

THE LANDSCAPE OF CLIMATE FINANCE

A CPI Report

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About CPI

Climate Policy Initiative (CPI) is a policy effectiveness analysis and advisory organization whose mission is to assess, diagnose, and support the efforts of key governments around the world to achieve low-carbon growth.

CPI is headquartered in San Francisco and has offices around the world, which are affiliated with distinguished research institutions. Offices include: CPI at Tsinghua, affiliated with the School of Public Policy and Management at Tsinghua University; CPI Berlin, affiliated with the Department for Energy, Transportation, and the Environment at DIW Berlin; CPI Rio, affiliated with Pontifical Catholic University of Rio (PUC-Rio); and CPI Venice, affiliated with Fondazione Eni Enrico Mattei (FEEM). CPI is an independent, not-for-profit organization that receives long-term funding from George Soros.

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Preface

Note that this landscaping exercise is a work in progress - we aim to provide the best possible information, but cannot claim to have captured everything. Comments and clarifications on both the numbers and tracking organizations are very welcome.

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Executive Summary

Climate finance has been a key topic in recent international climate negotiations, resulting in a significant commitment to increase the flow of climate finance from developed to developing countries to USD 100 billion per year by 2020. Building a comprehensive picture of climate finance flows is essential to this effort. Understanding how much and what type of support is being made available to advance action on low-carbon, climate-resilient development, how these types of support correspond to countries' needs, and whether financial resources are being spent productively, is critical to building trust among countries and ensuring the effective use of the available financial resources.

In this paper we assess the current status of the climate finance landscape, mapping its magnitude and nature along the life cycle of finance flows, i.e. the sources of finance, intermediaries involved in distribution, financial instruments, and final uses. After presenting estimates of current flows based on available data, describing the methodology, and discussing the sources of data, we offer recommendations to improve future data-gathering efforts.

To gain a comprehensive picture of the landscape of climate finance, it is necessary to compile data from a wide range of sources, from international organizations like the OECD, to private sector sources like Bloomberg NEF, as well as NGOs like the ODI. We conducted a detailed review of the available data, recognizing the wide variety of definitions and the gaps in data gathering. Our extensive year-long effort went to great lengths to cover all data sources and make them comparable to the extent possible. While the timeframes covered by these sources differ, our data mostly relate to flows in 2009/2010.

We used three major sources of information: 1) existing databases, tracking initiatives, and studies compiled by various organizations; 2) third-party expertise, when official numbers were lacking or did not appropriately portray the related flow; 3) our own estimates, when no satisfactory official / third-party numbers were available.

The Global Climate Finance Landscape

Our research suggests that at least USD 97 billion per annum of climate finance is currently being provided to support low-carbon, climate-resilient development activities.

An optimist might suggest that the USD 97 billion total in climate finance is close to 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:

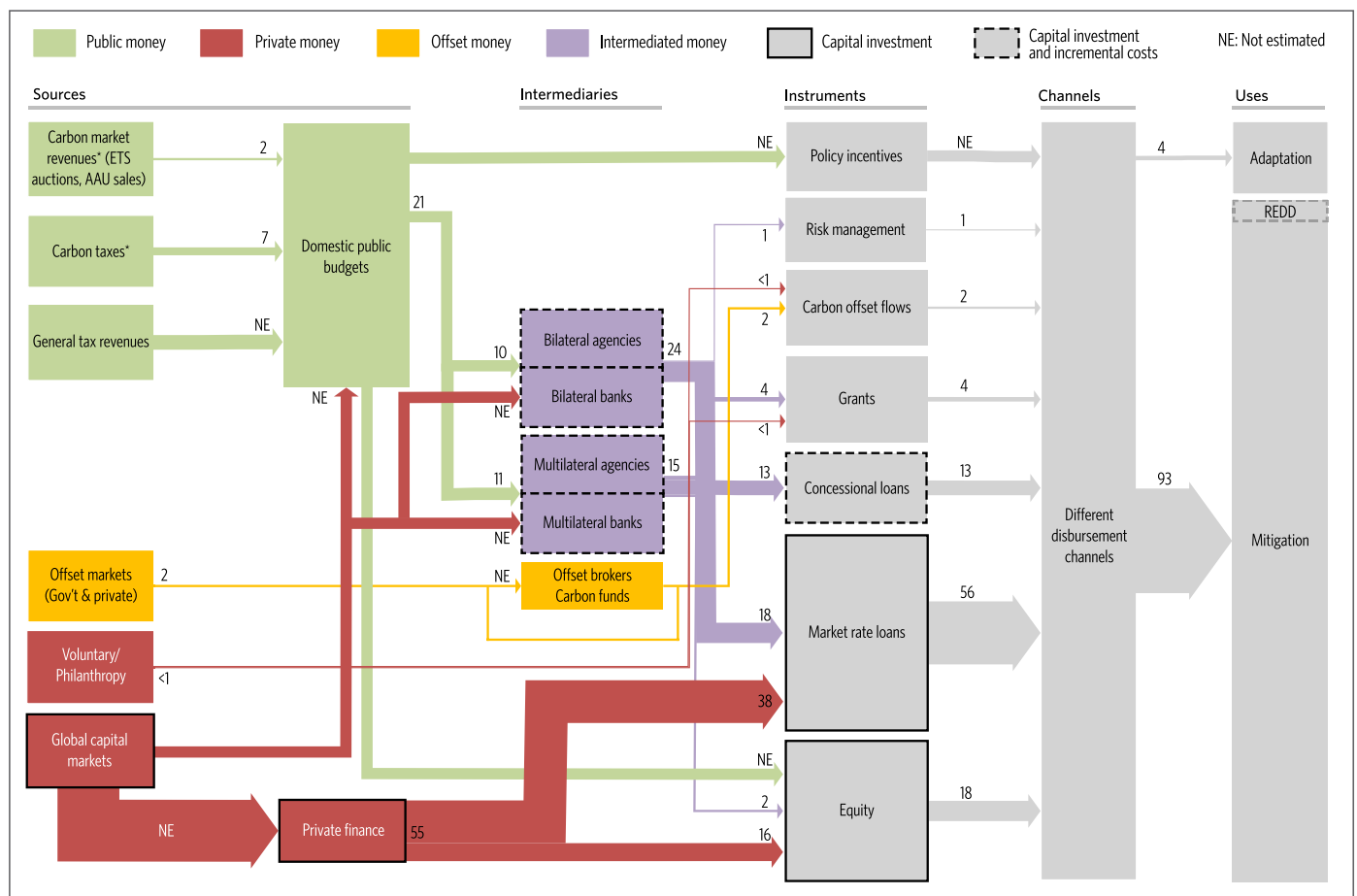
- Not all of the USD 97 billion is necessarily additional to climate finance available prior to the Copenhagen Accord. The reality is that while climate finance has increased quickly over the past 10 years, a significant share of the USD 97 billion was already being provided prior to the Summit.
- Many countries and commentators have interpreted the USD 100 billion climate finance to originate from public sources, rather than partially provided by the private sector (although the Copenhagen Accord does mention private sources).
- Many have also argued that the finance provided should cover incremental costs rather

than capital investment.

- Furthermore, the USD 97 billion total includes some developing countries and domestic sources, although to a limited extent.

Figure ES-1 – the ‘spaghetti diagram’ – illustrates the current landscape of climate finance flows along their life cycle. The width of the arrows in the diagram represents the relative size of the flows. The diagram distinguishes between ‘incremental costs’ and ‘capital investment’. The former refers to financial resources provided to cover the difference between a less costly, more polluting option and a costlier, more environmentally-friendly and/or climate-resilient one. The latter refers to tangible investment in mitigation or adaptation projects. Incremental costs are like revenues to recipients, whereas capital investment needs to be paid back. Incremental costs often make the difference in the final investment decision, influencing where investors decide to put their money, and are generally funded by public climate finance resources.

Figure ES-1. Current climate finance flows (in USD billion)



Source: Climate Policy Initiative (CPI)

Notes: Figures presented are indicative estimates of annual flows for the latest year available, 2009/2010 (variable according to the data source). Figures are expressed in USD billion and are 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. All flows are incremental except for those identified as full or partial ‘capital investment’. Most data presented relate to commitments in a given year, due to limited availability of disbursement data. *Estimated carbon pricing revenues indicated are not necessarily wholly hypothecated for climate finance.

SOURCES

The amount of private finance is almost three times greater than public finance. Out of the estimated USD 97 billion in global climate funding, on average USD 55 billion is provided by the private sector, while at least USD 21 billion is provided by public budgets. Private funding is in the form of direct equity and debt investments, to which bilateral and multilateral agencies and banks also contribute another USD 20 billion by leveraging the public funding they receive. A relatively small share – less than USD 3 billion – is provided by carbon markets and voluntary / philanthropic contributions. Public finance is raised through carbon market revenues, carbon taxes and general tax revenues.

The relatively small role of the public sector compared to the private sector is remarkable, in light of the debate in the global climate change negotiations where many have emphasized the need for developed countries to fund mitigation and adaptation in developing nations. The role of the private sector in our figures is a reminder of the fact that capital investment is crucial for any mitigation and adaptation activities. Many developing countries lack developed capital markets – i.e. a well functioning banking system, a public debt market and/or a public equity market – requiring them to rely, instead, on international capital investments. The poorest countries must rely on development banks.

Carbon finance plays only a small role in climate finance. The relatively small role of carbon finance (USD 2 billion out of USD 97 billion) stands in contrast with the high ambitions for carbon markets when the Kyoto Protocol came into force. After rapid growth in the generation of CDM ('Kyoto') carbon credits, the offset markets have leveled off at roughly 160 million credits per annum, as the European Union Emissions Trading System (EU ETS) proved to be the only significant source of demand.

INTERMEDIARIES

Intermediaries such as bilateral and multilateral financial institutions play a key role in distributing climate finance, around USD 39 billion a year (40% of the total). Most climate finance is not distributed directly by governments to end-users, as is generally believed, but is distributed through government agencies and development banks. Agencies mostly rely on public money, while banks typically leverage public money with debt financing.

Bilateral institutions distribute a greater share of finance than multilateral agencies. While there has been a lot of attention recently on the development of a global 'green fund' to catalyze international climate finance, the reality is that most of public climate finance (USD 24 billion) is currently provided by bilateral institutions (those sponsored by one nation) rather than multilateral institutions (like World Bank / IFC, EIB, EBRD, AfDB, AsDB, IDB), which distribute USD 15 billion a year. The remainder of climate finance either flows directly through the capital markets, or is provided directly by governments.

Dedicated climate funds, typically managed by bilateral and multilateral institutions, channel a small but growing portion of finance (currently USD 1.1-3.2 billion).

INSTRUMENTS

Most climate finance, USD 74-87 billion out of USD 97 billion, can be classified as investment or more generally including ownership interests. Around USD 56 billion is in the form of market rate loans; of this amount, USD 18 billion is through bilateral and multilateral institutions like IFC and EIB while USD 38 billion is through the private sector. Another USD 18 billion is provided as equity, of which USD 16 billion comes from the private sector. Because these loan and equity instruments must be paid back to investors over the investment horizon, they are technically not considered 'aid'.

Concessional loans (USD 13 billion) are typically provided by bilateral and multilateral banks. While the principal loan amount needs to be paid back, the interest rate payments are significantly discounted. The discount can be characterized as 'aid'. Concessional loans can therefore be considered as both incremental and investment contributions and include ownership interests where public bodies take on risk-return positions that a private investor would not bear.

The remainder of climate finance, between USD 8 and 21 billion, is comprised of instruments such as policy incentives, risk management facilities, carbon offset flows and grants. These types of financing that do not have to be (fully) paid back or incur a reduced interest rate can be seen as 'aid' in the technical sense of the word. Approximately USD 8 billion is provided in the form of grants (USD 4 billion), carbon offset flows (USD 2 billion) and risk management mechanisms (USD 1 billion). Policy incentive instruments are increasing in importance but their magnitude is not estimated as information tends to be fragmented.

The role of investment / ownership finance is striking. One can explain the large investment component in international climate finance as due to the lack, in many developing countries, of developed capital markets required to raise investment capital.

USES

The large majority of climate finance (USD 93 billion out of USD 97 billion) is used for mitigation measures; only a very small share goes to adaptation efforts. This large share of mitigation finance is mostly the result of significant capital investments in mitigation measures like renewable energy. Adaptation receives USD 4.4 billion, mostly in the form of incremental cost payments.

A detailed assessment of the sources for adaptation and mitigation shows that adaptation is predominantly financed through bilateral institutions (USD 3.6 billion out of USD 4.4 billion), followed by multilateral institutions (USD 475 million) and voluntary / philanthropy (USD 210 million). A relatively small share (USD 65 million) is provided by dedicated funds. It is surprising to see that multilateral funds like the Adaptation Fund, which has attracted a great deal of attention, play a relatively insignificant role compared to bilateral adaptation funds.

Mitigation finance is provided by a wider range of sources, with most (USD 55 billion out of USD 93 billion) coming from the private sector in the form of capital investment. Bilateral and multilateral institutions provide significant sums for mitigation, USD 19 billion and USD 14 billion respectively. Funds contribute USD 2.4 billion. While most of those sources provide capital

investment, the offset market provides USD 2.2 billion of incremental cost financing. Voluntary / philanthropic contributions are estimated to provide USD 240 million, slightly more than their contribution to adaptation.

The split between mitigation and adaptation (95:5) contrasts with some of the rhetoric in global climate change negotiations where many countries and commentators have remarked that climate finance should be split 50:50 between adaptation and mitigation. The following points are worth considering:

- One could argue that it makes sense to invest in mitigation now, while climate change can still be avoided, and that the world should only start to focus on costly adaptation measures once climate change is truly unavoidable and irreversible. One could see our data as proof that the world is acting rationally now.
- Many mitigation efforts are part of the business-as-usual economic activity and have rationales beyond climate change. For example, energy or resource productivity can be justified based on the savings achieved. Renewable energy can also be justified based on energy security and local environmental concerns (rather than global climate change concerns). This makes those activities more likely than adaptation activities.
- Mitigation activities tend to have more private sector participation, as they offer stronger incentives through established business models. Adaptation, on the other hand, is often a public good and needs to be provided through public sector accounts.

Key issues and recommendations for climate finance tracking

Our analysis of current climate finance flows highlights a number of key issues in climate finance tracking and suggests that there are multiple improvements required to overcome these challenges:

- **The complex nature of climate finance and lack of agreed-upon definitions hamper tracking efforts.** Inconsistencies in labeling and definitions of what constitutes climate finance exist. There needs to be a common set of definitions spanning all types of climate finance in order to allow data tracking and comparison.
- **The various objectives of climate tracking efforts complicate the analysis.** Various goals often require specific methods of analysis. Transparency and clarification regarding the objectives of specific climate finance tracking systems help to focus analytical and data-gathering efforts for global climate finance tracking.
- **While there is a wealth of data on elements of the climate finance landscape, there is limited coordination and some gaps in data gathering.** An expansion of our and others' efforts and a platform to bring existing tracking initiatives together could support a close dialogue between organizations active in this area, and improve the consistency, comprehensiveness, and overall quality of data.
- **Several information gaps impede a better understanding of what is needed to enhance the effectiveness of climate finance.** Inaccessible and inconsistent data on private finance flows, limited information on domestic and 'South-South' flows and a lack of data at the instrument, disbursement and use levels limit our understanding of the scale and effectiveness of climate finance efforts. New efforts to fill in those gaps are required.

A comprehensive picture of climate finance flows is essential for the success of international climate policy. Our study provides a first overview of the climate finance landscape and stimulates thinking and action on next steps in developing a comprehensive tracking system that ultimately helps countries learn how to spend money wisely.

1 An overview of current climate finance flows

Finance is a key ingredient of the global response to climate change. The success of low-carbon and climate-resilient development depends on the quantity and type of finance made available to support these efforts. In the Copenhagen Accord, developed countries pledged to collectively support developing countries' transitions to low-carbon futures with an annual USD 100 billion of 'new and additional' public and private finance by 2020, a commitment now included in the UNFCCC following the recent Cancún negotiations.

A number of organizations and initiatives actively monitor, track and analyze different pieces of climate finance, and since Copenhagen, these efforts have multiplied. Nevertheless, it remains difficult to obtain a clear picture of how *much* climate finance is flowing, *where* it is flowing from and to, and what *types* of finance are flowing. The availability of good data is essential for assessing the adequacy and productivity of climate finance, as well as for monitoring donor commitments.

Against the background of financing needs¹, this paper describes the current landscape of climate finance, by identifying, comparing, and evaluating existing databases and initiatives that track finance.

Out of this process emerges a comprehensive overview of the landscape of climate finance flows, including flow pathways – from donor pledges, through intermediaries and instruments, to end recipients – and the key actors involved in tracking

these flows. As such, the paper also serves to identify gaps and the subsequent improvements needed to enhance the quality, completeness, transparency, and consistency of current climate finance-tracking.

Thus, the objective of this study is three-fold: (i) to identify and quantify, to the greater extent possible, the main categories or dimensions of climate finance, (ii) to highlight key emerging issues and gaps in the tracking processes for the current landscape, and (iii) to point to remedies that will ensure that climate finance meets the expectations of being sufficient, transparent and productive.

A definition of climate finance

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. Discussions with many experts in the area² have indicated that the meaning of climate finance is continually evolving, and captures the following aspects:

- Financial support for mitigation and adaptation activities, including capacity-building and R&D, as well as broader efforts to enable the transition towards low-carbon, climate-resilient development
- Financial flows from developed to developing countries (North-South)
- Financial flows from developing to developing countries (South-South)
- Financial flows from developed to developed countries (North-North)
- Domestic climate finance flows in developed and developing countries
- Public, private, and public-private flows

1 Estimates of climate finance needs vary, according to the assumptions and parameters applied in individual studies e.g. the geographic, sectoral, and activity coverage, the timescale and phasing, and the desired target. World Bank (2010a) estimates that additional investments needs for mitigation interventions in developing countries could range from USD 140 billion to more than USD 175 billion per annum by 2030 (with related financing requirements of USD 265 to USD 565) while, adaptation financing needs could range between USD 30 to 100 billion per annum. Several organisations have proposed other estimates including: McKinsey 2009, IEA ETP 2008, UNCTAD 2007, UNDP HDR 2008, Stern 2007.

2 These discussions were kicked-off during the "The State of International Climate Finance: Is It Adequate and Is it Productive?" workshop organized by CPI in Venice in October 2010. Key takeaways from the workshop can be downloaded from the CPI web site at: <http://www.climatepolicyinitiative.org/our-work/publications>.

- Incremental cost and investment capital³: an understanding of the incremental cost can help identify where flows come from, while ultimately it is the investment cost that forms the greatest portion of expenditures
- Gross flows and net flows⁴ that shed light on the level of mobilized international investments and the net contribution of countries

For the purpose of this study, finance flows are limited to 'climate-specific finance', referring specifically to capital flows that target low-carbon and climate-resilient development. Note that this excludes a broader set of capital flows from developed to developing countries that will influence, directly or indirectly, emissions and/or vulnerability to climate change in developing countries; these are typically referred to as 'climate-relevant' finance (see Corfee-Morlot et al., 2009, and Buchner et al., 2011)⁵. 'Climate-specific' finance

3 Incremental costs refers to financial resources provided to cover the difference – or “increment” – between a less costly, more polluting option and a costlier, more environmentally-friendly (GEF, 2010) and/or climate-resilient one. Incremental costs are like revenues to recipients. Investment capital, instead, refers to tangible investment in mitigation or adaptation projects which needs to be paid back. Incremental costs often make the difference in the final investment decision, and are generally covered by public climate finance resources.

4 Climate finance can be measured in terms of 'gross' or 'net' metrics (AGF, 2010). Under the gross 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 net approach, amounts repaid by the recipient countries would be deducted (e.g. repayments of loan principal, repatriation of capital).

The 'gross and net approaches serve different purposes, and there are different perspectives on whether finance should be measured on a gross or net basis, particularly regarding private and non-concessional flows, as highlighted in discussions of the High-level Advisory Group on Climate Change Financing (cf. AGF, 2010). The on-going controversies make it difficult to recommend a specific choice, but suggest that both ways should be considered depending on the specific finance flow taken in consideration. It is important to clarify what metrics are being used when tracking finance flows, to avoid a mixture of both which would lead to inconsistent aggregate results. OECD-DAC statistics – explained in the following sections – make data available only on a gross basis.

5 'Climate-relevant' finance targets development and economic growth

may be either international public or private financing flows, and thus may be either concessional (public) or non-concessional flows (where the latter concerns private – as well as some forms of public – finance flows). It can have direct or indirect greenhouse gas mitigation or adaptation objectives/outcomes.

The study focuses on gross flows in order to highlight the overall scale of international investment, though net flows are also an important lens on climate finance that need to be explored further. Both incremental costs and investment capital are taken into account. While 'North-South' flows are the main focus of this study, 'South-South' and domestic climate finance flows in developing countries are included to the furthest extent possible (for some insights on the potential scale see Box IV), however our understanding as of yet is rudimentary, due to a limited availability of data for quantifying these flows at present.

Taxonomy

A comprehensive picture of climate finance is multidimensional, involving many pieces of information both on the type of finance and how finance flows from the donor to the recipient and, ultimately, within the recipient structure.

Two dimensions can help structure and systematize this information:

- A horizontal dimension that represents the life cycle of finance flows. How is finance flowing from the source to the final use? How are these flows assembled by source of finance and country of origin? How are they transferred and disbursed?
- A vertical dimension that describes what types of financial flows and intermediary channels are being used. Are they public finance, private finance or public-private finance flows? Climate-specific vehicles or general bilateral flows? Flows managed by International Finance Institutions

in key emitting sectors or in sectors affecting vulnerability to climate change. These flows influence climate change outcomes, but possibly in a negative manner (i.e. by increasing emissions) unless the capital is backing low-carbon or climate-resilient investments.

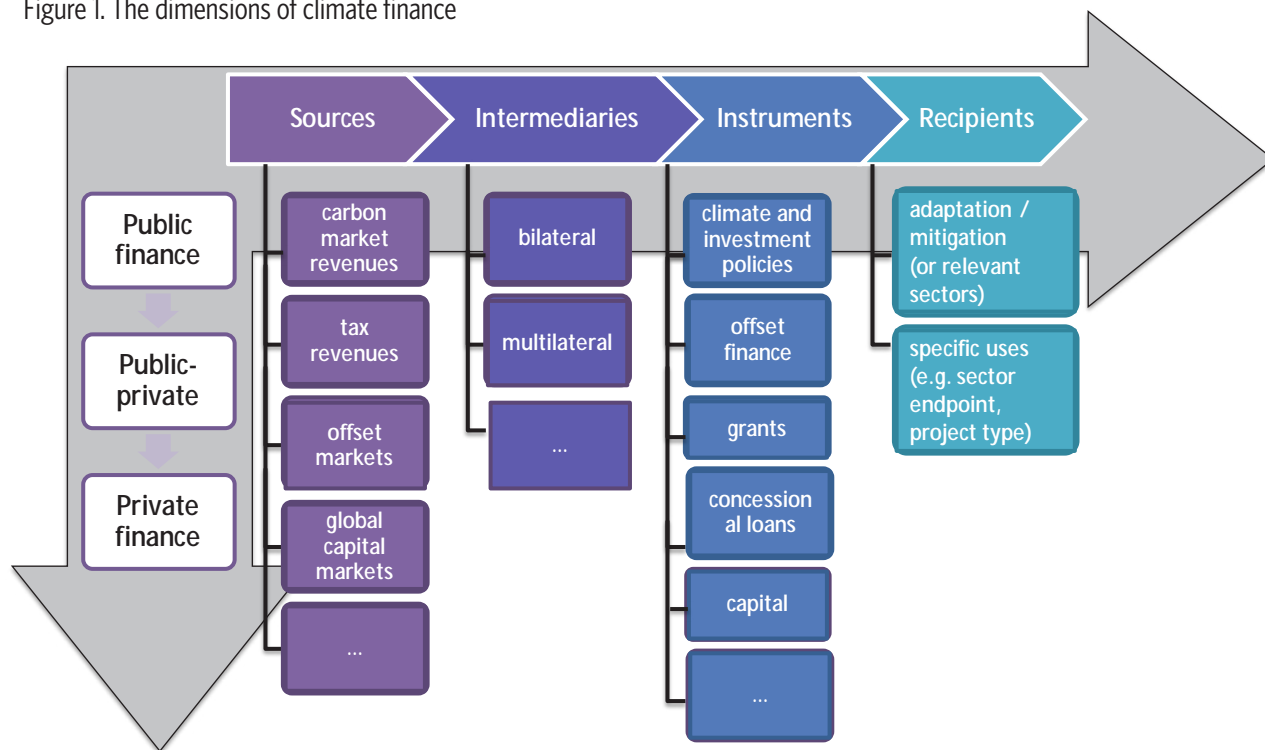
or directly by the government/private sector? Incremental finance, or investment finance?

these dimensions.

Figure 1 illustrates this framework, highlighting more information on the possible categories along

Based on this broad structure, the following taxonomy of climate finance categories is proposed (cf. Buchner *et al.*, 2011):

Figure 1. The dimensions of climate finance



Source: Buchner *et al.*, 2011

- **Sources** of climate finance disbursed, both existing and potential: this category captures where money currently comes from, and where additional climate finance money could come from. Current sources for climate finance include carbon market revenues and carbon-related mechanisms, general tax revenues, voluntary and philanthropic contributions, and capital markets; possible, innovative future sources could, for example, come from international transport fuel revenues, the removal of fossil fuel subsidies, redirecting fossil fuel extraction royalties/licenses, or a financial transaction tax (AGF, 2010).
- **Type of finance** e.g. public concessional (ODA and OOF), public non-concessional, private capital or investment.
- **Intermediaries** of climate finance: this category tracks specific patterns and channels for climate finance. Some finance flows are intermediated for various reasons, ranging from the expertise and network of the intermediary, legal requirements of finance, transparency concerns, confidentiality, diversification, or for pooling resources to benefit from economies of scale. In addition, these intermediaries are able to leverage a significant amount of co-financing. The principal intermediaries through which finance is transferred are bilateral or multilateral banks and agencies as well as climate funds. Regional and national development banks also play a role.
- **Instruments** of climate finance: this

category identifies the mode by which mitigation and adaptation projects and programmes are supported. Instruments used to distribute funds include specific policy-based incentives, risk instruments, and financial instruments (e.g., grants, loans, domestic policy support, guarantees, and other risk and financial instruments).

- **Disbursement channels:** this category identifies the organizations and mechanisms that are used to allocate the capital in the recipient country or region. Disbursement channels and mechanisms depend on the national context, but may include local or international NGOs, private sector entities, or public agencies such as national, bi- and multi-lateral development banks.
- **Recipients and uses** of climate finance: this category refers to the recipients (country or organization) and end uses of climate finance flows, covering the general purpose area (such as mitigation, REDD, adaptation or other) as well as the mitigation / adaptation sectors (renewables, agriculture, etc.) or technology targeted (onshore wind, methane capture, etc.).

Current climate finance flows

Our research suggests that at least USD 97 billion of climate finance is currently provided per annum. This is based on a detailed review of existing climate finance literature and information gathered from various efforts underway to track climate finance components. While sources differ in their timing, our data mostly relate to 2009 and 2010.

Figure 2 – the ‘spaghetti diagram’ – illustrates the current landscape of climate finance flows along their life cycle – according to the taxonomy outlined above – including the key categories of climate finance and the linkages between them, as well as estimates of their magnitude. The width of the arrows in the diagram represents the relative size of the flows.

The diagram distinguishes between ‘incremental costs’ and ‘capital investment’. The former refers

to financial resources provided to cover the difference between a less costly, more polluting option and a costlier, more environmentally-friendly and/or climate-resilient one. The latter refers to tangible investment in mitigation or adaptation projects. Incremental costs are like revenues to recipients, whereas capital investment needs to be paid back. Incremental costs often make the difference in the final investment decision, influencing where investors decide to put their money, and are generally funded by public climate finance resources. Most figures presented include administrative costs incurred as finance passes from source to recipient, which are primarily organizational set-up costs.

‘Fast-start finance’ is not specifically captured in this landscaping exercise⁶ since the objective is to provide an overview of the overall climate finance available for supporting the transition to green growth, without necessarily distinguishing between short and long-term finance. However, several organizations are leading initiatives to track and analyze ‘Fast-start finance’, including the UNFCCC, the WRI, Project Catalyst and the Government of Netherlands (with support from other countries’ governments, UNDP, and other UN agencies)⁷.

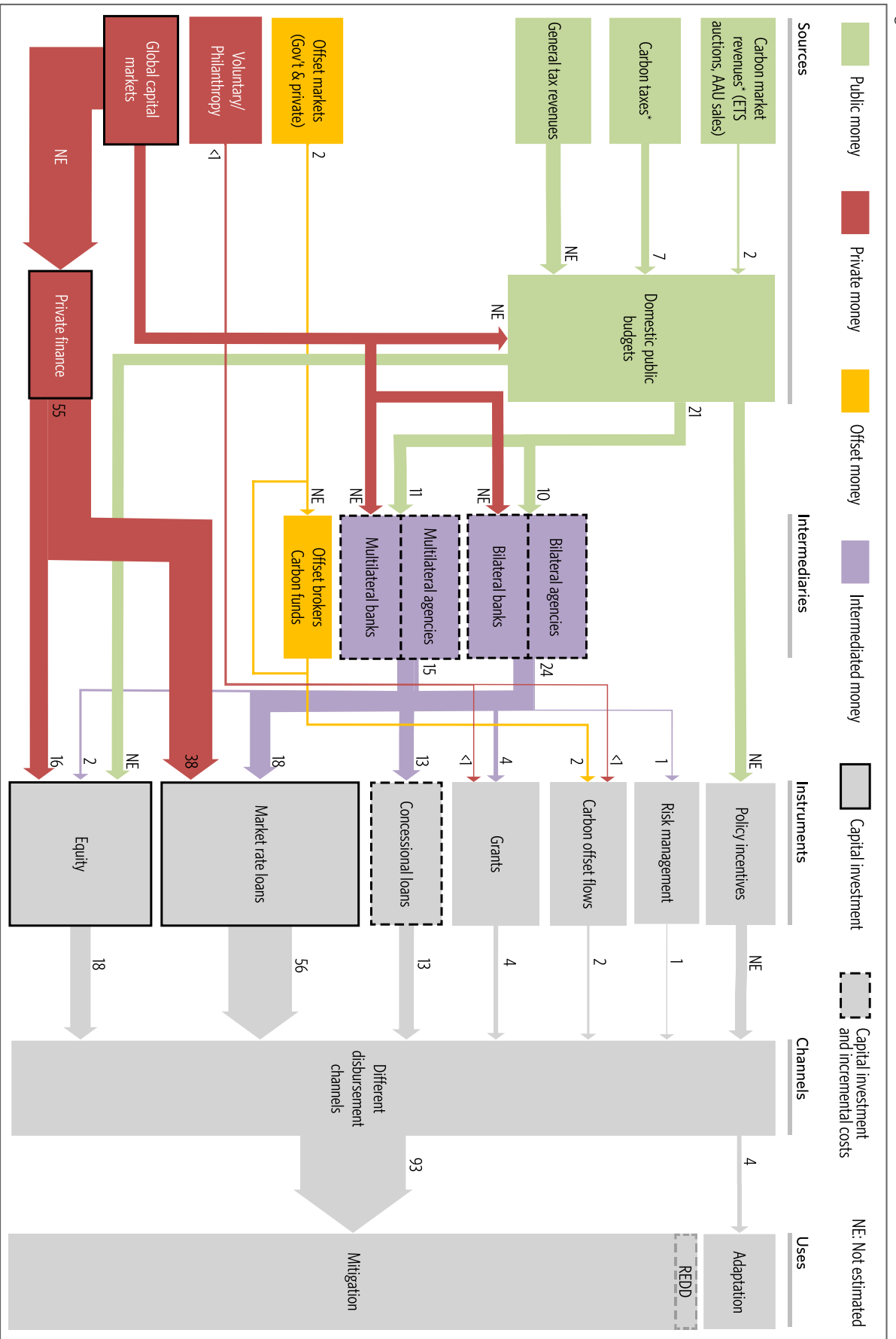
Sources

The amount of private finance is almost three times greater than public finance. Out of the estimated USD 97 billion in global climate funding, on average USD 55 billion is provided by the private sector, while at least USD 21 billion is provided by public budgets. Private funding is in the form of direct equity and debt investments, to which bilateral and multilateral agencies and banks also contribute another USD 20 billion by leveraging the public funding they receive. A relatively small share – less than USD 3 billion – is provided by carbon markets and voluntary / philanthropic contributions. Public

⁶ Indeed, some bilateral data presented in the landscape is from 2009, outside the ‘Fast-start finance’ years.

⁷ The web sites of these initiatives are as follows: http://unfccc.int/cooperation_support/financial_mechanism/fast_start_finance/items/5646.php; <http://www.wri.org/publication/summary-of-developed-country-fast-start-climate-finance-pledges>; <http://www.project-catalyst.info/>; <http://www.faststartfinance.org>.

Figure 2. Current climate finance flows (USD billion)



Source: Climate Policy Initiative (CPI)

Notes: Figures presented are indicative estimates of annual flows for the latest year available, 2009/2010 (variable according to the data source). Figures are expressed in USD billion and are 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. All flows are 'incremental' except for those identified as full or partial 'capital investment'. Most data presented relate to commitments in a given year, due to limited availability of disbursement data. *Estimated carbon pricing revenues indicated are not necessarily wholly hypothesized for climate finance.

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The relatively small role of public sector compared to the private sector is remarkable, in light of the debate in the global climate change negotiations where many have emphasized the need for developed countries to fund mitigation and adaptation in developing nations. The role of the private sector in our figures is a reminder of the fact that capital investment is crucial for any mitigation and adaptation activities. Many developing countries lack developed capital markets - i.e. a well functioning banking system, a public debt market and/or a public equity market - requiring them to rely, instead, on international capital investments. The poorest countries must rely on development banks.

Carbon finance plays only a small role in climate finance. The relatively small role of carbon finance (USD 2 billion out of USD 97 billion) stands in contrast with the high ambitions for carbon markets when the Kyoto Protocol came into force. After rapid growth in the generation of CDM ('Kyoto') carbon credits, the offset markets have leveled off at roughly 160 million credits per annum, as the European Union Emissions Trading System (EU ETS) proved to be the only significant source of demand.

Intermediaries

Intermediaries such as bilateral and multilateral financial institutions play a key role in distributing climate finance, around USD 39 billion a year (40% of the total). Most climate finance is not distributed directly by governments to end-users, as is generally believed, but is distributed through government agencies and development banks. Agencies mostly rely on public money, while banks typically leverage public money with debt financing.

Bilateral institutions distribute a greater share of finance than multilateral agencies. While there has been a lot of attention recently on the development of a global 'green fund' to catalyze international climate finance, the reality is that most of public climate finance (USD 24 billion) is currently provided by bilateral institutions (those sponsored

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Dedicated climate funds, typically managed by bilateral and multilateral institutions, channel a small but growing portion of finance (currently USD 1.1-3.2 billion).

Instruments

Most climate finance, USD 74-87 billion out of USD 97 billion, can be classified as investment or more generally including ownership interests. Around USD 56 billion is in the form of market rate loans; of this amount, USD 18 billion is through bilateral and multilateral institutions like IFC and EIB while USD 38 billion is through the private sector. Another USD 18 billion is provided as equity, of which USD 16 billion comes from the private sector. Because these loan and equity instruments must be paid back to investors over the investment horizon, they are technically not considered 'aid'.

Concessional loans (USD 13 billion) are typically provided by bilateral and multilateral banks. While the principal loan amount needs to be paid back, the interest rate payments are significantly discounted. The discount can be characterized as 'aid'. Concessional loans can therefore be considered as both incremental and investment contributions and include ownership interests where public bodies take on risk-return positions that a private investor would not bear.

The remainder of climate finance, between USD 8 and 21 billion, is comprised of instruments such as policy incentives, risk management facilities, carbon offset flows and grants. These types of financing that do not have to be (fully) paid back or incur a reduced interest rate can be seen as 'aid' in the technical sense of the word. Approximately USD 8 billion is provided in the form of grants (USD 4 billion), carbon offset flows (USD 2 billion) and risk management mechanisms (USD 1 billion). Policy incentive instruments are increasing in importance, but their magnitude is not estimated

as information tends to be fragmented.

The role of investment / ownership finance is striking. One can explain the large investment component in international climate finance as due to the lack, in many developing countries, of developed capital markets required to raise investment capital.

Uses

The large majority of climate finance (USD 93 billion out of USD 97 billion) is used for mitigation measures; only a very small share goes to adaptation efforts. This large share of mitigation finance is mostly the result of significant capital investments in mitigation measures like renewable energy. Adaptation receives USD 4.4 billion, mostly in the form of incremental cost payments.

A detailed assessment of the sources for adaptation and mitigation shows that adaptation is predominantly financed through bilateral institutions (USD 3.6 billion out of USD 4.4 billion), followed by multilateral institutions (USD 475 million) and voluntary / philanthropy (USD 210 million). A relatively small share (USD 65 million) is provided by dedicated climate funds. It is surprising to see that multilateral funds like the Adaptation Fund, which has attracted a great deal of attention, play a relatively insignificant role compared to bilateral adaptation funds.

Mitigation finance is provided by a wider range of sources, with most (USD 55 billion out of USD 93 billion) coming from the private sector in the form of capital investment. Bilateral and multilateral institutions provide significant sums for mitigation, USD 19 billion and USD 14 billion respectively. Funds contribute USD 2.4 billion. While most of those sources provide capital investment, the offset market provides USD 2.2 billion of incremental cost financing. Voluntary / philanthropic contributions are estimated to provide USD 240 million, slightly more than their contribution to adaptation.

The split between mitigation and adaptation (95:5) contrasts with some of the rhetoric in global climate change negotiations where many countries

and commentators have remarked that climate finance should be split 50:50 between adaptation and mitigation. The following points are worth considering:

- One could argue that it makes sense to invest in mitigation now, while climate change can still be avoided, and that the world should only start to focus on costly adaptation measures once climate change is truly unavoidable and irreversible. One could see our data as proof that the world is acting rationally now.
- Many mitigation efforts are part of the business-as-usual economic activity and have rationales beyond climate change. For example, energy or resource productivity can be justified based on the savings achieved. Renewable energy can also be justified based on energy security and local environmental concerns (rather than global climate change concerns). This makes those activities more likely than adaptation activities.
- Mitigation activities tend to have more private sector participation, as they offer stronger incentives through established business models. Adaptation, on the other hand, is often a public good and needs to be provided through public sector accounts.

An optimist might suggest that the USD 97 billion total in climate finance is close to 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:

- Not all of the USD 97 billion is necessarily additional to climate finance 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 97 billion was already being provided prior to the Summit.
- Many countries and commentators have interpreted the USD 100 billion climate finance to originate from public sources, rather than partially provided by the private sector (although the Copenhagen Accord does mention private sources).

- Many have also argued that the finance provided should cover incremental costs rather than capital investment.
- Furthermore, the USD 97 billion total includes some developing countries and domestic sources, although to a limited extent.

The sections that follow provide a detailed look at the methodology adopted in composing the overview, as well as the sources used. The paper closes with a review of key existing issues, and subsequent recommendations for improvement.

Table 1. Estimated volume of mitigation and adaptation finance (USD million and in percent)

Source	Total [^] (USD m)	Adaptation (%)	Mitigation (%)	Adaptation (USD m)	Mitigation (USD m)
Bilateral	22,767	16%	84%	3,641	19,127
Multilateral	14,361	3%	97%	475	13,886
Funds	2,492	3%	97%	65	2,428
Offsets*	2,250	0%	100%	0	2,250
Philanthropy**	450	47%	53%	210	240
Private finance	54,600	0%	100%	0	54,600
Total	96,920	5%	95%	4,390	92,531

Source: Climate Policy Initiative (CPI)

Notes:

[^]This column contains the mid-point of estimates where ranges exist.

* The Adaptation Fund is covered under the 'Funds' category and not under carbon offset flows.

**Philanthropy figure includes an estimated USD 240 million from voluntary carbon markets (OTC transactions).

2 Methodology

Following the taxonomy laid out in the previous section, we provide estimated climate finance flows for most of the entries in the diagram. To make things relevant and comparable, we used the most recent year (2009/2010) or an average of the most recent years (depending on which was the most representative), and all figures are stated in USD billion.

We use three major sources of information: 1) existing databases, tracking initiatives, and studies compiled by various organizations; 2) third-party expertise, when official numbers were lacking or did not appropriately portray the related flow; 3) our own estimates, when no satisfactory official / third-party numbers were available.

The resulting set of estimates of the climate finance landscape includes existing databases, tracking initiatives, and studies compiled by the various organizations working on certain elements of climate finance.

Nevertheless, we acknowledge that there remains ample room for improvement, often due to the lack of readily available, consistent data sources. In particular, the following caveats need to be highlighted: first, the figures presented in this study are predominantly based on climate finance commitments, given that data on disbursements is lacking at various stages. This aspect needs to be kept in mind as it potentially gives rise to a distorted picture of average annual climate finance flows. Commitments are likely to be considerably higher than annual disbursements, particularly because committed amounts often spread over a number of years (e.g. climate funds). In addition, commitment data are usually not adjusted *ex-post* for cancellations or amendments to the actual value of support provided, leading to potential overestimates of financial amounts⁸.

8 For example, guarantees and lines of credit may not be called upon

Second, the estimates presented are often based on multiple years, sometimes mixing annual estimates of climate finance from different years. This is due to the different accounting methodologies applied by the various data sources, and although estimates from different years cannot necessarily be added together, a comparable basis was utilized to meet the overall goal of our work, i.e. highlighting the scale of current climate finance flows. Future studies should aim for consistency in reporting years and definitions to allow trend analysis.

Third, only a selection of bilateral and multilateral development banks is currently included in our estimates. Additional ones could significantly improve the quality of our estimates, as well as shed light on the extent of the so-called 'leverage effect'⁹. Moreover, this measure could help clarify the contribution of global capital markets to climate finance through bilateral and multilateral agencies and climate funds, which has not yet been quantified due to data availability and methodological difficulties¹⁰.

and as such present an overestimate when considered on a commitment basis.

9 The concept of 'leverage effect' typically refers to the ability of public sector finance interventions to 'crowd in' private capital (AGF, 2010). At present, there is neither uniform definition nor methodology to calculate leverage ratios of public versus private finance. Brown et al., (2011) - that presents a survey of leverage ratio methodologies that have been used by various institutions and for different types of finance - highlights the coexistence of a narrow and a broad definition of leveraging. The former - used in generic financial terminology - refers to the ratio of debt to equity financing for an investment; the latter is applied instead to a wide array of instruments made available by financial entities that stimulate and mobilize other public and private contributions, by mitigating investment risks, or increasing returns at the sufficient scale to attract private financiers. See Box VI for additional information.

10 When dealing with reported prices or using third-party data based on prices, it was sometimes impossible to disentangle costs and margins or embedded instruments from final reported prices.

3 The landscape

This section describes each of the categories highlighted in the climate finance taxonomy, presenting both the available data on financial flows, and the organizations active in tracking different elements.

3.1 Sources

Current sources of climate finance include:

Source	Annual Flow (2009/2010, USD bn)
Carbon market revenues (EUAs auctioning, AAU transactions)	2.0
Carbon-related mechanisms (e.g. carbon taxes)	7.0
General tax revenues	Not Estimated
Offsets markets	2.3
Voluntary / Philanthropy	0.5
Global capital markets	Not Estimated
Private finance	37-72.2

Current climate finance comes from many sources. The dominating source is the private sector, which provides as much as USD 72 billion in climate finance (out of USD 97 billion). Domestic public budgets contribute a significant amount as well, around USD 21 billion. Carbon markets and voluntary / philanthropic contributions provide the remaining small share (less than USD 3 billion).

This paragraph provides an overview of current sources of climate finance. Sources include both public money from general taxes or carbon pricing mechanisms and private finance. Building upon available information, existing data for each source are reviewed and discussed in order to provide a reliable range of estimates.

These various sources have multiple connections to each other. Most importantly, money collected from the first three sources flows to domestic public budgets. There is also a strong link between capital markets and private finance flows.

While the present study focuses on current flows, it is useful to keep potential future sources of climate finance in mind to understand how the current situation might move ahead. The most discussed ones include:

- Revenues from international transport fuels
- Revenues generated by removing fossil energy subsidies in developed countries
- Revenues generated by fossil fuel extraction royalties/licenses
- Revenues from a financial transaction tax (FTT)¹¹.

¹¹ Cf. AGF (2010). See Box I for additional information.

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, EU ETS in short) and sales from Assigned Amount Units (AAUs) between countries bound by the Kyoto Protocol.

Data sources include governments’ press releases, information from the European Commission on the EU ETS’s current phase¹² and studies by carbon market analysts (such as the Deutsche Bank, Orbeo, CDC Climat, World Bank)¹³. Based on the available


data, we estimate that carbon market revenues reached USD 1.98 billion in 2010, USD 1.40 billion of which derive from EU ETS auctioning¹⁴ and USD 0.58 billion from AAU transactions. These flows are part of the ‘domestic public budget’ category. A more elaborate estimate would include revenues from the proceeds of additional cap-and-trade auctions (i.e., RGGI, NZ ETS, untapped national reserves in the EU ETS), indicating that the figure we provide establishes the lower bound of current carbon market estimates. As a general trend, this source is expected to increase over time, due to the shift towards expanded and additional national emission trading systems (e.g., the aviation sector in the EU, expected introduction of pilot systems in China and elsewhere) and a gradual increase of auctions within these systems (most importantly, the EU ETS).

12 The EC provides a summary of auctioning of Phase II allowances on http://ec.europa.eu/clima/policies/ets/auctioning_en.htm including national allocation plans. It also provides information on countries National Allocation Plans for the current phase.

Trading Directive by EU Member States”) but the report for 2009 seems to be months overdue: http://www.eea.europa.eu/publications/technical_report_2008_13.

13 A potential candidate for this was also the EEA annual report on the application of the EU ETS Directive, (“Application of the Emissions

14 Some 67 million allowances are auctioned on average per annum, multiplied by an average price of EUR 15.80 per ton in 2010 implies revenues of USD 1.40 billion.

Source	Estimated flow	Destination
<ul style="list-style-type: none"> EUAs auctioning: USD 1.4 bn AAU transactions: USD 0.6 bn 	USD 2.0 bn	100% domestic public budget
Description	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	
Outlook		<ul style="list-style-type: none"> Expanded and additional national emission trading systems (e.g. aviation in the EU, expected introduction of pilot systems in China and elsewhere) Gradual increase of auctions within these systems (EU ETS)
Primary data sources	<ul style="list-style-type: none"> Governments’ press releases Information from the EC on the EU ETS’s current phase Studies by carbon market analysts 	
Issues and future analysis	<p>These flows are part of the ‘domestic public budget’ category, therefore rendering an exact earmarking of proceeds for climate finance uses difficult.</p> <p>A more elaborate estimate would include revenues from the proceeds of additional cap-and-trade auctions (i.e., RGGI, NZ ETS, untapped national reserves in the EU ETS), indicating that the figure we provide establishes the lower bound of current carbon market estimates.</p>	

Carbon-related mechanisms

Carbon-related mechanisms comprise all climate-related revenues raised by governments – except carbon market revenues – ranging from explicit and implicit carbon taxes to charges on carbon markets assets transactions.

CARBON TAXES

Carbon taxes can be both explicit (i.e., applied on GHG emissions) and implicit (e.g., energy taxes or fuel taxes). Useful data on the countries that have implemented carbon and energy taxes can be found on the OECD / IEA Climate Change database¹⁵. Yet, no recurrent effort to aggregate figure of carbon or energy taxes revenues and earmarking has been identified so far, as revenues of these taxes are frequently being redistributed, impeding their entry into domestic public budgets.

The EC (EC, 2010) estimates that 2007 carbon taxes revenues as a percentage of GDP were 0.3% in Denmark, 0.81% in Sweden and 0.29% in Finland¹⁶. According to CEC (2011)¹⁷, annual carbon

15 OECD/IEA Policies and Measures Database, available at <http://www.iaea.org/textbase/pm/?mode=cc>.

16 Carbon taxes were set at: EUR 12 per tonne of CO₂ in Denmark, EUR 108 in Sweden and EUR 20 in Finland.


17 CEC (2011). Study available at: <http://www.chaireconomieduclimat>.

tax revenues from Finland, Norway, Sweden, Denmark, Switzerland and Ireland are estimated to be close to USD 7 billion. For energy-related taxes, only the share accruing to carbon taxes was retained in this estimate.

A study by Vivid Economics (2010) shows that the *implicit* price of carbon, driven by various policies imposed on the electricity sector, varies considerably across the six countries covered by study: from USD 28/tCO₂ in the UK, to USD 8/tCO₂ in China, USD 5/tCO₂ in the US, USD 4/tCO₂ in Japan and USD 2/tCO₂ in Australia. With USD 0.5/tCO₂ South Korea has the lowest carbon price. Still as much of this is delivered through regulation or subsidies, no revenues are being raised.

In sum, revenues from carbon-related mechanisms currently amount to approximately USD 7.0 billion, and flow – partly earmarked for climate finance – into domestic public budgets. Given the assumptions adopted, this figure represents a lower bound.

org/wp-content/uploads/2011/02/11-02-12-FLM-n20-Elbeze-De-Perthuis.pdf and based on data from the Ministries of Environment of the aforementioned countries (<http://www.ymparisto.fi/default.asp?contentid=377126&lan=EN> for Finland for instance).

Source	Estimated flow	Destination
Taxes levied on households and corporates	> USD 7.0 bn	100% domestic public budget
Description	Both explicit (i.e., applied on GHG emissions) and implicit (e.g. energy taxes or fuel taxes) carbon taxes. For energy-related taxes, only the share accruing to carbon taxes was retained in the estimate.	
Outlook		Additional climate policies envisaging carbon taxes as an option and carbon tax proposals on top of emissions trading schemes (UK and France notably)
Primary data sources	<ul style="list-style-type: none"> Chaire Economie du Climat (2011) based on data from the Ministries of Environment of the covered countries 	
Issues and future analysis	<p>Collected taxes can be redistributed to tax payers.</p> <p>There is no single data collection point for carbon taxes.</p>	

GENERAL TAX REVENUES

Government tax revenues generally pass through domestic public budgets before being allocated to particular objectives, such as international climate finance. As such, it is difficult to precisely calculate the extent of general tax revenues directed towards international climate finance. A rough estimate could be obtained based on the difference between domestic public budgets (allocated for climate finance) and specific carbon-related revenues (e.g., carbon market revenues and innovative finance mechanisms), but it would assume that all carbon-related revenues are set aside for international climate finance, with any shortfall met using general tax revenues. Given this strong hypothesis, this study refrains from providing an estimate for this source.

Transactions on European carbon markets give rise to charges such as value-added tax (VAT). We initially attempted to estimate the annual value of such charges for transactions on European Union Allowances (EUA) and secondary credits from the Clean Development Mechanism (CERs). Only spot transactions are subject to VAT, so we excluded futures or forward transactions, where EUAs or CERs were the underlying assets. To estimate potential contributions of VAT to climate finance we kept in mind some of the peculiarities of cap-and-trade mechanism (i.e. an allowance, is created free of charge and allocated at a given time, then surrendered and cancelled at a second stage) and that VAT is not a sales tax. We found that no value was actually being created or added along the way, only maybe temporarily depending on prevailing carbon prices. EU Member States are, in general, not expected to derive revenues from net VAT collection on carbon assets' transactions. The VAT fraud that interrupted the flow of VAT collection¹⁸ suggests that countries had foregone

revenues. Other elements that could create some temporary VAT revenues relate to the lack of harmonization of VAT rates and VAT collection timing mismatches between EU Member States, but are ultimately deemed insignificant.

ing. We acknowledge that the picture becomes more complex when transaction occurs between Member States.

¹⁸ Consider that in year 'n' an allowance is created and allocated for free to an installation. No VAT is being collected. Then, at some point in time this installation sells the allowance to another installation for say EUR 10. Assuming a VAT rate of 20%, the first installation would collect EUR 2 on top of the price. This can continue depending on prevailing market prices (going up and down) until the allowance is surrendered in year 'n+1' where no value is created, but is rather destroyed - so no VAT involved. Overall, all the flows collected offset each other's - it's only when this offsetting is interrupted (with VAT fraud for instance) that there can be some valuable revenues leak-

Box I. INNOVATIVE POTENTIAL FUTURE SOURCES OF CLIMATE FINANCE

A number of institutions have recently focused on potential new sources of climate finance that could be used to scale up funds on the scale needed to address mitigation and adaptation objectives.

Among the others, the UN Secretary General's High-level Advisory Group on Climate Change Financing (AGF, 2010) recommended the following¹:

CARBON PRICING FOR INTERNATIONAL AVIATION AND MARITIME TRANSPORTATION

The AGF estimates that revenues generated from international transport fuel taxation (so-called 'bunker taxes') on international aviation and shipping emissions could raise approximately USD 10 billion per annum². This would imply the establishment of a levy on maritime and aviation fuels, an *ad-hoc* emission trading scheme for such sectors, or an aviation tax on passenger tickets of international flights.

The AGF acknowledged difficulties in implementing the above-mentioned tax – including incidence on developing countries and national sovereignty. Indeed, no agreement has yet been reached through the UNFCCC process on addressing bunker emissions.

REMOVAL OF FOSSIL FUEL SUBSIDIES

The AGF estimates that revenues generated through the removal of fossil energy subsidies in developed countries could rise up to approximately USD 8 billion per annum in Annex II countries³.

REDIRECTION OF FOSSIL FUEL EXTRACTION ROYALTIES/LICENSES

The AGF did not provide a precise estimate of potential revenues that could be generated by redirecting (part of the) royalties collected by some developed countries on fossil fuel production towards climate finance purposes – rather, it simply reported that it could perhaps provide USD 10 billion a year.

FINANCIAL TRANSACTION TAXES (FTT)

The AGF estimates that revenues generated through a tax levied on international financial transactions could range between USD 2 billion and USD 27 billion in 2020.

The IMF Report to the G20 (IMF, 2010) states that a 1 basis point FTT charged at the global level on stock, bonds and derivative transactions could raise USD 200 billion ca. per year. A financial transactions tax in the form of a 'Tobin Tax' on foreign exchange transactions of 0.5 basis point on spot and derivative transactions in the four main trading currencies, instead, has been estimated to generate USD 20-40 billion.

The European Commission (EC, 2010) estimates that a FTT of 0.1% could generate between USD 72 billion and USD 80 billion⁴ whereas a currency transactions levy of 0.005% applied on Euro and British Pound, for instance, could raise approximately USD 16 billion per year.

The share of revenues generated by a FTT to be dedicated to climate change-related activities will be, however, a policy issue.

*Special Drawing Rights (SDRs)*⁵ are an additional alternative financing mechanism that has attracted a great deal of attention in the past few years. The IMF (2010b) proposed to use them – along with developed countries' reserve assets – as the initial capital base for a Green Fund that could mobilize private and other flows by issuing low-cost green bonds on the global capital market. The Fund could have been capitalized with the SDRs allocated to developed countries in 2009, which amounted to USD 176 billion. The AGF (2010), which also examined their potential among instruments that might deliver financing in the medium to long term, highlighted political acceptability issues related to the lack of consensus on the role of SDRs in the international monetary system.

1 See AGF (2010) for information on the methodology and assumptions.

2 Adjusted for any incidence in developing countries.

3 According to IEA's estimates, global annual subsidies for fossil fuels account to more than USD 500 billion (UNDP, 2011).

4 See EC (2010) for additional information.

5 A definition is provided in the Glossary of Terms.

DOMESTIC PUBLIC BUDGETS

Source	Estimated flow	Destination
<ul style="list-style-type: none"> Carbon market revenues: USD 2 bn Carbon taxes: USD 7 bn General tax revenues: Not Estimated 	> USD 21.2 bn	Bilateral and multilateral financial intermediaries (46%/54%) and directly to Policy Incentives and Equity instruments
Description	Proceeds from carbon market revenues and national taxes – general and carbon-related ones – flow through domestic public budgets and may or may not be hypothecated for climate finance purposes. North-South general budget support could represent an additional outflow of climate finance from domestic public budgets. Domestic flows include provision of policy incentives and direct flows to capital instruments in the case of direct government ownership and state-owned banks.	
Outlook	?	This category is highly dependent on the health of donors, as well as political and policy decisions e.g. with regard to the introduction/expansion of national emission trading systems, taxes etc.
Primary data sources	<ul style="list-style-type: none"> UNFCCC 5th National Communications OECD Development Database on Aid Activities: Creditor Reporting System OECD Trade and Agriculture Directorate (TAD) Export Credits Database 	
Issues and future analysis	Shortcomings of current ‘Monitoring, Reporting, and Verification’ systems of climate finance prevent a clearer and comprehensive overview of these flows, their sources, trends, and purposes. Significant uncertainty is related to the figure presented, which we considered to be an underestimate. In particular, data is lacking on flows of climate finance from domestic public budgets to multilateral organizations.	

All of the sources discussed in the previous section flow through government budgets in developed or developing countries (i.e. finance from national taxes, including traditional taxes, and from carbon pricing mechanisms and sovereign bond issuances). Moreover, general budget support – which by definition is not earmarked in any way – could represent a potential additional source of climate finance.

Climate finance originating from domestic public budgets can flow through intermediaries (i.e. bilateral and multilateral agencies, banks or climate funds), or flow directly to policy incentives¹⁹ and to capital instruments in the case of direct government ownership and state-owned banks active in climate finance investments.

19 The Nature Conservancy has noticed, for instance, that many developing countries are exploring environmental fiscal reforms to finance climate mitigation and adaptation efforts (Personal Communication, TNC, 2011).

The best systematic source of data on public North-South flows of climate finance is the OECD’s Creditor Reporting System Aid Activities database (see Box II). A range of estimates can be derived from this dataset. A conservative approach, that would count only commitments which donors mark as principally aimed at ‘*climate change only*’ (i.e., not including projects with dual impacts on non-climate objectives), provides an estimate of USD 5.4 billion for bilateral aid from DAC countries in 2009. Including both ‘*principal*’ and ‘*significant*’ data, instead, increases the figure to USD 7.4 billion for ‘mitigation only’ and to USD 9.5 billion²⁰ for all climate-related categories (including projects which have an effect on biodiversity and desertification objectives as well as climate change). Compared to 2008, the 2009

20 Data from 22 OECD DAC member countries are included (Luxembourg does not mark any of its aid with Rio Markers); data from the Netherlands refer to 2008 given that 2009 ones were not available. Data from the US is thought to be ‘under-marked’. Source: OECD (2011a).

Box II. OECD DEVELOPMENT ASSISTANCE COMMITTEE CREDITOR REPORTING SYSTEM (DAC CRS) AID ACTIVITIES DATABASE

The OECD's Creditor Reporting System (CRS) is the most comprehensive source of data on bilateral and multilateral Official Development Assistance (ODA) and Other Official resource Flows (OOF) in existence at present. Data are publically available in the Creditor Reporting System (CRS) Aid Activities database, which covers more than 90% of all aid funds flowing from OECD countries and multilateral organizations (OECD, 2010c).

Since 1998, the OECD has monitored climate change mitigation-specific aid using a policy marker system, the so-called Rio Markers. Donors are required to mark each funded project as either (i) targeting climate change as a 'principal objective' or (ii) a 'significant objective', or (iii) not targeting the objective. In 2009 the DAC approved and introduced a new marker to track contributions aimed at adaptation interventions, which will be applied from 2010 onwards.

The Rio Marker system therefore allows for a range of estimates of climate finance to be extracted according to the extent to which a project is focused on climate change-related objectives. It aims to highlight the order of magnitude and the trends in climate-related funding rather than exactly quantifying amounts. Despite its strengths, the DAC CRS system has some weaknesses, which require improvements¹. For instance, at the moment the system tracks only concessional finance targeting mitigation; it is however being extended to cover non-concessional finance. There is also limited usage of Rio Markers for OOF flows. In 2009, IBRD was the only institution to mark OOF flows.

In line with OECD's analytical use of the marker data (e.g., Corfee-Morlot *et al.*, 2009), this report follows this least conservative approach, including data marked as both climate change 'principal' and 'significant' and including projects with dual impacts on biodiversity and desertification. Likewise, we present 'commitment' data extracted from the CRS database as opposed to 'disbursement' data, on advice from OECD experts regarding use of Rio Marker data and also to maintain consistency with other data presented throughout this paper. It should be stressed, however, that commitment data almost certainly provide an inflated picture of the real annual flows arriving in developing countries. Future tracking should focus on improving disbursement level data.

In addition to bilateral aid, the OECD DAC database also monitors donor core contributions to multilateral organizations (multilateral development banks (MDBs) and UN agencies). However, the Rio Markers are currently not applied to this aid. The OECD CRS database does however provide for voluntary reporting by multilateral development institutions on their outflows to climate-related projects, using the Rio Markers. In recent years, only the EU Institutions, the International Development Association (IDA), the International Bank for Reconstruction and Development (IBRD) and the Nordic Development Fund have reported climate-marked data.

OECD DAC CRS database data for 2009 is used repeatedly throughout this report (OECD, 2011a). Data in current 2009 USD are used.

¹ See Buchner *et al.*, (2011) for additional information.

data show a large increase in aid marked with the climate change Rio Marker (e.g. 406% increase for Australia, 269% increase for Sweden and 317% increase for Switzerland) (OECD, 2011a).

The OECD also monitors a further piece of the outflow from domestic public budgets, namely export credits.

Export credits support export transactions by hedging risks for investors. They can be provided by or on behalf of governments, and 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).

Through these three flows – generally referred to as 'official or officially supported export credits' – OECD governments have provided an annual average of USD 18 billion to developing countries between 2002 and 2009, 87% of which lie in the 'mitigation-relevant'²¹ sectors. Yet, 'mitigation-

²¹ Corfee-Morlot *et al.* (2009) define 'mitigation-relevant support' to

*specific*²² export credits might be much less. The OECD (2011b) estimates that support for renewable energy and co-generation/district heating account for an annual average of USD 0.2 billion over the period 2002-2009. In 2009 only, the share of export credits directed to these clean energy sectors rose to USD 0.7 billion (OECD statistics on export credits, 2010, as cited in Buchner *et al.*, 2011).

It is worth noting that (ii) and (iii) are paid to the exporter and therefore technically represent a North-North flow. They can however play a key role in stimulating private low-emission investments in developing countries and are therefore counted in the landscape of climate finance. Export credits are further discussed in Section 3.3, dedicated to financial 'Instruments'.

Other sources of information on domestic public budgets allocated to climate finance include governments themselves and governmental reporting to the UNFCCC. Financial contributions made by Annex II Parties to multilateral institutions over the 2005-2010 reporting period, as reported in 5th National Communications, total USD 44 billion²³, while bilateral financial support totals USD 12.4 billion for mitigation and USD 1.9 billion for adaptation (UNFCCC, 2011a). Aggregated data are not available on an annual basis due to differences in reporting periods/years (UNFCCC, 2011a)²⁴.

include funding for development in key sectors that will shape emissions in developing countries and thus mitigation potential. Instead, 'mitigation specific support' aims to achieve greenhouse gas mitigation in developing countries as its main objective.

22 I.e., those going to 'low-carbon energy technologies' including nuclear, hydro, geothermal, solar, wind, tidal and biomass (cf. Corfee-Morlot *et al.*, 2009).

23 Among the key reporting issues, the UNFCCC (2011) highlights that approximately 70% of Annex II countries reported on financial resources dedicated to multilateral institutions and programmes. Some of them have difficulties in identifying the share of multilateral contributions addressing the implementation of the UNFCCC's objectives, and only few countries provided detailed information on such shares. Worth noting that Parties contributions to multilateral institutions over the 2005-2010 period increased markedly compared to 1998-2000 (USD 17.5 billion) and 2001-2003 (USD 19.6 billion) ones, as reported in the 3rd and 4th National Communications (UNFCCC, 2011).

24 In the present paper we estimated the average annual financial contri-

National Communications also report Annex II countries contributions to the GEF²⁵, which over the 2005-2010 reporting period amounted to a total USD 3.2 billion (UNFCCC, 2011a). Non-Annex I countries are also requested to provide information on the support received from the GEF, developed (Annex II) countries or bilateral and multilateral institutions (UNFCCC, 2007b).

The UNFCCC Secretariat's Finance Portal for Climate Change - launched in June 2011 - provides information on the financial resources reported by Parties through their 4th and 5th National Communications²⁶. At present, however, due to the inconsistencies in reporting approaches mentioned above (e.g. variable reporting years, currencies and levels of aggregation)²⁷, data cannot be used for a detailed comparative analysis.

Based on the available data, the volume of the annual domestic public budget flowing into the climate finance system is estimated to be at least USD 21.2 billion, a rough estimate based on donor reporting of contributions to multilateral institutions in the 5th UNFCCC National Communications and bilateral contributions reported through the OECD CRS system²⁸, plus an estimate of the volume of green export credits.

tribution by dividing by four (number of years) the total figures provided by UNFCCC (2011) for multilateral and bilateral flows respectively. Although the UNFCCC study indicated that the reporting period spans from 2005 to 2010, Annex II Parties made their submissions to the UNFCCC at the end of 2009 or at the beginning/during 2010, reporting data mainly for the period 2005-2008/2009. Hence, we considered only 4 years to estimate the average annual contributions. While acknowledging the simplistic approach, it allows us to provide an idea of the reported flows.


25 It refers to contributions to the GEF Trust Fund, the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).

26 An additional module on 'Fast-start finance' contributions is also available and an additional module on funds managed by the Global Environment Facility will be launched in late 2011. The Portal can be found at the following link: http://unfccc.int/cooperation_support/financial_mechanism/finance_portal/items/5824.php.

27 UNFCCC (2011) like UNFCCC (2007b) highlight data gaps and inconsistencies in reporting approaches adopted by Parties and suggest that aggregated data should be interpreted with caution.

28 There is a risk of double counting if donors have not used the same definitions under both reporting exercises for 'bilateral' and 'multilateral' contributions.

VOLUNTARY / PHILANTHROPY

Source	Estimated flow	Destination
<ul style="list-style-type: none"> US foundations: USD 0.21 bn Voluntary carbon market: USD 0.24 bn 	USD 0.45 bn	47% grants and 53% carbon offset flows
Description	Philanthropic contributions from US-based foundations to climate change-related interventions and voluntary over-the-counter transactions sourced from developing countries	
Outlook		Several efforts are currently underway to improve the tracking of private voluntary contributions. Hence, current estimates could be revised upwards.
Primary data sources	<ul style="list-style-type: none"> Private organization and research centers e.g., California Environmental Associates and Foundation Center Ecosystem Marketplace and Bloomberg New Energy Finance The World Bank Group 	
Issues and future analysis	<p>These flows are part of the 'private finance' category. Current tracking systems cover mainly US foundations, hence they do not allow a comprehensive perspective on the flows made available by private giving, which might be significant. In fact, the Hudson Institute (2011) estimates that in 2008/2009 private donations reached USD 50 billion.</p> <p>In addition, to provide a more appropriate estimate of 'North-South' flows, voluntary carbon offsets tracking should provide data at the country-level.</p>	

Estimates of global philanthropic donations to tackle climate change in developing countries are not yet available²⁹. In fact, only US foundations are requested to release annually detailed information on the activities supported (Foundation Center, 2010).

A 2007 report by California Environmental Associates (CEA) estimated that US foundations provide approximately USD 210 million per annum towards climate change-related interventions (CEA, 2007). The Foundation Center estimates that 2008 giving by US foundations for the same purposes accounted for USD 894 million³⁰.

29 The OECD-DAC CRS database has a section dedicated to 'private grants' provided for international purposes, but reporting is not exhaustive - not all DAC countries report information - and little is known on recipient countries and purposes (World Bank, 2010b).

30 Foundation Center web site: <http://maps.foundationcenter.org/gpf/climatechange2010.php>. Foundation Center data include all active U.S. grant making foundations as well as a large sample of foundation grants.

Also the Hudson Institute Center for Global Prosperity collects information on sources and magnitude of private giving to the developing world in its "Index of Global Philanthropy and Remittances". However,

However, this figure includes a USD 500 million commitment from the Hewlett Foundation which will be spent over five years. Moreover, it includes resources not directed to developing countries, which would appear to be approximately 13% (USD 115 million) of the total.

The Bill & Melinda Gates Foundation started reporting to the DAC CRS database, but not yet in regards to their climate change-related interventions³¹. This recent effort, along with other concerted initiatives³², help to improve understanding of the potential contribution of this source to climate finance.

Along with voluntary / philanthropic donations, data presented are not focused on climate-related giving specifically.

31 The Bill & Melinda Gates Foundation first data submission is related to 2009 contributions, and is available in the OECD CRS database (OECD, 2011a). These data, however, are mainly (two-thirds of their total) related to health programme. On 2010 contributions they are expected to report also on other programs e.g. climate change.

32 E.g., according to the Foundation Center (2010) a number of entities - the Foundation Center included - are currently working to enhance the information available on global international philanthropy.

private companies' Corporate Social Responsibility (CSR) initiatives can also have climate change-related benefits and can therefore be considered part of the climate finance landscape. Coherent and aggregate data on business climate initiatives are not currently available (Stadelmann *et al.*, 2011).

Alongside pre-compliance activity, CSR is one of the main drivers of the voluntary carbon market, an additional dimension of the climate finance landscape. In 2010, organizations' and individuals' purchases of voluntary carbon offsets – known as Voluntary Emission Reductions (VERs) – contributed to 'North-South' climate finance flows of approximately USD 240 million (Ecosystem


Marketplace, 2011)³³.

We therefore estimate voluntary / philanthropic contributions flowing in the climate-finance landscape to be at least USD 450 million per annum.

³³ Ecosystem Marketplace (2011) estimates that 58% of the total USD 414 million credits transacted on the voluntary over-the-counter (OTC) market were sourced from developing countries in 2010 (please note that Ecosystem Marketplace divides world's Regions using the United Nations classifications (<http://unstats.un.org/unsd/methods/m49/m49regin.htm>) hence, the developing countries share can include countries like Japan and Korea).

Also the World Bank's annual review of the global carbon market tracks voluntary markets transactions. In World Bank (2011) estimates 2010 voluntary OTC for USD 393.5 million.

OFFSET MARKETS

Source	Estimated flow	Destination
<ul style="list-style-type: none"> CDM: USD 1.9-2.0 bn Jl: USD 0.3 bn 	USD 2.2-2.3 bn	Directly to carbon offset flows or intermediated by brokers and carbon funds
Description	Public and private money dedicated to compliance with emission reduction commitments or with voluntary objectives by investing into various offset projects.	
Outlook		Uncertainty on a successor to the CDM but new offset mechanisms (REDD) and use of offsets in new markets (California, Australia, etc.).
Primary data sources	<ul style="list-style-type: none"> Reported primary offset prices by the World Bank based on surveys of market participants Reported / estimated issuance of CERs by IGES and the UNFCCC 	
Issues and future analysis	Incomplete information on the contractual terms of offset purchases makes it difficult to provide a precise value to the flows and to attribute the flow to specific end users.	

'Offset markets' as a source aggregates public and private money that support emission reduction commitments or voluntary objectives through various offset projects. Most of these projects are currently related to the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI). Apart from actors on the voluntary market, main players are compliance companies in regional and national systems (such as the EU Emissions Trading System – EU ETS – and the JETS), but also countries with Kyoto commitments. Offset buyers can acquire offsets directly, via carbon offset brokers or via carbon procure-

ment funds. This source comprises all offsets markets in which primary carbon offsets can be purchased for cash. Note that only the incremental cost linked to carbon offsets is reported here, not the investment costs of corresponding emissions reduction projects.

As a first indication, we estimate the value of carbon offset finance flow between USD 2.2³⁴ and

³⁴ Based on (1) CDM: USD 14.09/ton (the average primary CER price of the past 3 years in 2010 – using World Bank (2010b) data) and 132.4 million CERs issued in 2010 according to the UNFCCC and (2) JI: USD 13.49/ton (the average primary ERU price of the past 3 years in

USD 2.3³⁵ billion in 2010. This range is based on available data from the World Bank, the UNFCCC and IGES. Surveyed average annual primary carbon offset prices³⁶ are applied to the annual volume of offsets issued³⁷.

It is worth noting that this estimate conceals several disparities in offset transactions. First, close to four out of five CERs issued in 2010 are related to projects in China (62.5%), South Korea, and India (Point Carbon, 2011). Second, CDM projects tend to be concentrated around three major groups of methodologies. Therefore, in 2010, industrial processes (61.1%), renewables, and energy efficiency accounted for more than 85% of the issued offsets (ibid.). Projects types are nevertheless diversifying over time. Third, on the buying side for primary CERs, European countries (both country-level Kyoto compliance and installation-level EU ETS compliance) accounted for circa 86% and Japan 13% (JVETS compliance buyers).

2010 - using World Bank (2010b) data, and an estimated issuance of ERUs of 23.4 million in 2010 (based on IGES issuance figures for track 2 projects and expected issuance of track 1 projects).

35Based on (1) CDM: USD 14.09/ton (the average primary CER price of the past 3 years in 2010 - using World Bank (2010b) data) and 143.2 million CERs issued in 2010 according to IGES and (2) JI: USD 13.49/ton (the average primary ERU price of the past 3 years in 2010 - using World Bank (2010a) data) and an estimated issuance of ERUs of 23.4 million in 2010 (based on IGES issuance figures for track 2 projects and expected issuance of track 1 projects).

36 The details of actual purchase prices are confidential and included in ERPA's.

37Estimates for unit prices of primary carbon offset include the World Bank (2010b), news and analytics providers (IDEACarbon pCER index - <http://www.ideacarbon.com/services/pcerindexnew.htm> and PointCarbon - www.pointcarbon.com). Data on the amount of offsets issued can be found in the UNEP/RISØ, IGES and UNFCCC Registry databases (<http://cdmpipeline.org/>, <http://www.iges.or.jp/en/cdm/report.html>, and <http://cdm.unfccc.int/Registry/index.html>, respectively). While the first database gives a clearer overall picture of projects in the pipeline, the second one is supplemented with additional databases focused on more investment-related data. Estimates could be refined by looking at the contracting date of specific projects. Actual financial flows through the CDM primary market are thus estimated as the sum, for all projects with issuance, of volume of CERs issued times contract price.

GLOBAL CAPITAL MARKETS

Global capital markets raise money from institutional and individual investors through various forms of investment vehicles (equity, debt and structured finance), thereby providing capital to governments, MDBs, BFI's and multinational companies (including those labelled 'private finance', specifically investing in climate finance). In other words, it is a market for financial securities, where both individual investors and institutions can raise long-term funds.

Our framework includes the following linkages to the global capital markets:

- Lending money to governments and corporations: domestic public budgets (sovereign bonds, etc.) and private finance (corporate borrowing)³⁸;
- Providing money to MDBs and bilateral banks' major borrowing programmes (green bonds, more general purpose bonds and medium-term notes);
- Purchasing tranches of MDB-syndicated³⁹ or A/B loans⁴⁰, etc.

Estimating global capital markets' contributions to climate finance flows is difficult because of confidentiality aspects⁴¹ and because of the large amount of information needed.

Data sources include major financial data providers like Bloomberg and Reuters.


38 This can be extended to money invested in private corporations.

39 A syndicated loan consists of a structure in which a financial institution exercises leadership in a credit operation and brings together a group of banks and/or other institutions to respond to the needs of a client under the umbrella of a single loan. Under this structure, creditors share the same rights and obligations (pro rata).

40 A/B loans preserve the concept of pro rata, but change the capacity of each creditor to enforce those rights.

41 E.g., who purchased tranches from MDBs.

PRIVATE FINANCE

Source	Estimated flow	Destination
<ul style="list-style-type: none"> Global capital market (equity and debt): external sources of funding Cash flows from operations Cash flows from divestments 	USD 37.0-72.2 bn	70% to market rate loans and 30% to equity
Description	Private money injected in the global system to invest in mitigation- and adaptation-related projects in developing countries.	
Outlook	 Depends on demand for mitigation projects, technology costs, country- and technology-specific incentives and access to capital.	
Primary data sources	<ul style="list-style-type: none"> The lower bound (USD 37.0 bn) is a top-down estimate of 'Green' Foreign Direct Investments (FDI) in developing countries based on UNCTAD FDI database. The upper bound (USD 72.2 bn) is a bottom-up estimate of renewable energy projects in developing countries based on Bloomberg BNEF database (itself based on corporate communications and reported transactions). 	
Issues and future analysis	<p>There is confidentiality on the terms of several projects.</p> <p>Several instruments and incentives might be incorporated in reported investment amount.</p> <p>There are conflicting definitions of private finance in the climate finance sphere (what is 'green'?).</p> <p>Bottom-up and top-down estimates cannot be reconciled: the FDI estimate is multi-sector but excludes national flows, and the BNEF estimate considers foreign flows (both from the North and the South) and national flows but considers only renewable energy mitigation projects.</p>	

There is no agreement on what exactly counts as private climate finance, given that profit-making is the main objective and outcome of private sector activity and capital flows. However, key outcomes and objectives can also include greenhouse mitigation and climate adaptation, and capital flows to activities with such outcomes should be counted as climate finance. This includes, for instance, investment in renewable energy, energy efficiency, and sustainable forestry or agriculture on the mitigation side. An important component to private climate finance is the flows which are leveraged by the public sector.

In the present study, the 'private finance' source consists of private money being injected in the global system to invest in mitigation- and adaptation-related projects in developing countries. Finance stems from private entities like corporations and financial institutions, and includes both equity and loans dedicated to specific projects. 'Global capital markets' aim at financing the

'private finance' category, lending money or buying equity at the corporate level.

Dedicated systems to track private climate finance are not currently in place. Hence, we consider 'green' Foreign Direct Investments (FDIs) estimates and investments in the renewable energy sector as proxy for private finance flows.

FDIs are defined as investments made by a resident entity in one economy (the direct investor) with the objective of establishing a long term interest in an enterprise (the direct investment enterprise) located in another economy (UNCTAD, 2010; OECD, 2010a). By referring to climate change-relevant North-South financial flows Buchner et al., (2011) and OECD (2011c) states that FDIs represents the biggest source of financing across private and public sources, and can play an important role in addressing climate change by favouring the transfer of environmentally-friendly technologies and know-how.

The UNCTAD Foreign Direct Investment online database and the OECD database on 'International Direct Investment Statistics' are the two main sources that provide information on global FDI flows⁴². Other organizations maintain databases (the World Bank, the Financial Times and the CIA⁴³) and compile data on FDIs (i.e. Eurostat, the European Central Bank and the IMF⁴⁴), but do not provide the same level of detail as that of UNCTAD or the OECD, or are not based on primary data collection (Buchner et al., 2011). However, 'green' FDI statistics are not readily available, particularly due to a lack of an internationally agreed definition and comparable data (OECD, 2011c; Buchner et al., 2011; OECD, 2010a).

Following UNCTAD (UNCTAD 2010) and Eurostat, the OECD Investment Committee (OECD, 2011c; 2010a) proposes a two-dimension definition of 'green' FDI, distinguishing between a) FDIs in environmental goods and services (ESG) and b) FDIs in environmental mitigation processes⁴⁵, i.e. use of cleaner and/or more energy-efficient technologies.

OECD (2011c) attempts to measure the magnitude of FDI flows in each of these two dimensions. With regard to a), it estimates global FDI flows in the order of USD 40 billion ca. annually over the

2005-2007 period⁴⁶ (2.8% of total FDIs); with respect to b), it estimates global FDI flows in the order of USD 600 billion ca. over the 2005-2007 period⁴⁷. The gap between the two is very wide.

According to UNCTAD (2010), from 2003 to 2009 global FDI flows in renewable electricity generation, recycling, and manufacturing of environmental technology products (such as wind turbines, solar panels and biofuels)⁴⁸ reached a cumulative USD 344 billion of which, USD 90 billion occurred in 2009. Developing countries attracted approximately 40% of these green FDI flows during the 2003-2009 period. In our estimates, we hence consider 2009 North-South 'green' FDIs to be in the order of approximately USD 37 billion.

OECD (2011c) highlights the limited ability of developing countries to absorb significant green FDIs resources, due to inadequate policy and administrative frameworks.

To complement this estimate, which depends critically on the bottom-up approach adopted to track sector-specific clean energy investment flows, we considered additional data from Bloomberg New Energy Finance (NEF)⁴⁹. While not free of certain weaknesses⁵⁰, detailed information on developed-

42 Buchner et al. (2011) highlights key strengths and weaknesses of these two databases. The UNCTAD Interactive Database Division on Investment and Enterprise is available at: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sRF_ActivePath=P5,27&andsRF_Expanded=P5,27&andsCS_ChosenLang=en; UNCTAD also maintains a database with detailed FDI country-specific information: The World Investment Directory, available at: <http://www.unctad.org/templates/Page.asp?intItemID=3199&lang=1>. The OECD International Direct Investment Statistics database is available at: http://www.oecd.org/document/8/0,3746,en_2649_33763_40930184_1_1_1_00.html.

43 World Bank Group "World Development Indicators & Global Development Finance" database: <http://databank.worldbank.org/ddp/home.do?Step=1&id=4>; the Financial Times FDI Intelligence database: www.fdiintelligence.com/; the CIA World Factbook database: <https://www.cia.gov/library/publications/the-world-factbook/index.html>.

44 Eurostat: <http://epp.eurostat.ec.europa.eu/>; the IMF: <http://www.imf-statistics.org/imf/>.

45 The definition focus on 'environmental-relevant' FDIs aimed to reduce environmental harm, instead of 'mitigation-specific' ones.

46 Due to FDIs classification issues, this dimension is proxied with FDIs in energy, gas and water sector (EGW category as defined by ISIC classification). However, OECD (2011c) warns that this FDIs category includes electricity generated by conventional sources, and does not consider some environmental non-infrastructure services and products.

47 This figure considers a broad definition of 'environmentally-relevant' sectors, assuming that agriculture, manufacturing, mining, forestry, transport, construction and energy are included.

48 Identifiable in the database of greenfield projects. In its analysis, UNCTAD also examined and considered FDI data from cross-border M&A operations in renewable electricity generation.

49 An alternative and related approach would be to use databases tracking climate-related incremental costs like CDM and JI pipelines and use underlying project investment cost data. Still, not all projects in these databases feature the project investment cost as the project's additionality need not be demonstrated by a financial criteria. Note that other commercial databases could add further information, notably the ones managed by Dealogic. See <http://www.dealogic.co.uk/en/marketdata.htm> for further information.

50 Issues regarding the methodology used to aggregate investment figures from sector, various sources, timing of investments or holes in

to-developing country flows and developing-to-developing country flows (both domestic and international) on clean energy investment figures provide an important element for the overall estimate.

A recent study prepared by UNEP and Bloomberg NEF (2011) suggests that renewable energy investments in developing countries amounted to USD 72.2 billion⁵¹ in 2010 (from developed countries, other developing countries and private investment from national investors). Removing available data relative to public equity markets (IPOs, seasoned equity offering, etc.) would result in a USD 66.2 billion flow⁵². We therefore consider a range of USD 66.2-72.2 billion.

Based on available data, we therefore estimate private finance to be between USD 37.0-72.2 billion⁵³. It thus represents the largest component

existing databases.

51 This figure includes asset finance, capital rising by companies from venture capital, private equity and also public market investors. It is unsure to what extent this amount features public money, given the issue of state-owned investors. Data reported for China, India and Brazil only, suggest that public market involvement amounted to USD 6 billion, which have been deducted from the USD 72.2 billion to provide a better estimate of private finance flows. Of the USD 72.2 billion, China attracted more than two-third (or USD 48.9), mainly thanks to strong increase in asset financing. India accounted for USD 3.8 billion while Brazil for USD 6.9 billion. Renewable energy investments in Africa, instead, reached USD 3.6 billion.

At a global level, instead, 2010 total investment in renewable energy reached USD 211 billion or USD 186.9 billion if only the following categories are considered: venture capital (USD 2.4 billion), private equity (USD 3.1 billion), asset finance (USD 121.8 billion) and small distributed capacity (USD 59.6 billion); (i.e. excluding: government R&D, corporate RD&D, public markets and asset finance re-invested in equity). Source: UNEP and Bloomberg NEF (2011).

52 The reason why we consider excluding "Public Markets" is that the money raised this way also covers overhead costs, can cover a single element of a renewable technology's value chain (solar PV cells), can go to R&D, can support investment in developed countries, can support refinancing operations, etc..

53 Stadelmann et al. (2011), estimate private climate finance flowing North-South to range between USD 60-160 billion (years 2008-2010). In the private finance category they consider the following: carbon market payments (ca. less than USD 2 billion p.a.), investments leveraged by carbon market payments (USD 15-30 billion p.a.), low-carbon FDIs (ca. USD 30-40 billion p.a.), investments leveraged by developed countries' public funds (USD 20-90 billion p.a. considering a private-to-public leverage ratio of 2-4.), Voluntary offsets and pri-

in today's climate finance landscape, and directly flows into the 'capital' instrument categories (market rate loans and equity).

It is worth mentioning that pension funds are showing a greater interest towards investments in environmentally-friendly infrastructure projects, and are currently viewed as one key source of potential additional flows towards climate objectives. Given their low risk tolerance, pension funds are typically not participating in direct equity investments⁵⁴, but prefer alternative investment vehicles such as: green bonds (rainforest bonds, green corporate bonds, climate bonds, etc.), structured green products (asset-backed securities), or green infrastructure funds. It is usually difficult to identify the ratio of investments by individual pension funds in the climate change sector as a number of them are not required, by local legislation, to be transparent.

Given that engaging private sector financiers at scale has recently become the key issue around which many climate finance discussions are focusing on – e.g. in the context of the Green Climate Fund (BNEF, 2011a) – new initiatives, strategies and financial instruments are being developed. Among recent initiatives, for instance, the Chatham House Renewable Energy Finance Project and the Institutional Investors Group on Climate Change (IIGCC) can be cited⁵⁵. By directly engaging financiers – including some pension funds – they aim to catalyze greater investments towards the clean energy sector⁵⁶.

vate levies for climate finance (USD 0.25 billion p.a.). Other voluntary flows such as migrant remittances (USD 150-200 billion) and private donations (USD 50 billion p.a.) should be included, but climate-related data are not available.

54 Worth noting two pioneering direct investments in clean-tech projects located in North Europe recently undertaken by PensionDanmark and PKA, two of Denmark's biggest pension funds.

55 One recent remarkable development relates to countries prioritizing environment, social and governance (ESG) factors in the asset allocation process. UK and South Africa both have specific legislation governing this, and at least South Africa has guidance that 10% of assets under management should be focused on ESG assets.

56 See the following web sites <http://www.chathamhouse.org/research/current-projects/renewable-energy-finance-project> and <http://www.iigcc.org/> for additional information.

Box III. GEOGRAPHIC BREAKDOWN OF CLIMATE FINANCE SOURCES

The geographic dimension of the climate finance landscape is important as it helps us to understand who are the main contributors and recipients at present and how flows might need to be redirected in the future. In the absence of a comprehensive data source showing the geographic source and destination of flows, this box (and a corresponding box on recipients in Section 3.5) brings together some high level findings from the various sources consulted. A more detailed analysis is required to gain a better picture of the source and destination of flows at the country level. Further work is also required to fully reflect South-South and domestic flows, which are captured only to a limited extent in our landscaping exercise, as well as smaller flows of finance such as voluntary, philanthropy and climate funds. For further data see Appendix H.

PRIVATE FINANCE

Our landscape includes two estimates of the scale of private finance: the first estimate is derived top-down using UNCTAD FDI data and the second estimate is derived bottom-up using BNEF renewable energy project data. UNCTAD FDI data provides minimal information on the geographical breakdown of private finance sources. At the highest level, we know that cumulative FDI in low-carbon business areas over 2003-2009 in developing countries originated mostly from developed countries (77%), followed by developing countries (21%) and South-East Europe and CIS (1%). It is not possible to determine how much investment came from individual countries or indeed how much came from companies in the same developing country. The BNEF database tracks projects and gathers as much information as possible. However, investors and lenders often prefer to remain unidentified for various reasons. Thus, it is difficult to track sources of private finance.

BILATERAL FLOWS

Data on the geographical source of bilateral aid is relatively easy to obtain using the OECD CRS database and due to the fact that individual BFI funds are linked to single countries. Japan (33%), France (18%) and Germany (17%) were the highest contributing donors to the 2009/2010 bilateral flows presented in this landscape paper. It should be noted however, that flows from the development banks of these three countries are included in the landscape, while most of the others are not covered. Interestingly, China ranks fifth (3%) with flows from the China Development Bank included in the landscape.

MULTILATERAL FLOWS

Data on the geographical source of multilateral aid is available from the UNFCCC finance portal however, data is cumulative for the 5th NC reporting period, which covers several years (2005-2010). Furthermore, data is only available to download individually by donor and data is in multiple currencies. No other data documenting the source of multilateral climate finance contributions has been located so far. When aggregated, the data shows that 44% of the climate finance reported in 5th National Communications was provided by the USA, 10% by Sweden and 7% by both Belgium and the UK. However, it is not clear to what extent these results reflect actual flows or variable approaches to reporting among Parties.

CARBON OFFSET FLOWS

Kyoto carbon offset flows are being captured by CDM and JI pipelines. Looking at those pipelines and offset issuances from the UNFCCC, it is possible to obtain additional information on the sources and destinations of those flows. Carbon flows mostly originate from compliance buyers or agents thereof – i.e. developed countries only (European countries but also Japan). Obtaining a more elaborate country-level breakdown is more complex as (1) while buying parties are reported at the project level, the quantity that each purchases is not known and (2) when the flow is intermediated, information on the final user of the offset is not known.


3.2 Intermediaries

The principal intermediaries of climate finance are bilateral banks and multilateral banks and agencies. Several information systems currently track the portions of climate finance that flow through these intermediaries.

Intermediaries play a key role in climate finance, distributing around USD 39 billion a year. The principal intermediaries of climate finance are Bilateral and Multilateral Institutions, which distribute USD 24 billion and USD 15 billion respectively. The remaining climate finance either flows directly through capital markets or is provided directly by governments.

Intermediary	Annual Flow (2009/2010, USD bn)
Bilateral financial Institutions	22.8
Multilateral financial Institutions	12.2 - 16.5
Climate Funds	1.1 - 3.2
Carbon Funds	Not Estimated

Note: The estimated range for climate funds presented here cannot be aggregated with BFI and MFI flows due to double counting issues. We estimate the additional contribution not accounted for in BFI and MFI flows to be USD 2.4-2.6 billion.

Source (inflow)	Estimated outflow	Destination
<ul style="list-style-type: none"> Domestic Public Budgets: USD 9.5 bn Global Capital markets: Not Estimated 	> USD 23.7-24.0 bn	47% concessional loans, 33% non-concessional loans, 13% grants, 4% equity, 3% risk management; 84% mitigation, 16% adaptation
Description	Bilateral Financial Institutions (BFIs) and Bilateral Funds belong to or are governed by individual countries. They channel largely public money, but some also raise money on global capital markets.	
Outlook		This category depends on the health of donor economies as well as on political decisions about overseas support and export programs. There is, however, evidence of increased bilateral aid initiatives.
Primary data sources	<ul style="list-style-type: none"> Self-reporting and database updates by Bilateral Financial Institutions and Funds OECD Development Database on Aid Activities: Creditor Reporting System UNEP Climate Change Working Group for Bilateral Finance Institutions ODI/HBF Climate Funds Update website Bloomberg New Energy Finance Desktop and Analysis OECD TAD Export Credits Database 	
Issues and future analysis	<p>Our estimate is derived from a blend of primary and secondary data sources, some of which focus on a limited number of sectors. This provides a partial picture of the involvement of BFIs in the global climate finance landscape. Some BFIs are not included in our analysis. A more comprehensive estimate could be attained by directly engaging all bilateral development cooperation agencies and institutions in reporting on climate finance. Such an approach would benefit from a mutually defined and agreed upon methodology to account for climate finance interventions.</p> <p>More research is also needed to understand and capture the magnitude of South-South flows.</p>	

Bilateral Financial Institutions (BFIs)

This category includes bilateral development cooperation departments and agencies of individual countries and bilateral banks. We define Bilateral Financial Institutions (BFIs) and Bilateral Funds as institutions or funds primarily belonging to or governed by individual countries⁵⁷.

The OECD DAC collects data from donor governments about bilateral ODA and OOF in their CRS Aid Activities database (see Box II). Note that projects executed by multilateral institutions or non-governmental organizations on behalf of DAC members are also classified as bilateral aid, since it is the donor country that effectively controls the use of funds. Care must be taken to ensure that this flow is not counted twice in estimates of multilateral finance flows.

The CRS database provides an estimate for climate change-related bilateral aid of USD 9.5 billion⁵⁸ in 2009 (OECD, 2011a).

In 2009, the United Nations Environment Programme (UNEP) started an annual initiative to report bilateral climate change flows under the UNEP Climate Change Working Group for Bilateral Finance Institutions. Through the initiative, selected BFIs report on their financial commitments to developing countries for climate change mitigation and adaptation activities, including non-concessional official flows. In the first report, Atteridge et al. (2009) define a BFI as “a financial institution created and directed by a national government for the purpose of giving aid or investing in targeted development projects and programs in developing countries or emerging markets”. In the latest report, the definition is broadened: “‘bilateral’ means that beneficiaries or clients of these institutions are not direct shareholders”

57 This definition follows that of the World Bank, amongst others: “Multilateral and Bilateral Development Agencies,” available at: <http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/0,,contentMDK:20040612-menuPK:41694-pagePK:51123644-piPK:329829-theSitePK:29708,00.html>.

58 Data from 22 OECD DAC member countries are included (Luxembourg does not mark any of its aid with Rio Markers); data from the Netherlands refer to 2008 given that 2009 information was not available; data from the US is thought to be ‘under-marked’. Source OECD (2011a).

(UNEP, 2010). In line with UNFCCC, OECD, and WB classification, the present study adopts the former definition. According to the report, total committed institutional spending on climate change by the French Development Agency (AFD), the German Development Bank (KfW), and the Japan International Cooperation Agency (JICA)⁵⁹ amounted to USD 11.4 billion in 2009, including both ODA and non-ODA finance (UNEP, 2010). In addition, JICA and KfW provided USD 217 million of climate finance to Eastern and Southern Europe.

While OECD DAC member reporting includes finance channeled through BFIs⁶⁰, the volumes of climate finance reported to the OECD by the three BFIs above were found to be significantly lower than the volumes reported separately by the BFIs themselves. In our calculations, we thus replace OECD DAC data related to flows through these BFIs with self-reported data⁶¹. Together with estimates of climate finance flows through the Brazilian Development Bank (BNDES), China Development Bank, the Indian Renewable Energy Development Agency (IREDA), and the Overseas Private Investment Corporation, we estimate climate change spending by these seven BFIs to be on the order of USD 17.5 billion per annum, split approximately 80:20 between North-South and South-South flows⁶².

Additional estimates of bilateral financial support are available from the National Communications of Annex II⁶³ Parties to the UNFCCC. The bilateral financial support provided over the 2005-2010 reporting period, as stated in the 5th National Communications, totals USD 12.4 billion for mitiga-

59 EIB is also included in UNEP’s report. We however include the EIB’s data in our section on multilateral intermediaries.

60 Including SIDA, NORAD, DFIF, AusAID, Afd, JICA, KfW and NZAid.

61 Sources: UNEP 2010 for JICA Transitional Committee for the Design of the Green Climate Fund (2011) for KfW and AFD (2011a,b).

62 Additional information is available in Appendix A. It is possible that other BFIs, not specifically included in our analysis, are also providing significant volumes of climate finance. For instance, the Danish International Development Agency (DANIDA), and the United States Agency for International Development (USAID), which could be included.

63 Australia, Austria, Belgium, Canada, Denmark, EEC, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK and US.

tion and USD 1.9 billion for adaptation (UNFCCC, 2011a).

Project Catalyst (2010) estimated current bilateral flows to be on the order of USD 7 billion. The estimate is based on an assessment of the portion of 'Fast-start finance' pledges allocated through bilateral agencies plus an estimate of other sources of public climate finance in the 2010-2012 period.

AidData also maintains an online database of development finance flows – largely based on OECD CRS data – supplemented with data from individual donors' annual reports, project documents, personal communications, and web-based data. This database includes information on loans provided at market rates, non-DAC donor and non-development bank bilateral donors. However, non-DAC finance commitments included in the AidData database (from 20 countries) with mitigation-relevant 'activity codes' totaled just USD 9 million in 2008⁶⁴.

More research is needed, however, to capture and fully understand non-DAC finance flows, especially support from emerging economies for mitigation

64 Nominal commitments marked with an activity code related to energy conservation, nuclear, CHP, renewables, afforestation, or public transportation. Database accessed December 2010 using Research Release 1.9.2.

and adaptation activities (South-South flows, see Box IV).

Finally, while some of the data sources mentioned above include information on climate funds that are being set up or managed by BFIs, additional data is needed to capture the full extent of recent flows through climate funds. Using information from the ODI/HBF Climate Funds Update portal⁶⁵ and from individual funds themselves, we estimate additional bilateral climate finance delivered through climate funds to be somewhere in the range of USD 1 to 1.2 billion per annum (for further details see the paragraph dedicated to 'Climate Funds' below and Appendix B).

Based on OECD CRS data for bilateral aid (OECD, 2011a), the data of individual BFIs where available, an estimate of the additional contribution from climate funds, and an estimate of green export credits, we estimate that the climate finance currently flowing from bilateral sources is between USD 23.7 billion and USD 23.9 billion per annum. Note that these figures include both ODA and non-ODA data, mitigation and adaptation commitments, and the most recent data available. A detailed breakdown of the amounts is presented in Appendix A.

65 The portal can be consulted at the following web site: www.climate-fundsupadate.org.

Box IV. SOUTH-SOUTH FLOWS

In recent years, several studies have estimated South-South development assistance flows, but few have provided estimates of the proportion of aid directed specifically to climate finance. A 2008 report published by the UN Economic and Social Council (ECOSOC, 2008), for example, tracked development assistance from 18 non-DAC countries and several MDBs using a variety of sources (e.g. DAC statistics, annual reports from developing countries' development assistance programs, and direct contact with government officials and NGOs). It estimated flows of between USD 9 and 12 billion from the selected non-DAC donors in 2006 (between 7.8% and 9.8% of total aid flows) and predicted that flows would surpass USD 15 billion by 2010. The World Bank (2010b) also reports that aid from non-DAC countries reached USD 5.6 billion in 2007 and is following an increasing trend. Saudi Arabia alone accounted for approximately 40% of that amount.


Meanwhile, a New York University Study (Lum *et al.*, 2009) estimates that Chinese foreign aid and support to projects in Africa, Latin America, and South-East Asia grew from less than USD 1 billion in 2002 to USD 25 billion in 2007.

Brazil and India, generally referred to as 'emerging non-OECD donors', also play a significant role in the aid landscape (The Economist, 2010), with Brazilian contributions amounting to USD 437 million in 2007 and Indian contributions reaching approximately USD 610 billion in 2008/9 (OECD DAC, 2010). In addition, India is planning to set up its own aid agency to disburse USD 11 billion in national resources within the next 5-7 years (The Economist, 2011).

While none of the aforementioned reports provide information about climate finance specifically, Ballesteros *et al.* (2009) estimate that in 2006 developing country contributions to the Global Environmental Facility alone totaled USD 52.8 million.

In 2010, Brazilian, Indian, Chinese, and South African Ministers of Environment communicated their willingness to foster and strengthen South-South cooperation on a wide range of issues, including the support of adaptation measures. During the meeting, the creation of a joint fund to address adaptation issues was proposed (Tirpak *et al.*, 2010; Colitt 2010). In April 2010, at the 16th South Asian Association on Regional Cooperation (SAARC), Indian Prime Minister Manmohan Singh announced the creation of an “India Endowment for Climate Change in South Asia”, with the objective of supporting the members of the Association in addressing their adaptation and capacity building needs (Tirpak *et al.*, Singh 2010).

Multilateral Financial Institutions

Source (inflow)	Estimated outflow	Destination
<ul style="list-style-type: none"> Domestic Public Budgets: USD 11 bn Global Capital Markets: Not Estimated 	USD 13.6-17.0 bn	74% non-concessional loans, 9% concessional loans, 8% grants, 6% equity, 4% risk management; 96.7% mitigation, 3.3% adaptation
Description	Multilateral financial institutions and funds have multiple governing members, including both borrowing developing countries and developed donor countries. They raise money from a variety sources, including capitalization from governments and borrowing programs, as well as income from loans.	
Outlook		This category depends on the health of donor economies and the appetite of capital markets, as well as on political and policy decisions about the use of multilateral agencies.
Primary data sources	<ul style="list-style-type: none"> Self-reporting and database updates by Multilateral Financial Institutions and Funds UNFCCC Annex II National Communications OECD Development Database on Aid Activities: Creditor Reporting System UNEP Climate Change Working Group for Bilateral Finance Institutions ODI/HBF Climate Funds Update website Bloomberg New Energy Finance Desktop and Analysis 	
Issues and future analysis	Our estimate is derived from a blend of primary and secondary data sources, some of which focus on a limited number of sectors and provide only a partial picture of the involvement of MFIs in the global climate finance landscape. Several issues arise when aggregating data from different sources, ranging from inconsistency in methodologies and reporting periods to double counting. Efforts to improve tracking and reporting methodologies are underway, and the inclusion of additional MFIs in the figures presented could lead to higher estimates.	

Multilateral Development Banks (MDBs), regional development banks, and UN agencies fall under this category. More precisely, we define multilateral financial institutions and multilateral funds as institutions or funds with multiple governing members, including both borrowing developing countries and developed donor countries⁶⁶.

Money that flows to MDBs includes (1) the proceeds of major borrowing programs, (2) gross income from loans, investments, and shareholdings, and (3) direct contributions from donor countries to specific disbursement programs⁶⁷. Finance raised by MDBs on capital markets can come from a mix of public and private investors (banks, corporate, central banks, official institutions, fund managers, pension funds, insurers, etc.)⁶⁸. Sources of finance vary from bank to bank, according to their mandates⁶⁹.

The 5th National Communications of Annex II parties to the UNFCCC report a total contribution from domestic public budgets to multilateral institutions of USD 44 billion⁷⁰ over the reporting period 2005-2010 (UNFCCC, 2011a).

Project Catalyst (2010) estimates that the flow of climate finance from domestic public budgets to multilateral agencies is on the order of USD 3.7 billion per annum, based on an estimate of the share of 'Fast-start finance' pledges to be allocated

through multilateral funds. The OECD DAC database also tracks data on government core contributions to multilateral institutions, but these contributions, which are not earmarked, cannot by definition be marked for climate relevance⁷¹. Instead, the OECD DAC database encourages multilateral financial institutions to report their outflows to climate related projects, applying the Rio Markers. In recent years, only the EU institutions, IDA, IBRD and the Nordic Development Fund have reported climate marked funding, which totaled USD 5.8 billion in 2009.

Highlighting the key role played by development banks in supporting the clean energy sector during the aftermath of the economic and financial crisis – and hence their contribution to low-carbon, climate-resilient development – BNEF (2011) estimates that MDB project finance (loans and equity) investments in renewable energy projects⁷² totaled approximately USD 7.6 billion⁷³ in 2010.

Public databases are available on most MDB web sites⁷⁴, but their degree of user friendliness and comparability varies (Tirpak et al., 2010). Not only that, but it is sometimes difficult to extract informa-

66 This definition follows that of the World Bank, amongst others: "Multilateral and Bilateral Development Agencies," available at: <http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/0,,contentMDK:20040612-menuPK:41694-pagePK:51123644-piPK:329829-theSitePK:29708,00.html>.

67 These are supplemented by capital increases in certain years.

68 Investors who purchased IBRD green bonds between 2008 and 2010, for example, included the State of California, public pension funds, NGOs, private banks, and life insurance companies (World Bank database, available at: <http://treasury.worldbank.org/cmd/htm/GreenBondIssuancesToDate.html>).

69 Further research into each bank's funding structure is required to determine the portion of inflows from capital markets, domestic budgets, and reflows from lending. Disaggregated data may not be available to enable this to be done in isolation for climate finance. At present, our landscaping exercise does not map out self-financing or money raised on capital markets.

70 It refers to contributions to the WB, IFC, AfDB, AsDB, EBRD, IDB, UNDP, UNEP, UNFCCC and others.

71 The climate-specific portion of multilateral ODA could be imputed using the percentage of multilateral flows represented by climate-specific flows, which is specified by the Rio Markers. Indeed, in its latest presentation of CRS data, the OECD uses this approach to estimate member contributions to the Montreal Protocol, GEF, and IDA (OECD, 2011d).

72 BNEF (2011) considers project finance loans and equity contributions only. Investments in large hydro, supply chain (e.g. component manufacturing, feedstock production, and recycling), and energy efficiency projects are excluded from the BNEF calculations, as well as those in renewable energy companies. Loans from commercial lenders and equity provided by other investors are also excluded. Data are based on deals recorded on the BNEF Desktop and on deal disclosures in annual reports; for additional information on the methodology followed by BNEF, see BNEF (2011). BNEF data is not split according to final destination and therefore includes both North to South flows and North to North flows in some cases.

73 MDBs considered in this estimate include: the European Investment Bank; the Asian Development Bank; the African Development Bank; the World Bank Group; the Inter-American Development Bank; and the European Bank for Reconstructions and Development.

74 The IADB, the World Bank, the AsDB, and the GEF, for example, maintain aid databases that provide information on a project-by-project basis. Some organize aid by sector and subsector or by theme.

tion on climate-related funding. Donor databases also provide a wealth of quantitative and qualitative information about funded projects, including project descriptions, information on conditionality, and the tying status⁷⁵ of aid. An ongoing exercise by the MDBs to improve and standardize their reporting could significantly improve the value of this information⁷⁶.

We apply a bottom-up approach to estimate the scale of climate finance channeled through multilateral institutions, aggregating latest available estimates from the individual institutions, where available. This approach is applied to calculate the climate finance outflows from multilateral agencies, to add the most recent data on climate funds, and to specify how much money from MDBs flows to specific instruments⁷⁷.

Using information from the ODI/HBF Climate Funds Update online platform and from individual funds themselves, we estimate that climate funds provide an additional volume of multilateral climate finance to developing countries on the order of USD 1.4 billion ca. per annum (for further details see the 'Climate Funds' paragraph below and Appendix B).

There are, however, several issues that arise when aggregating data from different sources. First, considerable effort is required to prevent the double counting of finance flowing between multilateral agencies or from bilateral institutions to multilateral institutions⁷⁸. We aim to minimize

double counting to the extent possible (depending on the granularity of data available) through detailed analysis of project level data. Second, definitions of climate finance and years for which data are available are not consistent across organizations. Third, data is more often available on a commitment basis rather than a disbursement basis, and annual commitments are likely to be far larger than average annual disbursements. Last, co-financing by borrowing countries and other entities should be captured, but detailed information is often difficult to obtain and is therefore not included in our estimates⁷⁹.

Based on available data sources, we estimate the scale of climate finance flowing through multilateral financial institutions and funds to be between USD 13.6 billion and USD 17 billion⁸⁰ per annum. Additional details are presented in Appendix A.

⁷⁹ See BOX VI focuses on the 'leverage effect' for further information.

⁸⁰ The lower bound of the range is based on estimates from the IFC, IBRD, IDA, the AsDB, the AfDB, EIB, EU institutions, EBRD, IDB, the Nordic Development Fund, and the Nordic Investment Bank, plus an estimate of additional finance channelled through multilateral climate funds. Note that the EIB estimated that it provided an additional USD 1,218 million of climate finance to Eastern and Southern Europe in 2009 (UNEP, 2010). The upper bound estimate is taken from the preliminary version of the Joint MDB Climate Financing Report (June 2010) and refers to 2009 MDB mitigation financing. Detailed information is presented in Appendix A.

⁷⁵ 'Tying status' refers to limitations put on the procurement of goods or services to the donor country or to a group of countries which does not include substantially all developing countries (adapted from OECD Glossary of Statistical Terms).


⁷⁶ Joint MDB Climate Financing Report, Preliminary version (June 2010).

⁷⁷ The outflow to specific instruments is presented in Section 3.3.

⁷⁸ For example, the Global Environmental Facility Trust Fund involves a multitude of actors that may or may not report on related funds under their management, which means there is a risk of double counting if individual institutions' data are aggregated. GEF actors include (1) ten multilateral development agencies that manage project proposals and implementation, (2) the World Bank, which acts as fund trustee and administrator, (3) donor nations, and (4) funding recipients and co-founders (themselves from a diverse range of institutions, including GEF Agencies, governments, multilateral and bilateral organizations, NGOs, the private sector, and project participants).

Additional intermediated flows

CLIMATE FUNDS

Source	Estimated flow	Destination
<ul style="list-style-type: none"> Domestic Public Budgets: Not Estimated Global Capital Markets: Not Estimated Bilateral and Multilateral Financial Institutions: Not Estimated 	USD 1.1 - 3.2 bn	39 % equity, 37% non-concessional loans, 17% concessional loans, 7% grants; 97% mitigation, 3% adaptation
Description	Existing climate funds are typically multi-donor, with one or more bilateral or multilateral organizations providing Trustee and administrative services. Funds tend to have finite lifetimes and a specific sectoral focus, e.g. renewables, adaptation, forestry, etc.	
Outlook		Most existing climate funds are fairly new and have not yet disbursed large volumes of finance. A plethora of new climate funds is under development.
Primary data sources	<ul style="list-style-type: none"> Self-reporting by Funds ODI/HBF Climate Funds Update website 	
Issues and future analysis	There is a growing desire on the part of recipient countries to have enhanced ownership, or 'direct access', to climate funds. This may reduce the role of multilateral agencies in such funds in the future. However, the modalities for ensuring donor satisfaction and effective operation of funds are still under development.	

Note: The estimated range for climate funds presented here cannot be aggregated with BFI and MFI flows due to double counting issues. We estimate the additional contribution not accounted for in BFI and MFI flows to be USD 2.4-2.6 billion.

In recent years, a number of bilateral and multi-lateral organizations have set up climate-specific funds. These funds are typically multi-donor, with one or more bilateral or multilateral organizations providing Trustee and administrative services to manage the funds 'off-balance sheet'. The Climate Funds included in this study can be grouped into four categories:

1. Global donor funds established by UN agencies including the UNFCCC (the Adaptation Fund, the GEF Trust Fund, the Least Developed Countries Fund, the Special Climate Change Fund, the Strategic Priority on Adaptation Programme), the World Bank (the Clean Investment Funds, the Forest Carbon Partnership Facility), the UNDP, the UNEP and the FAO (the UN-REDD Programme, MDG Achievement Fund - Environment and Climate Change thematic window);
2. Global donor funds managed by EU institutions (Global Energy Efficiency and Renewable

Fund, Global Climate Change Alliance);

3. Regional recipient funds managed by regional development banks such as AfDB⁸¹ (Congo Basin Forest Fund) and BFIs such as BNDES (the Amazon Fund); and
4. National recipient funds managed by BFIs such as BNDES (the Mata Atlantic Initiative) and, in some cases, with a multilateral institution acting as trustee (the Indonesia Climate Change Trust Fund, the Guyana REDD+ Investment Fund)⁸².

⁸¹ In July 2011, African leaders announced that the AfDB will establish and manage an additional fund - the "Clim-Dev Africa Special Fund" - aimed at supporting Africa's access to and management of flows from the forthcoming Green Climate Fund. The AfDB has set aside a budget of USD 145 million for its establishment. Source: UNDP, 2011; UNDP Cambodia web site: <http://www.un.org.kh/undp/what-we-do/projects/cambodia-climate-change-alliance>; Climate News at <http://climate-news.com/environment/tag/african-development-bank>; FIN 24 web site at: <http://www.fin24.com/Economy/Africa-to-set-up-own-climate-fund-20110703>.

⁸² In order to attract innovative sources of domestic climate finance,

In addition to the money pledged specifically to these funds, many of them claim to leverage significant sums of co-finance⁸³. One of the most comprehensive sources of information on climate funds is the ODI/HBF Climate Funds Update portal, which tracks money flowing through dedicated climate change funds, as well as through several bilateral and multilateral initiatives⁸⁴.

The National Communications of Annex II Parties report – to varying levels of detail and aggregation – contributions made to funds under the management of the Global Environmental Facility⁸⁵ and to the Climate Investment Funds, which amounted to USD 3.3 billion and USD 0.3 billion respectively in the 2005-2010 reporting period.

Based on the ODI/HBF Climate Funds Update, research by SEI (UNEP, 2010), and reporting by the organizations managing the funds themselves, we estimate annual commitments from climate funds and initiatives to range from approximately USD

1.05 billion⁸⁶ to USD 3.2⁸⁷ billion. Note, however, that there are strong overlaps with bilateral and multilateral donor reporting, and the aggregation is subject to various methodological difficulties, including different definitions and reporting years. Therefore, this range should be considered as indicative only of the scale of climate funds within the broader scope of bilateral and multilateral finance.

In order to estimate the scale of additional climate finance coming from climate funds, we have surveyed the main climate funds for potential reporting overlaps with other climate finance flows, in particular with bilateral and multilateral flows reported in the OECD CRS database and with reporting by BFIs and MFIs. As a result of this survey, we add USD 1.4 billion to our estimate of multilateral flows and between USD 1 to 1.2 billion to our estimate of bilateral flows. Details of our assumptions and sources are presented in Appendix B.

some developing countries are also establishing or are about to establish national climate funds. In December 2009, for instance, Cambodia established a multi-donor financial facility called “Cambodia Climate Change Alliance Trust Fund” and an associated Support Programme to create a unified engagement point for donor countries – while minimizing transaction costs – and to provide a demand-driven grants facility for adaptation and mitigation projects. The programme was officially launched in February 2010 and total contributions from the EU, UNDP, the Danish International Development agency (DANIDA), and the Swedish International Development Agency (SIDA) currently amount to USD 8.9 million (total contributions to the Cambodia Climate Change Alliance to which the Fund belongs).

83 For example, the GEF reports that since its inception it has leveraged additional investments of approximately USD 20 billion while investing USD 3 billion in climate change mitigation, adaptation, and enabling activities (GEF, 2010).

84 The ODI/HBF Climate Funds Update, <http://www.climatefundsupdate.org>, presents data and information on 21 bilateral and multilateral climate funds and bilateral initiatives that have been set up in the last few years, including Germany’s International Climate Initiative – which receives funding from the sale of tradable emission certificates – Australia’s International Forest Carbon Initiative, Japan’s Hatoyama Initiative, and the UK’s International Climate Fund (formerly, the Environmental Transformation Fund). The Climate Finance Options platform – an initiative led by the UNFCCC and the UNDP/World Bank Group – also presents snapshot information on key climate funds, though limited quantitative information is presented.

85 The GEF Trust Fund, the LDCF, and the SCCF (UNFCCC, 2011).

Important changes to the landscape of intermediaries are anticipated, however, as recipient countries increasingly seek to access sources of climate finance more directly and to limit the role of intermediaries. The Adaptation Fund, in particular, is pioneering a model of ‘direct access’, by gradually enabling National Implementing Entities to access project funds directly. Other bilateral funds are also exploring ways to increase national ownership while maintaining adequate checks and balances. The foreseen benefits of strengthened national control include enhanced ownership and responsibility for delivering results, the integration of climate finance into the national policy-making process, improved coordination of donors and funds, and flexibility in fund management, all of which minimize transaction costs and increase

86 The lower bound estimate is taken from a UNEP (2010) report that includes: the Climate Investment Funds 2009 commitment of USD 0.47 billion; USD 0.24 billion channelled by the GEF for climate change; USD 0.15 billion made available by the Special Climate Change Fund and the Least Developed Countries Fund; and a lower bound estimate for commitments from other international specialized funds dedicated to climate change of USD 0.19 billion.

87 Details of the calculation behind the upper bound estimate can be found in Appendix B.

BOX V. GREEN CLIMATE FUND

One of the key achievements of the 16th Conference of the Parties (COP) held in Cancún in December 2010 was the establishment of a multilateral climate fund, the so-called Green Climate Fund (GCF).

'Designated as an operating entity of the financial mechanism of the Convention under Article 11', it will aim to provide scaled-up, predictable, and adequate funding to support projects, programs, policies, and other climate-related activities in developing countries, using thematic funding windows¹.

The Green Climate Fund is expected to become a pivotal instrument for financing adaption and mitigation, including REDD+ interventions, in a balanced manner. It remains to be seen, however, what portion of the USD 100 billion per year by 2020 that was committed by developed countries will be channeled by the fund.

Learning from the good and bad practices of previous climate- and non climate-related funds², the GCF should aim to fill gaps in the existing funding landscape, foster complementarities, and bring added value to other bilateral, regional, and multilateral funding mechanisms and institutions.

The design of the Fund has been assigned to a Transitional Committee composed of 40 high-level members from both developed and developing countries. The Committee must propose an effective design for the new fund in time for approval during the UN Climate Change talks in Durban, South Africa, in December 2011.

At the Second Meeting of the Transitional Committee (July, 13-14 2011, Tokyo) members discussed – among other topics – finance entry points and the accessing of finance. Members highlighted the need for the GCF to be able to handle a broad array of financing sources – generated both by government and non-government contributions – as well as the need to develop a strategy/platform for promoting private sector engagement. In addition, to ensure delivery at the necessary scale, members discussed the need for the fund to use a range of instruments to disburse finance, including grant and non-grant financing³.

1 E.g., mitigation, adaptation, REDD+, as well as geographic window (Least Developed Countries or Small Islands States, etc.). Source: UNFCCC Web site at http://unfccc.int/cooperation_and_support/financial_mechanism/green_climate_fund/items/5869.php. Transitional Committee Second Meeting, June 2011, Work stream I, http://unfccc.int/files/Cancún_agreements/green_climate_fund/application/pdf/tc2_ws1_1_290611.pdf

2 See, for instance, the "Background note: Comparison of relevant funds and institutions" prepared within Workstream I for the Second Meeting of the Transitional Committee, June 2011. Available at the following link: http://unfccc.int/files/Cancún_agreements/green_climate_fund/application/pdf/tc2_w1_2_290611.pdf

3 Sources: UNFCCC press release available at: http://unfccc.int/files/press/press_releases_advisories/application/pdf/110714_media_alert_tc.pdf; Summary of co-facilitators Workstream III: http://unfccc.int/files/Cancún_agreements/green_climate_fund/application/pdf/tc2_wsiii.pdf; Germanwatch (2011), Report on the 2nd meeting of the Transitional Committee to design the Green Climate Fund. Additional information can also be found on the UNFCCC web site.

opportunities for attracting additional resources from local and/or external entities (Müller, 2011).

Climate Finance tracking and reporting systems need to be ready to capture flows channeled through the 'direct access' approach.

CARBON FUNDS AND BROKERS

Much of the carbon offset business is intermediated, through public and private carbon intermediaries. On the public side, carbon funds (like IFCs) played a pioneering role in securing the very

first carbon deals and in making several parties tag along (Kyoto-bound governments, development banks, and private entities). On the private side, carbon offset brokerage houses, such as EcoSecurities, Tricorona, and Camco, act as intermediaries, investing in primary offset projects or purchasing secondary offsets from carbon markets on behalf of potential buyers. Much of this business is being captured by intermediaries who are able to set up carbon procurement funds and can guarantee confidentiality and flexibility to their clients. While the UNEP/RISØ and IGES databases confirm brokers' participation in specific

UN-endorsed offset projects, the scale of this participation is unknown, as the quantity of offsets bought and on behalf of whom is confidential.

More information is available on carbon funds (i.e. carbon procurement vehicles) that purchase carbon credits generated by project mechanisms (primarily through the Kyoto Protocol's CDM and JI schemes) but also through AAUs and other Green Investment Schemes. Note that multilateral and bilateral institutions are active players on the carbon market and are involved in the purchase of carbon credits generated mainly from CDM and JI projects⁸⁸.

Carbon funds can be categorized as follows:

- Public funds established primarily by industrialized countries seeking to offset their emissions in order to comply with Kyoto Protocol obligations. To a lesser extent, they have also been established by non-Annex B countries seeking to promote the development of project mechanisms. Some may also have been established for purposes of financial gain (e.g. Austrian JI/CDM programme, Belgian JI/CDM tender, etc.).
- Private funds established by private investors, including compliance buyers (industrial and energy companies) and financial investors attracted by the potential for financial gains (e.g. European Clean Energy Fund, Climate Change Capital Carbon Fund, etc.).
- Public-private funds aimed at raising and promoting the use of public and private sector capital through a single legal entity (e.g. BioCarbon Fund, KfW Carbon Fund, etc.)⁸⁹. This category includes the more than twenty climate funds managed by multilateral development banks with over USD 4 billion in committed capital.

In addition to these main categories, and despite the uncertainty surrounding the CDM and JI mechanisms, the most recent trend in the carbon market is the establishment of post-2012 compliance funds, such as the EIB's Post-2012 Carbon Credit Fund. These funds, by assuming the post-2012 regulatory risk, are signaling their confidence in the emergence of a post-Kyoto regime and encouraging the development of a post-2012 market.

In 2010, *Carbon Finance* (Environmental Finance, 2011) profiled 97 operational carbon funds and five planned funds, which disclosed a total capitalization of USD 15.22 billion, slightly less than what was reported in 2009 (USD 15.68 billion). Given the difficulties in identifying an annual financial flow through these intermediaries to the carbon offset finance instrument, we do not include a specific figure in our overview of current finance flows.

We therefore estimate that approximately USD 35.7-40.3 billion of climate finance is intermediated (by bilateral & multilateral banks and carbon funds & brokers) annually (or around 40% of estimated sources).

⁸⁸ The World Bank is one of the most active players among multilateral institutions, but also in the carbon market in general. It manages twelve carbon funds and facilities on behalf of Government and private investors.

⁸⁹ We followed the categorization of Alberola and Stephan (2010).

3.3 Instruments

Seven major categories of instrument have been identified: (i) policy incentives; (ii) risk management; (iii) carbon offset flows; (iv) grants; (v) concessional loans; (vi) market rate loans; and (vii) equity. While not necessarily comprehensive, these categories aim to capture the key instruments used to deliver climate finance at present. Financial support can either be given directly to specific projects and/or local implementing agencies, using a variety of instruments, or it can assist national policy efforts.

Bilateral and multilateral agencies, in particular, use a wide range of instruments (grants, loans, debt, equity, credit lines, etc.) to support mitigation and adaptation interventions in developing countries depending on specific project and recipient country needs. Adaptation, for instance, is predominantly financed through grants and concessional loans while mitigation is predominantly funded through concessional and non-concessional loans. Bilateral and multilateral financial institutions also adopt so-called 'climate change policy loans', i.e. development policy lending instruments used to support countries in the development, improvement and implementation of their public climate change policy and action plans and/or to further mainstream climate into development strategies.

Climate funds are also increasingly being used by IFIs as concessional finance alongside other sources. Our estimates of climate finance channeled through each instrument are derived from bottom-up calculations based on reporting by individual financial institutions and on information the OCED CRS database, but they also include a range of assumptions (as detailed in Appendix C).

Policy Incentives

This category includes resources directed at regulatory reform and 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

Most climate finance – USD 87 billion out of USD 97 billion – can be classified as investment or more generally instruments that include ownership interests. Key instruments to for delivering these investments include USD 56 billion in the form of market rate loans, USD 18 billion in equity and USD 13 billion in concessional loans. Instruments, such as policy incentives, carbon offset flows and grants make up the remainder of climate finance.

Instrument	Annual Flow (2009/2010, USD bn)
Policy Incentives	Not Estimated
Risk management	1.2
Carbon offset flows	2.5
Grants	4.5
Concessional loans	12.6
Market rate loans	56.1
Equity	18.0

started to use income-enhancing mechanisms to stimulate clean energy investment. In India, for example, the Central Electricity Regulatory Commission (CERC) will be administering a new feed-in tariff scheme to underpin India's National Solar Mission, which aims to deploy 22,000 MW of solar power by 2022 (DBCCA, 2010a)⁹⁰. In addition, the Ministry of New and Renewable

⁹⁰ Indian solar is also an area of activity under the Critical Mass Initiative, a platform convened by the World Economic Forum, the International Finance Corporation and United Nations Foundation. This Initiative aims to identify what is needed across different geographies to attract private investment at-scale for renewables and energy efficiency projects and to kick start activity by supporting large-scale, first-mover projects (FT, 2010; WEF, 2011).

Energy has launched a USD 0.01/KWh incentive for grid-connected wind projects. Meanwhile, the Chinese government has introduced 50% investment subsidies for large-scale, grid-connected PV systems, and 40% of the RMB 4 trillion (USD 585 billion) multi-year economic stimulus package has been directed at clean energy technology providers (TCG, 2009).

In addition to national data sources, Deutsche Bank's Climate Change Policy Tracker (2010) provides a useful summary of recently proposed and implemented incentive schemes.⁹¹ However, the value of support provided by these schemes is generally not available for multiple years.

There is thus a great deal of information available on policy support in developing countries, but it tends to be fragmented. Further research is therefore required to estimate the value of such domestic flows.

Risk Management

OFFICIAL LONG-TERM EXPORT CREDITS

As mentioned in Section 3.1, export credits provided in the form of direct loans, insurance, or guarantees, are financial arrangements aimed at facilitating exports in riskier overseas markets. Entities that deal with export credits are known as Export Credit Agencies (ECAs) and can be governmental departments or external institutions. The OECD Trade and Agriculture Directorate (TAD) maintains a database of the export credits⁹² provided officially by OECD members to developing countries with repayment terms of 5 years or more (long-term credits). These OECD statistics provide information on ECA support by end sector with the same level of disaggregation as the data on ODA; however, the purpose codes have

been slightly modified from those used by OECD DAC. As with bilateral ODA in the CRS system, this allows mitigation-relevant export credits to be distinguished, but makes it harder to differentiate credits that enhance GHG reduction from those that counteract it (cf. Corfee-Morlot et al., 2009). It is possible, however, to identify support provided to the renewable and energy efficiency sectors, thus partially capturing overall 'clean' flows (Buchner et al., 2011).

According to the OECD data (OECD, 2011b), 'official or officially-supported' export credits flowing from North to South were estimated at USD 18 billion per annum (average) between 2002 and 2009, with 87% directed toward 'mitigation-relevant' sectors. Yet, 'mitigation-specific'⁹³ export credits might be much less: estimates of export credits directed at renewable energy and co-generation account for an annual average of just USD 0.2 billion over the period 2002-2009 and USD 0.7 billion in 2009 (OECD statistics on export credits, 2010, as cited in Buchner et al., 2011)⁹⁴.

While an important element in the overall landscape of climate finance, OECD export credit data have limitations, as highlighted by Corfee-Morlot et al. (2009). First, access to the database is restricted to governments and, at present, data are publically available up to and including the year 2005 (OECD, 2007a; Buchner et al., 2011). Second, sectoral disaggregation of the data for individual developing countries is weak, making it difficult to identify the mitigation-relevant portion. Third, some export credits are not considered within the OECD's arrangement on reporting of official export credits and are therefore not captured in their database (Buchner et al., 2011: OECD, 2010a,b). Data on private export credits are not currently available in aggregated form (Buchner et al., 2011).

91 For example, renewable feed-in tariffs in Malaysia, the Philippines, Serbia, Jordan, Taiwan, and Thailand; tax incentives for low carbon vehicles in Bangladesh, Brazil, and South Africa; a carbon tax on electrical appliances in Mauritius; a cap and trade scheme and/or feed-in tariffs in South Korea and a loan scheme for renewable energy projects Bangladesh.

92 See: http://www.oecd.org/departement/0,3355,en_2649_34169_11111_1,00.html. OECD (2011e); OECD (2011f); OECD (2010b).

93 I.e., those going to "low-carbon energy technologies", including nuclear, hydro, geothermal, solar, wind, tidal, and biomass (cf. Corfee-Morlot et al., 2009).

94 It should be noted that loans and repayment insurance are paid to the exporter and therefore technically represent a North-North flow. They can however play a key role in stimulating private low-emission investments in developing countries and are therefore counted in the landscape of climate finance. Furthermore, in the case of export credits with repayment insurance and guarantees, no financial transfer (repayment flow) will occur unless contractual provisions are exercised.

GUARANTEES

Guarantees are used to mitigate the risks involved in clean investments (e.g. 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 donor reporting, we estimate annual guarantees in support of climate mitigation and adaptation to be at least USD 347 million⁹⁵, (estimates were only available from the IFC, the AsDB, and climate funds)⁹⁶.

The Multilateral Investment Guarantee Agency (MIGA) – a member of the World Bank Group – also plays a role in facilitating clean investments by providing political risk insurance guarantees for FDIs in developing countries. In 2010, the Agency issued a total of USD 1.5 billion in investment guarantees (15% of which were in the oil, gas, and mining sectors). However, data on the portion of guarantees related to clean investment is not available.

FINANCE-ENHANCING

Finance-enhancing instruments help improve the attractiveness of mitigation and adaptation projects by generating better credit ratings and reducing the cost of capital. This instrument category notably includes Power Purchase Agreements (PPA) set up with local utilities and power grid management companies. Details of these PPAs, including the identity and creditworthiness of the payer of last resort in the case of default and limits on potential recourses to sponsors, are typically factored into the credit analysis and influence both the willingness of banks to lend and the terms of lending. While not specific to climate finance, traditional credit improvement instruments would fit this category as well (e.g. letters of credit). It is also worth mentioning the recent development of climate-specific products to offset risk within the insurance sector (thereby enhancing credit quality)⁹⁷.

95 Ibid. 96.

96 IFC web site (<https://www.ifc.org>), accessed on December 2010; AsDB web site (<http://www.adb.org/>). See Appendix C for additional information.

97 Performance guarantees and warranties for renewables in particular.

No quantitative data for the flow through this instrument is currently available.

Carbon offset flows

Carbon offsets are financial instruments that aim to reduce GHG emissions. As described in Section 3.1, offsets can be bought directly on carbon markets via carbon offset brokers or via carbon procurement funds.

Between USD 2.2 and USD 2.3 billion flow through this instrument, including all sources of offsets markets⁹⁸.

It should be noted that 2% of CERs issued are transferred to the Adaptation Fund (AF) and are subsequently monetized on secondary carbon markets by its trustee to provide financial flows to adaptation projects and programmes in developing countries. So far, almost 13 million CERs⁹⁹ have been set aside for the AF. According to the Adaptation Fund Ethics and Finance Committee (2011), proceeds generated from the beginning of the monetization program in May 2009 to January 2011 amounted to USD 138.2 million. During 2010, the first completed available year, proceeds reached USD 100.2 million¹⁰⁰.

Payment for Ecosystem Services (PES)

Mercer, Cooley, and Hamilton (2011) define PES as: *“Formal and informal contracts in which landowners are remunerated for managing their land to produce one or more ecosystem service; PES transactions must consist of actual payments between at least one willing buyer and one willing seller to produce or enhance a well-defined ecosystem service or bundle of services.”*

In the context of climate change, PES schemes are aimed at maintaining or enhancing natural carbon

98 Ibid. 34;35.

99 646.7 million CERs had been issued as of June 30, 2011. Source: UN-FCCC at: <http://cdm.unfccc.int/Registry/index.html>.

100 See Adaptation Fund Ethics and Finance Committee (2011) for additional information. Document available at: http://adaptation-fund.org/system/files/AFB.EFC_4.10.Rev_2%20Financial%20Status%20Report.pdf. According to the World Bank (2010d), USD 300 million to USD 600 million could be raised through the 2% levy on CDM over the medium-term (2008-2012). This will depend on the carbon price.

sinks and the natural capacity of ecosystems to adapt to climate change. Transactions in this emerging marketplace may include government conservation incentive programs, the exchange of mitigation credits in voluntary or regulatory markets, cash payments, and in-kind compensations¹⁰¹. These transactions support a broad array of activities (e.g. capacity-building, technical assistance, etc.) and funders, including governments, businesses, and consumers.

A number of developing countries already have PES schemes in place, including Costa Rica, Mexico, and Indonesia¹⁰². The UNDP (2011) identifies six types of ecosystem market, which have estimated values that range in the billions:

1. Biodiversity offset and compensation programs (estimated global market: USD 2.4-4.0 billion per annum – Madsen et al., 2011);
2. Payments for watershed services and quality of water trading (estimated total transaction value of watershed management programs in 2008: USD 9.3 billion – Stanton et al., 2010);
3. Sustainable fisheries (USD 5-10 billion – UNDP, 2010);
4. Green commodities (USD 42 billion – UNDP, 2010);
5. Bio-prospecting contracts (USD 0.4-1.9 billion – UNDP, 2010);
6. Reducing Emissions from Deforestation and Forest Degradation (various estimates presented in Section 3.5).

Parker and Cranford (2010) have estimated total current flows of finance for ecosystem services and biodiversity in developing countries to be approximately USD 16 billion per annum, the majority of which is directed toward the forestry

sector. However, it is not possible to determine what portions of these PES payments have climate mitigation or adaptation (co-) benefits, nor to what extent the values overlap with other climate finance flows presented in this paper. The World Bank (2008) has called for efforts to better understand the potential of PES schemes and how they can be effectively designed and implemented.

Grants

Grants are transfers in cash or in kind for which no legal debt is incurred by the recipient (OECD, 2007b). Grants also include knowledge management programs (e.g. technical assistance, capacity building, knowledge hubs, etc.)¹⁰³. There is no single source of information on the volume of climate finance provided through grants. Instead, estimates must be taken from the reporting of individual sources, including international finance institutions.

According to the OECD CRS database, 43.6% of bilateral climate funding committed by DAC countries in 2009 was directed to ODA grants. In addition to OECD reporting (OECD, 2011a), individual BFIs provide information on the amount of their funding that is given as grants, as do individual multilateral agencies¹⁰⁴. We also assume that philanthropic sources of climate finance are channeled entirely through grant instruments. Based on available data, we estimate that annual climate finance flows delivered as grant instruments amount to approximately USD 4.5 billion.

The current estimate, however, lacks data on the grant contributions of developing country governments' to domestic clean energy developments. Deutsche Bank's Climate Change Policy Tracker (2010b) provides a useful summary of recently proposed or implemented public financing schemes¹⁰⁵, but, as discussed above, this summary

101 Debt-for-nature swaps have also resulted in developing country governments funding forest conservation programmes. The U.S. government and Indonesia have recently agreed on a debt-for-nature swap, which will generate USD 28.5 million for forest conservation action in Indonesia and aims to reduce carbon emissions by 2 Mt per year (TNC, 2011).

102 Stanton et al. (2010) provides insights on watershed payments, as well as a map of active protection programs.

103 For more details on this refer to Stadelmann and Michaelowa (2011) available here: <http://www.climatestrategies.org/research/our-reports/category/71/325.html>.

104 See Appendix C for additional information on this regard.

105 Examples include the Renewable Energy and Energy Efficiency Fund in Jordan, investment in green buildings by the South Korean government, and USD 786 million of investment by the Taiwanese govern-

is mostly without financial values. Country co-financing for projects supported by IFIs could further increase the value of grants, though this might also come from the usual leveraging by IFIs.

Concessional loans

Concessional loans, also referred to as soft loans, include debt provided at an interest rate below the prevailing market rate.

An ODA loan is defined as a concessional loan that conveys a grant element above 25% and has an interest rate below the prevailing market rate. In some cases, the 'grant element' needed to catalyze a project may be below 25%. For some donors this has meant re-thinking what the ODA definition means in the context of their contributions to some private sector activities. Minimal concessionality is critical for engaging the private sector in order to avoid over-subsidization, to increase the value obtained for public money.

Concessional loans can be measured as either the total volume of finance provided at concessional rates or as the grant equivalent value¹⁰⁶ of the concessional loan, reflecting the financial terms of the finance provided. However, comprehensive estimates of the grant equivalent value of concessional climate finance are not available, due at least in part to methodological difficulties. This paper therefore presents gross financial flows without taking into consideration the level of concessionality involved.

As in the case of grants, there is no centralized source of information about financial flows provided through concessional instruments. Accordingly, we base our estimate on the same individual donor reports as we did for the previous

ment in renewable energy and energy efficiency projects over the next five years.

¹⁰⁶ Also referred to as 'concessionality level', which is a measure of the 'softness' of credit, reflecting the benefit to the borrower compared to a loan at market rate. Technically, it is calculated as the difference between the nominal value of a Tied Aid Credit and the present value of the debt service at the date of disbursement, calculated at a discount rate applicable to the currency of the transaction and expressed as a percentage of the nominal value (OECD Statistical Glossary, available at: <http://stats.oecd.org/glossary/>).

instrument. Based on available data, we calculate annual concessional loan flows to be around USD 13 billion per annum.

Note that DAC donors report on the financial terms of aid to the OECD CRS Aid Activity database, including loan repayment terms (maturity, grace period, interest rate). This allows the DAC Secretariat to calculate and publish the grant element of total ODA and ODA loans (see Appendix D). The grant equivalent value of concessional climate finance can therefore be calculated to assess the overall concessionality of donors' support. However, the grant equivalent does not constitute a 'flow' in itself nor can it be calculated for equity investment, export credits and private flows more generally because at market terms the grant component is by definition zero.

Capital: market rate loans and equity

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 entity categorized as a 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 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.

Among debt instruments, the provision of credit lines is an alternative to construction debt. In this case, a lending institution will make funds available, but these will not be lent until the credit line beneficiary specifically requests them. Lines of credit guarantee that funds will be made available, but the financial asset does not exist until funds are actually advanced¹⁰⁷.

¹⁰⁷ OECD Glossary of Statistical Terms available at: <http://stat.oecd/>

While we acknowledge the important distinction between market rate loans and equity, as illustrated in Figure 2, the current data makes it challenging to disentangle the various capital contributions made by all actors from the broader capital class. Basic information is often confidential or not readily available, and complex ownership structures add further complications.

Our estimates of loans and equity are based on information about the two main contributors to these instruments: IFIs and private finance.

- Approximately USD 20 billion flows from multilateral and bilateral institutions and funds to capital, and this flow is composed primarily of market rate loans and other official flows (particularly from IBRD)¹⁰⁸. Just USD 1.6 billion of the outflow goes toward equity.
- USD 37-72.2 billion is presumed to flow from private finance into capital instruments. Yet, the sources of these figures do not provide any breakdown between loans and equity, largely because of confidentiality concerns. As a proxy, we therefore apply a project finance debt-equity ratio of 70:30¹⁰⁹, recognizing that this assumption

has a significant impact, because the private finance flow is the largest in the landscape. Based on this approach, USD 26-51 billion is estimated to flow to market rate loans and USD 11-22 billion to equity instruments.

- It should be noted that there may also be a flow of finance from domestic public budgets to capital instruments, i.e. in the case of direct government ownership and state-owned banks that are active in climate finance. No central source is available for this data, and this flow has not yet been quantified.

Given the difficulties involved in disentangling market rate loans from equity, we estimate that capital instruments channel USD 57-92 billion in climate finance overall; a very rough proxy suggests that USD 44-69 billion of this is channeled through market rate loans and the remainder through equity.

3.4 Channels

Disbursement channels are those organizations that work directly to disburse funds for climate mitigation and adaptation projects, including those from the public sector, public-private partnerships (PPPs), multilateral organizations, NGOs, and civil society. They may be local, regional, national, or international organizations. The disbursement channels through which Australian bilateral climate finance flowed in 2009, for example, included Care Australia, AusAID, the Commonwealth Scientific and Industrial Research Organization, Melbourne Health, the Ministry of Education (Kiribati), and the University of New South Wales, among others (OECD, 2011a).

There are few aggregated estimates of the split of finance by type of disbursement organization. The OECD CRS database is an exception, as it provides details of the name and type of disbursement channel for each project listed in the database. The split by disbursement organization type for all climate finance committed in 2009 is shown

[glossary](#). In practice, lines of credit attract a commitment fee from the recipient country, irrespective of whether funds are drawn down or not. Atteridge et al. (2009) discuss credit lines provided by BFs to commercial actors, governments, and local banks for clean energy projects. For example, the EIB's "Risk Sharing Finance Facility, signed in 2007, makes available up to EUR 10 billion over the period 2007-13, with a maximum EUR 50 million per project. This facility provides credit lines in the form of loans and guarantees to local financial institutions to be used for lending to European corporations for R&D, focusing on both large companies and SMEs. This finance is able to support projects with climate change benefits, for instance it has provided a EUR 50 million loan to a solar thermal power station project in Spain. By the end of 2008, total finance of €1.48 billion had been requested, 30% of which was for energy sector projects".

108 IBRD reports commitments of USD 4.6 billion to climate related projects in the form of OOF (non export credits) in 2009 (CRS, 2011).

109 This estimate is based on a survey of financial experts. The panel provided a range from 60% to 80% of debt. It was highlighted that the gearing level depended on several parameters relative to risks and returns (countries, sector, technologies, and investment stages notably). Moreover, this range would rather relate to renewable energy projects and might distort a bit other mitigation projects (energy ef-

ciency investment for instance) or climate change adaptation.

BOX VI. LEVERAGE EFFECTS

While there is broad consensus on the need to leverage the extent of private sector involvement, the term 'leverage' is used loosely. There is uncertainty about how best to leverage and how to quantify its extent and therefore a need to get a better sense of what leveraging actually means.

Leverage effects are found at multiple levels of the climate finance diagram. While the concept of a leverage effect typically reflects the ability of a public sector finance intervention to 'crowd in' private sector capital (AGF, 2010), there is neither uniform definition nor methodology, rendering it difficult to make comparisons across institutions, instruments, and interventions.

According to generic financial terminology, leverage is measured as the ratio of equity to a blend of debt and specific instrument categories (equity, carbon offsets, etc.). Financial institutions, particularly those interested in capturing the multiplier effect of leveraging, calculate it as the ratio of public to private co-financing. The GEF also considers the leveraging that occurs beyond its intervention, i.e. project replication or financing that would not have been spent in the absence of the GEF project (Brown *et al.*, 2011). The World Bank (2010c) – an active player in the carbon market – measures it as the ratio of the whole capital investment needed for a project to the net present value of primary CER (Brown *et al.*, 2011). In the field of development finance institutions, the level of grant element that is integrated into the loan defines the leverage effect.

At the source- and intermediary-levels, leverage refers respectively to:

- The funding of sources and intermediaries of climate finance by issuing bonds and borrowing from global capital markets. Bilateral and multilateral banks and other financial organizations/initiatives routinely raise money on capital markets (and with domestic and commercial banks) or through returns on loans as opposed to through government transfers. The size of leverage depends on each bank's ratio of equity to debt finance.
- Co-financing (syndicated loans and A/B loans). The focus of leverage is on the ability of a specific intermediary or group to catalyse other public and/or private investors. A number of specific estimates of leveraging ratios are available, ranging from calculations by the IFC to those of banks themselves. The information provided suggests a leveraging ratio between 1:3 and 1:8. Accordingly, a single dollar flowing from bilateral and multilateral banks could leverage between USD 3 to 8 dollars from other banks, global capital markets, and/or governments along the way.

At the level of specific instruments, sponsors or trustees communicate the ability of specific mechanisms and instruments to attract private finance into investment in climate mitigation and adaptation projects.

At the project-level, leverage effects can vary greatly according to factors, such as the host country, the technologies, and the partners involved.

In light of the existing pressure on public finance and the international call for greater engagement of the private sector in climate-related interventions, the multiplier role played by public flows has the potential to deliver significant financial resources. The importance of the leveraging effect in addressing the global climate finance challenge was also emphasised by the AGF's (2010) report, which highlighted the role of public financing instruments in mitigating the risks of climate investments (AGF, 2010). What is needed is an exploration of how public money can be invested efficiently and wisely to leverage private sector involvement in low-emission investment, as well as a better sense of what leveraging actually means.

in the table below¹¹⁰, showing the dominant use of public sector channels to disburse bilateral funds.

¹¹⁰ The multilateral agencies included are: EU Institutions, IBRD, IDA, and the Nordic Development Fund. Data on the Netherlands is from 2008 as 2009 data was not available (OECD, 2011a).

Source-channel relationships could be investigated further to determine the types of partnerships being formed to deliver climate finance.

Table 2. Disbursement channels used by DAC countries and multilateral agencies in 2009

	Public sector	NGOs & Civil Society	Public-Private Partnerships (PPP)	Multilateral Organisations	Other	To be defined
DAC countries	78%	4%	1%	12%	6%	0%
Multilaterals	5%	2%	0%	3%	3%	88%

Source: OECD, 2011a

3.5 Recipients

Climate finance is directed toward both mitigation (energy efficiency, renewable energy, forestry and agriculture, transport, industrial processes, and waste) and adaptation (water management, sanitation, forestry and agriculture, health, fishing, disaster prevention and preparedness, and capacity building) activities. In line with Article 2 of the UNFCCC, the OECD DAC defines climate change mitigation-related aid as activities that contribute “to the objective of stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system by promoting efforts to reduce or limit GHG emissions or to enhance GHG sequestration”, while climate change adaptation-related aid is defined as 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” (OECD, 2010c).

There are few estimates available of the portion of total climate finance going to mitigation versus adaptation, or of the portions going to individual sectors of the economy. Sectoral data, where available, is instead spread across a range of different organizations that are each tracking different elements of the climate finance picture. This necessitates lengthy aggregation efforts in order to establish a macro picture. In addition, donors have independently developed their own sectoral

Mitigation activities attract the large majority of climate finance – USD 93 billion out of USD 97 billion. This is largely the result of significant capital investments in mitigation measures like renewable energy. REDD is also gaining its place, though it is still a tiny piece of the overall end use of climate finance. Adaptation receives USD 4.4 billion, primarily in the form of incremental cost payments.

Recipient	Annual Flow (2009/2010, USD bn)
Mitigation	92.5
- REDD	0.7 - 1.9
Adaptation	4.4

nomenclatures and criteria for defining whether finance is used to address climate change adaptation, mitigation, or traditional development objectives. As a result, there is considerable variability in reporting between donors, which renders comparisons and aggregations difficult.

The OECD CRS database allows users to extract sectoral totals for climate mitigation-marked data, as well as data split by purpose codes. Appendix F presents detailed data for 2009 for 21 DAC donors, plus EU Institutions, IBRD, IDA, and NDF. This data highlights the focus of finance on the transport and storage, general environmental protection, energy, water supply and sanitation, and forestry sectors.

The recent expansion of the OECD CRS Rio Marker system to incorporate an additional marker for Climate Change Adaptation will - from 2010 donor reporting onwards - provide a useful indication of the split between mitigation and adaptation funding.

The UNEP (2010) reports a 69:31 ratio between mitigation and adaptation in total climate finance channeled through AFD, JICA, KfW and the EIB in 2009. The report also includes a detailed sectoral breakdown for both mitigation and adaptation funding, showing that the former is focused on the energy (44%) and transport (40%) sectors (as well as providing policy loans), while the latter is focused on water supply and treatment (73%).

Bilateral financial support reported by Annex II Parties in the 5th National Communications for 2005-2010 is dominated by spending on mitigation: USD 12.4 billion compared to USD 1.9 billion for adaptation (UNFCCC, 2001a).

While carbon offset finance is directed entirely toward mitigation projects, a share of the proceeds from the Clean Development Mechanism provides the main source of funding for the Adaptation Fund.

Using information provided by climatefundsupdate.org, Project Catalyst (2010) estimates that more than 80% of climate fund commitments through the end of 2009 have been directed

toward mitigation (including REDD) and less than 20% to adaptation.

Finally, estimates from work commissioned by Development Bank of South Africa (DBSA) indicate that roughly 85% of global climate finance is directed to mitigation and roughly 15% to adaptation activities.

Overall, there is limited comprehensive data available on the split of finance provided in support of climate change mitigation versus adaptation, but the limited estimates that are available point to the dominance of spending on mitigation, including REDD. Recently, however, pressure has been mounting for donors to redress this imbalance, following numerous studies that have estimated the need for large-scale adaptation financing, particularly in the absence of stringent mitigation targets (see e.g. World Bank, 2010d and UNFCCC, 2008). The Commonwealth countries have already responded by pledging to allocate 50% of their climate finance to adaptation, 20% to REDD, and 30% to other mitigation activities.

The first attempt by the Conference of the Parties (COP) to address this imbalance came with the requirement to deliver 'Fast-start finance' with a "balanced allocation between adaptation and mitigation", including forestry. With the aim of increasing transparency, it also invited developed country Parties to submit information to the Secretariat on the resources used to fulfill their commitments, including the ways in which developing countries access these resources (UNFCCC, 2011b).

In the absence of a comprehensive data source on the volume of finance directed to mitigation and adaptation respectively, we estimate the allocation between the two by:

- aggregating the reports of individual BFIs and MFIs (including climate funds) on the portion of finance directed to each,
- assuming that all private finance outflows and carbon offset flows (including finance generated on the voluntary carbon

markets) are directed to mitigation, and

- assuming that philanthropic contributions are directed to adaptation.

Thus, we estimate that approximately USD 92.5 billion is spent annually on mitigation and USD 4.4 billion on adaptation (a ratio of 95%:5%).

The resulting estimates are shown in Table 3 and underline the overwhelming dominance of current spending on mitigation.

Finally, an attempt has been made to estimate the scale of climate finance currently being directed to Reducing Emissions from Deforestation and

Table 3. Estimated volume of mitigation and adaptation finance

Source	Total [^] (USD m)	Adaptation (%)	Mitigation (%)	Adaptation (USD m)	Mitigation (USD m)
Bilateral	22,767	16%	84%	3,641	19,127
Multilateral	14,361	3%	97%	475	13,886
Funds	2,492	3%	97%	65	2,428
Offsets*	2,250	0%	100%	0	2,250
Philanthropy**	450	47%	53%	210	240
Private finance	54,600	0%	100%	0	54,600
Total	96,920	5%	95%	4,390	92,531

Source: Climate Policy Initiative (CPI) analysis based on different sources

Notes:

[^]This column contains the mid-point of estimates where ranges exist.

* The Adaptation Fund is covered under the 'Funds' category and not under carbon offset flows.

**Philanthropy figure includes an estimated USD 240 million from voluntary carbon markets (OTC transactions).

forest Degradation, the sustainable management and conservation of forests, and the enhancement of carbon stocks (known as REDD+ schemes). REDD+ investment is needed both for the creation of an enabling environment (e.g. capacity and institution building and regulatory reform) and for the implementation of mitigation projects (e.g. compensation schemes, ecosystem restoration, programs to enhance industrial productivity, and programs to create alternative livelihoods). Current flows of REDD+ finance come largely from governments in the form of grants - to capacity building programmes, in particular - with smaller but growing contributions from NGOs, philanthropic, and private sector sources. Private sectors motivations include carbon market compliance and pre-compliance; Corporate Social Responsibility including voluntary carbon market participation.

Various sources of data on REDD+ financing are available, but these lack quality, consistency, and/

or completeness (Simula, 2010), which makes it challenging to estimate the overall volume of finance currently flowing to REDD+ activities. Selected estimates of bilateral, forest carbon market, and REDD+ fund flows are presented in Appendix G to give a sense of the possible scale of current annual commitments. The data suggest that current REDD+ flows could be in the region of USD 0.7 billion per annum. Other organizations have, however, produced larger estimates. The World Bank (2008), for example, estimated annual bilateral and multilateral flows to forests to be approximately USD 1.9 billion in 2005-07¹¹¹, and data reported by donors in the Voluntary REDD+ Database (VRD) suggests that funding

¹¹¹This represents an increase of almost 50% over 2000 levels, particularly due to increased multilateral activity, which accounted for USD 0.8 billion in 2005-07). In the same study, Foreign Direct Investment (FDI) to forest industries were estimated to be approximately USD 0.5 billion in 2003-05, however such flows are not necessarily related to mitigation activities.

could have been as much as USD 1.8 billion in 2010¹¹². Meanwhile, Simula (2010) estimates the cumulative REDD+ commitments to be USD 7.2 billion from 2008 onwards¹¹³. Simula (2010) also points to domestic funding as an important source of REDD+ implementation, citing reports by Cameroon, Honduras, Nigeria, and Papua New Guinea in the VRD database, as well as data from China that suggests that annual financing for afforestation and reforestation there could be as much as USD 10 billion.

While these flows are relatively small at present, particularly in comparison with various estimates of the scale of funding required for REDD+¹¹⁴, finance is expected to rise rapidly in the coming years with the development of various REDD+ mechanisms inside and outside the UNFCCC process.

¹¹²The Voluntary REDD+ Database (VRD) contains information on agreed and planned REDD+ funding, voluntarily submitted by countries and institutions, including both funders and recipients. Detailed annual data is not available. Reporting by recipients is much lower, at USD 0.85 billion in 2010, highlighting differences between pledges and disbursement.

¹¹³ This figure is largely based on the Voluntary REDD+ Database (VRD) where some commitments stretch as late as 2015, and includes USD 1.9 billion through multilateral activities, USD 0.4 billion through international and regional activities and USD 4.8 billion through bilateral activities. Simula also presents data on REDD+ related 'Fast-start finance' (during the period 2010-2012) bilateral commitments totaling approx. USD 4.3 billion.

¹¹⁴ The Eliasch Review (2008), for instance, estimates that USD17-33 billion per year would be required to achieve a 50% reduction in emission from deforestation by 2030.

Box VII. GEOGRAPHIC BREAKDOWN OF CLIMATE FINANCE RECIPIENTS

Note that a corresponding box on the geographic split of climate finance sources is presented in Section 3.1. For further data see Appendix H.

PRIVATE FINANCE

Our landscape includes two estimates of the scale of private finance: the first estimate is derived top-down using UNCTAD FDI data and the second estimate is derived bottom-up using BNEF renewable energy project data. No information on the destination of FDI flows is available in the UNCTAD data. The BNEF database typically reports the location of the project. Data available for 2010 flows points to the concentration of activities in a small number of large emerging economies: 68% of the renewable energy investments were located in China, 10% in Brazil and 5% in India.

BILATERAL FLOWS

It is difficult to obtain an overview of the different regions receiving bilateral funds due to variable geographic groupings used by different institutions in their reporting, particularly with respect to Asian regions. Our quick analysis therefore uses only one category for Asia which includes both China and India. The data shows that Asia (40%), Latin America (25%) and the MENA region (14%) were the dominant recipients of the 2009/2010 bilateral flows presented in this landscape paper. A more detailed analysis is required to bring together country level data reported in the OECD CRS database and by individual BFI.

MULTILATERAL FLOWS

Data on the geographic location of recipients can only be determined using a detailed bottom-up approach, surveying individual MDB (climate) finance reporting. While our study has not attempted to undertake a detailed review of the destination of multilateral climate finance, we do however estimate the following regional split based on data reported in the OECD CRS database for IDA, EU institutions, NDF and IBRD; in UNEP (2010) for the EIB, as well as assumptions about the recipients of EBRD (Europe and CIS region), AsDB (Asia), AfDB (Africa) and IDB (Latin America) funding. Difficulties are encountered in aggregating different geographic regions used by different institutions in their reporting. This data suggests that recipients are predominantly located in Asia (26%), Latin America and the Caribbean (23%) and Europe/Commonwealth of Independent States region (19%). Country level data is also available in the OECD CRS and IDB databases. For further data see Appendix H.

CARBON OFFSET FLOWS

Kyoto carbon offset flows are being captured by CDM and JI pipelines. Looking at those pipelines and offset issuances from the UNFCCC, it is possible to obtain additional information on the sources and destinations of those flows. Looking at carbon flow destinations, it is possible to determine, by looking at the pipelines, which countries hosted CDM or JI projects. UNEP-Risø CDM pipeline figures indicate that China hosts projects that will generate 55% of CERs by 2012, India 15%, Brazil 6% and South Korea 4%. Similarly, UNEP-Risø JI pipeline figures Russia hosts projects that will generate 52% of CERs by 2012 and Ukraine 28%.

4 Main actors tracking climate finance flows

A number of organizations track components of the climate finance landscape. Figure 3 provides an overview of who is currently tracking which areas; additional information is presented in Appendix E.

As reflected in the taxonomy we use to track climate finance, we want to understand who is tracking public and private climate finance, from the sources to the recipients. We also want to know who monitors whether the financial resources are being spent effectively – the final goal of climate finance. In addition, due to the importance of proper monitoring, reporting and verification (MRV) of climate finance, we also ask who is working on methodological issues related to this topic. Buchner et al. (2011) focuses on an MRV system for climate finance, and offers two proposals on how to build an integrated, comprehensive and consistent framework for such a system. To get a comprehensive understanding of who is active in tracking climate finance, we consider both actors who compile primary data

Many actors compile and collect data on climate finance, including countries, international institutions, international financial institutions, private institutions, non-profit research organizations, and the academic community. Most tracking efforts focus on the sources of climate finance. The closer one moves towards the final uses of climate finance, the less data is available. The biggest information gap relates to information on climate finance effectiveness.

and those who collect and verify primary data to make it more accessible and comparable to other data sources, in support of their analytical efforts.

Figure 3. Who is tracking what?

	Countries	International institutions	International Finance Institutions	Non-profit	Academics	Private
Track finance sources - public (\$)	Country governments, EC	OECD, UNFCCC, UNDP, UNEP (Riso, SEFI), Funds	✓	WRI, ODI/HBF, AidData, SEA Ecosystem Marketplace Project Catalyst, CDC, TCG, IGES	✓	Commercial data providers (e.g. Env Finance), McKinsey
Track finance sources - private (\$)	Sovereign Wealth Funds	UNEP (Riso, SEFI), UNFCCC, OECD, IMF, UNCTAD, CIA, Funds, Eurostat	✓	REN 21, CDC, IGES	✓	BNEF, Dealogic, DB, FT, PointCarbon, Env. Finance, GS, CRAs, CEA, McKinsey, Foundations, Pension Funds, Reuters
Track finance effectiveness			Sustainability reports of IFIs	CPI, TNC, ...	✓	

Source: Climate Policy Initiative (CPI)

Note: This table includes both actors who track the primary data of climate finance and those who collect, verify and analyze the data.

Public finance

Climate finance from public sources is the area where most data is available. A range of different organizations and actors tracks different parts of public climate finance.

Countries themselves, e.g. governments, and in the case of the European Union, the European Commission, are a first source of this data. Development agencies of governments, such as USAID or EURADA¹¹⁵, are a further resource for information.

International institutions such as the OECD, UN agencies such as the UNFCCC, UNDP, and UNEP as well as their initiatives (e.g., Risø and SEFI) are very important data sources, due to the connections they have to governments and international financial institutions. The International Monetary Fund (IMF), another UN agency, also keeps various data sets that are useful to the analysis of climate finance.

International financial institutions, including both bilateral and multilateral banks and agencies, are important sources of information, particularly due to the deep understanding they have of the characteristics of climate finance projects. Key players in this area are the World Bank and other MDBs, as well as bilateral and regional development banks.

Non-profit research organizations play an important role across the whole landscape of climate finance. They invest a lot of resources in working with publicly available data, collecting and verifying them, and putting data into comparable formats. Active players include the Heinrich Böll Foundation, ODI, Stockholm Environment Institute (SEI), the World Resources Institute (WRI), AidData, Project Catalyst (an initiative of the ClimateWorks Foundation), The Climate Group (TCG), Ecosystem Marketplace, and CDC Climat¹¹⁶. Organizations active in the develop-

ment aid space such as the Center for Global Development (CGD) are also a source of important information. The academic community adds to the work of non-profit research organizations across the landscape.

Finally, private organizations such as McKinsey and Environmental Finance also track parts of public climate finance.

Private finance

Private finance represents the largest share of financial flows by far. Given confidentiality issues – as well as definitional issues (e.g. FDI) – the real scale and details of private finance are hard to grasp; nonetheless, a range of organizations provide information on parts of private climate finance.

Private institutions are clearly in the best position to track private climate finance. Active players include Bloomberg New Energy Finance, Dealogic, Environmental Finance, Point Carbon¹¹⁷, Deutsche Bank, McKinsey and Goldman Sachs. Further sources of information are credit rating agencies (e.g., Standard & Poor's). However, much of the information collected is not publicly available.

International institutions shed some light on private climate finance flows. UNEP and its initiatives (e.g., Risø and SEFI) and IGES provide project data, while UNCTAD and OECD, collect mainly data on FDI.

In addition, OECD also tracks 'net private grants' provided internationally, but little is known about the objectives and recipient countries of these grants.

Multilateral and bilateral banks have information on the private co-financing of projects, thus providing information on an important piece of private climate flows.

dex; <http://www.project-catalyst.info/>; <http://www.theclimategroup.org/>; <http://www.ecosystemmarketplace.com/>; <http://www.cdclimat.com/>.

117 Web sites: www.bnef.com/; www.dealogic.com/; www.environmental-finance.com/; www.pointcarbon.com/. Additional efforts to be mentioned include, for instance, California Environment Associates (CEA) (<http://www.ceacon consulting.com/>).

115 The European Association of Development Agencies (EURADA) has a membership of about 150 regional development agencies from across the European Union. Agencies from almost all the Member States of the EU are EURADA members.

116 Web sites: <http://www.boell.de/>; <http://www.odi.org.uk/>; <http://sei-international.org/>; www.wri.org/; <http://www.aiddata.org/home/in->

Additional information resides with large investors such as Sovereign Wealth Funds (which are state-owned investment funds that invest globally) or pension funds (which are important shareholders of listed and private companies) or might be found in government or financial market regulators such as the UK Financial Services Authority.

Finally, non-profit research organizations such as CDC Climat and REN21 collect project-level data while academics gather private finance data. For example, international business schools usually have many case studies on private investments.

The effectiveness of climate finance

The effectiveness of climate finance is an area that has received less attention than the overall tracking of public and private finance flows. The exceptions are sustainability reports of multilateral and bilateral finance institutions, such as a recent report by the Independent Evaluation Group of the World Bank Group (IEG, 2010).

In addition, non-profit organizations (e.g. The Nature Conservancy) and the academic community provide bottom-up case studies on some specific climate finance flows. EDF, Brookings, CPI, and the Overseas Development Institute are currently collaborating on a landscape review of climate finance effectiveness methodologies, applied across a range of private and public actors (report forthcoming in 2011).

Increasing awareness of the importance of climate finance effectiveness is also manifested in the recent efforts of a number of countries and multilateral institutions to add this issue to the agenda of the High Level Forum on Aid Effectiveness, which will take place in Busan in late November 2011, and manifested in forthcoming climate finance effectiveness work by the OECD and AfDB on several country case studies¹¹⁸.

¹¹⁸ See the following web site http://www.oecd.org/document/12/0,3746,en_2649_3236398_46057868_1_1_1_1,00.html for additional information.

MRV of climate finance

The monitoring, reporting, and verification of climate finance are critical to ensure consistent and transparent data; it is currently approached in a piece-meal, inconsistent way. Several organizations are working on methodological issues in order to improve this system.

International organizations such as the OECD and IEA (through the DAC and the Climate Change Expert Group¹¹⁹), multilateral as well as bilateral finance institutions that conduct their own MRV, non-profit research organizations such as WRI, the International Institute for Environment and Development (IIED)¹²⁰, AidData, SEI, the PEW Center on Global Climate Change, and academics, are active in this area.

A significant number of organizations are now tracking the various components of climate finance, partly due to an increase in efforts over the last years. However, much more is needed to bring these pieces together and produce a more consistent, comprehensive, and transparent picture of climate finance.

¹¹⁹ Climate Change Expert Group (CCXG) on the UNFCCC, more detailed information are available at the following web site: http://www.oecd.org/document/44/0,3746,en_2649_34361_1904108_1_1_1_1,00.html.

¹²⁰ IIED web site, available at: <http://www.iied.org/>.

5 The main issues in tracking and assessing climate finance

The analysis of current climate finance flows has generated a number of key insights. It has also highlighted the gaps and challenges involved in gaining a good overview of the climate finance landscape. This section summarizes the four main issues in tracking and assessing climate finance that emerged from this exercise.

Issue 1: The complex nature of climate finance and lack of agreed-upon definitions hamper tracking efforts

The complex nature of climate finance

The nature of the emerging climate finance system is complex. There are a number of dimensions that add to this complexity, including:

- Direction of flows: North-South, South-South, domestic versus international
- Status: Commitment versus disbursement
- Nature of flows: incremental cost versus investment capital
- Terms of flows: net versus gross flows
- Multiple sector of activity: public finance, development banks, private capital, carbon finance
- Multiple uses: mitigation versus adaptation, REDD+ as an emerging additional category
- Multiple instruments: grants, market based instruments, debt, equity

Additional complicating factors are the political economy of climate finance and how various forms of finance are packaged together to realize individual activities. The categories of instruments are also not always clear-cut due to the nature of flows (i.e., incremental costs can be covered through a variety of instruments). These many dimensions mean that a significant amount of information is needed to judge whether money is being directed to the most productive uses, complicating the

The picture of climate finance remains patchy. The lack of comprehensive information on climate finance is an impediment to negotiation, analysis and improvement of climate finance. The biggest gap in today's climate finance landscape is related to information on climate finance effectiveness.

tracking effort. Lack of an internationally agreed-upon definition of climate finance

There are significant inconsistencies in the labeling and definition of climate finance throughout the finance lifecycle. The main differences relate to how 'climate-specific' and 'climate-relevant' finance is labeled in databases and reports, how multilateral and bilateral finance is defined (e.g. whether actors are labeled as influencing the purpose of the transaction or only as an intermediary delivery channel), the status of climate finance tracked (e.g. pledged amounts versus committed amounts versus disbursed amounts), and whether it is possible to clearly identify mitigation or adaptation as the end use of specific projects and technologies. It is important to understand each system's caveats to ensure the best use of the available data (cf. Buchner et al., 2011). This can often involve making judgments. As such, caution needs to be applied when comparing or aggregating data.

A harmonization of labeling used by actors who are directly engaged in and thus have a better understanding of the relevant support (e.g. bilateral and multilateral institutions or research organizations that put a lot of effort into this area), could provide a more accurate picture of climate finance. Indeed, there is no agreed-upon methodology for tracking the share of funding dedicated to mitigation and adaptation – and often it is challenging to disentangle development and climate spending (partic-

ularly in the context of adaptation)¹²¹.

A further area that requires more work to move towards enhanced climate finance effectiveness is the definition of effectiveness itself. In particular, it would be useful to understand how 'effectiveness' could be defined along numerous levels and dimensions, taking into account the motivations and incentives for the climate finance flows. Linking the purpose and impact of the various flows to the objective(s) deemed relevant for effectiveness would improve the understanding of climate finance effectiveness and result in better advice for policymakers and stakeholders.

Issue 2: The various objectives of climate finance tracking efforts complicate the analysis

There are a number of different objectives driving the need to track climate finance flows, some of which require different types of analytics. These various objectives for tracking climate finance include:

- Creating transparency in the overall system, to get a consistent, comparable and accurate overview of climate finance flows, trends, directions and purposes;
- Tracking public finance commitments as well as disbursements, to enable accountability about how countries are collectively and individually progressing;
- Assessing the extent of climate action, to understand our collective progress towards a low-carbon, climate-resilient future and to build trust amongst countries;
- Assessing the effectiveness of specific climate finance mechanisms/instruments/projects;
- Assessing the effectiveness of spending, to help countries to use available financial resources more productively and thus to direct them more efficiently;

¹²¹ Note that the OECD Rio Markers provide an approximate way of quantifying the contribution of funding to address climate change, allowing for multiple goals, which in the light of the broader goal of green growth also has its rationale.

- Facilitating learning, by providing needed information in a timely manner and identifying where progress could be made.

The multiple objectives of climate finance tracking require different levels of information and lead to different tracking systems. To understand whether the various objectives are being met and to increase the ability to effectively plan, resource, and report on climate interventions, different types of analysis are required, complicating the undertaking of tracking and gleaned lessons on how to spend resources wisely.

Issue 3: While there is a wealth of data on elements of the climate finance landscape, there is limited coordination and some gaps in data gathering.

Many organizations are tracking aspects of the climate finance picture, developing both databases and reports. These organizations are aware of the challenges related to the availability and quality of data and have engaged in various efforts to improve estimates of selected flows. These efforts have accelerated since the Copenhagen conference.

Individual components of a comprehensive tracking system reside in several UN and non-UN sources, including the UNFCCC, the OECD, MDBs, UNCTAD, research bodies, and the private sector.¹²² However, many flows are not systematically measured, reported, or verified, and the granularity and consistency in which the details are tracked varies (cf. Buchner et al., 2011). There is also a lack of systematic coordination among the various systems, where several existing systems overlap and existing systems are sometimes inconsistent. As a result, information on the extent

¹²² International financial institutions including both bilateral and multilateral organizations have the granular information that helps clarify the scale and characteristic of finance that flows through these intermediaries. Note that only a selection of data based on reporting by these institutions is currently included in our estimates, additional ones could significantly improve the quality of our estimates, also by shedding light on the extent of the leverage effect. Moreover, this measure could help clarify the contribution of global capital markets to climate finance through bilateral and multilateral agencies and climate funds, which has not yet been quantified due to data availability difficulties

of support is difficult to access and interpret.

Centralized reporting systems do not exist, even for public finance data and, as mentioned, available data is not consistent or regularly reported. There is no integrated international system for storing and accessing financial data. Sometimes, there is also an overlap in and inconsistency of existing systems, due to differing approaches to tracking financial flows. The picture of climate finance thus remains very patchy and the lack of comprehensive information on all climate finance sources is an impediment to negotiation, analysis and improvement of climate financing, potentially slowing the delivery of additional climate interventions.

Issue 4: Several information gaps impede a better understanding of what is needed to enhance the effectiveness of climate finance

Private finance plays a crucial role, but data is lacking

In the overall landscape of climate finance, private capital far outweighs public finance. However, estimating private climate investment using existing sources proves to be difficult. The lack of consistent data on private climate finance flows, often due to confidentiality requirements and the existence of scattered, private initiatives that provide limited access to information make it particularly difficult to measure the volume and effectiveness of these flows.

An additional complicating factor relates to the issue of leveraging finance. While there is broad consensus on the need to leverage the extent of private sector involvement, the term 'leverage' is used loosely. There is uncertainty about how best to leverage and how to quantify its extent and therefore a need to get a better sense of what leveraging actually means.

Climate finance flows in many directions; domestic and "South-South" flows, which are sometimes difficult to track, are increasing in importance

The role of developing countries' flows in climate

finance has significantly increased over time. Most of the costs of moving towards green growth will be borne by individual developing nations, many of whom are already directing national public funds to climate issues, primarily for economic development reasons. This evolutionary change in the traditional North-South paradigm is also evidenced by the recent proliferation of national public funds related to climate issues.

However, due to difficulties in obtaining the necessary data, limited information has been included so far on flows from developing countries (i.e. both South-South flows and domestic flows including policy support, direct financing, and co-financing of internationally supported projects).

To understand the overall adequacy of finance against the challenge of long-term decarbonization, domestic and "South-South" flows must be considered alongside the traditional "North-South" flows. Along the same lines, direct budget contributions will become increasingly important in the future and must be considered in tracking climate-relevant flows¹²³.

The biggest gap - information on climate finance effectiveness

The international community has a very limited understanding of the effectiveness of climate finance efforts for a number of reasons: there is a lack of aggregated data, particularly at the instrument, disbursement, and use levels, making it difficult to quantify finance near end use; there is a lack of baselines for climate finance, so it is difficult to assess whether funding is sufficient; and evolving

¹²³ In 2010 the International Budget Partnership (IPB) through its Open Budget Initiative published the "Open Budget Survey", a broad and comprehensive survey that evaluates budget transparency and accountability around the world. The report shows that national budgets of 74 out of 94 countries assessed, did not meet basic standards of transparency and accountability, giving room for inappropriate and inefficient use of public resources.

The IPB is a global initiative that collaborates and actively engages with the civil society in order to increase budget transparency and accountability hence, ultimately, improve governance and outcomes. On the organization web site (<http://internationalbudget.org/i>) are available case studies that highlight budgeting-related issues and undertaken actions.

goals of climate finance complicate questions about whether funds are 'additional.'

Most importantly there is a lack of information on the disbursement and end uses of finance. Commitments are likely to be considerably higher than annual disbursements, particularly because committed amounts often disbursed over a number of years. In addition, commitment data are usually not adjusted ex-post for cancellations or amendments to the value of support provided, leading to potential overestimates of financial amounts¹²⁴. This calls for better monitoring of disbursed climate finance to understand how donors' commitments translate into action. The lack of adequate and consistent data on disbursed finance flows and on end use projects is a barrier to understanding where and how finance is being spent. These challenges are reinforced by a limited understanding of what constitutes effective climate finance, as indicated above. As a consequence, efforts to track and evaluate climate finance effectiveness have been limited and fragmented.

The lack of baselines for climate finance also makes evaluations of the sufficiency of countries' climate funding very challenging. A particularly controversial issue in this context relates to the interface between ODA and climate finance in setting the baseline, i.e. whether climate finance flows can be considered 'additional' if a country's ODA commitments have not yet been met. However, the question of whether finance counts for development or for climate change seems to be obsolete in light of the need to fold climate change into national plans, as part of countries' development agenda and the integration of climate risk and opportunities. These issues, which are embodied in the emerging green growth paradigm, call for a re-conceptualization of ODA and focus on total investment needs rather than incremental costs or additional investment.

¹²⁴ For example, guarantees and lines of credit may not be called upon and as such present an overestimate when considered on a commitment basis.

6 Conclusions

A comprehensive picture of overall climate finance flows is essential for the success of international climate policy. Understanding how much and what type of finance is being made available to support low-carbon, climate-resilient development, how finance corresponds to countries' needs, and how funds are being spent, is critical to building trust among countries and ensuring that money is being spent wisely.

This study provides a snapshot of the current climate finance landscape, describing ongoing efforts and activities related to climate finance, reviewing existing databases and initiatives that track finance flows, and categorizing and evaluating these efforts and databases. To harness what is already being done, we draw on a wide variety of these tracking initiatives and information systems to estimate the possible scale of current finance flows, mapping the spending path from sources through the intermediaries and instruments to end uses and making the data comparable wherever possible.

This effort suggests that close to USD 97 billion per annum of climate finance is currently flowing to developing countries¹²⁵, with more than half coming from private sources. While climate finance is clearly flowing, its exact scale is hard to quantify and it is difficult to link finance flows to actual end uses and results. The fragmentation in today's tracking systems and the resulting lack of comprehensive information on all climate finance flows is an impediment to negotiation, analysis and improvement of climate finance.

Next steps

To address the gaps and four key issues emerging from this analysis, several actions are needed, most importantly to enhance the understanding of the effectiveness of climate finance efforts. The following action items call for priority treatment.

¹²⁵ Including predominantly North-South flows in 2009/2010.

Improve the definition of climate finance

To improve standardized tracking of international climate finance flows, efforts should aim for consistency in reporting years, clear definitions of climate finance, spanning both public and private sources, and a better understanding of instrument categories. This calls for a more frequent update of climate finance tracking across the landscape and collaboration across actors, including donors and recipients. While consensus on one definition is unlikely given the various goals and specific circumstances, transparency on definitions used and best practice sharing is needed.

Clarify the objectives of tracking climate finance

To enable the most appropriate and comprehensive analytical and data-gathering work, current tracking systems need to be mapped to countries' goals, including effectiveness, efficiency, transparency, and accuracy.

Move towards a more comprehensive system of monitoring, reporting and verification (MRV)

There is no integrated, comprehensive system for storing and accessing financial data, and monitoring systems call for improvements¹²⁶. A comprehensive picture of climate finance may not be possible unless the entire spectrum of climate finance is included in reporting and information systems, going beyond the current focus on public finance to also cover private sector finance and include the many details of bilateral and multilateral contributions.

To address the large uncertainties surrounding estimates of the magnitude of existing climate finance flows, a comprehensive, transparent and reliable MRV framework for climate change finance is needed, building upon existing information systems and reporting mechanisms.

¹²⁶ Buchner et al., (2011) analyze today's various information systems and suggest straw man proposals to advance a more rigorous, transparent and comprehensive climate finance tracking system.

The recent decisions in the Cancún negotiations contain several elements of a more comprehensive MRV framework, such as enhanced reporting requirements for both donors and recipients of climate finance, but to substantially improve the understanding of the climate finance landscape, there is a need to:

- track finance flows from source to final use to enhance traceability and transparency;
- provide advice on the development of straw man proposals on how organizations engaged in climate finance tracking could join forces to improve the consistency, comprehensiveness and overall quality of data (see Buchner *et al.*, 2011);
- improve the currently weak verification of reported financial flows¹²⁷;
- provide a platform to bring existing tracking initiatives together in order to cover the whole spectrum of climate finance.

Address the major information gaps

Shed light on the scale of private finance

Private finance provides the majority of low-carbon investments, but its exact scale is hard to measure due to methodological and confidentiality issues. To help understand the role of private finance, there is a need to:

- develop proxies¹²⁸ to measure the scale of private finance;
- improve the representation of private flows in tracking initiatives¹²⁹;

¹²⁷ Buchner *et al.* (2011) point to various options that exist to advance this situation, including (i) an appropriate design of the new vehicles introduced in the Cancún Agreements – e.g., the registry and the enhanced review of national communications, (ii) the design of review procedures based on experiences in the context of Annex I national communications and GHG inventories, and (iii) lessons from information sources that reside outside the UN system, such as the OECD DAC CRS.

¹²⁸ For example, the Carbon Disclosure Project provides valuable information by disclosing voluntary company data.

¹²⁹ Buchner *et al.* (2011) suggests as a first step to extend existing reporting to include a basic reporting of private climate finance. A minimum level of information could be ensured by requesting public finance sources to report on leveraging ratios and by streamlining the reporting on finance flowing through carbon markets and by system-

- engage the private sector to disclose what they can; and
- get a better sense of what leveraging actually means.

Improve tracking of domestic and “South-South” flows

Domestic and “South-South” flows are essential to ensure progress towards a low-carbon, climate-resilient development future. To this end, stronger tracking efforts are required to appropriately highlight their scale. There is a need to:

- include domestic and South-South flows in the definition, tracking, calculation, and evaluation of climate finance;
- encourage and support developing countries to track their influx of climate-related finance, as well as expenditure¹³⁰;
- explore ways of designing public funds that are effective and ensure complementarity of international and national flows;
- pay more attention to tracking direct budget contributions.

Improve the understanding of climate finance effectiveness

The biggest gap in today’s climate finance landscape is the lack of a sound understanding of how effectively financial flows are being used, and whether they address the challenges posed by climate change and the needs of countries. To address this gap, there is a need to:

- develop common methodologies for calculating disbursement data at the recipient end of climate finance and for assessing the effectiveness of finance;
- encourage organizations to broaden their tracking initiatives to systematically embrace disbursement data;
- enhance the absorptive capacity of recipient countries in order to ensure an

atically tracking FDI flows that are indisputably green e.g. renewable energy, energy efficiency and waste management projects.

¹³⁰ In this context, there is the need to invest in creating and strengthening institutional capacity for tracking, as is for example fostered in UNEP’s Fit for Funds initiative. For more information see http://fs-uneep-centre.org/sites/default/files/project/1/ncfisp-june_0.pdf

effective and efficient allocation of climate finance in countries; and

- build up an evidence-based, bottom-up database of success and failure stories related to climate finance.

Rigorous monitoring and reporting can aid learning, planning and budgeting at the country level and drive effectiveness improvements.

Towards an effective balance of public and private capital

Against the background of financing needs, our estimate of current climate finance suggests that more is needed. To unlock sufficient climate finance for a low carbon, climate resilient transition, it is essential to understand the optimal balance is between public and private capital.

The private sector already provides the bulk of the infrastructure investments essential to the transformation of the energy and land use systems that drive climate risks, and is expected to contribute even more in the future. Public, multilateral, and bilateral sources are vital complements to these private flows and, given their scarcity, need to be used skillfully to ensure maximum impact, often in combination with private flows and policy reforms led by host governments.

To spend public money so that it leverages low emission investment from the private sector, there is a need to:

- identify the **reasons for investment of public financial resources to better direct its use** (i.e., identify those risks that should reside with the public and those which should reside with the private sector, and understand how the scale of these risks depends on the nature of the investments);
- understand **the best instruments for delivering public finance**, against these motivations (i.e., identify ways of risk-sharing, including innovative public policies and mechanisms such as export credits, government-funded green investment banks, national development banks, public-private partnerships, and other types of insurance or guarantees

that may be better aligned with the goals for public funding);

- comprehend **how international and national public investment flows align with each other and with private investments**, to best support country needs and achieve the most effective balance of different financial resources; and
- **ensure learning from these flows and current financing structures for use in new vehicles at national, sub-regional and global levels**, including the Green Climate Fund.

A better understanding of these issues can provide a proxy of the optimal scale of climate finance, indicating how much public money is needed to put the world on a pathway towards a low-carbon, climate-resilient future.

This study highlights a wide range of funds, funding programs, and investments related to “green” objectives. This variety is essential to have competition amongst funding models and learn the lessons from ongoing financing practices. Valuable insights about different ways of injecting public money and about different options of aligning public and private incentives in the portfolio composition, governance, and implementation are emerging, showcasing instruments that align incentives, manage risks, and coordinate among a number of actors over time. To ensure learning from this experimental phase, we must apply new thinking to glean lessons from the evolving practice in the field and explore how knowledge can be best shared and exchanged.

The role of CPI in the climate finance landscape: helping decision-makers spend their money wisely

October 2010 marked the beginning of the CPI Climate Finance Project, based in Venice. As climate finance issues will not be solved at the technical level alone, the project's goal is to provide analysis on climate finance for policymakers and the private sector, to help them make the best decisions in support of low-carbon growth.

The success of international climate policy depends on how much and what type of finance is available to support low-carbon, climate-resilient development. CPI seeks to address the question of whether international green, low-emissions finance is adequate and productive.

The CPI Climate Finance Project focuses on:

- **Landscaping and categorization** of activities related to green, low-emissions finance
- **Evidence-based analysis of the effectiveness and productivity of international finance flows**
- **Events** bringing together public and private sector actors in climate finance to share information and increase collaboration

Its added value is:

- **Breadth.** We work across the range of funds, funding mechanisms, and intermediaries around the world.
- **Depth.** We look at the entire value chain, from the sources of funds to the execution and implementation of projects.
- **Real-time learning.** We provide decision makers with timely feedback on what works and what doesn't.
- **Incentive alignment.** We explore how public policies support private investment.

- **National and international flows.** Our work helps to ensure an efficient, globally integrated allocation of funds.

Our findings will also be used to improve existing funding instruments and inform the development and implementation of new vehicles, such as the Green Climate Fund.

Index of acronyms

AAU	Assigned Amount Unit
AsDB	Asian Development Bank
AF	Adaptation Fund
AFD	Agence Française de Développement
AfDB	African Development Bank
AGF	High-Level Advisory Group on Climate Change Financing
AusAID	Australian Agency for International Development
BFI	Bilateral Financial Institution
BNDES	Brazilian Development Bank
BNEF	Bloomberg New Energy Finance
CCXG	Climate Change Expert Group
CDC	Caisse des Dépôts
CDM	Clean Development Mechanisms
CEA	California Environmental Association
CER	Certified Emissions Reductions
CGD	Center for Global Development
CIF	Climate Investment Fund
CRS	Creditor Reporting System
DAC	Development Assistance Committee
DB	Deutsche Bank
DBSA	Development Bank of South Africa
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
ERPA	Emission Reduction Purchase Agreement
ETS	Emission Trading Scheme
EU	European Union
EU ETS	European Union Emissions Trading System
EURADA	European Association of Development Agencies
FCPF	Forest Carbon Partnership Facility
FDI	Foreign Direct Investment

FTT	Financial Transaction Tax
GCCA	Global Climate Change Alliance
GEEREF	Global Energy Efficiency and Renewable Energy Fund
GEF	Global Environmental Facility
GHG	Greenhouse Gas Emissions
HBF	Heinrich Böll Foundation
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
IFI	International Financial Institutions (we include both bilateral and multilateral institutions)
IGCC	International Center for Climate Governance
IGES	Institute for Global Environmental Strategies
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
JI	Joint Implementation
JICA	Japan International Cooperation Agency
JVETS	Japan Voluntary Emissions Trading Scheme
KFW	KFW Entwicklungsbank (German Development Bank)
LDCF	Least Developed Countries Fund
MDB	Multilateral Development Bank
MFI	Multilateral Financial Institution
MRV	Measurement Reporting and Verification
NDF	Nordic Development Fund
NFE	National Funding Entities
NZ ETS	New Zealand Emission Trading Scheme
ODA	Official Development Assistance
ODI	Overseas Development Institute
OECD	Organization for Economic Co-operation and Development

OTC	Over-the-Counter
PES	Payment for Ecosystem Services
PPA	Power Purchase Agreement
pCER	Primary Certified Emission Reduction
REDD	Reducing Emissions from Deforestation and Forest Degradation
REN21	Renewable Energy Policy Network for the 21st Century
RGGI	Regional Greenhouse Gas Initiative
SCCF	Special Climate Change Fund
SDR	Special Drawing Rights
SEI	Stockholm Environment Institute
TCG	The Climate Group
TNC	The Nature Conservancy
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP-Risø	United Nations Environment Programme Risø Centre on Energy, Environment and Sustainable Development
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-Added Tax
VER	Voluntary Emissions Reductions
WB	World Bank
WRI	World Resource Institute

Glossary of terms

Additionality	<p>Within the climate finance context, 'additionality' refers to financial resources raised for climate change objectives which are over and above funds that governments earmarked for other objectives. The 'additionality' criteria aims to ensure that climate finance does not substitute or divert funding intended for other purposes such as economic and social development.</p> <p>Operationally, it refers to financing above and beyond the ODA target (Brown et al., 2010a; UNDP, 2011).</p> <p>Particularly in the context of 'Fast-start finance', donor have come under scrutiny as to whether their climate finance contributions are 'new and additional' - that is, over and above previously pledged aid commitments.</p>
Annex I	Industrialized countries that were members of the OECD in 1992, plus countries with economies in transition, including the Russian Federation, the Baltic States, and several Central and Eastern European States are included in the Annex I of the UNFCCC.
Concessional loan	In line with the ODA definition by the DAC, a concessional loan is characterized by a grant element above 25% and with concessional interest rates. They also present longer repayment periods than typical or standard market or multilateral loans and are generally provided to poorest countries. Concessional loans and guarantees are also provided to the private sector by the private sector arms of the MDBs using funding from the climate funds.
CRS	The Creditor Reporting System is the DAC database on 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.
EA	Enabling Activities: activities to help countries prepare national strategies and action plans in fulfillment of their obligations to global environmental standards.
ERPA	Emission Reduction Purchasing Agreement - ERPA, is the agreement governing the sale and purchase of project-based emission reduction credits.
Export Credit	Loans or loan guarantee designed for the purpose of trade, and which are not represented by a negotiable instrument.
'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.
GEF	<p>The Global Environment Facility is an independent financial organization that provides grants and concessional loans to developing countries and countries with economies in transition (UNDP and World Bank-eligible countries) for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.</p> <p>The GEF would provide new and additional grants and concessional funding to cover the 'incremental' or additional costs associated with transforming a project with national benefits into one with global environmental benefits.</p>
Grant	Transfers made in capital, goods, or services for which no repayment is required.
Green Investment Scheme	Green Investment Scheme (GIS) is a mechanism developed in the framework of the Emission Trading scheme for 'greening' AAUs, i.e. recycling revenues from the sale of 'hot air' AAU carbon allowances into projects that further reduce emissions. 'Greened' AAUs are in fact intended to address concerns that the former Soviet bloc of Countries would sell the so-called 'hot air' allowances to companies and government without taking steps to reduce emissions.

Incremental Cost	Incremental costs refer to financial resources provided to cover the difference between a less costly, more polluting option and a costlier, more environmentally-friendly and/or climate-resilient one. Incremental costs are like revenues to recipients, as opposed to capital investment which refers to tangible investment in mitigation or adaptation projects that needs to be paid back.
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.
Non-Annex I	Mostly developing countries. Certain groups of developing countries are recognized by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures.
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.
OOF	Other Official Flows represent transactions by the official sector with countries on the DAC List of ODA Recipients which do not meet the conditions for eligibility as Official Development Assistance, because they have a grant element of less than 25% or because they are not primarily aimed at development.
PES	Mercer, Cooley and Hamilton (2011) defined PES as: "Formal and informal contracts in which landowners are remunerated for managing their land to produce one or more ecosystem service; PES transactions must consist of actual payments between at least one willing buyer and one willing seller to produce or enhance a well-defined ecosystem service or bundle of services".
PPA	Power Purchase Agreements are contracts between two parties: one who generates electricity for the purpose of sale (the seller), and one who is looking to purchase electricity (the buyer). There are various forms of Power Purchase Agreements—these are differentiated by the source of energy harnessed (e.g., Solar, wind, etc.).
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: <ul style="list-style-type: none"> • 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.
Special Drawing Rights (SDRs)	Special Drawing Rights is an international reserve asset created by the IMF to supplement its member countries' official reserves. Their value is derived from a basket of four key international currencies: US Dollar, the Euro, the Japanese Yen and the UK Pound. IMF allocates SDRs to member countries in proportion to their quotas, which are based on a country's relative weight in the world's economy (IMF),
Transaction Costs	Transaction costs are charges levied by intermediaries in return for financial services. The Adaptation Fund for example caps implementing entities' management fees at 8.5% of total costs.

References

- Adaptation Fund Ethics and Finance Committee Fourth Meeting (2011), "Financial Status of the Adaptation Trust Fund (as at 31 January 2011), prepared by the World Bank as Trustee for the Adaptation Fund, Agenda Item 11 a), March 10, 2011AFB/EFC.4/10/Rev.2.
- AFD (2011a), "Results and Lessons Learned from AFD's Operations in the Fight Against Climate Change from 2005 to 2010", internal document.
- AFD (2011b), "The Commitments of the AFD Group in the Fight Against Climate change: 2010 Results", DTO/Climate Unit, internal document.
- African Development Bank (2010), Annual Report 2010, Tunisia, <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Annual%20Report%202010%20EN.pdf>
- AGF (2010), "Report of the Secretary-General's High-level Advisory Group on Climate Change Financing", United Nations, New York, November 2010.
- Alberola E., Stephan N., (2010), "Carbon Funds in 2010: Investment in Kyoto Credits and Emissions Reductions", CDC Climate Research, Climate Report No. 23, May 2010.
- Asian Development Bank (2011), "Annual Report 2010", Manila, available at: <http://beta.adb.org/documents/adb-annual-report-2010>
- Atteridge A., Kehler-Siebert C., Klein R.J.T., Butler C., and Tella P., (2009), "Bilateral Finance Institutions and Climate Change: a Mapping of Climate Portfolios", Stockholm Environment Institute, Working Paper, Stockholm, November 2009.
- Ballesteros A., et al., (2009), "Power, Responsibility and Accountability: Re-thinking the Legitimacy of Institutions for Climate Finance", Working Paper, World Resources Institute, Washington DC, available at: <http://www.wri.org>.
- Bloomberg NEF (2011), "The Past and Future of Development Bank Finance to Clean Energy Projects", Clean energy Research Note, April 2011.
- Bloomberg NEF (2011a), "Towards a Green Climate Finance Framework", White Paper, 1 September 2011.
- Bretton Woods, 14 June 2011, "BP cash for World Bank Forest Fund", available at: <http://www.brettonwoodsproject.org/art-568572>
- Brown J., et al., (2011), "Leveraging Climate Finance: a Survey of Methodologies", Climate Finance Effectiveness Background Paper (forthcoming).
- Brown J., Bird N., and Schalatek L., (2010a), "Climate Finance Additionality: Emerging Definitions and Their Implications", Overseas Development Institute and Heinrich Böll Foundation, Climate Finance Policy Brief No. 2, June 2010.
- Brown J., Bird N., and Schalatek L., (2010b), "Direct Access to the Adaptation Fund: Realizing the potential of National Implementing Entities", Overseas Development Institute and Heinrich Böll Foundation, Climate Finance Policy Brief No. 3, November 2010.
- Buchner B., Brown L., Corfee-Morlot J., (2011), "Monitoring and Tracking Long-Term Finance to Support Climate Action", OECD, COM/ENV/EPOC/IEA/SLT(2011)3.
- CEA (2007), "Design to Win. Philanthropy's Role in the Fight against Global Warming", California Environmental Associates, San Francisco, August 2007, available at: http://www.climateactionproject.com/docs/Design_to_Win_8_01_07.pdf.
- CEC (2011), "La taxe carbone: de la théorie à la pratique. Les problématiques liées à l'instauration d'une taxe carbone", Chaire Economie du Climat, Université Paris-Dauphine CDC Climate, FLM No. 20,

- February 2011, available at: <http://www.chaireeconomieduclimat.org/wp-content/uploads/2011/02/11-02-12-FLM-n20-Elbeze-De-Perthuis.pdf>.
- Colitt R., (2010), "Interview Brazil to Create Climate Fund, technology for poor", Reuters, Jan 21, available at: <http://in.reuters.com/article/businessNews/idINIndia-45586820100121?pageNumber=2&virtualBrandChannel=0&sp=true>.
- Corfee-Morlot J., Guay B. and Larsen K.M., (2009), "Financing for Climate Change Mitigation: Towards a Framework for Measurement, Reporting and Verification", OECD/IEA Information Paper, Paris, October 2009.
- CPI (2010), The State of International Climate Finance: Is It Adequate and Is It Productive?, Climate Policy Initiative, Venice, available at: <http://clmtp.ic/state-of-climate-finance>
- DBCCA (2010a), "GET FIT Program. Global Energy Transfer Feed-in Tariffs for Developing Countries", DB Climate Change Advisors, Deutsche Bank Group, April 2010.
- DBCCA (2010b), "Global Climate Change Policy Tracker", DB Climate Change Advisors, Deutsche Bank Group, March 2010.
- Deutsche Bank Group (2011), "Global Climate Change Policy Tracker. The Mega-Trend Continues: Exploring Risk & Return, February 2011.
- Diaz D., Hamilton K. and Evan J., (2011), "State of the Forest Carbon Markets 2011: From Canopy to Currency, Ecosystem Marketplace", available at: http://www.forest-trends.org/publication_details.php?publicationID=2963
- Dutschke M. and Wertz-Kanounnikoff S., (2008), "Financing REDD: Linking Country Needs and Financing Sources", CIFOR Info Brief No. 17.
- EBRD (2011), "Annual Report 2010", available at: www.ebrd.com/annualreport.
- EC (2010), "Innovative Financing at a Global Level", Commission Staff Working Document, European Commission, Brussels, SEC (2010) 409 final.
- EC (2011), "Scaling up International Climate Finance After 2012", Commission Staff Working Document, European Commission, Brussels, SEC (2011) 487 final.
- Economist (2010), Brazil's Foreign-Aid Programme, "Speak Softly and Carry a Blank Cheque", available at: <http://www.economist.com/node/16592455>
- Economist (2011), Official Development Assistance, "Aid 2.0, India is thinking about setting up its own aid agency. Why should others give aid to India?" available at: <http://www.economist.com/node/21525899>.
- Ecosoc (2008), "Trends in South-South and Triangular Development Cooperation". Background Study for the Development Cooperation Forum, United Nations Economic and Social Council (ECOSOC), April 2008.
- Ecosystem Marketplace (2011), "Back to the Future. State of the Voluntary Carbon Markets 2011", Bloomberg New Energy Finance and Ecosystem Marketplace.
- EEA (2009), "Application of the Emissions Trading Directive by EU Member States - reporting year 2008", EEA Technical report No. 13/2008, Copenhagen, Denmark.
- Eliasch Review (2008), Climate Change: Financing Global Forests", Crown, UK.
- Ellis J., et al., (2010), "Options to Revise Reporting Guidelines for Annex I and Non-Annex I National Communications", OECD/IEA Information Paper, COM/ENV/EPOC/IEA/SLT(2010)4, Paris.
- Environmental Finance (2011), "Carbon Funds 2011", Environmental Finance, Carbon Finance, London, 2011.

- Foundation Centre (2010), "International Grant making Update, A Snapshot of U.S. Foundation Trends", December 2010.
- Fransen T., (2009), "Enhancing Today's MRV Framework to Meet Tomorrow's Needs: The Role of National Communications and Inventories", WRI Working Paper, Washington, DC: World Resources Institute, June 2009, available at: <http://www.wri.org>.
- FT (2010), "India's Solar Mission", 14 November 2010, available at: <https://www.ft.com/cms/s/0/4963f452-efef-11.df-88db-00144feab49a.html#axzz1EE1cFdk1>.
- GEF Council (2002), Co-financing, Agenda Item No. 9, GEF/C.20/6, September 2002, available at: <http://www.thegef.org/gef/sites/thegef.org/files/documents/C.20.6.pdf>.
- GEF Council (2003), Co-financing, Agenda Item No. 13, GEF/C.20/6/Rev.1 available at: http://www.thegef.org/gef/sites/thegef.org/files/documents/GEF_C20_6_rev1.pdf.
- GEF Evaluation Office (2010), "OPS4 - Progress Towards Impacts", Full Report, April 2010.
- Germanwatch (2010), "German Climate Finance Put to the Test. An assessment of German Financial Support for Climate-Related Activities in Developing Countries from a Development Policy Perspective", Stuttgart, November 2010.
- Germanwatch (2011), "Countdown to Cape Town", Report on the 2nd Meeting of the Transitional Committee to design the Green Climate Fund.
- Hamilton K., Chokkalingam U., Bendana M., (2010), "State of the Forest Carbon Markets 2009. Taking Root and Branching Out", Ecosystem Marketplace, Washington DC, January 2010.
- Hudson Institute (2011), "Index of Global Philanthropy and Remittances", available at: <http://www.hudson.org/>.
- Huhtala A., Curto S., and Ambrosi P., (2010) 'Monitoring Climate Finance and ODA' World Bank Issues", Brief #1, available at: <http://beta.worldbank.org/climatechange/sites/default/files/documents/DCFIB%20%231-web.pdf>.
- IEA (2008), Energy Technology Perspective 2008: Scenarios and Strategies to 2050, Paris: International Energy Agency.
- IEG (2010), "Phase II: The Challenge of Low-Carbon Development", Climate Change and the World Bank Group, IEG Study Series, The World Bank, Washington DC, 2010.
- IMF (2010), "Financial Sector Taxation - The IMF's Report to the G-20 and Background Material", International Monetary Fund, available at: <http://www.imf.org/external/np/seminars/eng/2010/paris/pdf/090110.pdf>.
- IMF (2010b), "Financing the Response to Climate Change", International Monetary Fund, SPN10/06, March 2010, available at: <http://www.imf.org/external/pubs/ft/spn/2010/spn1006.pdf>.
- Information Office of the State Council (2011), China's Foreign Aid, the People's Republic of China, April 2011, Beijing. Report available at: <http://www.scio.gov.cn/zxbd/wz/201104/t896900.htm>
- Inter-American Development Bank (2009), "IDB Annual Report 2009. The Year in Review", IDB Group, February 2010, available at: <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=35118293>.
- Joint Multilateral Development Bank Climate Financing Report, Preliminary version (June 2010).
- Lum T., et al., (2009), "China's Foreign Aid Activities in Africa, Latin America, and Southeast Asia", U.S. Congressional Research Service, Washington DC, February 2009, available at: <http://www.fas.org/sgp/crs/row/R40361.pdf>

- Macqueen D., (2010), "Review of Funds Which aim To Protect Tropical Forests", IIED, available at: <http://pubs.iied.org/G02922.html>.
- Madsen B., Nathaniel C., Kandy D., Bennett G., (2011), "2011 Update: State of Biodiversity Markets", Washington, DC: Forest Trends, 2011, available at: http://www.forest-trends.org/documents/files/doc_2848.pdf.
- McKinsey & Company (2009), "Pathways to a Low-carbon Economy. Version 2 of the Global Greenhouse Gas Abatement Cost Curve", McKinsey & Company.
- Meeting of the CTF Trust Fund Committee (2010), "Trustee Reports on Financial Status of Clean Technology Fund (CTF)", CTF/TFC.5/3, Manila, March 2010 and June 2011.
- Meeting of the SCF Trust Fund Committee (2010), "Reports on Financial Status of the SCF", SCF/TFC.5/4, Manila, March 2010.
- Mercer D., Cooley E.D. and Hamilton K., (2011), "Taking Stock: Payments for Forest Ecosystem Services in the United States", Washington D.C.: Ecosystem Market Place.
- Müller B., "Enhanced Direct Access", Submission to the Transitional Committee on the Issue of Thematic Funding Windows (Workstream II & III), The Oxford Institute for Energy Studies, August 2011.
- Norway, 2010, Countries Take First Steps to Implement their Partnership to Combat Deforestation, News Item on the Norwegian Embassy in Indonesia web site, 20 August 2010, http://www.norway.or.id/Norway_in_Indonesia/Environment/Norway-finances-establishment-and-start-up-activities-of-Indonesian-REDD-Agency-with-USD-30-million-contribution/.
- OECD (2007a), "Statistics on Export Credit Activities", Organisation for Economic Co-operation and Development (OECD), available at: <http://www.oecd.org/dataoecd/30/35//37931024.pdf>.
- OECD (2007b), "Reporting Directive for the Creditor Reporting System", DCD/DAC(2007)39/Final, Organisation for Economic Co-operation and Development (OECD), Paris, September 2007.
- OECD (2010), Statistics on Export Credits, Trade and Agriculture Directorate (TAD), available at: http://www.oecd.org/department/0,3355,en_2649_34169_1_1_1_1_1,00.html.
- OECD (2010a), "Defining and Measuring Green FDI: Preliminary Findings and Issues for Discussion", (Note by the Secretariat) Organisation for Economic Co-operation and Development (OECD), DAF/INV/WP/WD(2010)1, Paris, September 2010.
- OECD (2010b), "Arrangement on Officially Supported Export Credits" - January 2010 Revision, TAD/PG (2010)2, Organisation for Economic Co-operation and Development (OECD), Paris.
- OECD (2010c), "Tracking Aid in Support Of Climate Change Mitigation and Adaptation in Developing Countries", OECD-DAC, Organisation for Economic Co-operation and Development (OECD), July 2010.
- OECD (2010d), "Development Co-operation Report" - Statistical Annex of the Development Co-operation Report Organization for Economic Co-operation and Development (OECD), Paris, April 2010. Statistical Annex available at: www.oecd.org/dac/stats/dac/dcrannex (latest update December 2010).
- OECD (2010e), "DAC Report on Multilateral Aid", DCD/DAC(2010)32/Final, Paris, September 2010.
- OECD (2011a), Creditor Reporting System _Full download file "CRS 2009.zip", DAC Creditor Reporting System database, <http://stats.oecd.org/Index.aspx?DatasetCode=CRSNEW>, data downloaded 5th April 2011.
- OECD (2011b), "Financing Climate Change Action and Boosting Technology Change",

- Organisation for Economic Co-operation and Development (OECD) Paris, flyer update March 2011. <http://www.oecd.org/dataoecd/34/44/46534686.pdf>.
- OECD (2011c), "Defining and measuring Green FDI: An Exploratory Review of Existing Work and Evidence", (Note by the Secretariat) Organisation for Economic Co-operation and Development (OECD), OECD Working Papers on International Investment, No. 2011/2.
- OECD (2011d), "Tracking Aid in Support of Climate Change Mitigation and Adaptation in Developing Countries", OECD-DAC, Organisation for Economic Co-operation and Development (OECD), September 2011.
- OECD (2011e), "Arrangement on Officially Supported Export Credits", TAD/PG(2011)13, Organisation for Economic Co-operation and Development, Paris.
- OECD (2011f), "Smart Rules for Fair Trade: 50 Years of Export Credits", OECD publishing, Paris. http://www.oecd-ilibrary.org/trade/smart-rules-for-fair-trade_9789264111745-en.
- OPIC (2010), "Annual Report 2010", Overseas Private Investment Corporation, available at: <http://www.opic.gov/publications/reports-handbooks/annual>.
- OECD DAC (2010), "Beyond the DAC: The Welcome Role of Other Providers of Development Co-Operation", OECD Development Co-operation Directorate DCD Issues Brief, May 2010, available at: <http://www.oecd.org/dataoecd/58/24/45361474.pdf>.
- Parker, C., J. Brown, and J. Pickering (2009), "The Little Climate Finance Book: a Guide to Financing Options for Forests and Climate Change", Oxford: Global Canopy Foundation, available at: <http://www.globalcanopy.org/materials/little-climate-finance-book>.
- Parker C., and Cranford M., (2010), "The Little Biodiversity Finance Book: a Guide to Proactive Investment in Natural Capital (PINC)", http://www.globalcanopy.org/sites/default/files/LBFB_EN%20.pdf.
- PEW (2011), "Who's Winning the Clean Energy Race? Growth, Competition and Opportunity in the World's Largest Economies", 2011, available at: <http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/G-20Report-LOWRes-FINAL.pdf>
- Project Catalyst (2010), "From Climate Finance to Financing Green Growth", Organization for Economic Co-operation and Development (OECD), Brief Paper, November 2010.
- Simula M., (2010), "Analysis of REDD+ Financing Gaps and Overlaps", Ardot, available at <http://reddpluspartnership.org/65563/en/>
- Singh M., (2010), "Speech at SAARC Summit", 29 April, 2010, available at: http://www.kuwaitasamachar.com/index.php?option=com_content&view=article&id=41812:manmohan-singhs-speech-at-saarc-summit&catid=31:india-news&Itemid=276.
- Stadelmann M., Michaelowa A., (2011), "How to enable the private sector to mitigate? Building Capacity and Creating the Enabling Environment for Low-Carbon Business Activities in Developing Countries", Working Paper, June 2011, Climate Strategies.
- Stadelmann M., Timmons Roberts J., Michaelowa A., (2011), "Accounting of Private Climate Finance. Types of Finance, Data Gaps and the 100 Billion Dollar Question", Working Paper, August 2011. Climate Strategies.
- Stanton T., et al., (2010), "State of Watershed Payments: an Emerging Marketplace", Ecosystem Marketplace, available at: http://www.forest-trends.org/documents/files/doc_2438.pdf.
- Stanton T., Echavarria M., Hamilton K., Ott C., (2010), "State of Watershed Payments: an Emerging Marketplace", available online:

- http://www.foresttrends.org/documents/files/doc_2438.pdf.
- Stern N., (2007), "The Economics of Climate Change: The Stern Review". Cambridge, UK: Cambridge University Press.
- TCG (2009), "Climate Change and Finance in India: Banking on the Low Carbon Indian Economy May 2010", The Climate Group, 2010.
- The Global Environmental Facility (2010), "GEF5 Focal Area Strategy"
- The Nature Conservancy (TNC) (2011), "Debt-for-Nature" Swap Generating \$28.5M for Forest Conservation in Indonesia, News Item from September 28, 2011, available at: <http://change.nature.org/2011/09/28/%e2%80%9cdebt-for-nature%e2%80%9d-swap-generating-28-5m-for-forest-conservation-in-indonesia/>
- Tirpak D., et al., (2010), "Guidelines for Reporting Information on Climate Finance". WRI Working Paper, World Resources Institute, Washington DC, available online at: http://pdf.wri.org/working_papers/guidelines_for_reporting_information_on_climate_finance.pdf.
- Transitional Committee for the Design of the Green Climate Fund (2011), "Report on the Survey on Lessons Learned from Relevant Funds and Institutions". "Annexes to the Report of the Survey", TC-3/INF.2, August 2011, available online at: http://unfccc.int/Cancun_agreements/green_climate_fund/items/6038.php.
- UNCTAD (2010), "World Investment Report 2010. Investing in a Low-Carbon Economy", United Nations, New York and Geneva, June 2010.
- UNDP (2011), "Catalysing Climate Finance. A Guidebook on Policy and Financing Options to Support Green, Low-Emission and Climate-Resilient Development", New York, available online at: http://www.undp.org/environment/docs/lecrds/catalysing_climate_finance.pdf.
- UNDP HDR (2008), "Human Development Report 2007/2008, Fighting Climate Change: Human Solidarity in a Divided World".
- UNEP (2008), "Payments for Ecosystem Services: Getting Started: a Primer", 2008 Forest Trends, The Katoomba Group and UNEP, May 2008.
- UNEP (2010), "Bilateral Finance Institutions and Climate Change: a Mapping of 2009 Climate Financial Flows to Developing Countries", United Nations Environment Programme, 2010.
- UNEP and Bloomberg NEF (2011), "Global Trends in Renewable Energy Investment 2011 Analysis of Trends and Issues in the Financing of Renewable Energy", United Nations Environment Programme and Bloomberg New Energy Finance, 2011.
- UNFCCC (2007a), Dialogue on Long-Term Cooperative Action to Address Climate Change by Enhancing Implementation of the Convention. "Report on the Analysis of Existing and Potential Investment and Financial Flows Relevant to the Development of an Effective and Appropriate International Response to Climate Change", Dialogue Working Paper 8, Vienna, 27-31 August 2007.
- UNFCCC (2007b), Subsidiary Body for Implementation, "Compilation and Synthesis of Fourth National Communications", F19C CNCov/SeBmlb/2er0 0270/O17N F.6/Add.2, Bali, 3-11 December 2007.
- UNFCCC (2008), "Investment and financial flows to address climate change: An update", Technical paper, Geneva, November 2008.
- UNFCCC (2011a), Subsidiary Body for Implementation, "Compilation and Synthesis of Fifth National Communications", Addendum, Financial Resources, Technology Transfer,

- Vulnerability, Adaptation and Other Issues Relating to the Implementation of the convention by Parties included in Annex I to the Convention", FCCC/SBI/2011/INF.1/Add.2, Bonn, 6-16 June 2011.
- UNFCCC (2011b), Conference of the Parties, "Submissions on Information from Developed Country Parties on The Resources Provided to Fulfil the Commitments Referred to in Decision 1/CP.16, paragraph 95, FCCC/CP/2011/INF.1, Durban, 28 November to 9 December 2011.
- Vivid Economics (2010), "The Implicit Price of Carbon in the Electricity Sector of Six Major Economies, report prepared for The Climate Institute, October 2010.
- World Bank (2006), Development Committee (Joint Ministerial Committee of the Boards of Governors of the Bank and the Fund on the Transfer of Real Resources to Developing Countries), "Clean Energy and Development: Towards an Investment Framework", DC2006-0002, The World Bank, April 5, 2006.
- World Bank (2008), "Climate Investment Funds: Mapping of Existing and Emerging Sources of Forest Financing". First Design Meeting on the Forest Investment Program, CIF/FDM.1/2, Washington, DC, October 16-17, available at: http://siteresources.worldbank.org/INTCC/Resources/Mapping_study_Final_for_FIP_Design_Meeting_Oct_16-17_08.pdf.
- World Bank (2010a), "World Development Report 2010. Development and Climate Change", Washington DC.
- World Bank (2010b), "State and Trends of the Carbon Markets 2010", Washington DC, May 2010.
- World Bank (2010c), "Monitoring Climate Finance and ODA", Washington DC, 2010.
- World Bank (2010d), "World Bank Annual Report 2010. Year in Review", Washington, DC, 2010, available at: <http://www.worldbank.org/annualreport/2010>.
- World Bank (2010e), "Beyond the Sum of its Part: Combining Financial Instruments for Impact and Efficiency", Issue Brief #3, Washington, June 2010.
- World Bank (2011), "Trustee Report on the Financial Status of The Guyana REDD-Plus Investment Fund (GRIF)", May 2011, available at: http://siteresources.worldbank.org/CFPEXT/Resources/GRIF_Trustee_Report_2-May-2011.pdf
- World Economic Forum (WEF) (2011), "Web site News Item: Scaling-Up Low-Carbon Infrastructure Investments in Developing Countries", available at: <http://www.weforum.org/reports/scaling-low-carbon-infrastructure-investments-developing-countries>.
- World Resource Institute (WRI) (2010), "Summary of Developed Country 'Fast-Start' Climate Finance Pledges", November 2010, available at: http://pdf.wri.org/climate_finance_pledges_2010-11-24.pdf.

Websites

- African Development Bank (AfDB) web site, available at: <http://www.afdb.org/en/#>.
- AidData Tracking Development Finance web site, available at: <http://www.aiddata.org/home/index>.
- Asian Development Bank (AsDB) web site, available at: <http://www.adb.org>.
- Bloomberg New Energy Finance web site, available at: <http://bnef.com/>.
- Center for Global Development web site, available at: <http://www.cgdev.org/>.
- Central Intelligence Agency - CIA, The World Factbook database, available at <https://www.cia.gov/library/publications/the-world-factbook/index.html>.
- Chatham House, Renewable Energy Finance Project web site, available at: <http://www>.

- chathamhouse.org/research/current-projects/renewable-energy-finance-project.
- Chicago Climate Exchange web site, available at: <http://www.chicacoclimatex.org>.
- Climate Change Expert Group (CCXG) on the UNFCCC web site, available at: http://www.oecd.org/document/44/0,3746,en_2649_34361_1904108_1_1_1_1,00.html.
- Dealogic web site, available at: <http://www.dealogic.co.uk/en/marketdata.htm>.
- Environmental Finance web site, available at: <http://www.environmental-finance.com/>.
- European Commission Climate Action web site, available at: http://ec.europa.eu/clima/policies/ets/auctioning_en.htm.
- Eurostat web site, available at: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>.
- 'Fast-start finance' web site, available at: <http://www.faststartfinance.org/node/267>.
- IDEA carbon web site, available at: <http://www.ideacarbon.com/>.
- IIGCC - Institutional Investors Group on Climate Change web site, available at: <http://www.iigcc.org/>.
- IGES - Institute for Global Environmental Strategies CDM Programme database, available at: <http://www.iges.or.jp/en/cdm/index.html>.
- IMF web site, available at: www.imf.org.
- Inter-American Development Bank (IDB) online project database, available at: <http://www.iadb.org/idbamerica/index.cfm?thisid=1521>.
- International Budget Partnership (IPB) web site, available at: <http://internationalbudget.org/>.
- International Finance Corporation (IFC) web site, available at: <https://www.ifc.org>.
- International Institute for Environment and Development (IIED) web site, available at: <http://www.iied.org/>.
- MGA Multilateral Investment Guarantee Agency - World Bank Group, The Foreign Direct Investment Network web site, available at: <http://www.fdi.net/>.
- Multi-Donor Trust Fund Office Gateway web site, available at: <http://mdtf.undp.org>.
- Nordic Development Fund web site, available at: www.ndf.fi.
- OANDA web site, available at: <http://www.oanda.com/>.
- ODI/Heinrich Böll Foundation Climate Funds Update database, available at: <http://www.climatefundupdate.org>.
- OECD DAC Creditor Reporting System database, available at: <http://www.oecd.org/dataoecd/50/17/5037721.htm>.
- OECD DAC statistics, available at: www.oecd.org/dac/stats.
- OECD Trade and Agriculture Directorate (TAD) Export Credits Database, http://www.oecd.org/department/0,3355,en_2649_34169_1_1_1_1,00.html.
- OECD Foreign Direct Investment (FDI) Statistics - OECD Data, Analysis and Forecasts web site, available at: http://www.oecd.org/document/8/0,3746,en_2649_33763_40930184_1_1_1_1,00.html.
- OECD Glossary of Statistical Terms, available at: <http://stat.oecd.org/glossary>.
- OECD User's Guide to the CRS Aid Activities database, available at: www.oecd.org/dac/stats/crsguide.
- OECD web site, "Focus on Aid Targeting the Objectives of the Rio Conventions", <http://www.oecd.org/dac/stats/rioconventions>.
- OECD/IEA Policies and Measures Database, available at: <http://www.iea.org/textbase/pm/?mode=cc>.

- Pew Center on Global Climate Change web site, available at: <http://www.pewclimate.org/>.
- Point Carbon web site, available at: <http://www.pointcarbon.com/>.
- Project Catalyst web site, available at: www.project-catalyst.info/.
- Reuters web site, available at: <http://www.reuters.com/>.
- The Brazilian Development Bank web site and database available at: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Areas_de_Atualizacao/Meio_Ambiente/Mata_Atlantica/projetos_aprovados.html.
- The Brookings Institute web site, available at: <http://www.brookings.edu/>.
- The Climate Group web site, available at: <http://www.theclimategroup.org/>.
- The Environmental Defense Fund web site, available at: <http://www.edf.org/home.cfm>.
- The Financial Times “FDi Intelligence” web site, available at: <http://www.fdiintelligence.com/>.
- The Foundation Center web site, available at: <http://foundationcenter.org/gpf/climate-change/chart-oecd.html>.
- The GEF project database, available at: <http://www.gefonline.org/>.
- UNCTAD interactive database of Division on Investment and Enterprise, available at: <http://www.unctad.org/templates/Page.asp?intlItemID=3199&lang=1>.
- UNDP web site, available at: <http://www.beta.undp.org/undp/en/home.html> and <http://www.un.org.kh/undp/>.
- UNEP Risø Centre CDM/JI Pipeline Analysis and Database, available at: <http://cdmpipeline.org/>.
- UNEP SEFI web site, available at: <http://www.sefi.unep.org>.
- UNFCCC Registry web site, available at: <http://cdm.unfccc.int/Registry/index.html>.
- UNFCCC Finance Portal for Climate Change web site, available at: http://unfccc.int/cooperation_support/financial_mechanism/finance_portal/items/5824.php.
- Voluntary REDD+ Database (VRD) web site, <http://reddplusdatabase.org/>, accessed September 2011.
- World Bank Project & Operations database, available at: <http://go.worldbank.org/IAHN-QIVK30>.
- World Bank web site, available at: <http://worldbank.org>.

Appendix A

Details on climate finance flows from “intermediaries”

Table 1. Bilateral Financial Institutions (BFIs) climate finance contributions

Bilateral Financial Institutions	2010 (USD million)
AfD - French Development Agency	3,717 ^a
BNDES - Brazilian Development Agency	3,149 ^b
China Development Bank	600 ^b
IREDA - Indian Renewable Energy Development Agency	115 ^b
OPIC - Overseas Private Investment Corporation	95 ^b
JICA - Japan International Cooperation Agency	6,418 ^c
KfW - German Development Bank	3,451 ^d
Total	17,545

- a. Transitional Committee (2011) and AFD (2011 a, b). Data refer to climate finance commitments. Of the USD 3,717, USD 3,450 was dedicated to mitigation projects and USD 518 to adaptation interventions (USD 265 million of which having both co-benefits for mitigation and adaptation). Mitigation interventions are directed towards the following countries: Sub-Saharan Africa, Latin America, Asia and the Pacific, The Caribbean, Middle East and Northern Africa, Multi-countries. In 2010, more than a third of commitments was focused in the Latin America region. Adaptation interventions are directed towards the following countries: Sub-Saharan Africa, Latin America, Asia and the Pacific, The Caribbean, Middle East and Northern Africa. 46% of the 2010 commitments were focused in Asian countries.
- b. BNEF (2011). Data represent project finance loans and equity contributions to renewable energy projects only. Investments in large hydro, supply chain (e.g. component manufacturing, feedstock production and recycling), and energy efficiency projects are excluded from the BNEF calculations, as well as those in renewable energy companies. Loans from commercial lenders and equity provided by other investors are also excluded. Data are based on deals recorded on the BNEF Desktop, and deals disclosures in annual reports; for additional information on the methodology followed by BNEF see BNEF (2011). Chinese Development Bank contributions are likely to be higher than those reported. In fact, although USD 600 million was confirmed, the Bank announced USD 36 billion in credit lines to low-emitting energy manufacturers.
- c. UNEP (2010). Data are for 2009.
- d. Transitional Committee (2011).

Table 2. Bilateral climate finance outflows per source

Bilateral Sources	Year	Total climate finance (USD million)
DAC countries	2009	4,522^a
BFI s	2010	17,545^b
Green Export credits	2009	700^c
Bilateral climate funds	Various	972-1,208^d
Total		23,739-23,975

a. OECD (2011a); DAC countries reporting excluding data for three BFIs for which separate estimates are available i.e. AFD, KFW and JICA.

b. See Table 1 above.

c. OECD Statistics on Export Credits (2010); Buchner et al., (2011).

d. See Appendix B for detailed sources.

Table 3. Climate finance outflows from multilateral financial institutions

Multilateral Financial Institutions	2009	2010
WB		
• IFC International Finance Corporation		1,680 ^a
• IBRD International Bank for Reconstruction and Development	4,629 ^b	
• IDA International Development Association	466 ^b	
EU institutions	691 ^b	
EIB European Investment Bank	1,515 ^c	
EBRD - European Bank for Reconstruction and Development		482 ^d
AsDB Asian Development Bank		1,770 ^e
AfDB African Development Bank		108 ^d
IDB Inter-American Development Bank	846 ^f	
Nordic Development Fund	25 ^b	
Multilateral Climate Funds		1,402 ^g
Tot - Lower Bound	13,614	
Tot - Upper Bound^h	17,000	

a. Transitional Committee (2011). The figure is referred to FY 2010 climate operations.

b. OECD CRS database data with Climate Change Rio Marker (OECD, 2011a). EU Institutions figure consists of projects by the Commission of European Communities and the European Development Fund only.

c. UNEP (2010).

d. BNEF (2011). Data represent project finance loans and equity contributions to renewable energy projects only. Note: given that EBRD financing focuses on Central and Eastern EU countries, the figures presented do not refer to "North-South" flows only, but may include those directed towards countries now part of the European Union (e.g. Poland, Slovakia and Slovenia). We consider BNEF numbers as a lower-bound estimate of EBRD climate financing, given that since the launch of their Sustainable Energy Initiative (SEI) in 2006 – aimed specifically at mitigating climate change and improving energy efficiency – they demonstrated a growing engagement in energy efficiency and clean energy related sectors as well as in the development of the carbon market. In 2010, SEI financing reached almost EUR 2.2 billion. Source: EBRD (2011).

With regard to AfDB, bottom-up calculations based on AfDB (2011) suggest that climate-focused projects in the energy sector approved in 2010 account for approximately USD 53.2 million. Some of these projects may have multiple objectives. AfDB is showing a growing commitment in helping African countries cope with climate change. For instance, in 2009 it developed its Strategy of Climate Risk Management and Adaptation (CRMA), which resulted in a 2011-2015 action plan that includes investments of approximately USD 8 billion by 2015. The plan envisaged the contribution of AfDB's partners, multilateral and bilateral entities as well as the private sector. Source: AfDB web site: <http://www.afdb.org/>.

e. AsDB (2011). 2010 data include USD 1.76 billion of clean energy investments (renewable energy and energy efficiency activities) and USD 10 million related to the replenishment of ADB's own Climate Change Fund.

f. IDB online project database accessed December 2010. Includes approved amount totals for projects approved in 2009 in the "Climate Change and Renewable Energy" Topic Area, supplemented with additional 2009 projects that do not appear in this topic area but are referenced in the 2009 Annual Report, or appear in a database search on the keyword: climate change (data on these projects are also taken from the project database).

g. Figure is indicative only, aggregating data from a number of different time periods. See Appendix B for detailed sources.

h. Joint Multilateral Development Bank Climate Finance Report, Preliminary version (June 2010); UNEP (2010).

Appendix B

Note on integration of climate fund money into bilateral and multilateral finance flows

We define Bilateral Financial Institutions and Bilateral Funds as institutions or funds primarily belonging to, or governed by, individual countries, including national development banks. We define Multilateral Financial Institutions (or Multilateral Development Banks) and Multilateral Funds as institutions or funds governed by multiple countries (including both borrowing developing countries and developed donor countries), typically through a multilateral institute¹³¹.

There is a risk of double-counting if the value of bilateral and multilateral funds or initiatives is aggregated with other reported flows of bilateral and multilateral climate finance. In order to estimate the potential scale of additional climate finance money coming from climate funds, we have surveyed the main climate funds for potential reporting overlaps with other climate finance flows presented in the landscaping exercise. In doing so, we paid particular attention to bilateral and multilateral flows reported in the OECD CRS database (OECD, 2011a) and by multilateral and bilateral development banks themselves. As a result, from the climate funds and initiatives reviewed, we add a net total of USD 1,402 million to our estimate of multilateral flows and a range of USD 972 -1,208 million to our estimate of bilateral flows. Details of our assumptions and sources of estimates are presented in the following paragraphs and in Table 1. Overview of approach to integration of Climate Fund finance below.

Climate Fund reporting in the OECD CRS database

While the OECD CRS database may become a useful future resource for tracking donor contri-

¹³¹ Following the categorisation also used by the UNFCCC, OECD and WB (<http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/0,contentMDK:20040612-menuPK:41694-pagePK:51123644-piPK:329829-theSitePK:29708,00.html>) among others.

butions to multilateral climate funds, we find that there is currently insufficient information for tracking, and it is unclear to what extent donor reporting in the database includes money committed to climate funds.

The CRS Reporting Directives infer that money directed by DAC donors to climate funds administered by multilateral institutions should be reported by those DAC donors as **bilateral aid**, and thus reported in the CRS database¹³².

In such cases, CRS entries should include the multilateral institution through which the fund money is channeled, or the name of the fund itself in the 'channel of delivery' field. The latest list of channels of delivery¹³³ (used for both DAC and CRS reporting) from a 2011 report on 2010 flows includes several but not all of the climate change related funds listed in Table 1:

Added pre-2008:

- Global Environment Facility Trust Fund (2003)
- Multilateral Fund for the Implementation of the Montreal Protocol (2003)
- UNFCCC

Added 2008:

- Central European Initiative - Special Fund for Climate and Environmental Protection (added 2008)
- Adaptation Fund (added 2008)
- Global Energy Efficiency and Renewable

¹³² 'DAC Members' reporting to the CRS covers their bilateral ODA only. Their multilateral aid i.e. contributions to the regular budgets of the multilateral institutions (also called core funding) is excluded. Financing of specific projects executed by multilateral institutions ("non-core funding", also called "extra-budgetary funding") is classified as bilateral. These projects are reportable in the CRS", [OECD, 2007b, p. 8 CRS Reporting Directive] "If [...] the donor effectively controls the disposal of the funds by specifying the recipient or other aspects of the disbursement (e.g. purpose, terms, total amount, reuse of any repayments), then the contribution should be classified as bilateral and allocated to the appropriate recipient Country", [OECD, 2007b, p. 8 CRS Reporting Directive].

¹³³ The list is available at www.oecd.org/dac/stats/crs/directives.

Energy Fund (added 2008)

Added 2010:

- Global Environment Facility - Least Developed Countries Fund
- Global Environment Facility - Special Climate Change Fund
- Global Climate Partnership Fund

Upon examining climate marked data reported in CRS for 2009, however, we find relatively little (total USD 437 million) explicit reporting by DAC donors on the climate funds listed in Table 1 (either reporting the fund name under the channel of delivery or in any other fields such as project descriptions), suggesting that some donors may be under-reporting on their contributions to these funds. In addition, donors may be reporting contributions to these funds but not labeling them as such. Indeed, an additional USD 235 million of bilateral finance is channeled through the following international organizations, and could be related to some of the funds considered: WBG, WB, WBI, IFC, AfDB, AsDB, EBRD, IDB, UNDP, EU Institutions, GEF, GEEREF IBRD, UNDP, UNEP, FAO, UNIDO and IFAD. We therefore remove USD 235 million from our estimate of additional finance provided through bilateral climate funds to produce a lower bound estimate.

It should also be noted that multilateral agency reporting on their outflows in the OECD CRS database does not include extra-budgetary funding or special funds under their management¹³⁴.

Inclusion of climate fund estimates

We find a large discrepancy between our estimates of the potential scale of finance channeled annually through the climate funds included in Table 1, and the estimates of climate fund money potentially included in the OECD CRS database (OECD, 2011a). As such, we have tried to replace the

¹³⁴ "Data on aid activities financed from multilateral institutions' regular budgets are included in the [CRS] Database" [p. 9 CRS Reporting Directive, emphasis added] i.e. not climate fund money. Indeed, we do not find multilateral reporting in the CRS database related to climate funds (except one entry by EU institutions (included as a multilateral institution in the CRS database) related to the GCCA, leading to potential double counting of inflows to the fund and outflows from the fund.

OECD CRS reporting - which is potentially related to funds - with estimates of the scale of the funds derived from a range of other sources. We are not able to replace data in this manner in all cases, due to data availability for different time periods and definitional differences. However, the aim is not to produce an accurate annual figure for a specific year, but instead to provide a rough estimate of the potential scale of current climate finance flows, including the additional contribution of the main climate funds.

In order to do this we also looked at several other areas of potential double counting with other estimates of climate finance included in our report, including reporting by multilateral and bilateral development banks.

We reviewed each fund individually to assess the extent to which the estimated annual fund value should or should not be aggregated with other estimates presented in the paper. Four groups emerge:

1. Risk of overlap, but no overlaps found at present.

In future years, however, it is assumed that donors will report contributions to such funds in their CRS reporting of bilateral aid, which means that the value of these funds should not be added to other flows, as this would lead to double counting. While we aggregate the value of reported bilateral and multilateral climate finance flows in 2009 with the value of selected climate funds to provide an estimate of the scale of climate finance, we recognize the shortcomings of combining data from multiple years and stress that we cannot necessarily assume that the current level of annual climate finance is equal to the value of reported bilateral and multilateral contributions in 2009, plus the value of climate funds. Available information is insufficient to determine the additionality of such funds to regular climate finance aid flows.

We also place the Adaptation Fund into this

category, due to the fact that its primary source of funding is non-donor based. However, donors provide voluntary contributions to the fund, giving rise to the potential for overlap in the future.

2. Risk of overlap (between donor reporting of contributions to the funds and reporting by implementing agencies involved in the fund), and overlaps found.

We assume that any commitments reported in the OECD CRS database that are related to the funds represent deposits into the fund and do not relate to funding approved for specific projects, as there is usually a time lag between money being deposited and money being disbursed to projects. We assume that estimates of annual project funding approved provide a closer approximation of annual flows from the funds than do commitments into the funds. We therefore remove any commitments to the funds reported in the OECD CRS database and replace them with the estimates of annual approved spending under each fund. Included in this category are UN-REDD, CIFs, FCPF, GEEF, GCCA, GEF and the Congo Basin Forest Fund. We remove a total of USD 437 million from the CRS database.

As mentioned above, however, it is possible that donors have reported money committed to these funds but have not labeled it as such. This may include some portion of the money reported as channeled through the multilateral agencies involved in administering these funds. Total commitments in 2009 reported as channeled through the following multilateral organizations (over and above the aforementioned USD 437 million, which is explicitly related to funds) is USD 235 million: WBG, WB, WBI, IFC, AfDB, AsDB, EBRD, IDB, UNDP, EU institutions, GEF, GEEREF, IBRD, UNEP, FAO, UNIDO and IFAD.

3. No potential overlaps between the fund and the flow. BNDES Mata Atlântica initiative

fits this category as a result of the domestic source of funding. The value of the fund is added to the bilateral flow data.

4. Clear overlaps exist in the reporting of the value of some bilateral funds or initiatives, and donor reporting in OECD CRS or elsewhere. Estimates of the value of these funds are therefore not aggregated with the overall estimate of bilateral climate finance flows. Included in this category are the ICI and IFCI.

In general we use estimates of annual funding 'approved' for projects rather than 'disbursed' to projects, in order to be consistent with estimates of other climate finance flows presented in the landscape paper, which tend to relate to commitments to, rather than disbursements to, specific projects or programmes (the latter being less readily available).

The Global Environmental Facility

In this paper, the annual value of GEF funds committed for climate projects has been obtained using data provided to us directly by the GEF Secretariat. We choose to use these data instead of GEF Project Online Database and other official documents of the Trust Fund because:

1. as highlighted by the GEF Evaluation Office (GEF Evaluation Office, 2010), the information provided by the Project Online Database are still not completely reliable.
2. other official documents of the Trust Fund do not allow annualizing committed funds.
3. it allows us to select projects which have been fully approved in a given year ("CEO Endorsed"/"CEO Approved" stage of the GEF project cycle¹³⁵).

¹³⁵ Projects in the previous stages were not considered in the figure presented due to the high risk of not being approved or for the long time frame - up to 22 months - they can take to get from one stage to the other. This is particularly the case for projects at the "Council Approved" stage that is the stage preceding the "CEO Endorsed/CEO Approved" one. Detailed information on the GEF's project cycle are available at the following link: http://www.gefcountrysupport.org/report_detail.cfm?projectId=211. Please note, this link shows the process for full-size projects. On the right hand side of the page is possible to

Thus, the figure presented includes only funds earmarked for projects that reached the “CEO Endorsed”/“CEO Approved” stage in 2010. At this stage funds cease to be legally under the control of the GEF Trust Fund, and ownership is in the process of being transferred to the respective Implementing Agency by the Trustee (the World Bank). The actual transfer of funds to Agencies will be made subsequently, after the Agencies’ governing body final approval.

In addition to the GEF Trust Fund, our figure includes financial resources related to the Least Developed Countries Fund (LCDF) and the Special Climate Change Fund (SCCF).

Data include a flat 10% Agency fee. All GEF projects are subject to a flat 10% Agency fee, which covers their services in assisting the countries in preparing and implementing projects.

Co-financing - which in 2010 accounted for USD 2.7 billion - is not included, due to the risk of overlap with other data presented in the report.

Only projects classified under the Climate Change focal area have been taken into consideration. However, it should be noted that according to the GEF Evaluation Office (GEF Evaluation Office, 2010) a significant proportion of funding linked to climate change is registered under the Multi-focal area.

view it for Medium size projects and Enabling activities.

Table 1. Overview of approach to integration of Climate Fund finance

Fund name	Type	Instruments	Estimated latest year value (USD million)	Added to intermediary flows?	Source and details	Assumptions for integrating funds into bilateral or multilateral intermediary flows
Adaptation Fund	Multilateral ^[1]	Grants	34.5 ^[2]	YES	<p>Cumulative total approved spend up to 31 January 2011 – assumed to be representative of annual spend given recent start date (2009)</p> <p>Source: “Financial Status of the Adaptation Fund Trust Fund (as at 31 January 2011)”, WB, December 2011.</p>	<p>The Adaptation Fund’s main source of revenue is a 2% levy on CERs issued by CDM projects [3], plus voluntary donor contributions which amounted to USD eq 85.59 million as of January 2011. It is assumed that flows generated by the CDM levy are not included in reporting by bilateral or multilateral agencies.</p> <p>Double counting could however arise in relation to the voluntary contributions of donors. In CRS 2009 two entries related to the AF were found: (1) disbursements by Sweden labelled “contribution to the chair” and therefore not related to disbursements from the fund and (2) a commitment by Spain channeled through the World Bank totaling USD 62.6m and labelled “ADAPTATION FUND OF PARTIES CONFERENCE (KYOTO)”. We thus deduce that there is a high risk of overlaps between the value of this fund and reporting by Spain under OECD CRS 2009. We assume that Spain’s commitment to the fund represents a deposit into the fund and does not relate to projects approved. We therefore remove the figure of USD 62.6 million and add instead USD34.52 million. The interim Trustee is the IBRD. No reporting related to the Adaptation Fund was found in IBRD CRS 2009 reporting.</p> <p>[4] In 2009, in the CRS database, a specific channel code for the Adaptation Fund (47T11) has been added. Donors should then report any contributions to the Fund using this code. This code will be available for 2010 data onwards.</p>
<p>[1] Countries can access resources directly, through National Implementing Agencies (NIEs) or using the services of a multilateral implementing entity (MIEs). According to Brown et al., (2010b), “Direct Access to the Adaptation Fund: realizing the potential of National Implementing Entities”, out of 22 project funding proposals to the AF by November 2010, 21 involved MIEs (18 of which UNDP). Based on this information, we can classify the fund as multilateral.</p>						
<p>[2] Including in this cumulative funding decision also the project concepts endorsed – the figure rises of USD 53.3 million. Note alternative estimate: According to “2010 DAC Report on Multilateral AID”, the estimated annual value associated to the Adaptation Fund ranges between USD 0.5 to 2 billion.</p>						
<p>[3] The World Bank serves as the Funds’ Trustee, monetize CERs and manage the proceeds. In 2010 the World Bank Treasury arranged CERs sales for USD 100.23 million. The CERs were sold at an average price of EUR 12.17 per ton. The inaugural sale of CERs took place in the third week of May 2009. Source: http://treasury.worldbank.org/cdm/htm/AdaptationFundInaugural.html.</p>						
<p>[4] Indeed, in the document “Role and responsibility of the AF Trustee, 2008” it is said that: “the Trust Fund resources will be kept separate and apart from the asset of the WB, but may be commingled with other trust fund asset maintained by the WB for admin and investment purposes. The WB will keep separate records and accounts for the resources held in the Trust Fund”.</p>						

Fund name	Type	Instruments	Estimated latest year value (USD million)	Added to intermediary flows?	Source and details	
Global Environmental Facility	GEF Trust Fund	Multilateral			<p>The GEF is funded by donor countries and co-financed by GEF Agencies: government contributions (counterpart commitments) and other funding provided by multilateral and bilateral organizations, NGOs, private sector, and project participants. There is a risk of double counting; if the value of the fund is aggregated with reporting by donors (OECD CRS) and GEF implementing agencies. However, data for GEF commitments are reported by the GEF Secretariat whereas data on GEF disbursements are reported by each GEF implementing agency.[7] IDB, IBRD, ADB, AfDB, UNDP, UNEP, UNIDO, IFAD or FAO have acted as implementing agencies for projects approved in 2010. Estimates of climate finance channelled through IDB, IBRD, ADB and AfDB only are included in this paper (although for different years) and therefore give rise to potential overlaps. The IDB project database does not mention GEF in any titles of projects listed in the climate change and energy focal area. GEF is listed several times in the IBRD project information included in the OECD CRS database (which only goes to 2009) but flows are "other official flows" so likely refer to co-financing rather than GEF grants. No project level information is available in the source used for AfDB and ADB climate finance estimates so any double counting cannot be determined.</p>	
	Least Developed Countries Fund	Multilateral	301.6	YES*	<p>2010. Grants only. Source and method: GEF Secretariat internal data</p> <p>According to OECD/DAC Room document No. 8, GEF Trust Fund is listed in the CRS database as "channel of delivery" under multilateral ODA. In 2009, LDCF and SCCF were also added on the list of multilateral agencies who can receive ODA (In CRS 2008 some contributions to LDCF and SCCF were channelled through the "GEF channel" code 47044; but also through the "UNFCCC Channel - code 41118).</p>	
	Special Climate Change Fund	Multilateral	<p>GEF contribution in the form of grants (Note that co-financing can take the form of grants; loans, concessional or market-rate; credits; equity investments; commitment of in-kind support and other specified types).</p>		<p>It is assumed that this amount is included in the GEF total above and is not therefore included separately. The Strategic Priority on Adaptation was initially a 3-year pilot programme aimed to show how adaptation planning and assessment could be practically translated into full-scale projects. This pilot project provided USD 50 million to help fund adaptation in the developing world (its portfolio consists of 26 projects and programs amounting to USD 48.35 million implemented through GEF-3 and GEF-4). The pool of funds has now been fully allocated and the funded adaptation projects have been initiated. It was financed by GEF and it also received co-financing from other GEF Focal Areas, as well as from other sources for a total of USD 780 million.</p>	
	Strategic Priority on Adaptation	Multilateral	Grants	3.5	NO	<p>Related to new investments approved by GEF between July 1, 2008 and June 30, 2009. The SPA 2010 Evaluation Report, states that approximately USD 20.8 million (43%) of the SPA funding was committed under GEF4 (2006-2010).</p>
	UN-REDD Programme	Multilateral	Grants	50.7	YES *	<p>The UN-REDD Programme is a Multi-Donor Trust Fund managed by FAO, UNDP and UNEP. The fund was established in July 2008 and allows donors to pool resources. Contributions received so far are from Norway, Denmark and Spain. In the CRS 2009 database Norway reports a USD 46 million contribution to the Fund and Denmark reports a USD 14 million contribution to UN-REDD, CIF/FIP and FCPF combined. We thus deduce that there is a high risk of overlaps between the value of this fund and reporting by bilateral donors under OECD CRS. We assume that the commitments to the fund represent deposits into the fund and do not relate to projects approved. We therefore remove the figure of USD 60 million and add instead USD 50.7 million</p>
	[7] So far, in the Creditor Reporting System database, GEF disbursements cover activities implemented by the World Bank, (2000 onwards), UNDP (2008 onwards), and IFAD (2008 onwards). Source: http://stats.oecd.org/Index.aspx?DataSetCode=CRSNEW .					

Fund name	Type	Instruments	Estimated latest year value (USD million)	Added to intermediary flows?	Source and details	Assumptions for integrating funds into bilateral or multilateral intermediary flows
MDG Achievement Fund - Environment and Climate Change thematic window	Multilateral	Grants	32.5	YES	<p>Jan 2010 to December 2010 Approved budget - projects in the Environment and Climate Change thematic window. Source: http://mdf.undp.org</p> <p>All financing through the MDG Achievement Fund is considered ODA and will take the form of grant-based aid. Funds are channeled via the UNDP Multi-Donor Trust Fund to the Participating UN Organizations. There is a risk of overlaps in donor reporting (OECD CRS) and implementing agencies. A search in the OECD CRS 2009 database however reveals no mention of the fund.</p>	
Climate Investment Funds (CIFs) including the Clean Technology Fund and the Strategic Climate Fund	Multilateral	Grants, concessional loans, loans and guarantees	1,015.0 [8]	YES	<p>Source: Trustee Reports on Financial Status of the CTF and SCF; March 2010 (data on projects approved as of Jan 31, 2010) and June 2011 (data on projects approved as of March 2011). Data on approved projects over the 14 month period are compared to determine the value of projects approved during the 14 month period.</p> <p>There are risks of overlaps between fund reporting and reporting by donors (in OECD CRS), implementing agencies (AfDB, ASDB, EBRD and IDB) and the trustee (WBG). Regarding donors, a search of 2009 data in the OECD CRS database reveals no mention of the funds. Regarding the trustee (WBG), a search of IDA and IBRD's project data reported in 2009 in the OECD CRS database reveals no mention of the funds. Regarding implementing agencies, the funds are not listed in the project titles of IDB's project database for 2009 and no information is available on the projects included in AfDB, ASDB and EBRD's estimates of climate finance so any double counting cannot be determined.</p>	<p>Various donors report commitments to this facility in 2009 in the OECD CRS database: Norway (USD 40m) and Australia (as part of their International forest Carbon Initiative) (USD 16 million). We assume that these contributions represent deposits into the fund and do not relate to projects approved. We therefore remove the figure of USD 56 million and add instead USD 11.52 million. Another potential area for overlap is reporting by delivery partners: the World Bank, AfDB, ASDB, IDB, FAO, UNDP and UNEP. We report climate finance estimates for the WB, AfDB, ASDB and IDB only. No information is available on the projects included in AfDB and ASDB's estimates of climate finance so any double counting cannot be determined. A search of the IDB's project database and IBRD and IDA's project data reported in 2009 in the OECD CRS database reveals no mention of the fund.</p>
Forest Carbon Partnership Facility	Multilateral	Grants	11.5	YES *	<p>Cumulative total approved spend - assumed to be representative of annual spend given recent, mid-2008, start date. Source: www.climatefundsupdate.org</p> <p>Potential overlaps include donor reporting and reporting by the fund manager, the AfDB. Norway reports an USD 0.02 million commitment to this fund in 2009 in the OECD CRS database. There are a number of other disbursement entries from Norway and the UK. We assume that the commitment represents a deposit into the fund and does not relate to projects approved. We therefore remove the figure of USD 0.02 million and add instead USD 17.42 million. No information is available on the projects included in AfDB and ASDB's estimates of climate finance used in this report so any double counting cannot be determined.</p>	
Congo Basin Forest Fund	Multilateral	Grants	17.4	YES *	<p>Cumulative total approved spend - assumed to be representative of annual spend given recent, mid-2008, start date. Source: www.climatefundsupdate.org</p> <p>Potential overlaps include donor reporting and reporting by the fund manager, the AfDB. Norway reports an USD 0.02 million commitment to this fund in 2009 in the OECD CRS database. There are a number of other disbursement entries from Norway and the UK. We assume that the commitment represents a deposit into the fund and does not relate to projects approved. We therefore remove the figure of USD 0.02 million and add instead USD 17.42 million. No information is available on the projects included in AfDB and ASDB's estimates of climate finance used in this report so any double counting cannot be determined.</p>	

[8] An alternative estimate is provided in WB Issue Brief 3 (2010) "Beyond the Sum of Its Parts: Combining Financial Instruments for Impact and Efficiency" <http://beta.worldbank.org/sites/default/files/documents/DCFB3-web.pdf> which estimates CTF (2009-12) at USD 4.4 billion over 4 years or USD 11 billion per year.

Fund name	Type	Instruments	Estimated latest year value (USD million)	Added to intermediary flows?	Source and details	Assumptions for integrating funds into bilateral or multilateral intermediary flows
Global Energy Efficiency and Renewable Energy Fund	Multilateral	Equity	29.9	YES *	<p>Funds disbursed to date - assumed to be representative of annual spend given recent, 2008, start date. Source: www.climatefundsupdate.org</p> <p>Cumulative total approved spend - assumed to be representative of annual spend given recent, 2008, start date. Source: www.climatefundsupdate.org</p> <p>We assume that there is a high risk of overlap between the reported value of this fund and reporting by bilateral donors under OECD CRS (in 2009, commitments to the fund from Norway and EU Institutions total USD 30.4 million commitment to GEEFER) and EIB reporting in UNEP (2010) although no information on specific funding initiatives of the EIB is available in the report. We assume that the bilateral donor contributions represent deposits into the fund and do not relate to projects approved. We therefore remove the figure of USD 30.4 million and add instead USD 29.93 million. In the CRS database there is a specific channel for GEEFER, code 30015. It was moved to this channel category, which falls under the Public-Partnership Initiatives, in 2010. It moved from "Other Multilateral Institutions" and code 47114 deleted.</p>	
Global Climate Change Alliance	Multilateral	Grants	25.8	YES *	<p>Projects approved to date - assumed to be representative of annual spend given recent, 2009, start date. Converted from BRL using average exchange rate over the lifetime of the fund (oanda.com). Amazon Fund website. Source: http://www.fundoamazonia.gov.br/FundoAmazonia/fam/site_pt/Esquedo/Projetos/carteira_projetos.html</p> <p>A total of USD 95.9 million of commitments from EU Institutions related to the GCCA is reported OECD CRS database for 2009. We assume therefore that there is considerable risk of double counting if these figures are aggregated with the fund value. We therefore remove the figures of USD 95.9 million, replacing them with the total approved spend of USD 25.8 million.</p>	<p>USD 112 million commitments from Norway to Brazil related to the Amazon Fund in 2009 are recorded in the OECD CRS database. We assume therefore that there is considerable risk of double counting if these figures are aggregated with the fund value. We therefore remove the figures of USD 112 million, replacing them with the total approved spend of USD 104.95 million</p>
Amazon Fund (Fundo Amazônia)	Bilateral	Grants	105.0	YES*	<p>BNDES website listed approved projects (3 of), accessed 23/02/2011: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Areas_de_Atacao/Melo_Ambiente/Mata_Atlantica/projetos_aprovados.html. R\$ converted using average exchange rate for 2009 (oanda.com).</p> <p>It is assumed that there is no overlap with other contributions included in the landscaping exercise because the source of the funding is the Bank's Social Fund (comprised in part by the institution's profit). The initiative's focus is on forest restoration projects in conservation units and public property, as well as in riverine vegetation (i.e. it is not labeled by BNDES as climate finance).</p>	
BNDES Mata Atlântica initiative	Bilateral	Grants	3.9	YES	<p>110 million € p.a. used for climate protection projects in developing countries, converted to USD using Oanda exchange rate on 11/02/2011. Source: Presentation by the German Federal Ministry for the Environment, 'Fast-start finance' Workshop, British Embassy in Berlin 31.1.2010.</p> <p>Although funds come from a new source (auctioning of German emissions trading certificates), the German Ministry for the Environment reports that it implements a substantial part of its Fast-start funds through International Climate Initiative (ICI) and Fast-start is accounted as ODA. We assume therefore that spending through the ICI would be reported in the OECD CRS database. A brief search of projects in the databases of the OECD and BMU highlight some potential overlaps e.g. the Coral Triangle Initiative project in Asia and several projects in Brazil including Refrigerator recycling system, Programme of Activities (PoA) for Energy Efficiency Improvement in Buildings, Master Plan to Harness Biogas Potential in Rio Grande do Sul.</p>	
International Climate Initiative	Bilateral	Grants and concessional loans.	150.0	NO	<p>110 million € p.a. used for climate protection projects in developing countries, converted to USD using Oanda exchange rate on 11/02/2011. Source: Presentation by the German Federal Ministry for the Environment, 'Fast-start finance' Workshop, British Embassy in Berlin 31.1.2010.</p> <p>Although funds come from a new source (auctioning of German emissions trading certificates), the German Ministry for the Environment reports that it implements a substantial part of its Fast-start funds through International Climate Initiative (ICI) and Fast-start is accounted as ODA. We assume therefore that spending through the ICI would be reported in the OECD CRS database. A brief search of projects in the databases of the OECD and BMU highlight some potential overlaps e.g. the Coral Triangle Initiative project in Asia and several projects in Brazil including Refrigerator recycling system, Programme of Activities (PoA) for Energy Efficiency Improvement in Buildings, Master Plan to Harness Biogas Potential in Rio Grande do Sul.</p>	

Fund name	Type	Instruments	Estimated latest year value (USD million)	Added to intermediary flows?	Source and details	Assumptions for integrating funds into bilateral or multilateral intermediary flows
International Forest Carbon Initiative	Bilateral	Grants	47.6	NO	<p>Cumulative total approved spend - assumed to be representative of annual spend given recent, 2008, start date. Source: www.climatefundsupdate.org</p> <p>It is assumed that there may be significant overlap between reporting on finance channelled through this bilateral initiative and Australia's reporting in the OECD CRS database. Indeed, 2009 entries in the OECD CRS database include various entries which explicitly mention the Initiative.</p>	
Indonesia Climate Change Trust Fund	Bilateral	Grants	5.5	YES	<p>Cumulative total approved spend - assumed to be representative of annual spend given recent, 2010, start date. Source: www.climatefundsupdate.org</p> <p>No donor contributions are reported in CRS for 2009. However it is assumed that donors will report contributions to this fund in their CRS reporting of bilateral aid in future years, at which point the figures should not be added as this would lead to double counting.</p>	
Guyana REDD+ Investment Fund	Bilateral	Grants	0.0	NO	<p>No projects approved as yet. Source: www.lcds.gov.gy</p>	
<p>Hatoyama Initiative</p> <p>Bilateral</p> <p>Loans and Equity (Concessional loans and grant aid through JICA, overseas investment loans by JBIC, export credit insurance to cover trade risks by NEXI, and private finance loans and investments. Assume 50:50 split of private sector contribution between MR loans and equity)v</p> <p>1,413.0 [9]</p> <p>PARTIALLY</p>	<p>Cumulative total approved spend (as of April 2010) is USD 5.32bn, USD 2.91 billion is considered ODA and 2.41 OOF, Other Official Sources. Estimated private sector contribution: 27% or USD 1,413m.</p> <p>The Initiative was announced in December 2009 at the Copenhagen Summit and is planned to operate from 2010 to 2012.</p> <p>Considering that Japan pledged "climate finance" for USD 15 bn by 2012, we can assume that approx. USD 5bn will be committed/spent annually. Source: www.climatefundsupdate.org; WRI: JICA's Cooperation for Climate Change http://www.jica.go.jp/english/publications/brochures/pdf/climate_change.pdf</p> <p>While the Hatoyama Initiative appears to provide a significant increase in climate finance from Japan, there is considerable risk of double counting between the Hatoyama Initiative, Japan's contributions to the CIFs and bilateral donor's contributions (under the preceding Cool Earth Partnership) reported in the OECD CRS database and by JICA in UNEP 2010.</p> <p>We therefore add only an estimated annual value of intended contributions from the private sector (based on the expected 27% contribution, applied to the cumulative total approved spend). Note: It should be noted that, as also remarked by the Climate Funds Update web site, there is lack of clarity between "approved" and "disbursed" financing.</p>					

[9] According to the www.climatefunds.org web site, USD3.6 billion comes from the government budget and USD 1.36 billion from private funding sources. Info based on MOFA, 22 July, 2010.

Appendix C

Details on the instruments used to channel climate finance via bilateral and multilateral institutions and funds

Table 1. Climate finance outflows from bilateral and multilateral financial institutions and funds, by instrument

Bilateral	Total climate finance (USD million)					Source of allocation by instruments
	Risk %	Grants %	Concessional loans %	Non-concessional loans	Equity	
DAC countries contributions	4,522	43.6%	56.2%	0.2%		The allocation by instrument presented relates to the full amount of climate marked data, i.e. USD 9.5 billion (OECD CRS 2009 database). This is applied to the value adjusted to exclude data for three BFls for which separate estimates are available i.e. AfD, KfW and JICA (USD 4.5 bn).
AfD - French Development Agency	3,717	1.5%	67.0%	31.5%		UNEP (2010). However, TC (2011) indicates that AfD also provides climate finance in the form of guarantees and risk sharing among others.
BNDES - Brazilian Development Agency	3,149		96.5%	3.5%		The allocation by instrument was obtained by applying to the BNEF (2011) estimate the average split between market rate loans and equity adopted by the other IFIs.
China Development Bank	600		96.5%	3.5%		The allocation by instrument was obtained by applying to the BNEF (2011) estimate the average split between market rate loans and equity adopted by the other IFIs.
IREDA Indian Renewable Energy Development Agency	115		96.5%	3.5%		The allocation by instrument was obtained by applying to the BNEF (2011) estimate the average split between market rate loans and equity adopted by the other IFIs.
JICA	6,418	7.5%	92.5%			UNEP (2010).
KfW	3,451	19.8%	12.3%	67.8%		UNEP (2010) and Personal Communication with KfW, October 2011.
OPIC	95		96.5%	3.5%		The allocation by instrument was obtained by applying to the BNEF (2011) estimate the average split between market rate loans and equity adopted by the other IFIs.
Green Export credits	700	100%				OECD Statistics on Export Credits 2010; Buchner et al. (2011)
Sum (USD million)	22,767	700	3,192	11,397	7,332	147

Multilateral	World Bank	Total climate finance (USD million)					Source of allocation by instruments	
		Risk %	Grants %	Concessional loans %	Non-concessional loans	Equity		
	<ul style="list-style-type: none"> IFC International Finance Corporation 	1,680	28.0%	55.0%	17.0%	Estimated from annual and financial reports for 2009 and 2010 reporting related to all commitments. Note that IFC also reports provision of climate finance in the form of grants and blended instruments (TC, 2011).		
	<ul style="list-style-type: none"> IBRD International Bank for Reconstruction and Development 	4,629		100%		OECD CRS 2009 database. All finance is reported as 'Other Official Flows (non export credit)' which we assume is delivered through non-concessional loans only.		
	<ul style="list-style-type: none"> IDA International Development Association 	466	9.0%	91.0%		OECD CRS 2009 database.		
	EU Institutions	691	91.0%		9.0%	OECD CRS 2009 database.		
	EIB European Investment Bank	1,515		100%		UNEP (2010).		
	EBRD - European Bank for Reconstruction and Development	482		96.5%	3.5%	The allocation by instrument was obtained by applying to the BNEF (2011) estimate the average split between market rate loans and equity adopted by the other IFIs. However, TC (2011) indicates that EBRD also provides climate finance in the form of grants, performance fees and incentives, guarantees and risk sharing instruments.		
	AsDB Asian Development Bank	1,770	2.6%	9.1%	14.5%	72.4%	1.4%	Estimated from annual and financial reports for 2009 and 2010 reporting related to all commitments.
	AfDB African Development Bank	108			96.5%	3.5%	The allocation by instrument was obtained by applying the average among the other IFIs to the BNEF (2011) estimate.	
	IDB Inter-American Development Bank	846	2.7%	5.9%	82.5%	8.9%	Own reporting in IDB online project database.	
	Nordic Development Fund	25		100%			OECD CRS 2009 database.	
	Sum (USD million)	12,212	517	879	731	9,616	469	
	Climate funds (%)		0%	7%	17%	37%	39%	Based on a review of individual fund financing profiles.
	Climate funds (USD) (upper bound)	2,610	0	194	445	956	1014	
	Total bilateral, multilateral and funds (USD)	37,589	1,217	4,266	12,573	17,904	1,629	
	Total bilateral, multilateral and funds (%)	3%	11%	33%	48%	4%		

Appendix D

ODA Grant Element

Table 1. Average grant element of total ODA and ODA loans by DAC donors in 2008-2009

Donor	Grant element of total ODA (%)	Grant element of ODA loans (%)
	<i>Norm: 86%*</i>	
2008-2009		
Australia	100	87.4
Austria	100	0.0
Belgium	100	83.6
Canada	100	0.0
Denmark	100	0.0
Finland	100	30.1
France	89	54.9
Germany	93	47.0
Greece	100	0.0
Ireland	100	0.0
Italy	99	82.4
Japan	86	73.1
Korea	90	81.8
Luxembourg	100	0.0
Netherlands	100	0.0
New Zealand	100	0.0
Norway	100	0.0
Portugal	96	72.2
Spain	96	67.5
Sweden	100	33.0
Switzerland	100	0.0
United Kingdom	100	0.0
United States	100	0.0
TOTAL DAC	96	67.1

Source: OECD 2010d

(*) Countries whose ODA commitments as a percentage of GNI is below the DAC average are not considered as having met the terms target. This provision disqualified Greece, Italy, Korea and the United States in 2009. Source: Statistical Annex of the Development Co-operation Report (Table 20 - Financial Terms of ODA Commitment) (OECD, 2010d). In accordance with the 1978 Terms Recommendation of the DAC, the annual average grant element of total ODA commitments should be at least 86% (for Least Developed Countries, the targets are at least 86% over three years for each country, or 90% annually for the group). (Source: OECD User's Guide to the CRS Aid Activities database).

Appendix E

Existing climate finance tracking databases and major ongoing initiatives

TRACKING PUBLIC CLIMATE FINANCE:

African Development Bank Group (AfDB) online project database, available at: <http://www.afdb.org/en/projects-operations/project-portfolio/#c10693>

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

Ecosystem Marketplace/Bloomberg New Energy Finance Voluntary Carbon Market data, available at: http://moderncms.ecosystemmarketplace.com/repository/moderncms_documents/vcarbon_2010.2.pdf.

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

German National Climate Initiative online project database, available at: <http://www.bmu-klimaschutzinitiative.de>.

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

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

OECD Creditor Reporting System (CRS) Aid Activities database, available at: <http://www.oecd.org/dataoecd/50/17/5037721.htm>.

UNCTAD FDI database, available at: <http://stats.unctad.org/fdi/>.

UNDP 'Fast-start finance', available at: www.faststartfinance.org

UNDP/GEF Small Grants Programme project database, available at: <http://sgp.undp.org/index.cfm?module=Projects&page=AdvancedSearch>

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

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

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

World Bank Project Portfolio database, available at: <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,menuPK:51563~pagePK:95873~piPK:95910~theSitePK:40941,00.html>

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

TRACKING PRIVATE FINANCE:

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

CIA World Factbook database <https://www.cia.gov/library/publications/the-world-factbook/index.html>

Dealogic ProjectWare and Loan Analytics: <http://bnef.com/services/industry-intelligence-slash-desktop/>

Environmental Finance Carbon Funds Directory: <http://www.environmental-finance.com/books/view/11>

Eurostat FDI Statistics: <http://epp.eurostat.ec.europa.eu>

Financial Times "FDi Intelligence" database: <http://www.fdiintelligence.com/>

Foundation Centre research database: <http://foundationcenter.org/findfunders/statistics/>

IMF International Financial Statistics Online database: <http://www.imfstatistics.org/imf/>.

Institute for Global Environmental Strategies (IGES) CDM Programme database: http://www.iges.or.jp/en/cdm/report_cdm.html

OECD International Direct Investment Statistics database: http://www.oecd.org/document/8/0,3746,en_2649_33763_40930184_1_1_1_1,00.html.

Point Carbon - Carbon Project Manager, Carbon Market Trader EU: <http://www.pointcarbon.com/trading/>

Reuters Trader for Commodities Advanced: http://thomsonreuters.com/products_services/financial/financial_products/commodities_energy/energy/trader_commodities_advanced?parentKey=619468

Thomson Reuters Eikon for Energy: http://thomsonreuters.com/products_services/financial/youreikon/commodities/energy

UNCTAD Interactive Database Division on Investment and Enterprise: <http://stats.unctad.org/fdi/>

UNCTAD World Investment Directory: <http://www.unctad.org/templates/Page.asp?intlItemID=3204&lang=1>

UNEP-Risø CDM/JI Pipeline Analysis and Database: <http://cdmpipeline.org>

UNFCCC CDM and JI Project Activities databases: <http://cdm.unfccc.int/Projects/projsearch.html>

World Bank Private Participation in Infrastructure (PPI) Project Database: <http://ppi.worldbank.org/index.aspx>

World Bank, World Development Indicators and Global Development Finance, <http://databank.worldbank.org/ddp/home.do?Step=1&id=4>.

Appendix F

Sectoral breakdown of flows

Table 1. Sectoral breakdown of OECD CRS climate-marked data, 2009

Sector Name	USD million
I. SOCIAL INFRASTRUCTURE & SERVICES	1,052.2
I.1. Education	74.3
I.2. Health	43.7
I.3. Population Pol./Progr. & Reproductive Health	5.4
I.4. Water Supply & Sanitation	874.0
I.5. Government & Civil Society	49.5
I.6. Other Social Infrastructure & Services	5.3
II.1. Transport & Storage	2,906.7
II.2. Communications	0.6
II.3. Energy	1,593.5
II.4. Banking & Financial Services	56.4
II.5. Business & Other Services	5.6
III.1.a. Agriculture	255.8
III.1.b. Forestry	365.0
III.1.c. Fishing	12.3
III.2.a. Industry	47.7
III.2.b. Mineral Resources & Mining	0.2
III.2.c. Construction	6.7
III.3.a. Trade Policies & Regulations	11.1
III.3.b. Tourism	1.2
IV.1. General Environment Protection	2,227.7
VI.1. General Budget Support	110.4
VI.2. Dev. Food Aid/Food Security Ass.	10.8
VI.3. Other Commodity Ass.	0.0
VIII.1. Emergency Response	25.0
VIII.2. Reconstruction Relief & Rehabilitation	58.5
VIII.3. Disaster Prevention & Preparedness	83.2
IX. ADMINISTRATIVE COSTS OF DONORS	0.2
X. SUPPORT TO NGO'S	4.2
XI. REFUGEES IN DONOR COUNTRIES	0.0
XII. UNALLOCATED/UNSPECIFIED	13.7

Source: OECD 2011a

Appendix G

REDD+ Flows

Table 1. Financial flows for REDD+

Fund	Estimated annual commitments (USD million)	Source
UN-REDD Programme	50.7	Jan 2010 to December 2010 Approved budget for projects. Source: http://mdtf.undp.org
World Bank Forest Carbon Partnership Facility	11.5	Cumulative total approved spend. Source: www.climatefundsupdate.org
Congo Basin Forest Fund	17.4	Cumulative total approved spend. Source: www.climatefundsupdate.org
Amazon Fund	105.0	Cumulative total approved project spend. Source: Amazon Fund.
BNDES Mata Atlântica initiative	3.9	Projects approved to date. Source: BNDES.
Forest Investment Program	0.7	Funds disbursed to investment plans to date. Source: www.climatefundsupdate.org
Norway-Indonesia REDD+ Partnership	0.0	Phase I contribution equals USD 30 million, however no funds have yet been disbursed to projects. Source: Norway (2010)
Norway-Guyana REDD+ Investment Fund	0.0	USD 30 million deposited to the fund as of April 2011, however no funds have yet been disbursed to projects. Source: WB (2011)
Global Environment Facility	55.0	Macqueen (2010) estimate of forest related activities in the fifth replenishment the GEF, divided by four years of the replenishment.
International Tropical Timber Organization	4.0	Macqueen (2010)
Bilateral climate marked commitments in the forestry sector	365.0	OECD DAC database data for 2009 (OECD, 2011)
Forest Carbon Market	125.0	Ecosystem Marketplace (2011)
Total	738.2	

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 47.6 million cumulative in approved total spending, according to www.climatefundsupdate.org), German International Climate Initiative (USD 85.4million approved for REDD projects to date according to www.climatefundsupdate.org), Norwegian Climate and Forest Initiative (USD 2,250 million according to Parker et al., 2009), Japanese Hatoyama Initiative.
- In most cases, annual data for funds is not available. We therefore use cumulative total approved spending for projects, assuming that annual flows will ramp up over the first few years of the fund's operation, and therefore that the first one or two years of operation can be expected to be roughly equal to future annual flows.
- Ecosystem Marketplace (Diaz et al., 2011) estimates the total value of transactions in the forest carbon market in 2010 to be USD 178 million, up considerably from USD 37.1 million in 2008 (Hamilton et al., 2010). The estimate includes voluntary markets (USD 126.9 million) and regulated markets (USD 133.4 million) including the clean development Mechanism, the New South Wales GGAS and the New Zealand ETS. A very rough adjustment of the estimate to include only project activities executed in developing countries brings the total value to around USD 125 million, far greater than the equivalent estimation for 2008 of USD 17.5 million. Diaz et al., (2011) reveal that forest carbon transactions represented more than 40% of the total voluntary OTC carbon market by volume in 2010. They also point out a growing trend towards local purchasing of credits in Asia and Latin America, indicating that this flow of finance may increasingly become South-South as opposed to North-South.

Appendix H

Geographic breakdown of sources and recipients of bilateral and multilateral finance

Table 1. Sources of bilateral finance (2009/2010)

Donors	USD million	%
Japan	7,283	33%
France	3,815	18%
Germany	3,608	17%
Brazil	3,149	14%
Norway	629	3%
China	600	3%
United Kingdom	581	3%
Spain	556	3%
Australia	318	1%
Denmark	299	1%
Finland	183	1%
United States	148	1%
India	115	1%
Korea	102	0%
Belgium	90	0%
Sweden	81	0%
Canada	72	0%
Switzerland	50	0%
Italy	43	0%
Austria	29	0%
Greece	11	0%
Portugal	3	0%
Ireland	1	0%
New Zealand	1	0%
Total	21,768	100%

Sources: See Appendix A for detailed sources

Note: excludes funds and export credits; allocates BFI money to location of BFI while some money may have been raised from alternative sources.

Table 2. Recipients of bilateral finance (2009/2010)

Recipient Region	USD million	%
Asia	8,660	40%
Latin America	5,355	25%
North Africa and Middle East	3,028	14%
Other Africa	2,558	12%
Oceania	182	1%
The Caribbean and Central America	155	1%
Europe	84	0%
America	32	0%
Transregional / Unspecified	1,620	7%
Total	21,674	100%

Source: See Appendix A for detailed sources

Note: OPIC, funds and export credits are excluded from calculations due to lack of readily available information on recipient geographies. KfW splits from UNEP (2010) applied to latest data due to absence of splits in latest data.

Table 3. Sources of multilateral finance (cumulative, 5th NC reporting period)

Donors	USD million	%
USA	19,474	44%
Sweden	4,448	10%
Belgium	3,250	7%
UK	3,182	7%
France	2,840	6%
Canada	1,975	4%
Finland	1,419	3%
Italy	1,394	3%
Japan	1,285	3%
Portugal	1,221	3%
Switzerland	1,094	2%
Greece	869	2%
Ireland	288	1%
Australia	249	1%
EEC	239	1%
Luxembourg	238	1%
Spain	185	0%
New Zealand	135	0%
Norway	114	0%
Denmark	111	0%
Iceland	90	0%
Netherlands	86	0%
Austria	2	0%
Grand Total	44,186	100%

Source: UNFCCC Finance Portal for Climate Change

Table 4. Recipients of multilateral finance (2009/2010)

Recipient Region	USD million	%
Asia	2,742	26%
Latin America and Caribbean	2,402	23%
Europe and CIS	1,987	19%
North & Central America	1,566	15%
MENA	1,055	10%
Africa	435	4%
Oceania	55	1%
Unspecified	219	2%
Total	10,460	100%

Source: See Appendix A for detailed sources

Note: excludes climate funds and IFC for which no geographic breakdown was readily available.