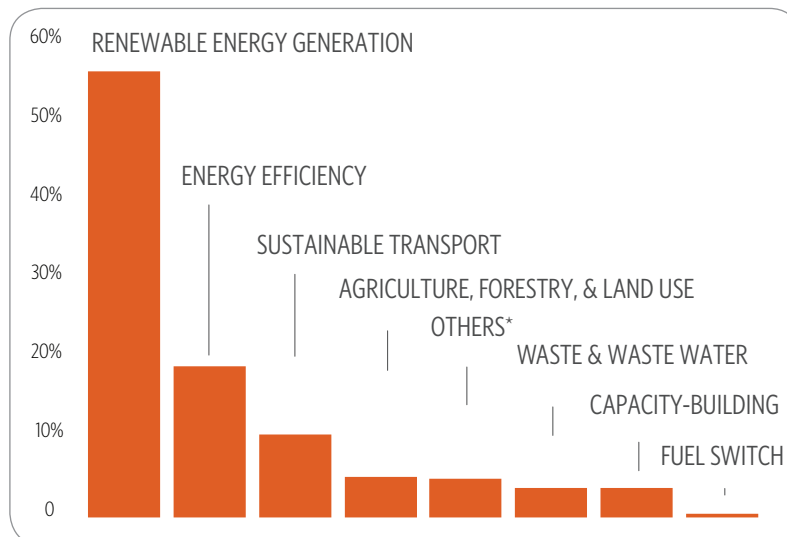
The allocation of the various activities listed in the OECD CRS database (OECD, 2012) against the presented sectors was based on the best available information (i.e., project purpose and description)³. The weights obtained for each sector were then applied to allocate the identified portion of Fast-Start finance devoted to mitigation.

We acknowledge the presence of financial flows directed to projects not in line with our definition of climate finance such as money invested in research and development, gas-fired power plants, or projects with apparently no link to abatement interventions, but rather linked to activities like human rights (e.g. "CSO campaign against poverty, hunger, exclusion and violation of human rights in South Asia") or peace-building, conflict prevention, and resolution (both marked as "significant" in the OECD CRS dataset). Support to such activities was allocated to the category "others," which also include multi-sector or unspecified aid. Michaelowa/Michaelowa (2011) also highlights issues related to donors incorrect coding and reporting to OECD DAC (see OCED, 2010 for comments on Michaelowa/Michaelowa, 2011).

With regard to DFIs, the breakdown of mitigation finance reflects institutions self-reporting against the sectoral categories provided in the financial survey. In those cases where respondents provided different sectoral breakdown, the project/category description was considered for allocating data against the chosen categories.

To estimate the sectoral allocation of DFIs' climate finance sourced from secondary data, we used - depending on the institution/group of institutions considered - the following: Ecofys-IDFC (2012), UNEP-SEI (2011); Annual Reports and BNEF (2012).

Figure 3. Sectoral breakdown of governments' and DFIs' mitigation finance. (USD 80.4-83.7 billion)



Note: The total include Climate Funds' mitigation financing, which is however excluded from the sectoral allocation due to data availability. The category "others" can include unspecified or multi-sector aid, or unallocated portions of DFIs' financing.

- 1 To allocate to the mitigation theme the USD 1.8 billion identified in Fast-Start Finance reporting for 2010, we applied the average share observed in the distribution of money between mitigation and adaptation projects during the 2010-2011 period as per Gibbs (2012) (71.4% including REDD vs. 22.5%). To this, we added a share of the money directed to projects with multiple objectives, computed according to the weight of mitigation versus adaptation projects on the total.
- 2 The sectoral breakdown does not include Climate Funds money due to data availability issues.
- 3 Climate finance commitments retrieved from the OECD CRS data set and allocated to the energy efficiency sector refer to a portion of those flows directed to measures aimed at improving the "power quality and reliability" of electrical transmission/distribution networks. A specific example is, for instance, a project titled "Pacific Power Utilities improved energy efficiency." We acknowledge that more detailed analysis is needed to understand what is behind each specific project "label."

of bilateral finance and support claims that bilateral finance for REDD+ has so far been faster to disburse than multilateral finance (ISU, 2012).

This estimate, however, largely based on data for international public flows, does not account for **domestic REDD+ finance which some experts estimate could be several times greater than international donor flows.**

It is particularly difficult to determine the volume of domestic flows and few reliable estimates are available. Streck and Parker (2012) estimate that approximately USD 2.5 billion per year is spent in Brazil, Mexico and Indonesia alone and a further USD 7 billion annually is spent in China on afforestation activities. Meanwhile, Brazil, Cameroon, the Democratic Republic of Congo, Gabon, Indonesia, Laos, Mexico, and Papua New Guinea report REDD+ self-finance amounts to USD 2.4 billion in the Voluntary REDD+ Database⁶⁸ database (ISU, 2012).

Private sector motivations to invest in REDD+ activities include **carbon market compliance**, pre-compliance positioning, and **corporate social responsibility** including **voluntary carbon market** participation. While the volume of forest credits traded on voluntary markets dropped by almost half between 2010 and 2011, the average price of credits almost doubled, meaning that the market held its overall value. On the other hand, sales of CDM/JI forestry credits rose considerably between 2010 and 2011 (as the end of the Kyoto compliance period drew near) but average prices fell slightly (Peters-Stanley, 2012). Some new emerging compliance carbon markets, notably in Australia, as well as nascent bilateral markets, may provide new sources of demand going forward. Aside from carbon markets, Streck and Parker (2012) estimate that the private sector is currently generating more than USD 1 billion each year through premiums associated with **certified forest products**, at least part of which goes towards conservation programs.

Taken together, available estimates of domestic, international, and private flows imply total REDD+ flows of around USD 11.8 billion per year. This figure is not presented in the *Climate Finance Flows Diagram 2012* at present given the figure's high level of uncertainty and poor underlying data sources. It would appear however that domestic governments are the most significant contributors to REDD+ finance. Engaging the private sector to drive sustainable production practices will be crucial to meaningfully tackle the drivers of deforestation, supported by clear government

incentives and policies and support from the international community.

Adaptation

In 2010/2011, USD 12.3 - 15.8 billion was directed towards activities with adaptation objectives. Accounting for 77.5% of the total, public financial institutions were the predominant sources. These institutions are also the holders of long-standing expertise in the field given their past experience in the areas of development assistance with relevance to adaptation.

The biggest knowledge gap in adaptation financing is the role of the private sector, which is not estimated in this study.

Little agreement exists on what qualifies as adaptation finance or, more narrowly, what qualifies as an adaptation intervention. Adaptation, in fact, encompasses various types of activities, which may span the entire vulnerability reduction-response to impacts continuum, and which can be applied to a wide range of sectors (agriculture, water, energy, etc.). As a result, **most institutions are not yet equipped with a proper methodology for measuring adaptation finance**, although relevant efforts to establish tracking and reporting approaches are currently underway (e.g., the MDBs' initiative on joint adaptation finance tracking).

Hence, weaknesses in defining, measuring, tracking and reporting adaptation finance, partial data from some multilateral players, and the inability of existing efforts to capture private resources dedicated to such activities, hampered our understanding of adaptation finance flows.

Given the definitional and methodological complexity surrounding the topic, there are few estimates available so far, as few have actually tried to truly identify and assess adaptation financing.

In the *Landscape 2012* we aim to highlight the progress achieved so far on this matter, as well as underscore the remaining gaps.

Our estimate of about USD 12.3–15.7 billion of adaptation finance comprises: donors' bilateral aid (USD 1–4.4 billion) (OECD, 2012)⁶⁹ including USD 428 million of

68 Source: <http://reddplusdatabase.org/>.

69 Data are adjusted to exclude Bilateral Finance Institutions' contributions to this field.

Box 11 - Sectoral breakdown of public adaptation finance

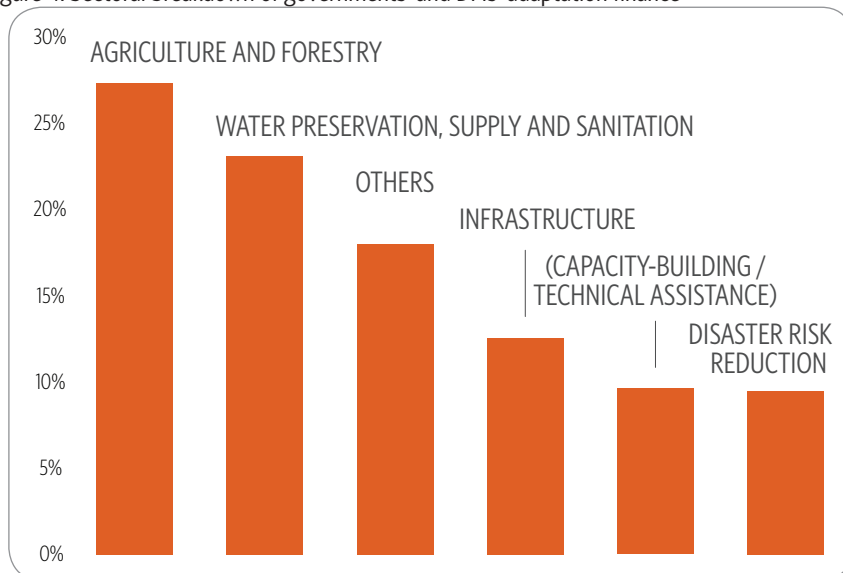
Based on the information gathered, we attempted to categorize adaptation finance by recipient sectors, despite an international agreement on this has not been reached as yet. We found that **the agriculture and forestry, and the water preservation, supply and sanitation sectors were the main recipients of climate-resilient finance in 2010/2011, receiving 27% (USD 4.4 billion) and 23% (USD 3.8 billion) of the total respectively** (see Figure 4).

Among individual contributors, Bilateral Financial Institutions allocated 51.3% of their adaptation finance to the water sector. Disaster risk reduction initiatives also represented an area in which Bilateral Finance Institutions were particularly active, receiving 15.6% of their adaptation finance. National players appeared critical in supporting the strengthening of the resilience of local infrastructure assets, as well as the agriculture and forestry sector, which were the recipients of 31.3% and 30.9% respectively of their adaptation finance.

Among DFIs, multilateral organizations, on the other hand, were the major providers of financial support towards capacity building and technical assistance initiatives in this area, which accounted for 12.7% of their total adaptation finance. Activities included awareness raising programs, training to address vulnerabilities, early warning systems, and strengthening of institutions, policies, and regulations.

Dedicated Climate Funds also played a role in adaptation financing, albeit limited compared to the total, accounting for about 2.5%. They are however proving critical in financing pilot and demonstration projects, and in promoting the integration of climate risk and resilience into development policies and planning. This is particularly the case of the Pilot Countries for Climate Resilience (PPCR), a program operating within the Climate Investment Funds framework, which, by channelling 45% of the total Climate Funds' finance (or USD 154.8 million), stands out as the major contributor in this area.

Figure 4. Sectoral breakdown of governments' and DFIs' adaptation finance



Note: Climate Funds' adaptation financing (USD 352 million) and the estimated portion of philanthropic contributions targeting adaptation (USD 120 million) are excluded from the sectoral breakdown due to data availability issues. The category "others" can include, for instance, unspecified or multi-sector aid, or unallocated portions of DFIs' financing.

Fast-Start finance⁷⁰ Climate Funds (USD 0.4 bn) and

70 The portion of the identified USD 1.8 billion in Fast-Start Finance reporting for 2010 directed to adaptation (USD 441 million) was estimated by applying the average share observed on the thematic allocation of Fast-Start money over the 2010-2012 period as per Gibbs (2012) (71.4% to mitigation including REDD vs. 22.5% to adaptation). To this we added a share of the money directed to projects with multiple objectives, computed according to the weights of mitigation versus adaptation projects on the total.

DFIs' support targeting climate change adaptation activities (USD 10.9 billion), and philanthropic contribution from Foundations⁷¹ (USD 105.5-134 million).

With regard to bilateral assistance, in November 2011 the OECD-DAC published the first-ever complete

71 We allocated 50% of the identified USD 211-268 million of philanthropic contributions to climate-specific projects to adaptation measures. See paragraph on "Grants instruments."

Creditor Reporting System dataset on aid for climate change adaptation, whose “marker” was approved by member countries in 2009 (OECD, 2011)⁷². While donors inappropriate coding⁷³ affects the true magnitude of the identified flows (Junghans and Harmeling, 2012), this has brought to light their contributions to the field, advancing understanding on how much money is going to advance the adaptation agenda.

Elaborating on the OECD-DAC methodology, which is “objective based”⁷⁴ the World Bank has developed an “activity-based” system, that tracks spending on activities with adaptation co-benefits at the sub-component level⁷⁵ “only if they explicitly include climate adaptation reasoning, and directly address vulnerability or impact from climate variability and change” (IEG, 2012). This system was introduced in 2012.⁷⁶

This initiative feeds into the group of MDBs currently working on a joint approach for adaptation finance tracking (AfDB.org; IDB et al., 2012). The outcomes of this effort, which will be released at COP 18, are hence not fully reflected in our figures.

Four MDBs, in fact, opted to report on mitigation only while in the process of finalizing the above mentioned methodology; others, estimated adaptation financing following the DAC Rio Marker as selection criteria for adaptation activities (e.g., EBRD, KfW and JICA). The World Bank’s figures reflect, instead, the newly piloted methodology. More information is needed on the approaches followed by NFIs for reporting to understand what is actually counted against this theme. Those surveyed by us or under the Ecofys-IDFC (2012) initiative were requested to report according to the OECD definition.

72 This marker captures those activities that aim “to reduce 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.” For additional information see OECD website (OECD.org).

73 Junghans and Harmeling (2012) reveal that about 65% of the activities in the adaptation dataset are unrelated to it, or do not identify adaptation as a “significant” or “principal” target, while about half of the remaining 35% are over-coded e.g., reporting adaptation as a primary objective when it should have rather been reported as secondary.

74 In the OECD CRS database, a project is marked as having adaptation as a “principal objective” if “the activity would not have been funded but for that objective” or as having a “significant objective” if the intervention was “formulated or adjusted to help meet climate concerns” (OECD 2011; IEG, 2012).

75 The typology of activities with climate co-benefits by World Bank sector can be consulted at the Worldbank.org website.

76 For more information see also World Bank website at <http://climatechange.worldbank.org/content/tracking-finance>.

The biggest knowledge gap in adaptation financing is the role of the private sector. Businesses, households, and other private groups have a vested interest in engaging in climate initiatives, particularly when climate change may directly affect their main sources of revenue. The private sector’s financial support can take the form of investments aimed at climate-proofing businesses and assets,⁷⁷ corporate social responsibility initiatives, as well as philanthropic contribution.

Geographical distribution of climate finance

The *Landscape 2012* strives to unveil additional information on domestic climate finance flows. This is reflected in the private flows categorization and the expanded coverage of Development Finance Institutions’ climate expenditures.

We find that **USD 193 billion** of global climate finance, or 53%, goes to projects in developed countries. Some notable sources include the following:

- USD 62 billion comes from corporate actors (including a significant portion of small-scale renewable investment);
- USD 58 billion comes from project developers;
- USD 24 billion comes from commercial financial banks (reflecting higher recourse to project-level debt financing); and
- USD 24 billion comes from German and Italian households (investing in solar PV);

In developed countries, the largest contributors are private actors (89%).

We also find that **USD 171 billion** of global climate finance goes to projects in developing countries. Some notable sources include the following:

- USD 70 billion comes from Development Finance Institutions;
- USD 65 billion comes from (mostly domestic) project developers;

77 The UNFCCC maintains a database of private sector action on adaptation (PSI). Activities may encompass those aimed to ensuring the resilience of business operations, or the supply of technologies/services in support of vulnerable communities. The PSI is a voluntary initiative intended 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. Financial aspects related to the various cases presented is not readily available or, whether specified, not verified by the UNFCCC secretariat. For additional information see UNFCCC.int.

Box 12 - How is Germany financing its energy transition? Financing the Energiewende

The private sector is proving pivotal in financing the German energy transition. In 2010, the private sector financed contributed more than 95% of total climate finance invested in the country, providing USD 47.8 billion.

Germany plays a central role in European decarbonization. The government has set ambitious climate and energy targets to reduce emissions 80-95% below 1990 levels by 2050 (Energy Concept, 2010), while phasing-out nuclear energy by 2022 (2011 Energy Transition/ Energiewende).

In 2010, at least USD 49.1 billion (1.5% of GDP) was invested to support the German transition to a low-carbon economy (CPI, 2012).

The private sector provided more than 95% of climate finance in Germany, almost half of which was supported by concessionary loans from development banks. Thus, the public sector played an important role in supporting private investment. The bulk of private money came from corporate investors (USD 29.2 billion), led by corporations in the energy sector. Private households invested a significant USD 18.6 billion.

Besides the concessionary loans, the high share of private investment coincided with other incentives such as the Feed-in Tariff. In 2010, the Feed-in tariff paid to households and corporate renewable energy generators amounted to approximately USD 17.4 billion, equivalent to 49% of the actual total capital investment in renewable energy in that the same year. This underlines the importance of the FiT in influencing renewable energy investors' decisions.

The federal-level development banks KfW and Rentenbank provided at least USD 21.9 billion of concessional loans for climate-specific investments, which represented a 43% share of total capital investment in renewable energy, and 72% of total incremental investment in energy efficiency.¹ The significant role of concessionary loans highlights the importance of public finance instruments beyond just direct subsidies and grants.

Renewable energy generation capital investments in buildings, energy utilities, agriculture, and industry, amounted to USD 35.3 billion. Corporations across sectors invested USD 21.6 billion, while private households invested a significant USD 13.1 billion in the building sector renewable energy capacity. Energy efficiency amounted to USD 9.6 billion of incremental investment, the households' share of which was USD 5.4 billion (57%). Investments in efficient buildings accounted for the largest share of energy efficiency investment with USD 7.7 billion.

Is Germany on track? Whether or not climate-specific finance in Germany was sufficient in 2010 to meet Germany's climate and energy targets is difficult to answer. No comprehensive estimate is available for the total investment required for reaching these targets. However, CPI Report (2012) assessment of the distribution of climate finance across different uses provides a basis for focusing subsequent in-depth analysis on this regard.

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Based on "The Landscape of Climate Finance in Germany", CPI (2012)

¹ Please note the referenced study reports figures for total capital investments for renewable energy and incremental investments for energy efficiency.

- USD 13 billion comes from corporate actors;
- USD 12 billion comes from commercial financial banks;

The share of private sector contributions to climate finance in developing countries is around 57%.

Compared to developed countries, climate projects in developing countries rely more on balance sheet financing and instruments from development banks.

Box 13 - Geographical distribution of public climate finance

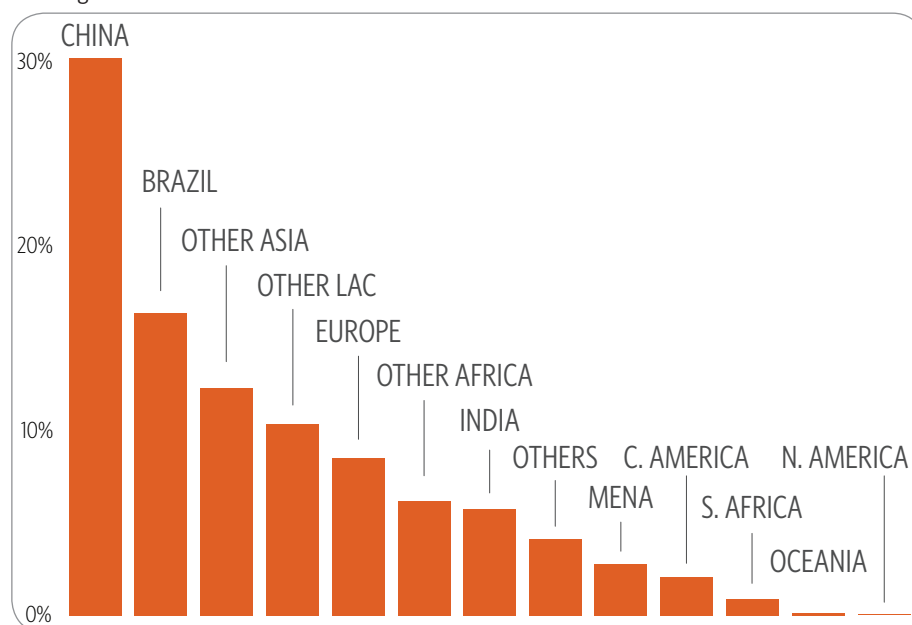
The Figure 4 presents the geographical distribution of countries' bilateral aid, including Fast-Start financing, and DFIs' money. This graph highlights that, with approximately USD 38.9 billion – 47% of total public finance – emerging giants like China and Brazil were the largest recipients of climate finance flows. Notably, this reflects the weight of the China Development Bank and Brazil's BNDES in delivering domestic money in pursuit of development mandates. In fact, 33.3% of Development Finance Institutions' finance goes to China while 17.9% goes to Brazil.

The governments' budgets breakdown does not include the estimated portion of public funds tracked from project finance reporting from the BNEF database, about USD 11 billion, as the detailed split per country could not be retrieved. We can however infer that 64%-72% of that pertains to developed countries – mainly the U.S. and Germany – while the remaining 28%-36% to developing countries, mainly in Asia. The allocation of bilateral aid per recipient countries was retrieved from the OECD CRS data set (OECD, 2012).

With regard to DFIs, the breakdown of their climate finance by beneficiary country reflects institutions' self-reporting against the geographic categories provided in the financial survey. When respondents provided different sectoral breakdowns, data were allocated against the selected macro-areas categories¹.

To estimate the breakdown by recipients countries for those DFIs' we did not have detailed data for, we used – depending on the institution/group of institutions considered – the information presented in the following: Ecofys-IDFC (2012), UNEP-SEI (2011) and entities' annual reports. In some cases, we applied the average share observed in other DFIs. In particular, we assumed that the China Development Bank – which accounts for the largest single share of NFIs' climate finance – invested domestically (see also Ecofys-IDFC, 2012).

Figure 4. Geographical distribution of government budgets and Development Finance Institutions' climate financing



Note: Government budgets data refers to OECD DAC money only (OECD, 2012). Data do not include the estimated portion of public funds tracked from project finance reporting in the BNEF database for about USD 11 billion. The category "others" refers to bilateral contributions whose recipients were not specified, or money distributed to transnational/transregional projects.

¹ For instance, one respondent provided finance allocated for macro-regions such as "East Asia & Pacific" and "South Asia Region," according to their tracking procedures. In this case, all money was allocated to our "Other Asia" category.

Box 14 - Financing Renewable Energy Generation and Energy Efficiency in China

- **State-backed enterprises shape the current outlook of China's solar PV and wind power generation.**
- **China invested a sum of USD 142 billion to improve energy efficiency over the 11th Five-Year Plan (2006 to 2010). Private finance accounted for 83% of that total.**

China's ambition to shift to a greener economy is reflected in the significant investments made in the renewable energy and energy efficiency sectors over the past few years.

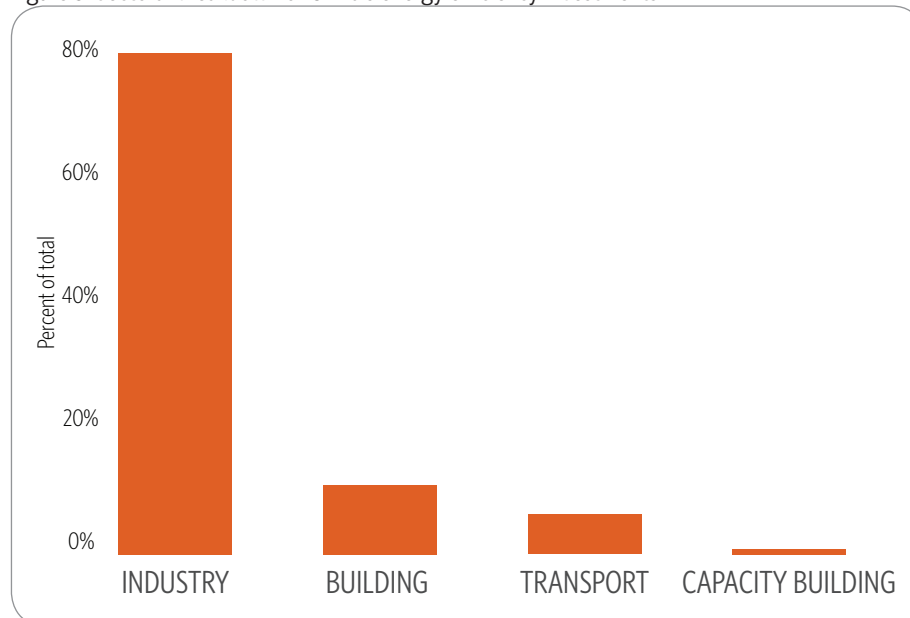
In terms of gross investment in renewable energy, China has led the world for the past three years as **gross investment in renewable energy increased 51%, from USD 33.7 billion in 2009 to USD 51 billion in 2011**. In 2011, 87.7% of the total investment was devoted to wind power and solar PV, which reached 62.4 GW (about 25% of world's capacity) and 3.1 GW (4.4% of the global market¹) accumulated installed capacity respectively.

With USD 39.6 billion, or 88.6% of the total, asset financing was the primary method of supporting wind and solar PV projects. This is typically arranged with an 80:20 debt to equity ratio in the case of wind, where developers are requested by law to take, at minimum, a 20% equity stake and borrow the remaining from state-owned or policy-related banks. The ratio is different for distributive PV projects, where developers take equity stakes for 30%,

borrow 20% from banks, and get the remaining 50% in the form of grants under the "Golden Sun demonstration" and the Building-integrated PV (BIPV) subsidy programs introduced in 2009².

State-owned enterprises (SOEs)³ are the major developers in both the wind and solar PV markets, accounting for 79.9% and 61% of total installed capacities respectively. SOEs have privileged access to credit from financial institutions, thanks to their long-established relationship with state-owned banks

Figure 5. Sectoral breakdown of China's energy efficiency investments



1 The National Development and Reform Commission has revised the 12th Five Year Plan solar PV target from 15 GW to 21 GW by the end of 2015, in order to boost the domestic solar PV market and to absorb the excess supply due to U.S. anti-dumping and anti-subsidy tariffs. On Oct.24, 2012, the Information Office of the State Council published the 2012 edition of white paper on China's Energy Policy, which claimed that China's installed generating capacity of solar energy was expected to exceed 21GW by 2015.

2 The BIPV subsidy program provides upfront subsidies for grid-connected rooftop and BIPV systems.

3 SOEs include national, provincial, and municipal level state-owned enterprises and their subsidiaries/spinoffs.

and their solid balance sheets, which can serve as loan guarantees.

China was also a leader in investment in the energy efficiency sector. **Investment in energy efficiency was driven by the mandatory targets set in the 11th Five-Year Plan (FYP) to reduce national energy intensity by 20% from 2005 levels by 2010.** Over the course of the Plan (2006-2010), China's energy efficiency investment reached a cumulative amount of USD 120 billion.

Private finance represented the lion's share of total energy efficiency finance, 79% of the total USD 120 billion invested; corporations provided USD 53.3 billion, households contributed USD 1.9 billion, commercial banks provided USD 38 billion, and the stock market raised USD 1.6 billion. Private funding was raised in the form of direct equity and debt investments.

Public money contributed USD 22.9 billion (19.1%): The central government supported energy efficiency programs in the industrial, building, and transport sectors with USD 15.2 billion (12.7%), in the form of direct investment, subsidies, rewards, transfer payments, government procurements, and concessional loans. Provincial and lower-level governments provided USD 7.7 billion (6.4%) as local supplements to support activities in their jurisdictions. International institutions and international carbon market contributed additional USD 2.3 billion (1.9%).

The industrial sector attracted the greatest share of money: 89%, or USD 107 billion, to undergo energy audits, technology upgrades, facility retrofitting, and closure of outdated plants.

Energy efficiency investment in the 11th FYP surpassed the amount invested in any previous FYPs. The vast scale of investment was critical to China's energy target achievement in the 11th FYP period. On average, the ratio of public funding to "private investment" was 1 to 4.23. This leverage effect should however be interpreted by keeping in mind that there are governmental resources "sitting-behind" private investments.

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Based on forthcoming "Annual Review of Low-Carbon Development in China (2013)," CPI Report

4 Conclusions and the way forward

A comprehensive picture of today's climate finance flows will improve our collective understanding not only about how much and what type of finance is provided to promote low-carbon, climate-resilient development, but how the world stands in relation to global finance and temperature goals. With a comprehensive picture, we can begin to identify how different types of support correspond to different needs, and whether resources are being spent productively. This understanding is critical to highlight emerging trends and position policy makers and investors to respond to the challenges effectively.

The *Landscape 2012* builds and improves upon CPI's initial effort to provide a snapshot of the current climate finance landscape. Our methodology draws on a wide variety of tracking initiatives and information systems to estimate the possible scale of available finance. This study highlights that there is not one single climate finance story; climate finance archetypes differ by country and circumstance. In addition, a number of actors have distinctive responsibilities. Public and private intermediaries continue to play a pivotal role in distributing climate finance. National banks are playing a growing role in channeling resources. Private commercial banks and infrastructure funds are also critical players; they intermediate both project finance debt and direct investments. In addition, better information about private finance flows highlights the various private sector representatives that are active in climate investments on the primary investment and lending sides — including institutional investors, albeit to a small extent — and clean technology manufacturers engaged in vendor financing.

The *Landscape 2012* suggests that annual global climate finance flows reach between **USD 343 - 385 billion in 2010-2011, or USD 364 billion on average**. Although close to 75% of this comes from private sources, the public sector plays a pivotal role by providing funds that catalyze private sector investment. **These figures shed light on global efforts to match the global financing need.** Overall, while money is clearly flowing to low-carbon, climate-resilient development, investment levels fall far short of that required to limit global temperature rise to below two degrees Celsius. The International Energy Agency projects that incremental investment in the energy sector will need to reach USD 36 trillion over the period of 2012-2050 – or approximately USD 1 trillion each year (IEA, 2012). This estimate highlights just

how much more finance is required to fund the transition toward a low-carbon, climate resilient future.

The amounts represented in the *Landscape 2012* reflect better data and increased coverage. The *Landscape 2012* aimed to address some of the major information gaps identified in the *Landscape 2011*. Building upon the *Landscape 2011*, the *Landscape 2012* better captures the magnitude and nature of climate finance flows between and within countries. We expanded the geographic scope, covered more types of actors, and collected better information about the recipients of finance. Most importantly, by untangling private sector flows, we have improved our understanding about the actual sources of money, where it is going, and through which financial instruments. This has been particularly true in the case of domestic flows.

Nonetheless, there is room for improvement. Reporting gaps and inconsistent labels and definitions hamper our ability to track and fully capture the scale and effectiveness of climate finance. Climate Policy Initiative will continue to build and improve upon this understanding in future *Landscapes* and through other, ongoing efforts⁷⁸.

Emerging key issues

This study confirms and elaborates upon several findings from the *Landscape 2011*.

Private capital is essential and makes up the lion's share of global climate investment flows

Public resources alone cannot finance the transition to a low-carbon, climate-resilient future; unlocking private sector capital will be essential. The *Landscape*

78 To unlock sufficient climate finance for a low-carbon, climate-resilient transition, it is essential to increase climate finance effectiveness based on the optimal balance between public and private capital. To shed light on how to do this, CPI, in collaboration with the World Bank Group, CLP and the OECD, established the San Giorgio Group, a new working group of key financial intermediaries and institutions actively engaged in green, low-emissions finance. The core objective of the Group is to analyze how to mobilize and deploy adequate and effective finance to achieve low-carbon, climate-resilient development. To address the weak understanding of climate finance effectiveness, CPI has initiated within the San Giorgio Group a work stream on concrete case studies to build up knowledge on elements that make investments successful from a financial, environmental, organizational, and political perspective. By building up an evidence base what works and what doesn't the goal is to learn from the wide range of existing and evolving financing practices, to provide insights on how to scale up climate finance and spend available resources more wisely. For more information see <http://climatepolicyinitiative.org/venice/san-giorgio-group/>

Box 15 – Tracking issues

Many organizations are engaged in efforts to track aspects of the climate finance picture but several gaps remain.

These gaps hamper efforts to compare and aggregate data, and assess the overarching effectiveness of finance.

Many organizations maintain databases and/or prepare reports about particular elements of the climate finance landscape. However, there is no integrated international system for storing this data, many flows are not systematically measured, reported, or verified, and where tracking efforts are in place, granularity and consistency varies (cf. Buchner et al., 2011). This hampers efforts to compare and aggregate data, and assess the effectiveness of finance.

As the sources and volumes of climate finance increase, the challenge to track and analyze flows will become greater. While many organizations are working to improve these systems, a number of areas require urgent attention:

- **Transparency and consistency in definitions** - what is counted and reported as climate finance, including sectoral boundaries and whether total project value or only relevant portions of investments are counted;
- A clearer distinction between **incremental costs and investment capital**;
- Related to this, a better **understanding of how incremental support and specialized risk instruments** stimulate investment; and
- Improved **information about domestic and private flows** of finance. Most clean development investment will need to come from national, private sources, but data remains scarce.

Based on “The Landscape of Climate Finance,” CPI Report (2011)

2012 highlights the relationship between public and private sources, and suggests that a major portion of private investment relies on public finance to create an environment where investments are viable. There is a clear incidence of public money standing behind private investments, particularly in the emerging economies of China and Brazil.

Well-targeted public capital can make investments go further

Well-targeted, public resources are an essential element of transformational climate investment structures. Most public money (almost 80%) is currently delivered through national, bilateral, and multilateral organizations. While public institutions generally take the risk for money channeled through these organizations, the money itself can be largely raised from private sources. Our findings suggest a number of best practices are emerging in developing and developed countries where well-targeted, public capital is starting to unlock

significant investment. The *Landscape 2012* also shows that bilateral public funding increased despite fiscal austerity and tightening credit context, likely reflecting the impact of fast-start finance pledges.

Looking forward, public money remains essential, but, given its scarcity, we need to understand its role (i.e., which risks should reside with the public sector and which should reside with the private sector, and how the scale of these risks depends on the nature of the investments) to spend available resources wisely. Public funds, especially international public money, should only pay for those risks the private or national public investments will not bear, and the scale of these publicly offloaded or assumed risks depend on the nature of the investment.

Domestic finance is a key element

Our findings underline the importance of domestic finance in addressing the global challenge of climate change. The *Landscape 2012* highlights that a large

proportion of public investment reflected domestic government support toward structural changes in energy systems as engines of economic growth. Further information on private finance shows that domestic private actors play a key role.

Emerging economies play a key role

Roughly one third of global mitigation investments are located in China, Brazil, and India. Further, a significant share of investment in these three countries is raised domestically and disbursed by state-owned entities in pursuit of development mandates. We hope that these leaders signal a trend among other developing countries toward low-emissions, climate-resilient growth as a practical and productive national development strategy.

Understanding about adaptation finance is still scarce

While the large majority of climate finance is still used for mitigation measures, we have been able to capture more money that is beginning to be invested in adaptation activities. This reflects new tracking initiatives that specifically address the information gap on adaptation finance. However, data inconsistencies and the difficulties in defining what constitutes adaptation finance (and where the boundaries between adaptation and development finance are), hamper our understanding.

Next steps for data gathering and analysis

To improve the world's understanding of climate finance, and to put current climate finance flows in perspective, the following key issues need to be addressed.

Comprehensiveness — further expansion of scope and coverage

This study emphasizes the relative importance of private finance. Further information on private finance is needed, particularly related to non-project level entry points for finance, to better understand corporate sources of capital for balance sheet financing.

The *Landscape 2012* also confirms the essential role of a number of actors, including international, national, and local financial institutions, and households. Additional detail on these institutions' financing, including information about the new methodology that Multilateral Development Banks⁷⁹ are developing for tracking and

accounting mitigation and adaptation finance, will improve our understanding of their role in climate finance. We also need better information on domestic-level finance and on financing channels for households. A better overview of climate funds, particularly national ones, would further improve the comprehensiveness of the climate finance landscape.

Finally, better information on the role of specific sectors (such as energy efficiency and non-energy sectors), and uses (such as adaptation and enabling environment finance), and better mapping of specific instruments (such as tax incentives), is needed.

The dimensions of climate finance — clarify net climate finance flows

The *Landscape 2012* takes both incremental costs and investment capital into account. It focuses on gross flows due to the difficulty of calculating incremental cost, and net values of all finance flows due to the importance of understanding the full volume of financial flows delivered. Gross flows also tell a story about upfront support that is needed to encourage further investments. Ultimately, it is instructive to understand net contributions by countries and actors, and to obtain a good understanding of incremental costs compared with business-as-usual, or "brown", investments. This is particularly important to understand how global efforts are tracking against the financing levels needed to stabilize average global temperature below two degrees Celsius. Proxies are necessary to better understand these dimensions. In this context, the role of risk mitigation and policy instruments in addressing incremental costs warrant further work.

The impact — increase understanding of climate finance effectiveness

The biggest gap in today's climate finance landscape remains the lack of a sound understanding about whether finance flows are being used effectively, and whether they adequately address the challenges posed by climate change and global needs. We need more efforts to define and describe what constitutes effective climate finance, starting with lessons from the important experiences of organizations already working to measure the impact of climate finance. In fact, a number of countries and DFIs are now actively developing frameworks to measure and evaluate the performance of the climate finance they are providing, delivering, and/or receiving (Buchner et al., 2012), fostering more streamlined reporting frameworks.

⁷⁹ Including the African Development Bank (AfDB), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Inter-American Development Bank (IDB), the World Bank (WB), and the International Finance Corporation (IFC).

More rigorous monitoring and reporting can aid learning, planning, and budgeting at the country level and thus drive effectiveness improvements. However more than just tracking will be required; analysis of policy effectiveness will also be critical. In addition to CPI's effort to build up an evidence-based, bottom-up database of success and failure stories related to climate finance (the *San Giorgio Group* case studies),⁸⁰ there is a need to explore how effectiveness can also be ascribed to the climate finance landscape. Possibilities include the calculation/indication of expected avoided carbon emissions, carbon cost per unit, and co-impacts. A further option to increase the understanding about the effectiveness of climate finance is to relate public money contributions to estimates of incremental costs. Finally, disbursement channels are also key for effective climate finance spending, and more information on this element could improve the understanding of climate finance effectiveness.

The benchmark — exploration of business-as-usual ("brown") finance flows.

To put climate finance estimates into perspective, comparable estimates of traditional "brown", or business-as-usual, finance are a useful benchmark to check whether there is real progress towards a low-carbon, climate-resilient future.

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

80 Within the San Giorgio Group, CPI works on concrete case studies to build up knowledge on elements that make investments successful from a financial, environmental, organizational, and political perspective. We aim to provide credible information on how to ramp up public expenditures, integrate national and international capital streams, leverage public funds with private flows efficiently, and invest the aggregate wisely. For more information see <http://climatepolicyinitiative.org/publication/san-giorgio-group-case-studies/>

Index of acronyms

AAU	Assigned Amount Unit	NDF	Nordic Development Fund
AsDB	Asian Development Bank	NFI	National Finance Institution
AF	Adaptation Fund	ODA	Official Development Assistance
AFD	Agence Française de Développement	ODI	Overseas Development Institute
AfDB	African Development Bank	OECD	Organization for Economic Co-operation and Development
AGF	High-Level Advisory Group on Climate Change Financing	OPIC	Overseas Private Investment Corporation
BFI	Bilateral Finance Institution	OTC	Over-the-Counter
BIPV	Building Integrated Photovoltaic	REDD	Reducing Emissions from Deforestation and Forest Degradation
BNDES	Brazilian Development Bank	REN21	Renewable Energy Policy Network for the 21st Century
BNEF	Bloomberg New Energy Finance	RGGI	Regional Greenhouse Gas Initiative
CAF	Development Bank of Latin America	SOE	State-Owned Enterprise: including national, provincial and municipal level state-owned enterprises and their subsidiaries/spinoffs.
CDB	China Development Bank	TNC	The Nature Conservancy
CDC	Caisse des Dépôts	UNDP	United Nations Development Programme
CDM	Clean Development Mechanisms	UNEP	United Nations Environment Programme
CEA	California Environmental Association	UNEP-Risø	United Nations Environment Programme Risø Centre on Energy, Environment and Sustainable Development
CER	Certified Emissions Reductions	UNFCCC	United Nations Framework Convention on Climate Change
CIF	Climate Investment Funds	VER	Voluntary Emissions Reductions
CRS	Creditor Reporting System	WB	World Bank
DAC	Development Assistance Committee		
DBSA	Development Bank of Southern Africa		
DFI	Development Finance Institutions		
EBRD	European Bank for Reconstruction and Development		
ECA	Export Credit Agency		
EDF	Environmental Defense Fund		
EEA	European Energy Agency		
EEC	European Economic Community		
EIB	European Investment Bank		
EU	European Union		
EU ETS	European Union Emissions Trading System		
FDI	Foreign Direct Investment		
FiT	Feed-in Tariff		
FYP	China's Five-Year Plan		
GEF	Global Environmental Facility		
GHG	Greenhouse Gas Emissions		
IBRD	International Bank for Reconstruction and Development		
ICI	International Climate Initiative		
IDA	International Development Association		
IDB	Inter-American Development Bank		
IEA	International Energy Agency		
IFC	International Finance Corporation		
IFCI	International Forest Carbon Initiative		
IGES	Institute for Global Environmental Strategies		
IIED	International Institute for Environment and Development		
IREDA	Indian Renewable Energy Development Agency		
JI	Joint Implementation		
JICA	Japan International Cooperation Agency		
JVETS	Japan Voluntary Emissions Trading Scheme		
KFW	KFW Entwicklungsbank (German Development Bank)		
MDB	Multilateral Development Bank		
MFI	Multilateral Finance Institution		
NAFIN	Nacional Financiera Development Bank		

Glossary

CRS	The Creditor Reporting System is a database of individual aid activities, which contains detailed quantitative and descriptive data on individual aid projects and programs. It enables analysis of the sectoral and geographical breakdown of aid for selected years and donors.
DAC	The Development Assistance Committee is the committee of the OECD which deals with development co-operation matters. At present, there are 24 members of the DAC: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, the United States, and the European Commission.
EXPORT CREDIT	Export credits are government financial support, direct financing, guarantees, insurance or interest rate support provided to foreign buyers to assist in the financing of the purchase of goods from national exporters. (OECD, 2012d)
FAST-START FINANCE	The Copenhagen Accord obliges developed countries to collectively provide fast-start finance to developing countries in the amount "approaching USD 30 billion for the period 2010-2012", for enhanced action on mitigation (including Reducing Emissions from Deforestation and forest Degradation, REDD), adaptation, technology development and transfer, and capacity building.
GRANT	Transfers made in capital, goods, or services for which no repayment is required.
INCREMENTAL COST AND INVESTMENT CAPITAL	Incremental cost and investment capital are both important lenses for climate finance flows. Incremental cost refers to financial resources provided to compensate the difference between a less costly, more polluting option and a costlier, more environmentally friendly and/or climate-resilient one. Investment capital refers to tangible investment in mitigation or adaptation projects. Whereas investment capital is paid back to the investor, incremental costs often are not and are often funded by public climate finance support, either through policy support or concessional finance
INFRASTRUCTURE FUND	"Funds focused on making direct financial investments in projects across the following sectors: power (renewables, coal-fired, gas turbine and nuclear), water (treatment and distribution), transportation (airports, ports, roads, parking lots and rail links), social (prisons, hospitals and schools), and utilities (gas distribution, electricity transmission, fixed-line telephone and mobile telephone)." (PFI Global Infrastructure Report 2007, "The rise of infra funds" retrieved from http://crp.stanford.edu/publications/articles_presentations/Orr_01_Infra_funds_2007pfie.pdf).
JOINT IMPLEMENTATION (JI)	Track 1 JI Simplified approval process for JI projects where the host Party is considered to fulfill all the eligibility requirements of the Kyoto Protocol on emission reporting. Track 2 JI Parties that have not met the Kyoto Protocol requirements on emission reporting can carry out JI projects under a more rigorous approval regime.
ODA	Official Development Assistance is defined as those flows to developing countries (countries and territories on the DAC List of ODA Recipients) and to multilateral agencies in the form of grants or loans, which are: provided by the official sector; aimed to promote economic development and welfare; given at concessional financial terms (if a loan, having a grant element of at least 25%). In addition to financial flows, technical co-operation is included in aid.
PRIVATE EQUITY	"Private equity invests in private companies (...) to distinguish it from 'public equity' investments in stock markets. (...) Private equity funds acquire established companies in old industries, with the aim of reviving their fortunes. (...) Private equity funds come in all shapes and sizes." (EVCA website: http://evca.eu/what-is-private-equity/)
REDD+	REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks.

**RIO MARKERS
(RMS)**

The Rio Markers (RMs) are indicators of the degree of relevance of a given activity in addressing the objectives of the three "Rio Conventions" (the United Nations Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), and the UNCCD). The screening of an activity against the objectives of a Convention will result in the following scores:

0 (not targeted): means that the activity is found not to be targeted to the Convention;

1 (significant): means that targeting the objectives of the Convention is an important but secondary purpose of the activity (i.e. not one of the principal reasons for undertaking the activity);

2 (principal): means that targeting the objectives of the Convention is an explicit objective of the activity and fundamental in its design (i.e. the activity would not have been undertaken without this objective);

3 (Action Programme/AP-related): for desertification only. It means that the activity was undertaken to combat desertification/land degradation as a principal objective and in support of an action programme (NAP, SRAP or RAP) to implement the UNCCD.

VENTURE CAPITAL

"Venture capital is a type of private equity focused on start-up companies. Venture capital funds often back entrepreneurs who have just the germ of a business idea." (EVCA website: <http://evca.eu/what-is-private-equity/>)

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- Banco de Desarrollo de America Latina /Development Bank of Latin America (CAF) at: <http://www.caf.com/view/index.asp?ms=19>
- Banco Estado de Chile website at: <https://www.bancoestado.cl>
- Bancoldex Colombia website at: <http://www.bancoldex.com/portal/default.aspx>
- Black Sea Trade & Development Bank website at: <http://www.bstadb.org/>
- Bloomberg New Energy Finance website at: <http://bnef.com/>
- Brazilian Development Bank BNDES website at: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/Press/Noticias/2012/20120213_fundoclima.html
- Caisse de Dépôt et de Gestion (CDG), <http://www.cdg.ma/>
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- Climate Investment Funds website at: <https://climateinvestmentfunds.org/cif/>
- Development Bank of Southern Africa (DBSA) website at: <http://www.dbsa.drm-za.com/>
- European Bank for Reconstruction and Development (EBRD) website at <http://www.ebrd.com/pages/homepage.shtml#&panel1-2>
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- Industrial Development Bank of Turkey (TSKB) website at: <http://www.tskb.com/>
- Inter-American Development Bank (IDB) website at: <http://www.iadb.org>
- International Finance Corporation (IFC) website at: <https://www.ifc.org>
- Japan International Cooperation Agency (JICA) website, at: <http://www.jica.go.jp/english/>
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- Multi-Donor Trust Fund Office Gateway website at: <http://mdtf.undp.org>
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- ODI / HBF, Climate Funds Update database at: <http://www.climatefundsupdate.org>

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- OECD Trade and Agriculture Directorate (TAD) Export Credits Database at: http://www.oecd.org/department/0,3355,en_2649_34169_1_1_1_1_1,00.html
- OECD User's Guide to the CRS Aid Activities database at: www.oecd.org/dac/stats/crsguide
- OECD website, "Focus on Aid Targeting the Objectives of the Rio Conventions" at: www.oecd.org/dac/stats/rioconventions
- OECD, List of OECD Member Countries at: <http://www.oecd.org/general/listofocdmembercountries-ratificationoftheconventionontheoecd.htm>
- OECD/EEA database on instruments used for environmental policy and natural resources management, <http://www2.oecd.org/ecoinst/queries/index.htm>
- Overseas Private Investment Corporation (OPIC) website at: <http://www.opic.gov/>
- Small Industries Development Bank of India (SIDBI) website at: <http://www.sidbi.com/>
- The Brazilian Development Bank website at: <http://www.bndes.gov.br>
- The Financial Times FDi Intelligence website at: <http://www.fdiintelligence.com/>
- The Foundation Center website at: <http://foundation-center.org/gpf/climatechange/chart-oecd.html>
- The Global Environmental Facility (GEF) project database at: <http://www.gefonline.org/>
- The Nordic Development Fund (NDF) website at: <http://www.ndf.fi/>
- UNCTAD interactive database of Division on Investment and Enterprise at: <http://www.unctad.org/templates/Page.asp?intItemID=3199&lang=1>
- UNEP Risø Centre CDM/JI Pipeline Analysis and Database at: <http://cdmpipeline.org/>
- UNFCCC CDM Registry website at: <http://cdm.unfccc.int/Registry/index.html>
- UNFCCC Finance Portal for Climate Change website at: http://unfccc.int/cooperation_support/financial_mechanism/finance_portal/items/5824.php
- Adaptation Private Sector Initiative (PSI) at : http://unfccc.int/adaptation/nairobi_work_programme/private_sector_initiative/items/4623.php.
- Vnesheconombank (VEB) website at: <http://www.veb.ru/>
- World Bank Project & Operations database at: <http://go.worldbank.org/IAHNOIVK30>
- World Bank website at: <http://worldbank.org>

Appendix A - Main assumptions and methodology

The Scope of Private Climate Finance

We covered 1,636 individual active projects from the Bloomberg New Energy Finance database, representing 82% of the extra capacity in developed countries and 89% of the extra capacity in developing countries (53.9 GW in total).

For both developed and developing countries, we looked at the most relevant “2011 financing stories”, each representing more than 1 GW of extra capacity financed in 2011.

Developed countries (OECD): 45% of the projects for 45% of total capacity

The top 7 stories, which represent 75% of the projects for 82% of capacity in developed countries are as follows:

- US wind and solar financing
- Canadian wind financing
- German wind financing
- UK wind and biomass & waste financing
- Spanish wind and solar financing
- Italian solar financing
- Korean wind and marine financing (one large-scale project)

Developing countries (non-OECD): 55% of the projects for 55% of total capacity

The top 3 stories, which represent 85% of the projects for 89% of capacity in developing countries are as follows:

- Chinese wind, solar and biomass & waste financing
- Indian wind financing and solar financing
- Brazil wind financing

Small-scale distributed capacity

Data for small-scale distributed capacity (PV and Solar Water Heater) were retrieved from FS-UNEP and BNEF (2012), and Weiss and Mauthner (2012) and categorized by geography and category of actors based on the data available.

“Green” FDI data

The data used in the Landscape 2012 were retrieved by UNCTAD experts from the fDi Markets database. Figures covered greenfield investments occurred globally in 2011. We decided to exclude cross-border M&A as we decided to focus on new investment in emission reduction/stabilization only.

The sectors covered were the following: renewable generation (biomass, geothermal, hydroelectric, solar, tidal and wind energy); and waste management.

To avoid double counting with the data retrieved from the BNEF database, FDI data were allocated as the range of uncertainty to the BNEF subtotal, except for flows that are typically of domestic nature such as governments’ budget and households ones.

CURRENCY	ANNUAL AVERAGE
EUR/USD (2010)	1.3277
EUR/USD (2011)	1.3926
BR\$/USD (2011)	0.5997
TND/USD (2009)	0.74654

Source: Oanda (2012)

Appendix B - A summary of the Landscape 2011

FINANCE FLOWS	AMOUNTS (ON AVERAGE)	METHODOLOGY
ALL	USD 97 BILLION	<ul style="list-style-type: none"> Indicative estimates of annual flows for the latest year available, 2009/2010 (variable according to the data source) Estimates spanning multiple years adjusted to produce annual-equivalents Includes incremental costs and capital investment Most data presented related to commitments in a given year, due to limited availability of disbursement data
BILATERAL	USD 22.8 BILLION	<ul style="list-style-type: none"> Bilateral contributions reported through the OECD's Creditor Reporting System Aid Activities (OECD CRS) database Bilateral Finance Institutions direct reporting (TC, 2011; UNEP 2010; BNEF, 2011) an estimate of the volume of green export credits (OECD statistics on export credits, 2010, as cited in Buchner et al., 2011b).
MULTILATERAL	USD 14.4 BILLION	<ul style="list-style-type: none"> Multilateral institutions' direct reporting and reporting by various tracking initiatives including TC, 2011; UNEP 2010; BNEF, 2011
CLIMATE FUNDS	USD 2.5 BILLION	<ul style="list-style-type: none"> ODI/HBF Climate Funds Update and reporting by Fund administrators
CARBON OFFSET FINANCE	USD 2.2 BILLION	<ul style="list-style-type: none"> This range was calculated using data from the World Bank, the UNFCCC and IGES to apply surveyed average annual primary carbon offset prices to the annual volume of offsets issued.
PRIVATE FINANCE	USD 55 BILLION	<p>Range of 37.0-72.2 billion between:</p> <ul style="list-style-type: none"> 'Green' Foreign Direct Investments (FDI) Based on the United Nations Conference on Trade and Development database (UNCTAD, 2010) Renewable energy investments, based on the United Nations Environment Programme (UNEP) and BNEF (UNEP and BNEF, 2011) regarding renewable energy investments in developing countries (from developed countries, other developing countries and private investment from national investors).
VOLUNTARY / PHILANTHROPIC CONTRIBUTIONS	USD 450 MILLION	<ul style="list-style-type: none"> Voluntary / philanthropic contributions based on CEA, 2007; Ecosystem Marketplace, 2011

Appendix C - Existing climate finance tracking databases and major ongoing initiatives

TRACKING PUBLIC CLIMATE FINANCE:

Adaptation Fund, Funded Projects and Funding Status data at: https://www.adaptation-fund.org/funded_projects

African Development Bank Group (AfDB) Project Portfolio database at: <http://www.afdb.org/en/projects-and-operations/project-portfolio/>

AidData Development Finance and Foreign Aid Portal at: <http://aiddata.org>

Asian Development Bank project database at: <http://www.adb.org/projects>

European Bank for Reconstruction and Development (EBRD), online project database at: <http://www.ebrd.com/saf/search.html?type=project>

European Commission, Climate Action, Fast-start Finance, list of actions tracked at: http://ec.europa.eu/clima/policies/finance/international/faststart/index_en.htm

European Investment Bank (EIB), Project finance database at: <http://www.eib.org/projects/loans/sectors/index.htm>

Global Climate Change Alliance (GCCA), Technical and Financial Support database at: <http://www.gcca.eu/technical-and-financial-support>

GEF project database, available at: <http://www.gefonline.org/>

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany, National and International Climate Initiative online project database at: http://www.bmu-klimaschutzinitiative.de/index_en.html

Inter-American Development Bank (IDB) online project database at: <http://www.iadb.org/en/projects/projects,1229.html>

Multi-Partner Trust Fund Office, Development and Climate Change Fund at: <http://mptf.undp.org/factsheet/fund/MDG00>

ODI/Heinrich Böll Foundation Climate Funds Update at: <http://www.climatefundsupdate.org/>

OECD Creditor Reporting System (CRS) Aid Activities database at: <http://stats.oecd.org/Index.aspx?datasetcode=CRS1>

United Nations Development Programme (UNDP), United Nations Environment Programme, UNFCCC, World Bank Group, Fast Start Finance website at (updated as of December 2011): <http://www.faststartfinance.org/>

UNDP/GEF Small Grants Programme project database at: <http://www.undp.org.np/environment--energy/program/sgp-35.html>

UNFCCC Finance Portal for Climate Change at: http://unfccc.int/cooperation_support/financial_mechanism/finance_portal/items/5824.php

_____ Funding for Adaptation interface at: http://unfccc.int/adaptation/implementing_adaptation/adaptation_funding_interface/items/4638.php

U.S Government, Recovery.Gov, Track the Money, <http://www.recovery.gov/Pages/default.aspx>

Voluntary REDD+ Database, REDD+ Partnership at: www.reddplusdatabase.org

World Bank / OECD Aid flows at: <http://siteresources.worldbank.org/CFPEXT/Resources/299947-1266002444164/index.html>

World Bank / UNDP Climate Finance Options database at: www.climatefinanceoptions.org/cfo

World Bank Project & Operations database at: <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,menuPK:51562~pagePK:64133621~piPK:64140076~theSitePK:40941,00.html>

WRI Summary of Developed Country 'Fast-Start' Climate Finance Pledges (updated as of November 2011) at: <http://www.wri.org/stories/2010/02/summary-developed-country-fast-start-climate-finance-pledges>

TRACKING PRIVATE CLIMATE FINANCE:

Bloomberg New Energy Finance Industry Intelligence / Desktop: <http://bnef.com/services/industry-intelligence-slash-desktop/>

Dealogic ProjectWare and Loan Analytics: <http://www.dealogic.co.uk/en/marketdata.htm>

Ecosystem Marketplace / Bloomberg New Energy Finance, Voluntary Carbon Market data at: http://moderncms.ecosystemmarketplace.com/repository/moderncms_documents/sovcm_postlaunchreport_2012.1.pdf

- ____ Publication at: http://www.forest-trends.org/publication_details.php?publicationID=3164
- Environmental Finance Carbon Funds: <http://www.environmental-finance.com/books/>
- European Commission Eurostat, FDI Statistics: <http://epp.eurostat.ec.europa.eu>
- EEX, European Energy Exchange data at: <http://www.eex.com/en/>
- Financial Times, FDI Intelligence database: <http://www.fdiintelligence.com/>
- Foundation Centre research database: <http://foundationcenter.org/findfunders/statistics/>
- Institute for Global Environmental Strategies (IGES) CDM Programme database at: <http://www.iges.or.jp/en/cdm/index.html>
- OECD Creditor Reporting System (CRS) Aid Activities database at: <http://stats.oecd.org/Index.aspx?datasetcode=CRS1>
- OECD International Direct Investment Statistics database at: <http://www.oecd.org/daf/internationalinvestment/>
- Point Carbon - Carbon Project Manager, Carbon Market Trader EU at: <http://www.pointcarbon.com/trading/>
- Thomson Reuters Trader for Commodities Advanced at: <http://training.thomsonreuters.com/portal/product.php?pid=4>
- Thomson Reuters Eikon for Energy at: http://thomsonreuters.com/products_services/financial/financial_products/a-z/eikon_for_energy/
- UNCTAD Interactive Database Division on Investment and Enterprise at: <http://stats.unctad.org/fdi/>
- UNEP-Risø CDM/JI Pipeline Analysis and Database at: <http://cdmpipeline.org>
- UNFCCC CDM and JI Project Activities databases at: <http://cdm.unfccc.int/Projects/projsearch.html>
- ____ Adaptation Private Sector Initiative (PSI) at : http://unfccc.int/adaptation/nairobi_work_programme/private_sector_initiative/items/4623.php.
- World Bank Private Participation in Infrastructure (PPI) Project Database at: <http://ppi.worldbank.org/>
- ____ State and Trends of Carbon Market, 2012 at: http://siteresources.worldbank.org/INTCARBON-FINANCE/Resources/State_and_Trends_2012_Web_Optimized_19035_Cvr&Txt_LR.pdf
- ____ World Development Indicators and Global Development Finance at: <http://databank.worldbank.org/ddp/home.do?Step=1&id=4>

Appendix D - Details on Development Finance Institutions

BILATERAL FINANCE INSTITUTIONS	REPORTING YEAR	SOURCE AND NOTES
AfD Agence Française de Développement - Proparco	2011	Self-reporting via CPI survey Given that some of the projects supported contributed to both mitigation and adaptation purposes, we allocated the dual purpose money according to the total distribution between mitigation and adaptation projects.
JICA Japan International Cooperation Agency	2011	Self-reporting via CPI survey
KfW - KfW Entwicklungsbank - DEG	2011	Self-reporting via CPI survey
OPIC Overseas Private Investment Corporation	2011	Self-reporting via CPI survey
MULTILATERAL FINANCE INSTITUTIONS	REPORTING YEAR	SOURCE AND NOTES
AfDB African Development Bank	2011	Self-reporting via CPI survey - mitigation data only
AsDB Asian Development Bank	2011	Self-reporting via CPI survey - mitigation data only Based on the information retrieved on the Bank's website, and at the best of our knowledge, we allocated 100% of the reported portion of equity financing to balance sheet finance.
EBRD European Bank for Reconstruction and Development	2011	Self-reporting via CPI survey The reported portion of equity financing was allocated 50:50 between balance sheet financing and project-level equity, due to data availability constraints.
EIB European Investment Bank	2011	Joint MDBs Mitigation Finance Report (IDB et al., 2012). The figure included hence represents financing to mitigation projects only. To retrieve the breakdown by instruments, sectors and geography we applied the shares presented in UNEP-SEI (2011).
EU Institutions	2010	OECD CRS 2010 data (OECD, 2012) The figure included in the Landscape 2012 represents aid marked both principal and significant. Financing with multi-purpose objectives (i.e. both mitigation and adaptation) was allocated according to the distribution between mitigation only and adaptation only projects (55% vs. 45%).
IDB Inter-American Development Bank	2011	Self-reporting via CPI survey The portion of climate finance committed to Mexico was allocated to Central America.
IFC International Finance Corporation	2011	Self-reporting via CPI survey - mitigation data only The reported portion of equity financing was allocated 50:50 between balance sheet financing and project-level equity, due to data availability constraints.
NDF The Nordic Development Fund	2011	NDF Annual Report 2011 To estimate the thematic breakdown between mitigation and adaptation we applied the share retrieved from the OECD CRS 2009 dataset (OECD, 2011b) The geographical breakdown was derived from NDF Annual Report 2011 and, specifically, we allocated committed funds based on the distribution of approved projects at the end of 2011 i.e. Africa (42%), Asia (28%) and Latin America (30%).

World Bank (IDA and IREDA)	FY 2011	<p>Self-reporting via CPI survey</p> <p>To estimate the breakdown by instruments, we applied:</p> <ul style="list-style-type: none"> - for IDA: 6% to grants; 94% to concessional loans, as presented in the OECD CRS 2010 data (OECD, 2012). - for IBRD: 100% market-rate loans, as presented in the OECD CRS 2009 data (OECD, 2011a). <p>The Bank assesses mitigation and adaptation co-benefits independently. Hence, to split total 2011 climate financing avoiding double counting, we allocated the dual purpose money according to the total distribution between mitigation and adaptation.</p>
NATIONAL & SUB-REGIONAL DEVELOPMENT FINANCE INSTITUTIONS	REPORTING YEAR	SOURCE AND NOTES
AfD Agencia Financiera de Desarrollo	2011	Self-reporting via CPI survey
BNDES Brazilian Development Bank	2011	<p>Self-reporting via CPI survey</p> <p>Data included in the report represent disbursement rather than commitments.</p> <p>The bank reported financing to renewable energies and energy efficiency as a combined category (see also BNDES, 2012). To derive the allocation pertaining to each sector, we applied the share on 2011 disclosed deals per sectors, as presented in BNEF (2012).</p>
CAF Development Bank of Latin America	2011	Self-reporting via CPI survey
DBSA Development Bank of Southern Africa	2011	<p>Self-reporting via CPI survey</p> <p>Geographical breakdown: DBSA's financing to South Africa was considered as domestic spending, as occurred in the area where the institution is based in.</p>
FIRA Fideicomisos Instituidos en Relación a la Agricultura (Mexico)	2011	Self-reporting via CPI survey
IREDA Indian Renewable Energy Development Agency	2011	<p>IREDA Annual Report (2011)</p> <p>To avoid potential double counting with other DFIs' flows, total financing was reduced by 40%, which is the share of international assistance in IREDA's resource base for 2010-2011, as reported in IREDA (2011). In our estimate we have included financing directed to projects in the following sectors: wind, hydro, biomass power generation, energy efficiency and energy conservation, solar energy, waste to energy.</p> <p>Instruments breakdown: To estimate the portion of low-cost debt versus market-rate debt we associated to the former the total amount of finance committed to those sectors for which in 2011 IREDA received the interest rate subsidies provided by the Indian Ministry of New and Renewable Energy (IREDA, 2012). To market-rate debt was allocated the remaining portion.</p>
NAFIN Nacional Financiera (Mexico)	2011	Self-reporting via CPI survey

<p>BE Banco del Estado de Chile Bancoldex S.A, Colombia BCIE/CABEI Central American Bank for Economic Integration BSTDB Black Sea Trade and Development Bank of Greece CDG Caisse de Dépôt et de Gestion, Morocco CDB China Development Bank HBOR Croatian Bank for Reconstruction and Development Indonesia Eximbank KoFC Korea Finance Corporation SIDBI Small Industries Development Bank of India TSKB Industrial Development Bank of Turkey VEB Vnesheconombank Russia</p>	<p>2011</p>	<p>Ecofys-IDFC (2012) The volume of green finance stated in the report was adjusted by: - the 7% share reported as other environmental projects, as we opted to include only what banks reported as mitigation and adaptation; - climate finance spending data received in response to CPI's survey by the other NFIs and BFI above listed, only those covered in the report; - climate finance spending data received in response to CPI's survey by AFD, KFW and JICA, which was re-allocated to the BFIs category - the share of Lower carbon energy generation project, as it may have included fuel-to-fuel switch project (e.g., fuel to gas, coal to gas) or fossil fuel based co-generation. - an estimated portion of guarantees/risk management instruments The volume obtained was allocated to mitigation and adaptation assuming a 89% vs.11% breakdown, which is in line with the report, and the share observed in the financing of other BFIs and MFIs. Note: Due to the above, and the inclusions of KFW Entwicklungsbank and DEG's climate financing rather than the entire KFW Bankengruppe, our NFIs' total climate financing is lower as compared to the Ecofys-IDFC (2012) report. We decided to include KFW Entwicklungsbank and DEG' financing only for two main reasons: (a) to avoid double counting with the money captured in the private finance flows; and (b) to avoid distortions in the presentation of the BFIs' money, given the domestic-oriented focus of the excluded business areas of the Group, and the lack of analogous examples across the group of BFIs. We acknowledge the presence of public money sitting behind private investments, quantifying it whenever possible, and highlighting the key role played by KfW domestically in the support of the German Energiewende (see Box 10). Instruments breakdown: To estimate the breakdown between the instruments categories featured in the Landscape 2012, the aggregated volume of climate financing was: 1) Broken down between loans and others instruments (95% versus 5%) as indicated in Ecofys-IDFC (2012) 2) The resulting amount was then further broken down based on the weighted average observed for the other NFIs + BFIs for which we had data for. 3) The resulting portion of equity was allocated 50:50 between balance sheet financing and project-level equity, due to data availability constraints. Geographical breakdown: To estimate the breakdown between the various geographical recipients we (1) allocated the estimated portion pertaining to CDB to China, assuming that it invested domestically; (2) the remaining portion was allocated according to the average shares among the other BFIs and NDBs for which we had data.</p>
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Appendix E - Details on Climate Funds

FUND NAME	TYPE	INSTRUMENTS	ESTIMATED LATEST YEAR VALUE (USD MILLION)	SOURCE AND DETAILS
Adaptation Fund	Multilateral ¹	Grants	85.6	Approved funds to projects in 2011. Source: UNFCCC Finance Portal - Adaptation Fund Database of Projects - http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/6668.php#Approved%20project%20data and Adaptation Fund Portal - http://www.adaptation-fund.org , consulted on July 27, 2012
Global Environmental Facility (GEF) • GEF Trust Fund • Least Developed Countries Fund • Special Climate Change Fund	Multilateral Multilateral Multilateral	Grants	220.5 170.2 32.2 18.1	Projects approved or endorsed by the CEO during 2011, as of end July 2012. Source: Personal communication with GEF Secretariat, July 2012.
UN-REDD Programme	Multilateral	Grants	35.2	Multi-Partner Trust Fund Office, May 2012, Third Consolidated Annual Progress Report on Activities Implemented under the UN-REDD Programme Fund for the period 1 January - 31 December 2011, http://mptf.undp.org
MDG Achievement Fund - Environment and Climate Change thematic window	Multilateral	Grants	15.4	Approved budget in 2011 for projects in the Environment and Climate Change thematic window. Source: http://mdtf.undp.org .
Climate Investment Funds (CIFs) including: • the Clean Technology Fund and • the Strategic Climate Fund	Multilateral	Grants, concessional loans, loans and guarantees	929.5	Approved spend in 2011. Source: www.climatefundsupdate.org
Forest Carbon Partnership Facility (FCPF)	Multilateral	Grants	21.4	Approved spend in 2011. Source: www.climatefundsupdate.org
Congo Basin Forest Fund	Multilateral	Grants	57.3	Approved spend in 2011. Source: www.climatefundsupdate.org
Global Energy Efficiency and Renewable Energy Fund	Multilateral	Equity	17.4	Approved spend in 2011. Source: www.climatefundsupdate.org
Global Climate Change Alliance	Multilateral	Grants	77.0	Approved spend in 2011. Source: www.climatefundsupdate.org
Amazon Fund (Fundo Amazônia)	Bilateral	Grants	26.9	Approved spend in 2011. Source: www.climatefundsupdate.org
BNDES Mata Atlântica initiative	Bilateral	Grants	5.8	R\$ 11.8m approved in 2011 for 3 reforestation projects (converted to USD using an exchange rate of USD 0.48860/R\$, oanda.com , 1 September 2012). Source: Press Release, 26 May 2011, http://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/Press/Noticias/2011/20110526_mataatlantica.html
Germany's International Climate Initiative	Bilateral	Grants and concessional loans.	89.7	Approved spend in 2011. Source: www.climatefundsupdate.org

Australia's International Forest Carbon Initiative	Bilateral	Grants	31.4	Total approved spend. No annual data is available. Cumulative total approved spend is therefore divided by four given four full years of operation since June 2008. Source: www.climatefundsupdate.org
Indonesia Climate Change Trust Fund	Bilateral	Grants	0.0	Approved spend in 2011. Source: www.climatefundsupdate.org
UK Internatioanl Climate Fund	Bilateral	Grants	78.2	Approved spend in 2011. Source: www.climatefundsupdate.org
Guyana REDD+ Investment Fund	Bilateral	Grants	0.4	Administrative fees for project proposal preparation grants for projects approved in 2011, including: (1) Institutional Strengthening , US\$ 305,168. Source: (2) Micro and Small Enterprise Development, \$127,476
Japan's Fast-Start Finance	Bilateral	Grants, loans, risk instruments and equity	799.7	Cumulative total approved spend divided by two to give an approximation of annual flows over two full years of operation to date. Source: www.climatefundsupdate.org .

1 Countries can access resources directly, through National Implementing Agencies (NIEs) or using the services of a multilateral implementing entity (MIEs).

Appendix F - Financial flows for REDD+

FUND	ESTIMATED ANNUAL COMMITMENTS (USD MILLION)	SOURCE
Bilateral and EU Institution commitments marked for climate change and forest related purpose	700.0	OECD DAC database data for 2010 (OECD, 2012)
Additional Fast Start Finance for REDD+	243.7	CPI analysis of Fast Start Finance reporting to UNFCCC for 2010; Gibbs (2012)
Norway-Indonesia REDD+ Partnership	0.0	Phase I contribution equals USD 30 million, however no funds have yet been disbursed to projects. Source: Personal Communication with Indonesian officials.
Norway-Guyana REDD+ Investment Fund	0.4	Administrative fees for project proposal preparation grants for projects approved in 2011, including: (1) Institutional Strengthening, US\$ 305,168.
UN-REDD Programme	35.2	Multi-Partner Trust Fund Office, May 2012, Third Consolidated Annual Progress Report on Activities Implemented under the UN-REDD Programme Fund for the period 1 January - 31 December 2011, http://mptf.undp.org
World Bank Forest Carbon Partnership Facility (FCPF)	21.4	Approved spend in 2011. Source: www.climatefundsupdate.org
Congo Basin Forest Fund	57.3	Approved spend in 2011. Source: www.climatefundsupdate.org
Forest Investment Program (FIP)	51.0	Approved spend in 2011. Source: www.climatefundsupdate.org
Global Environment Facility (GEF)	10.9	CPI identification of projects related to forests, approved or endorsed by the CEO during 2011, as of end July 2012. Source: Source data through personal communication with GEF Secretariat, July 2012.
Global Climate Change Alliance	24.7	Approved spend in 2011 in the REDD area. Source: www.climatefundsupdate.org
Amazon Fund	26.9	Approved spend in 2011. Source: www.climatefundsupdate.org
BNDES Mata Atlântica initiative	5.8	R\$ 11.8m approved in 2011 for 3 reforestation projects (converted to USD using an exchange rate of USD 0.48860/R\$, oanda.com , 1 September 2012). Source: Press Release, 26 May 2011, http://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/Press/Noticias/2011/20110526_mataatlantica.html
International Tropical Timber Organization (ITTO)	4.0	Macqueen (2010)
Forest Carbon Markets	143.0	Peters-Stanley et al. (2012). Value of primary credits sold on the voluntary and CDM/JI markets in 2011.
Total	1,324.2	

Notes: - The following donor funds are excluded from the table above due to their interaction with other funds presented: Australian International Forest Carbon Initiative (USD 31.4 million annualized estimate based on data from www.climatefundsupdate.org), German International Climate Initiative (USD 0.76 million approved for REDD projects in 2011 according to www.climatefundsupdate.org), Norwegian Climate and Forest Initiative (no data on 2011 approved projects at www.climatefundsupdate.org), Japan Fast-Start Finance. - The estimate of bilateral and EU Institution commitments in the forest sector is based on filtering of OECD CRS data according to climate change marking and forest related purpose coding (forestry industries, development, education/training, policy & admin. Management, research and services). Project channels and titles were screened to remove potential overlaps with ITTO, GEF, FIP, FCPF and UN-REDD. The portion of Fast-Start finance we identified in 2010 data (about USD 1.8 billion), is estimated to have contributed an additional USD 250 million, which was obtained by applying an average 14% share of Fast-Start financing to REDD measures over the December 2010 and 2011 period (Gibbs 2012).