

CLIMATE INVESTMENT FUNDS

CTF/TFC.11/7
April 8, 2013

Meeting of the CTF Trust Fund Committee
Washington D.C.
May 2-3, 2013

Agenda Item 8

REVISED CTF INVESTMENT PLAN FOR MEXICO

PROPOSED DECISION

Recalling its endorsement in January 2009 of the *CTF Investment Plan for Mexico*, the Trust Fund Committee reviewed document CTF/TFC.11/7, *Revised CTF Investment Plan for Mexico*, submitted by the Government of Mexico, in collaboration with the Inter-American Development Bank and the World Bank Group. The Committee takes note of the proposed revisions to the *CTF Investment Plan for Mexico* and the proposed reallocation of funding (see table below), including:

- a) decreasing the indicative CTF allocation to the Private Sector Wind Development program (IFC) from USD 30.0 million to USD 15.6 million;
- b) dropping the Private Sector Energy Efficiency program (IFC), which had an indicative CTF allocation of USD 20.0 million under the original endorsed investment plan; and
- c) re-allocating USD 34.4 million from the above two programs to a new project entitled, Geothermal Exploration Risk Reduction Project (IDB).

The Trust Fund Committee endorses the revisions as a basis for the further development of the new activities for CTF funding, noting that the total indicative allocation under the revised plan remains at USD 500 million in CTF funding.

The Committee further takes note of the schedule of submission of the Geothermal Exploration Risk Reduction Project (IDB) to the Trust Fund Committee for funding approval in December 2013 and requests IDB to work closely with Mexico to expedite the development of the proposal for timely submission to the Committee.

Project/Program	MDB	CTF Funding (USD Million)		
		Endorsed Investment Plan in January 2009	Revised Investment Plan Proposed for Endorsement in May 2013	Status/Proposed Changes
Urban Transport Transformation Program	IBRD	200.0	200.0	Approved -- no change
Efficient Lighting and Appliance Project	IBRD	50.0	50.0	Approved -- no change
Renewable Energy Part I	IDB	53.4	53.4	Approved -- no change
Renewable Energy Part III	IDB	70.6	70.6	Approved -- no change
Energy Efficiency Part I	IDB	24.4	24.4	Approved -- no change
Energy Efficiency Part II (ECOCASA Program)	IFC	51.6	51.6	Approved -- no change
Private Sector Wind Development	IFC	30.0	15.6	USD 15.6 million approved; decrease by USD 14.4 million
Private Sector Energy Efficiency	IFC	20.0	0.0	Dropped from the revised plan; decrease by USD 20.0 million
Geothermal Exploration Risk Reduction Project	IDB	0.0	34.4	New project proposed in the revised plan; increase by USD 34.4 million
Total		500.0	500.0	

CLEAN TECHNOLOGY FUND
INVESTMENT PLAN FOR MEXICO
Revision

April 2013

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List of Abbreviations and acronyms

AC	air conditioning	INECC	<i>Instituto Nacional de Ecología y Cambio Climático</i> (National Institute of Ecology and Climate Change)
AEM	<i>Acciona Energía México</i>	IPP	independent power producers
AMDEE	<i>Asociación Mexicana de Energía Eólica</i> (Mexican Wind Energy Association)	KfW	<i>KfW Entwicklungsbank</i> (German Development Bank)
AWP	Acciona Wind Power	KM	knowledge management
BANOBRAS	<i>Banco Nacional de Obras y Servicios Públicos</i> (National Bank for Public Works and Services)	LAERFTE	<i>Ley para el Aprovechamiento de las Energías Renovables y el Financiamiento de la Transición Energética</i> (Law for the Use of Renewable Energy and the Financing of the Energy Transition)
BANORTE	<i>Banco Mercantil del Norte</i>	M	million
CB	capacity building	M&E	monitoring and evaluation
CCLIP	IDB's Conditional Credit Line for Investment Projects	MDB	multilateral development bank
CDM	Clean Development Mechanism	MW	megawatts
CFE	<i>Comisión Federal de Electricidad</i> (Federal Electricity Commission)	MXN	Mexican pesos
CFL	compact fluorescent lamps	NAFIN	Nacional Financiera
CIF	Climate Investment Funds	NAMA	Nationally Appropriate Mitigation Actions
CO ₂	Carbon dioxide	PECC	<i>Programa Especial de Cambio Climático</i> (Special Climate Change Program)
CO _{2e}	Carbon dioxide equivalent	PEF	<i>Presupuesto de Egresos de la Federación</i> (National Budget)
CONAGUA	<i>Comisión Nacional del Agua</i> (National Water Commission)	PPA	power purchase agreement
CONAE	<i>Comisión Nacional para el Ahorro de Energía</i> (National Energy Efficiency Commission), now CONUEE	PRONASE	<i>Programa Nacional para el Aprovechamiento Sustentable de la Energía</i> (National Program for the Sustainable Use of Energy)
CONAVI	<i>Comisión Nacional de Vivienda</i> (National Housing Commission)	PROTRAM	<i>Programa Federal de Apoyo al Transporte Urbano Masivo</i> (Federal Program for the Support of Mass Transit)
CONUEE	<i>Comisión Nacional para el Uso Eficiente de la Energía</i> (National Commission for the Efficient Use of Energy)	RE	renewable energy
COP	UNFCCC's Conference of the Parties	SECCI	IDB's Sustainable Energy and Climate Change Initiative
CRE	<i>Comisión Reguladora de Energía</i> (Energy Regulatory Commission)	SEDATU	<i>Secretaría de Desarrollo Agrario, Territorial y Urbano</i> (Ministry of Land Ownership and Territorial and Urban Development)
CTF	Clean Technology Fund	SEMARNAT	<i>Secretaría de Medio Ambiente y Recursos Naturales</i> (Ministry of Environment and Natural Resources)
EE	energy efficiency	SENER	<i>Secretaría de Energía</i> (Ministry of Energy)
ENACC	<i>Estrategia Nacional de Cambio Climático</i> (National Climate Change Strategy)	SHCP	<i>Secretaría de Hacienda y Crédito Público</i> (Ministry of Finance)
ESCO	Energy Service Company	SHF	<i>Sociedad Hipotecaria Federal</i> (Federal Mortgage Society)
EUR	Euros	SIL	specific investment loan
FI	financial intermediary	SME	small and medium enterprises
FIDE	<i>Fideicomiso para el Ahorro de Energía Eléctrica</i> (Electricity Savings Trust-Fund)	t	ton
FIP	CIF's Forest Investment Program	TC	technical cooperation activity
FIRA	<i>Fideicomisos Instituidos en Relación con la Agricultura</i> (Agriculture-Related Trust-Funds)	TFC	Trust-Fund Committee
GCI-9	IDB's Ninth General Capital Increase	UNFCCC	United Nations Framework Convention on Climate Change
GDP	gross domestic product	USD	US Dollars
GHG	greenhouse gas	UTTP	Urban Transport Transformation Program
GoM	Government of Mexico	WTG	wind turbine generator
IBRD	International Bank for Reconstruction and Development (World Bank)		
IDB	Inter-American Development Bank		
IFC	International Finance Corporation		
INE	<i>Instituto Nacional de Ecología</i> (National Institute of Ecology), now INECC		

EXECUTIVE SUMMARY

The Clean Technology Fund (CTF) Investment Plan (IP) submitted by the Government of Mexico (GoM) was endorsed by the CTF Trust Fund Committee (TFC) on January 27, 2009. The CTF IP is a “business plan” of the GoM, agreed with the International Bank for Reconstruction and Development (IBRD), the Inter-American Development Bank (IDB) and the International Finance Corporation (IFC). It provides support for the achievement of the low-carbon objectives contained in the previous administration’s planning documents (National Development Plan, National Climate Change Strategy and Special Climate Change Program). The focal point for the CTF in the GoM lies in the Ministry of Finance (SHCP).

The CTF IP includes a number of projects or programs to be executed by the three Multilateral Development Banks (MDBs). The IP foresaw USD 500 million of CTF resources, combined with additional resources from the MDBs, the GoM, the private sector, and other sources. A combined amount of USD 465.6 million of CTF resources has been approved by the TFC for seven projects and programs to be executed by the MDBs. These projects and programs are now in different stages of preparation or execution. The remaining USD 34.4 M were originally allocated to the IFC’s energy efficiency and wind development programs. However, at this time, IFC doesn’t foresee short term investments in both the wind energy sector and the energy efficiency sector. Therefore, in order to accelerate the execution of CTF resources following the new targets to enhance CTF operations, IFC is making its 34.4M of unused CTF resources available to be allocated to other priority programs or projects as determined by the GoM.

The overall rationale for CTF intervention remains unchanged. The GoM stresses that the administration of President Peña Nieto has clearly established that **renewable energy, energy efficiency, and sustainable transport actions**, which deliver both development and climate change mitigation benefits, are among the GoM’s priorities.

After evaluating a number of options, the GoM decided to reallocate the USD 34.4 M to a **Geothermal Exploration Risk Mitigation Project** to be executed by IDB. The GoM has determined that this would be both an appropriate and effective use of the concessional financing from CTF, and a project aligned with its current priorities.

The proposed Geothermal Exploration Risk Mitigation Project would encourage private investment in geothermal energy through financial and risk transfer mechanisms to reduce investment costs, mobilize private capital for projects and ensure a sustainable growth in the long term. The preliminary concept note is included in this IP Revision.

Building on the positive experience of this IP, the GoM is preparing a second Investment Plan to be submitted to the CTF. Mexico is currently preparing its National Development Plan (PND) and other relevant energy and transport sectorial programs, including the National Climate Change Strategy (ENACC) and the Special Climate Change Program (PECC). When preparing these documents, the GoM will consider the possibility of accessing to additional CTF resources, so that the new IP to be presented is fully aligned with the national priorities and strategies.

CTF Proposed Allocation and Update of Project Financing Plan

Table 1: Mexico CTF Indicative Financing Plan Endorsed in 2009 (USD 500 million)

Financing Source	IFC	IBRD	IDB	Total
CTF	50	250	200	500
Other sources	500	2,800	2,397	5,697
Total	550	3,050	2,597	6,197

Source: Original IP Document

Table 2: Mexico CTF Indicative Financing Plan Endorsed After Reallocation (USD 500 million)

Financing Source	IFC	IBRD	IDB	Total
CTF	15.6	250.0	234.4	500.0
Other sources	173.9	2,638.4	3,502.6	6,314.9
Total	189.5	2,888.4	3,737.0	6,814.9

INTRODUCTION

In its May 2012 meeting, the Clean Technology Fund (CTF) Trust Fund Committee (TFC) agreed to establish a set of targets to monitor the delivery of CTF projects. The Committee established these targets to enhance CTF operations and strengthen pipeline management, while also promoting and encouraging the effective use of CTF resources. It also agreed to request a number of CTF countries to prepare an update or revision of their Investment Plans (IPs) and submit it to the TFC for discussion at its May 2013 meeting or before.

The CTF IP¹ submitted by the Government of Mexico (GoM) was endorsed by the CTF TFC on January 27, 2009. The CTF IP is a “business plan” of the GoM, agreed with the International Bank for Reconstruction and Development (IBRD), the Inter-American Development Bank (IDB) and the International Finance Corporation (IFC). It provides support for the achievement of the low-carbon objectives contained in the National Development Plan, the National Climate Change Strategy (ENACC) and the Special Climate Change Program (PECC). The focal point for the CTF in the GoM lies in the Ministry of Finance (SHCP).

The CTF IP includes a number of projects or programs to be executed by the three Multilateral Development Banks (MDBs). The IP foresaw USD 500 million of CTF resources, combined with additional resources from the MDBs, the GoM, the private sector, and other sources. A combined amount of USD 465.6 million of CTF resources has been approved by the TFC for seven projects and programs to be executed by the MDBs. These projects and programs are now in different stages of preparation or execution. The remaining USD 34.4 M was originally allocated to the IFC’s energy efficiency (EE) and wind development programs.

At this time, however, IFC doesn’t foresee short term investments in both the wind energy sector and the EE sector. IFC’s assessment is that currently, wind development in Mexico can be financed on commercial terms without the need for CTF subsidy. Moreover, unfavorable business environment has had a negative impact in the development and implementation of EE programs that would comply with the terms articulated under Mexico’s Investment Plan. Therefore, and in order to in order to accelerate the execution of CTF resources (following the target to monitor and delivery of CTF projects established by the CTF), IFC is making its 34.4M of unused CTF resources available to be allocated to other priority programs or projects as determined by the GoM. In December 2012, after evaluating a number of options, the GoM decided to move forward with a Geothermal Exploration Risk Mitigation Project to be executed by IDB.

Two Joint Missions were held in Mexico City in January and March, 2013. Discussions were held with SHCP, the Ministry of Energy (SENER), the Ministry of the Environment and Natural Resources (SEMARNAT), the National Institute of Ecology and Climate Change (INECC), and the Energy Regulatory Commission (CRE) on the revision of the CTF IP.

During these missions, the GoM stressed that the administration of President Peña Nieto has clearly established that renewable energy (RE), EE, and sustainable transport actions, which deliver both development and climate change mitigation benefits, are among the GoM’s priorities.

¹ The original IP is available in: <http://bit.ly/CTFMEX>

Furthermore, in order to seek further support to these priorities, and taking into account that progress to set up the Green Climate Fund has been slower than expected, the GoM informed its intention to submit a second CTF Investment Plan, including projects that both comply with the CTF investment criteria and are aligned with the GoM's priorities and strategic directions. The GoM expects to have this document ready for submission during the summer of 2013.

The IDB team discussed with the GoM the proposed Geothermal Exploration Risk Mitigation Project. It was agreed that this project should encourage private investment in geothermal energy through financial and risk transfer mechanisms to reduce investment costs, mobilize private capital for projects and ensure a sustainable growth in the long term.

The GoM and the MDBs discussed how best to comply with the recently approved CTF results framework. For this purpose, a consultancy will be carried out to design the procedures for transferring the information on the results of CTF projects and programs to the relevant GoM institutions, aggregating data, and reporting IP-level results to the CIF Administrative Unit.

A meeting with relevant stakeholders from civil society and the private sector was held during the second Joint Mission to seek their inputs on this IP revision. In this meeting, participants from Civil Society organizations, research institutes and other relevant stakeholders discussed the expected outcomes of the CTF IP (original plan and the revised IP), and conveyed their concerns, potential opportunities and challenges for a successful implementation of the projects, as well as voiced the need for improved community engagement and social focus. A summary as well as answers to the main issues raised are included in the Stakeholder Engagement Section of this document.

STATUS OF ORIGINAL INVESTMENT PLAN IMPLEMENTATION

Table 3. Status of Approval of CTF Projects

Program/Project Title	MDB	TFC Approval Date	MDB Board Approval Date*	CTF Funding (USD M)	Leveraged Funding (USD M)
Urban Transport Transformation Project	IBRD	Oct-2009	Mar-2010	200.00	2,200
Efficient Lighting and Appliance Project	IBRD	Sep-2010	Nov-2010	50.00	600
Renewable Energy Part I (Private Sector)	IDB	Nov-2009	Jun-2010	53.38	600
Renewable Energy Part III (NAFIN RE Finance Facility)	IDB	Oct-2011	Nov-2011	70.61	2,430
Energy Efficiency Part I (Commercial Banking Component)	IDB	May-2011	Mar-2011	24.40	88
Energy Efficiency Part II (Ecocasa Program)	IDB	Aug-2012	Dec-2012	51.61	249
Private Sector Wind Development	IFC	May-2009	Jan-2010	15.60	173.9
Renewable Energy (Wind Development) Program	IFC	-	-	14.40	-
Energy Efficiency Program	IFC	-	-	20.00	-

* For the case of programs including loans and grants, and/or several loans, only the first loan approval date is shown.

IBRD: Urban Transport Transformation Program (UTTP)

Description: The objective of the project is to contribute to the transformation of urban transport in Mexican cities toward a lower carbon growth path. The project aims to achieve the objective by utilizing USD 200 million of CTF loan and USD 150 million of IBRD loan. This Specific Investment Loan (SIL) will help to reduce the initial financial barriers for the adoption of low-carbon integrated mass transit corridors, as well scrapping of older, inefficient public transport vehicles. Blending CTF and IBRD resources with other financing will make the investment capital available for local governments which may otherwise had not be readily available for infrastructure projects.

Rationale: Mexico is among the most carbon-intensive economies in Latin America, and its transport sector is no exception. Transport accounts for 18% of Mexico's total greenhouse gas (GHG) emissions, and even more in large cities like Mexico City – 41%, as one example. This has forced the GoM to formulate country-wide climate change strategies in selected urban areas, to reform regulatory and business structures for surface transport, and to implement the first BRT system projects in Mexico City and León. The UTTP is part of a concerted government effort to accelerate the modal shift towards energy-efficient, low-carbon mass transport systems, in order to change the transport sector's carbon path. It is estimated that a national integrated mass transit program over time could achieve a share of 30% of daily trips in major urban areas, with a ridership eventually exceeding 20 million passengers per day, which could lead to a reduction of 20% in the sector's carbon footprint.

Progress: The UTTP is achieving its outcome indicators as expected. The construction of a BRT project - the Ecovia, in Monterrey is advancing well, and is planned to become operational in 2013, as originally scheduled. The sub-loan has disbursed 22.8 million dollars out of 30 million committed to the project. According to the M&E indicators for the UTTP, between 2010 and 2012 the project should have leveraged 910 million dollars in counterpart financing. One of these projects is the Ecovia in Monterrey. Out of 9 projects that currently are under implementation, six are expected to be operational by the end of 2013.

IBRD: Efficient Lighting and Appliance Project

Description: The project's objective is to promote Mexico's efficient use of energy and to mitigate climate change by increasing the use of energy-efficient technologies at the residential level. The project comprises three components: (1) Replacement of Incandescent Bulbs (IBs) with Compact Fluorescent Lamps (CFLs) in the low-to-medium income residential sector; (2) incentives to encourage the replacement of old and inefficient appliances in the residential sector (such as refrigerators and ACs); (3) technical assistance and institutional strengthening.

Rationale: The project is a key element of Mexico's national strategy for climate change mitigation and will have a significant sustainable development impact – reducing GHG emissions resulting from the switch to more efficient lighting and appliances. It is estimated, that at current average residential tariffs, a compact fluorescent lamp (CFL) would pay for itself in less than a year and generate savings of more than USD 20 over its lifetime. Concessional financing provided by IBRD has been essential to overcome the barriers to the adaptation of EE technologies, such as high initial investment costs of new equipment, unfamiliar credit profiles of potential residential clients, risk-averse lending practices by commercial banks, and the lack of relevant expertise and capacity of financial institutions to analyze and appropriately structure EE deals. The CTF financing component within this package provides incentives for scaling up critical EE programs for Mexico that would not otherwise be possible under a business-as-usual scenario.

Progress: By December 2012, the IBRD loan (USD 250.6 million) had disbursed 98%, GEF grant (USD 7.1 million) – 70.2% and the CTF loan (USD 50 million) – 100%. The project was restructured on July 2012, with the purpose to reallocate funds between components 1 and 2, and to revise the proportion of expenditures financed by the CTF loan in component 2, in order to improve project results. 22.9 million Incandescent Bulbs (IBs) have been replaced by Compact Fluorescent Lamps, representing 100% of the original target. As a direct result of this achievement, the GoM was awarded the World's Guinness Record for the largest amount of energy-saving CFLs distributed at no cost of the final consumer. By September 2012, 1,781,538 appliances had been replaced, thus meeting and passing Component 2 target of 1.7 million appliances.

IDB: Renewable Energy Part I (Private Sector)

EURUS Wind Project

Description: The Project consists of: (i) 167 AW70 wind turbine generators (WTGs) with a nominal capacity of 1.5 MW each (total 250.5 MW installed capacity) manufactured by Acciona Wind Power (AWP) (ii) associated control facilities, and (iii) transmission infrastructure. The Project has been developed by Acciona Energía México (AEM) through a special purpose limited liability company, Eurus S.A.P.I. de C.V. (Eurus or the Project Company) at a total cost of USD 604.53 M. AEM constructed, owns and operates the Project. AE is a leader in RE and the world's largest developer and constructor of wind farms, with over 7,291 MW of wind capacity installed in fourteen countries. The project is the largest operating wind farm in Latin America and the largest wind project in Acciona's portfolio. The Project is developed under Mexico's self-supply framework and sells its energy to Cemex México S.A. de C.V. and its subsidiary Inmobiliaria Río de la Silla, S.A. de C.V. under a 20-year power purchase agreement (PPA). **The project uses USD 30 million of CTF resources to leverage USD 345 million.** The entirety of the debt was disbursed on June 30, 2010.

Rationale: The Project has a number of important benefits in helping to facilitate Mexico's transition to a low carbon economy, especially given the GoM's desire to aggressively reduce its GHG emissions, targeting a 50 percent reduction by 2050. This transaction represented an opportunity for the IDB to assist Mexico to develop viable alternative energy projects and to help harness the country's abundant wind energy resources in order to meet energy demand. As one of the first private wind power projects in the country, the Project provided an important demonstration effect. The Project furthered the off-taker's corporate goal of using RE and provided a good opportunity for the IDB to leverage its resources to mobilize funds from other development finance institutions and commercial banks. The CTF loan also provided important support to the transaction to help mitigate key project-specific risks. The Bank's involvement in the Project provided important financial additionally and ensured that environmental and social issues were properly addressed, including the implementation of the consultation and land leasing process with the local community.

Progress: The project is under implementation; construction of the project was finalized in 2010.

Further renewable energy projects

Description: The IDB, through one of its private windows, has been looking for projects where CTF resources are needed. Especially now that NAFIN (a national development bank) is stepping up its efforts to finance RE projects, and in particular wind projects (with CTF resources, see below), the IDB is focusing the utilization of CTF resources through its private sector windows on non-wind technologies. It has in particular identified some solar PV projects that meet the conditions for the use of CTF resources.

A sample project would be a 90 MW PV project, to be financed with USD 20 million from CTF resources and leveraging approximately USD250 million (for a total amount of USD 270 million).

Rationale: Mexico has an extraordinary solar resource with average solar irradiation rates around 5kWh/m²/day; even more than 70% of the territory displays values higher than 4.5kWh/m², which makes Mexico the ideal playground for deployment of photovoltaic energy, concentrating solar power and solar thermal systems. Northern Mexico's solar resources are equivalent to those in the North African deserts. That being said, due to the high capital costs of solar (USD 3,000 to 7,000 per kW) only projects subsidized by the government or donors have been implemented. In terms of photovoltaic (PV) energy total installed capacity was 19.4 MW at the end of 2008, with 873kW being installed in 2008.

Progress: The project is under preparation and is expected to be approved by the IDB in November 2013.

Technical Cooperation Activities

This Program includes a number of technical cooperation activities:

Promotion of Carbon Markets in Mexico. The main objective of this TC is to support the GoM to develop and strengthen the institutional capabilities to promote, at the federal and local levels, the development of emission reduction activities, facilitating its participation in the Carbon Markets. It will consist of four components to be developed in parallel by different consulting firms under the supervision of the IDB team, and in close coordination with the GoM through SEMARNAT. The components are: (i) design of a Nationally Appropriate Mitigation Action (NAMA); (ii) Preparation for Bilateral Agreements of emission reductions purchases and (iii) a registry of emissions reductions activities/projects.

Capacity Building for NAFIN's Unit of Sustainable and Climate Change Projects. The Technical Cooperation was designed to support the strengthening of the capacities of NAFIN, both technical and operational, with regards to their financing activities on climate change mitigation and sustainable development projects. The TC is expected to deliver institutional strengthening specifically for the *Dirección de Proyectos Sustentables* and the *Unidad de Proyectos Sustentables y Cambio Climático*, including activities related to evaluation, financing and management of sustainable and climate change projects (RE, EE, water treatment, other low carbon technologies, etc.). The executing agency is NAFIN.

Study of the macroeconomic and social impacts of the wind energy industry. This TC complemented the efforts of the Mexican Wind Energy Association (AMDEE) and its Initiative for the Development of Wind Energy potential in México. The industry-wide initiative with support from SENER was the first attempt to reach a consensus between all the relevant stakeholders about the true competitive potential of wind energy in the country (12GW until 2020) and determine concrete solutions to major implementation barriers. The study on the macroeconomic impacts identified the major benefits that the installation of 10GW and 20GW could bring to the Mexican Economy as a whole.² The government found this private-led exercise very useful, and replicated it with other renewable technologies like solar and geothermal energy. The National Energy Strategy 2012-2026 refers to this study.

Feasibility of Biomass Cogeneration Projects in the Sugar Cane Industry in Mexico. CRE, the beneficiary of this TC, was interested in analyzing the financial feasibility of cogeneration projects from sugar cane, as

² See: <http://bit.ly/ERmexEOL>

a way to promote private investments in the energy sector. Besides using electricity and heat for self-consumption during the harvest season, sugar factories have the potential of selling excess electricity into the grid. Ten sugar cane mills were analyzed. The financial analyzes that were carried out helped CRE to design appropriate regulations for this industry.

Assessment of Geothermal Potential in Mexico. This TC helped CRE to close the information gap in terms of the potential for geothermal energy in Mexico, feasibility of implementation according to state-of-the-art technologies, benchmark of exploration techniques and identification of necessary measures to regulate water sources in connection with electricity generation from geothermal reservoirs. The study was developed for the CRE and published in May 2011.³ The remaining resources for this TC will be used by IDB to assist SENER and CRE in the further development of an enabling regulatory and policy framework for geothermal energy.

Comprehensive Shared Value Analysis of Renewable Energy in Oaxaca. The TC will support a comprehensive review and appraisal of existing and future shared-value opportunities for the wind energy sector in Oaxaca, design a cost-benefit analysis for new companies interested in entering the wind power sector, and finance a small-scale pilot innovation. The TC is currently in the preparation phase.

Additionally, the Program proposal included the following technical cooperation activities funded by IDB and GEF resources in areas related to the Program: (i) a migratory bird cumulative assessment⁴; (ii) a Program for Support of Technology Development and Transfer with a local research institute (focused on wind technologies, already approved and ready to start execution) (ii) a pricing mechanism study (the CRE benefitted from several studies regarding best practices and regulation options for fixing incentives and tariffs including for surplus in self-supply projects) and a (iv) Development of a National Climate Change Financing Facility (this TC was revised and the resources were reallocated towards the following activities: (a) vulnerability studies and impact mitigation options at the Grijalva river watershed ,and (b) studies for low-carbon growth in Mexico and transition towards a green economy.)

IDB: Renewable Energy Part III (NAFIN RE Finance Facility)

Description: The program goal is to contribute to Mexico's drive to increase the share of RE sources in its overall generation and to reduce GHG emissions. This would be achieved by filling the existing financing gap for RE projects through the provision to project developers of competitive loans and contingency credit lines to cover cash flow deficits during the life of the project. Through this project, two specific and interconnected objectives will be pursued: (i) scaling up investment in RE generation projects; and (ii) contributing to familiarize the Mexican banking sector with these investment opportunities by demonstrating their viability and mobilizing resources from financial institutions.

CTF concessional resources will leverage at least a similar amount from NAFIN's lending resources and from the existing Conditional Credit Line for Investment Projects (CCLIP) approved by the IDB for NAFIN.

The main expected impact of the program would be the electricity generated from RE sources and the implicit reduction in GHG emissions. The expected outcomes in connection with the specific objectives are: a) an effective increase in the investment in RE generation projects, and b) increased investment by

³ CRE, 2011. Evaluación de la energía geotérmica en México. <http://www.cre.gob.mx/documento/2026.pdf>

⁴ The results were considered inconclusive, and partial results were published by IFC in: http://bit.ly/oaxaca_birds

Mexican financial institutions in RE projects as a result of having become familiarized with these opportunities. The program will provide financial resources to eligible projects in competitive conditions in two different ways: (i) through the provision of direct loans to developers of RE generation projects; and (ii) making contingent credit lines available to projects, to cover potential cash flow shortages over the life of the project.

Rationale: Access to financing has been identified as a significant barrier to RE investments, due to the following sector specific factors: (i) high initial investment cost; (ii) the banks' apprehension to develop new or unproven business/products lines, linked to the lack of relevant expertise to analyze and structure energy projects with weak credit and/or unfamiliar risk profiles of potential clients (e.g., energy users or generators), and (iii) lack of regulatory incentives. All these factors have resulted in the lack of adequate financial instruments to support RE projects, which translates into relatively high transaction costs and high interest rates or excessive requests for collateral. Privately managed RE power plants in the Mexican regulatory framework are authorized under the figure of the independent producer or the self-supplier. Developments so far have mainly consisted of consumer/producer partnerships under the latter's regulatory license. Banks assess the creditworthiness of both the technological partner and the end consumer when analyzing the risk involved in these project finance operations. Some resident foreign banks have been active in financing wind power plants, seemingly on account of their matrix's business ties with the partners in the development, but the rhythm and scale of RE investments would vastly improve if financial resources at competitive rates were made available to developers. The lack of regulatory incentives is being addressed by a number of activities, including operations from the IDB. On the other hand, high investment costs can only be reduced through technological progress. Therefore, this program focuses on the financial sector specific factors that restrict investment in RE power plants. Through the creation of this financing facility, the IDB seeks primarily to leverage the CTF funds and to scale up investments in RE projects. The increase in the number of projects will also demonstrate their viability and indirectly contribute to the development of capacity within a financial sector increasingly familiarized with RE projects risks. The scope of the intervention, considering conservative assumptions on the leverage attainable, will allow for a significant boost in RE power capacity investment in Mexico on the order of 1,000 MW.

Progress: Currently under execution. Both IDB's CCLIP and NAFIN funds have already been used for financing these investments. The first disbursement of CTF funds is scheduled for April 2013.

Technical Cooperation Activities

Public Policies to maximize local benefits of wind projects in Mexico: The objective of this activity is to design public policies at all levels to maximize the positive impacts of wind projects in the socially inclusive development of the region, to minimize possible negative impacts, and to improve the distribution of benefits among the different communities, within communities, and between men and women. Its specific objectives are (i) to evaluate the flow of resources, social issues, and existing mechanisms in the region of the Isthmus of Tehuantepec in connection with the preparation and operation of wind projects; (ii) to propose policies at the level of the communal land ownership schemes (*ejidos* and *comunidades*), as well as at the local, state and federal levels; (iii) to propose a process for the implementation of such policies, including communication activities, training and participatory planning, among others, and (iv) to contribute to the implementation process of the proposed policies. The request for proposals for the first component of this activity has already been published by the IDB.

Renewable Energy Knowledge Management: The objective of this technical cooperation is to contribute to the capture and dissemination of the knowledge being generated in Mexico concerning RE projects.

The components are (i) regulatory Knowledge; (ii) financial literacy, and (iii) environmental Knowledge. This activity is currently in preparation.

IDB: Energy Efficiency Part I (Commercial Banking Component)

Banorte Subnational Green Financing Partnership (IDB)

Description: The main objective of the project is to provide a solution on climate change issues at the sub-national level. By creating a partnership with Banco Mercantil del Norte (Banorte), the IDB intends to promote green financing focusing on EE projects that will result in direct economic and environmental returns to the sub-national sector. IDB is using USD 10 million of CTF resources to leverage USD 30 million of IDB resources.

Rationale: the IDB has identified a problem in the energy consumption at the sub-national level. According to SENER, the energy consumption of the public sector increased 33.5% in a ten year period, from 1991 to 2011. SENER has conducted EE audits in 898 municipalities in Mexico. Results showed that in a municipality of 2 million habitants and 155 km² the potential of energy savings could be of 45%, equivalent to MXN 64 million annually and avoiding as much as 182 thousand tons of CO_{2e}. As we can see in the above example, EE measures at the sub-national level can bring both environmental and economic benefits to a sub-national.

Progress: IDB is presenting the project to the eligibility committee in March 2013.

Green Bond Securitization (IDB/IFC)

Description: The objective of this transaction is to pool EE loans of medium size companies originated by selected financial institutions to be securitized in the capital markets.

Rationale: This transaction seeks to promote capital markets financing to small and medium-sized companies that are currently unable to implement sustainable energy measures due to lack of information, transaction costs, and lack of financing. This project engages financial intermediaries and capital markets investors in financing EE. The project will use CTF resources in the amount of USD 8 million to leverage USD 20 million from the IDB and USD 20 million from IFC resources.

Progress: The IDB is currently structuring the transaction and selecting the financial institutions.

FIRA Green Line (IDB)

Description: The objective of the loan is to support the FIRA agricultural trust-funds to grow a portfolio of EE loans for agriculture companies.

Rationale: According to Mexico's national strategy of climate change (ENACC, 2007) , agriculture accounts for 7% of total GHG emissions in the country and forests and land-use change account for 14%, a total of 21% of emissions. Moreover, agriculture is highly exposed to climate change, as farming activities directly depend on climatic conditions. The IDB is leveraging USD 40 million IDB funds with USD 5 million in CTF funds.

Progress: IDB is assessing the project eligibility in April 2013.

Technical Cooperation Activities

The “Financial Intermediaries under the CTF Program” project has the objective of developing a package of capacity building (CB) and knowledge management (KM) activities to build the abilities and engagement of the many crucial market actors necessary to implement EE credit lines. IDB will not only help financial intermediaries (FI), but also support capacity building to SMEs, Energy Service Companies (ESCOs), technicians and technology providers with the purpose of raising awareness about EE environmental and economic benefits while at the same time generating a strong demand for EE financing. The CB and KM activities include among others:

- A Knowledge Report on the EE market in Mexico will be performed in order to update knowledge on the state of the industry.
- Capacity-building training materials for public and private banks, ESCOs, and SME end-users will be developed, including comprehensive training on EE lending.
- Standard Contracts will be developed using existing successful contract structures in Mexico and abroad and tailored for Mexico’s business, financial and legal environment.
- Monitoring, Evaluation and Dissemination of program and project data.
- ESCOs/technicians will be hired to perform investment-grade audits for interested SMEs, and this component of the TC will provide funds to subsidize these audits.
- SMEs will also be trained through events taking place in partnership with FIs.

Execution Update. As of today IDB has used resources to: (i) sponsor the Seminar “Financial Instruments to Promote Energy Efficiency - The experience from local financial institutions in Latin America and the Caribbean” -18 and 19 October 2012, Mexico; (ii) produce the Knowledge Report on EE Industry in Mexico and a Mexican ESCO diagnosis Report (these two reports are under review), and (iii) hire a consultant that helps with the execution of the TC.

IDB: Energy Efficiency Part II (Ecocasa Program)

Description: The general objective of the Ecocasa Program is to contribute to the reduction of GHG emissions in the housing sector in Mexico. This will be achieved by providing financing for housing developers to build housing projects that meet GHG reduction goals established by the Program, as well as mortgages that follow the sustainability criteria established by the National Housing Commission (CONAVI). The concessional resources of the CTF channeled through the Federal Mortgage Society (SHF), a national development bank, will be targeting the construction projects, while resources from the existing CCLIP ME-X1010 will fund SHF mortgage instruments for its target segment of the population (workers not affiliated to any social security program). In a first stage the Program considers the emission reductions derived from improvements in thermal performance, but methodologies to account for emission reductions related to location (transport), building materials, and water saving technologies will be developed. The Program is the first large-scale pilot under the Housing NAMA that was submitted by the GoM in December 2012 to the COP16, and that follows a whole-house approach for reaching emission reductions. The German Development Bank KfW will provide further EUR 80 million to leverage CTF/IDB resources in this facility. A grant proposal of the Latin-American Investment Facility (European Commission) has been approved in the amount of EUR 7 million to support the construction of houses of the highest standard in terms of EE, following the Passive House approach as a demonstration and capacity building exercise. Finally the NAMA Facility funded by the governments of the UK and Germany will also support the implementation of the NAMA.

Rationale: The residential sector currently accounts for around 16% of total energy use in the country, 11% of commercial energy use (excluding firewood), 26% of total electricity use and 3% of direct GHG emissions. The residential sector is indirectly responsible for the energy use and GHG emissions in other sectors, such as construction, cement and steel industries, water and sanitation and transport. These emissions have grown substantially during the last decades on account of inadequate architectural designs and building techniques, the use of energy and GHG emission-intensive building materials and technologies; inefficient water use, leading to increased energy use and GHG emissions in the water and sanitation sector, and locations with poor accessibility, leading to a high reliance on energy-intensive transport systems. The saving potential of the residential sector is more cost-effective than other alternatives. Although the analyses by INECC and SEMARNAT of the different sectors in Mexico acknowledge that actions targeted at the residential sector represent only between 5% and 6% of the total GHG mitigation potential, these actions have been chosen as one of the seven areas of intervention underpinned in the National Program for the Sustainable Use of Energy (PRONASE) 2009, on account of their cost effectiveness. In fact, these 7 areas represent 60% of the total GHG savings potential by 2030 which imply investment costs that are lower than the benefits accruing from the GHG savings delivered (these actions deliver profits).

Progress: The project is currently under implementation. The first houses will be financed in the second quarter of 2013.

Technical Cooperation Activities

The program envisages a comprehensive TC package including: (i) the development and implementation, building on the existing efforts, of simulation, rating, inspection, and monitoring procedures addressing the thermal performance, water usage, accessibility (location) and building material lifecycle aspects of houses; (ii) strengthening the capacities of the housing industry and housing finance institutions for the financing and construction of low-carbon housing through the provision of bridge loans to housing developers, as well as technical studies and training opportunities; (iii) the dissemination of knowledge on low-carbon housing among the public, industry, universities, and government institutions at the national and local level, and (iv) the provision of inputs to support the development of public policies for low-carbon housing. Several activities are under implementation.

IFC: Private Sector Energy Program

Description: This program was designed to build on IDB's Renewable Energy Program and Energy Efficiency Program to address GHG emissions growth in power generation and energy demand in Mexico. It aimed to finance direct interventions in the private sector in order to fast-track and complement the IDB's initiatives in a combined effort to contribute to a transformation in Mexico's energy sector. The program anticipated using CTF funds to finance RE and EE projects.

Renewable Energy – Under RE initiatives, IFC projected to deploy CTF funds to provide appropriate incentives for qualified developers to fast-track the implementation of RE projects. These initial projects, in addition to having an immediate GHG impact, would provide valuable information on the types and amounts of incentives required to catalyze RE development in the country. This information would be used by the government and IDB to help design the Energy Transition Fund and develop new regulations. The Energy Transition Fund would then be positioned to scale-up RE development in the country.

Energy Efficiency – In the case of EE, IFC anticipated complementing the IBRD and IDB EE programs targeted towards transforming high GHG emitting sectors such as cement, steel, iron, chemicals/petrochemicals and sugar.

Rationale: Renewable Energy - Mexico is one of the most promising yet untapped areas for wind energy development in Latin America. The country has a tremendous wind energy potential conservatively estimated at more than 40 GW. However, its development has been extremely slow by global wind industry standards. This is due to a number of market barriers, such as the perception of high risk by investors, high early entrant cost for developers and changing regulatory framework and policies relating to wind energy. In November 2008, the Law for the Use of Renewable Energy and the Financing of the Energy Transition (LAERFTE) was passed establishing a more effective regulatory framework and greater incentives for developers. Despite the new law and a favorable tariff structure, private sector projects were still not coming to fruition, largely due to significant additional costs and risks associated with being “first movers”, and a financial crisis which dried up access to capital. In order to address these challenges, IFC’s objective under this program was to work with private sector RE developers, and when necessary equipment manufacturers, interested in entering the Mexican power sector, but who need additional incentives or risk mitigation to make their projects feasible/palatable.

Energy Efficiency – Under EE initiatives, the main objectives were to provide financial incentives or risk products to market leaders to encourage them to implement new low carbon technologies and establish new standards and benchmarks for such technologies in their respective industries. By working with companies that have significant market share or market influence, the proposed initiatives intended to have an impact, both by capturing a large share of the industry’s emissions reduction potential through companies, and by catalyzing competition that would create a need for other market players to follow suit. Smaller players would be incentivized indirectly through programs with financial institutions.

Progress: Renewable Energy – In June 2009, the CTF TFC approved the requested USD 15.6M of CTF financing for the program “Private Sector Wind Development”. Under this program, USD 15M was used by IFC to finance the La Ventosa project, a 67.5MW wind farm in the state of Oaxaca, that, together with IFC’s own resources, was able to mobilize additional USD 173.6M in co-financing. The project has been implemented and the wind farm currently produces about 290 GWh of electricity annually and sells 100% of its expected annual power generation to companies operating in the country under Mexico’s self-supply framework.

The use of CTF funds under this project demonstrated that private wind projects under Mexico’s self-supply framework could take on more debt than was previously thought and helped to catalyze and fast track wind development even during a financial crisis. Today, the state of Oaxaca benefits from over 1,000 MW of installed wind capacity including projects under the private self-supply framework and IPPs. Several other projects totaling about 2,000 MW are expected to come on line. Altogether, since the financing of the CTF-funded project, over 20 more projects have closed financing or begun construction under the self-supply framework.

In addition to the investment project, USD 100,000 of CTF funds were used to finance the formulation of a Sector Strategy to guide sustainable development of wind energy sector in the Mexico. The project directly supported the efforts to develop the RE sector in the country by aligning the private sector interests with the commitments of the Government of Mexico to increase the share of renewable technologies in the country’s energy generation matrix. In November 2012, SENER published the results of the CTF-funded “Strategy for the Development of the Wind Energy Sector in Mexico”. The strategy

shows the increased relevance of wind energy in Mexico's energy sector matrix with 1,300 MW already in operation and development potential of additional 12,000 MW over the next eight years. Further developments in wind energy will have many positive impacts for Mexico's economy among them new investments and jobs, and the possibility of the development of an entire industry with all its value chain. The contents of the documents are open to the general public and can be found at SENER's website⁵.

The remaining from IFC's RE allocation (USD 14.4M out of USD 30M) was set aside to finance other wind energy projects. At this time, however, IFC does not foresee projects that would require CTF resources. IFC's assessment is that currently, wind development in Mexico can be financed on commercial terms without the need for CTF subsidy. Given these positive developments in the wind sector and to ensure that the balance CTF funds are deployed quickly, IFC (following discussions with the GoM and other MDBs) will reallocate the balance of USD 14.4M to finance a Geothermal Exploration Risk Mitigation Project to be executed by the IDB.

Energy Efficiency – To date, the progress of EE initiatives has been slow. The financial crisis that started in 2008 has had a negative impact in the development and implementation of EE programs that would comply with the terms articulated under Mexico's CTF IP. Since the approval of the IP, IFC has been engaging with different private sectors players to assess investment opportunities in this sector that merit CTF funds. However, the unfavorable business environment has prevented the program from sticking to the timeline presented in the CTF Country Plan. IFC's current pipeline is not sufficiently advanced to meet the Trust Fund Committee's request to have the CTF funds committed in the near future. Therefore, following discussions with the GoM and other MDBs as part of the Country IP revision process, IFC will reallocate the unused funds in its EE program (USD 20 M) to a Geothermal Exploration Risk Mitigation Project to be executed by IDB.

CIRCUMSTANCES AND RATIONALE FOR INVESTMENT PLAN REVISION

The GoM decided to reallocate USD 34.4 M of the original CTF IP to a **Geothermal Exploration Risk Mitigation Project** to be executed by IDB. The GoM has determined that this would be both an appropriate and effective use of the concessional financing from CTF, and a project aligned with its current priorities.

The overall rationale of the CTF IP remains unchanged. The Government has expressed its continued support and prioritization of **RE, EE and sustainable transport** in its economic and sustainable development agenda.

Current Trends and National Energy Strategy

The GoM has recently published its National Energy Strategy.⁶ The strategy outlines **priority areas** for the period between 2013 and 2027.

In order to **reduce dependency from natural gas** as main source of electricity generation (50% in 2012), and thus limit the country's growing imports of this fuel⁷, the current administration is planning to reach

⁵ See footnote 2 above.

⁶ Estrategia Nacional de Energía 2013-2027, <http://bit.ly/ENE2013>

the goal of **generating 35% of electricity from renewable sources** by 2024. Furthermore, the GoM underlines the importance of the **private sector** in order to reach those goals. **Strategic Issue 10 (Diversifying and optimizing the generating park) within Policy Measure 2 (Refining, Processing and Generation)** further strengthens this argument and calls for a reduction in the dependency of imported natural gas resources and for an expansion of the energy generating alternatives. The Strategy acknowledges the difficulties that the current scenario will encounter to fulfill the legal dispositions set in the LAERFTE Law, and calls for the development of a portfolio of projects incorporating environmental costs and GHG emission considerations that is solid enough. The defined lines of action of the Strategic Issue 10 allocate to SENER, the national utility (CFE) and CRE the responsibility of **promoting the diversification of the generation matrix including more RE**, as well as to CRE the responsibility of **strengthening the regulatory framework** by (i) reviewing and updating the current regulatory framework and the administrative procedures for the private sector to obtain RE generation permits and (ii) designing and establishing financial and tariff mechanisms to incentivize RE usage.

Policy Measure 4 (Energy Transition) includes **Strategic Issue 15: Identify and take advantage of the RE potential**, which places **geothermal energy** as the second highest in potential (10,000 MW) among existing RE sources. A technical analysis commissioned by the GoM envisions a competitive scenario in which 18,000 MW from renewable sources would be installed by 2018, generating an increase in the GDP of MXN 230 billion and generating more than 70,000 jobs, mitigating 17 Mt CO_{2e} and raising the share of RE in 29% in the generation capacity.

Geothermal energy potential. Several initiatives have been undertaken by the GoM to explore the potential of Geothermal Energy in Mexico and promote actions to help develop the resource. Mexico is the country with the fourth largest geothermal installed capacity in the world. The totality of this capacity has been developed by CFE. Nevertheless, the resources potentially installed in the long term (between 7.5 and 10 GW according to estimates) are still very far from being tapped.⁸ The CTF-funded study on the geothermal potential and regulatory framework⁹ provides an inventory of the geothermal areas in Mexico, presents alternative exploration methods, and lays out the regulatory barriers that geothermal energy faces in Mexico. The report concludes that there is a need to adapt the current water resource legislation in the country in order to better define the characteristics of hydrothermal resources and incentivize private development of geothermal resources.

SENER recently published a report on “Actions to promote geothermal energy in Mexico”, analyzing economic, technical and regulatory aspects of geothermal potential and challenges. The report compiles information from private and public sources and includes information obtained from an extensive survey of key stakeholders. It also proposes specific actions and describes the associated benefits.¹⁰ The proposed CTF IP revision adds a geothermal energy project to the wide array of RE interventions envisioned in the original IP. This is a direct result of the development of the energy portfolio in Mexico and the need to unveil potential to deliver a steady level of energy supply. Two Mexican mitigation cost analyses (see Figure 1 and Figure 2) attribute positive costs to geothermal energy as compared to the baseline scenario. However, the costs are so small (approximately USD 10 / t CO_{2e}) that a minor increase

⁷ Between 2000 and 2011, the energy consumption in Mexico has grown at a 2.08% annually (at a bigger rate of the GDP growth of 1.82%). On the other side, primary energy production has decreased by 0.3% annually.

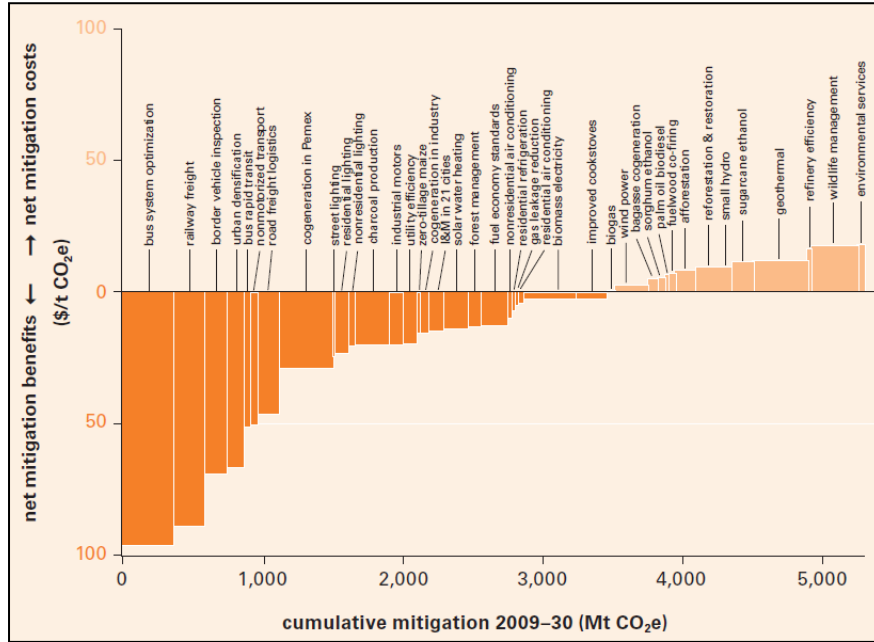
⁸ SENER, 2012. *Iniciativa para el Desarrollo de las Energías Renovables en México. Energía geotérmica* (study commissioned to PwC). <http://bit.ly/ERgeoMEX>

⁹ See footnote 3.

¹⁰ See footnote 8.

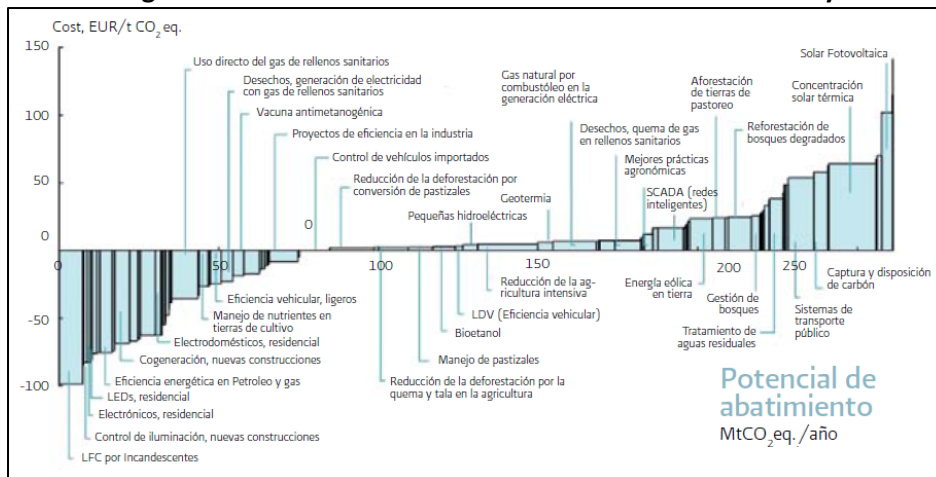
in the assumed baseline fossil fuel prices makes this technology economically competitive. Moreover, these calculations do not capture the economic benefits that geothermal energy provides in terms of energy price stability.

Figure 1: GHG abatement cost curve for Mexico - MEDEC



Source: Johnson et al., 2010. *Low-Carbon Development for Mexico*. World Bank. <http://bit.ly/lcdmex>

Figure 2: GHG abatement cost curve for Mexico - McKinsey



Source: McKinsey GHG Abatement Cost Curve v2.0. Quoted by: Instituto Nacional de Ecología, 2010. *Potencial de mitigación de gases de efecto invernadero en México al 2020 en el contexto de la cooperación internacional*. <http://bit.ly/GElimit20>

Even if economic viable, geothermal energy projects are not financially feasible, when left purely to be driven by market forces. It is estimated that concessional funding to reduce initial investment costs for private developers would trigger the exploitation of this source, diversifying the energy matrix in the country. There are currently MXN 150 million (approximately USD 12 million) assigned for geothermal exploration risk insurance in the National Budget (PEF) for 2012. The availability of these funds for inclusion in the geothermal risk project is subject to meeting certain legal requirements, but it further underlines the importance of geothermal energy and the direct link to the risk reduction proposal.

Development potential. The importance of geothermal energy for the country lies in its ability to deliver a steady level of energy supply and in its great potential, estimated in reserves equivalent to nearly 10 GW in the long run. Of these, the proven reserves (additional capacity that can be installed in known geothermal fields), plus probable (reserves that are more than 50% likely to be commercially recoverable with currently available technology) are estimated at 3.2 GW (see Table 4).

Table 4. Geothermal Potential in Mexico

Type of reservoir	Potential(GW)
Proven	1.14
Probable	2.1
Possible	7.4
Total	10.6

Source: SENER data from 2011. Forecast for 2011-2025

Major constraints. The potential of the sector is being significantly underutilized due to the fact that geothermal projects in their first investment phase face significant risks related to the exploration and identification of the resource.

- **High risk and cost**, especially in the exploration phase (initial phase): (i) inability to determine *ex ante* resources (no drilling has taken place); (ii) high capital costs: activities encompassing exploration and drilling represent 30-60% of the total investment to be financed, with no certainty that there will be enough resources (in quantity or quality) to make the investment viable; (iii) long periods of maturity of the investment, and (iv) insufficient knowledge on how to assess the feasibility of projects by investors, which increases risk perception. All this creates shortage of funding or inadequate funding conditions (collateral requirements and excessive fees) and acts as a brake on private investment in the sector.
- **Regulatory risk:** there is a lack of a regulatory mechanism that defines a “project area”, preventing other potential developers to get permission to exploit the same area and thus protecting the investment for these activities. Moreover, the absence of a regulatory framework for the exploitation of geothermal resources within the regime of the National Water Commission’s (CONAGUA) concessions specifically suited to the case of geothermal energy, as well as power sector risks, are important factors in the decision making of investors and financiers.

Rationale for CTF Financing. The project aims to encourage private investment in geothermal energy resources through specific financial and risk transfer mechanisms to reduce investment costs, mobilize private capital for projects and ensure a sustainable growth in the long term. Specifically, these mechanisms and their objectives are:

- Exploration risk reduction mechanism (initial phase). This mechanism may be an insurance instrument or guarantee, or a capital contribution to the project to face the uncertainty related to the existence, amount and quality of the geothermal resource and increase private sector participation in exploration and exploitation.
- Funding for project developers (advanced stage) through loans or contingent credit lines to accelerate the development of geothermal projects for sale to the grid (independent power producers or small producers) or for self-supply.

- Grant resources for studies or reports that may be associated with resource exploration and technical studies required to complete the financing in the context of attracting investors.

The project is expected to deliver a number of development benefits, in addition to its climate co-benefits (see Table 5).

Table 5. Estimated benefits from the development of geothermal energy in Mexico

Geothermal Energy Impact	Installation of 2 GW in Mexico (2012-2020)
GDP Increase	MXN 95,400 million (0.7% of 2011 GDP)
Jobs generated	36,700
Fiscal Revenue Increase	MXN 8,000 million annually
GHG abated	8.4 MtCO _{2e} per year in 2020 (14% of energy sector abatement potential)
Other benefits	13% reduction in natural gas imports

Source: SENER, 2012. <http://bit.ly/ERgeoMEX>

PROPOSED CHANGES TO THE INVESTMENT PLAN

Table 6: Mexico Original CTF Financing Plan (2009) (USD million)

MDB/Program	Total CTF funding	Cofinancing	Govt.	Private	IBRD	IDB	IFC	Carbon Finance	Others
IBRD/ Transport	200	2,200	750	643	600	150	-	50	7
IBRD/ Efficient Lighting and Appliance Project	50	600	50		400	-	-	150	
IDB/ Renewable Energy	125	2,060	600	850	-	310		-	300
IDB/ Energy Efficiency	75	337	25	150	-	51.5	-	100	10
IFC/ Private Sector Energy Program	50	500	-				135	-	365
Total	500	5,697	1425	1643	1000	511.5	135	300	682

Table 7: Mexico Revised CTF Financing Plan (2013) (USD million)

MDB/Program	Total CTF funding	Cofinancing	Govt.	Private	IBRD	IDB	IFC	Carbon Finance ¹¹	Others
IBRD/ Urban Transport Transformation Program	200.00	1,975	1,093	732	150	-	-	-	-
IBRD/ Efficient Lighting and Appliance Project	50.00	664	230	176	251	-	-	-	7
IDB/ Renewable Energy Part I (Private Sector)	53.38	600	-	484	-	45	71	-	-
IDB/ Renewable Energy Part III (NAFIN RE Finance Facility)	70.61	2290	70	1,540	-	70	-	-	750
IDB/ Energy Efficiency Part I (Commercial Banking Component)	24.40	108	-	44	-	44	20	-	-
IDB/ Energy Efficiency Part II, Ecocasa Program	51.61	249	-	86	-	50	-	-	113
IFC/ Private Sector Wind Development	15.60	173.9	-	64.3	-	22	22	-	65.6
IDB/ Geothermal Exploration Risk Reduction Project ¹²	34.4	115.6	12			34.4			69.2
Total	500	6,176	1,335	3,126	401	195	113		1,005

¹¹ Some of the RE projects that have been financed with CTF resources have received carbon credits, and some of the projects to be financed in the future may also receive carbon credits. The total amount of carbon credits received or to be received cannot however be determined.

¹² There are currently MXN 150 million (approximately USD 12 million) allocated for geothermal exploration risk insurance in the National Budget (PEF) of 2012. The availability of these funds for inclusion in the geothermal risk project is subject to meeting certain legal requirements.

POTENTIAL IMPACTS OF PROPOSED CHANGES ON INVESTMENT PLAN OBJECTIVES

Table 8: Assessment of Proposed Changes in the IP

CTF Investment Criteria	Original Investment Plan	Revised Investment Plan
Transformational Impact	The government of Mexico worked closely with the Inter-American Development Bank (IDB), members of the World Bank Group (IBRD, IFC), and key Mexican stakeholders to develop an investment plan that taps USD 500 million from the CTF for projects in the RE, EE, and transportation sectors. These projects help meet crucial financial shortfalls, catalyze private sector engagement, and build local capacity. CTF funds are expected to mobilize USD 6.9 billion in additional public and private support, and have the potential to reduce Mexico's 2008–2030 GHG emissions by over 60%.	Same as original IP
Potential for GHG Emissions Savings	13.2 Mt CO _{2e} per year	7.158 Mt CO _{2e} per year
Cost-effectiveness	$(\text{CTF USD}500 \text{ mill}) / (13.2 \text{ Mt CO}_{2e} \text{ per year}) \times 20 \text{ year project lifetime} = \text{USD}1.9 / \text{tCO}_{2\text{eq}}$	$(\text{CTF USD}500 \text{ mill}) / (7.158 \text{ MT CO}_2 / \text{year}) \times 20 \text{ year project lifetime} = \text{USD}3.45 / \text{tCO}_{2e}$
Demonstration Potential at Scale	<p>Transport: national BRT over time could achieve a share of 30% of daily trips in urban areas (over 1 million) exceeding 20 million passengers per day, reducing 20% of the carbon footprint of the transport sector.</p> <p>RE: The program would build upon and leverage existing RE projects in a programmatic way; 18 Mt CO₂ year (6% of total projected emission from power sector in 2013). 10 times replication.</p> <p>EE, lighting and appliances: 15-20% of market potentials.</p> <p>EE, industrial: 15-40% of sector consumption. 27 Mt CO_{2e} per year are estimated cumulative savings up to 2013.</p>	Same as original, adding 8.4 Mt CO _{2e} in 2020 (14% of energy sector abatement potential) for Geothermal Energy. The new technology introduced in the CTF IP will entail a significant demonstration potential for the private sector of the country, as it will pave the way for increased security of investment and improve the current knowledge of both financial and technical aspects of this technology
Development Impact	The program, through its three axes (RE, EE and transport) will support the transformation of the energy and transport industry, leading to job creation and new export opportunities and enhanced competitiveness of Mexico within a global low-carbon economy. The program would help decarbonize key sectors of the Mexican economy as well as address the country's energy security needs, while lowering prices (in a relative sense) through avoided incremental investments and lowering transfers from the Treasury to the sector in the form of subsidies. This will improve Mexico's competitiveness considering that electricity is a key input that substantially affects operating costs and thus productivity.	Same as original IP

Implementation Potential	Mexico is strongly committed to a progressive climate change policy. Regarding the particular sectors, technologies for urban massive transport have been successfully tested in other cities and the scale of implementation seems relative easy to implement compared to large scale infrastructure. The GoM has promoted the establishment of supportive legislation for RE and EE and has embarked in an aggressive program of EE, RE, and climate change. SEMARNAT, INE, SENER, CRE, FIDE and CONAE have accumulated practical experience through the years.	Same as original IP (CONAE is now CONUEE). The new geothermal energy project will require a close coordination among the different actors involved. There is an active dialogue among SENER, SEMARNAT, INECC, NAFIN, CRE, CFE, CONAGUA and the private sector to tailor the project to the country's needs.
Additional Costs and Risk Premium	The additional costs and risk premiums are described in detail in pages 22-24 of the Original IP	Same as original IP. Regarding the new geothermal energy proposal, the technology faces several challenges (such as inability to determine ex ante the resources, high initial capital costs, long periods of maturity of the investment, and insufficient knowledge on how to assess the feasibility of projects by investors, which increases risk perception. All this creates shortage of funding or inadequate funding conditions (collateral requirements and excessive fees) and acts as a brake on private investment in the sector.

Table 9: Risks and Mitigation Measures: Revised CTF IP (2013)

Risk	Mitigation Measure	Residual Risk (low/moderate/high)
Change of Government Priorities	The GoM has shown a strong commitment to climate change policy through continuous improvement in the legislation, ambitious goal setting and definition of development priorities in RE and transport through the different administrations.	Low
Lack of involvement of private developers (specifically for geothermal project)	The project team, including the different government agencies and the IDB, are engaged in an outreach effort and a continuous dialogue to ensure the participation of the private sector.	Medium
Social/Environmental Impacts	The MDB safeguards ensure the quality of the mitigation measures. There is currently a technical cooperation activity beginning execution which aims at defining more comprehensive public policies to improve the local benefits of wind projects to communities.	Medium
No Geothermal Resources are found	A strict quality control of the technical aspects of the preliminary assessment documents of the geothermal project will be enforced in order to choose only sites with high probability.	Medium-Low
Overall risk after mitigation		Medium-Low

MONITORING AND EVALUATION

In order to fully comply with the CTF Results Framework approved in December 2012,¹³ the GoM and the participating MDBs are currently working to develop an internal mechanism for the GoM to report on the CTF IP Results at a programmatic level to the CTF.

The terms of reference for this activity include:

1. Consult with relevant agencies of the Federal Government on the procedures for integrating the information generated by the CTF projects in the current or planned information systems, particularly those related to the CTF sectors.
2. Consult with SHCP and the relevant agencies on the procedures to send the information to the CIF Administrative Unit.
3. Review monitoring and evaluation frameworks included in the documents of the various projects of the MDBs, and consult with the leaders of these projects and the focal points in the implementing agencies or intermediaries on the information generation mechanisms in each one of the projects or programs, and on the appropriate procedures to channel that information into the aforementioned information systems.
4. In the case of confidential information, specific mechanisms will be proposed for handling such information and agree with stakeholders the degree of aggregation necessary to make the results public.
5. From the information gathered in the above, a manual of procedures for reporting results of the CTF in Mexico will be prepared. The procedures should be agreed with the MDBs, executing agencies or intermediaries, and other relevant institutions. The Manual will include information sources, specific responsibilities, forms, procedures and schedules.

¹³ See <http://bit.ly/CTFrefr>.

Table 10: Results Framework Original IP (2009) vs. Revised IP (2013)

Results	Results Indicator	Baseline	Expected Results in Original Investment Plan Endorsed in January 2009	Expected Results after Revision May 2013	Means of verification
GHG emission reductions	Tons of GHG emissions reduced or avoided	Transport: 20 Mt CO _{2e} per year. Electricity: 138 Mt CO _{2e} per year (2008).	Total= 13.2 Mt CO _{2e} per year	Total= 7.158 Mt CO _{2e} per year	National M&E System and M&E framework of the implementing agency
Financial resources leveraged	Volume of direct finance leveraged through CTF funding-disaggregated by public and private finance		5,697 (see Table 6)	6,244.6 (see Table 7)	National M&E System and M&E framework of the implementing agency
Renewable energy capacity	Installed capacity (MW) as a result of CTF interventions	85 MW of installed wind capacity (2008)	Total= 825 MW	Total= 1,458 MW	National M&E System and M&E framework of the implementing agency
Additional passengers	Number of additional passengers (disaggregated by men and women if possible) using low carbon public transport as a result of CTF intervention	300,000 passengers per day	5 million passengers per day	Same as original	National M&E System and M&E framework of the implementing agency
Energy savings	Annual energy savings as a result of CTF interventions (GWh)	Electricity consumption: 230,000 GWh (in 2007)	Total=14,500 GWh per year	Total= 3,500.3 GWh per year	National M&E System and M&E framework of the implementing agency

Additionally, in order to measure the transformational impact of the CTF IP, the emission intensity of the national economy and of the CTF subsectors will be tracked by the National M&E System.

STAKEHOLDER ENGAGEMENT

On March 20, 2013, a meeting was held in Mexico City for the public consultation of the CTF IP in Mexico. At this meeting the progress of the 2009 IP and the most important aspects of the revision progress of 2013 were presented. The attendees to this meeting were representatives from different sectors (private sector, academic institutions, national Congress, civil society organizations, and experts).

This meeting was convened by SEMARNAT (General Directorate of Climate Change Policy), INECC, and SHCP, along with representatives of the IDB and IBRD.¹⁴

The objectives of the meeting were:

- Share information about the execution of the Investment Plan approved in 2009, as well as about the review process currently underway.
- Obtain, compile and consider comments from the participants to enrich the review process of the Plan.

The GoM stated that transparency is one of its objectives, and that approaching all sectors of society in the construction of the Mexico CTF IP would enable drawing conclusions and defining action lines. SEMARNAT stated that the conclusions of the meeting would be taken into account in the preparation of the country's climate change planning instruments, in particular the National Climate Change Strategy (ENACC).

Representatives from the MDBs gave presentations on the CTF IP projects and a round of questions and answers was held.

Once the presentations were over, the consultation was carried out, giving time for the participants to engage in an exchange of views and formulate concrete proposals. Later, in plenary, all the proposals were shared.

In this document we present a summary of all the comments and proposals resulting from this consultation exercise related with the progress and prospects on the CTF IP. The table below (Table 11) compiles the main issues that arose from the exercise and the responses from the MDBs.

¹⁴ The meeting was facilitated by a team from Talleres Solaris, S.C.

Table 11: Main issues and clarifications from the consultation process

Main Clarifications	Joint Mission Responses
Need for improved and increased involvement of communities and civil society in project development and better communication of objectives and results	The MDBs will develop comprehensive communication strategies under the guidance of the GoM with the purpose of disseminating project objectives, benefits and results.
More focus on transport and EE and less in RE	The priority areas are defined by the GoM in line with its development priorities.
Better definition of responsibilities among the three levels of government and the MDBs	The new Ministry of Land Ownership and Territorial and Urban Development (SEDATU) seeks to ensure a better coordination with municipal and state authorities.
Improved transparency and execution of programs by the GoM	The GoM and the MDBs are developing an internal mechanism for the GoM to report on the CTF Results to the CIF, in line with the revised CTF Results Framework. The implementation of the mechanism will ensure a unified approach to data reporting, and the results will be made public.
Insufficient enforcement of MDB social and environmental safeguards, or inadequate safeguards regarding community development	<p>The MDBs must intensify communication campaigns to disseminate their policies on social and environmental safeguards, to make sure that the civil society understands the relevance of such safeguards for every single project. The MDS monitor the enforcement of their safeguards in all projects by the highest standards. In addition, IDB, IFC and IBRD have independent consultation and evaluation mechanisms: The Independent Consultation and Investigation Mechanism (ICIM) for IDB, the Inspection Panel for IBRD and the Compliance Advisor Ombudsman (CAO) for the IFC. These mechanisms address complaints from communities or individuals who allege that they are or might be adversely affected by MDB-financed operations.</p> <p>MDBs are constantly updating their environmental and social safeguards as emerging issues come up and get involved in relatively new sectors such as wind power.</p>

Summary of Stakeholder Inputs

On the overall portfolio of projects of the CTF IP

- Why is the IDB-funded study on biodiversity impacts of wind power not public? It is odd that these resources are used to achieve the objectives of private companies given that these funds were not designed for that. (2)¹⁵
- The GoM should improve the execution and performance of its resources. There should be a greater involvement and participation of social stakeholders and communities in the projects and a major dissemination of the program’s objectives. (2)
- Less attention to wind energy and more to EE and transport. (2)

¹⁵ The number refers to the times this issue was mentioned, either by different participants or by the same person.

On the Renewable Energy Programs.

- On the wind power investments in Oaxaca: Have the MDBs assessed the social impacts? Are people informed on all the social conflicts generated in Oaxaca? It is important to involve citizens. The land should be considered as part of the investment to avoid conflicts. (2)
- The fact that the inclusion of safeguards relating to community development is optional is contrary to Article 21 of the LAERFTE. It is necessary to review this. We should not only see what's happening at the community level, but also find the reason why projects are causing so many conflicts, internal divisions and conflict between communities. (4)
- It is important that the public policies study that IDB will carry out includes a section about why the safeguards are failing. Guidelines for the environmental and social safeguards must be complied and if the country fails to do so, it should be published. Safeguards should provide the cumulative effects of the benefits derived from the projects. Regional effects should be highlighted, and cases should not be individualized. (4)
- An improved methodology of the distribution of benefits of RE projects should be developed.

On the Mitigation of Geothermal Power Hazards

- CONAGUA must be closely involved in regulating geothermal power projects.
- The risk assessment should be viewed from the environmental sector, basically involving CONAGUA, not from the energy sector.
- There is a need to verify that geothermal projects are viable without modifying the regulatory framework.

On social participation in projects

- It is important that the MBDs include in their implementation procedures the participation of observers from civil society to avoid the current problems of credibility and achieve greater transparency in the implementation of projects.
- How far do the responsibilities of multilateral banks extend and how far that from the federal, state and municipal governments? This border is not clearly defined. In order to avoid the perception that resources are being used to support the election campaigns of political parties, it is necessary to promote awareness and public clarification of the participation rules for the projects funded by CTF. (3)
- Consultancies should be transparent in its entire process, and there should be equal opportunities for interested actors to participate.
- Translate the work of the financial area of the MDBs to the social area. Encourage more, in quantity and quality, access to information. Actors should be able to obtain relevant information when formally requested to the MDBs. (2)
- The project implementation roadmap should consider the existing problems in the communities in which projects will be implemented. Work needs to be done with the communities and authorities at the three levels of government to guarantee it.
- Consider a specific entry for local technical assistance and strengthening of local capacities for the implementation of projects at the municipal level.
- Avoid the error of justifying the use of concessional funds arguing that because of its condition of "new sector", the financial return to investors and banks must be improved. The true risk factor associated to the use of RE are the problems caused by excluding local communities as

beneficiaries, which generates heavy costs for both the government of Oaxaca and to the IDB, and the benefits go exclusively to the investors.

- We suggest using 34.4 million to detonate a large-scale RE community model, as it exists in countries like Japan. This would open a new line of wind power with the possibility of lower financing costs and risks.
- Set out the conditions for the use of the 70 million USD that NAFIN will be channeling, and avoid that considering social issues is something optional. It would be a violation of Mexican law and thereby contribute to the risk of systematic exclusion of communities.

Other general suggestions

- It is essential to align these projects with the new National Development Plan, as well as with sector programs, the climate change strategy and other corresponding sector strategies.
- The resources for the implementation of projects agreed with SHCP should be considered additional to the budgets of government agencies, so they can focus on the follow up of projects.
- SHCP should open a “window” for promoters of private financing.
- Expand solar projects to communities with less than 100 inhabitants, aligning the proposal with the Low Emissions Development Program.
- Improve instruments for the use of resources and for execution times, with less bureaucracy and more transparent processes. (2)
- The IDB should use a light system with the Mexican government related to the performance and execution policies of the funds. Yellow can indicate that you receive a warning, and red means that resources are removed.
- There are still missing qualitative studies. Clean technologies are a market issue and that is the way they should be considered.
- The funds from IDB and IBRD for new investments should be directed to solve the problem of hundreds of sewage treatment plants in the country (many of which do not work), under the emissions reduction approach.
- On the second investment plan, if support for EE in water and waste is considered, then it must be open to all water operators to prevent benefits for only a few.

Unresolved issues according to participants

- Reasons behind the declining resources in financing transport projects (PROTRAM).
- There wasn't enough discussion about transport. (2)
- For the second Investment Plan, more support to integrated transport and urban development systems. Transportation involves mobility, housing development, access to goods, health. (2)
- When referring to environmental and social issues, particular studies, focused on individual companies rather than a sector in general, were mentioned. It is required for these studies to expand its scope and clarity.

ANNEX I: GEOTHERMAL EXPLORATION RISK REDUCTION PROJECT (IDB)

Problem Statement. In the global ranking of countries according to the consumption of fossil fuels to generate electricity, Mexico ranks 5th in the case of oil, and 7th in the case of natural gas (IEA, 2010 data). The Mexican government has been promoting the development of RE to diversify the country's energy sources and mitigate the impact of the energy industry on the environment.¹⁶

The production of electricity from geothermal resources¹⁷ is a relatively mature generation technology for which Mexico has enormous potential. Geothermal energy could be an alternative source of renewable and low-carbon energy to produce a relatively stable supply of electricity. It does not depend on weather conditions, and has storage capacity itself, so that it provides a supply of low-cost baseload power and complements other sources whose availability of supply is intermittent.

According to 2010 data:¹⁸

- Geothermal energy is used in 78 countries worldwide, both for electricity production and for in direct heat applications.
- Worldwide, 39 countries use geothermal energy to produce electricity, with an installed capacity of 10.7 GW geothermal (0.4% of total energy capacity installed globally¹⁹). It is estimated that by 2015 this capacity will exceed 18.5 GW (12% annual growth).
- Mexico is the country with the fourth largest installed capacity for geothermal power generation worldwide (958 MW). However, this only accounts for 2% of the effective capacity of national power generation. This capacity is owned and operated by the national public utility (CFE).

Mexico is one of the most promising geothermal areas in the world and has a comparative advantage, since it is a pioneer in the use of these resources. Nevertheless, it is necessary to lay the foundations to scale up the much needed private investment and develop the sector.

There are MXN 150 million (approximately USD 12 million) assigned for geothermal exploration risk insurance in the National Budget (PEF) of 2012. The availability of these funds for inclusion in the geothermal risk project is subject to meeting certain legal requirements, but it further underlines the importance of geothermal energy and the direct link to the risk reduction proposal.

Development potential. The importance of geothermal energy for the country lies in its ability to deliver a steady level of energy supply and in its great potential, estimated in reserves equivalent to nearly 10 GW in the long run. Of these, the proven reserves (additional capacity that can be installed in known geothermal fields), plus probable (reserves that are more than 50% likely to be commercially recoverable with currently available technology) are estimated at 3.2 GW (see Table 12).

¹⁶ SENER, Estrategia Nacional de Energía 2013-2027, <http://bit.ly/ENE2013>

¹⁷ Energy generated by the use of natural heat from the inside of the Earth, which moves from the interior of the crust toward the surface levels, transported through rock and / or fluids.

¹⁸ Santoyo-Gutiérrez and Torres-Alvarado, 2010. *Escenario futuro de explotación de la energía geotérmica: Hacia un desarrollo sustentable*. Revista Digital Universitaria, UNAM. <http://bit.ly/futGEOT>.

¹⁹ For Latin America this figure corresponds to 0.5% of energy supply in the region (IDB 2011, Renewable Energy Best Practices in Promotion and Use for Latin America and the Caribbean).

Table 12: Geothermal Potential in Mexico

Type of reservoir	Potential(GW)
Proven	1.14
Probable	2.1
Possible	7.4
Total	10.6

Source: SENER data from 2011. Forecast for 2011-2025

Major constraints. The potential of the sector is being significantly underutilized due to the fact that geothermal projects in their first investment phase face significant risks related to the exploration and identification of the resource.

- **High risk and cost**, especially in the exploration phase (initial phase): (i) inability to determine *ex ante* resources (no drilling has taken place); (ii) high capital costs: activities encompassing exploration and drilling represent 30-60% of the total investment to be financed, with no certainty that there will be enough resources (in quantity or quality) to make the investment viable; (iii) long periods of maturity of the investment, and (iv) insufficient knowledge on how to assess the feasibility of projects by investors, which increases risk perception. All this creates shortage of funding or inadequate funding conditions (collateral requirements and excessive fees) and acts as a brake on private investment in the sector.
- **Regulatory risk:** there is a lack of a regulatory mechanism that defines a “project area”, preventing other potential developers to get permission to exploit the same area and thus protecting the investment for these activities. Moreover, the absence of a regulatory framework for the exploitation of geothermal resources within the regime of the National Water Commission’s (CONAGUA) concessions specifically suited to the case of geothermal energy, as well as power sector risks, are important factors in the decision making of investors and financiers.

In summary, the characteristics inherent in investing in geothermal exploration makes this a RE source difficult to develop by the private sector. Private sector participation can potentially complement the ongoing efforts by CFE to continue expanding its geothermal capacity. Niches for private sector participation lie in particular in the self-supply and small producer modalities.

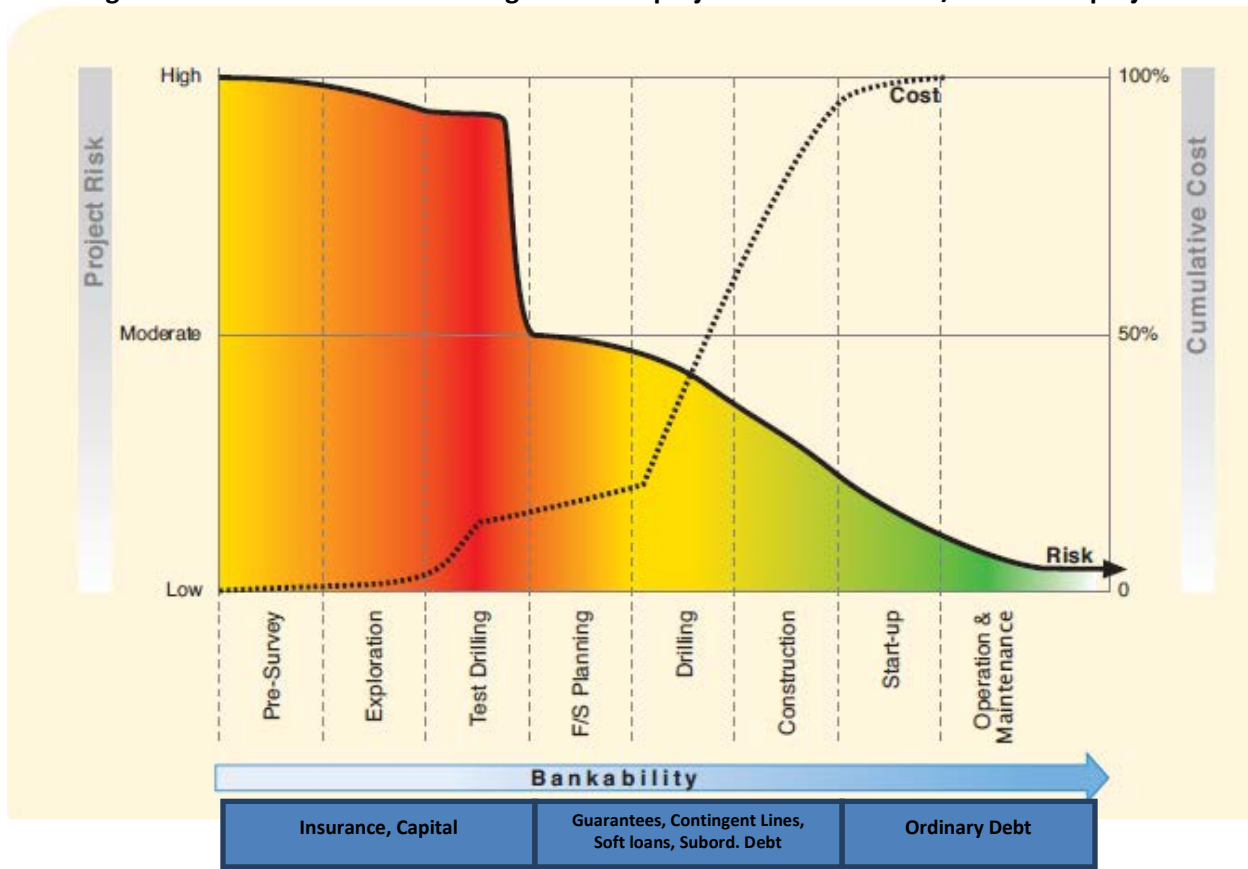
Rationale for CTF Financing. The project aims to encourage private investment in geothermal energy resources through specific financial and risk transfer mechanisms to reduce investment costs, mobilize private capital for projects and ensure a sustainable growth in the long term. Specifically, these mechanisms and their objectives are:

- 1) Exploration risk reduction Mechanism (initial phase). This mechanism may be an insurance instrument or guarantee, or a capital contribution to the project to face the uncertainty related to the existence, amount and quality of the geothermal resource and increase private sector participation in exploration and exploitation. Given the level (likelihood and impact) of exploration risk, public intervention is strongly justified to cover it in the most cost-effective way. The existence of private insurance is limited and its price costly, making investment in the sector without partial public support virtually non-existing. IDB proposes the structuring of a flexible insurance instrument to manage risk with or without support from private insurance companies, on the basis of a technical exploration analysis. The insurance premium would be

subsidized by public funds provided by the state directly or derived from the implicit subsidy on CTF concessional financing of the project. The GoM and the IDB will also consider the possibility of operating with guarantees and other contributions.

These activities are supported through NAFIN co-financing resources, acting as a first or second tier development bank, for the exploration and development activities. NAFIN will make use of the available concessional multilateral funding and of the Flexible Financing Facility of the IDB (CCLIP) in order to offer guarantee products or contingency line of subordinated debt to the developers, with the goal of catalyzing additional private investment.

Figure 3. Financial solution 50MW geothermal project in terms of cost / risk of the project



Source: ESMAP Geothermal Handbook Planning 2012, and IDB team

- 2) Funding for project developers (advanced stage) through loans or contingent credit lines to accelerate the development of geothermal projects for sale to the grid (independent power producers or small producers) or for self-supply.
- 3) Grant resources for studies / reports: that may be associated with resource exploration and technical studies required to complete the financing in the context of attracting investors. These studies not only help make the project viable but they can contribute to the development of a geothermal potential national map, geologic modeling and location of new wells, design of research programs and technological development or introduction of sustainability standards for the construction, operation and decommissioning of geothermal plants. Other studies could cover requirements relating to any necessary regulatory reforms.

- 4) In order to implement these mechanisms, we propose the creation of a Geothermal Investment Fund to boost investment in geothermal energy development, with initial funding from the GoM, the IDB and the CTF which allows players to leverage resources from other public and private investors, to promote the development of a portfolio of bankable projects at an accelerated pace. The fund would be endowed with:
- Grant funds from public sources (e.g. SHCP / SENER), specifically designed to act as capital or to pay the required insurance policies.
 - Long-term debt concessional CTF guaranteed by the government: can fund the initial stages of exploration and drilling, in which the risk is higher, building on their attractive loan terms to instrument the support through simple loan, contingent lines, guarantees or subordinated debt in order to attract private investment. The subsidy implicit in this type of financing could also be used as a subsidy and act as an upfront subsidy.
 - The Bank will make its best efforts to seek other public or private loans, bilateral and multilateral agencies, as well as the participation of international donors. The Bank would use the CCLIP to provide financing adapted to the characteristics of projects and would provide technical assistance resources for the necessary studies.
 - Private Ordinary loans to supplement these resources as the project progresses and the risk decreases (becomes more bankable) providing the long-term funding those projects need.

The establishment of such Fund is not essential: the Fund itself is only a tool for the design and coordinated management of a funding formula set for each project based on its risk-based distribution and mitigation strategy. The same work can be carried out by the “lead agent” of the project’s financing tool. The Fund would involve significant savings in transaction costs and would keep the investment / risk balance.

Proposed Transformation. Scaling of investment in the development of geothermal energy generates both environmental and economic benefits, including:

- For the environment: Reduction of GHG emissions at a competitive generation cost relative to other clean energy sources.
- For the economy: reducing dependence on imported fossil fuels, stable power for the power system, development of private industry with high export potential and high added value, generating new investments, employment and regional development (see Table 13).
- From the strict point of view of competitiveness of the economy, geothermal power is the most efficient RE outside large-scale hydropower. For proven technologies as this one, the estimated investment cost reduction for each doubling in installed capacity is approximately 5%.

Table 13. Estimated benefits from the development of geothermal energy in Mexico

Geothermal Energy Impact	Installation of 2 GW in Mexico (2012-2020)
GDP Increase	MXN 95,400 million (0.7% of 2011 GDP)
Jobs generated	36,700
Fiscal Revenue Increase	MXN 8,000 million annually
GHG abated	8.4 MtCO _{2e} per year in 2020 (14% of energy sector abatement potential)
Other benefits	13% reduction in natural gas imports

Source: SENER, 2012. <http://bit.ly/ERgeoMEX>

Table 14. Products, expected outcomes and impacts

Outputs and outcomes	<ul style="list-style-type: none"> • Geothermal capacity with financed exploration: 50 MW (first project) • Pipeline of geothermal projects in areas with proven geothermal reserves with financed exploration (#): TBD • Geothermal projects financed (#): TBD • Third party mobilized resources through the financed projects (exploration and development) = USD 115.6 million. • Reduction of GHG emissions= 0.21Mt CO_{2e}/year
Impact	<ul style="list-style-type: none"> • Long-term installed capacity (MW): TBD

Table 15: Project Indicative Financing (USD million)

Financing Source	Amount
CTF	34.4
Other sources	115.6
Total	150

Table 16: Project Preparation Timetable

Milestone	Date
Eligibility/Quality Review	October 2013
Approval by CTF	December 2013
Approval by IDB Board	January 2014

ANNEX II: MEXICO INVESTMENT PLAN PHASE II

Building on the positive experience of this IP, the Government of Mexico is preparing a second Investment Plan to be submitted to the CTF. Mexico is currently preparing its National Development Plan (PND) and other relevant energy and transport sectorial programs, including the National Climate Change Strategy (ENACC) and the Special Climate Change Program (PECC). When preparing these documents, the GoM will consider the possibility of accessing to additional CTF resources, so that the new IP to be presented is fully aligned with the national priorities and strategies.