

Impact Evaluation of the GEF Support to Climate Change Mitigation: Transforming Markets in Major Emerging Economies

Approach Paper

Approved by Rob D. van den Berg, Director, GEF Evaluation Office

5th of June 2012

Contacts

Aaron Zazueta,
Chief Evaluation Officer, Team Leader Impact Evaluation Stream
azazueta@thegef.org

Neeraj Kumar Negi
Evaluation Officer, Task Team Leader
nnegi1@thegef.org

GEF Evaluation Office
1818 H Street NW
Washington DC 20433
Tel: 202 473-4054, Fax: 202 522-1691
www.gefeo.org

Introduction

Climate change is evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level¹. Global GHG emissions due to human activities have grown since pre-industrial times with an increase of 70 percent between 1970 and 2004². While some of the observed changes in climate could be attributed to the natural causes, *“most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.”*³ The business as usual scenario – in terms of anthropogenic emissions – is expected to lead to severe impacts on ecosystems, food supply, coastal areas, human settlements, health, freshwater availability, etc, which in turn are expected to negatively affect the general well being of human populations⁴. There is, therefore, a need to undertake measures to mitigate and adapt to climate change.

GEF was established in 1991 to assist in protection of the global environment and promote environmentally sound and sustainable economic development. It is a *“mechanism for international cooperation for the purpose of providing new and additional grant and concessional funding to meet the agreed incremental costs of measures to achieve agreed global environmental benefits”*⁵. GEF serves as a financial mechanism for implementation of guidance by the United Nations Framework Convention on Climate Change (UNFCCC) on an interim basis. In recent years other funding sources have emerged for implementation of UNFCCC guidance. However, they are not yet fully operational.

Since GEF’s inception, it has provided funding support for climate change. As part of its climate change focal area programs and strategies, GEF has addressed concerns related to mitigation and adaptation. Nonetheless, its focus in terms of funding provided through the GEF trust fund has primarily been on climate change mitigation (CCM).⁶ Up to August 2011 GEF had provided a funding of US \$ 9.12 billion for generation of global environmental benefits⁷. Of this, US \$ 3.04 billion had been provided for CCM related activities.

GEF is replenished every four years through a replenishment process. Overall performance studies (OPS) of GEF take stock of GEF effectiveness in achieving its objectives and identify areas where GEF could improve. These studies are undertaken to inform the participants of the replenishment process on GEF achievements and facilitate deliberations on the measures that need to be taken for the next GEF cycle. The “Impact Evaluation of the GEF Support to Climate Change Mitigation” is being undertaken as an input to the Fifth Overall Performance Study (OPS-5). While past evaluations on climate change mitigation have addressed the overall GEF portfolio, major emerging economies have not been a focus.

¹ Climate Change 2007: Synthesis Report. IPCC, Nov 2007. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

² IPCC, Nov 2007

³ IPCC, Nov 2007. *The report clarifies uses of terms used to denote the level of uncertainty. Usage of very likely indicates at least 90 percent probability.*

⁴ IPCC, Nov 2007. *The report clarifies uses of terms used to denote the level of uncertainty. Usage of very likely indicates at least 90 percent probability.*

⁵ Instrument for the Establishment of the Restructured Global Environment Facility, Oct 2011.

⁶ GEF has supported adaptation activities through various trust funds managed by it. This includes the GEF trust fund, SCCF, LDCF and Adaptation Fund. The impact evaluation focuses on climate change mitigation activities supported through resources from the GEF trust fund.

⁷ This excludes fees provided to the agencies to meet their implementation costs

This impact evaluation will address this gap by assessing the extent, and advancing understanding of how, GEF supported CCM activities are transforming relevant markets or sub-markets⁸ in major emerging economies. The field work for the evaluation will cover four major emerging economies – China, India, Mexico and Russia. Of these, India and Mexico will be covered through more detailed country case studies. The impact evaluation is expected to be completed by April 2013.

Objectives and Key Questions

Market transformation is generally understood as the lasting changes in the structure and/or function of markets⁹. The impact evaluation is aimed at comparative assessment of the extent and ways in which GEF is transforming CCM relevant markets in major emerging economies. It would try to understand the causal mechanisms that affect market transformation, the resultant reduction in and avoidance of GHG emissions, and the lessons that could be learnt from the experiences in major emerging economies. More specifically the impact evaluation will pursue following objectives:

- Assess contributions of GEF supported activities to GHG emission reduction and avoidance
- Assess progress made by GEF supported activities towards transforming markets for climate change mitigation
- Ascertain the Impact pathways and factors affecting further progress towards market transformation

Through its projects GEF aims at CCM relevant market transformation in developing countries and those with economies in transition. Of these, major emerging economies are especially important in terms of their climate change mitigation potential. Compared to others, in major emerging economies any improvement over the baseline course, given size of the markets and an increasing trend in energy demand, is likely to lead to greater absolute GHG emission reduction and avoidance.

Key questions

What have been the GEF contributions to GHG emission reduction and avoidance?

The ultimate objective of the climate change mitigation projects supported by the GEF is to reduce GHG concentration in atmosphere. Thus, assessment of GEF contribution to GHG reduction and avoidance is central to this impact evaluation. The evaluation would determine an ex-post estimate of GHG emissions reduction and avoidance achieved by GEF projects covered through the evaluation. These estimates, among other things, would take into account the shifts in the baseline during the period the benefits from the GEF projects accrued (so as to facilitate comparison with a counterfactual). Reported data on actual achieved GHG emission reduction/avoidance and anticipated reduction/avoidance would be

⁸ In several instances the targeted markets could be sub-national. Where relevant, sub-markets may also be the focus of enquiry. In this paper the term “market” may refer to both markets at the national and sub national level. For an individual project the boundaries overall market considered will be set by the boundaries outlined in the project documents. However, even if a sub-national market was targeted its significance and effect on the larger national market would also be addressed.

⁹ Geller and Nadel (1994; 1996) have defined the term and used it within the context of energy efficiency relevant markets. But this term could also be extended to cover other CCM relevant markets.

verified and extent to which key assumptions for estimating benefits are realistic would be assessed. The evaluation will also verify whether for reported indirect benefits, the estimated long term impacts are consistent with the causal chains of the project theory of change – i.e. whether the prerequisite intermediate states (medium term outcomes) and short term outcomes have been achieved for the long term impacts to be attributable to the project. The evaluation would also address the role played by GEF in generation of these benefits and the extent support provided by the GEF conforms to incremental reasoning.

What has been the progress made by GEF supported activities towards transforming markets for climate change mitigation?

The evaluation would assess observable progress made in terms of transformation of markets relevant for climate change mitigation, the resultant environmental stress reduction and co-benefits¹⁰. The focus would be on ascertaining whether the expected short term outcomes and intermediate states (medium term outcomes) in a given project's causal chain have been achieved and/or are being achieved. Attention would be given to achievements related to barrier removal and market transformation. These may include transformation in areas such as supply chain and infrastructure, access to finance, policy environment, changes in consumer behavior, etc. The evaluation will take stock of how transformation in these dimensions is resulting into environmental stress reduction, i.e. reduction in and avoidance of GHG emissions, at a systemic level. The evaluation would also take stock of co-benefits and unanticipated positive or negative impacts that may be associated and attributed to the projects.

What are the impact pathways and factors that affect further progress towards market transformation?

The aim would be to understand impact pathways in terms of how market transformation and resultant stress reduction is being achieved. Attention would be given to the processes such as replication, mainstreaming, and up-scaling that lead to impacts, along with bottlenecks that stall progress. Much of progress made and obstacles encountered during the post project implementation phase may be due to factors that are beyond the control of the GEF project. However, several of them are within plausible control. The evaluation would assess the extent factors that are largely within control – such as quality of project design and implementation – had a bearing on the manifested progress to impact. Activities that are more effective in generating CCM GEBs on a long term basis will be identified. Attention would also be given to factors that are influenced more by actions of non-GEF actors, but are critical because of the influence they have on achievement of intended long term impacts.

The CCM impact evaluation is being undertaken to report on GEF achievements in terms of bringing about transformation of relevant markets in major emerging economies in OPS5. This evaluation leaves out several important groups of countries and themes. The Office would be undertaking additional work for a more comprehensive reporting on CCM impacts in OPS5. This includes review of the terminal

¹⁰ The environmental stress reduction in this case indicates reduction in and avoidance of CO₂ (or equivalent) emissions that contribute to climate change. Co-benefits refer to benefits other than GHG emissions reduction or avoidance.

evaluation reports, country portfolio evaluations (CPEs), thematic evaluations; evaluations undertaken by the independent evaluation offices of the GEF agencies; and, other independent publications and reports that cover GEF CCM activities. Not all of the information gathered through the comprehensive desk review would be reported on through this impact evaluation. However, information that pertains to the markets covered through the field based studies undertaken as part of this impact evaluation will be reflected in the evaluation report.

GEF approach to generation of global environmental benefits

Figure 1 presents a schematic summary of the general framework for GEF's theory of change. The theory of change presented in the figure is generic – individual projects may focus on a few of the depicted aspects – it schematically portrays different causal mechanisms through which GEF supported activities might lead to long term environmental impact and other co-benefits. This generic theory of change will inform the approach, methods and tools that will be used for this evaluation.

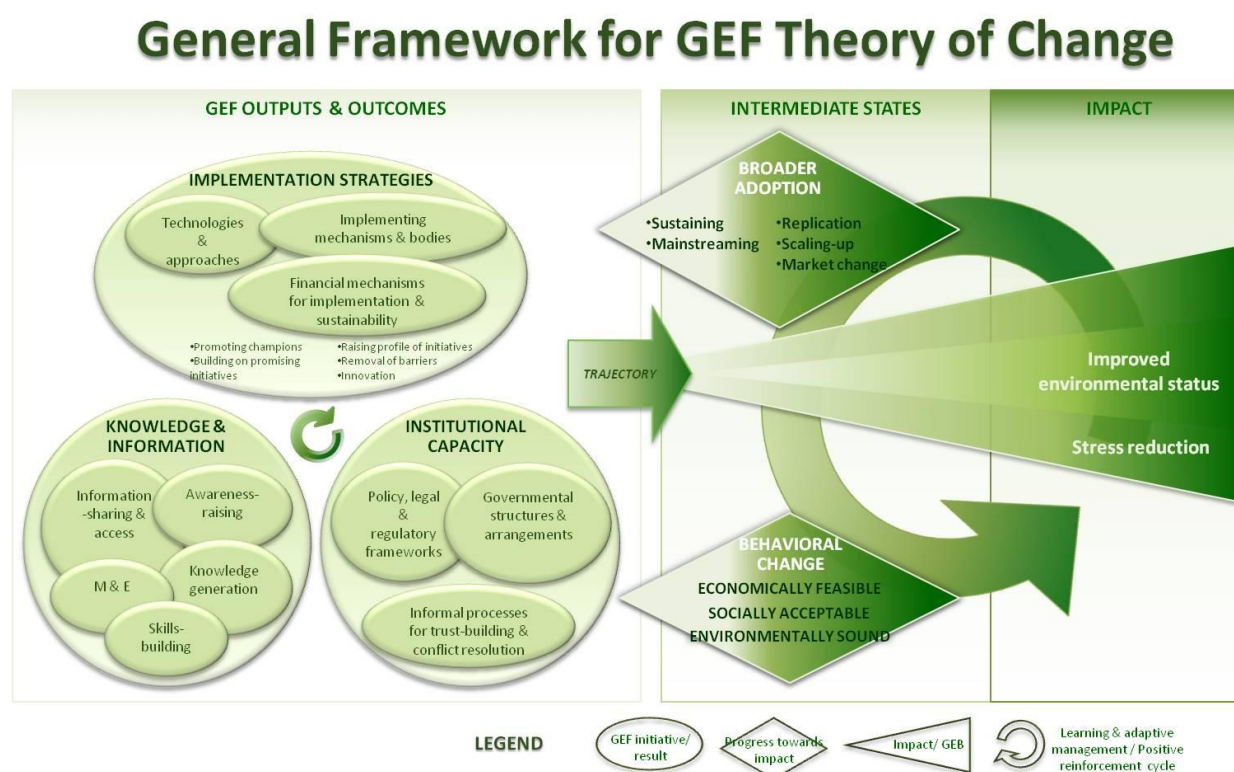


Figure 1

GEF Modalities

GEF support has focused on activities that facilitate national actors in playing an increasing role in addressing global environmental concerns. GEF has financed these activities through several modalities – full size projects, medium size projects, enabling activities, and small grants (through Small Grants Programme) – to finance generation of global environmental benefits. These modalities generally

regulate the level of GEF funding for a project and may have separate project preparation requirements and appraisal process.

GEF's Catalytic Role

GEF financed activities differ in terms of how directly they contribute to stress reduction at the local and systemic levels, and catalytic role. They also differ in terms of the contributions made by other partners, and the project benefit-mix composition in terms of CCM benefits (global environmental benefits) vis-à-vis national and local benefits. A classification based on funding modalities does not tell much about how GEF projects relate to its catalytic role. OPS4 identified three broad categories that may help us understand the catalytic role of the GEF: foundational activities; demonstration activities; and investment activities projects.

Foundational activities aim at creating an enabling environment for generation of global environmental benefits through focus on policy and regulatory framework, institutional structures and arrangements, long term monitoring of environmental status; and building of the knowledge base on global environmental concerns through knowledge generation, enhancing access to information, and awareness building. Although foundational activities are not expected to directly lead to environmental stress reduction, they are expected to create enabling conditions that may, in due course, facilitate adoption of technologies and approaches that lead to behavior change and stress reduction.

Demonstration activities focus on piloting, demonstrating and testing approaches, technologies, and financial mechanisms. While demonstration activities are expected to result in direct environmental stress reduction, these effects – in the short to medium run – are likely be local in nature. It is assumed that by demonstrating their applicability, desirability, viability, and efficacy, GEF would be able to facilitate adoption of promoted approaches, technologies and financial mechanisms at a larger scale.

Investment activities aim at supporting replication, upscaling or mainstreaming of approaches that are known to be effective in generating global environmental benefits. These activities are usually implemented intensively at a substantially large scale.

A GEF supported project may comprise of elements that conform to one or more of these categories. However, based on its overall thrust a project may be classified as belonging to any one of the three catalytic role categories. An assessment of the GEF CCM portfolio from the catalytic role perspective shows that foundational, demonstration, and investment projects account for 41.3 percent, 49.2 percent and 9.5 percent of the GEF CCM projects. The GEF supported enabling activities to support countries in preparing national communications to the UNFCCC account for an overwhelming majority of foundational projects. Since GEF grants for foundational projects tend to be small in size, they account for only 9.8 percent of GEF investment in CCM. Demonstration activities account for 67.5 percent of the GEF investment. Even though investment projects account for only 9.5 percent of the projects they account for 22.7 percent of the GEF funding. Substantial presence of demonstration and investment projects in the CCM portfolio both in terms of numbers and share in funding shows that GEF has given considerable support to activities that result in direct environmental stress reduction.

The Incremental Principle

Since its inception, GEF has supported eligible countries in generation of global environmental benefits by providing for the **incremental** costs – through its support GEF seeks to mitigate the future economic burden on a participating country that would result from its choosing the GEF supported activity in preference to one that would have been sufficient in the national interest. The project proposal review process is expected ensure that the GEF support provides for only the “agreed incremental costs”. While support provided by GEF being in line with the incremental costs is a necessary condition for approval, it by itself is not sufficient. The incremental benefits need to be commensurate with the incremental costs so as to ensure cost effectiveness of GEF grants.

The incremental cost principle explains several differences that are seen in level of support provided by the GEF. For example for similar projects, GEF tends to provide for a greater share of project outlay in least developed countries (LDCs) and small island developing states (SIDSs) than in large emerging economies where countries have greater capacity to provide for project costs. Similarly, for similar set of countries, GEF tends to provide for a greater share of project outlay for foundational projects than for investment projects, where national benefits are expected to be significantly larger.

The incremental principle needs to be taken in account to put GEF contribution through projects (wherein several other partners also contribute) in a context. CCM projects aim at GHG emission reduction and/or avoidance and therefore could be compared in terms of their achievements on this front (unlike other focal areas where the GEBs are difficult to boil down to a single statistic). When this incremental principle is not taken into account, biases tend to affect assessment of the benefits attributable to GEF and make comparisons across project categories difficult. For example while incremental costs (and benefits) tend to be more obvious for renewable energy projects, these are not as clear for energy efficiency projects. For renewable energy projects GEF could support incremental costs that are incurred in adopting a renewable energy generation technology instead of a cheaper baseline conventional energy generation technology that has a significant GHG footprint. For energy efficiency projects GEF could address incremental costs incurred in promoting early adoption of energy efficient technologies, products and behaviors (that in due course could have been adopted without GEF support), compared to the baseline course of action. The evaluation will not be used to test hypotheses on incremental reasoning. Instead, it would be used as an opportunity to generate hypotheses so that these may be tested through future work of the Office.

GEF CCM Strategies

Since inception of GEF, its CCM strategies have evolved. During the pilot phase (1991-94), there were no operational programs, strategies or objectives to which a project proposal needed to conform for GEF approval. As a result CCM projects financed during this phase are very diverse in terms of supported sectors, and promoted technologies and applications. The “Independent Evaluation of the Pilot Phase” noted that given the limited resources that GEF has, a lack of focus spreads its resources too thin and called for a greater strategic focus. Consequently, for GEF1 (1994-98) and GEF2 (1998-2002) period

programming was based on operational programs developed from 1996 to 2000. The operational programs for CCM included:

- removing barriers to energy conservation and efficiency (operational program 5)
- promoting the adoption of renewable energy by removing barriers and reducing implementation costs (operational program 6)
- reducing the long term costs of low green house gas-emitting technologies (operational program 7)
- promoting environmentally sustainable urban transport (operational program 11)
- integrated ecosystem management (operational program 12)

From pilot phase to GEF2, majority of GEF funding for CCM was for projects that promoted renewable energy. The second overall performance study of GEF (OPS-2) concluded that GEF has been more effective in promoting energy efficiency and has had limited success in promoting renewable energy. Here it would be opportune to also note similar results have been reported by other evaluations that covered CCM activities financed by other international financial institutions: several assessments undertaken by independent evaluation offices of other international financial institutions have found that in general energy efficiency projects supported by their institutions tend to be more cost effective than their renewable energy projects (ECG, 2011)¹¹. In GEF, evidence in support of relative cost-effectiveness of energy efficiency projects subsequently resulted in a shift in funding – from GEF3 onwards GEF has provided increased funding for energy efficiency related projects.

The third overall performance study (OPS3) of GEF called for a need to shift from technology-based to market-based approaches. For subsequent GEF phases, this resulted in a move to support projects that focus more on bringing about a broader market transformation than on promoting specific CCM relevant technologies.

During GEF-4, GEF stopped providing support for improvement in energy efficiency of power plants and for promotion of off grid renewable energy measures. In contrast, GEF started supporting promotion of energy production from biomass and to carbon sequestration (LULUCF). The programming for GEF-4 was based on the following six strategic programs:

- promoting energy efficiency in residential and commercial buildings
- promoting energy efficiency in the industrial sector
- Promoting market approaches for renewable energy
- Promoting sustainable energy production from biomass
- Promoting sustainable innovative systems for urban transport
- Management of land use, land use change and forestry (LULUCF) as a means to protect carbon stocks and reduce GHG emissions

Compared to GEF-4, for GEF-5 there have been several changes in the CCM strategies. Promotion of energy efficiency in buildings sector and the industrial sector has been combined into a single objective. Although promotion of low-carbon technologies was included as an operational program during 1994-

¹¹ Overcoming barriers to energy efficiency: new evidence from independent evaluation; ECG Draft Briefing Note, Nov 2011.

2006, it had been dropped as an objective for GEF-4. In GEF 5 a more streamlined version of this priority has been included as an objective. Another addition has been inclusion of support for enabling activities and capacity building as a separate CCM program objective. The six focal area objectives for GEF-5 are:

- promote the demonstration, deployment and transfer of innovative low-carbon technologies
- promote market transformation for energy efficiency in industry and building sector
- promote investment in renewable energy technologies
- promote energy efficient, low carbon transport and urban systems
- promote conservation and enhancement of carbon stocks through Sustainable Management of Land Use, Land-Use Change, and Forestry
- Support Enabling Activities and Capacity Building

GEF CCM Portfolio

To understand the potential *evaluandum* better, the evaluation team undertook an analysis of the GEF CCM portfolio. In order to label projects in a way consistent with the classification followed in the 'IPCC Climate Change 2007: Synthesis Report' ³ and in the 'World Development Report – Development and Climate Change' (2010), a separate exercise was undertaken to determine the carbon emission sector or sectors that were addressed and the climate change mitigation strategies pursued through GEF projects¹². The analysis showed that CCM activities accounts for a third of the total funding provided by the GEF since its inception. Up to August 2011, GEF had provided a funding of about US \$ 3.04 billion through 765 projects to address CCM related concerns (table 1).¹³

Table 1: GEF funding across phases¹⁴ (in US \$ m)

Particulars	Pilot Phase	GEF 1	GEF 2	GEF 3	GEF 4	GEF 5*	Total
Climate Change Mitigation	233	392	603	847	842	126	3,043
Other Focal Areas	454	681	1,113	1,829	1,685	311	6,072
All Focal Areas	687	1,073	1,716	2,677	2,527	437	9,116

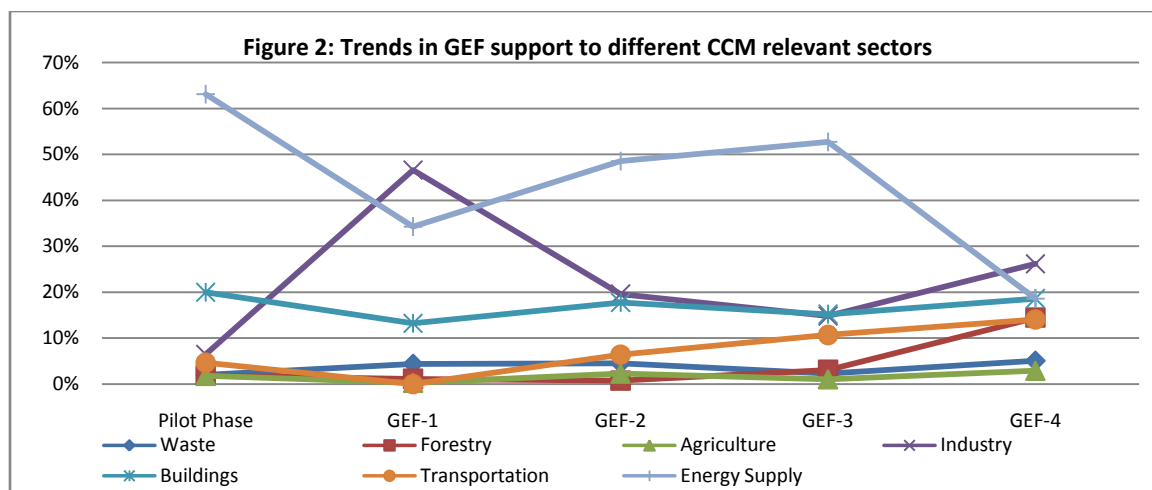
*The data for GEF 5 is only up to August 2011. GEF 5 is expected to end in June 2014.

In terms of sectors where GHG emissions take place, GEF has provided more funding for activities that address CCM in energy generation/supply (40%), industrial (23%) and building (16%) sectors. Its attention to transportation sector increased considerably after inclusion of sustainable transportation as one of the operational program during GEF-2 in 2000 (figure 2). Similarly, from 2002 onwards attention to LULUCF has also increased significantly. Transportation sector and LULUCF now account for 9 percent and 8 percent of the cumulative GEF support for CCM, respectively.

¹² GEF strategies could have been a basis. However, this approach was not used because CCM strategies of GEF have changed and it would have required considerable retrofitting, and comparisons with the strategies and sectors that are used as a basis in the wider literature would not have been possible.

¹³ SGP is included in the portfolio in form of full size projects.

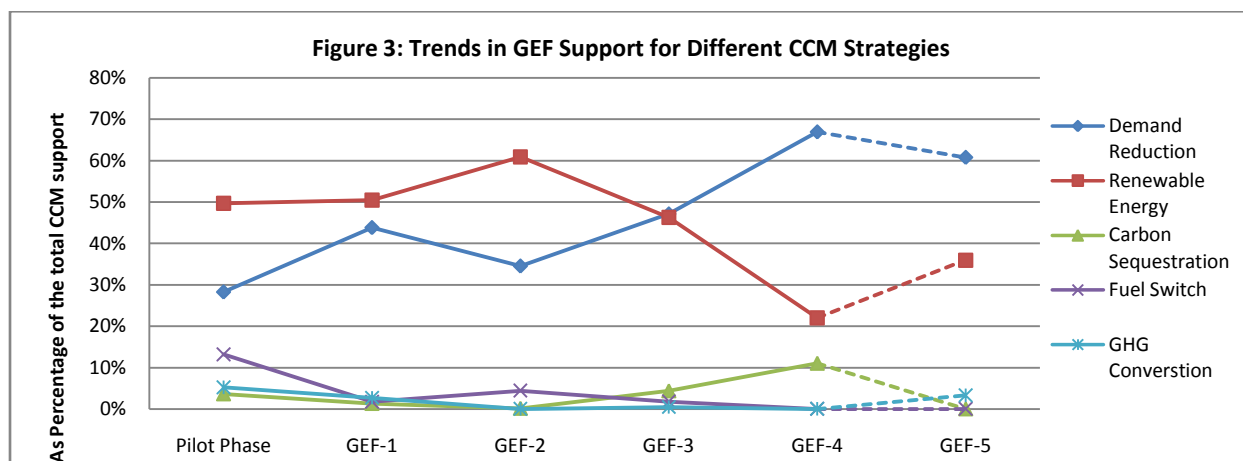
¹⁴ Each phase generally corresponds to a four year replenishment cycle period. The last period – GEF5 – started in July 2010 and will end in June 2014.



In terms of generic strategies that address CCM, GEF has channeled more resources to activities that promote demand reduction (energy efficiency) (49%) and renewable energy (43%). GEF has provided relatively less funding for activities that promote carbon sequestration (5%), fuel switch (3%) and GHG conversion (1%). Up to GEF2, a majority of GEF funding was for renewable energy. Since GEF3, demand reduction has been receiving more funding than other strategies.

In terms of activities undertaken as part of GEF projects, 84 percent of the projects either explicitly aim at capacity development, or have components or subcomponents that directly address capacity development. Twenty nine percent of the projects address development of legal, policy and/or regulatory measures. Seven percent of the GEF CCM projects, accounting for 12.1 percent of GEF's CCM investment, involve establishment of energy services companies (ESCOs) or development of capacities of the existing ESCOs. Sixty two percent of GEF CCM projects, accounting for 87 percent of GEF funding, involve transfer of technologies.

GEF supported projects are developed and managed on ground by GEF Agencies. These agencies assist eligible governments, private sector organizations, and NGOs in the development, implementation, and management of GEF projects. Among agencies, World Bank Group and UNDP together account for a bulk of GEF supported CCM projects both in terms of numbers (81 %) and GEF funding (88%).



While the exact number of projects that have been completed is difficult to ascertain from the Project Management Information System (PMIS) – given low reliability of data on project status – for 127 projects terminal evaluation reports are available. More than two thirds of the CCM projects (543 projects), which account for US \$ 2.07 billion in GEF funding, had been approved during GEF-3 or earlier. Thus, there is a sufficiently large pool of projects where it is realistic to expect evidence on emerging long-term impacts (or absence of these).

Methodology

The impact evaluation will draw on both primary and secondary sources of information. It will use mixed methods to respond to the key questions of the evaluation.

PMIS Dataset

Overall reporting on key characteristics of GEF's CCM portfolio would be based on an analysis of the PMIS dataset. Much of the portfolio analysis work for this evaluation has already been completed. The tasks completed so far include identification of 765 CCM projects in the portfolio, their categorization and labeling based on sectors addressed and generic strategies adopted, technologies and approaches promoted. This dataset would be further adapted to meet the evolving needs of this impact evaluation.

Desk review of terminal evaluations

All the terminal evaluations for the GEF projects that pertain to the CCM themes (i.e. transportation, wind energy, efficient buildings) covered through this evaluation and have been submitted to the Evaluation Office will be reviewed to gather information on progress to impact and causal factors. Where appropriate this information will be used to make comparisons with the information gathered through field visits. This will help in broadening the evidence base for the selected themes of the evaluation acknowledging that several of the older projects were developed at a time when GEF had different priorities (for example focus on technology vis-à-vis market transformation).

Secondary Sources of Information

The review of secondary sources would include a survey of the existing publications that report on impacts of GEF supported CCM activities in major emerging economies covered by this evaluation. This would include publications by the GEF EO, evaluation offices of the GEF agencies, and other independent evaluations that will be identified and accessed in a targeted manner. The impact evaluation would also draw upon the terminal evaluation reviews prepared by the Evaluation Office for GEF supported CCM projects that have been completed in the countries covered by the evaluation.

Field Work

The field work for the evaluation will cover four major emerging economies – China, India, Mexico and Russia. The focus would be on sustainable transportation, wind energy, and energy efficient buildings. In addition, where a critical mass of projects is found in India and Mexico – which would be covered through more detailed country case studies – transformation of other CCM relevant markets may also be assessed. These countries and themes have been selected based on: size of the portfolio and projects

that have been approved during GEF2 or earlier. Review of outcome to impacts (ROtI) method will be used to gather information in the field. Of the GEF supported CCM projects that have been implemented in these four countries, 18 projects that have been completed (or are almost about to be completed) have been selected for field work (see annex 3).

Methodological Considerations and Methods

Addressing Counterfactual

Determination of a counterfactual helps in assessment of the net impact of an intervention. This evaluation would primarily utilize a modeling based approach to determine relevant counterfactual for the projects covered under the evaluation. Several GHG accounting protocols are already available¹⁵. However, these often do not meet the specific needs of the GEF supported CCM activities which tend to give more attention to upstream market transformation issues. To determine the amount of GHG emission reduction and avoidance the evaluation will use as a basis the estimation models that have been developed (transportation) or are being developed (energy efficiency) by the STAP.

For this evaluation, experimental design or quasi-experimental design based assessment of impact may not be feasible. Experimental approach had not been integrated in the design of the GEF's CCM projects. Therefore, this approach is difficult to apply in a post-facto assessment. A quasi-experimental approach may also be difficult to apply in most situations because datasets that would lend themselves to such an assessment are difficult to access and often likely to be absent.

There is empirical evidence from several developed countries to suggest that a part of the energy efficiency gains may not translate into reduced energy demand because it may spur greater consumption due to lower de-facto cost of energy (per unit of output) for the consumer and – where there is pent up energy demand – increase in energy availability¹⁶. These effects, also known as rebound effects, tend to be lower in developed countries (studies indicate that in developed countries these effects generally tend to be less than 20% and vary from sector to sector). However, they are likely to be much higher in developing countries where there is considerable pent up energy demand. Field verifications conducted for the evaluation would gather evidence on rebound effects to assess the extent promoted energy efficiency measures are leading energy demand reduction. Given that experimental design or quasi experimental design based approaches would not be used, it might be difficult to estimate small effects. However, field verification would certainly help in identification of instances where major adjustments might be required.

Progress to impacts would also be measured through a theory of change (or no change) based evaluation approach. The barriers that prevent adoption of the desirable technologies and GEF supported interventions to address barriers would be mapped. This will help in identifying the barriers that were prevalent at project inception, their respective importance, and the efforts made through a

¹⁵See WRI and WBCSD 2007 (also http://www.ghgprotocol.org/files/ghgp/electricity_final.pdf); Madrigal, Marcelino, and Randall Spalding-Fecher, World Bank 2010; IPCC Fourth Assessment Report (FAR): Working Group III. Several other sector specific GHG calculators are also available.

¹⁶ Energy Efficiency and Sustainable Consumption: The Rebound Effect (2009). Editors: Herring and Sorrell. Also see: Wigley, K.J., 1997. Assessment of the importance of the rebound effect; paper presented at the 18th North American Conference of the USAEE/IAEE, San Francisco.

GEF supported project to address them. The changes observed in the post project status of the barriers would be compared with changes predicted based on the project's theory of change. This would help the evaluation in assessing the extent to which progress has been made to intermediate stages.

Given that GEF supports only incremental costs and only incremental benefits may be attributed to GEF support, the evaluation would look at the GEF interventions covered through this evaluation from an incremental cost principle perspective. This would facilitate a more realistic estimation of benefits attributable to GEF.

Measurement of GHG emission reduction and/or avoidance

Assessment of the extent GEF supported CCM activities are reducing GHGs in the atmosphere is important because it helps in ascertaining whether the incremental GHG reduction and/or avoidance is commensurate with the agreed incremental costs supported by GEF and facilitates comparisons across different categories of projects. To be useful, it is imperative that the ex-ante and ex-post estimates of GHG reduction and avoidance benefits are realistic and have a scientific basis.

Prior to 2008, there were wide variations in methodologies used by the project proponents in making GHG reduction or avoidance projections. In 2008, the GEF Secretariat published a manual on estimation of GHG emission reductions for energy efficiency and renewable energy projects (GEF/C.33/Inf.18)¹⁷. The methodology presented in the manual classifies emissions impacts into three general categories – direct project life time; direct post project; and, indirect reduction – in order of decreasing accuracy and certainty. A major criticism of this manual has been that it overestimates the GHG reductions. In order to address the weaknesses of the existing manual, STAP is now working with the Secretariat and other stakeholders to prepare a revised manual. The revised manual is expected to distinguish causality from shifting baselines and adequately account for uncertainty in realization of expected emission reductions.

In 2010 the GEF STAP published a manual for estimation of the transportation sector related emission reduction benefits (GEF/C.39/Inf.16)¹⁸. This manual is considered to be quite advanced and realistic in terms of estimates of GHG emissions reductions.

This evaluation will use the revised model being prepared by STAP for estimation of GHG emission reduction and/or avoidance for energy efficiency and renewable energy projects. Where applicable, the manual for estimation of the transportation sector related emission reduction and avoidance benefits would also be used. This will allow the evaluation to arrive at reliable estimate of GHG emissions reduction and avoidance benefits.

Assessment of Progress to Impact

The unit of analysis for this impact evaluation would be a specific market relevant to CCM in a selected major emerging economy. Data on progress to impact would be gathered keeping this unit in mind. Since GEF primarily intervenes through projects, the GEF supported CCM projects that address the market selected for assessment would be covered. Where more than one GEF supported project has covered a selected market, a synthesis of information on their combined impacts will be carried out.

¹⁷ http://www.thegef.org/gef/sites/thegef.org/files/documents/C.33.Inf_.18%20Climate%20Manual.pdf

¹⁸ http://www.thegef.org/gef/sites/thegef.org/files/documents/C.39.Inf_.16%20STAP%20-%20Manual%20for%20Calculating%20Greenhouse%20Gas%20Benefits_0.pdf

Assessment of progress to impact will aim at determining the progress made in project's causal chain in terms of realization of intended impacts. Achievement of short term outcomes – including local level stress reduction – by the project would be at one end of the spectrum. On the other, would be the long term impact generally achieved through replication, up-scaling, mainstreaming and market transformation at a systemic level. Achievement of medium term outcomes (intermediate states) that lead to long term impacts are between these two ends of the spectrum.

In 2009 the Evaluation Office, in collaboration with Conservation Development Center, developed a “Review of Outcome to Impact” (ROtI) approach to assess progress to impact¹⁹. This methodology was adopted to report on impact achievements of GEF projects – including CCM projects – in OPS-4. The Office has also used this methodology in several country portfolio evaluations and impact evaluations. A revised version of the ROtI rating scale will be used to report on progress to impact²⁰. Reporting on the progress to impact of GEF CCM activities in countries selected for field studies will be based primarily on data collected from the field.

Several projects that constitute the *evaluandum* aim at promotion of technologies that may lead to CCM. The stage of technology development cycle and innovation chain where GEF intervened, along with whether a given intervention was designed towards product or technology push or towards creating market demand pull, will be identified. Where the focus has been on promoting a product or a technology, the impact evaluation would assess how these are being picked up in the market and the factors that affect the pick-up. For the latter the focus would be for determining how measures to foster demand pull are facilitating pick-up of products and technologies that would contribute to CCM. Where the focus has been on measures to foster demand pull, the evaluation will assess whether these measures are facilitating pick-up of products, technologies and behaviors that would contribute to CCM.

In 2011, the GEF Evaluation Office, as part of its work with the ‘climate change evaluation community of practice’, completed a meta-evaluation to understand framework used in the reviewed energy efficiency related evaluations²¹. The meta-evaluation, carried out by Woerlen (2011) entailed review of the evaluations available at the online-library of energy efficiency related evaluations the community's website. Woerlen discusses in detail the evaluation framework prepared by Tokle and Uitto (2009) to assess market transformation related achievements of energy efficiency projects, and proposes an adapted version of the Tokle and Uitto framework for mapping intervention design and results. The adapted framework identified **20 barriers that could be grouped into four clusters**: barriers related to **consumers/ users; policy makers; local financiers; and supply chain and infrastructure**. The impact evaluation will use Woerlen's (Tokle and Uitto inspired) framework to identify the barriers targeted by GEF projects, and the results achieved by GEF projects in addressing market transformation barriers (see annex 2). This will facilitate in understanding better whether the ex-post changes being observed in the market could be linked to GEF projects and pathways through which outcomes and intermediate states

¹⁹ http://www.thegef.org/gef/sites/thegef.org/files/documents/M2_ROtI%20Handbook.pdf

²⁰ The revised scale is more streamlined than its predecessor. The rating is focused entirely on expected results in the causal chain towards long term impacts. The considerations related to project design, which were incorporated in the original rating scale, are now not considered as indicators of progress to impact but as factor that may explain progress to impact.

²¹ Woerlen, 2011: http://www.climate-eval.org/sites/default/files/file/MetaEvaluation_Woerlen.pdf

in the causal chain of barrier removal and market transformation related interventions are being achieved.

Alternatives Considered

The primary focus of this evaluation is on select CCM relevant markets in emerging major economies. Alternatives considered for this impact evaluation were:

- **To cover impact achievements in other country groupings such as the small island developing states (SIDS), least developed countries (LDCs), and smaller economies that are in transition.** GEF funding for CCM activities in major emerging economies has been considerably more than in other country groups and selection of this group over others allows the Office to track a greater proportion of GEF CCM portfolio. This does not gainsay the need to understand CCM impact achievements and underlying causal mechanisms in other country groups – as contextual circumstances and causal linkages could be very different. The impact evaluation team will explore opportunities to undertake CCM impact evaluations in these country groups in its future work program.
- **To assess impacts of the key strategies or themes at a global level.** This approach was rejected because it is likely to be considerably costly if these strategies and themes were to track a major part of the GEF portfolio. On the other hand, if the outlay is reduced only one or two themes could have been covered.
- **To cover impacts of CCM projects solely through desk review of terminal evaluation of completed projects.** This approach allows tracking of entire CCM portfolio of completed GEF projects but the evidence that would be analyzed would have been collected at the point of project completion. While this could have allowed assessment of the short term outcomes, it would not have helped in assessing the longer term impacts and verification of the causal linkages.
- **Project as unit of analysis.** This would have led to double counting of impacts when more than one project addressed market transformation of a given sector. Selection of the market at the national level allows the evaluation to explore not only project related impacts but also the impacts due to interactions among several projects.

Transformation of key markets in major emerging countries was selected as a focus because it is more streamlined than other alternatives and helps the Evaluation Office track transformative impacts in countries where there is high potential for achievement of CCM benefits in a more cost effective manner.

Coverage through field studies

In all six major emerging economies – Brazil, China, India, Mexico, Russia, and South Africa – were considered for selection (table 2, 3 and 4). Of these, after an analysis of their CCM portfolios and the extent these countries have been covered through past work of the Evaluation Office, India and Mexico were selected for country case studies. In addition, China and Russia will be covered through targeted field visits.

In Brazil, the Office is approaching completion of a country portfolio evaluation and, therefore, been adequately covered through other evaluations of GEF. In South Africa the number of CCM projects approved during GEF2 and earlier and GEF financing through such projects is relatively small and no CCM relevant market – where GEF has invested a significant amount before GEF3 – stands out in terms of utility for future GEF programming (table 3).

Table 2: GEF’s CCM portfolio in the countries shortlisted for CCM impact evaluation (in m \$)*

Country	SGP	Enabling activities	Medium size projects	Full size projects	All modalities
Brazil	0.0	5.7 (2)	0.0 (0)	78.0 (9)	83.8
China	0.0	8.6 (2)	1.8 (2)	502.1 (38)	512.5
India	1.8	3.5 (2)	3.8 (5)	199.4 (20)	208.5
Mexico	0.2	0.3 (1)	1.0 (1)	159.0 (14)	160.5
Russia	0.0	0.0 (0)	2.7 (3)	111.5 (13)	114.2
South Africa	0.2	0.3 (1)	3.8 (5)	27.2 (5)	31.5

*Number of projects in parentheses except for SGP

Among the six countries China has the largest CCM portfolio. However, China has also been covered through several recent evaluations. As a result, while covering China is important from the GEF portfolio perspective, it was felt that it might not be opportune to undertake a detailed country case study. In Russia, although the present CCM portfolio is quite large, the portfolio of projects approved during or before GEF2 is not significant. The only market where Russia provides a critical mass of projects is in the ‘efficient buildings’. As a result of these reasons both China and Russia were not selected for detailed country case studies – they will be covered through targeted field visits to cover the three key markets: wind energy (China) and transportation (China), and efficient buildings (both in China and Russia)

Table 3: GEF’s CCM portfolio in shortlisted countries: projects approved in GEF2 or earlier (in m \$)²²

Country	SGP	Enabling Activities	MSP	FSP	All modalities
Brazil	0.0	1.5 (1)	0.0 (0)	47.9 (5)	49.4
China	0.0	3.6 (1)	0.8 (1)	320.2 (22)	324.6
India	0.7	3.5 (2)	1.0 (1)	119.3 (10)	124.4
Mexico	0.2	0.3 (1)	0.0 (0)	131.8 (9)	132.4
Russia	0.0	0.0 (0)	1.7 (2)	16.9 (4)	18.6
South Africa	0.0	0.3 (1)	1.8 (3)	22.7 (4)	24.8

*number of projects in parentheses except for SGP

²² GEF funding for projects that have been approved in GEF3 or earlier, or those that have been completed, or for whom there is evidence that they are close to completion. All, but two, projects reported on in this table had been approved during GEF3 or earlier.

Table 4: Technology transfer, barrier removal and/or market transformation projects (nos) ²³

Country	China	Brazil	India	Mexico	Russia	South Africa
Energy Efficiency	22 (13)	2 (1)	11 (3)	4 (2)	11 (3)	3 (0)
<i>Certification, labels, standards</i>	4 (2)	1 (1)	2 (1)	0 (0)	5 (0)	2 (1)
<i>Efficient Lighting</i>	2 (1)	0 (0)	0 (0)	2 (1)	2 (0)	1 (0)
<i>Appliances</i>	2 (1)	0 (0)	(0)	2 (1)	1 (0)	1 (0)
<i>Building</i>	5 (3)	1 (0)	1 (0)	0 (0)	6 (2)	0 (0)
<i>Industrial technologies</i>	6 (2)	0 (0)	6 (1)	1 (0)	2 (0)	0 (0)
<i>Power generation and supply</i>	1 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)
<i>ESCO-Energy Finance</i>	3 (2)	0 (0)	1 (1)	0 (0)	2 (1)	0 (0)
Renewable Energy	8 (5)	3 (3)	8 (6)	8 (6)	4 (0)	8 (5)
<i>Solar energy</i>	4 (2)	0 (0)	2 (1)	5 (3)	1 (0)	5 (3)
<i>Off grid PV</i>	3 (2)	0 (0)	1 (0)	4 (2)	0 (0)	1 (0)
<i>Solar water heating</i>	2 (1)	0 (0)	1 (1)	1 (0)	1 (0)	3 (2)
<i>Wind Energy</i>	4 (3)	0 (0)	1 (1)	4 (4)	2 (0)	1 (1)
<i>Biogas</i>	4 (3)	0 (0)	1 (1)	2 (1)	0 (0)	0 (0)
<i>Hydro</i>	2 (1)	0 (0)	1 (1)	1 (1)	1 (0)	0 (0)
<i>Biomass based energy</i>	3 (3)	3 (2)	4 (3)	1 (1)	0 (0)	0 (0)
Transportation	8 (2)	1 (1)	2 (0)	2 (2)	1 (0)	2 (1)
<i>Public rapid transportation</i>	3 (0)	0 (0)	2 (0)	1 (1)	1 (0)	1 (1)
<i>Fuel cell buses/hybrids/Electric</i>	3 (2)	1 (1)	0 (0)	1 (1)	0 (0)	0 (0)
Others: Coal bed methane	1 (1)	0 (0)	1 (1)	0 (0)	1 (1)	0 (0)
Others: Land fill methane	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)
Others: Hydro methane recovery	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Completed projects or projects approved in GEF 2 or earlier in parentheses; numbers don't add up vertically because of several overlapping categories

India and Mexico were selected for detailed country case studies because they have significantly large CCM portfolios (Table 2) and a larger proportion of this was approved during GEF2 or earlier (table 3). These countries have not received as much coverage through other evaluations undertaken by the Office. Therefore, case studies in these two countries were also seen as a way to help the Office address field verification based evidence gap.

The field work would be focused covering CCM relevant market themes such as sustainable transportation, wind energy, and energy efficient buildings (annex 3). In addition, for India and Mexico – which would be covered through more detailed country case studies – transformation of other CCM relevant markets would also be covered. The evidence collected through field based work will be supported by extensive desk review of the terminal evaluations of projects relevant to these themes. These reviews will cover projects that have been undertaken in countries that have not been covered through the field work.

Through country case studies the impact evaluation will look at the balance that GEF has struck among various CCM priorities, opportunities and country needs.

²³ GEF funding for projects that have been approved in GEF3 or earlier, or those that have been completed, or for whom there is evidence that they are close to completion. All, but two, projects reported on in this table had been approved during GEF3 or earlier.

Key Products of the Evaluation

Country and thematic case studies

The country case studies will present impacts of GEF's CCM related activities at the country level in India and Mexico. The focus would be on presenting an assessment on how GEF is transforming energy related markets, the long term impacts of these efforts, and the causal linkages through which these impacts are being achieved. In addition to the CCM themes, the country case studies would also assess that the balance that GEF has been able to strike between different themes, opportunities, and country needs. Three market themes will also be covered through case studies. These would cover transportation and wind energy (both China); and buildings (China and Russia) related markets.

The case studies will be treated as internal documents of the evaluation. Where these case studies have a potential to be an important resource to other stakeholders and where they meet the EO online publication quality expectations, these may be published at the GEF EO website.

Evaluation Report

The evaluation report will adequately address the following key questions:

- What have been the GEF contributions to GHG reduction and avoidance?
- What has been the progress made by GEF supported activities towards transforming markets for climate change mitigation?
- What are the impact pathways and factors that affect further progress towards market transformation?

The report will address the national context of the countries covered through field studies, their peculiarities and common threads, the role that GEF has played and the activities it has supported in these countries. Using the approach described earlier in this paper it would determine the transformative impacts that GEF has had in select CCM relevant markets of these countries. This would also cover GEF's macro level CCM related impacts on legal, policy and regulatory environment; capacity development; and knowledge generation and sharing.

Findings and conclusions presented in the report would present experiences in market transformation using a comparative framework. It would discuss impacts distinguishing experiences in different themes within a country and in the same theme across different countries. The focus would also be on distilling the lessons that seem to transcend country circumstances, and those that are specific to countries. The evaluation will be submitted to the Council in its fall 2013 meeting, within the framework of the annual report on impact that is submitted by the Office.

Other products

The evaluation team will also prepare several other knowledge products such as signposts (two page evaluation summary), paper on portfolio analysis, meta-evaluation on GEF CCM impacts; report on emerging impacts and progress to impact by completed CCM projects based on the review of terminal evaluations. These papers will be published online at the evaluation webpage.

Stakeholder Involvement

The evaluation will involve stakeholders through consultations and sharing of emerging findings so that the evaluation may be strengthened through their feedback. Following stakeholders will be targeted.

CCM Team

The CCM team at the Secretariat is one of the key stakeholders of the evaluation. The evaluation team has been in regular touch with the CCM team to determine the broad contours of the evaluation. Their support would be sought to get inputs at various stages of the evaluation. In the initial stages inputs would be sought to ensure utility of the evaluation in informing the future work of GEF. During the course of the evaluation the emerging findings will be shared and their feedback will be addressed in preparation of final report of the evaluation.

Climate Change Task Force

It is comprised of the focal area coordinators of the GEF Agencies, the GEF Secretariat, and the STAP. This group would be invited to provide comments on the draft approach paper for the evaluation. The emerging findings of the evaluation would be shared with them in an interagency meeting to get their feedback early on in the process of the evaluation report preparation. Once the draft evaluation report is prepared, they would again be invited to provide comments to that these could be addressed in the final report of the evaluation.

Technical Advisory Group (TAG)

This group will be constituted to ensure quality of the evaluation. The main roles of the TAG will be to provide advisory support and guidance on methodological issues, evaluation approach, scientific and technical issues, identification of existing data sources, and facilitation of contact with relevant research institutions. The feedback of this group would be sought before drafts and emerging findings are shared with other stakeholders. One of the key members of this group will be the Climate Change expert of STAP panel. Another independent CCM expert will be brought onboard to provide advisory support to the evaluation team. In addition, the evaluation offices of the GEF agencies will be invited to participate in this panel.

Other Key Stakeholders

GEF agencies that were involved in implementation and execution of the projects covered through the evaluation constitute an important set of stakeholders. Their feedback will be sought at different stages of the evaluation. This includes their feedback on the draft report of the evaluation and other intermediate products. Their support will be sought to undertake the fieldwork and accessing important documents for the evaluation.

The GEF Operational Focal Points in the countries covered through the evaluation constitute another important group of stakeholders. Their support would be sought in undertaking the fieldwork and accessing important documents for the evaluation. Their feedback would be sought on reports and intermediate products of the evaluation, especially studies on the markets covered within their respective country.

To reach out to wider audience that may be interested in this evaluation, a web page has been created within the GEF EO website for this evaluation. This page will host several evaluation related documents such as the approach paper, draft reports, technical papers, etc. Where appropriate the evaluation team will also use the *climate-eval – community of practice* (<http://www.climate-eval.org/>) to share evaluation products with the wider climate change evaluation community and get their feedback.

Management of the Evaluation

The evaluation team will be led by Neeraj Negi, Evaluation Officer and task team leader for the evaluation. Aaron Zazueta, Chief Evaluation Officer and team leader for the impact evaluation stream of work, will be responsible for the overall supervision of the impact evaluation. Several consultants at will be hired to undertake country studies, desk reviews and provide research assistance support.

Evaluation Work Plan and Calendar

Table 5 presents the key milestones of the evaluation. The evaluation is expected to be complete in April 2013.

Table 5: Evaluation Calendar

Key milestone	Completion date
Portfolio Analysis	April 2012
Approach Paper	May 2012
Field Studies and case studies	November 2012
Desk Reviews	November 2012
Presentation of the preliminary findings	December 2012
Draft Report	February 2013
Final Report	April 2013

?

Annex 1

Annex1: Major CCM portfolios of GEF

Particulars	Size of the GEF CCM Portfolio (in m \$)*	Size Rank	CCM tech. transfer portfolio up to GEF-3 (in m \$)	CCM Tech transfer up-to GEF-3 Rank	STAR CCM Benefits Score ²⁴	STAR CCM Benefits Score Rank	STAR CCM allocation for GEF-5
China	512.5 (21.5%)	1	317.3 (20.9%)	1	34.95	1	149.6 (13.8%)
India	206.7 (8.7%)	2	115.5 (7.6%)	3	7.19	2	93.8 (8.6%)
Mexico	160.3 (6.7%)	3	131.8 (8.7%)	2	3.07	5	40.0 (3.7%)
Russia	114.2 (4.8%)	4	14.7 (1.0%)	23	6.67	3	87.0 (8.0%)
Philippines	92.9 (3.9%)	5	75.0 (4.9%)	4	0.68	28	8.8 (0.8%)
Brazil	83.7 (3.5%)	6	44.5 (2.9%)	8	4.14	4	53.9 (5.0%)
Egypt	71.2 (3.0%)	7	62.1 (4.1%)	5	1.11	14	14.5 (1.3%)
Morocco	54.7 (2.3%)	8	50.9 (3.4%)	7	0.45	36	5.8 (0.5%)
Poland	54.4 (2.3%)	9	54.4 (3.6%)	6	—	—	—
Indonesia	50.9 (2.1%)	10	35.7 (2.4%)	9	2.28	6	29.7 (2.7%)
Argentina	36.3 (1.5%)	12	28.9 (1.9%)	12	1.55	9	20.2 (1.9%)
Thailand	34.4 (1.4%)	13	19.4 (1.3%)	15	1.54	10	20.1 (1.8%)
South Africa	31.3 (1.3%)	16	13.1 (0.9%)	25	1.97	7	25.7 (2.4%)
Ukraine	26.0 (1.1%)	19	5.5 (0.4%)	50	1.72	8	22.5 (2.1%)

*Country portfolios presented in this table exclude SGP grants

The STAR CCM Benefits Score rank reflects the rank of a country (among countries eligible for GEF grants for CCM) in terms of its CCM benefits potential score using the STAR model for potential estimation.

²⁴ Ninety five percent of the weight in the benefit index is accounted for by the level of carbon emissions adjusted taking note of the reduction in carbon intensity of a country. The remainder is accounted for by the extent of forest cover in a country after adjusting for the trends pertaining to change in forest cover. Details could be found in the document GEF/P.3 available at <http://www.thegef.org/gef/STAR>. The benefits index scores are updated frequently. The ones listed in this table were calculated by the GEF secretariat in November 2011.

Annex 2

Barrier and Project Visualization Tool (Woerlen, 2011)

Available at: <http://www.climate-eval.org/?q=node/28>

Barriers	Intensity of the barrier	Intensity of the barrier removal activity within the projects framework
Consumers and Users related		
Consumer ignorance		
Lack of interest/ motivation		
Lack of expertise		
Lack of access		
Lack of affordability		
Lack of cost effectiveness		
Supply chain and infrastructure		
Ignorance		
Lack of expertise		
Lack of affordability		
Lack of cost effectiveness		
Lack of a business model		
Local financiers		
Ignorance		
Lack of expertise		
Lack of cost effectiveness		
Lack of business model		
Policy Makers		
Lack of interest / motivation		
Ignorance		
Lack of Expertise		
Lack of affordability		

Intensity of barrier:

- No barrier (a)
- Present but not important (b)
- Significant barrier (c)
- Show-stopping barrier (critical barrier) (d)

Intensity of barrier removal activity

- No activity (0)
- (1)
- (2)
- (3)
- (4)
- Very intense (5)

Using the tool: 1. Map the sector: identify barriers to energy efficiency renewable market transformation for all four groups of stakeholders, score them a to d. 2. Match barriers with project activities; fill in project activities in the last column.

Annex 3

List of projects to be covered through field work

GEF ID	Country	GEF_IA	Project Name	GEF Phase	GEFgrant	Building	Solar	Wind	Biogas	Transport
76	India	WBG	Alternate Energy	Pilot Phase	26.00		Yes	Yes		
112	India	WBG	Photovoltaic Market Transformation Initiative (IFC)	GEF - 1	30.38		Yes			
292	Russia	UNDP	Capacity Building to Reduce Key Barriers to Energy Efficiency in Russian Residential Buildings and Heat Supply	GEF - 1	3.38	Yes				
325	India	UNDP	Coal Bed Methane Capture and Commercial Utilization	GEF - 1	9.20					
370	India	UNDP	Development of High Rate Bio Methanation Processes as Means of Reducing Greenhouse Gas Emissions	Pilot Phase	5.50				Yes	
386	India	UNDP	Optimizing Development of Small Hydel Resources in Hilly Areas	Pilot Phase	7.50					
404	India	WBG	Energy Efficiency	GEF - 1	5.00					
446	China	WBG	Renewable Energy Development	GEF - 1	35.73		Yes	Yes		
575	Mexico	WBG	High Efficiency Lighting Pilot	Pilot Phase	10.00					
643	Mexico	WBG	Renewable Energy for Agriculture	GEF - 2	8.90		Yes	Yes		
784	Mexico	WBG	Methane Capture and Use (Landfill Demonstration Project)	GEF - 2	6.27				Yes	
941	China	UNDP	Demonstration of Fuel Cell Bus Commercialization in China (Phase II-Part I)	GEF - 2	5.82					Yes
943	China	WBG	Renewable Energy Scale Up Program (CRESP), Phase 1	GEF - 2	41.57			Yes		
1155	Mexico	WBG	Introduction of Climate Friendly Measures in Transport	GEF - 2	6.13					Yes
1284	Mexico	UNDP	Action Plan for Removing Barriers to the Full-scale Implementation of Wind Power	GEF - 3	4.74			Yes		
1646	Russia	UNDP	Cost Effective Energy Efficiency Measures in the Russian Educational Sector	GEF - 2	1.00	Yes				
1892	China	WBG	Heat Reform and Building Energy Efficiency Project	GEF - 3	18.35	Yes				
2257	China	UNDP	Demonstration of Fuel Cell Bus Commercialization in China, Phase 2	GEF - 3	5.77					Yes