

**Monitoring and Evaluating
The 100 Billion Green Climate Fund:
A Reflection on the Challenges Ahead**

MPA Candidate

Liliana Benitez

**School of Public Administration
University of Victoria**

Client

**Mr. Marcos Castro Rodriguez
Climate Change Specialist
World Bank**

Second Reader

**Dr. Kimberly Speers
Senior Lecturer, School of Public Administration
University of Victoria**

Supervisor

**Dr. Evert Lindquist
Professor and Director, School of Public Administration
University of Victoria**

Chair

**Dr. Budd Hall
Professor, School of Public Administration
University of Victoria**

**ADMN 598 Project Report
July 2012**

EXECUTIVE SUMMARY

Climate change is a global concern. Parties within the United Nations Framework Convention on Climate Change (UNFCCC) have been discussing for decades ways to address the financial challenges of reducing GHG emissions (mitigation) and adapting to climate change impacts. One of the most remarkable agreements of the Convention is to mobilize \$100 billion in annual financing by 2020 through a new Green Climate Fund (GCF) that will be used to support climate change mitigation and adaptation efforts in developing countries.

While there is a significant amount of literature on issues related to the GCF's governance and structure, there is yet limited discussion on the development of a Monitoring and Evaluation (M&E) framework for the GCF and how this can be set up in practice. With the GCF Board meeting for the first time in August 2012, reflecting on an M&E framework at this point may be thought to be premature; however, due to increasing domestic budgetary pressures and with the desire to ensure good governance, transparency and accountability, thinking ahead about good M&E practices is critical for making good climate finance decisions. Building a sustainable M&E system not only demands resources, good comprehension, and technical know-how, but also requires political will and commitment, therefore central leadership and early planning are key in the advancement of these discussions.

If massive financial flows are to be deployed to developing countries with the dual objectives of reducing greenhouse gas emissions and improving countries resilience to climate change, the full implementation and disbursement of the Fund should result in measurable impacts toward a low carbon, climate resilient world. The M&E framework for the GCF is also relevant due to its proposed magnitude. The GCF is expected to disburse twice the amount of the lending operations of the World Bank. The potential to prove effectiveness by maximizing the benefits associated with the spent dollar is expected to improve long-term budgetary allocations.

This study aims to survey current state analysis and provide a better understanding of approaches that can be used to monitor and evaluate the GCF. It is structured amongst four themes: (i) the most suitable investment instruments that can be used by the GCF to maximize its effectiveness; (ii) the approach to accurately monitor and report GCF contributions by donor countries; (iii) the evaluation framework for GCF investments at program and project levels; (iv) the performance measures and the Measuring, Reporting and Verification (MRV) approach that needs to be part and complement of the overall M&E framework.

Achieving a good comprehension of what constitute good lessons and best practices is essential to ensuring that effective experiences are replicated and diffused quickly through the existent networks. Having recognized that M&E is not a terminus point, but rather a long-term process that requires reiteration; the development community should promote technical understanding

from the top to the bottom and vice versa and live networks of senior and operational champions should be encouraged to test, learn, adjust and implement the necessary M&E approaches.

It is very well known that trying to achieve a mature and functional M&E system can take years.¹ Hence, establishing a mindset for an early design and development of an M&E system during the early GCF governance phase, promoting such a dialogue between donors and recipients, and reflecting on the challenges ahead should be seen as complying with the demand for increased transparency, accountability and efficiency in the public sectors.

Type of instruments

This master's project report analyses a range of financial instruments to support climate change mitigation and adaptation through future disbursements of the GCF. The type of instruments examined includes grants, loans, equity, market instruments, guarantees, catastrophe bonds and insurances. After reviewing their use of in different settings, the following recommendations are put forward:

- The GCF should use grants primarily for capacity building and to support the implementation of local Monitoring, Reporting and Verification (MRV) systems. Capacity building is essential for countries to develop national mitigation and adaptation plans suitable to their needs and to access and use GCF funding in the most effective manner. Countries should also develop the necessary MRV infrastructure to be able to meet future requirements of GCF supported initiatives.
- The private sector can play an important role in climate change mitigation, particularly in middle-income countries, if financial instruments such equity, subordinated equity, multilateral loans and guarantees are effectively provided. Private sector investment can also be leveraged in low-income countries if political risk is covered through risk-management instruments provided by the international community.
- Climate change adaptation would be difficult to be financed by the private sector and this will pose challenges for the mobilization of resources and the support of adaptation strategies. Thereby, the GCF may consider the provision of concessional loans for low-income countries and multilateral loans (low interest) for middle-income countries.
- The early experience in using catastrophe bonds and insurance mechanisms for covering climate risks should be exploited. The GCF should support agencies coordinating and implementing regional insurance pools and may contribute to insurance premiums in the most vulnerable countries.

¹ This holds for climate change and other policy areas.

Monitoring and Reporting GCF Contributions of Donor Countries

Reporting climate finance contributions is an essential element for building trust between developed and developing countries. GCF contributions are to be additional to existing Official Development Assistance (ODA) commitments. In the absence of proper guidelines for monitoring and reporting donor contributions, confusion and discrepancies may arise. This study recommends that each donor country reports simultaneously on ODA and Climate Finance contributions in a way that every fund or initiative is placed under a single category. Such reporting can take place yearly in a way that ODA goals and Climate Finance goals are measured simultaneously. The establishment of a public registry is recommended.

Strategic Recommendations for the GCF M&E Framework

This study examined the evaluation approach of major development funds including World Bank projects and programs, GEF (Global Environmental Facility) projects, CDM (Clean Development Mechanism) initiatives and investments through the Climate Investment Funds (CIF). Based on this review, several recommendations for the GCF M&E framework were made:

- The GCF should have an independent evaluation group that will set up standards, MRV guidelines and performance measures to be used for mitigation and adaptation. The evaluation unit will work with the accredited implementing entities of the GCF in the early inception of projects and will ensure that MRV and evaluations are executed with sufficient level of rigor.
- The GCF independent evaluation unit should champion for an evaluation culture by establishing M&E networks, providing on-going advice to the countries, and assisting with capacity building and competency profiles for evaluators who will be able to advise and help country managers on the update of the results-performance monitoring indicators. Such a unit should also help building data quality, which is of paramount importance for an M&E framework. National statically bureaus should also be captured in the evaluation networks as well as other information management agents.
- GCF investments should move away from traditional financing approaches towards a results-based framework where payments are made upon performance. A results-based approach for climate finance will require a greater reliance on market-based instruments and performance based approaches such as NAMAs (Nationally Appropriate Mitigation Action), the Clean Development Mechanism (CDM) and Reduced Emissions from Deforestation and Forest Degradation (REDD+).
- Social safeguard policies should be part of GCF operation guidelines. Social impacts of GCF investments should be properly monitored and reported and the GCF evaluation unit should provide guidance on how to monitor social issues over the time of the investments. GCF projects and programs should also allow stakeholders to provide input through an independent body to minimize any negative social consequences.

- Project and program outcomes need to be measured against a credible baseline. A baseline study, which depicts for example, the GHG emissions in the absence of the project, shall accompany a project/program proposal.
- The GCF Evaluation Unit should provide detailed guidelines and minimum requirements for MRV and baseline data should be provided as part of the initial Project Review Process.

This study charted performance indicators used for climate mitigation and adaptation programs. Significant experience in using performance indicators for climate mitigation exists while the experience with indicators for climate adaptation is limited. The absence of universal indicators to measure performance will impose challenges to the GCF evaluation unit.

Further Research Needs

This study intends to raise awareness of the challenges involved in associated with the development of an M&E framework for the GCF, provides initial guidance on how to proceed, and raises the need for championing a draft reflection on the M&E framework at this stage, when operational details of the Fund are still to be worked. Such a reflection draft should not be intended to be used for adoption by the Transitional Committee in charge of the design of the new GCF, but rather for enrichment of the discussions carried at this stage.

Further work is needed in terms of providing more detailed M&E procedures that can be used in the context of specific funding windows and instruments. In addition, more research is needed for identifying common indicators to measure the performance of climate change adaptation programs and cost-effective MRV approaches.

CONTENTS

1.0 Introduction	8
1.1 The Green Climate Fund arising from the UNFCCC Process	8
1.2 Objectives and Research Questions.....	9
1.3 An Evaluation Framework for the GCF.....	9
1.4 Performance Measurement.....	10
1.5 Structure of this Report	10
2.0 The Green Climate Fund and its Implementation Challenges	11
2.1 A Short History of the UNFCCC Convention.....	11
2.2 The Green Climate Fund	12
2.3 Key Challenges in Designing the Green Climate Fund	14
3.0. Methodology and Conceptual framework.....	20
3.1 Conceptual Framework.....	22
3.2 Summary of Limitations and Weaknesses of the Methodology	25
4.0 Identification of Climate Finance Instruments for the GCF	27
4.1 Climate Finance: Definition, Needs, and Current Flows	27
4.2 Grant Instruments.....	29
4.3 Loans	30
4.4 Private Sector and Equity Financing	31
4.5 Guarantees.....	32
4.6 Insurances	33
4.7 Market-Based Instruments	33
4.8 Analysis: Suitability of Climate Finance Instruments.....	36
5.0 A Logic Model for the GCF	39
5.1 Inputs	39
5.2 Components and Activities	39
5.3 Outputs, Indicators and Outcomes.....	39
5.4 Logic Models for the GCF: Mitigation and Adaptation	40
6.0 Monitoring Donor Countries' Contributions.....	44

6.1 Climate Finance Reporting under the UNFCCC.....	44
6.2 Fast Start Finance.....	45
6.3 World Resources Institute Reporting.....	46
6.4 Indicators for Measuring Climate Finance Flows.....	47
6.5 Monitoring Donor’s Contributions: Key Recommendations	47
7.0 Climate Finance M&E in Developing Countries: Lessons from Recent Experiences.....	49
7.1 Monitoring and Evaluation of World Bank Projects	49
7.2 Evaluation Framework of Projects of the Global Environmental Facility (GEF).....	53
7.3 Evaluation Framework of the Climate Investment Funds	57
7.4 Evaluation of Carbon Funds under the Clean Development Mechanisms	59
7.5 Review of M&E Frameworks: Concluding Remarks.....	60
8.0 Performance Measurement.....	61
8.1 Measuring the Effectiveness of Climate Finance: Setting the Context.....	61
8.2 Indicators for Climate Mitigation.....	62
8.3 Indicators for Climate Adaptation.....	64
8.4 The Monitoring, Reporting and Verification Challenge	65
8.5 Review of Performance Indicators: Concluding Remarks.....	67
9.0 Implications for a Monitoring and Evaluation Framework of the GCF	68
9.1 Essential Elements of the GCF Monitoring and Evaluation Framework.....	68
9.2 Desirable Elements of the GCF Evaluation Framework	70
9.3 Key Steps Forward	71
9.4 Risks and Barriers.....	72
10.0 Conclusions	74
References	76

1.0 INTRODUCTION

Climate change is one of major global environmental concerns of this era. Parties within the United Nations Framework Convention on Climate Change (UNFCCC) have been discussing for decades on ways to address the financial challenges of reducing GHG emissions (mitigation) and adapting to climate change impacts. World leaders have agreed on a common goal to prevent the globe to warm beyond 2 degrees Celsius (UNFCCC, 2009). To achieve the 2 degree goal, it is required a reduction of more than 60% of our business as usual greenhouse gas emissions by 2050. This means a major transformation of our energy systems plus massive financing to support changes. One of the key financing instruments under the Convention is the so-called Green Climate Fund.

1.1 The Green Climate Fund arising from the UNFCCC Process

At the Conference of the Parties to the UNFCCC held in Copenhagen in 2009, developed countries agreed to mobilize \$30 billion of “Fast Start Finance” (FSF) between the years 2010 and 2012, with the goal of reaching \$100 billion in annual financing by 2020 and the establishment of the Green Climate Fund (GCF) to be used for climate mitigation and adaptation efforts in developing countries (UNFCCC, 2009). The Copenhagen Accord commitments were further reiterated in the UN Climate Talks in December 2010, with a set of decisions known as the Cancun Agreements. Further progress took place during the Climate Change talks at Durban in 2011 (or COP-17), with decisions and timelines to operationalize the green climate fund. The GCF will be managed by a 24-member independent Board, chosen by UNFCCC constituency countries. A permanent GCF secretariat will be established after the parties of the Climate Change Convention decide on the host country for the GCF.

The GCF has been subject of extensive and heated discussions (Abott and Gartner, 2011; Bird et al., 2011). While the fund is to support developing countries to develop and implement climate change adaptation and mitigation strategies, extensive discussions are taking place regarding operational and funding issues. During a 2011 meeting, UNFCCC’s Executive Secretary, Cristiana Figueres stated “Every year, nations must work together to build better, more ambitious international responses in the common effort against human-generated climate change.... The launch of the Green Climate Fund is one of the significant decisions that nations reached in Cancun, which show that governments can take repeated steps forward, including this year in Durban” (UNFCCC 2011a, pp. 1).

In a recent white paper, the chief executive of Bloomberg New Energy Finance, Michael Liebreich, argued that the current approach for designing the GCF will result on its own failure. He questioned that those responsible for the design of the fund have limited private sector experience, looking to create yet “another multilateral institution for managing pools of public

money but, even if they succeed in creating a fund, there is no earthly way developed world governments will resource it to the tune of \$100 billion per annum” (Liebreich 2011, pp. 2).

Beyond these controversies, there are other key unresolved elements in the design of such fund (Schalatek and Bird, 2011). For example, are these funds supplemental to current aid targets already committed by the developed world? Which countries are to contribute to the fund and what would be their share? What degree of concessionality would GCF investments entail? Lastly, how will activities financed by the GCF be monitored and evaluated?

1.2 Objectives and Research Questions

This report is written for the Capacity Building Department of the World Bank to provide background information about the GCF and possible monitoring and evaluation approaches for it. The overall goals of the GCF are fully consistent with the Bank’s broader climate change research agenda. The Bank has a strong interest in ensuring that the GCF meets its core objective of combating climate change. As such, the Bank, through its capacity building programs on climate finance, assists developing countries and economies in transition to strengthen their institutions, and build local expertise to enable them to develop projects for the carbon markets and to access climate finance.

Based on the experience of the World Bank and from other multilateral funding mechanisms and existent monitoring and evaluation approaches, this report summarizes a set of strategic recommendations for the design of the monitoring and evaluation framework of the fund. This study aims to provide a better understanding of monitoring and evaluation approaches for the GCF and provides strategic recommendations on key elements for its evaluation framework. The study starts with an overview of the climate change convention and the GCF design and implementation challenges. It then explores the following research questions:

- What type of climate finance instruments (CFI) can be used by the GCF to maximize its effectiveness?
- How to monitor climate finance contributions of donor countries?
- What elements need to be part of the Monitoring and Evaluating Framework for GCF supported activities?
- What performance indicators can be used for the GCF?

1.3 An Evaluation Framework for the GCF

While there is plenty of literature on issues related to the fund’s governance and structure (Müller and Harmeling, 2010; UNFCCC, 2011), there is limited discussion on an evaluation framework and how it can be setup. If massive financial funds are to be channelled to developing countries, with the dual objectives of reducing greenhouse gas emissions and improving countries resilience to climate change, fund disbursements should result in measurable results

towards a low carbon, climate resilient society. This study aims to analyze key evaluation aspects of the GCF and will address current gaps in the literature.

Lessons for evaluating the GCF can be drawn from evaluation schemes of existent financial instruments for climate action. This project surveys the evaluation framework of several instruments, including World Bank lending projects, the Climate Investment Funds (CIFs), the Global Environmental Facility (GEF) and others.

1.4 Performance Measurement

The GCF will need to adopt a performance measurement approach and a Measurement, Reporting and Verification (MRV) framework. Performance indicators to monitor the outcomes of the GCF funded climate change programs and projects will need to be established. Given the size of the fund, performance measurement should go beyond project level evaluations and measure economy-wide impacts. This project examines performance measures and MRV approaches of related funding initiatives and puts recommendations forward for the design of the GCF performance measurement framework.

1.5 Structure of this Report

This report is structured as follows. Section 2 entails a literature review describing the history of the Climate Change Convention and the main GCF implementation challenges. Section 3 describes the methodology and explains the process involved in researching and preparing this project and discusses limitations of the research. Section 4 assesses the suitability of the different types of climate finance instruments and Section 5 provides logic models for the GCF funding windows of mitigation and adaptation. Section 6 analyzes donor countries' contributions to the GCF. Section 7 surveys the evaluation approach of similar funding initiatives and Section 8 explores suitable performance measures. Key recommendations for the evaluation framework of the GCF are presented in Section 9. Section 10 provides concluding remarks.

2.0 THE GREEN CLIMATE FUND AND ITS IMPLEMENTATION CHALLENGES

Climate change talks have been taking place for over 20 years at the international level. During this period, negotiators have witnessed remarkable successes [for instance, the establishment of the Clean Development Mechanism (UNFCCC, 2001) and the launch of the GCF (UNFCCC, 2011b)] and several disappointments such as the withdrawal of the US and Canada from the Kyoto Protocol and the delay of a new, global mitigation agreement to 2020 (UNFCCC (2012)).

The purpose of this background section is to provide an overview of the Climate Change Convention, the process that led to establishing the GCF, and the key challenges and controversies associated with the design and operation of the GCF.

2.1 A Short History of the UNFCCC Convention

The United Nations Framework Convention on Climate Change (UNFCCC) was opened for signature in 1992 at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (UNFCCC, 1998). 154 nations signed the UNFCCC with the aim to reduce atmospheric concentrations of greenhouse gases and "prevent dangerous anthropogenic interference with Earth's climate system." (UNFCCC 1998, pp. 8). Mitigation action at that time was aimed primarily at industrialized countries. Since the UNFCCC entered into force, the parties have been meeting annually in Conferences of the Parties (COP) to assess progress in dealing with climate change.

In 1997, the third Conference of the Parties took place in Kyoto, Japan. After intensive negotiations, it adopted the Kyoto Protocol, which outlined greenhouse gas emissions reduction obligation for Annex I countries and flexible mechanisms such as the clean development mechanism (CDM) and joint implementation (JI). Most industrialized countries and some central European economies in transition agreed to legally binding reductions in greenhouse gas emissions of an average of 6 to 8% below 1990 levels between the years 2008–2012 (UNFCCC, 1998). While the United States Clinton Administration originally agreed to reduce its emissions by 7% below 1990 levels, the Congress did not ratify the treaty and the Bush administration explicitly rejected the Protocol in 2001.

At the COP 7 meeting in Marrakech, Morocco in 2001, negotiators finalized most of the operational details for nations to ratify the Kyoto Protocol, in the so far, Marrakech Accords. The United States' delegation maintained its observer role, declining to participate actively in the negotiations. The main decisions at COP 7 included operational rules for international emissions trading among parties to the Protocol and for the CDM and joint implementation (UNFCCC, 2001).

COP 11 took place in Montreal in 2005 with more than 10,000 delegates. It was one of the largest intergovernmental conferences on climate change ever and marked the coming into force of the Kyoto Protocol.

COP 13 took place in 2007 in Bali, Indonesia. It included agreements on a timeline and structured negotiation on the post-2012 framework (after the end of the first commitment period of the Kyoto Protocol), adopted the Bali Action Plan and created AdHoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) (UNFCCC, 2009).

COP 15 took place in Copenhagen, Denmark. With several industrialized countries reluctant to fulfill commitments under the Kyoto Protocol, much of the negotiations were on a post-2012 agreement. Developed countries pledged to provide new and additional resources approaching USD 30 billion for the period 2010-2012 and with balanced allocation between mitigation and adaptation. This collective commitment has come to be known as 'fast-start finance' (FSF) (UNFCCC, 2009).

COP 16 at Cancun affirmed the Copenhagen discussions and stressed the need for securing long-term financing, through the Green Climate Fund (GCF). It was to be established to support projects, programs, policies and other activities in developing country Parties using thematic funding windows (UNFCCC, 2010; UNFCCC, 2011b).

COP 17 took place in Durban, South Africa in 2012. Negotiators argued for days on issues related to finance, the Kyoto Protocol and long-term commitments. Canada officially withdrew from the Kyoto Protocol. Negotiations were extended for 36 hours before reaching a final agreement which included the following (UNFCCC, 2012):

- The launch of the Green Climate Fund (GCF) and the establishing of its governing Board. Regional groups were asked to nominate board members within three months. The Board will establish key operational aspects of the fund, including an evaluation framework;
- An extension of the Kyoto Protocol with the European Union and 11 other countries, beginning the first of January of 2013.
- An agreement to negotiate a global deal for climate change mitigation by 2015, embracing developed and developing countries and to be effective by 2020.
- Continuation of the CDM under simplified MRV rules.

A major outcome of the Durban meetings, the launch of the GCF, is explained in the next section.

2.2 The Green Climate Fund

The Green Climate Fund (GCF) is expected to be the main instrument for climate finance in the future. The GCF will support climate change projects, programmes, policies and other activities in developing countries for climate action. It will promote a “paradigm shift towards low-

emission and climate-resilient development pathways” (GCF 2012, pp.3). The Fund will be guided by the principles and provisions of the Convention.

The GCF is expected to replace several existing funding mechanisms provided by donors, once fully operational. Several years will be required until the funding target of 100 billion a year is reached. During COP 16, it was decided that the Green Climate Fund would be designed by a Transitional Committee in accordance with pre-defined terms of reference (see [Annex III to decision 1/CP.16](#)). The Transitional Committee comprises forty members, with fifteen members from developed country Parties and twenty-five members from developing country Parties. Party representatives need to meet certain qualifications with the proper experience and skills, notably in the area of finance and climate change (GCF, 2011).

The Transitional Committee proposed key elements for building the framework and the organizational structure of the Green Climate Fund. Such elements were endorsed during [COP 17 at Durban](#) (UNFCCC, 2012). Key issues include:

- The GCF will be guided by the principles and provisions of the Climate Change Convention;
- The Board of the GCF will include 24 members: 12 from developed countries and 12 from developing countries. Nominations will take place by March 31, 2011 and the first meeting is scheduled for April, 30, 2012;
- The GCF will have a legal personality and will possess the legal capacity, as necessary, for the exercise of its functions and the protection of its interests;
- The GCF will count with a fully independent secretariat that will operate in a host country to be defined;
- The fund will be balanced between adaptation and mitigation activities;
- The fund will support programs and/or projects that are part of countries’ climate change mitigation plans (e.g. nationally appropriate mitigation actions – NAMAs) and adaptation plans (national adaptation plans - NAPs);
- Funds will be disbursed both through direct access and international access (e.g. development banks). National entities accessing the fund will need to follow an accreditation process. The Board will develop, manage and oversee an accreditation process for all implementing entities based on specific accreditation criteria that reflect the Fund’s fiduciary principles and standards and environmental and social safeguards;
- The GCF will include a different set of climate finance instruments;
- The fund may employ results-based financing approaches for incentivizing mitigation actions. Approaches for payment for verified results are to be used when appropriate.

The following general guidelines were adopted for monitoring and evaluation (GCF, 2011; GCF 2012):

- Programmes and projects will be regularly monitored for impact, efficiency and effectiveness in line with rules and procedures to be established by the Board;
- A results measurement framework that establishes indicators and performance measures will be developed;
- There will be periodic independent evaluations of the performance of the Fund. The Board will establish an operationally independent evaluation unit as part of the core structure of the Fund;
- Reports of the Fund's independent evaluation unit will be provided to the Parties of the Convention for purposes of periodic reviews of the financial mechanism.

The Republic of Korea, Germany and Denmark have contributed to the start-up costs of the Green Climate Fund. Due to the financial crisis in Europe and economic slowdown in major economies, not many pledges have been submitted. The World Bank has been designated as interim trustee for the GCF, becoming its fiscal agent. This involves establishing a Financial Intermediary Fund (FIF) trust fund at the Bank to receive, hold and invest contributions, transferring funds as instructed by the GCF Board, and preparing financial reports (GCF, 2012).

Some commentators argue that developed countries would not make significant contributions to the GCF until there is agreement on its governance structure, fiduciary standards and evaluation framework (Schalatek and Bird, 2011). It will take time to secure agreement on aspects due to differing views of countries. The subsection below provides more context and details on these discussions and controversies.

2.3 Key Challenges in Designing the Green Climate Fund

The GCF can be the main driver for coping with climate change at a global level. However, as a global instrument, it requires a broad consensus on how should it be designed, structured, governed, operated and evaluated (Schalatek and Bird, 2011). Since the early discussions about the governance and operational requirements of the GCF, conflicting and opposing views between developed and developing countries arose (Lattanzio, 2011).

This section starts by examining how economic power has been shifting from the traditional OECD countries towards the BRICs (Brazil, Russia, India and China) in the global economy (PCW, 2011). In this context, the traditional definition of “donors” and “recipient” countries may need to be revised over time. It then discusses low income countries' concerns that GCF money needs to supplement (and not supplant) official development assistance. Two relevant issues follow: the role of the private sector and the degree of concessionality of GCF investments. Finally, it highlights the needs for donor coordination, the capacity building in developing countries for using GCF monies effectively and the challenges of setting-up a new agency.

2.3.1 Shared Responsibilities in a Changing Global Economy

A long-lasting debate in the Climate Change Convention has been about who pays and who receives compensation for climate damages. The UNFCCC addresses this issue by stating the needs of common, but differentiated responsibilities. Article 3 of the Convention states that “parties should protect the climate system for the benefit of future and present generations of human kind on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities. Accordingly, developed countries should take the lead in combating climate change and the adverse effects thereof” (UNFCCC 1998, pp. 4).

One interpretation of this article is that developed countries must contribute towards climate change mitigation and adaptation in developing countries. This argument may have been valid 20 years ago, when the Climate Change convention was established; however, the global economy has transformed since then.

During the last decade, emerging economies have grown faster than OECD countries along with their emissions. GHG emissions from China have surpassed those of the United States. In 1997, the US GDP was 3.6 larger than that of China (measured in PPP). Now, it is only 1.4 larger and the Chinese economy may surpass the US within a decade. The world economy is now driven by emerging economies, moving towards an era of prosperity while keeping their internal accounts in order. If such patterns continue, the global economy will be mostly dominated by emerging markets (China, India, Brazil, Russia, Mexico and Indonesia) by 2050 (PCW, 2011). Figure 1 shows the prospects of the global economy for 2050.

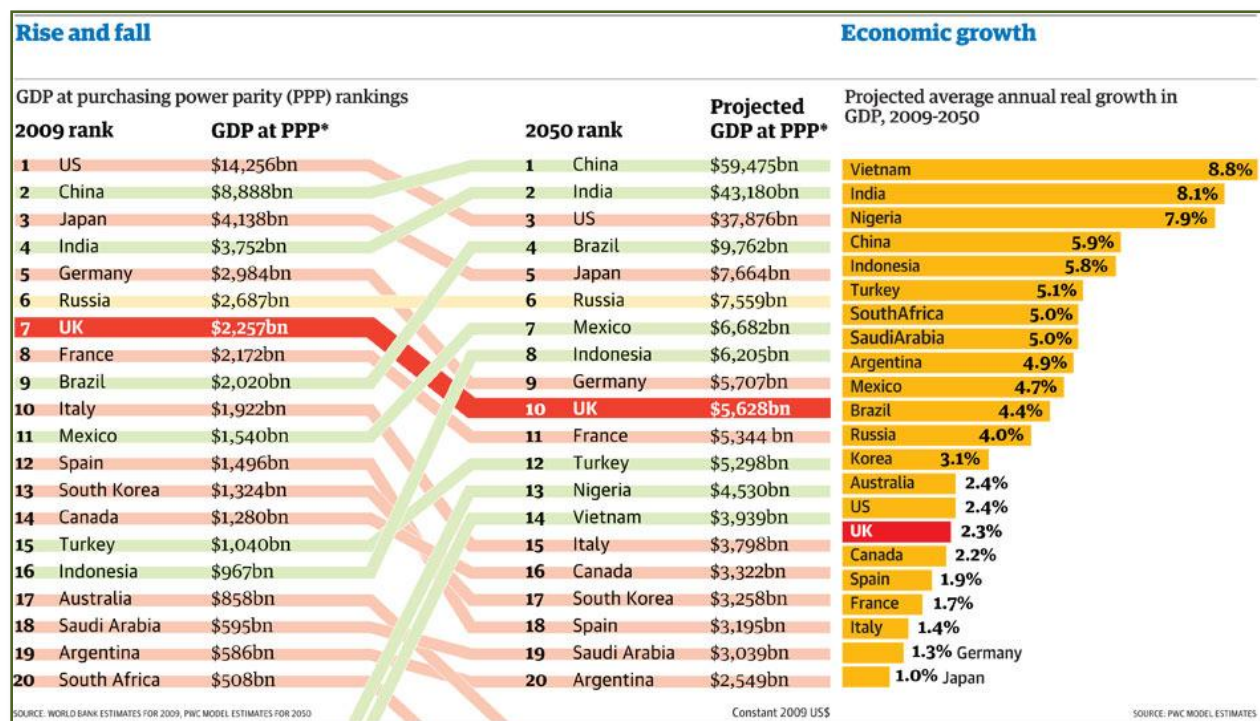


Figure 1: Prospects of the Global Economy for 2050. Source: PCW, 2011

With these prospects of the global economy for the next decades, it would be difficult to sustain the original interpretation of common but differentiated responsibilities under the UNFCCC convention. The notion of developed and developing countries of today would not hold, such as who should be the donors and recipients of the GCF. The BRIC (Brazil, Russia, India, China) countries will play a dominant role in the global economy for the next decades. They will drive investment and consumption in developing countries and will have considerable influence in other world regions, particularly in Africa.

2.3.2 “Additionality” of Climate Finance with Respect to ODA

Many developing countries claim that climate finance commitments under the convention are an entitlement and should supplement or “be additional” to aid or official development assistance (ODA) (World Bank, 2010a). There are two reasons for that:

- ODA is meant to help developing countries to achieve the Millennium Development Goals (MDGs) and there is an extant commitment of OECD countries to allocate 0.7 percent of their GDPs to ODA by 2015. Developing countries argue that funds addressing climate change are not part of this past commitment.
- Most of GHG concentrations to date are a product of historic GHG emissions from developed countries. Accordingly, climate finance should be considered as an obligation for those who caused the emissions historically (World Bank, 2010a).

In the views of many OECD countries, climate finance and development finance are closely linked at the project level and it will be difficult to separate. Concessional aid irrespective of its use should be recorded as a part of ODA commitments. They see climate finance as a component of their overall ODA contributions that support the MDGs related to environment (World Bank, 2010a).

The UNFCCC supports the views of the developing countries. Specifically, Articles 4.3 and 4.5 of the treaty call for industrialized countries to provide “new and additional” financial resources to meet the agreed developing country implementation of climate change goals (UNFCCC 1998, pp. 5). This means that climate finance and GCF contributions should be in addition to ODA commitments.

Many countries, however, are far from reaching the 0.7 of GDP goal of development aid. With exception of the UK (currently at 0.6), G7 countries are well short of this target: the US, Japan and Italy have not surpassed the 0.2 barrier, Canada is just at 0.33, Germany at 0.40 and France at 0.47 (World Bank, 2010a). Furthermore, aid disbursements have been decreasing in many countries. The 2010 ODA contribution was US\$ 108.1 billion, which is lower than year 2005 ODA contribution of US\$ 125 billion. The current ODA gap is about 100 billion dollars. At the same time, additional climate finance for the GCF represents other 100 billion dollars (UNFCCC, 2012a). Table 1 below summarizes ODA commitments per country and identifies the ODA contribution gap.

Table 1: ODA Commitments per Country (selected countries) (World Bank, 2010a)

Country	ODA for 2010 (billion USD)	ODA/GDP (2010)	ODA gap
Germany	11.6	0.4	43%
Denmark	2.3	0.83	None
Netherlands	5.3	0.8	None
France	10.1	0.46	34%
Italy	3.4	0.2	71%
Canada	3.5	0.33	53%
Japan	8.5	0.18	74%
United States	24.7	0.19	73%
EU members	63.8	0.48	31%
Total	108.1	0.32	54%

At present, developing countries fear that future GCF donor contributions can result in potential reductions in ODA. Switching funds from ODA commitments to the GCF will not be in low-income countries' best interest because ODA helps to alleviate immediate problems such as health, nutrition and education; whereas the benefits of climate change action are medium and long-term. Without an additional effect of the GCF with regard to ODA, there is simply no rationale for creating the GCF. Unless a rigorous and transparent monitoring system is in place to track ODA and Climate Finance contributions simultaneously, there will be no way to assess the validity of the GCF. Unfortunately, there has been little discussion of this issue at the GCF Transitional Committee meetings (GCF, 2012).

2.3.3 Public vs. Private Sources of Funding

There is a common understanding that public sector funding cannot fulfill the range of funding needed for climate change adaptation and mitigation. Measures to encourage private sector investment are essentially needed.

One key issue is how to encourage private sector investment in a way that every dollar of public sector expenditure results in multiplied investment of the private sector. While for public finance, the source of investment is provided by the public treasuries and allocations are decided by governments, private climate finance is created via markets and allocations take place in specific regions and sectors (Buchner et al., 2011). Therefore, part of the success of the GCF would be in its ability to leverage private sector funds for investment in both middle- and low-income countries. A range of strategies may be needed to encourage private sector participation. This includes putting in place a strong enabling environment, using public funds to support early entry of projects, and using innovative tools and risk management instruments to attract private sector investment (Sierra, 2011).

2.3.4 Type of Instruments and Degree of Concessional Resources

The GCF can be disbursed using different instruments. Some instruments like grants are given without needs of re-payment. Others instruments are not concessional like loans, equity, and insurance. There are mixed instruments as well, such as concessional loans which typically have a minimum of 25% of grant component. Developing countries are pushing to have the GCF as a concessional instrument (UNFCCC, 2012). In practice, a mix of instruments will be used.

The bottom line remains on how to account concessional and non-concessional funds. For example, if a country puts a billion dollar in the GCF, but half of it needs to be repaid with interest, how much of the contribution will be considered part of the 100 billion GCF target? There is currently no resolution on this important issue.

2.3.5 Donor Coordination

The global climate finance architecture is complex. Finance is channelled through a wide array of multilateral funds – such as the Climate Investment Funds, the Adaptation Fund and the Global Environment Facility - as well as through the bilateral channels of development agencies of the European Union, USA, Germany, UK, Australia, Canada, Japan, Norway and others.

A proliferation of funding channels creates various challenges for recipient countries. It is difficult for them to access finance because each funding donor has specific requirements and application procedures. This will also make the monitoring and evaluation of climate finance much more challenging (Nakhooda et al., 2011).

Lack of donor coordination in climate finance is a concern. Poorer countries, where the need for development and improved climate resilience is greatest, find it most difficult to access support. The project-based approach and earmarked nature of many of the funding mechanisms become barriers for countries (OECD, 2012a). Africa, which has more climate-sensitive economies than any other continent, has only received 14% of global climate finance approved to date.

2.3.6 Country Preparedness

Five decades of development co-operation experience provide important lessons on how public finance can be channelled to a country (OECD, 2012a). One lesson concerns the importance of strengthening and using public financial management systems of the recipient countries. The most efficient approach is to blend domestic and external resources and to ensure country's ownership in the use of the finance.

Only a few countries have been able to quantify how much external and internal public finance is used to address climate change (OECD, 2012b). One challenge is the lack of agreement on a definition of climate-change-related expenditures. While mitigation activities may be identified and ranked in terms of the impact on emissions reductions, there is no equivalent measure for adaptation.

For developing countries, appropriate classification of climate change expenditures is important to ensure that external financing baselines are appropriately defined such as additionality of climate change financing can be verified. From a policy perspective, the appropriate classification of climate change expenditures serves a useful signalling and control function, particularly where resources intended to support climate change policies are allocated across agencies and levels of government. Such accounting of expenditures becomes an essential element for a Monitoring and Evaluation Framework of Climate Finance.

In addition to tracking climate finance, a growing number of recipient countries have set up national climate change funds that receive funding from multiple developed countries in an effort to coordinate and align donor interests with national priorities (Nakhoda et al., 2011). Recent studies suggest a growing number of National Climate Funds in countries such as Brazil, Indonesia, Bangladesh, China, Ecuador, Guyana, the Maldives and Thailand (OECD, 2011b). In many countries, an external agency administers the funds, helping to build donor trust by using high fiduciary standards. The establishing of National Climate Funds might also help the monitoring and evaluation aspects of the Green Climate Fund (OECD, 2011b).

2.3.7 Setting-up a New Agency

The GCF is expected to have its own board, secretariat, host country, operational budget and staff. A brand new agency in charge of allocating money will be created. How effective will this be? Many commentators argue that there are too many agencies for development and no need for an additional one (UNFCCC, 2012). There are already significant issues regarding coordination of donors, with development work often duplicated in the absence of coordination.

The GCF can build its success by aggregating the many sources of climate finance into a single entity. As discussed in Section 4, there is a “spaghetti” of climate financing flows disbursed bilaterally, through MDB’s and from the private sector (Buchner et al., 2011). If such multitude of funds can be aggregated, the disbursement can be more effective increasing the effectiveness of the monitoring and evaluation process.

3.0. METHODOLOGY AND CONCEPTUAL FRAMEWORK

The overall goal of this project is to recommend Climate Finance Instruments for the GCF together with developing an M&E framework. In accordance with the client's interest, this report tackled the following research questions:

- What type of climate finance instruments (CFI) can be used by the GCF to maximize its effectiveness?
- How to monitor climate finance contributions of donor countries?
- What elements need to be part of the Monitoring and Evaluating Framework for GCF supported activities?
- What performance indicators can be used for the GCF?

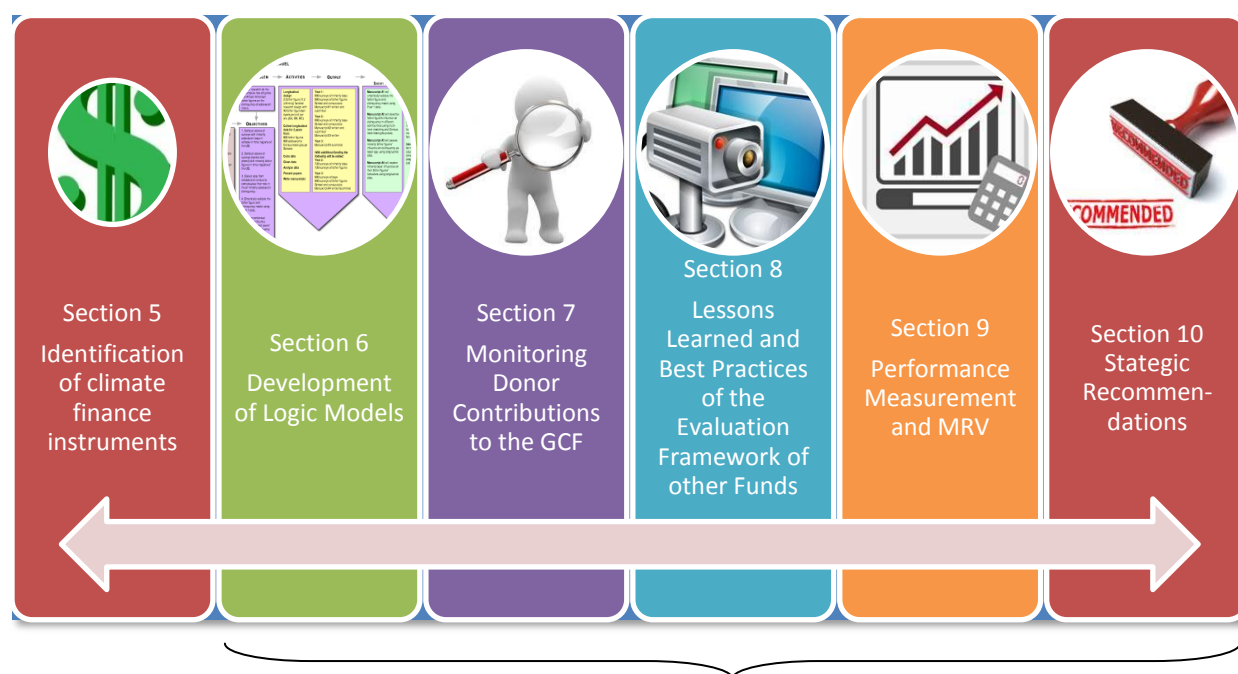
This section identifies the methodology and conceptual framework for the project. The approach includes a policy instruments scan to identify the right mix of climate finance instruments (CFI), logic modeling to link CFI with outcomes, a jurisdictional scan to identify M&E best practices and a literature review to pinpoint performance indicators. The following sections describe the rationale of the approach, details of the analysis and notes potential methodological weaknesses and limitations. Table 2 describes the rationale behind the methods used to address each research question and its limitations.

Table 2: Rationale and Weakness for Methods used to address each Research Question

Research Question	Methodology/ Methods	Rationale of Selection	Weakness
What type of climate finance instruments (CFI) can be used by the GCF to maximize its effectiveness?	Policy instrument scan and selection of CFI using cost-effectiveness criteria.	A policy instrument scan of the investment operations of Multilateral Development Banks (MDB's) provides empirical evidence on the suitability of the CFI to support specific activities and target countries. The feasibility of using each recommended instrument is backed with a relevant number of projects.	Potential bias towards instruments typically used/preferred by MDB's.
How to monitor climate finance contributions of donor countries?	Literature review and gap analysis	Efforts to monitor climate finance contributions are well documented in the literature. Gap analysis identifies missing elements of such efforts.	There is a limited number of climate finance tracking initiatives implemented so far.
What elements need to be part of the Monitoring and Evaluating Framework for GCF supported activities?	Jurisdictional scan and logic modeling to link CFI with Program outcomes.	The logic model provides a good understanding of the relationship between GCF inputs (e.g. CFI) and outcomes. It is an essential tool that guides the evaluation process. The jurisdictional scan identifies best evaluation practices of different institutions, which have been refined in the course of several decades.	Evaluation framework builds on the experience of donors and funding agencies without incorporating perspectives of local implementing agencies and recipient countries. M&E constraints that exist in countries with limited capacity are not accounted for.
What performance indicators can be used for the GCF?	Literature Review	There is a significant amount of literature on performance measures for climate change, particularly in the area of mitigation. Approach benefits from documented expertise of a wide range of investment agencies.	Data limitations and capacity constraints in client countries are not accounted for.

3.1 Conceptual Framework

In the absence of a fully established and operational GCF, this study is comprised of six building blocks as depicted in Figure 2. The first building block focuses on the first research question of this study, i.e. the type of climate finance instruments (CFI) that can be used to maximize GCF's effectiveness. Once the CFI are identified and understood, the evaluation framework is examined through a progression of interrelated steps that include: the development of logic models for adaptation and mitigation windows; examination of approaches for monitoring donor contributions to the GCF; identification of lessons and best practices from the evaluation framework of other funds; identification of suitable performance measures and MRV principles; and overall recommendations.



Elements of the Evaluation Framework

Figure 2: Conceptual Framework for this Study (developed by author)

Section 3.1 describes the approach for identifying relevant climate finance instruments for the GCF (first building block in the Figure) and Section 4.2 describes the approach to build the GCF evaluation framework (remaining building blocks in the Figure).

3.1.1 Identification of Cost-Effective Climate Finance Instruments

Cost-effectiveness is measured by the extent to which the GCF has achieved its goals at a lower cost (compared with alternatives). For climate change mitigation, cost effectiveness means that climate finance instruments (CFI) are selected in a way that GHG reductions in developing countries are maximized for every dollar provided by the GCF. In this sense, the GCF will need to select climate finance instruments (CFI) such that:

- (i) The CFI leverages large amounts of private sector investment (i.e. high leverage ratio);
- (ii) There is significant experience in using the CFI in different country/sector settings;
- (iii) The CFI allows the GCF to reach a wide-range of countries and sectors (inclusivity);
- (iv) The CFI selected entails repayment whenever possible and appropriate.

This study selects CFI based on criteria (i) – (iv). Criterion (i) is known from recent studies (Brown et al., 2011; Kossoy and Guigon, 2012; Huhtala and Ambrosi, 2010) and helps to identify a long list of CFI that are discussed in Section 4.

Criteria (ii) and (iii) are determined through an empirical review of comprehensive project finance databases, namely:

- *World Bank Projects Database*: This database provides detailed information on about 11,000 lending projects in over 100 countries from 1947 onwards. The database can be searched by themes (e.g. climate change) and countries, and includes instruments such as grants, loans and concessional loans. The database is publicly open and available at: <http://www.worldbank.org/projects>
- *IFC Projects Database*: This database provides detailed information on about investment operations of the International Finance Corporation (IFC) with the private sector. The database can be searched by themes (e.g. climate change) and countries, and includes instruments such as private sector loans and equity investments. The database is publicly open and available at: <http://www.ifc.org/projects>
- *MIGA Projects Database* This database provides detailed information about investment guarantees provided by Multilateral Investment Guarantee Agency (MIGA). The database only includes investment guarantees and can be searched by themes and countries. <http://www.miga.org/projects/index.cfm?stid=1821>
- *UNEP Riso CDM Pipeline* The CDM/JI Pipeline Analysis and Database focuses on carbon market instruments and contains all CDM/JI projects that have been sent for validation/determination. The CDM Pipeline contains 8871 CDM projects and can be searched by country and sector. It is publicly available at: <http://www.cdmpipeline.org/>
- *Ecofys NAMA database* This database contains proposals of Nationally Appropriate Mitigation Actions (NAMAs) developed around the world. The NAMA database contains information on 52 NAMAs in 24 countries and can be publicly accessed at: <http://www.namadatabase.org/>

Building on the criteria, the project review and the database search, different CFI are recommended for different types of settings, e.g. middle income versus low-income countries; adaptation versus mitigation investments.

3.1.2 Elements of the M&E framework for GCF supported activities

Development of the GCF Logic Model: A logic model is a representation of how a program is intended to produce particular results. Logic models are graphical in nature and show the logical relationships between the resources invested (inputs), program components, activities, outputs and outcomes (McDavid and Hawthorn, 2006). The inputs refer to the context in which the program operates, the resources involved in the program and the instruments used. Components of the GCF refer to the sectors where it would invest and operate. Activities are the specific interventions that lead to outputs measured by indicators. Outcomes are the short-term, intermediate and long-term benefits or changes as a result of the interventions (Wholey, 1987).

The conceptual approach for developing the GCF logic model is as follows:

- (i) Goals and outcomes are given by the GCF operating instrument and its mandate under the UNFCCC.
- (ii) Inputs are the climate finance instruments identified in Section 5.
- (iii) Components are the priority sectors for mitigation and adaptation where GCF investments are expected to take place. Activities are recommended climate mitigation and adaptation measures within each sector. Sectors and activities have been identified in the literature, for instance the International Panel on Climate Change (IPCC) in its *2007 Assessment Report* (IPCC, 2007) and the *Global GHG Abatement Costs Curve* developed by McKinsey (2010).
- (iv) Outputs and indicators are examined in Section 9 through a literature survey of other climate funds (see section 4.5 for specific approach).
- (v) Climate mitigation and adaptation logic models are presented separately, taking into consideration that inputs, components, activities, indicators and outcomes differ.

Monitoring Donor Contributions to the GCF: The GCF calls for new and additional contributions towards climate change adaptation and mitigation. The challenge is on how to verify that such contributions are new and additional. This study uses a literature review and gap analysis to examine how climate finance contributions of donor countries are currently tracked. Special emphasis is on analyzing existent registries and tracking websites in order to identify gaps and put together recommendations for a global monitoring system of climate finance.

Identification of Best Practices of the Evaluation Framework of other Funds: Section 6 examines the evaluation approach of four of the most relevant institutions, programs and funds on climate change:

- (i) The World Bank: While World Bank projects cover a range of sectors (beyond climate change), the experience gained by decades of project implementation and its solid and well-structured Independent Evaluation Unit (IEG) provides useful insights towards the design of an M&E system for the GCF.

- (ii) The Global Environmental Facility (GEF): The GEF is one of the largest funder of projects to improve the global environment and has allocated some \$10 billion since 1991 (GEF, 2010). It has funded a range of climate mitigation and adaptation projects all over the world and has a well-defined evaluation approach that implements jointly with partner agencies.
- (iii) The Climate Investment Funds (CIFs): The CIFs are considered to be predecessors of the GCF and have developed a set of evaluation guidelines and principles to evaluate the impacts of climate change mitigation and adaptation projects and programs.
- (iv) The Carbon Funds and the Clean Development Mechanism (CDM): Carbon funds have been created during the last decade for reducing greenhouse gas emissions in developing countries. They have been managed by diverse institutions such as the German Development Bank (KfW) and private banks. Monitoring and evaluating carbon finance projects followed the guidelines provided by the CDM Executive Board of the United Framework Convention Climate Change which entails rigorous procedures for GHG quantification, measuring and verification.

Lessons learned and best practices are obtained by means of a policy review of evaluation documents pertaining each of the institutions/funding mechanisms. Results, implications and strategic recommendations for the GCF (which are developed based on these findings) are presented in Section 9.

Performance Indicators: With increasing interest on establishing results-based financing mechanisms for the GCF, the choice of performance indicators becomes more critical. Furthermore, the UNFCCC Convention mandates for credible Measuring, Reporting and Verification (MRV) systems. MRV systems need to provide consistent, transparent, complete and accurate estimates of climate mitigation and adaptation programs. This study surveys different MRV approaches used for climate change programs and identifies suitable performance indicators for measuring outputs of sectoral interventions.

Information sources for indicators are project and program evaluations of the World Bank, GEF, CDM funds and others.

3.2 Summary of Limitations and Weaknesses of the Methodology

This study builds on the evaluation experience of multi-lateral institutions and a systematic analysis of documents, databases, case studies and website data. As such, the study is based on existing work and evaluation practices of others, and inherits any possible limitations of such evaluation approaches and has potential biases towards investment strategies of Multilateral Development Banks. The approach also lacks consultations with climate change practitioners in developing countries who will be directly engaged in M&E aspects of GCF funded projects. Input for practitioners could have been obtained through expert interviews; however, at the

client's recommendation, interviews were not performed due to existing political sensitivities associated with the governance and administration of the GCF.

4.0 IDENTIFICATION OF CLIMATE FINANCE INSTRUMENTS FOR THE GCF

The GCF seeks to promote climate change mitigation and adaptation investments through different means, ranging from grants and concessional loans to guarantees and sophisticated risk management instruments. After an introduction on the climate finance “definition” and needs, this section provides an overview of the different instruments that can be used for promoting investment in climate action. It ends by providing specific guidance on appropriate climate finance instruments to support climate change mitigation and adaptation in low and middle income countries.

4.1 Climate Finance: Definition, Needs, and Current Flows

Climate finance is not yet clearly defined; there is no internationally agreed definition of what it entails. Moreover, there is no conventional starting place for a methodology or measurement framework to track climate finance flows (Corfee-Morlot et al., 2011). Additionally, due to confidentiality issues, there are no devoted systems for tracking private climate finance and hence, no formal definition of the private climate finance component.

Climate finance generally refers to resources that support climate mitigation (i.e. investments that will result in net reductions of GHG emissions) and climate change adaptation (i.e. plans, strategies, projects and programs that reduce countries’ vulnerabilities to climate change). Climate finance is also viewed as capital flows that target “low-carbon, climate resilient development” (Buchner et al., 2011). The IMF and World Bank (2011) define climate finance as funds which cover the costs and risks of climate action, support an enabling environment and capacity for adaptation and mitigation, and encourage R&D and deployment of new technologies.

Global climate finance needs have been estimated by different organizations. According to the World Development Report of the World Bank, annual requirements for climate finance in developing countries by 2030 are between \$30 to \$100 billion per year for adaptation and \$140 to \$175 billion per year for mitigation (see Figure 3) (World Bank, 2010b). These are the public funds required to achieve the 2°C climate stabilization goals and to protect vulnerable areas from the negative effects of climate change. Additional private sector financing will be needed for profitable investments on sustainable energy, transportation and other sectors.

According to the 2010 World Bank Development Report of 2010, “public” climate finance only accounts for about \$9 billion a year (World Bank, 2010b) and filling this gap will be a massive challenge. It will require tapping new sources from the public and private sectors.

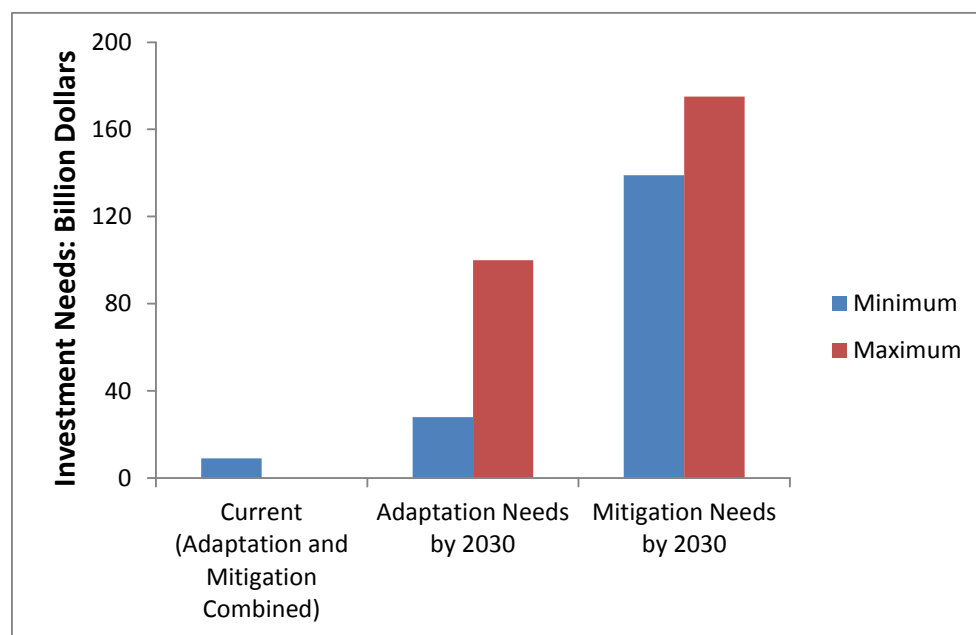


Figure 3: Climate Finance needs (billion US\$). Source: World Bank, 2010b

Using a different methodology, the Climate Policy Initiative (CPI) identified a larger volume of existing sources of climate finance. The estimated amount is USD 97 billion in global climate funding, with USD 55 billion provided by the private sector and USD 21 billion by public budgets (Bucher et al, 2011). According to the CPI study, private funding is given in the form of direct equity and debt investments. A relatively small share – less than USD 3 billion – is provided by carbon markets and voluntary contributions. The CPI report notes, however, that a significant share of the USD 97 billion was provided prior to the Copenhagen Accord. Most of this will not be “eligible” to be counted as part of the 100 billion needs for the GCF.

Climate finance can incorporate both domestic and international sources. Domestic sources include revenues from taxation used for climate friendly investments. The CPI estimates include domestic sources. However, under the climate change discussions, climate finance under the GCF refers to international funds. The Copenhagen and Cancun agreements specify that climate finance flows from developed countries (Annex 1) to developing (Non-Annex 1) countries.²

Climate finance can be mobilized through a range of instruments from public sources or from private sources. In its broad definition, climate finance includes funds provided in concessional terms and funds provided at commercial rates (Bucher et al, 2012).

The UNDP (2011) has mapped the type of climate finance funds to date (without the GCF) or the “landscape” of climate finance as shown in Figure 4.

² A more extended discussion on the definition and measurement of climate finance is provided in Buchner, Brown and Corfee-Morlot et al. (2011).

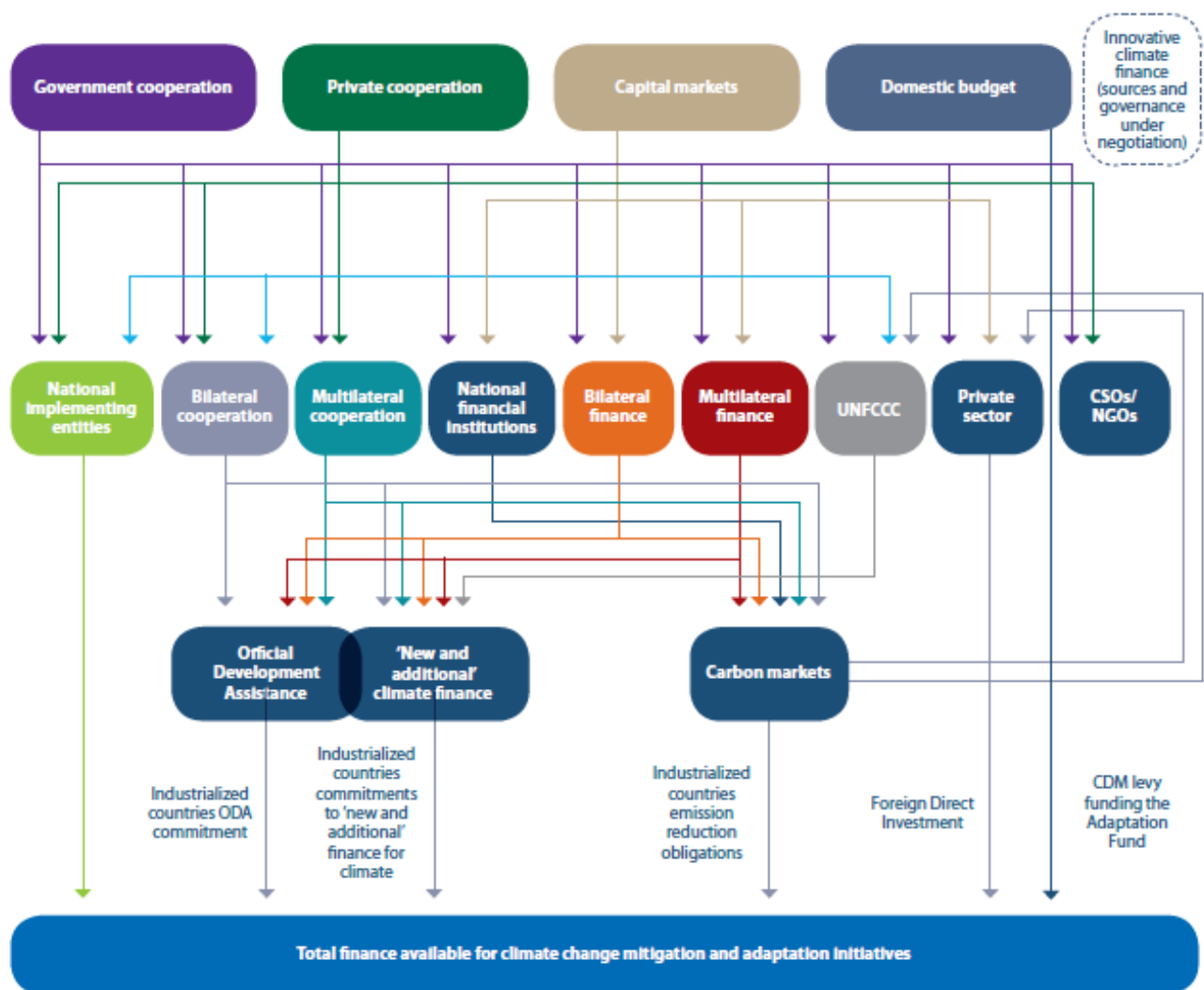


Figure 4: Climate Finance: Sources, Agents and Challenges. Source: UNDP, 2011

The next section describes and analyzes the range of climate finance instruments available. It includes grants, public loans, private sector loans and equity, market mechanisms (CDM and REDD+), guarantees and insurance.

4.2 Grant Instruments

Grants are funds that incur no debt or other financial liability. They are usually disbursed in stages. The GEF has been the primary organization providing grant financing. GEF grants for climate change include the Least Developed Countries Trust Fund ([LDCTF](#)) and Special Climate Change Trust Fund (SCCF) (Huhtala, 2011).

The LDCF aims to address the special needs of the Least Developed Countries (LDCs), which are particularly vulnerable to the adverse impacts of climate change. This includes preparing and implementing National Adaptation Programmes of Action (NAPAs) (GEF, 2012).

The SCCF was created in 2001 to address the special needs of developing countries under the UNFCCC. The overall objective of the fund is to implement long-term adaptation measures that increase the resilience of national development sectors to the impacts of climate change. The SCCF should serve as a catalyst to leverage additional resources from bilateral and other multilateral sources. The Parties to the Climate Convention identified adaptation to climate change as the top priority of the SCCF, and technology transfer and its associated capacity building activities as another essential area for funding.

The [Climate Investment Funds \(CIFs\)](#) also provide grant financing for various types of adaptation and mitigation initiatives. They are considered as the predecessors of the GCF. Total pledges to the CIFs are 6.5 billion. Major contributors to the CIFs are the US, UK, Japan, Germany, France, Norway, Spain, Australia, Canada, Sweden, The Netherlands, Denmark, Switzerland and Korea (CIF, 2012).

From a recipient perspective, grants are attractive instruments for climate finance, as there is no obligation to return these funds. But, grants impose high costs to donor countries. In order to maximize the effectiveness of resources allocated to climate finance, donors will need to be selective on when and why to use the grants. While many of the climate mitigation activities such as investments in energy efficiency and renewable energy have a positive financial return (McKinsey, 2010), using grants as support for such activities can be a waste of resources. Alternatively, investments in climate change adaptation do not always show a tangible financial return, although they are beneficial to the society and specially the poor. In this case, the use of grants can be more justified.

The use of grants also depends on the client country. For instance, the World Bank only provides concessional finance to the poorest countries through the International Development Association (IDA) (World Bank, 2011). A similar approach may be established within the GCF, i.e. provide grants only for the least developed countries.

Experience from the portfolios of donor agencies suggest that private leverage factors can vary considerably according to the type of public financing that is deployed, the sector and technology. Broadly speaking, each dollar of public finance can leverage between 3 to 6 dollars of non-concessional lending (World Bank and IMF, 2011). Leverage ratios can be significantly higher where the public finance component is in the form of concessional lending or grants, running at 8 to 10 or even more.

4.3 Loans

Loans have been used for decades for renewable energy investments and other type of climate related projects. Multilateral development banks such as the World Bank, the Interamerican

Development Bank and Asian Development Bank provide different type of loan instruments. There are two main types of loans: standard loans and concessional loans. The first type of loan is given to governments at competitive interest rates. Multilateral development banks are able to raise capital at a relatively low cost from international markets due to their high credit rating AAA. Then, they lend money to developing countries that have the capacity to pay (World Bank, 2011).

Concessional finance refers to lending that is designed to achieve certain goals in poor countries. Concessional finance is extended by creditors at a cost that is below market – zero or low interest. Payment terms tend to be lenient or flexible. The largest provider of Concessional Finance is the World Bank, who manages the IDA (International Development Agency) Funds (World Bank, 2011).

Loans are a suitable instrument to be used for projects that promise a reasonable return to private investment. This includes energy efficiency, renewable energy and mass transportation systems; but excludes a range of adaptation projects. Adaptation projects do not offer tangible returns to private investment because they are often seen as public goods and private investors may find difficult to recover their returns. For instance, building a dam can protect a community from flooding. However, a private entity may not be willing to build such dam on its own because it will be difficult to charge consumers of the service provided by the dam.

In terms of leveraging private sector funds, multilateral loans can have a positive leverage effect due to their low interest rates. If the target is, for example, a profitable project on energy efficiency and renewable energy, a multilateral loan can help to attract private sector loans and equity. A recent experience with the CIF, showed that a multilateral loan, blended with a small amount of concessional finance helped to bring equity to a wind power investment in Mexico (CIF, 2012).

4.4 Private Sector and Equity Financing

Private sector flows for climate mitigation related investment in developing countries have grown rapidly. Investments in clean energy (including renewable energy, energy efficiency, and transportation efficiency investments) exceeded half a trillion dollars in 2010, with over \$200 billion in developing countries (World Bank and IMF, 2011).

Global capital markets raise money from individuals and institutions and individual's investors through various investment vehicles such as equity and debt. This money is then provided to multinational companies, financial intermediaries, MDBs and governments for investment into profitable projects with a certain return (Brown and Jacobs, 2011).

As noted by Baucher et al. (2011), almost all private sector financing goes towards mitigation measures. However, financing mitigation is not straight forward. It often happens that climate mitigation projects are too small for equity investors to consider, or project proponents cannot access sufficient equity, despite having a strong internal rate of return. When provision of equity

is the main limiting factor, equity capital ‘pledge’ funds become an option to consider (Brown and Jacobs, 2011). According to this model, there is a “public finance sponsors” (e.g. an international financial institution) that gives a small amount of equity to encourage much larger pledges from private investors. An alternative model to leverage private finance is to use subordinated equity funds. In this case, public finance provides subordinated equity (Brown and Jacobs, 2011; Younger, 2012). This implies that repayment on the equity provided by the “public fund” is of lower priority than the repayment of other equity investors. Under this scenario, the fund would have claimed on profits only after rewards to other equity investors are distributed. The subordinated equity funds allow increasing the risk-adjusted returns of the private investors.

Donor countries are usually supportive of using these types of instruments as would like the private sector to take a significant share of the climate finance commitments. However, some limitations occur. First, many climate adaptation projects do not present an attractive *financial rate of return* (although they have a positive *economic rate of return*). Second, investment in several less developed countries is yet too risky to undertake, even if they provide an attractive financial rate of return. Given these circumstances, private sector financing is most suitable for climate mitigation investments in creditworthy economies (usually middle income countries).

4.5 Guarantees

Guarantees are financial instruments that help to improve certainty to investors. A partial risk guarantee (PRG), for example, could guarantee private lenders against the risk of a government failing to perform its contractual obligations with respect to a private project. PRG can be used within the context of climate mitigation and energy efficiency investments (Huhtala, 2011). One of the main advantages of guarantees is that they can leverage substantial amounts of private sector investment. Multilateral banks have developed innovative instruments to cover political risks involved in energy and transport related projects.

Loan guarantees help to protect the private investor against defaults. In countries with high political risks, where contracts may have a low legal standing, and where energy markets are dysfunctional, investment risks cannot be reduced through conventional policy or financial tools. In these circumstances, loan guarantees provided by international public financial institutions are useful to reduce the risk to private lenders. Loan guarantees ensure loan repayments, when borrower cannot make the payments (Brown and Jacobs, 2011).

Guarantees can be used in both middle and low income countries contexts. Investments in the energy sector in Africa, for example, can yield significant returns if political risks are covered. They also show to have a very significant leverage effect (Huhtala, 2011). In terms of sectors, guarantees work best in mitigation projects where investments promise an attractive financial return.

4.6 Insurances

Natural catastrophes have increased in frequency and cost due to climate change and growing urban density in vulnerable areas. Catastrophes can have a significant impact on public finance where governments need to suddenly re-allocate budgets towards emergency, relief and reconstruction work (Huhtala, 2011).

Various financial instruments have evolved during the last years to deal with catastrophes. For example, catastrophe bonds pay high interest rates to compensate for the risk of the issuer not repaying the principal in the event of a catastrophe. The World Bank has established called MultiCat Program that allows governments to buy insurance on affordable terms by issuing catastrophe bonds (Zelenco, 2011). One of the pioneers in using this system is Mexico. It has issued a US\$290 million bond using the MultiCat Program that enabled to transfer a pool of catastrophic risks (hurricanes and earthquakes) to the market.

Catastrophe insurances are increasingly used worldwide. They are suitable for both middle and low income countries. In the case of low income countries, insurance premiums may need to be subsidized by public finance from international sources (Huhtala, 2011). Catastrophe insurance focuses on adaptation, but goes beyond climate change related risks.

4.7 Market-Based Instruments

This section discusses market-based mechanisms and fund-supported mechanism including the CDM, REDD+ and NAMAs. A market mechanism entails the creating of credits through a mitigation activity. Such credits can be sold in the market or purchased by a fund. Such fund can be supported by the GCF.

4.7.1 Clean Development Mechanism

One of the most prominent market mechanisms to support climate mitigation has been the Clean Development Mechanism. The Kyoto Protocol promoted emission trading and market mechanisms for reducing the costs of emission reductions. As shown in Figure 5, the carbon market developed very rapidly during 2005-2009, with a downturn in 2010 due to the regulatory uncertainty over future climate commitments (World Bank, 2012).

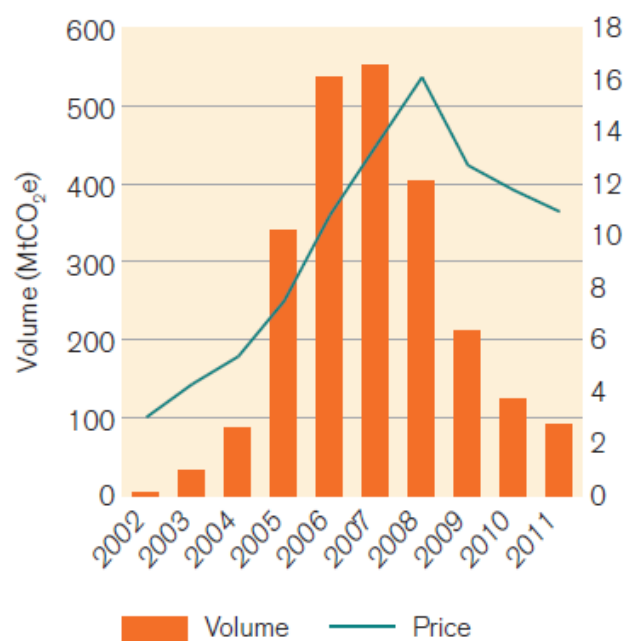


Figure 5: Evolution of the carbon market between 2002 and 2011. Source: World Bank, 2012

While the CDM originally attracted middle income countries only, it later became attractive for low income countries after the introduction of programmatic approaches. The CDM has also been very effective in leveraging substantial amounts of private sector flows towards climate mitigation in areas of energy supply, energy efficiency, waste management and industrial processes (World Bank, 2011c). As a market mechanism, the CDM does not impose significant investment from donor countries, but require them to set emission limits to their industrial sectors.

4.7.2 Reduced Emissions from Deforestation and Forest Degradation (REDD+)

Deforestation and forest degradation are the second leading cause of global warming, responsible for about 15% of global greenhouse gas emissions (IPCC, 2007). The CDM does not include deforestation as an eligible activity due to the complexities and particularities of initiatives aimed at reducing deforestation. But, an alternative instrument, REDD+ applies.

REDD+ is a programmatic approach for reducing deforestation and forest degradation at national and sub-national levels. When fully implemented, it will become a monetary incentive for countries to reduce deforestation. The essence of REDD+ is to establish payments linked to performance. Under this approach, countries that have reduced deforestation and forest degradation as compared to a reference scenario, can receive monetary compensation based on the amount of carbon emissions avoided. The source of compensation can come from carbon fund (usually, composed from donor contributions) or from the private sector. To get the REDD+ process started, donor countries have put money into the Forest Carbon Partnership Facility. The FCPF provides technical assistance for REDD+ readiness and has a carbon fund to purchase REDD+ credits in the future (FCPF, 2011).

REDD+ has a significant potential to be implemented in low income countries such as the Democratic Republic of Congo, Tanzania, Kenya, Uganda, Cambodia, Nepal, Peru and others. It can also leverage private sector investment in sustainable forestry. It can be supported through carbon funds or through a market-based system similar to that of the CDM.

4.7.3 Nationally Appropriate Mitigation Actions (NAMAs)

NAMAs are Nationally Appropriate Mitigation Actions seeking international support through technology transfer, finance and capacity building. NAMAs are country-driven climate mitigation plans that align with local priorities and have a sectoral or national coverage (Lütken et al., 2012).

NAMA have typically been categorized as follows:

- Unilateral NAMAs: mitigation actions undertaken by developing countries on their own;
- Supported NAMAs: mitigation actions in developing countries, supported by direct climate finance from developed countries, or direct support from the GCF.
- Credited NAMAs: mitigation actions in developing countries, which generate credits to be sold on the carbon market or to a carbon fund (e.g. sectoral crediting).

During the last years, developing countries have been increasingly active in developing NAMA proposals and a few have started the implementation. Examples of NAMAs are the implementation of energy measures across residential, institutional and industrial sectors in Peru and the Development of an urban transport masterplan in Vietnam (Ecofys and ECN 2012). Figure 6 maps the countries that have developed NAMA proposals by 2012 (Ecofys, 2012).

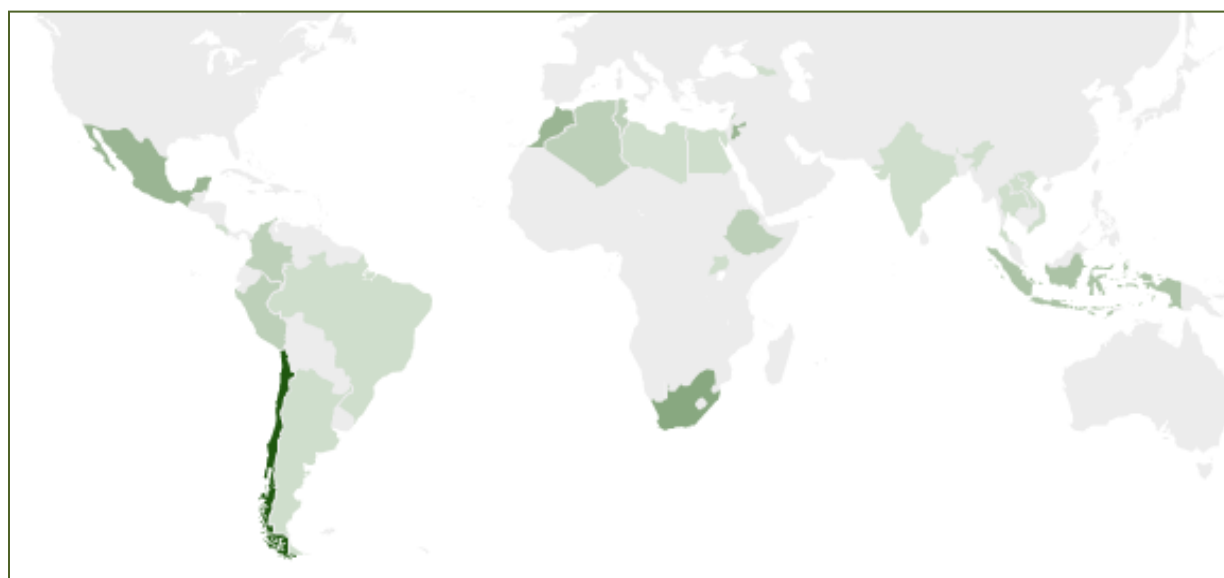


Figure 6: Countries Developing NAMAs. Source: Ecofys, 2012

NAMAs have been particularly appealing for developing countries because they entail a country-driven process and encourage alignment of mitigation plans with national development strategies. NAMAs will be subject to MRV in accordance with guidelines adopted by the Conference of the Parties (Ecofys, 2012).

4.8 Analysis: Suitability of Climate Finance Instruments

The previous sub-sections provide an overview of a broad range climate finance instruments. In practice, can we use the same instruments for adaptation and mitigation? Can they be equally applied for middle income and low income countries? Would donors be indifferent on the type of instruments used? The answers to these questions are typically “no”. An equity investment can work-well in supporting a profitable renewable energy project in China (IFC, 2011), but may not be effective for an adaptation program in rural Tanzania due to a lack of private sector interest. The appropriateness of using grants or loans to support climate finance activities will vary depending on the economic and institutional strength of the country and the types of activities being supported (UKaid, 2011).

Generally, **grants** are provided to non-revenue generating activities such as capacity building, ‘readiness’ activities, action plans, policy reform, planning processes and information dissemination. Grants may also be needed to support adaptation programs in low income countries that generate large social benefits to low-income vulnerable communities. Examples of grant-based capacity building activities are: the Carbon Finance Assist Capacity Building Program of the World Bank, the REDD+ Readiness Program of the Forest Carbon Partnership Facility, the Partnership for Market Readiness and the Capacity Building for Regional Coordination of Sustainable Forest Management in the Congo Basin (World Bank, 2012).

Concessional loans, like those provided by the World Bank through the International Development Association (IDA), are only given to low income countries (World Bank, 2011). Middle income countries, who have more fiscal discipline and capacity to pay, receive non-concessional loans. Such loans may still be provided with a low interest if capital is raised through an “AAA” credit agency like the World Bank or the IDB. Examples of concessional loans for mitigation in low income countries are the Electricity Network Reinforcement and Expansion Project (ENREP) in Ethiopia, the Renewable Energy Development Project in Vietnam and the Energy Development and Access Project in Ghana.

In terms of “**AAA**” **lending**, Mexico’s Framework for Green Growth Development, the Energy Efficiency Development Policy Loan for Poland and the Private Sector Renewable Energy and Energy Efficiency Project in Turkey are noted (World Bank, 2012).

Equity investments can be used to support profitable climate mitigation activities implemented jointly with the private sector. Most of equity investments target middle income countries due to size and lower risk. Usually, equity investments are blended with loan instruments. Examples of equity investments for mitigation are: Wind Power Renewable Energy Generation in China (with

China WindPower Group Limited), Solar Renewable Energy Generation in India (with Applied Solar Technologies Ltd.) and Medco Electric Power Project in Indonesia (IFC, 2012 – ICF Project Search: <http://www.ifc.org/projects>)

Guarantees are suitable for climate change mitigation projects and they can help to reduce the risk exposure of profitable investments in climate change mitigation. There is an increasing use of loan guarantees in Africa, where investors hesitate to invest due to perceived political risks. Examples of using guarantees for climate mitigation/sustainable energy include the *Takoradi Renewable Energy Ltd. Project* in Ghana, the *Star Hydro Power Ltd. Project* in Pakistan and the *Eolo Wind Farm Project* in Nicaragua (World Bank, 2012).

The **Clean Development Mechanism** has supported hundreds of mitigation projects worldwide (see Section 4). During the last years, programmatic approaches for climate mitigation have evolved through the so-called Programme of Activities (PoA) modality, with more than 250 programs under development in low and middle income countries (World Bank, 2012). REDD+ programs are underway in more than 30 low and middle income countries (FCPF, 2011). Middle and low income countries are also developing NAMAs (see Figure 6), which are expected to play an important role in the context of the GCF. Among the hundreds of examples, it is worth mentioning the Municipal Waste Compost Program in Uganda (PoA), the Smart Use of Energy Program in Mexico (PoA), the Moroccan Solar Energy Plan (NAMA), and the South African Renewables Initiative (NAMA) (Kossoy and Guigon, 2012; Ecofys and ECN, 2012).

Insurance schemes are important climate change adaptation strategies to assist both low-income and middle income countries (Huhtala, 2010). Examples of insurance schemes are the MultiCat Program in Mexico (Zelenco, 2011) and the Caribbean Catastrophe Risk Insurance Facility (CCRIF, 2012).

Table 3 summarizes the type of climate finance instruments, the type of climate change actions that can support the target countries, and some examples.

Table 3: Climate Finance Instruments, Scope, Target Countries and Examples (compile by author)

Instrument Type	Scope	Target Countries	Examples*
Grant	Capacity Building for Adaptation and Mitigation	Low and Middle Income	<ul style="list-style-type: none"> • Carbon Finance Assist Capacity Building Program of the World Bank • REDD+ Readiness Program of the Forest Carbon Partnership Facility • Partnership for Market Readiness • Capacity Building for Regional Coordination of Sustainable Forest Management in the Congo Basin
Concessional Loans	Mitigation and Adaptation	Low Income	<ul style="list-style-type: none"> • Electricity Network Reinforcement and Expansion Project (ENREP) in Ethiopia • Renewable Energy Development Project in Vietnam • Energy Development and Access Project in Ghana
Loan - AAA	Mitigation and Adaptation	Middle Income	<ul style="list-style-type: none"> • Mexico's Framework for Green Growth Development • Energy Efficiency Development Policy Loan for Poland • Private Sector Renewable Energy and Energy Efficiency Project in Turkey
Equity investments	Mitigation	Middle income	<ul style="list-style-type: none"> • Wind Power Renewable Energy Generation in China (with China WindPower Group Limited) • Solar Renewable Energy Generation in India (with Applied Solar Technologies Ltd.) • Medco Electric Power Project in Indonesia
Market Based instrument (CDM, NAMA, REDD+)	Mitigation	Low and Middle Income	<ul style="list-style-type: none"> • Municipal Waste Compost Program in Uganda (PoA) • Smart Use of Energy Program in Mexico (PoA) • The Moroccan Solar Energy Plan (NAMA) • The South African Renewables Initiative (NAMA).
Guarantees	Mitigation	Low and Middle Income	<ul style="list-style-type: none"> • Takoradi Renewable Energy Ltd. Project in Ghana • Star Hydro Power Ltd. Project in Pakistan • Eolo Wind Farm Project in Nicaragua
Catastrophe Insurances	Adaptation	Low and Middle Income	<ul style="list-style-type: none"> • MultiCat Program in Mexico • The Caribbean Catastrophe Risk Insurance Facility

*Note: several projects and programmes are at the design phase

5.0 A LOGIC MODEL FOR THE GCF

This section provides a logic model for GCF with specific attention to climate mitigation and adaptation. The logic model helps depicting the results framework, identifying strategies and measuring performance. This section starts by describing the inputs, specifying components and activities, and describing outputs, indicators and outcomes. The section ends by presenting the logic models for adaptation and mitigation.

5.1 Inputs

GCF resources are transferred to the international or national accredited implementation agencies that support climate mitigation and adaptation programs.

In terms of climate change mitigation and considering the analysis summarized in Table 3, implementation agencies would support programs through grants for capacity building, carbon market instruments, loans, equity investments and guarantees.

For climate change adaptation, implementation agencies would support programs through grants for capacity building, concessional loans for low income countries, loans for middle income countries and insurance schemes.

5.2 Components and Activities

Each program window will implement activities in different sectors. Investments in climate mitigation may include sectors such as: energy supply, buildings, agriculture, forestry and transport (McKinsey, 2010). Examples of activities are: wind and solar energy (energy supply), energy efficient lighting (buildings), reforestation (forestry), agroforestry (agriculture) and public transport systems (transport).

Investment in adaptation will vary across countries depending on their vulnerabilities, but will include actions in sectors such as: coastal areas, health, agriculture, forestry and water supply. (IPCC, 2007). Examples of activities are: protective infrastructure (coastal), enhanced community medical services (health), crop insurance (agriculture), fire prevention measures (forestry) and watershed protection (water).

5.3 Outputs, Indicators and Outcomes

Sectoral investments will results in measurable outputs. Explicit indicators need to be specified for each activity type. Section 8 provides a detail discussion on output indicators and its findings are incorporated into the logic models of Figures 7 and 8.

Outcomes are medium and long-term. In the medium-term, countries will stabilize their national GHG emissions (i.e. emissions stop growing despite economic growth). In the long-term, countries will reduce their GHG emissions. The ultimate outcome of the GCF is the same of that of the Climate Change Convention and the Kyoto Protocol (UNFCCC, 1998): *“stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner”*. This implies stabilizing GHG concentrations at 450 ppm which corresponds to about to 2 degrees warming (IPCC, 2007).

The medium-term outcome for climate change adaptation entail a reduction in the costs of the impacts of climate change. In the long-term, countries are fully prepared to live in a warmer world and have systems in place to deal with different kinds of climate variability.

5.4 Logic Models for the GCF: Mitigation and Adaptation

Figures 7 and 8 show the proposed logic models for mitigation and adaptation, respectively.

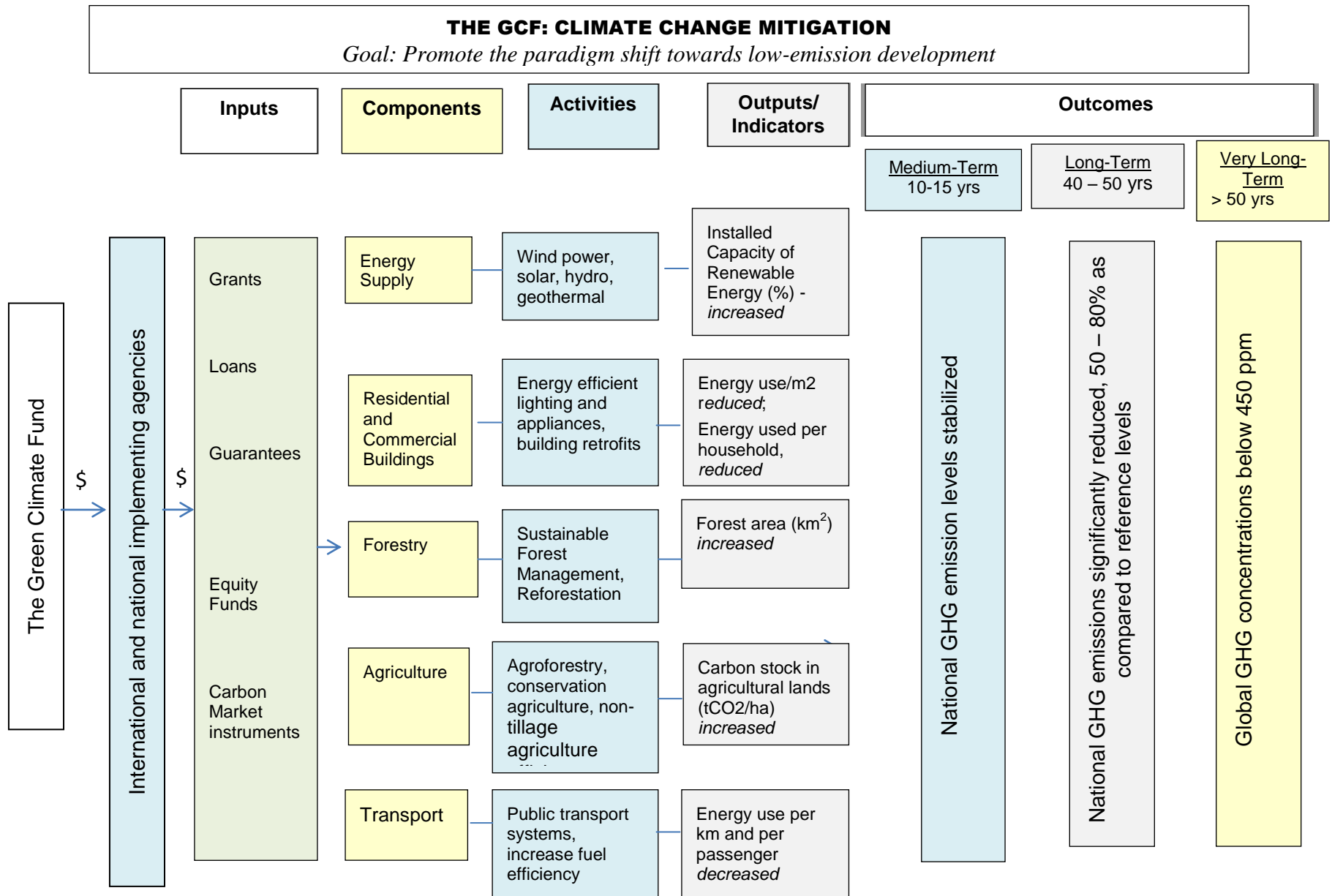


Figure 7: Logic Model for the GCF: Mitigation

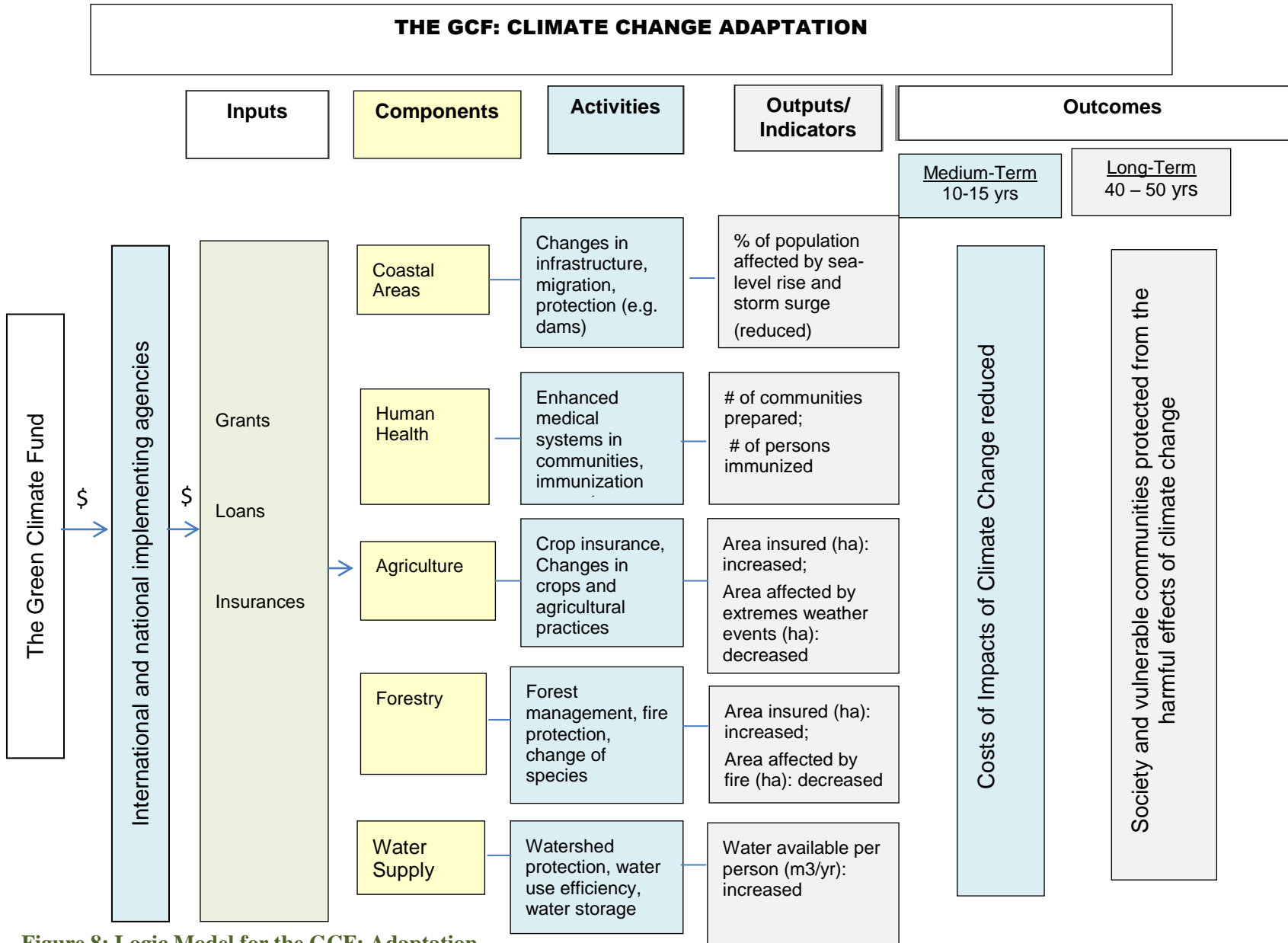


Figure 8: Logic Model for the GCF: Adaptation

6.0 MONITORING DONOR COUNTRIES' CONTRIBUTIONS

As discussed in the preceding sections, a monitoring and evaluation framework for the GCF will consider two main components: the donor countries contributions' and the recipient countries project and program expenditures. This section starts by summarizing existing monitoring and tracking platforms for climate finance. It then evaluates their comprehensiveness and provides recommendations for a registry that reports GCF contributions.

6.1 Climate Finance Reporting under the UNFCCC

Donor countries have agreed to contribute \$30 billion of "Fast Start Finance" between now and 2012 and \$100 billion to the GCF by 2020. Fast Start Finance is the conglomerate of financial contributions to "climate finance" under various mechanisms mentioned in the previous section. Pledges and commitments are monitored and reported via the UNFCCC website. Accounting for such commitments allow parties to measure progress towards reaching the financial targets for 2012 and 2020.

The Fast-Start Finance website contains developed country reports to the UNFCCC on their climate finance contributions. There is no specific guideline, however, on how such reports should be structured and what kind of contributions to include. There is also no mention on how these funds are additional to past commitments; whether they are additional to ODA; or whether they are replacement of ODA commitments.

By September, 2011, the following country submissions were available at the Fast-Start Finance site: Australia, Canada, European Union, Iceland, Japan, Lechtestein, New Zealand, Norway, Switzerland, and United States. An example of such communications is the one of Canada. Canada claims that international public climate finance would reach \$441 million in fiscal 2010/11, including \$400 million in new and additional climate change financing. This includes some \$45 million for adaptation through the Least Developed Countries Fund, Canada's International Development Research Centre and other agencies; some \$290 million for the International Finance Corporation (IFC), a member of the World Bank Group, to support clean energy projects and provide advisory services; about \$45 million for REDD+ and the Biocarbon Fund, and \$238.4 million for GEF replenishments, covering a broad set of environmental initiatives. While these contributions are of great value, it is not clear whether same level of funding will sustain for next years and how much of these contributions are reported as ODA funding. There is also no quantification on how much these funds will leverage from other sources in order to multiply the investment.

The UNFCCC has recently established the finance portal for climate change that contains a detailed database on each country's contribution and the type of projects and countries supported. However, it lacks of consistency in reporting from one country to another (making

comparisons more difficult) and just a few countries have started to present yearly reports on their climate finance contributions.

6.2 Fast Start Finance

The Netherlands' government financed the popular site called Fast Start Finance (FSF): <http://www.faststartfinance.org/>. It contains information on donors and recipient countries. It uses data from the UNFCCC submissions to build a user-friendly database. Table 4 summarizes the contribution of main countries to climate finance by September 2011.

The FSF site also presents the differences between pledged funds and committed funds. This data is highly relevant as most countries contribute much less than their pledges and public announcements. This underscores the importance of tracking political commitments and public announcements and disclosing whether governments fulfill public commitments.

Recipient of fast-start financing include countries in Africa, Asia and Latin America. The site reports on the type of projects for each recipient country and provides a graphical illustration of who contributes and who receives.

The FSF website has the valuable feature of presenting data for both pledges and commitments. Some of the limitations of the FSF website are: is not always updated for all countries; relationships to ODA are missing; leverage of private sector funds is missing.

Table 4: Fast Start Finance Contributions of Major Donors (by September, 2010) (FSF, 2012)

Donor Country	Total pledged	Total committed	Number of Programmes
Australia	AUD 599 million		5
Belgium	EUR 150 million	EUR 42,0 million	-
Canada	CAD 400 million		-
Denmark	DKK 1 200 million	DKK 308,0 million	7
European Union	EUR 150 million	EUR 50,0 million	8
Finland	EUR 110 million		7
France	EUR 1 260 million	EUR 1 260,0 million	24
Germany	EUR 1 260 million	EUR 291,9 million	70
Iceland	USD 1 million		-
Japan	USD 15 000 million		-
Liechtenstein	CHF 1 million	CHF 1,0 million	8
Luxembourg	EUR 9 million	EUR 9,0 million	-
Malta	EUR 1 million	EUR 0,1 million	2
Netherlands	EUR 310 million	EUR 310,0 million	7
New Zealand	NZD 90 million	NZD 90,0 million	-
Norway	USD 1 000 million	USD 382,0 million	20
Portugal	EUR 36 million	EUR 12,0 million	-
Slovenia	EUR 8 million		2
Spain	EUR 375 million		9
Sweden	EUR 800 million		17
Switzerland	CHF 140 million		-
United Kingdom	GBP 1 500 million	GBP 568,0 million	8
United States		USD 1 700,0 million (for 2010)	-

6.3 World Resources Institute Reporting

The World Resources Institute (WRI) publishes regularly updates of fast start financing on its [website](#). Beyond the data, the WRI also presents a critical analysis of the information submitted by donors to the UNFCCC (Stasio et al., 2011).

An important finding of the WRI's assessment of FSF is that reports do not always represent "new and additional resources". The Institute states that a number of pledges include commitments already made in the past. For example, Japan's USD 15 billion fast start pledge announced in December 2009 as the Hatoyama Initiative includes USD 10 billion announced previously in 2008, while the fast start pledges of the United Kingdom and the United States also include their 2008 commitments to the Climate Investment Funds (CIFs) of roughly USD 1.4 billion and USD 2 billion respectively (Stasio et al., 2011). The WRI also argues that funds for climate mitigation and adaptation should be additional to development aid. Under the current reporting system to the UNFCCC, there is no way to track this.

6.4 Indicators for Measuring Climate Finance Flows

Section 4 described the different flows of climate finance. A “spaghetti” of climate finance options exist, being disbursed in an uncoordinated manner by bilateral donors, international financial institutions, the private sector and charity organizations. Within this context, it is difficult to quantify climate finance flows. In the absence of “firm” numbers on climate finance flows, it is not possible to quantify the impact of such investments.

The OECD recently developed a creditor reporting system (CRS) for aid activities. This includes bilateral and multilateral Official Development Assistance (ODA) and Other Official resource Flows. Data are publically available in the Creditor Reporting System (CRS) Aid Activities database. The database covers more than 90% of aid funds flowing from OECD countries and multilateral organizations (OECD, 2012b).

Starting in 1998, the OECD started monitoring climate change mitigation-specific aid using a policy marker system, the so-called Rio Markers. Within this system, donors are required to mark each funded project as one of the following:

- (i) Funds are targeting climate change as a ‘principal objective’,
- (ii) Funds are targeting climate change as a ‘significant objective’;
- (iii) Funds are not targeting the objective.

The Rio Marker system allows estimating climate finance flows in a certain extent. However, it only tracks concessional finance and excludes non-concessional finance. As shown in section 5, there are major divergences in the estimates of climate finance flows. The reality is that there is not yet a consist approach for reporting and quantifying climate finance. An ideal system should be the one that tracks funds disbursements from the donors and funds received by the countries. And those numbers should match.

6.5 Monitoring Donor’s Contributions: Key Recommendations

Reporting climate finance contributions is an essential element for the GCF, not only for ensuring that resources are there, but also for building trust between developed and developing countries. Recent experiences show fundamental challenges in monitoring climate finance, starting from the definition of climate finance, the requirements for being “new and additional” financial resources and the lack of transparency in some of the existing reporting schemes (Watson et al., 2012).

The following recommendations are proposed in order to improve the monitoring process of climate finance donor contributions:

- Each donor country should report simultaneously ODA and Climate Finance contributions. Every fund should lay under one category, not on both.

- Donors should specify the degree of concession of their contributions. Development impacts vary on whether the funds provided are grants, concessional loans, regular loans or equity investments. This would allow a fair comparison of the contributing efforts across different donors. For example, providing a million dollar in grants requires much more effort than providing a million dollar loan.
- Donor's reporting should be based on deposited or disbursed funds as opposed to pledged amounts.
- Climate Finance reporting should be properly categorized under predefined windows of adaptation or mitigation.
- A climate finance registry, to be managed by an independent entity, should be established. This registry will incorporate the information of the preceding point and will be linked to program/project evaluation data (next section).

Implementing these recommendations during the next years will help to better understand the magnitude of climate finance and the impact of the resulting investments.

7.0 CLIMATE FINANCE M&E IN DEVELOPING COUNTRIES: LESSONS FROM RECENT EXPERIENCES

This section summarizes the evaluation approach of some of the most relevant institutions, programs and funds. It starts by explaining the evaluation approach of World Bank projects. While World Bank projects cover a range of sectors (beyond climate change), the experience gained by decades of project implementation and its solid and well-structured Independent Evaluation Unit (IEG), provides useful insights towards the design of an M&E system of the GCF. This section continues with a description of the existing M&E modalities of the Global Environmental Facility (GEF), the M&E approach of the Climate Investment Funds (CIF) and the M&E framework of the Clean Development Mechanism (CDM).

This section outlines key finds of the survey of M&E approaches. Results, implications and strategic recommendations for the GCF (which are developed based on these findings) are presented in Section 9.

7.1 Monitoring and Evaluation of World Bank Projects

The World Bank helps to reduce poverty in developing countries by focusing on four core development goals at the global and country levels:

- (i) Expanding economic opportunities;
- (ii) Enhancing human development;
- (iii) Mitigating socioeconomic and environmental risks;
- (iv) Improving governance and public sector effectiveness (World Bank, 2011a).

The World Bank finances programs and projects through two main instruments: IBRD loans and IDA concessional loans. IBRD (The International Bank for Reconstruction and Development) provides loans to governments and public enterprises at relatively low interest rates. IDA (The International Development Association) provides concessional loans and grants to the poorest countries in very favourable terms. IDA concessional loans include at least 25% of a grant component. The World Bank Group also provides assistance, financing and risk management services to the private sector through the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA).

The World Bank has a separate Department, the Independent Evaluation Group (IEG), which deals with the evaluation of its projects, programs and services. IEG is responsible with evaluating the activities of IBRD and IDA, the work of IFC in private sector development, and MIGA's guarantee services and projects. The Director of IEG reports directly to the World Bank Group's Board of Directors in order to maintain its independency (IEG, 2012a). The goal of the

evaluation group is to provide an objective assessment of the results of the Bank Group's work and to identify and disseminate lessons learned from experience (IEG, 2011). The IEG evaluates the interventions of the World Bank Group to find what works, what does not work, and the reasons why. These efforts are intended to help improve the contributions of the World Bank Group to its key development goals.

IEG undertakes evaluation of a range of strategies, policies, programs, projects, and corporate activities of the World Bank Group and examines successes and failures at the project, country, sector, corporate, regional, and global levels (IEG, 2012b). It produces a variety of country, sector, and thematic evaluations designed to improve accountability and results. This includes: project evaluations, country program evaluations, global program reviews, sector evaluations, thematic evaluations and corporate evaluations. This section examines the approach for project and country program evaluations.

To illustrate the program evaluation approach of the World Bank, it is important to first understand its project cycle, where M&E aspects are included in every step of the Project cycle (Figure 9), not just after completion of the project.



Figure 9: The M&E cycle of World Bank Projects (Adapted from World Bank, 2011a)

A World Bank project starts by defining the Country Assistance Strategy that outlines the sector priorities of a given country. Then, ideas for creating meaningful changes through projects are discussed. World Bank representatives and the borrower country discuss potential projects and identify its impacts, risks and alternatives (World Bank, 2011). Then, project preparation starts and detail documentation is prepared. At this point, a thorough scrutiny of the viability of the

project takes place which includes assessments of economic, technical, institutional, financial, environmental and social aspects of the project. During preparation, indicators for measuring project performance are defined. After a proposed project is approved, it is implemented and supervised/monitored over its lifecycle. At the end of the loan or credit disbursement period (anywhere from 1-10 years), a completion report identifying project results, problems and lessons learned is completed by the operations staff. The project evaluation, by the IEG follows.

Throughout its cycle, each project is evaluated at different levels. Project proposals or project concept notes are reviewed (and challenged) prior the funding allocation. Potential risks, environmental and social impacts are also assessed in detail (World Bank, 2011a). During the project implementation, operational units supervise the project and monitor its performance by the use of indicators which were defined before the project start. At the end of the project, the operational unit responsible for the project produces an implementation completion report (ICR). The ICR is an integral part of the Bank's knowledge management systems and a milestone in the project cycle. It marks the transition from implementation to project operation (IEG, 2012b). The ICR evaluates the following:

- (i) The degree to which the project achieved its development objective and outputs as set out in the project documents;
- (ii) Other significant outcomes and impacts;
- (iii) Prospects for the project's sustainability;
- (iv) Bank and borrower performance, including compliance with relevant Bank safeguard and business policies.

The ICR also provides the data and analysis to substantiate these assessments, and it identifies the lessons learned from implementation (IEG, 2008).

The next step in a project evaluation is the Project Performance Assessment Report (PPAR) that consists of a careful review of the ICR by the Independent Evaluation Group, complemented by fieldwork (IEG, 2012b). In preparing this report, evaluation staff examines project files and other documents, interviews operational staff and visits the borrowing country for onsite discussions with project staff and beneficiaries. Each PPAR is subject to a peer review process. Once the review process is finalized and the PPAR completed, it is disclosed to the public. Each PPAR includes an assessment of the project performance using a standardized rating system. The rating is contingent on an operation's stated objectives and started with three main criteria: the relevance of the objectives and design (relevance), the extent to which the objectives were achieved (efficacy), and the efficient use of project resources (efficiency) (IEG, 2008). The rating criteria has evolved through the years, from a single "Outcome" rating used in the past, through the inclusion of additional ratings like "Borrower" and "Bank" performance, to a total of ten indicators used today.

Project performance is publicly available. Figure 10 includes an example of how the performance of projects across the World Bank portfolio in Latin America is shown to the public in an easy-to-understand manner. The information in the figure identifies the success and failure of each project in the region. Results from the evaluation become a key element for the review of World Bank operations, programs and country assistance strategies.

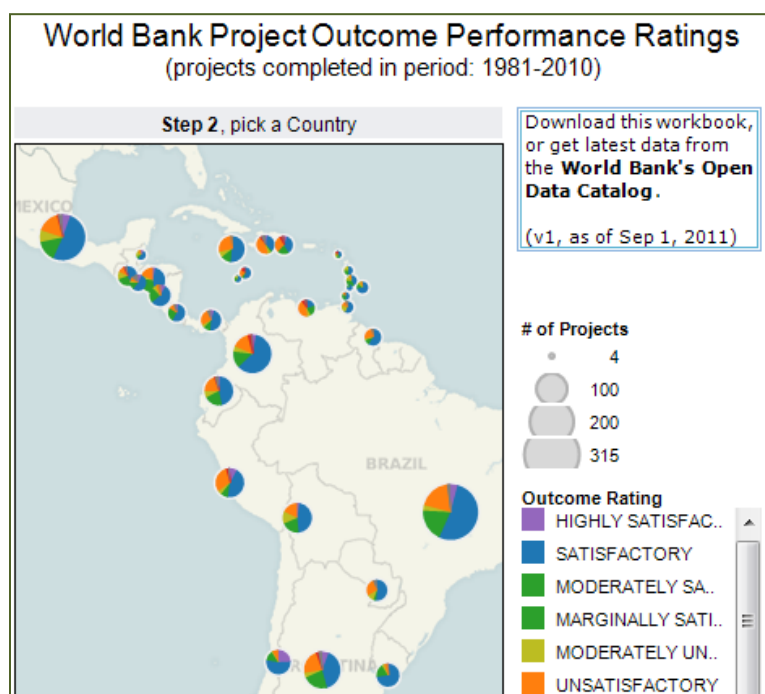


Figure 10: Example of Project Evaluation results from the World Bank, as presented to the public (IEG, 2012a)

Another key component of World Bank's monitoring and evaluation approach is the Inspection Panel. The Inspection Panel is an independent vehicle for people in the borrower's country, who believe that they have been, or likely to be, harmed by a World Bank funded project (Inspection Panel, 2011). The Panel gives people affected by World Bank Projects direct access to the World Bank's Board of Executive Directors. As such, the Panel helps bringing World Bank lending operations into compliance with its own operational policies and procedures. Inspection Panel investigations are fact-finding approaches that help to identify remedies for issues that harm people and environment.

In summary, relevant aspects of the Bank's M&E system include:

- A high level of scrutiny of each project during its life cycle;
- A pre-defined set of indicators to be used in every project;
- A detailed monitoring of the project's performance through supervision missions;
- A self-reported evaluation and an independent evaluation of the project performance;

- A set of indicators (or rating criteria) that includes, among others, indicators to assess the relevance of the objectives, the extent to which the objectives were achieved and the efficient use of project resources (efficiency);
- A feedback mechanism that uses results of the evaluation to redefine and improve programs and country strategies;
- A transparent way to portray results to the public. This does not only include M&E reports, but also visualization tools that can help the public to quickly identify successes and failures;
- An inspection panel that allows people potentially affected by a World Bank project to submit complaints and ask for project modifications when they have not met the World Bank operational procedures (which includes safeguards and socioeconomic considerations).

These findings are complementary to those identified by Buchner et al. (July, 2012) in the recent survey of systems to monitor climate finance effectiveness. Buchner et al., stressed on the needs of real-time evaluations and information sharing, while this survey underpins issues of high scrutiny from the beginning to end of the project cycle, pre-defined performance measures and indicators, transparency and open reporting, and a feedback mechanism to improve performance.

7.2 Evaluation Framework of Projects of the Global Environmental Facility (GEF)

The Global Environment Facility (GEF) works with 182 member governments — in partnership with international institutions, civil society organizations (CSOs), and the private sector — to address global environmental issues. It is an independent financial organization that provides grants to developing countries for projects that support countries achieving their sustainable development objectives (GEF, 2012a). Thematic areas of the GEF include biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.

The GEF is one of the largest funder of projects to improve the global environment and has allocated some \$10 billion since 1991 (GEF, 2010). The GEF also serves as financial mechanism for various international conventions including Biological Diversity (CBD), Climate Change (UNFCCC), Persistent Organic Pollutants (POP) and Desertification (UNCCD). The World Bank serves as the GEF Trustee. As the GEF Trustee, the Bank is accountable to the GEF Council for the performance of its fiduciary responsibilities (GEF, 2008). The Trustee mobilizes resources for the Fund and manages the Fund, including the investment of its liquid assets, the disbursement of funds to the Implementing Agencies as well as the financial reports regarding the investment and use of the Fund's resources.

The GEF has established an independent Evaluation Office that reports directly to the GEF council. In its most recent monitoring and evaluation policy document (GEF, 2010), the GEF key overarching objectives are outlined as follows:

- i) Promote accountability for the achievement of GEF objectives through the assessment of results, effectiveness, processes, and performance of the partners involved in GEF activities;
- ii) Promote learning, feedback, and knowledge sharing on results and lessons learned among the GEF and its partners, as a basis for decision making on policies, strategies, program management, projects, and programs; and to improve performance.

During the last years, the GEF increasingly focused on results-based management (RBM) as means to improve management effectiveness and accountability by defining realistic expected results and targets, monitoring progress toward the achievement of expected results and targets, integrating lessons learned into management decisions, and reporting on performance.

While monitoring is one of the key instruments of RBM, evaluation looks at monitoring and RBM with a critical eye to assess their validity, credibility, and reliability. Monitoring tells whether the organization, country, portfolio, or project is on track to achieving its intended objectives (GEF, 2012b) Evaluation provides information on whether the project or portfolio is on the right track. Evaluation also provides evidence on how changes are taking place, and the strengths and weaknesses of the design of the projects, programs, or corporate strategies embedded in the RBM.

The GEF conducts evaluation in coordination with its delivery and implementation partners. There are different types of evaluations. Some examples are (GEF, 2010):

- Project evaluations: these are evaluations of projects under implementation. It includes ex-post evaluations (after the project ends) and ex ante quality assurance (before the project start).
- Program evaluations: these are evaluation studies on interventions to attain specific global, regional, country, or sector objectives. They include evaluations of the GEF focal areas, corporate programs and programmatic interventions.
- Country-level evaluations: these are evaluations targeting the portfolio of projects in a given country and the alignment with the assistance strategy behind them.
- Cross-cutting and thematic evaluations: they look at a package of interventions covering different themes such as socioeconomic benefits and gender, capacity development, policy, technology and climate resilience.
- *Ad-hoc reviews* of programs and processes that do not require a full evaluation, but need an independent assessment.
- *Overall performance studies* of the GEF. This evaluation is connected to the GEF replenishment and looks at the global impact and benefits of GEF programs.

The evaluation work of the GEF is guided by internationally recognized principles and standards. The GEF evaluation agency cooperates with other evaluation units operating within the UN system. The M&E approach is guided by the following principles: independence, credibility,

utility, impartiality, transparency, disclosure, ethical, participation and competencies and capacities (GEF, 2010).

GEF evaluations focus on five major criteria:

- Relevance: the extent to which the investment is suited to local (environmental) priorities and align with GEF objectives;
- Effectiveness: the extent to which an objective has been achieved;
- Efficiency: the extent to which results has been delivered at the least cost;
- Results: whether short- to medium-term outcomes have been achieved;
- Sustainability: the likely ability of an intervention to continue to deliver benefits after its completion.

Project and program objectives and intended results should be specific and measurable, so as to make it possible to monitor and evaluate the project and program effectively. Baseline data would be developed for the key results indicators. In addition, M&E activities should apply “Minimum M&E requirements” at both the project and program levels. Table 5 summarizes GEF minimum requirements.

Table 5: Minimum requirements for evaluating GEF projects (GEF, 2010)

Minimum Requirement	Description	Specification of Minimum Requirements
Design of M&E Plans	All projects and programs will include a concrete and fully budgeted M&E plan .Project logical frameworks should align, where appropriate, to the GEF’s focal area results frameworks.	<ul style="list-style-type: none"> • SMART indicators for results and implementation are linked appropriately to the focal area results frameworks; • A baseline for the project or program with indicator data; • Identification of reviews and evaluations that will be undertaken, including midterm reviews and terminal evaluations; • Organizational set-up and budgets for M&E.
Application of M&E Plans	Project and program monitoring and supervision will include implementation of the M&E plan	<ul style="list-style-type: none"> • SMART indicators for implementation actively used; • SMART indicators for results actively measured, or if not, a reasonable explanation provided; • The baseline for the project fully established and data compiled to review progress, and evaluations undertaken as planned; • The organizational set-up for M&E is operational and its budget is spent as planned.
Project and Program Evaluation	Projects and all programs will be evaluated at the end of implementation. The evaluation will be undertaken independent of project management, will be reviewed by the evaluation unit of the GEF Agency or by independent quality assurance mechanisms of the Agency.	<p>The evaluation will assess at a minimum:</p> <ul style="list-style-type: none"> • achievement of outputs and outcomes, and provide ratings for targeted objectives and outcomes; • likelihood of sustainability of outcomes at project or program termination, and provide a rating for this; • The report of the evaluation will be sent to the GEF Evaluation Office immediately when ready, and at the latest, within 12 months of completion of project or program implementation.
Engagement of Operational Focal Points	Projects and programs will engage operational focal points in M&E-related activities.	<ul style="list-style-type: none"> • The M&E plan will include a specification of how the project or program will keep the relevant GEF OFP informed and, where applicable and feasible, involved, while respecting the independent nature of evaluation; • During implementation, GEF OFPs will be informed by the Agencies on M&E activities in the projects and programs that belong to their national portfolio; • The GEF OFPs will be informed of midterm reviews and terminal evaluations and will, where applicable and feasible, be briefed and debriefed at the start and end of evaluation missions; • They will receive a draft report for comment, will be invited to contribute to the management response (where applicable), and will receive the final evaluation report within 12 months of project or program completion.

The GEF M&E approach is a helpful model for monitoring and evaluating climate finance investments from the GCF. Some of the most valuable lessons from the GEF include:

- Have an independent evaluation unit/agency;
- Project and Program Implementation should focus on a Results-Based Management (RBM) approach;
- M&E focuses on key criteria related to relevance, efficiency, effectiveness, results and sustainability;
- Provide guidance for the different types of evaluations, namely: project, program, country-level, cross-cutting, ad-hoc reviews and overall performance studies should be executed;
- Provide detailed guidelines and minimum requirements for the monitoring design and implementation, evaluation and reporting;
- Establish a feedback mechanism arising from the evaluation;
- Provide a list of “Minimum evaluation requirements” which are of practical guidance for project developers;
- Prescribe the use of a pre-defined set of performance indicators.

7.3 Evaluation Framework of the Climate Investment Funds

The Climate Investment Funds (CIFs) have been designed by developed and developing countries to support low carbon, resilient development investments in developing countries. The CIFs are implemented by Multilateral Development Banks (MDBs) with the aim of bridging financing and learning gap between now and a future international climate change agreement (CIF, 2012a). Once the GCF will be operational, donors’ contributions to the CIFs will probably be halted. Nonetheless, the experience of the CIFs brings significant value towards the design of the GCF.

The Clean Investment Funds (CIF) comprise a set of financing instruments that provide developing countries the opportunity to embark into a low carbon resilient development path (CIF, 2012b). CIFs provide developing countries with grants, concessional funds, and risk mitigation instruments that aim to leverage financing from the private sector, MDBs and other sources. Five MDBs – the World Bank Group, African Development Bank, Asian Development Bank, Inter-American Development Bank implement CIF-funded projects and programs.

The CIFs are composed of two main components, or trust funds: the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). The SCF contains three sub-components that include the PPCR (Pilot Program for Climate Resilience), FIP (Forest Investment Program) and SREP (Program for Scaling up Renewable Energy in Low Income Countries). Each program is governed by a Committee that has equal representation of contributor countries and recipient

countries (CIF, 2012b). CIF stakeholders include the Multilateral Development Banks, UN and UN agencies, Global Environment Facility (GEF), UN Framework Convention on Climate Change (UNFCCC), Adaptation Fund, Bilateral Development Agencies, Non-Governmental Organizations, Indigenous Peoples, Private Sector Entities, and Scientific and Technical Experts.

Monitoring and evaluation of the CIFs build on the procedures of the Multilateral Development Banks (MDB) that operate the funds. There is an annual reporting of the Clean Technology Fund (CTF) and Strategic Climate Fund (SCF) targeted programs by the MDBs to the Trust Fund Committees, and an independent evaluation of the operations of the Trust Funds and the impacts of its activities will be carried out jointly after three years of operations by the independent evaluation departments of the MDBs. Results achieved through the funds will be published and publicly available (CIF, 2012a).

Some of the CIF sub-components include grants for capacity building in the recipient countries. This includes support towards developing and implementing Monitoring and Evaluation systems in developing countries (CIF, 2011a).

The Monitoring and Evaluation (M&E) framework of the CIFs builds on results frameworks to guide each program sub-component. It operates within existing national monitoring and evaluation systems (CIF, 2011b). This way, they integrate into national M&E systems, and are the countries who take the lead in establishing a “managing for results” philosophy that will help enhance the impact of their investments. This approach also enables countries to gain the opportunity to share experiences and lessons with others in support of the replication of good practices for managing and sustaining transformations at the country level.

Within the Clean Technology Fund, the largest component of the CIFs, the M&E approach establishes mandatory items for planning, monitoring and reporting and learning and knowledge management. Table 6 below provides a summary of these aspects (CIF, 2012b).

Table 6: Guidelines for M&E of Programs under the Clean Technology Fund (CIF, 2012b)

Planning	Monitoring and Reporting	Knowledge Management
<ul style="list-style-type: none"> • There should be a logic model in the investment plan that sets the strategic direction and identifies the results that identified priority projects/programs must contribute to. • Result indicators from projects should be linked to aggregate country level indicators. • Investment plans should articulate the issues, priorities for investments, challenges, and risks to be addressed in a country context. • Project and program documents should describe the expected results of individual interventions, linked to the overall results framework for the pilot country. • Catalytic results – beyond the immediate output of projects/programs under the CTF – should also be clearly identified and the reporting approach outlined in the investment plan. 	<ul style="list-style-type: none"> • CTF financed projects and programs are implemented using MDB processes, procedures and systems. However, there is a set of indicators for the CTF that must be included in projects/programs. • Countries supported by the MDBs are mainly responsible for collecting and reporting data on all these key indicators. The government will identify and charge an executing agency with reporting responsibility • Project outputs and outcomes are expected to be monitored and reported on a regular basis using the key indicators. Reporting is expected at the start when establishing the baselines, at mid-term and upon completion. Annual reporting is desirable whenever feasible. • Countries are the main reporting units of the CTF. Reporting against the implementation of the investments plans/strategies is at the core of the CTF M&E system. The government will identify and charge an executing agency with reporting responsibility. 	<ul style="list-style-type: none"> • CTF knowledge management activities are closely linked to CTF's work on monitoring and reporting. • CTF projects include knowledge management activities involving identifying, creating, organizing, sharing and using lessons learned, and good practices in CTF pilot country programs and projects. • CTF knowledge management activities have their own results framework to be evaluated on.

7.4 Evaluation of Carbon Funds under the Clean Development Mechanisms

Carbon funds have been created during the last decade with the objective of reducing greenhouse gas emissions in developing countries. Carbon funds support projects eligible for the Clean Development Mechanism (CDM) of the Kyoto Protocol and have been managed by diverse institutions such as the World Bank, the German Development Bank (KfW) and private banks. The Clean Development Mechanism (CDM), defined in Article 12 of the Protocol, allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (developed countries) to implement an emission-reduction project in developing countries. Such projects can earn certified emission reduction (CER) credits, each equivalent to one tonne of CO₂ reduced, and can be counted towards meeting Kyoto targets (UNFCCC, 1998). A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers. The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction or limitation targets.

Monitoring and evaluation of carbon finance projects followed the guidelines provided by the CDM Executive Board of the United Framework Convention Climate Change. Carbon funds managed by the World Bank are also subject to World Bank monitoring and evaluation procedures.

The CDM is considered an output-based funding mechanism. This means that money is transferred only after results are achieved. The Monitoring and Evaluation approach follows highly rigorous procedures in terms of GHG quantification, measuring and verification. After GHG reductions are achieved and verified by an independent entity, emission reduction certificates are issued. Such certificates can be sold in the market or purchased by a carbon fund.

Summarizing, the CDM monitoring and evaluation approach includes:

- A high level of scrutiny of the greenhouse gas reductions of a project throughout its project cycle;
- As an output-based mechanism, money is disbursed only after results (GHG reductions) are achieved ;
- A single indicator, GHG reductions, is used for the project evaluation;
- When carbon funds are canalized through the World Bank, additional considerations of safeguards and environmental/social issues need to be taken into consideration.

Despite the complex approach for evaluation, the CDM represented various billion dollars of investment and leveraged 2-3 times its investment amount.

7.5 Review of M&E Frameworks: Concluding Remarks

Multilateral Development Banks (MDBs) have supported the progress of M&E approaches for climate-related activities thanks to a growing number of investment initiatives. However, there is not a consistent framework, nor a uniform set of indicators that are used constantly across initiatives. The GCF should learn from the MDBs experience and adopt their evaluation principles in order to develop an evaluation framework that would meet the specific needs of the green fund and the UNFCCC. At the same time, the GCF should tailor the evaluation framework to its specific needs, in a way that it can be effectively applied in conjunction with county implementing agencies in Africa, Asia and Latin America. The information collected and discussed in this section is used for producing the set of recommendations laid out in Section 9.

8.0 PERFORMANCE MEASUREMENT

Performance measurement will be a key element for making the GCF evaluation framework useful and credible. This section starts with a brief discussion of how GHG reductions are to be measured against a baseline or reference level scenario. It then explores a set of performance indicators for climate change mitigation and adaptation. It ends by presenting some key challenges of Monitoring, Reporting and Verification (MRV) systems and implications for the GCF.

8.1 Measuring the Effectiveness of Climate Finance: Setting the Context

For measuring GHG reductions it is necessary to set a baseline or business-as-usual scenario that will consider economic growth and the resulting increase in energy-use and GHG emissions. Project and sectoral interventions supported by the GCF will result in measurable emission reductions as compared to a baseline. Figure 11 illustrates this concept using an example of the International Energy Agency. Global energy-related emissions are currently 30 Gt of CO₂/yr. In a baseline scenario, emissions are expected to increase to 62 CO₂/yr by 2050. By implementing a range of technological options (e.g. renewable energy, energy efficiency, nuclear energy, carbon capture and storage) globally, global emissions will be just 14 CO₂/yr by 2050. In this case, emission reductions are 48 CO₂/yr. With information on the costs of reducing emissions by implementing the technologies shown in Figure 11, cost-effectiveness estimates, measured in \$/tCO₂ can be made.

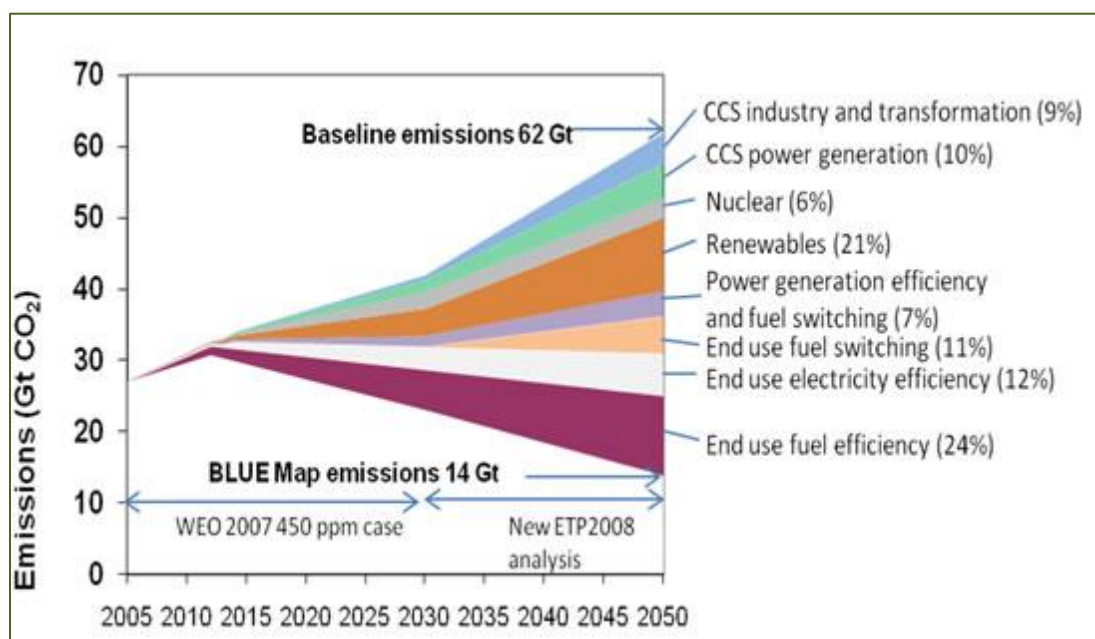


Figure 11: Global Baseline and Emission Reduction Scenarios for the Energy Sector (IEA, 2011a)

This apparently simple approach presents several challenges like (Elis and Moarif, 2009, Lutken et al., 2012):

- How can we accurately predict baseline emissions over the next decades if the rate of economic growth is influenced by several unknown factors?
- How can emissions be quantified in countries with limited capacity of their statistical offices?
- How can the aggregate effect of simultaneous policies and investments be quantified?
- What are the costs of measuring GHG reductions of projects over a lengthy period of time?
- How can the emissions/sinks of natural systems, such as forests and wetlands, be accurately quantified?

A similar discussion can be made for climate change adaptation. In this case, the baseline can be measured in physical units representing climate change impacts, for instance, the number of houses flooded or hectares of crops destroyed due to climate change. Here, the problems in predicting impacts will be even more challenging than those related to mitigation (Elis and Moarif, 2009).

8.2 Indicators for Climate Mitigation

During the last decade, a series of GHG methodologies were developed through the implementation of the Clean Development Mechanism (Kosoy and Guigon, 2012). CDM methodologies provide algorithms for measuring baselines and project impacts of different types of projects activities. CDM methodologies focus on quantifying tonnes of carbon dioxide equivalent, or tCO₂e. A tonne of CO₂ equivalent is a weighted average of the emissions of different greenhouse gases such as carbon dioxide, methane and nitrous oxide. Once GHG emission reductions are quantified, indicators of efficiency, such as \$/tCO₂e reduced can be used.

Many climate mitigation projects deal with energy sector interventions. In the area of energy efficiency, the impacts of programs are better measured in units of energy, for instance, kWh of electricity saved. Similarly, in the transport sector, reductions in person-km travelled can be a suitable indicator (Elis and Moarif, 2009).

The GCF intends to achieve country-wide transformations in their energy systems. Country comparisons can be made using indicators of emission intensity (tonnes of CO₂e per unit of GDP); or tonnes of energy consumption per unit of GDP. Figure 12 shows a comparison in energy intensity between different countries (IEA, 2011a). Such comparisons can be made in the future to track country progress and economy-wide impacts of GCF and countries' progress in fulfilling the objectives of the convention.

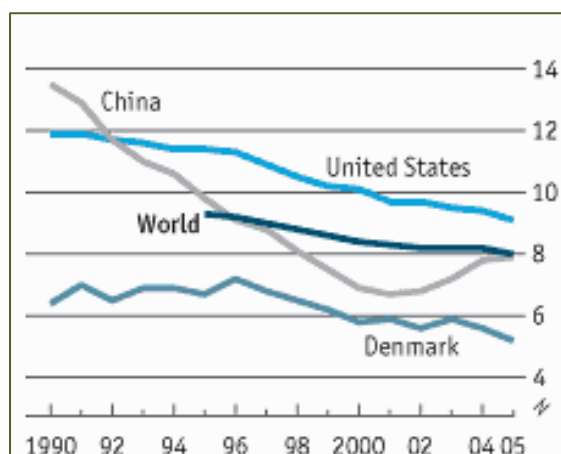


Figure 12: Energy use per unit of GDP. In BTU/\$. Source (IEA, 2011a)

GCF investments not always result in measurable GHG reductions. For instance, investments on R&D, policy development and capacity building cannot be directly quantified in tonnes of CO₂e. In these cases, other indicators exist, like the GEF (Global Environmental Facility) indicators for climate mitigation. These indicators measure the outcome of GEF strategies and objectives, particularly the adoption and market development of renewable energy, energy efficiency, and other clean technologies. The GEF climate change project indicators are (GEF, 2000):

- Energy production or savings and installed capacities;
- Technology cost trajectories;
- Business and supporting services development;
- Financing availability and mechanisms;
- Policy development;
- Awareness and understanding of technologies;
- Energy consumption, fuel-use patterns, and impacts on end users.

Following the logic model depicted in Figure 7, sector-level indicators are required to measure performance of climate mitigation investment outcomes. Table 7 provides a list of sector-level indicators as found in literature. The selection of specific indicators will vary depending on country-specific circumstances and data availability.

Table 7: Performance Indicators for Climate Change Mitigation

Performance Indicator	Units	Source
<i>Energy Supply</i>		
Installed Capacity of Renewable Energy	% (of total capacity)	Pew Environmental Group (2010)
Alternative and nuclear energy (% of total energy use)	% of total energy use	World Bank (2012b)
Public Spending on Renewable Energy	\$	IEA (2000)
<i>Residential and commercial buildings</i>		
Energy Use per floor Area	BTU/sq ft; GJ/m ²	Energy Star (2012)
Electricity Use per Household	MWh/household	World Energy Council (2012)
GHG emissions per household	CO ₂ e/household	World Energy Council (2012)
<i>Forestry</i>		
Forest Area	km ²	World Bank (2012b)
Forest Capital Stock	\$	FAOSTAT (2012)
<i>Transport</i>		
Share of Biofuels	%	World Energy Council (2012)
Energy Intensity	Energy/passenger-km	
<i>All Sectors</i>		
GHG emissions	tCO ₂ e	IPCC (2007)
GHG emissions per capita	tCO ₂ e/person	IPCC (2007)
Greenhouse gas intensity	tCO ₂ e/\$ of GDP	IPCC (2007)

8.3 Indicators for Climate Adaptation

Indicators for building resilience and climate change adaptation are much more difficult to develop. Identification of suitable indicators can be derived from project and program development objectives. Examples of national adaptation objectives are (World Bank, 2012a):

- Increased resiliency of communities with respect to climate variability and its effects on agriculture, natural resources, infrastructure and energy resources;
- Increased adaptive capacity of natural and managed systems under current and predicted climate variability by enhancing and conserving environmental services.

These *broad national objectives* can be translated into specific *project goals*. Examples of project-level adaptation goals are:

- Increase the robustness of infrastructure designs and long-term investment development;
- Improve societal awareness and preparedness to react to climate change;
- Enhance adaptability of vulnerable managed systems (e.g. by diversifying crop production in vulnerable agricultural areas);

- Reverse trends that increase vulnerabilities (e.g. building houses in areas subject to flooding);
- Integration of disaster risk reduction into sustainable development policies and practices.

Performance measures can be derived from specific adaptation projects. The World Bank mainstreaming project in the Caribbean proposed a set of outcome and impact indicators. Some examples are (World Bank, 2011b):

- Percentage of sectoral staff equipped and trained to incorporate climate change concerns into their work;
- Percent increase of dissemination activities for public awareness to climate change issues and impacts;
- Number of City-Level Adaptation Strategies and Implementation Action Plans;
- Number of weather stations reporting with 90% reliability;
- Number of models and datasets developed under the project found useful by potential users/beneficiaries;
- Active regional coordination on climate change issues improve through x number of staff providing input to international negotiations;
- Expected Risk reduction per dollar of investment;
- Number of farmers with weather insurance;

Summarizing, a short list of suitable performance indicators is provided below. Indicators will vary depending on the sector and activity and expert consultation would be required. The GCF may consider a technical, advisory committee to develop performance indicators for adaptation.

8.4 The Monitoring, Reporting and Verification Challenge

Monitoring, Reporting and Verification (MRV) have been essential elements of recent climate finance experiences (Lutken et al, 2012). MRV would also be essential for the GCF. Impacts of investments will need to be monitored (e.g. yearly GHG reductions), reported to the fund administrators and verified by third parties. The design of a MRV system for GCF sponsored activities will face the challenge of having a proper balance between accuracy and MRV costs. Beyond costs, lack of capacity and limited data availability are major barriers in developing countries to establish solid MRV systems (Castro et al., 2011).

In setting a MRV system, the following key principles need to be accounted for (Castro et al., 2011):

- Environmental Integrity: Does the MRV guarantees completeness, accuracy and consistency? Are estimates conservative?
- Data availability: Is baseline data available or can be quantified? Would emission reduction data be available? (i.e. to be disclosed by businesses and industry).
- Transparency: Is emission data publicly available and estimation methods transparent?
- Cost Efficiency: Are the costs of MRV reasonable? Can they be reduced without undermining the environmental integrity?

The Clean Development Mechanism (CDM) established one of the most stringent MRV systems. This resulted on built credibility in the CDM process and protected the environmental integrity of the mechanism (Kosoy and Guigon, 2012). At the same time, MRV has posed significant costs to the CDM, ranging from 10% to 40% of the project costs.

Figure 13 describes the MRV cycle of the CDM (UNFCCC, 2012b). Once the project has been identified, proponents needed to provide an ex-ante quantification of the projected emission reductions using a methodology that has been previously approved by the CDM Executive Board. Project proponents should also propose a monitoring methodology that would be applied during the project implementation. The ex-ante GHG quantification and monitoring methodology are reviewed by a third part before the project start. Once validated, the Project is submitted to the CDM Executive Board for its approval and registration. During the operation phase of the project, the project implementation monitors the emission reduction and a third party verifies that such estimates are accurate. After verification, emission reduction credits (CERs) are issued by the CDM Board and project proponents can trade those certificates in the market.

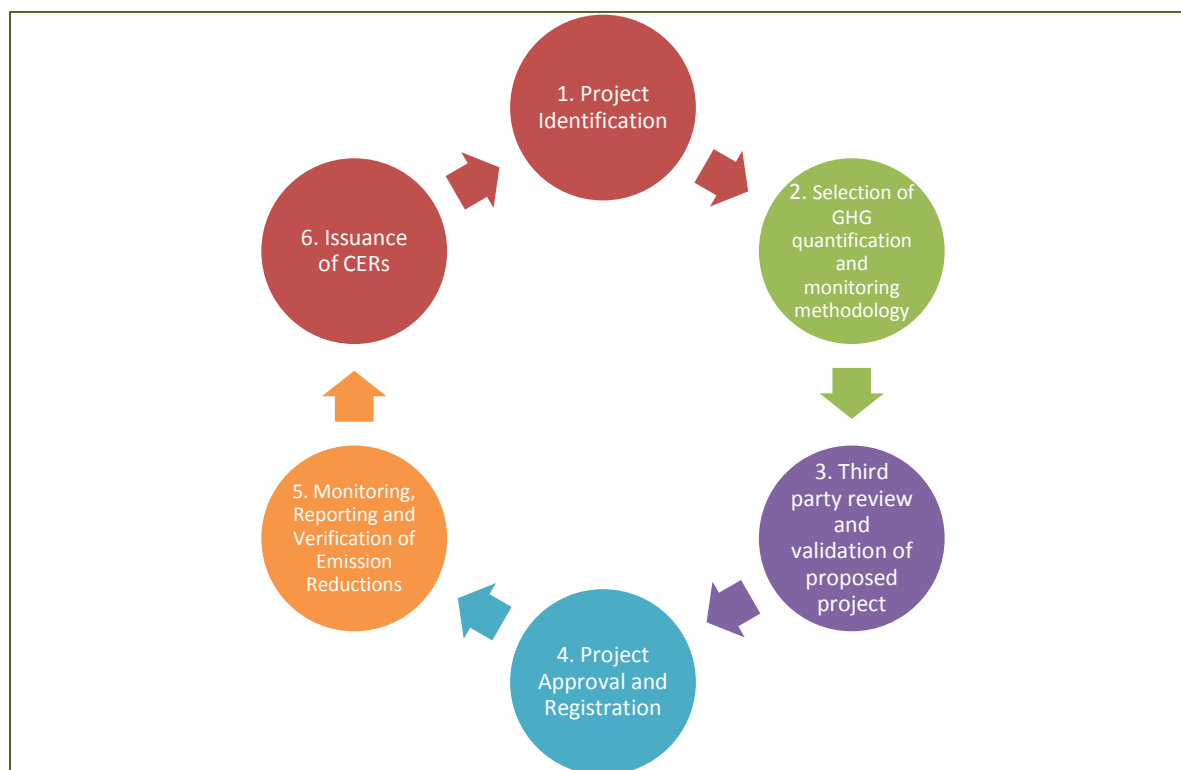


Figure 13: The Evaluation cycle of CDM Projects. Adapted from UNFCCC (2012b)

There are no doubts about the strengths of the MRV approach of the CDM. Nonetheless, it may be difficult, to use this approach for investments of the size of the GCF (Castro et al., 2011). Simplifications may be needed. While the GCF can sponsor programs through National Mitigation Plans (NAMAs), performance measurement will be required at a program or sector level. Section 9 provides strategic recommendations for MRV systems under the GCF.

8.5 Review of Performance Indicators: Concluding Remarks

The literature review indicates that there is significant experience with indicators for climate mitigation both at national and sectorial levels, with relevant experiences in sectors such as energy, buildings, forestry and transport. At the same time, appears to be a limited experience with indicators for climate adaptation. This will pose challenges for the GCF evaluation unit, because indicators will need to be tested before being used in projects. Consequently, there will first be a learning phase that will allow project implementing entities to provide feedback to the GCF Evaluating Unit on the best adaptation indicators to use.

The indicators discussed and identified in this section have been incorporated into the GCF logic models (Figure 7 and 8) providing means for verification of GCF investment outputs.

9.0 IMPLICATIONS FOR A MONITORING AND EVALUATION FRAMEWORK OF THE GCF

This section sets out a vision for a well performing Monitoring & Evaluation (M&E) system and determines strategic elements that can constitute pillars for such a framework. It starts by specifying core, essential elements of the GCF M&E framework and continues with outlining desirable, but less essential components that can be part of the framework. It finalizes by outlining suggested steps forward for the client.

9.1 Essential Elements of the GCF Monitoring and Evaluation Framework

Figure 14 illustrates core elements of the M&E framework of the GCF and the section below provides further detail on each of the components.

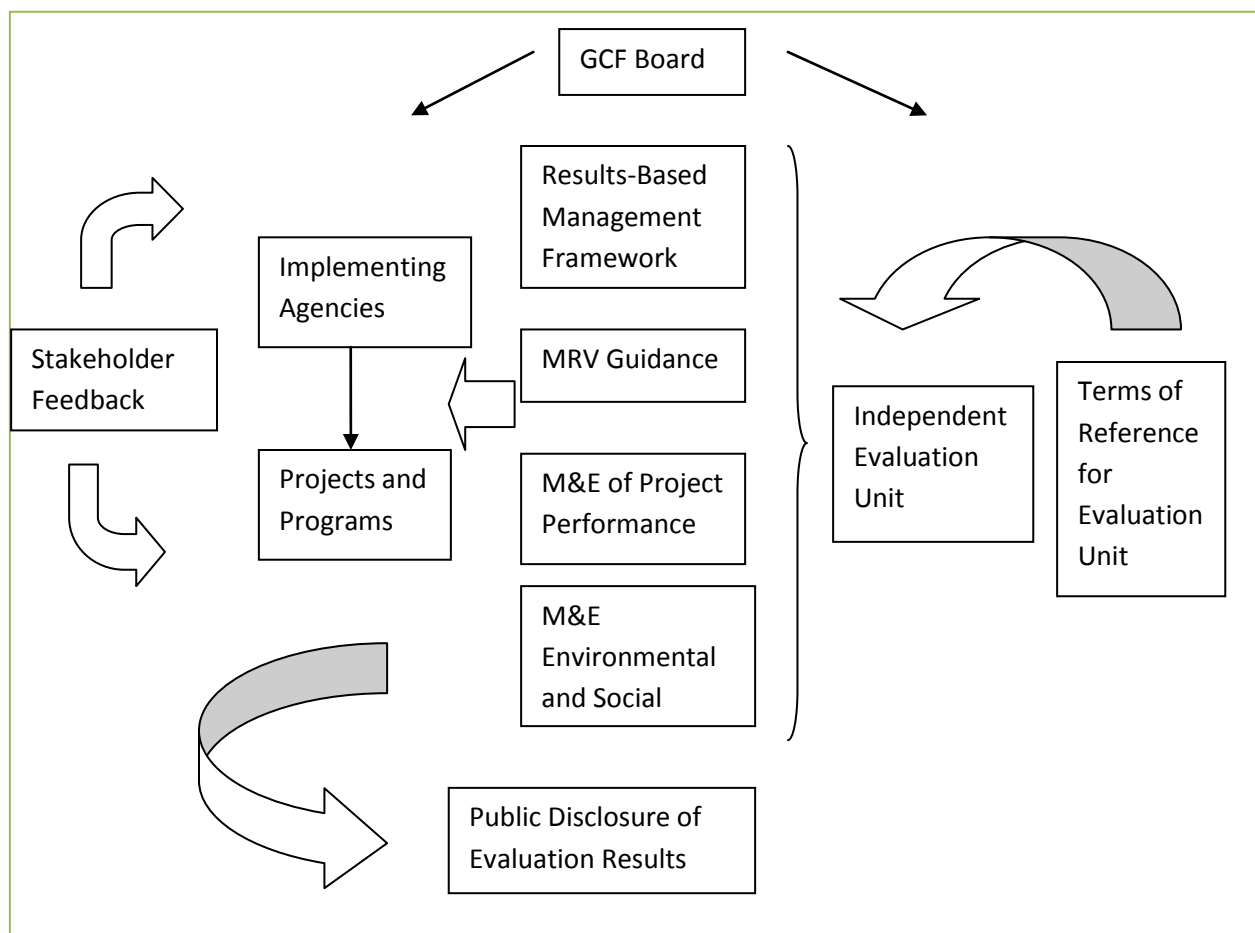


Figure 14: Essential elements of the GCF monitoring and evaluation framework

Terms of References for the Independent Evaluation Unit: The GCF will need to have an independent and neutral evaluation group that will report directly to the Climate Fund Board. The evaluation group will set up standards, guidelines and performance measures to be used for mitigation and adaptation programmes implemented by the designated operational entities. It will also prescribe MRV guidelines. The evaluation unit will work with the accredited implementing entities of the GCF to ensure that MRV and evaluations are executed with sufficient level of rigor. The evaluation unit will conduct detail assessments and investigations when needed. The evaluation unit will also be responsible of capacity building of evaluation staff of implementing entities. Lessons learned from the Canadian Monitoring and Evaluation System should be considered, for example, to have consistent and comparable set of guidelines that build the initial foundation in building a sustainable M&E system.

A Results-Based Management Framework: GCF investments should move away from traditional financing approaches towards a results-based framework where payments are made upon performance. Experience on performance-based payments can be drawn from several instruments such as REDD+, the Clean Development Mechanism and Program-for-Results (PforR) framework developed by the World Bank. The GCF may consider as well purchasing NAMA credits, which have undergone the full MRV process.

The GCF Evaluation Unit should provide detailed guidelines and minimum requirements for measuring reporting and verification: This will encourage project developers to consider core evaluation principles, indicators, and best practices as part of the evaluation process, including the ex-ante and ex-post evaluations. A MRV system should meet the following minimum requirements: i) environmental Integrity: it guarantees completeness, accuracy and consistency of emission reduction estimates and methodologies use are conservative; ii) data availability: baseline data and emission reductions data should be available; iii) transparency: emission data should be publicly available and estimation methods should be transparent; iv) cost efficiency: MRV costs should be reasonable. Ways to reduce costs without undermining the environmental integrity shall be explored.

Monitoring Impacts on Social Issues: Social safeguard policies should be part of GCF operation guidelines. Social impacts of GCF investments should be properly monitored. The GCF evaluation unit should provide guidance on how to monitor social issue over the time of the investments.

GCF funded projects should allow stakeholders to provide feedback to GCF projects and programs through an independent body. GCF investments should account for environmental and social considerations and should minimize risks. To ensure such compliance, stakeholders and parties affected by a project should be given the opportunity to provide feedback to an independent body. This body can be part of the evaluation team and should report directly to the GCF board.

Public Disclosure of Evaluation Results: Evaluation Results should be made available to the publics through project reports, studies and graphical interfaces. Following the Canadian model, transparency is “an underlying value of the M&E system” (Lahey, 2010).

Develop Evaluation Expertise at the Country-Level. The GCF Evaluation will need to use in-country evaluators. In several countries, it will be necessary to develop the necessary expertise to undertake evaluations. Developing a right size human resources supply is important for the M&E system. Additionally, promoting an organizational culture geared through M&E requires senior management to have an excellent understanding and trust in the M&E information.

9.2 Desirable Elements of the GCF Evaluation Framework

Desirable elements for the GCF M&E include:

Investment program proposals should present a clear results framework and a logic model: Every investment program proposal (or Concept Note) will be reviewed and approved by the GCF Board or designated entity. The program proposal will include a clearly defined results framework that requires review by the evaluation unit. The results framework shall include clearly defined “climate” objectives, program inputs, outcomes and indicators to measure performance. A program logic model shall accompany the Concept Note, and be reflective of the GCF logic model.

Country and Sector-Level Baseline Data and Reference Scenarios shall be developed in Advance through a “Readiness” Process. A MRV readiness process that entails development of baseline and reference scenarios should be promoted prior the disbursement of GCF resources. This will enable reliable estimates of GHG reductions through programmatic approaches. Project and program outcomes need to be measured against a credible baseline. A baseline study, which depicts for example, the GHG emissions in the absence of the project, shall accompany a project/program proposal.

Advanced MRV Systems. Countries may use advanced MRV systems, particularly in sectors like forestry and agriculture. With the advance of technology, remote sensing methods like satellite mapping provide reliable estimates of GHG flows and stocks on land.

Common Reporting with other Agencies. It is advisable to map information on GCF projects and programs using common reporting systems with other agencies such as the World Bank, Regional Banks and countries’ development agencies (e.g. GIZ, USAID, CIDA). This way, consistency in reporting through different intermediaries could be ensured.

Recognize the early role of champions and advocate for an M&E system that identifies channels and nodes of the networks. Even though the drivers for building an M&E system could be associated either with agenda setting or induced by fiscal measures, it is critical to understand “who the key audiences are, and what questions need to be answered”(Lahey R., 2010). This would be important for the GCF evaluation framework, as it is consistent with the mandate of having participatory approaches for MRV.

Promote coordination of GCF investments with the work of other donors. GCF investments should coordinate with work done by development agencies, multilateral banks, aid organizations and philanthropic organizations in a way to maximize impacts and reduce costs.

Establish pre-defined sanctions for bad performance and set-up a conflict resolution mechanism. When a project goes wrong, implementing agencies and developers should be made accountable. Sanctions for bad performance should be known in advance and should follow an approach applicable for different types of programs and projects financed across the world. A conflict resolution mechanism should be set-up as to allow for settlement of discrepancies.

GCF investments should require inter-institutional coordination at the country level: Climate change issues are usually dealt by Ministries of Environment. Nevertheless, mitigation and adaptation actions require investments in the energy, agriculture and forestry sectors. For an effective program implementation, country entities (e.g. Ministries of Environment, Agriculture, and Forestry Departments) need to collaborate and implement programs in a collaborative and efficient manner. The approach for institutional coordination needs to be specified in the program concept note.

Promote transparency in contracts. The GCF will involve investments in infrastructure and technical assistance. Local agencies will be involved in the implementation of projects through contractual arrangements that will be awarded using best procurement practices. General data on contracts may be made available to the public.

9.3 Key Steps Forward

Governance arrangements for the GCF are to be concluded at COP 18 in Doha, December 2012. This includes the selection of the country to host the Secretariat. Once initial modalities are defined, conversations on the M&E Framework should already be allowed through an open and participatory process.

Dialogue: A first and necessary step is to establish a dialogue on the M&E approaches. This dialogue should be country driven, but counting with the technical expertise of the evaluation practices of MDB's. Such a dialogue will be supported with technical documents that provide background information on the key elements of M&E systems for climate finance. Through the dialogue, key M&E challenges could be identified at early stage.

Technical Working Group: Arising from the dialogue, a technical working group on M&E can be formed. This group can provide key recommendations on the technical elements for developing an M&E framework and start identifying main challenges for implementation. The technical group can provide guidance on how MRV systems should be developed at the country level.

Financial Resources: In a parallel process, the GCF Board should assign resources for setting-up the GCF evaluation unit. Such unit should be in place once the GCF starts operating. Figure 15 depicts the proposed process.

MDB's Technical Assistance: The World Bank and other MDB's can become strategic champions to the GCF in terms of sharing their "E&M know-how". They can also take a leading role in terms of knowledge sharing and capacity building to support the process depicted in Figure 15. Climate Finance evaluation issues and MRV are important elements that need to be looked at and MDB's should incorporate these themes as part of their numerous capacity building and technical assistance programs on climate finance. Building on this preliminary study, the Bank may consider developing a more comprehensive guiding document, a "*Primer on Climate Finance Monitoring and Evaluation*", which can provide direct technical assistance to the GCF. Further work is needed in terms of providing more detailed evaluation procedures and protocols that can be used in the context of specific funding windows and instruments.

9.4 Risks and Barriers

Implementing the proposed M&E framework will face a number of barriers. This section outlines the main barriers and proposes solutions to overcome these barriers:

Capacity Building: A critical element for the sustainability of an M&E relates to the availability and adequacy of human resource in developing countries with the needed skill sets. Capacity building can be enhanced by using a range of tools including direct training, south-south exchange and professional networks. It would be important that the GCF together with MDB's support M&E capacity building programs in recipient countries.

Data: Proper monitoring requires reliable and accessible data. While data is often dispersed across different ministries and governmental agencies, it would be necessary to consolidate data systems and improve data collection systems.

Funding: A functional MRV system needs to balance the accuracy of the measurements against the costs of monitoring. The past experience with project-based CDM activities showed that MRV costs can be a barrier for implementation. Programmatic and sectoral approaches (as opposed to project-based) can reduce the overall costs of MRV.

Stakeholder Feedback and Timing of the Investments: An important element of the proposed framework is to have consultations with stakeholders on GCF operations. While stakeholders and directly affected communities provide valuable inputs for the design and operation of the projects, consultations can sometimes be lengthy and delay GCF disbursements. There would be needs to balance the extent of consultations and the timing prior undertaking the investments.

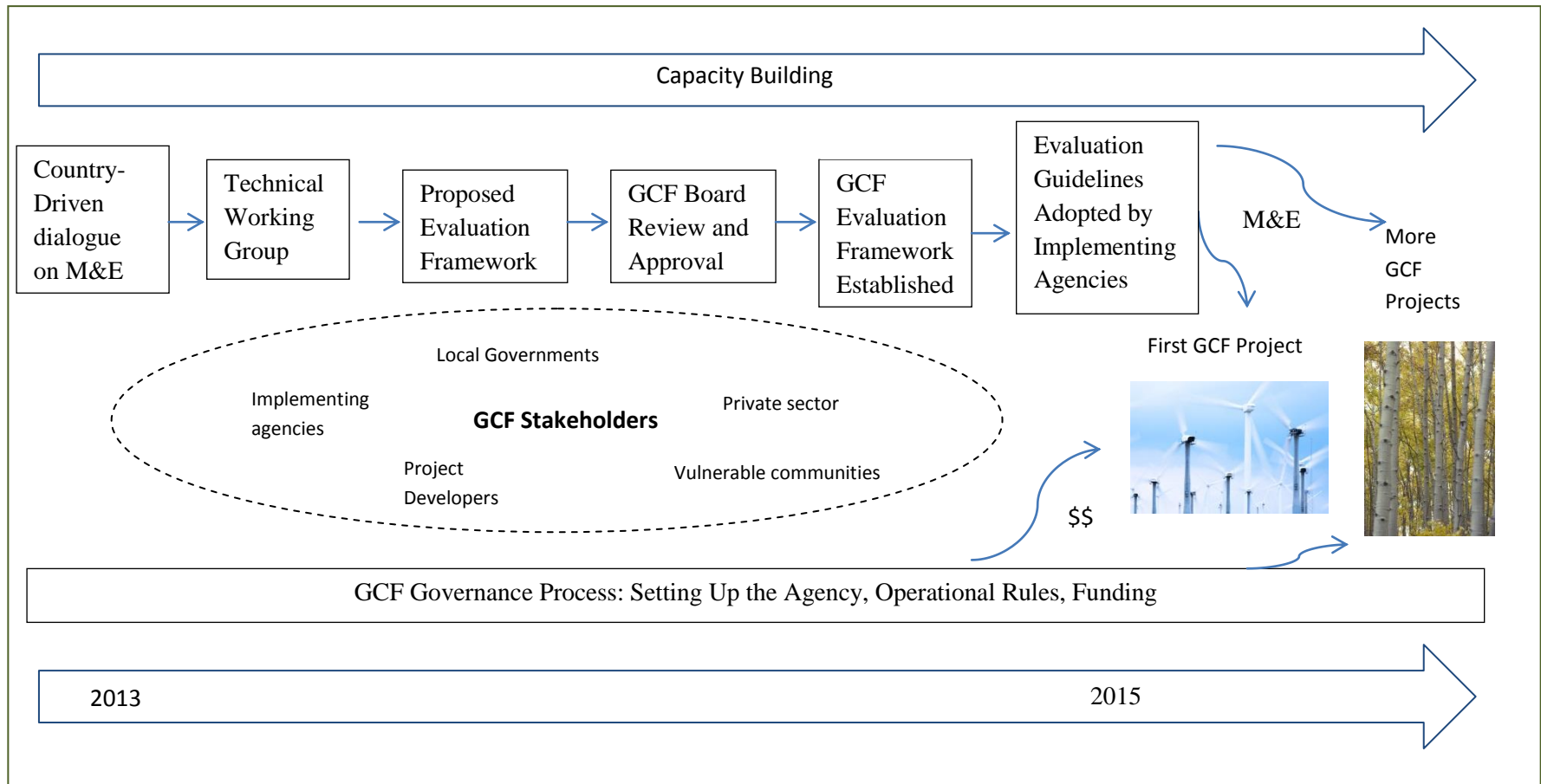


Figure 15: Proposed Timeline for Setting-Up the M&E Framework of the GCF

10.0 CONCLUSIONS

This report provided an overview about the Green Climate Fund (GCF), climate finance instruments that can be part of it and possible monitoring and evaluation approaches for activities implemented through the GCF. It helped to attain a better understanding of suitable monitoring and evaluation approaches for the GCF, the role of MRV, and the identification of proper performance measures for climate change mitigation and adaptation.

A comparison and assessment of financial instruments suggested that the private sector can play a significant to support climate change mitigation in middle income countries. As such, guarantees, public equity, subordinated equity and multilateral loans can be effective instruments to support mitigation investments (energy efficiency, renewable energy, mass transit). When political risk is covered through insurances and guarantees provided by the international community, these instruments may be used in low income countries as well. Climate adaptation initiatives, which often require public funding and are less appealing to the private sector, can be supported through catastrophe risk insurance mechanisms and grant-based mechanisms that blend national and international sources.

This report provided clarity on relevant aspects for establishing the GCF evaluation framework. Through an analysis of the evaluation approaches of World Bank projects, the GEF (Global Environmental Facility), Climate Investment Funds (CIFs) and CDM (Clean Development Mechanism) projects, some key recommendations are grouped in five pillars:

- The GCF's Independent Evaluation Unit should adopt core evaluation principles of environmental integrity, data availability, transparency and cost efficiency. It should also develop guidance documents and minimum requirements to be used by accredited GCF implementing entities. Implementing entities accredited by the GCF Board should have sufficient evaluation experience prior to their engagement in climate investment programs;
- GCF investments should prioritize the use results-based frameworks where payments are made upon performance. Relevant experience can be drawn from instruments such as REDD+, the Clean Development Mechanism and the Program-for-Results (PforR) developed by the World Bank;
- The GCF's Evaluation Unit should provide detailed guidelines and minimum requirements for measuring reporting and verification, building on the extant experience of the CDM and REDD+ process and promoting the use of advanced technologies, such as remote sensing, for the forestry and agricultural sectors;

- The GCF should promote social equity and transparency by publishing evaluation results, encouraging “open contracts” and providing a window to stakeholders to provide input through an independent body in order to minimize any negative social consequences;
- Donor contributions to the GCF and official ODA should be tracked simultaneously. This will prevent donors to switch their ODA contributions to fulfill their GCF pledges. The key rationale for the creation of the GCF is to bring new and additional funding resources to support climate change mitigation and adaptation in developing countries.

Further research is needed in terms of providing more detailed evaluation procedures that can be used in the context of specific funding windows, instruments and specific country circumstances. In addition, more research is needed for identifying common indicators to measure the performance of climate change adaptation programs. Sector-specific MRV guidelines need to be thought and developed. Consultations on M&E aspects with developing country experts and practitioners need to be started.

REFERENCES

- Abbott, K. and D. Gartner, 2011. *The Green Climate Fund and the Future of Environmental Governance*. Earth System Governance Working Paper No. 16. Earth System Governance Project, Lund.
- Bird, N., J. Brown and L. Schalatek, 2011. *Design challenges for the Green Climate Fund*, Herich Boll Stiftung, Berlin.
- Brown, J., B. Buchner, G. Wagner and K. Sierra, 2011. *Improving the Effectiveness of Climate Finance: A Survey of Leveraging Methodologies*, Overseas Development Institute, London.
- Buchner, B., A. Falconer, M. Herve-Mignucci and M. Brinkman, 2011. *The Landscape of Climate Finance*, Climate Policy Initiative, Venice.
- Buchner, B., J. Brown and J. Corfee-Morlot, 2011. *Monitoring and Tracking Long-Term Finance to Support Climate Action*, Climate Policy Initiative, Venice.
- Buchner B., A. Falconer, C. Trabacchi and J. Jane Wilkinson, 2012. *Public Climate Finance: A Survey of Systems to Monitor and Evaluate Climate Finance Effectiveness*, Climate Policy Initiative, Venice.
- Castro, P., D. Hayashi, M. Stadelmann, A. Michaelowa, M. Cames and S. Healy, 2011. *Solving the MRV challenge for new market-based mechanisms: What can past experience teach us?* Öko-Institut e.V., Berlin.
- CIF (Climate Investment Funds), 2011a. *PPCR Monitoring and Evaluation, Preliminary Guidance*, Climate Investment Funds Secretariat, Washington DC.
- CIF, 2011b. *SREP Monitoring and Evaluation*, Climate Investment Funds Secretariat, Washington DC.
- CIF, 2012a. *Annual Report of 2011: From the Ground Up, Investing in our Green Future*, Climate Investment Funds Secretariat, Washington DC.
- CIF, 2012b. *Independent Evaluation of the Climate Investment Funds*, Climate Investment Funds Secretariat, Washington DC.
- Corfee-Morlot J., Guay B. and Larsen K.M., 2009, *Financing for Climate Change Mitigation: Towards a Framework for Measurement, Reporting and Verification*, OECD, Paris.

- Ecofys, 2012. Nationally Appropriate Mitigation Actions (NAMAs) Database, Ecofys, The Netherlands.
- Ecofys and ECN, 2012. *Status Report on Nationally Appropriate Mitigation Actions (NAMAs): Mid-year update*, Ecofys, The Netherlands.
- Ellis J. and S. Moarif, 2009. *GHG Mitigation Actions: MRV Issues and Options*, Organization for Economic Cooperation and Development, Paris.
- Energy Star, 2012. *Portfolio Manager quick Reference Guide*, Energy Star Program, United States of America.
- FAOSTAT, 2012. *Forest Production per Country*, Food and Agriculture Organization of the United Nations, Rome.
- FCPF, 2011. *Forest Partnership Facility Annual Report 2010*, Forest Carbon Partnership Facility Secretariat, Washington DC.
- FSF (Fast Start Financing), 2012. *Contributing Countries Pledges – Online Registry*, The Netherlands.
- GCF (Green Climate Fund) Transitional Committee, 2011. *Managing Finance. Background note: Thematic windows*, UNFCCC, Bonn.
- GCF (Green Climate Fund), 2012. *Governing instrument for the Green Climate Fund, Interim Secretariat of the Green Climate Fund*, Bonn.
- GEF (Global Environmental Facility), 2008. *Guidelines for GEF Agencies Conducting Terminal Evaluations*, GEF, Washington DC.
- GEF, 2010. *The GEF Monitoring and Evaluation Policy 2010*, The Global Environmental Facility, Washington DC.
- GEF, 2012. *Global Environmental Facility Evaluation Office*, GEF, Washington DC.
- GEF, 2012b, *Proposed Amendments to the Evaluation Framework Prepared by the Adaptation Fund Evaluation Function*, GEF, Washington DC.
- Huhtala, A., 2011. *Development, Climate and Finance Series: Climate Finance in the Urban Context*, World Bank, Washington DC.
- Huhtala A. and P. Ambrosi, 2010. *Development, Climate and Finance Series: Making the Most of Public Finance for Climate Action*, World Bank, Washington DC.
- IEA, 2000. *The IEA Energy Indicators Effort: Increasing the understanding of the Energy/Emissions link*. International Energy Agency, Paris.

- IEA, 2011a. *World Energy Outlook 2011*. International Energy Agency, Paris.
- IEA, 2011b. *Clean Energy Progress Report*, International Energy Agency, Paris.
- IEG, 2008, *Doing Business: An Independent Evaluation Taking the Measure of the World Bank Indicators*, World Bank, Washington DC.
- IEG, 2011. *Improving Development Results Through Excellence in Evaluation*, World Bank, Washington DC.
- IEG, 2012a. *The Independent Evaluation Group*, World Bank, Washington DC.
- IEG, 2012b. *Lessons from Impact Evaluations of World Bank Projects*, World Bank, Washington DC.
- IMF and World Bank, 2011. *Mobilizing Climate Finance: A Paper prepared at the request of G20 Finance Ministers*, International Monetary Fund, Washington DC.
- Inspection Panel, 2011. *Annual Report 2010-2011*, World Bank, Washington DC.
- IPCC (International Panel of Climate Change) 2007. *Fourth Assessment Report*, International Panel of Climate Change, Geneva.
- Kossoy A. and P. Guigon, 2012. *State and Trends of the Carbon Market*, World Bank, Washington DC.
- Lahey R., 2010. *The Canadian M&E System: Lessons learned from 30 Years of Development*, ECD Working Papers Series No 23, World Bank, Washington DC.
- Lattanzio, R., 2011. *International Climate Change Financing: The Green Climate Fund (GCF)*. Congressional Research Service of the US.
- Liebreich, M., 2011. *Towards a Green Climate Finance Framework*. Bloomberg New Energy Finance, London.
- Lütken, S., E. Aalders, B. Pretlove, N. Peters and K. Holm-Olsen, 2012. *Measuring, Reporting Verifying: A Primer on MRV for Nationally Appropriate Mitigation Actions*. UNEP Risø Centre, Denmark.
- McKinsey, 2010. *Greenhouse Gas Abatement Cost Curves*, McKinsey and Co., New York.
- Mc David, J. and L.R. Hawthorn, 2006. *Program Evaluation & Performance Measurement: An Introduction To Practice*, Sage, Thousand Oaks, CA.
- Müller B. and S. Harmeling, *In the Footsteps of the Global Fund: How to establish the new climate fund - COP 16 Outreach*, Stakeholder Forum, Bonn.

- Nakhooda S., A. Caravani, and A. Wenzel 2011. *Climate Finance Fundamentals: The Evolving Climate Finance Architecture*, Heinrich Böll Stiftung North America.
- OECD, 2011, *Development Perspectives for a Post-2012 Climate Financing Architecture*, Organization for Economic Cooperation and Development, Paris.
- OECD 2012a, *Busan Climate Change Finance Building Block - Draft Implementation Plan*, Organization for Economic Cooperation and Development, Paris.
- OECD 2012b, *Creditor Reporting System (CRS) Aid Activities database*, Organization for Economic Cooperation and Development, Paris.
- PCW, 2011. *The World in 2050: The accelerating Shift of global economic power: challenges and Opportunities*, PCW, New York.
- Pew Environmental Group, 2010. *Who's Winning the Clean Energy Race?: Growth, Competition and Opportunity in the World's Largest Economies*, the Pew Charitable Trusts, Washington DC.
- Schalatek, L. and N. Bird, 2011. *The Principles and Criteria of Public Climate Finance – A Normative Framework*, Herich Boll Stiftung, Berlin.
- Sierra, K., 2011. *The Green Climate Fund: Options for Mobilizing the Private Sector. A brief for the GCF Transitional Committee*, Climate and Development Knowledge Network, UK.
- Stasio K., C. Polycarp, A. Ballesteros and C. Easton, 2011. *Summary of Developed Country 'Fast-Start' Climate Finance Pledges*, World Resources Institute, Washington DC.
- UNDP, 2011. *Catalyzing Climate Finance, A Guidebook on Policy and Financing Options to Support Green, Low-Emission and Climate-Resilient Development*, United Nations Development Program, New York.
- UNFCCC, 1998. *The Kyoto Protocol to the United Framework Convention on Climate Change*. United Nations, UNFCCC, Bonn.
- UNFCCC, 2001. *The Marrakesh Accords and the Marrakesh Declaration*, UNFCCC, Bonn.
- UNFCCC, 2009. *Draft decision CP.15. Proposal by the President*, The Copenhagen Accord. UNFCCC, Bonn.
- UNFCCC, 2010. *Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010*, UNFCCC, Bonn.
- UNFCCC, 2011a. *UN Climate Chief on the Green Climate Fund*. Press Release, UNFCCC, Bonn.

- UNFCCC, 2011b. *The Cancun Agreements. What will governments do in 2011?*, UNFCCC, Bonn.
- UNFCCC, 2012a. *Key Decisions at Durban*, UNFCCC, Bonn.
- UNFCCC, 2012b. *The Clean Development Mechanism (CDM) Project Cycle*, UNFCCC, Bonn.
- Watson C., S. Nakhooda, A. Caravani and L. Schalatek, *The practical challenges of monitoring climate finance: Insights from Climate Funds Update*, Herich Boll Stiftung North America, Washington DC.
- Wholey, J.S, 1987. “ Evaluability Aseement: Developing Program Theory.” In L. Bickman (ed), *Using Program Theory in Evaluation: New Directions for Program Evaluation*, 33. San Francisco: Jossey-Bass.
- World Bank, 2010a. *Development, Climate and Finance Series: Monitoring Climate Finance and ODA*, World Bank, Washington DC.
- World Bank, 2010b. *World Development Report 2010: Development and Climate Change. Chapter 6: Generation the Funding Needed for Mitigation and Adaptation*, World Bank, Washington DC.
- World Bank, 2011a. *World Bank Annual Report 2011: Year in Review*, World Bank, Washington DC.
- World Bank, 2011b. *Monitoring and Evaluation of Adaptation Activities - The Caribbean Mainstreaming Adaptation to Climate Change Project*, The World Bank, Washington DC.
- World Bank 2012, *Development and Climate Change: A Strategic Framework of the World Bank Group*, Washington DC.
- World Bank 2012b, *World Development Indicators – Online Database*, The World Bank, Washington DC.
- World Energy Council 2012, *Energy Efficiency Indicators*. WEC Committee on Energy Efficiency Policies and Indicators, Paris.
- Younger D., 2012. *International Finance Corporation (IFC) Experience in in Financing Renewable Energy*. IFC, Washington DC.
- Zelenco I., 2011. *Insuring Against Natural Disaster Risk: MultiCat Program*, World Bank, Washington DC.