



**IDB PUBLIC-PRIVATE SECTOR  
CTF PROPOSAL**

**Mexico Public – Private Sector  
Renewable Energy Program**

Amal-Lee Amin and Carla Tully

**IDB PUBLIC-PRIVATE SECTOR CTF PROPOSAL**  
**Mexico Public – Private Sector Renewable Energy**  
**Program**

Amal-Lee Amin and Carla Tully



Inter-American Development Bank  
2009

# IDB PUBLIC-PRIVATE SECTOR CTF PROPOSAL

|  |  |
|--|--|
| <p><i>Name of Project or Program</i></p>                       | <p><b>Mexico Renewable Energy Program (the “Program”)</b></p>  |
| <p><i>CTF amount requested / Total Project Cost (USD):</i></p> | <p>USD 50 million for envelope of private sector investments</p> <p>USD 1.54 million public and private sector technical assistance (see Annex 1)</p> <p>USD 1.837 million as the maximum for implementation and supervision budget (this maximum assumes 4 projects will be supported under the envelope and will be lower if a smaller number of projects are supported - see Annex 2)</p>   |
| <p><i>Country targeted</i></p>                                 | <p>Mexico</p>  |
| <p><i>Indicate if proposal is a Project or Program</i></p>     | <p>The development of renewable energy in Mexico is being supported by both public and private sector activities at the IDB and private sector activities at the IFC.</p> <p>The Program incorporates several public and private sector components, which are being developed in parallel to complement and build upon each other with a view toward transformation of the renewable energy market in Mexico. The overall program is being submitted to the CTF Trust Fund Committee in four proposals.</p> <p><b>Proposal I</b> was approved on May 11, 2009, by the CTF Trust Fund Committee and allocated USD 15 million for the first intervention in this Program, the joint IFC/IDB <i>Private Sector Wind Development</i>.</p> <p><b>Proposal II</b>, described herein, expands upon the programmatic approach presented in Proposal I and seeks funding for an envelope of private sector projects and public and private sector technical assistance activities.</p> <p><b>Proposal III</b>, to be submitted at a later date by the IDB, will seek funding for specific public sector projects within the Program.</p> <p><b>Proposal IV</b>, if necessary would be submitted at a later date by the IFC, to seek funding for</p> |

additional private sector projects within the Program..

**DETAILED DESCRIPTION OF PROJECT OR PROGRAM**

**Fit with Mexico's Country Investment Plan**

1. On January 27, 2009, Mexico's Country Investment Plan (CIP) was endorsed by the CTF Trust Fund Committee. Mexico's CIP described the country's GHG emissions profile and indicated that the development of renewable energy sources was a key strategic area for CTF resources including through the private sector. An initial analysis determined that a CTF renewable energy program could result in a reduction of around 1.8 million tons of carbon dioxide equivalent (Mt CO<sub>2</sub>e) /year at an abatement cost between USD 31/t CO<sub>2</sub>e and USD 38/t CO<sub>2</sub>e.
2. On May 11, 2009, the first operation under the CIP, the joint IFC/IDB Private Sector Wind Development Program (Proposal I), was approved by the CTF Trust Fund Committee. Since that time, the IFC and IDB have advanced the due diligence and financial structuring process and expect to pursue their respective Board of Director approvals in November 2009.
3. Following from the CIP and Proposal I, the IDB is presenting Proposal II of a comprehensive public/private program designed to demonstrate renewable energy as a commercially attractive, proven, and reliable source of power and to stimulate transformation of the energy sector in Mexico. Proposal II of the Program seeks approval from the CTF Trust Fund Committee for a USD 50 million envelope to fund individual private sector renewable energy projects, as well as USD 1.54 million for technical cooperation to support the implementation of the new renewable energy law, assess options for programmatic CDM, and design a development plan for local communities impacted by renewable energy projects. Please refer to Annex 1 for a complete listing of technical cooperations to be funded by CTF and other sources of funding. Proposal III of the Program will seek approval for approximately USD 72 million of CTF funding to accelerate and scale-up financing of renewable energy projects by Mexico's national development banks, and a comprehensive knowledge management program. Proposal IV of the Program may seek approval for up to USD 15 million of CTF funding to fund one or more individual private sector projects.
4. A cross-cutting component of the Program will be a comprehensive knowledge creation and management program to support the development of a robust Mexican renewable energy market, such as dissemination of lessons learned and best practices from CTF-funded projects to future projects; feedback loops between projects and policy makers and regulators; all of which will contribute to necessary organizational learning, stakeholder cooperation, and institutional capacity building.
5. IDB requests the approval of the CTF Trust Fund committee for the IDB Group, including the Inter-American Investment Corporation as a sub-implementing entity, to implement the Program.
6. Given the need for private sector projects to have all committed resources available prior to closing, the IDB requests the approval of the CTF Trust Fund Committee to allow for the upfront transfer of the entire amount for each IDB-approved project under the private sector envelope from the Trustee to the IDB, based on the confirmation of availability of USD 50 million by the Trustee as evidenced in Annex 3. The transfer would be subject to (a) approval by IDB's Board of Director of each project, and (b) submission of a transfer request to the

Trustee including the anticipated closing date of the relevant project.

### **GHG profile of Mexico**

7. According to Mexico's Special Climate Change Program (Programa Especial de Cambio Climático – PECC), Mexico emitted 715.3 Mt CO<sub>2</sub>e in 2006 of which almost 430 Mt CO<sub>2</sub>e were from generation and combustion of fossil fuels. Mexico ranks thirteenth in the world based on total GHG emissions and is the largest emitter in Latin America excluding land use sources. It accounts for 1.6% of global CO<sub>2</sub>e emissions from fossil fuels, excluding other GHGs and land-use change and forestry.
8. The sources of Mexico's GHG emissions are energy generation (27.5%), use of energy (32.7%), forests and land-use change (18.44%), waste management (14%) and industrial processes (7.4%). The oil and gas sector is responsible for about 12% of GHG emissions, about half of which is classified under energy generation (2006 data).
9. Mexico has been very proactive in its efforts against climate change. In April 2005, Mexico established the Intersecretarial Commission on Climate Change (Comisión Intersecretarial de Cambio Climático – CICC). The CICC's key mandates include the formulation and coordination of national climate change strategies and their incorporation in sectoral programs. On August 28, 2009, the Special Climate Change Program (Programa Especial de Cambio Climático - PECC) was published. The PECC, building on the 2007 National Climate Change Strategy, sets adaptation and mitigation goals for the current administration, and suggests a long-term mitigation scenario, aimed at reaching the "aspirational" goal of a 50% reduction of greenhouse gases emissions below 2000 levels by 2050, announced by the government at the UN Climate Conference in Poznan, December 2008.

### **Overview of the Mexican power sector**

#### ***Power generation in Mexico***

10. According to data from Secretaría de Energía (SENER) and Comisión Reguladora de Energía (CRE), at the end of 2008, Mexico had around 59.5 GW of total installed electricity generation capacity. Of the total electricity generation, 50.8% was from natural gas, 16.2% was from fuel oil, 9.2% was from coal, 14.4% from hydro, 3.8% from nuclear, 2.6% from geothermal, and 0.09% was from wind. The demand for electric power in Mexico has been growing faster than GDP over the past several decades and this trend is likely to continue for the foreseeable future as electricity use continues to grow in the residential, commercial, and industrial sectors. According to a study carried out by the World Bank under a scenario based solely on least-cost criteria, total annual CO<sub>2</sub> emissions from power generation would increase by 230% between 2008 and 2030 – from 138 to 312 Mt CO<sub>2</sub>e. Based on their economic costs of production – excluding carbon and local externalities – both coal and gas-fired power generation would increase under this least-cost scenario, with coal accounting for 37% of the new capacity, and gas 25%. However, Mexico is experiencing a decrease in fossil fuel reserves and there is growing pressure to diversify the country's power sources. Assuming a cost of CO<sub>2</sub>e of as little as USD 10/ton is factored in, low-carbon energy technologies – hydro, wind, biomass, geothermal, and efficient cogeneration – could become cost competitive options replacing much of the projected investments in conventional fossil fuel based thermal power generation in the least-cost scenario.

#### ***Regulatory framework of the Mexican power sector***

### The monopoly status of CFE and LFC

11. In accordance with the Mexican Constitution, the government-owned entity Comisión Federal de Electricidad (CFE) is responsible for the generation, transmission and distribution of electricity for “public service.” CFE owns and operates the majority of Mexican power generation and medium and high-voltage transmission lines, and is in charge of distribution services in most of the country. CFE holds a monopoly position in transmission and distribution in its geographic area.

### The Law for the Public Electricity Service of 1992

12. Based on the Public Service Law for Electrical Energy of 1992 (Ley de Servicio Público de Energía Eléctrica), “public service” generation plants can be owned and operated either by CFE or by private sector independent power producers (IPP). The IPPs sell capacity and energy to CFE via power purchase agreements (PPA) tendered to the IPP market. The PPAs, which set out the price and terms of the energy sales, are awarded to the IPP that can generate the power at the lowest cost. Since the passage of the 1992 legislation, more than USD 6 billion in private capital has been mobilized and today 23% of Mexico’s power generation capacity is supplied by 11,457 MW of private IPPs. With respect to electricity generation, IPPs contribute 34% of the total energy generated by the system, or 78,494 GWh. No IPPs currently provide renewable energy generation, but two wind IPP projects totaling 200MW have already been tendered and others are in the pipeline.
13. The 1992 law excludes certain activities from the definition of “public service,” including (i) electricity generation for self-supply purposes (autogeneration or cogeneration), (ii) small scale production (<30 MW) for sale to CFE, (iii) independent power production for sale to CFE, (iv) electricity generation for export purposes, and (v) electricity imports.

### The autogeneration framework

14. The autogeneration framework allows private developers to sell power to some of the largest commercial and industrial groups in Mexico as off-takers, as long as the off-taker is also a shareholder in the project. Autogeneration projects are interconnected to Mexico’s power grid , either as “inside the fence” projects or as “remote self-supply” projects. In the latter case, the electricity sold to the off-takers is wheeled via CFE, under Mexico’s power sector interconnection regulations. The power that the off-taker acquires from the autogeneration project offsets the power that they otherwise would have purchased directly from CFE representing the mix of other generation sources that supply the CFE national grid.
15. Under the autogeneration regulations, CFE also acts as the backstop off-taker and will acquire any excess energy generated above autogeneration contractual obligations and the off-takers’ demanded power at a tariff equivalent to 85% (without previous notification) or 95% (with previous notification) of the regional regulated short-term marginal cost of the power grid. Alternatively, under regulations for intermittent remote renewable autogeneration projects, an autogeneration project may also elect to “bank” any excess generated energy for up to one-year to apply to future contractual off-take obligations.
16. Privately financed autogeneration projects provide 7% of power generation from 4,542 MW of installed capacity and “inside the fence” private cogeneration projects provide 4.3% from 2,677 MW, according to CRE. The autogeneration framework for private power developers is effective because it allows private developers to earn a tariff that is typically higher than the rate paid to private power developers by CFE through the IPP process, and is typically lower

than the price charged to industrial consumers by CFE.

### ***The potential of renewable energy in Mexico***

17. Despite having world-class renewable energy resources and the prospect of wind power and other sources achieving economic competitiveness in the short to medium term, the renewable energy sector of Mexico remains relatively untapped. Around 14% of Mexico's primary electricity output (in GWh) comes from renewable energy, which is largely accounted for by large-scale hydropower. According to various studies, including Mexico's Economics of Climate Change Study of 2009, which was sponsored by the IDB and based upon studies by McKinsey and the Mario Molina Center, by 2030 renewable energy could result in more than 72 Mt CO<sub>2</sub>e per year of abatement from five main sources: hydropower (both large and small), wind power, geothermal, energy from biomass, and solar. Combining such renewable energy investments with smart grids could result in a further 15 Mt CO<sub>2</sub>e reduction by 2030. To date, Mexico has not accessed the carbon market at scale although the potential exists to do so.

### Wind

18. Mexico has a number of regions with good to excellent wind conditions. In particular the state of Oaxaca at the Isthmus of Tehuantepec in the south of the country presents sites with resources comparable to the best developed sites in the world and average wind speeds equal to or faster than those present at offshore sites in the North Sea in Northern Europe. Other interesting sites across the country are Zacatecas in the highlands, Tamaulipas and Veracruz on the coast of the Gulf of Mexico and the northern states close to the US border, including the shoreline along the Pacific coast of Baja California. Conservative estimations for the potential at the Isthmus of Tehuantepec are in the range of 3,000 MW - 5,000 MW while other estimates reach 15,000 MW for the whole country.
19. As of today, CFE has 3 wind power projects with a combined capacity of 85.5 MW. The first wind plant began its operations in 1984 in Oaxaca, with 7 wind turbines providing a total installed capacity of 1.6 MW (La Venta I). A major step was achieved in 2006 with the commissioning of the La Venta II wind farm with a capacity of 83.3 MW. These, together with a small-scale project in Baja California, have supplied CFE with valuable lessons in terms of the day-to-day operation in high wind conditions.
20. Under the autogeneration framework, private developers have identified 4,000 to 6,000 MW of wind power potential at sites located predominantly in Oaxaca and Baja California, much of which could be implemented by 2014 under an attractive policy and regulatory framework and favorable economic climate and assuming timely construction of additional transmission capacity. In late 2006, CRE tendered permits for approximately 1,500 MW of wind power generation on the Isthmus of Tehuantepec to 13 private sector developers, who have agreed to commission the projects by the end of 2010.
21. A further 505 MW of Oaxaca wind capacity is being tendered by CFE under the IPP scheme. The first two projects of 101 MW each, La Venta III and Oaxaca I, were tendered during 2009, while the remaining 3 projects will be tendered prior to 2012. For the IPPs, a proportionate share of the cost of the interconnection infrastructure will be paid by each of the IPPs and passed-through to CFE.

### Small-scale hydro

22. Unexploited hydropower potential is estimated at 11,500 MW, including an estimated 3,250

MW of small-scale hydroelectric plants (less than 10 MW). At the end of 2008, total installed capacity of hydroelectric power generation was 11,343 MW in operation for public supply on the interconnected network, and 119 MW in privately owned autogeneration projects. The share of hydropower in total electricity generation is currently between 10 and 14% (depending on each year's rainfall volume) but despite plans to build additional generation this will decline to below 9% by 2017. During the last decades CFE has tended to give priority to gas generators, due to its perceived ease and speed of implementation and low cost, and as a result relative participation of hydropower in the energy matrix is decreasing.

23. During the 2010-2013 period, CFE will develop two hydro plants: "La Yesca" in Jalisco with a 750 MW capacity and two plants in Rio Moctezuma with a combined capacity of 92 MW. In terms of small-scale hydros, no new developments are planned by CFE; however, CFE is planning to upgrade the capacity of 10 small-scale hydros by 58 MW. CRE has authorized private sector developers to commission 23 hydroelectric autogeneration projects with a total capacity of 216 MW.
24. Some additional incentives at the regulatory level have been established to encourage private sector investment in hydro power. The national water law grants private investors the possibility of acquiring water rights and the National Water Authority is allowed to issue concessions for self-supply projects for 25-year operational life hydro plants.

#### Solar

25. Mexico has an extraordinary solar resource with average solar irradiation rates around 5kWh/m<sup>2</sup>/day; even more than 70% of the territory displays values higher than 4.5kWh/m<sup>2</sup>, which makes Mexico the ideal playground for deployment of photovoltaic energy, concentrating solar power and solar thermal systems as well. 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.
26. In terms of photovoltaic (PV) energy total installed capacity was 19.4 MW at the end of 2008, with 873kW being installed in 2008. Most of the installations are owned by private sector companies or private communities and correspond to off-grid applications in homes, PV water pumping and communications. Worth mentioning as a pilot project is the installation of 1kW PV systems in low income housing in the city of Mexicali in Baja California funded in part by the IDB. The 57 systems are operated under a new net-metering contract published by the regulator. Due to the high costs of PV, these systems require some form of subsidies. The Institute of Electrical Investigations (IIE) estimated a total potential for off-grid PV systems at a range between 10 MW and 20 MW in the period 2005-2015.
27. In addition, with funding from the GEF, CFE is structuring the hybrid solar thermal-gas project Agua Prieta II, in Sonora. The components of this concentrated solar power are: i) design and construction of a 12-15 MW (peak) solar field consisting of a large field of single-axis tracking parabolic solar collector; and ii) design and construction of a 480 MW (net) gas based thermal plant, with a standard configuration that includes two industrial frame combustion turbines. This will be the first project of this nature in Mexico and Latin America and it is expected to be replicated by demonstrating its financial feasibility in addition to its contribution to CO<sub>2</sub> emission reductions.

#### Geothermal

28. The unexploited potential of base-load geothermal energy is estimated at over 1,500 MW. Mexico is currently the third largest producer of geothermal energy in the world, with an installed capacity of 960 MW, based on high temperature reservoirs. Geothermal power plants, which are all owned by CFE, contribute 2.6% of the total electricity fed into the main interconnected system. Low temperature reservoirs have been solely used for recreational purposes but a project is planned to assess and map the full potential of these low enthalpy reservoirs.
29. The first geothermal station in Mexico started operation in 1973 in Cerro Prieto, state of Baja California. The energy from this source has met more than 50% of the power demand in the state, which operates its grid separately from the rest of the country. This fact shows the flexibility and reliability of geothermal energy as a source for base load electricity.
30. There are four geothermal fields now under exploitation: Cerro Prieto, Los Azufres, Los Humeros and Tres Vírgenes. Cerro Prieto is the second largest field in the world, with 820 MW and 138 production wells in operation; sedimentary (sandstone) rocks host its geothermal fluids. Los Azufres (88 MW), Los Humeros (35 MW) and Las Tres Vírgenes (10 MW) are volcanic fields with fluids hosted by volcanic (andesites) and intrusive (granodiorite) rocks. One small (300 kW) binary-cycle unit is operating in Maguarichi, a small village in an isolated area with no link to the national grid. Despite this significant potential, only plants with an additional combined capacity of 125 MW are planned to be built in the medium term to 2017 in the same sites.

#### Biomass

31. Mexico has a large potential to produce energy from biomass. It is estimated that, taking into account agricultural and forest waste with energy potential and solid urban waste from the ten main cities, the country has an unexploited potential capacity of 9,000 MW. Currently the largest use of biomass for power generation in Mexico is from sugarcane bagasse, which is used as fuel, mixed with fuel-oil, for generating power at sugar mills. As of 2008, 373 MW of sugarcane-based biomass was owned and operated by private sector companies. The CRE has granted licenses for 50 small-scale power generation projects using biomass that corresponds to a total installed capacity of 515 MW.
32. Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) calculates that the 37,595 million tons of municipal solid waste produced in Mexico each year could be equivalent to 0.988 kg/per capita/day. Only 21,822 million tons are placed in landfills, 10,880 million tons are in uncontrolled sites and 3,545 million tons in 26 controlled landfills. These figures among others have led SEMARNAT to an estimation of emissions of 100.6 million tCO<sub>2e</sub>, of which 54 million tCO<sub>2e</sub> correspond to solid waste and 46.4 million tCO<sub>2e</sub> are from water treatment plants. The main biogas projects in Mexico are in Monterrey and Aguascalientes. The biogas energy project potential in Mexico is estimated between 2635 and 3771 PJ per year. CRE has authorized 4 projects with a total capacity of 24 MW.

#### **Barriers to realize the potential of renewable energy generation in Mexico**

33. Despite the significant potential for renewable energy in Mexico, a number of barriers have prevented the investment necessary to exploit this large renewable energy potential and to realize the range of benefits that this would provide in terms of low carbon growth and energy security.

### ***Regulatory barriers***

34. The current regulatory framework for the Mexican power sector, especially the uncertainty about how certain laws may actually be interpreted, constitutes one of the major barriers for the development of renewable energy sources by the private sector. Renewable energy developers must therefore assume significant risks associated with operating under such an uncertain and continually changing regulatory framework. At the same time, regulators have so far lacked the opportunity to learn more of the operational aspects of renewable energy projects within the Mexican context. Such asymmetry of information creates an additional challenge for the regulator that is now in the process of creating a regulatory framework that can adequately fulfill the new legislation for the promotion of renewable energy in Mexico.

### **Limitations on tendering renewable energy projects (IPPs)**

35. As outlined above, according to the Public Service Law for Electrical Energy of 1992 (Ley de Servicio Público de Energía Eléctrica), “public service” generation plants can be owned and operated either by CFE or by private sector independent power producers (IPP).
36. However, CFE’s ability to purchase renewable energy from IPPs is constrained by the following legal requirements:
37. Firstly, CFE is required by law to purchase the cheapest electricity available in the market. As is the case with renewable energy technologies globally, the levelized costs of renewable technologies tend to exceed that of fossil fuel power generation. For renewable technologies to be cost competitive, a number of changes to the way in which costs (within the electricity system) are accounted for are necessary. Moreover, under such a legal requirement there is little incentive for energy planners to consider the potential benefits that renewable energy may provide as part of a diverse energy portfolio in terms of enhancing energy security, reducing fuel price risk, reducing foreign exchange requirements, and allowing a more flexible approach towards energy planning. At the same time, such a least cost approach makes it difficult to factor the cost of carbon, along with other social and environmental externalities, into energy prices. Therefore, this focus on lowest cost power has led CFE to tender over 98% of IPPs for fossil fuel technologies, to the point where so far none of the existing IPPs provide renewable energy.
38. Secondly, CFE has been reluctant to recognize the capacity contribution of intermittent renewable technologies such as wind and solar in its planning process, which further disadvantages promising renewable energy sources .
39. Whilst there have been disincentives for CFE to invest in or contract for renewable energy, there are further barriers for private sector development of renewable energy resources resulting from the lack of transparency and uncertainty of the tendering process. As typical for a vertically integrated monopoly, CFE is able to maintain a certain amount of discretion in how it responds to the existing regulatory framework. Of note are uncertainties over the definition of ceiling prices for the tendering process, over the IPP selection criteria, and with regards to the timing between the invitation to an auction and the actual closing of a PPA. All of these create additional risks and costs for IPPs pushing up the price of the power that they can sell.

### **Small-scale producers**

40. The Electricity Law defines “small producers” as those generators with a capacity under 30 MW that generate electricity solely for sale to CFE. Small producers are paid 85% (without

previous notification) or 95% (with previous notification) of the regional short term marginal cost and there is no capacity payment. Small renewable energy producers get slightly higher rates (95 or 98%). However, the uncertainty of this contracting process has created barriers to small producers preventing these from entering the market .

#### Barriers for autogeneration projects

41. CFE's dominance in determining the timing and prices for IPPs has led private power developers to favor the autogeneration market, which offers a more transparent pricing scheme allowing for greater pricing certainty necessary for private sector developers and financiers to allocate capital at a reasonable cost.
42. Under the autogeneration scheme, however, private developers still face the uncertainty with regards to CFE's role as the backstop off-taker for 'excess electricity', the definition of which lacks clarity, particularly in cases of breach of contract by the off-taker. Although CFE is required by law to buy any excess electricity at a price equal to at least 85% of the regional regulated short-term marginal cost of the power grid, there remains a high uncertainty among private sponsors that this would be the case.

#### *Grid interconnection charges*

43. Electricity produced under the autogeneration scheme is transmitted and distributed via CFE under power sector interconnection regulations. For this purpose a transmission agreement has to be signed between the producer and CFE. A key element of the transmission agreement is the cost of the wheeling charges, which are meant to compensate CFE for the use of the transmission infrastructure. As with the other pricing schemes, there is no clear methodology for calculating these charges, and in practice these are set on a case-by-case basis. Without the issuance of a transmission agreement by CFE to the producer, the producer cannot operate. .
44. For instance in late 2006, CRE gave permits for approximately 1,500 MW of wind power generation on the Isthmus of Tehuantepec to 13 private sector developers. The autogeneration developers were required however to bear the costs for the interconnection infrastructure, estimated at USD 200 million, necessary to link the Oaxacan wind power to the main transmission network.

#### *Project approval procedures*

45. The approval procedures for project developers by CFE have also been an impediment to the development of renewable energy projects. For example, while many hydro projects in the range of 30 MW or less were under development, they have been abandoned due to hurdles in the CFE approval procedures which lead to high upfront and transaction costs, including requirements for costly studies.

#### CFE as power producer

46. Development of renewable energy projects by CFE has been constrained by government expectations that any public sector investment must generate a minimum 12% internal rate of return. This hurdle has further disincentivized CFE investment in higher capital cost technologies such as renewable energy.

#### The new Renewable Energy Law

47. In November 2008, the Congress took the first critical step to address the lack of regulatory and pricing certainty for renewable energy project implementation with the passage of the renewable energy law, Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética, (LAERFTE or “Renewable Energy Law”).
48. The law is based upon the following principles: institutional strengthening of SENER and CRE regarding renewable energy; design and implementation of a Renewable Energy Strategy and a Renewable Energy Program; economic assessment of net benefits for renewable energy projects and economic regulation and barrier elimination. The main objective of the law is to create a stable regulatory environment and to set strong investment incentives for renewable energy developers in Mexico. The corresponding “Reglamento” (secondary regulations) was published on September 2, 2009, which provides a general framework that is to be elaborated in more detail over the next 2 years. A number of studies are underway to consider possible new methodologies and other regulatory instruments for supporting the implementation of the Law. The active engagement of renewable energy developers and other industry and civil society stakeholders during these next two years is widely recognized as being essential to the design of methodologies and regulatory instruments to effectively implement the Law. Below are some of the steps that are underway towards overcoming some of the key regulatory barriers that have been identified.
49. Perhaps of greatest significance is that the LAERFTE shifts responsibility from CFE to CRE for developing a clear and transparent tariff system for power producers. Dispatch and operational rules for renewable energy generators will be reviewed and modified, and regulatory tools will be established for setting up the ceilings for IPP tenders and the tariffs paid by CFE to small renewable energy generators. On the autogeneration side, CRE will have a greater oversight role in the definition of the interconnection requirements, wheeling charges, and the electricity prices to be paid to generators by CFE for the purchase of surplus power generated.
50. At the same time SENER is commissioning studies to further facilitate these regulatory changes, including a study to determine how best to address the externalities derived from electricity generation and incorporate these externalities into the tariff-setting system in order to meet the government’s 2012 goals for renewable energy. CRE is also required to review if and how it can determine capacity payments for intermittent power generators, including those less than 30MW.
51. To help guide the development of renewable energy projects, SENER will develop a resource map – or inventory - for different renewable energy technologies in Mexico. The Renewable Energy Program will include targets for different types of renewable energy technology in Mexico’s energy matrix in the medium term.
52. To address the lack of resources to finance this transformation in Mexico’s energy matrix, the LAERFTE also requires the creation of the Energy Transition Fund (Fondo de Transición Energética), which should provide resources and incentives for renewable energy generation as well as energy efficiency, fund research and development activities with an emphasis on development of local industrial supply chains, increase access to electricity for off-grid areas, and enhance use of renewable energy in non-electricity producing activities.

***Lack of established investment environment***

53. The Mexican renewable energy sector is still in its infancy, which presents additional barriers to its successful development and mainstreaming. The lack of an established track record of

renewable energy projects compounds the challenges to developers by increasing the risk perception of renewable energy projects.

54. The absence of a critical mass of renewable energy projects puts developers in the generally undesirable position of pioneering the application of renewable energy technologies in the Mexican market. For example, new entrants to Mexico's wind sector are cautious given notable difficulties in deploying existing wind turbine technology to the strong wind conditions that are prevalent in Oaxaca. Newer multi-megawatt turbine technologies are now being deployed and a track record for these technologies will need to be developed over time; however the existing wind farms operated by CFE have provided some information and basic knowledge on how to deal with the strong prevailing wind conditions in this region.
55. Furthermore, renewable energy developers are impacted by the high cost of being an early entrant, which manifests directly into higher transmission fees as well as equipment costs. For instance, wind projects in Oaxaca are required to pay for the cost to construct the transmission line to link into the main transmission and distribution network. The developers that are ready to finance and construct renewable energy projects entered into purchase agreements with international equipment suppliers prior to the current financial crisis and are subject to serious supply constraints and resulting high prices. This is particularly poignant among wind developers.
56. Opportunities to reduce equipment costs through a national supply chain for renewable technology have yet to materialize. Although some research and development activities have begun, the lack of renewable energy projects in operation has deprived researchers of critical data for developing technologies specific to the Mexican resources, such as the high wind speeds in Oaxaca. A national supply chain of wind or solar technology and manufacturing capability would decrease the cost basis of equipment, due to reduced transportation costs and lower labor costs. Locally manufactured equipment would also serve to increase the developmental benefit of renewable energy projects by providing high quality employment. An increase in the availability of wind turbines designed to local conditions and the exceptionally high wind velocities would also be expected.

#### ***Financial barriers***

57. The combination of policy and regulatory barriers alongside the lack of an established investment environment as identified in the previous sections, all serve to further increase the capital costs of renewable energy. At the same time some specific financial barriers to private sector investment in renewable energy are also typical in countries with little experience of financing renewable energy.
58. Despite the long track record of Mexican national development banks in financing power generation projects, including to a limited extent renewable energy, they have not developed appropriate financial instruments to specifically address the risks and liquidity needs of the renewable energy sector. This relative inexperience in financing renewable energy projects has led to mismatch among financial products offered by public banks and the demand from private developers.
59. Furthermore, innovative financial products, such as carbon finance mechanisms, have not yet been fully utilized in the Mexican financial market. Although Mexico has 130 million tCO<sub>2e</sub> that could be mitigated, recent UNFCCC figures report that the country only has registered CDM projects that mitigate 8.8 million tCO<sub>2e</sub>. Carbon finance has been difficult to pursue due to lack of information among private sector companies, over-regulation in public companies

and a lack of financial programs to support sustainable projects among public and private banks, in addition to other inherent carbon market barriers such as carbon price volatility, lack of methodologies and difficulties to apply the additionality criterion. To further fuel the challenges of the project that are eligible, carbon prices remain low and there is continuing uncertainty about the structure of the carbon market post 2012. To date, financiers heavily discount expected carbon revenues when analyzing the viability of any eligible project.

60. Each of the above barriers and challenges has been aggravated by the global financial crisis, which threatens to halt the development and construction of important renewable energy projects. Not only has the financial crisis eliminated most, if not all, sources of commercial finance, it has reduced the credit quality of key large offtakers who have already entered into autogeneration supply contracts. The crisis has also adversely impacted the ability of sponsors to allocate scarce equity and accept the relatively higher risk of renewable energy projects in untested markets, such as Mexico. The combination of a growing funding gap, eroded offtaker credit quality, and sponsor risk perceptions, if unaddressed, would delay the implementation of several hundreds of MW of renewable energy projects in Mexico by at least two to three years, which in turn could undermine existing momentum towards creating a supportive policy and regulatory framework for renewable energy as mandated by the new Law, and directly forgoing the opportunity for millions of tons of CO<sub>2</sub>e emission reductions by 2012.

#### **Program description**

61. Through a series of public and private sector interventions, the Program will reduce and in some cases serve to remove key barriers to the development of the renewable energy sector in Mexico. The individual activities are designed to leverage off each other to maximize the Program's impact and ultimately stimulate transformation of Mexico's power sector to incorporate renewable energy as a technically and commercially viable power source that is backed by clear and supportive regulation. The Program incorporates a combination of policy and regulatory support, direct and indirect funding of projects, development enhancing technical cooperation, and knowledge management to create the feedback loop necessary to truly catalyze the sector. The core of this Proposal II is the funding of an envelope of private sector projects, which aims to generate an overall, established and mature investment environment for the Mexican renewable energy sector as well as address the outlined financial barriers. In addition, a range of public and private sector technical assistance activities will address the regulatory, technological and R & D shortcomings of the environment in which these projects will be embedded.

#### ***Addressing the institutional and regulatory barriers***

##### **Climate change policy**

62. Notwithstanding Mexico's notable advances on its climate change agenda, including not only the institutional and legal frameworks, but also its leading role in the international arena, the country lacks sufficient capacity to support sustainable projects that may contribute to GHG mitigation. The IDB and the government of Mexico have been working together on a programmatic basis since 2008 to implement a series of policy-based loans to develop and support the government's climate change agenda. Although these activities extend beyond the focus of renewable energy, these interventions are integral to this CTF program, as they support the policy and institutional framework necessary to transform the energy sector in Mexico to incorporate renewable sources of energy.
63. At the end of 2008, the IDB approved the First Programmatic Operation to Support the Agenda

of Climate Change in Mexico, a policy-based loan with disbursements tied to advancements in Mexico's institutional framework, adaptation agenda, and mitigation agenda. The IDB is now in the formalization process of the Second Programmatic Operation to Support the Agenda of Climate Change in Mexico, which will deepen the results obtained in the First Operation and reflect the successful passage and implementation of the LAERFTE.

64. Mexico's government has confirmed that in spite of the financial crisis, the government has maintained focus on the climate change agenda and related policy measures, which underpin these policy-based loans. The IDB received Board Approval for the Second Programmatic Operation on September 17<sup>th</sup>, 2009 and disbursement is expected to take place during last quarter of 2009. As a continuation of the programmatic approach to climate change, the government is planning to request a Third Programmatic Operation to be prepared and approved during 2010, which further demonstrates the government's commitment to developing the policy framework necessary to execute their climate change strategy.
65. In anticipation of the Third Programmatic Operation, the IDB is preparing a USD 2 million technical cooperation, funded through its Sustainable Energy and Climate Change Initiative (SECCI), as part of a request to support the design of a new National Climate Change Financing Facility for Mexico or a National *Fondo Verde*. This facility would leverage and attract financial resources from Mexico's domestic budget, donors, multilateral and bilateral development banks, CTF, and carbon finance and strategically direct them to Mexico's national development banks and/or commercial banks for delivery of low carbon investments in climate change projects, including renewable energy.
66. Recognizing the potential for attracting carbon finance for the renewable energy and energy efficiency sectors, USD 800,000 of CTF non-reimbursable funding is being sought to undertake a comprehensive assessment of opportunities for attracting carbon finance for the renewable energy and energy efficiency sectors and to develop a programmatic approach towards attracting carbon finance in relevant sectors. This technical cooperation will raise awareness, and provide training, to build the capacity of public and private sector financing agencies and intermediaries on opportunities presented by a future carbon market. In addition, the IDB will be sponsoring CRE to determine how it can facilitate the implementation of programmatic CDM projects and thus create an incentive for emission reducing investments on a sector-wide basis.

#### Implementation of renewable energy law

67. IDB is working with the government to design the specific implementation of the new regulatory framework under the Renewable Energy Law (LAERFTE) through a series of studies. Other development institutions, such as GTZ, NADBank, USAID, and World Bank, have also been working with the government to prepare for the development and implementation of the new law. Close coordination among these development institutions is essential to materialize support for the government in an effective manner.
68. *Pricing mechanism studies:* IDB is sponsoring three studies contributing to the regulation of the LAERFTE with regard to pricing methodologies. The overall aim of the studies is the implementation of a regulatory framework that supports investment in renewable energy in the Mexican electricity matrix through providing greater transparency and certainty of energy pricing and related costs, as well as a fairer distribution of costs so as to avoid penalizing intermittency and other characteristics typical of wind power and other renewable energy generators. These studies will build upon previous reports sponsored by GTZ in the field of

externalities and the issue of capacity payments to renewable energy generators. The studies are expected to be completed by January 2010. Upon completion of the studies, IDB will work with CRE, SENER and other stakeholders to translate the results of the studies into an effective regulatory framework

69. The first study will focus on the determination of the necessary regulatory tools for calculating service fees between generators and distributors in the electricity system in the case of renewable energy and cogeneration. This study will determine maximum prices to be paid to IPPs for electricity sold to CFE, based on a range of economic, environmental and financial considerations. This technical assistance includes a strong focus on capacity-building and training for CRE staff so that they can apply the methodology in an effective manner.
70. The second study will present to the regulator the methodologies for the price calculation paid to renewable energy and cogeneration self-supply and small producer projects for their excess electricity and capacity. Again the methodologies will take into account economic, environmental and financial criteria for setting the tariffs.
71. The third study will establish the adequate pricing methodologies and conditions for use of the electricity transmission and distribution system and associated services required by renewable energy generators. This will include wheeling charges reflecting a fair treatment to both generators and utilities in terms of real incurred costs.
72. *Biomass potential study*: CRE has identified the need for a biomass study that will define the potential for electricity production by sugar cane producers that fit within the Small Producers (<30MW) category. The study will assess the feasibility for such producers to supply power and capacity to the grid and make recommendations to CRE as to which regulatory tools are best suited to support these projects. The cost for this study is expected to be USD 60,000 and is proposed to be paid for with CTF non-reimbursable funding. The study is expected to be completed in March 2010. Upon completion of the studies, IDB will work with CRE and SENER to translate the results of the studies into specific regulations.
73. *Geothermal potential study*: CRE has identified the need for further assessing and mapping the geothermal potential for energy production. The study will assess the feasibility for such producers to supply heat and power, as well as capacity to the grid and make recommendations to CRE as to which regulatory tools are best suited to support these projects. The cost for this study is expected to be USD 80,000 and CTF non-reimbursable funding is requested for this.
74. *Cogeneration efficiency study*: CRE has identified the need for a cogeneration study that aims to define the efficiency criteria and tools by which the regulator will issue permits to cogeneration projects on the basis of appropriate technical standards. The cost for this study is expected to be USD 100,000 and CTF non-reimbursable funding is requested for this. The study is expected to be completed towards the end of 2009. Upon completion of the studies, IDB will work with CRE and SENER to translate the results of the studies into specific regulations.

### ***Addressing lack of an established investment environment***

#### **Private sector financing of renewable energy projects**

75. Through the strategic deployment of IDB and CTF resources, the amount of renewable power generated in Mexico's energy matrix can be increased to the point where renewable energy investments no longer face the challenges and high costs of early market entrants. Investment

in private sector projects, in particular, will expedite the implementation of renewable energy projects and the resulting greenhouse gas emission abatement sought by the government's climate change policies and new renewable energy law.

#### IDB Private Sector Envelope

76. In accordance with the *CTF Private Sector Operational Guidelines*, private sector investments may access CTF resources through two possible mechanisms. The first is through the presentation of individual projects requiring USD 50 million or more of CTF financing; and second, through the approval of a program or envelope that will fund multiple projects. In those instances where an envelope is presented to and approved by the CTF Trust Fund Committee, approval of CTF financing for the individual projects within the envelope is subject to the internal approval processes of the implementing MDB. This proposal seeks approval for the envelope described below (the "IDB Private Sector Envelope"). To provide additional context, it also includes a description of a sample project to highlight the types of projects expected to benefit from CTF funding within the IDB Private Sector Envelope.
77. The core of this proposal of the Program is the request for USD 50 million of CTF capital for an envelope of private sector renewable energy projects in Mexico ("IDB Private Sector Envelope"). The IDB Private Sector Envelope will complement and be consistent with the USD 15 million already approved for the first intervention within Proposal I. The IDB Private Sector Envelope will provide financing for 2 to 4 renewable energy projects using wind, solar, biomass, geothermal, or small-scale hydro technologies. The projects within the IDB Private Sector Envelope are expected to lead to the installation of between 350 and 450 MW of renewable energy power and provide an annual GHG savings of 0.9 to 1.2 MtCO<sub>2</sub>e. In each case, CTF resources will be used to more effectively leverage the IDB financing pledged to the project – increasing the number of MW of renewable energy that can be installed within the shortest period of time and to yield the highest practical level of GHG savings.
78. Projects will be selected to maximize the impact of CTF resources on the reduction of greenhouse gas emissions. The selection process of individual projects will also take into consideration the financial viability of the projects as well as IDB internal resource allocation. Specifically, the proposed allocation strategy will allow for relatively large projects that are supported by experienced international sponsors, as well as smaller projects with local sponsors, to first create a replicable model and later foster investment by new market entrants. The project described below is illustrative of the types of projects that could be considered for financing under the IDB Private Sector Envelope.
79. Leveraging of IDB resources using the CTF will target barriers that are limiting project development, such as high early entrant costs and lack of established track record. Moreover, the CTF will also help to mitigate the scarcity of available financing in the midst of the current financial crisis. CTF resources can be used in a number of ways to reduce a variety of project risks and make developers, off-takers, and banks more likely to participate in the marketplace. In addition, IDB participation in the IDB Private Sector Envelope will allow greater coordination with governmental entities as well as access to technical expertise. The IDB's added value may include promotion of regulatory reforms through policy-based loans and technical cooperations, collaboration and co-financing with Mexican public banks, evaluation of the potential reduction in CO<sub>2</sub> emissions related to a proposed project and/or guidance in the process of CDM processing and registration. With each additional project in the IDB Private Sector Envelope, CTF resources will be used to establish a track record, demonstrating the application of new technologies, marking a path within the Mexican regulatory framework, and

confirming the bankability of renewable energy infrastructure projects.

80. CTF resources are expected to be applied to projects within the IDB Private Sector Envelope in the form of subordinated loans, guarantees, or equity capital, each with concessional terms. These funds would be used as subordinated debt to close a gap in a project's financing plan, reduce the average cost of capital (due to high equipment costs, early entrant costs, etc.) to a point where a project meets the sponsor's investment requirements or to provide an additional subordinated financing tranche to give the necessary comfort to senior lenders. Guarantees would be considered when sufficient funding could be accessed in the market, but where certain risks (e.g. technology/regulatory) needed to be shared. Equity capital would be appropriate in instances where the level of risk was such that loans and guarantees could not be structured, for example, in the exploration phase of a geothermal project. The specific financial instrument and level of concessionality will be considered and structured on a case-by-case basis depending on the particular circumstances of the projects' financing plans, but in all cases will use the least amount of CTF resources and the least concessional terms required to have the desired catalytic impact.
81. The proposed IDB Private Sector Envelope of projects is consistent with the role of the private sector, as identified in the CTF Country Investment Plan for Mexico, in that the CTF resources will be used to leverage IDB loan/guarantee support to the private sector – and that of the IFC when the two institutions act as co-lenders – to facilitate implementation of renewable energy projects. Furthermore, the expected initial application of resources to relatively large projects with experienced developers will create a demonstration effect that is a goal of the Country Investment Plan, allowing replication by smaller, local project sponsors.
82. Taking into account the investment and supervision period, the IDB Private Sector Envelope is expected to have a life of approximately 20 years from the date of approval.

#### Sample project

83. The first project to be considered within the proposed IDB Private Sector Envelope is a 250 MW wind power project on the Isthmus of Tehuantepec in the Oaxaca region of Mexico. The project is particularly suited for CTF financing due to its important greenhouse gas emissions savings, its development impact and its demonstration effect. As it is expected to be the largest wind farm in Latin America once completed, this project brings the scale that CTF is targeting. By providing 250 MW of renewable installed capacity, the project will reduce CO2 emissions by an estimated 600,000 metric tons per year and provide 25 percent of the total energy needs of the off-taker, a large Mexican industrial company. The purchase of wind energy will also have a positive financial impact for the off-taker, as the negotiated tariff is lower than the current per-kWh charge for industrials set by CFE, and is expected to remain very competitive under reasonable alternative cost scenarios. Certified Emissions Reductions (CERs) generated by the project have been assigned to the off-taker under an Emission Reductions Purchase Agreement.
84. Moreover, the experienced European developer of this project is bringing an internationally recognized and tested technology to the region that is capable of harnessing the strong wind conditions on the Isthmus of Tehuantepec, thereby providing an important demonstration effect for international and local developers alike. This demonstration effect is strengthened in that this project is one of the first private wind farms in Mexico under the autogeneration framework and will serve as an example for future projects. The successful implementation of this project is a critical first step for this developer, which has signed a cooperation agreement

with the off-taker to jointly develop future investments in the renewable energy arena in Mexico. The project will allow the off-taker to reduce its carbon footprint, while continuing to benefit from the reliability and convenience of the existing electricity grid.

85. The project, with a total cost of approximately \$525 million, requires significant debt financing, which is a challenge in the current liquidity constrained market. In anticipation of leveraging USD 30 million of CTF funding for the project, both IDB and IFC have deemed the project eligible for financing and have begun the due diligence process. Subject to due diligence, internal approvals, and deployment of CTF funding, IDB would be in a position to contribute up to USD 50 million of senior debt, and IFC would provide a maximum of USD 75 million of senior and subordinated debt. IDB and IFC are working with the sponsor to identify lenders, including commercial banks and international and Mexican development banks, willing to provide the remaining debt financing. The sponsors have invited Nacional Financiera (NAFIN) to co-finance the project alongside IDB and IFC, which would provide NAFIN with significant experience in project finance for wind power projects.
86. Participation of IDB and IFC is proving particularly important, as the project is adjacent to an important migratory bird corridor and sits on Ejido land, a local community that falls within the definition of Indigenous Peoples for both of IDB and IFC. IDB's and IFC's environmental and social due diligence and monitoring will confirm that any relevant impacts and/or risks of the project are properly evaluated and mitigated. In addition, a study is being undertaken in connection with the project to evaluate the cumulative impact on endemic and migratory bird and bat populations of existing and future wind farms in the region. This information will be shared with SEMARNAT and will serve as an important baseline of information for as many as ten additional wind projects, totaling 1,350 MW that are planned for development in the vicinity.
87. In addition to pioneering solutions to environmental and social issues, the project faces the economic challenges associated with being a new entrant. As with the project in Proposal I, this project bears higher operating costs due to incremental transmission fees to fund the build-out of the transmission line. Together, the environmental, social, and economic issues erect a barrier to implementing the project quickly and efficiently. The projects that are developed in the Isthmus of Tehuantepec in the Oaxaca region of Mexico after these first projects will be able to leverage the efforts of the early entrants and will not need to contend with the additional costs or time.
88. The catalytic effect of CTF resources for the project, as described above, can best be achieved if funds are directed toward addressing the following challenges. First, the project's size implies significant debt requirements, which will be difficult to meet in the current market environment. Second, lenders face credit risk due to the weakened financial condition of the off-taker resulting from the financial crisis. Third, the project is bearing the risk and uncertainty associated with the consistency and strength of the project wind resource. Finally, the regulatory framework is continuing to evolve, albeit in a positive direction, and lacks the stability desired by both the equity and debt providers. The provision of a loan to the project using USD 30 million of CTF funds could address these issues by filling a financing gap and strengthening the creditworthiness of the project. The CTF tranche of the IDB loan would be subordinated to senior debt, and would bear concessional terms, thereby improving the project's financial performance. The beneficial role of the CTF funds will assist in catalyzing commercial lenders to provide senior debt to the project and further fill the funding gap. Although only 5.7% of the total project cost, the proposed CTF financing is equal to approximately 20 percent of the project's equity contribution and will provide a meaningful

cushion for lenders. Without access to the CTF funds, the project may be delayed, as the sponsors may be unable to mobilize sufficient financing to complete the project with the necessary terms, given that lenders will require a significant financial cushion to mitigate the identified risks.

### *Addressing financial barriers*

#### Public sector financing of renewable energy projects

89. In the forthcoming Proposal III for the Program, the IDB will seek approval from the CTF Trust Fund Committee to utilize around USD 70 million of CTF resources to leverage financing from the national development banks and facilitate their role in scaling-up financing for renewable energy projects.
90. Funding from Nacional Financiera (NAFIN), Banco Nacional de Obras y Servicios Publicos (BANOBRAS) and Banco Nacional de Comercio Exterior (BANCOMEXT) complements and catalyzes financing available from local and international commercial banks, as well as international development institutions. Through finance and guarantee programs, the national development banks are often better positioned than commercial banks and sponsors to bear certain risks. Going forward, the role of the Mexican national development banks will be important in mobilizing private sector investment, thereby expanding the pool of available capital to renewable energy projects.
91. Toward this end, and in coordination with its climate change policy-based loans, IDB is working with each of the national development banks through Conditional Credit Line for Investments Projects (CCLIP). In November 2008, the IDB approved a USD 1.2 billion CCLIP for investments in infrastructure and public services for BANOBRAS. The partnership between the IDB and BANOBRAS shares the goals of Mexico's National Infrastructure Program, which calls for financing basic infrastructure services such as energy, water, sanitation and irrigation. IDB is currently negotiating a shared USD 1.2 billion CCLIP for NAFIN and BANCOMEXT. To directly address the significant and unmet financing needs of renewable energy projects, IDB is currently assessing how a portion of the NAFIN/BANCOMEXT and BANOBRAS CCLIPs could be targeted towards dedicated financing instruments for renewable energy projects. It is therefore anticipated that CTF resources could leverage the CCLIPs to increase the role of national development banks within Mexico's renewable energy sector .

#### Complementary capacity building within the national development banks

92. Demonstrating its commitment to implementing its climate change strategy, the government of Mexico has identified the role of Mexico's development banks to finance sustainable projects, including renewable energy and energy efficiency. For example, NAFIN will carry out this responsibility through the implementation of innovative financial mechanisms such as financing and guarantees in support of renewable energy and energy efficiency investments, either directly or directed through commercial banks. In order to achieve this objective, NAFIN has created the Sustainable Projects and Climate Change Unit (UPSCC).
93. As of today, NAFIN lacks the organizational infrastructure to implement its new mandate and finance renewable energy projects, which are typically structured as project financings. In order to build the necessary capacity within NAFIN, IDB is supporting NAFIN with the UPSCC. The staffing and formalization of the UPSCC was one of the conditions to disbursement for the Second Programmatic Operation to Support the Agenda of Climate Change in Mexico discussed to in paragraph 62. In parallel with this effort and to provide real-time capacity

building, IDB will invite NAFIN to co-finance renewable energy projects in Mexico, particularly those benefiting from CTF funds under the IDB Private Sector Envelope. With each project that is co-financed by IDB and NAFIN, alongside other MDBs, bilaterals, and commercial banks, NAFIN will develop hands-on experience building a portfolio of well-structured renewable energy projects.

94. IDB is **seeking \$300,000 of CTF non-reimbursable grant** to further to strengthen the capacity of NAFIN in the area of renewable energy financing, including in support of project preparation for renewable energy, that will enable NAFIN to reduce the upfront development costs for developers, for example through feasibility studies. This will compliment existing SECCI technical cooperation as above, including the forthcoming USD 2 million for a Mexican Climate Change Financing Facility.

### ***Knowledge creation and management***

95. As a result of the myriad interventions of this Program, knowledge creation activities will occur on the ground in Mexico: at the project sites, with the regulators, in research institutes, in discussions with the local population, while measuring migratory bird patterns, and in the board room of renewable energy developers. In order for this knowledge to spread beyond the locale in which it is generated, the Program requires a robust knowledge management component for capturing the knowledge and disseminating it within Mexico, through the IDB, and to the CIF Admin Unit and the broader climate change community, including and especially the UNFCCC.
96. In Proposal III of this Program, the IDB will further outline the knowledge management strategy for the Program and seek approval for a budget to execute the knowledge management component. This strategy will identify the key sources of knowledge creating, and mechanisms for capturing and disseminating relevant knowledge among the appropriate stakeholders, including regulators, government officials, private sector sponsors, research institutes, public and private financiers, NGOs, and communities.
97. The knowledge generated by the Program is expected to fall within four categories: regulatory, technical, environmental, and social. The first wind projects on the Isthmus of Tehuantepec in Oaxaca, which are expected to benefit from CTF resources under Proposals I and II, are already generating critical knowledge in each of these categories and provide a useful framework for anticipating the types of knowledge that will be generated and inform the development of a knowledge management system.
98. Projects in the Isthmus of Tehuantepec in Oaxaca are expected to offer a case study that consists of several types of knowledge including: (i) technical aspects of specific renewable technologies, such as wind turbines, (ii) environmental impacts, including those affecting bird and bats in migratory corridors, (iii) market knowledge regarding wind energy, financing mechanisms, the roles of private developers, investors, the government, and other stakeholders, (iv) regulatory frameworks, (v) the roles of Ejidos and indigenous communities in negotiations with developers, in property rights, leasing and land access issues, etc. (v) opportunities for local community development, and (vi) the identification of areas needing further investment and study.
99. In the area of technology development and transfer, subject to agreement with individual project developers, the data generated from private wind projects may be made available to benefit research institutes and serve as an input into turbine design. The Instituto de Investigaciones Electricas' (IIE) development of new turbine technology would address the

specific wind conditions of the region and facilitate the development of a local supply chain to design, develop, construct, and maintain wind turbines in Mexico. To support this knowledge creation, an IDB request for USD 5.0 million GEF supported Technical Assistance program has been cleared. This leverages additional co-financing from IDB, the government of Mexico and private sector, with the aim for supporting the creation of a competitive supply-chain and services industry in the wind energy sector for the production of electricity. The specific objectives of this cooperation are to: (i) structure a value chain for the production of goods and services at the national level in the wind energy sector; (ii) consolidate the human talent required for the design of state of the art wind turbines; (iii) consolidate the technical capabilities for the manufacturing, testing and certification of wind turbines (iv) establish the necessary industrial capabilities for the production of wind turbines with a high component of national technology; and (v) support the development and provide capacity building to promote wind power application through distributed generation by small power producers. This will help position Mexico as a key player in the world's wind energy market.

100. The knowledge management component of the Program will not only seek to manage knowledge, but will also seek to create knowledge for broad dissemination. For example, instead of preparing a cumulative impact assessment for endemic and migratory birds and bats for an individual wind project on the Isthmus of Tehuantepec in Oaxaca, the USD 100,000 SECCI funded technical cooperation will address the current and future project sites. The results of the study will not only disseminate to future project developers in Oaxaca, but also shared with SEMARNAT. The systematic creation and management of this knowledge will substantially reduce the chances of adverse environmental impacts resulting from GHG saving wind projects, and reduce the development costs of neighboring sites.
101. With respect to social issues, IDB requests USD 100,000 of CTF non-reimbursable finance for a technical cooperation to create a Development Plan for Local Communities on the Isthmus of Tehuantepec in Oaxaca. This region is currently experiencing a significant impact from the construction of multiple private wind farms being developed by companies including recipients of CTF funding. While the companies are implementing certain activities to benefit the local communities, it would be important to structure and implement a program to support community development and investment to make them more sustainable in the long-term. This plan would complement several anticipated investments by CTF and IDB. Moreover, as these are among the first private wind farms to be developed, the creation and implementation of such a plan would provide important social additionality by CTF and IDB to the individual project. Through the proposed knowledge management program for the Program such a plan could have a strong demonstration effect for future projects in Oaxaca, in Mexico, and throughout the region. With respect to economic benefits of wind energy, the IDB requests support for USD 100,000 of CTF non-reimbursable finance for a technical cooperation to assessing the economic benefits of developing a wind power industry within Mexico. This will quantify direct and indirect benefits to the economy as a whole and impact on GDP.
102. The IDB will collaborate with the World Bank, IFC, and other development institutions in this effort to ensure that each institution's efforts are leveraged to maximize the knowledge that is compiled and shared within the Mexican renewable energy sector. This coordinated feedback loop among stakeholders is critical to realizing the transformational potential of this Program.

#### **Transformational impact of the Program**

103. The Program represents a significant collaboration between the public and private sectors within Mexico and the IDB to transform the role of renewable energy within the Mexican

energy matrix. The Program further incorporates the activities of the IFC and World Bank Group, both on a programmatic basis and in the financing of individual projects.

104. The renewable energy potential of Mexico presents many opportunities, yet many challenges. While Mexico is endowed with plentiful sources of renewable power – from the wind, sun, water, and earth – its regulatory framework has prevented these resources from being exploited. As a result, Mexico is far behind similar middle-income countries in establishing a track record in renewable energy. And, at the time when Mexico was able to pass ground-breaking legislation to pave the way for renewable energy to become a significant portion of the energy matrix, the world was subjected to the worst financial crisis in recent history, cutting off needed capital.
105. The proposed Program seeks to address the challenges embedded within the Mexican system and transform the energy sector to incorporate renewable energy on an ever-increasing level. With the encouragement of the IDB's climate change policy-based loans, the critical first step was taken by the government through the passage of the new Renewable Energy Law. Through this Program, CTF funds will be used to directly support the government in the implementation of the new regulatory framework. If successfully implemented, the new framework will level the playing field for renewable energy projects to compete with fossil fuel generation, and thereby increase the amount of renewable energy used to satisfy Mexico's growing demand. The incorporation of environmental and social externalities into the IPP tender process, the possible inclusion of capacity payments for intermittent sources of power, and the shift from CFE to CRE for pricing responsibility will attract the attention of international and local renewable energy developers.
106. Even under a new regulatory framework, however, developers will evaluate whether to enter the Mexican market based on the experiences of their predecessors, the pioneers in Mexico's renewable energy sectors. The financing of renewable energy projects in the near term directly through the IDB Private Sector Envelope of private sector projects and indirectly through Mexico's development banks will create the critical mass necessary to create a solid track record and move Mexico's renewable energy sectors along the path to maturity. These sources of financing will mitigate the challenges presented by the global financial crisis and prevent Mexico from losing additional experience in the renewable energy market.
107. The Program also incorporates critical capacity building and knowledge creation and management for public and private actors. Targeted technical cooperations will build capacity and knowledge within CRE, SENER, NAFIN, and SEMARNAT, helping to tackle issues from programmatic CDM opportunities to cumulative impact assessments for wind projects, among others. Moreover, as Proposals I and II proceed and begin providing valuable lessons to the market, Proposal III of the program will be designed to maximize opportunities for scaling-up of investments. The knowledge management function within the Program will disseminate the information and lessons to benefit regulators, research institutes, financiers, developers, and the public at large.
108. Greater than the value of its individual components, this Program and the commitment of the Mexican government come together to provide a unique opportunity to transform the Mexican energy sector to make way for renewable energy to become a competitive, proven, and reliable part of the energy matrix.

### ***Potential GHG Emissions Savings***

109. The IDB Private Sector Envelope is estimated to provide funding to 350 to 450 MW of renewable energy projects and is expected to offset approximately 4.5 – 6.0 MtCO<sub>2</sub>e over five years from 2010 to 2014.
110. The GHG mitigation potential of the technologies (wind, solar, biomass, geothermal, and small-scale hydro) that may be used by the projects in the IDB Private Sector Envelope is high. Each of these technologies is technically viable, commercially available, and zero or low emitting.

### ***Cost-Effectiveness***

111. The cost effectiveness for the CTF funds in the IDB Private Sector Envelope is estimated to be 4.5 – 6.0 MtCO<sub>2</sub>e for five years from 2010 to 2014 abated per USD 50 million of CTF investment, which is equivalent to approximately USD 8.33 to 11.11 per tCO<sub>2</sub>e abated per CTF dollar invested.

### ***Demonstration Potential at Scale***

112. The expected GHG emissions from the Mexican power sector under a business as usual case is estimated at approximately 850 MtCO<sub>2</sub>e for five years from 2010 to 2014. As noted above, the 350 to 450 MW IDB Private Sector Envelope is expected to result in a reduction of an estimated 5 – 6.5 MtCO<sub>2</sub>e during this same time frame. Based on an estimated 825 MW of total private renewable energy projects that could be conservatively expected to be implemented over the same five year period, an estimated 12.3 MtCO<sub>2</sub>e would be abated over the five-year period from 2010 to 2014 (in addition to the GHG emissions abatement from the renewable energy power generation that is currently installed and expected to be fully commissioned and operational during 2009).
113. As outlined in this Proposal, a set of targeted technical cooperations from the CTF and IDB's SECCI are supporting the Mexican regulator to efficiently implement the Renewable Energy Law, developing capacity within NAFIN, and addressing environmental and social challenges associated with certain renewable energy development, among others. Together, the implementation of the law, capacity building efforts, and financing of renewable energy projects create the environment necessary for future renewable energy projects to be developed without the challenges currently impeding the scaled-up deployment of renewable energy in the Mexico electricity market.

### ***Development Impact***

114. The development of the projects within the IDB Private Sector Envelope, as well as the scale-up of renewable energy in Mexico, is expected to promote sustainable economic development in Mexico.
115. The IDB Private Sector Envelope of wind, solar, biomass, geothermal, and/or small-scale hydro projects will create a meaningful amount of renewable energy and will have a broad developmental impact. Primarily, the IDB Private Sector Envelope will provide installed capacity to meet growing demand for energy in Mexico and reduce GHG emissions by partially offsetting what would otherwise likely be thermal generation in the form of combined cycle

natural gas generation or coal generation. Beyond meeting demand, by nature of their private sector origination, projects in the IDB Private Sector Envelope will demonstrate that renewable energy is competitive, and in fact, makes good business sense. This demonstration effect is a key goal of the IDB Private Sector Envelope, which seeks to finance projects with the participation of both experienced, international sponsors as well as local companies.

116. The IDB Private Sector Envelope of projects will bring environmental and social benefits to Mexico through employment generation, corporate social responsibility outreach as well as through knowledge sharing and environmental risk mitigation activities. Locally, individual projects will create jobs, become a source of additional income for landowners, introduce new technologies and draw attention to potential environmental and social issues associated with the process of economic development. In the case of the Sample Project described above, as a result of the sponsor's commitment to local employment, it is expected that a minimum of 20% of the estimated 1000 workers will be members of the local ejido. 90% of ejido members have signed 30-year land use agreements that permit the construction of necessary infrastructure in return for ongoing compensation, but do not interfere with other land use activities. On the environmental side, IDB is funding a study to assess the cumulative impact on endemic and migratory bird and bat populations of existing and future wind farms in the region in order to assess a key concern stemming from the multiple projects converging on one area of Mexico. This study will be shared with local stakeholders and provided to SEMARNAT so that they may continue to build upon the data collected and develop and implement appropriate mitigation programs.
117. The IDB Private Sector Envelope of projects is also expected to bring advanced renewable energy technology to Mexico. In the case of the Sample Project, the turbines provided by the international sponsor are specially suited for the severe wind conditions of Oaxaca.
118. The technical cooperations play a key role within this proposed program approach with regards to fostering sustainability of the CTF investments: specific technical cooperations will strengthen institutional and technical capacity in key areas, including for strengthening the regulators capacity to implement a well designed Renewable Energy Law that creates a sustainable investment and operating environment needed for the successful implementation of renewable energy projects in the medium and long run. Furthermore, IDB's technical cooperations with regards to the design and development of a National Climate Change Financing Facility will identify and target relevant capacity-building necessary to strengthen the role of local capital markets in scaling-up financing for the renewable energy sector.

### ***Implementation Potential***

119. The passage of the new Renewable Energy Law and its implementation, as supported by the Program, are expected to create a transparent and predictable regulatory framework that will attract international and local sponsors to develop and scale-up renewable energy projects throughout the country. The technical cooperations of the proposed Renewable Energy Program are a key element for the successful implementation of the Renewable Energy Law.
120. The IDB Private Sector Envelope is expected to mobilize USD 70 to 80 million from IDB plus approximately USD 580 to 770 million from project sponsors and other lending sources including the IFC, commercial banks, bilateral financiers, and/or export credit agency financing.
121. This Proposal is also requesting a total of USD 1,54 m of CTF resources to finance the following seven technical cooperation activities: a USD 800K TC for assessing and preparing CDM programs of action for renewable energy and energy efficiency in the Mexican market and

capacity-building in support of this; a USD 300,000 TC to strengthen NAFIN's capacity in financing of renewable energy plus; three TCs to support the regulator with analyses of Mexican biomass potential; a co-generation efficiency criteria study and a TC for Geothermal potential study, as well as; a USD100,000 TC to support the Development Plan for Local Communities and a USD 100,000 TC to study the economic and social benefits associated with investment in the wind power sector. These outlined TCs are leveraging at least USD 2.25 million of IDB SECCI TCs, and will further build upon a USD 5 million GEF project in support of this Program. Together these technical cooperation activities will have a critical role in supporting institutional and technical capacity-building and development as necessary to ensure the transformation of the renewable energy sector in Mexico.

#### ***Additional Costs & Risk Premium***

122. The CTF funds will be structured to help offset the high cost of being an early first-mover in Mexico's renewable energy sector (including the increased development costs and fees imposed as a result of recurrent changes in regulations and requirements to obtain licenses, permits and transmission interconnection and grid access permits), and aim to help the project achieve long-term financial viability given the current financial market conditions. It will also seek to address the specific obstacles identified by commercial bank financiers towards financing renewable energy projects in Mexico at this time. In addition, the structure of the CTF funds will be tailored to achieve the necessary leverage ratios and debt service coverage ratios for the projects within the IDB Private Sector Envelope. The CTF funding will be sized to offer the level of concessional financing that helps the projects to be financially viable when taking into consideration the project risks and current commercial financing terms.
123. CTF financing in the projects will be complemented by IDB financing as well as potential financing from IFC, commercial banks, bilaterals, export credit agencies and revenues from sale or in-kind use of CERs.

#### ***Financial Sustainability***

124. The projects within the IDB Private Sector Envelope, along with the Private Sector Wind Development, are expected to promote sustainability by helping to establish a demonstrated track record for the technical and financial viability of private sector renewable energy projects, and thereby assisting to accelerate the development of the sector. Future project developers are expected to benefit from the development efforts, persistence and high costs encountered by the early movers in the sector, including the projects within the IDB Private Sector Envelope, which should ease the development and implementation process and lower the entry costs for future project developers. The lowering of risks, which results from the establishment of such a track record, along with an improvement in the financial markets, will make Mexico's renewable energy projects attractive on their own merits in the future. The technical cooperations aiming to facilitate the successful implementation of the new Renewable Energy Law are crucial to support the establishment of a track record for successful private sector renewable energy projects.
125. The changes in the regulatory framework combined with the establishment of a track record, as well as the development of financing and guarantee mechanisms by the Mexican development banks, are expected to create an investor-friendly environment that will generate renewable energy projects that do not need to rely on concessional financing. This is particularly true for autogeneration wind projects, which absent the financial crisis, were positioned to secure market

based commercial bank financing.

### *Effective Utilization of Concessional Finance*

126. The renewable energy sector in Mexico remains far from reaching the maturity required for individual private sector projects to attract commercial financing without the assistance of concessional financing. Project developers continue to bear the higher costs and risks associated with early market entry. The challenges faced by projects that are pioneering the uses of renewable technologies in Mexico and generating experience under the existing and new regulatory frameworks raise the return requirements of developers, who must allocate their time, expertise and capital in countries that can provide the acceptable economic returns. The availability of concessional finance for private sector renewable energy projects in Mexico prevents developers from delaying or avoiding investments until the new regulatory framework is fully implemented and tested by other developers, who may not materialize. The current financial crisis further exacerbates the situation, causing a tightening of credit and increase in financing costs for those projects that can even secure financing. These additional financial costs and liquidity constraints prevent projects from being developed and constructed in the near term and thus delay the realization of critical GHG savings, as well as the transformation of the Mexican energy sector.

127. The CTF funds allocated to the IDB Private Sector Envelope will be available to individual projects in the form of subordinated debt, guarantees, and/or equity. The amount of CTF funds allocated to an individual project, which financial instrument is used, and the terms and conditions of the funds will be determined on a project-by-project basis, based on the specific risks and requirements of the project. The structuring of the funds, including the level of concessionality, will be consistent with the CTF Private Sector Operational Guidelines and subject to the IDB's internal approval processes.

128. All projects within the IDB Private Sector Envelope will explore the use of carbon finance to generate capital for the project or to offset the project parties' carbon footprint.

### *Mitigation of Market Distortions*

129. The IDB Private Sector Envelope will provide CTF funds to individual projects; however, the IDB is open to consider working with all qualified private sector renewable energy developers whose projects are financially and technically viable. The IDB would use the CTF resources within the IDB Private Sector Envelope, when necessary, to enable these projects to achieve debt financing and accelerate the scale-up of Mexico's renewable energy market.

### *Risks*

130. The main risks are:

#### Programmatic Risks:

- i. *Approach to developing Mexico's renewable energy market:* There is a risk that despite the attractiveness of CTF incentives, international commercial bank lenders remain too risk adverse or capital constrained to return to Mexico's renewable energy sector in the immediate term. Should this happen, renewable energy development is likely to stall until the financial crisis is over and the desired 825 MW of additional renewable energy

expected to be mobilized in the coming three to five years may not happen. IDB will aim to mitigate this risk by structuring CTF financing to specifically address the barriers preventing commercial bank lenders from entering the market and developers from remaining in the market;

- ii. *Regulatory regime:* There is a risk that the revisions to Mexico’s new Renewable Energy Law and modifications to sector regulations, including the future tariff regime, may not level the playing field for renewable power sources or attract investors. The World Bank and IDB’s CTF interventions aim to address this risk by working with the government to design the regulations and by providing a feedback loop for project level information to be obtained by the government, regulators and other sector participants;

**IDB Private Sector Envelope Risks:**

- iii. *Identification of projects:* There is a risk that IDB will be unable to identify projects that are financially and technically viable, and that require concessional financial support from CTF resources within the IDB Private Sector Envelope. This risk is mitigated by the IDB’s extensive knowledge of the renewable energy market in Mexico and assessment of the pipeline of renewable energy projects that are or will be eligible for financing in the near term. In addition, IDB and IFC have deemed a project that could benefit from USD 30 million of the USD 50 million IDB Private Sector Envelope eligible for financing.
- iv. *Individual project risks:* In selecting projects to benefit from the IDB Private Sector Envelope resources, the IDB will consider a number of risks that are typical of similar transactions, including tariff and market considerations, completion risk, technology concerns and volatility of the resource supply. The priority of dispatch for renewable energy projects and ongoing public sector work to develop the regulatory framework will serve as mitigating factors. IDB’s approval process also requires extensive due diligence to identify and mitigate risks early in the course of project development. Residual risks stemming from the inherent uncertainty of most renewable energy resources, possible cost overruns and other factors may also be addressed through financial structuring measures such as the establishment of minimum financial ratios or reserve accounts.

***Performance Indicators***

131. The performance indicators outlined below are derived from the CTF Results Measurement Framework dated April 3, 2009, as well as Mexico’s Country Investment Plan. These indicators will be tracked at least annually.

| Indicator  | Baseline       | Anticipated Results by December 2014 (5 years) unless otherwise specified* |
|--|----------------|--|
| <b>IDB Private Sector Envelope:</b>                            |                |  |
| Total MW of projects funded by the IDB Private Sector Envelope | 0 MW           | 350 – 450 MW   |
| Total GWh of projects  | 0 GWh per year | 1.4 – 1.8 GWh per year   |

|  |  |   |
|--|--|---|
| funded by the IDB Private Sector Envelope                                  |  | (assuming 350 – 450 MW fully commissioned, operating at 45% capacity factor and an average availability of 95% over 8,760 hours during the year )   |
| CTF financial leverage for the IDB Private Sector Envelope of projects     | N/A  | 1:14 – 1:18<br><br>(based on CTF funding of USD 50 million for 350 – 450 MW at an approximate cost of USD 2000 per kW)  |
| GHG emissions avoided by the IDB Private Sector Envelope of projects       | 0 MtCO2 per year   | Approximately 0.9 – 1.2 MtCO2 per year, 4.5 – 6.0 MtCO2 during the five-year period 2010 to 2014<br><br>(equivalent to 350 – 450 MW at 45% capacity factor over 8,760 hours per year and an emission factor of 0.65 tCO2e / MWh (source: CDM-UNFCCC)) |
| CTF cost effectiveness factor for the IDB Private Sector Envelope          | N/A  | USD 8.33 to 11.11 per tCO2e abated per CTF dollar invested  |
| Abatement cost for the IDB Private Sector Envelope                         | N/A  | USD 32 per tCO2e  |
| <b>Indicator</b>   | <b>Baseline</b>  | <b>Anticipated Results by December 2014 (5 years) unless otherwise specified*</b>   |
| MW of private renewable energy generation installed and fully commissioned | 682 MW<br><br>(note: this capacity is composed of 420 MW of operating biomass, 119 MW of operating small-scale hydro, and 143 MW of wind, which was partially commissioned at the end of 2008 but is expected to be operational during 2009) | 1,507 MW<br><br>(including an additional 500 MW of wind and 325 MW small-scale hydro, of which an estimated 350 – 450 MW could require CTF support)   |

|   |   |   |
|---|---|---|
| GHG emissions avoided by private renewable energy generation installed and fully commissioned   | Approximately 5.08 MtCO <sub>2e</sub> during the five-year period 2010 to 2014<br><br>(equivalent to 420 MW of operating biomass (22% capacity factor), 119 MW of operating small-scale hydro (24% capacity factor), and 143 MW of wind (40% capacity factor), each at 8,760 hours per year and an emission factor of 0.65 tCO <sub>2e</sub> / MWh) | Approximately 13.02 MtCO <sub>2</sub> during the five-year period 2010 to 2014<br><br>(equivalent to 500 MW at 40% capacity factor for wind and 325 MW at 50% capacity factor for small hydro over 8,760 hours per year and an emission factor of 0.65 tCO <sub>2e</sub> / MWh) |
| Incremental project financing leveraged   | N/A   | USD 1.25 – 1.60 billion (assuming 825 MW at a total project cost of USD 2 – 2.5 million per MW installed and 70% debt financing less USD 155 million estimated CTF contributions, including amounts from Proposals 1, 2, and 4))  |
| <b>Indicator</b>  | <b>Baseline</b>   | <b>Anticipated Results by December 2014 (5 years) unless otherwise specified*</b>   |
| Installed private renewable energy generation capacity as a percent of Mexico's total national installed power generation capacity                            | 1.15%<br><br>(equivalent to 682 MW in private renewable energy power generation divided by 59.5 GW total installed capacity in Mexico)  |   |
| Electricity generated by private renewable energy generation as a percent of Mexico's total national electrical output  | 0.59% at the end of 2008<br><br>(based on 420 MW of biomass and 119 MW of small-scale hydro and 143 MW of wind operating at the end of 2009)  |   |
| * Actual results will be measured on an annual basis. Estimates for some categories were not provided at this time as they are not believed to be meaningful. |   |   |

## Annex 1

### Technical Cooperations

#### Mexico Renewable Energy Program

| <b>Technical Cooperation Name</b>  | <b><u>Source of Funds</u></b> | <b><u>Amount</u></b> | <b><u>Paragraph</u></b> |
|--|-------------------------------|----------------------|-------------------------|
| Development of National Climate Change Financing Facility  | SECCI                         | 2,000,000            | 65                      |
| Assessment, capacity-building and development of programmatic CDM and other Carbon Finance opportunities                           | CTF                           | 800,000              | 66                      |
| Pricing mechanism study  | SECCI                         | 150,000              | 68                      |
| Biomass potential study to support the design of the regulatory framework  | CTF                           | 60,000               | 72                      |
| Geothermal potential study to support the design of the regulatory framework   | CTF                           | 80,000               | 73                      |
| Co-generation efficiency study to support the design of the regulatory framework   | CTF                           | 100,000              | 74                      |
| Technical Cooperation for strengthening NAFIN's capacity for renewable energy financing and support for project preparation grants | CTF                           | 300,000              | 94                      |
| Support for technology development and transfer with a local research institute  | GEF                           | 5,000,000            | 99                      |
| Migratory bird cumulative impact assessment  | SECCI                         | 100,000              | 100                     |
| Study on the economic and social benefits associated with investment in the wind power sector.                                     | CTF                           | 100,000              | 101                     |
| Development Plan for Local Communities   | CTF                           | 100,000              | 101                     |
| <b>Sub-Total – CTF Funded<sup>1</sup></b>  |                               | <b>1,540,000</b>     |                         |
| <b>Sub-Total – Non-CTF Funded</b>  |                               | <b>7,250,000</b>     |                         |
| <b>Total</b>   |                               | <b>8,790,000</b>     |                         |

---

<sup>1</sup> All proposed CTF technical cooperations will be submitted for approval through the IDB's established approval process for technical cooperations.

## Project Budget

### Mexico Renewable Energy Program – Proposal II Summary for 20 Years

|   | <b>Minimum</b>  | <b>Maximum</b>   |
|---|-----------------|------------------|
| <b>Technical cooperations</b>   |                 |                  |
| Technical cooperation administration costs  | 77,000          | 77,000           |
| <b>IDB Private Sector Envelope</b>  |                 |                  |
| Implementation (staff costs for appraising, structuring, negotiating and closing the financing) | 100,000         | 200,000          |
| Legal expenses (external legal counsel)   | 100,000         | 200,000          |
| Supervision, monitoring & evaluation (staff costs and expenses)                                 | 680,000         | 1,360,000        |
| <b>IDB Private Sector Envelope Sub-Total</b>  | <b>880,000</b>  | <b>1,760,000</b> |
| <b>Total</b>  | <b>957, 000</b> | <b>1,837,000</b> |

Notes:

- "Minimum" assumes that 2 projects benefit from CTF funding within the IDB Private Sector Envelope.
- "Maximum" assumes that 4 projects benefit from CTF funding within the IDB Private Sector Envelope.
- Internal project costs will be requested from the Trustee at the time of approval of each individual project approved by the IDB Board of Directors.
- External project costs will be requested from the Trustee as such expenses become due.
- Supervision costs may decline if the tenor for any project funded through the IDB Private Sector Envelope is less than 20 years.

© Inter-American Development Bank, 2009  
[www.iadb.org](http://www.iadb.org)

The Inter-American Development Bank Technical Notes encompass a wide range of best practices, project evaluations, lessons learned, case studies, methodological notes, and other documents of a technical nature that are not official documents of the Bank. The information and opinions presented in these publications are entirely those of the author(s), and no endorsement by the Inter-American Development Bank, its Board of Executive Directors, or the countries they represent is expressed or implied.

1300 New York Avenue, N.W.  
Washington, D.C. 20577  
USA

Authors: Amal-Lee Amin ([amalleea@iadb.org](mailto:amalleea@iadb.org)) and Carla Tully ([Ctully@iadb.org](mailto:Ctully@iadb.org))