Inter-American
Development Bank

IDB PRIVATE SECTOR
CTF PROPOSAL

# Mexico CTF-IDB Group Energy Efficiency Program, Part I

# Mexico CTF-IDB Group Energy Efficiency Program, Part I
# Proposal for Submission to the CTF Trust-Fund Subcommittee

**TABLE OF CONTENTS**

| | |
|---|---|
| *Name of Project or Program* | **Mexico CTF-IDB Group Energy Efficiency Program, Part I** |
| *CTF amount requested* | USD22M loan for the Commercial Banking Envelope<br>USD590,000 grant for IDB-executed knowledge management<br>USD825,000 grant for IDB-executed technical cooperation for Commercial Banks, technicians and SMEs<br>USD265,000 grant for IDB-executed technical cooperation for Public Sector Component<br>USD720,000 budget for implementation and supervision (see Annex II)<br>**TOTAL: USD24,400,000** |
| *Country targeted* | Mexico |
| *Indicate if proposal is a Project or Program* | Public-Private Sector Program |

## EXECUTIVE SUMMARY


1. According to government estimates, up to 18% of Mexico's energy consumption in 2030 could be reduced through cost-effective energy efficiency measures, which would result in significant greenhouse gas (GHG) emission reductions. Mexico's first-tier (commercial banks, non-deposit-taking companies, and others) and second-tier (national development banks) financial intermediaries are well-positioned, and necessary, to mainstream energy efficiency (EE) investments in Mexico, by providing the required financing. By working through both first-tier and second-tier LFIs, CTF funds can effectively and efficiently reach a range of sectors of the economy including large, medium-sized, and small industrial and commercial companies, as well as residential energy consumers.

2. The Mexico CTF-IDB Group Energy Efficiency Program (the Program) will promote scaling up the supply of EE financing products and services by local financial intermediaries (LFIs) in Mexico, by providing them with the financial, knowledge and technical cooperation (TC) needed to develop necessary knowledge and build a track-record of such investments. The investment capital and technical cooperation funds will be provided by the CTF, IDB, commercial banks, donors, and bilateral agencies.

3. The Program is composed of two complementary components: A Public Sector Component and a Commercial Banking Component. In the Commercial Banking Component, three banks will receive financial, knowledge, and technical support in order to mitigate their risk and improve capacity to make EE loans. The Public Sector Component will provide financial support to the Federal Mortgage Corporation (SHF, a national development bank), aimed at developing the financing of more energy-efficient green housing in Mexico. Both components will be supported by knowledge-management (KM) Programs that will consolidate existing knowledge, gather lessons learned and data generated by this Program, and disseminate these to relevant stakeholders throughout the market. This Program Part I Proposal requests CTF resources for the Commercial Banking Component, as well as for a package of TC and KM activities that will support the objectives and implementation of both components. A further detailed proposal for the Public Sector Component will be submitted to the CTF Trust Fund Subcommittee in the coming months (see Annex I for the outline of this Component).

## LIST OF ABBREVIATIONS

| | |
|---|---|
| ABM | *Asociación de Bancos de México* (Mexican Banking Association) |
| BANOBRAS | *Banco Nacional de Obras y Servicios Públicos* (National Bank for Public Works and Services) |
| BANCOMEXT | *Banco Mexicano de Comercio Exterior* (Mexican Bank for Foreign Trade) |
| CCLIP | conditional credit line for investment projects |
| CDM | Clean Development Mechanism |
| CFE | *Comisión Federal de Electricidad* (Federal Electricity Commission) |
| $CO_2e$ | carbon dioxide equivalent |
| CONAPO | *Consejo Nacional de Población* (National Population Council) |
| CONAVI | *Comisión Nacional de Vivienda* (National Housing Commission) |
| CONUEE | *Comisión Nacional para el Uso Eficiente de la Energía* (National Commission for the Efficient Use of Energy) |
| CRE | *Comisión Reguladora de Energía* (Energy Regulatory Commission) |
| CTF | Clean Technology Fund |
| EE | energy efficiency |
| ENACC | *Estrategia Nacional de Cambio Climático* (National Climate Change Strategy) |
| ESCO | energy service company (herein generic term for EE technical intermediaries) |
| EUR | Euros |
| FIDE | *Fideicomiso para el Ahorro de Energía Eléctrica* (Fund for Electricity Savings) |
| FIRA | *Fideicomisos Instituidos en Relación con la Agricultura* (Agriculture-Related Trust-Funds, Central Bank) |
| FIRCO | *Fideicomiso de Riesgo Compartido* (Shared Risk Trust-Fund, Ministry of Agriculture) |
| FOVISSSTE | *Fondo de la Vivienda del Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (Housing Fund of the State Workers' Social Security and Services Institute) |
| FTEASE | *Fondo para la Transición Energética y el Aprovechamiento Sustentable de la Energía* (Energy Transition Fund) |
| GDP | gross domestic product |
| GHG | greenhouse gases |
| GoM | Government of Mexico |
| IBRD | International Bank for Reconstruction and Development (World Bank) |
| IDB | Inter-American Development Bank |
| IFC | International Finance Corporation |
| IIC | Inter-American Investment Corporation |
| INFONAVIT | *Instituto Nacional del Fondo de la Vivienda para los Trabajadores* (National Institute for the Workers' Housing Fund) |
| IPCC | Intergovernmental Panel on Climate Change |
| KfW | *Kreditanstalt für Wiederaufbau* (German development bank) |
| KM | knowledge management |
| LASE | *Ley para el Aprovechamiento Sustentable de la Energía* (Energy Efficiency Law) |
| LAERFTE | *Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética* (Law for the Use of Renewable Energy and the Financing of the Energy Transition) |
| LFI | local financial intermediary |
| M | million |
| MXN | Mexican pesos |
| NDB | national development bank |
| PBL | policy-based loan |
| PECC | *Programa Especial de Cambio Climático* (Special Climate Change Program) |
| PJ | petajoules |
| PRONASE | *Programa Nacional para el Aprovechamiento Sustentable de la Energía* (National Energy Efficiency Program) |
| PPM | parts per million |
| SEDESOL | *Secretaría de Desarrollo Social* (Social Development Ministry) |
| SEMARNAT | *Secretaría de Medio Ambiente y Recursos Naturales* (Environment Ministry) |
| SHF | *Sociedad Hipotecaria Federal* (Federal Mortgage Corporation) |
| SMEs | small and medium-sized enterprises |
| SENER | *Secretaría de Energía* (Ministry of Energy) |
| SOFOLES | plural of *Sociedad Financiera de Objeto Limitado* (Single-Purpose Financial Institution) |
| SOFOMES | plural of *Sociedad Financiera de Objeto Múltiple* (Multiple-Purpose Financial Institution) (herein generic name for all SOFOLES and SOFOMES) |
| t | ton |
| TC | technical cooperation |
| UNFCCC | United Nations Framework Convention on Climate Change |
| USD | United States Dollars |

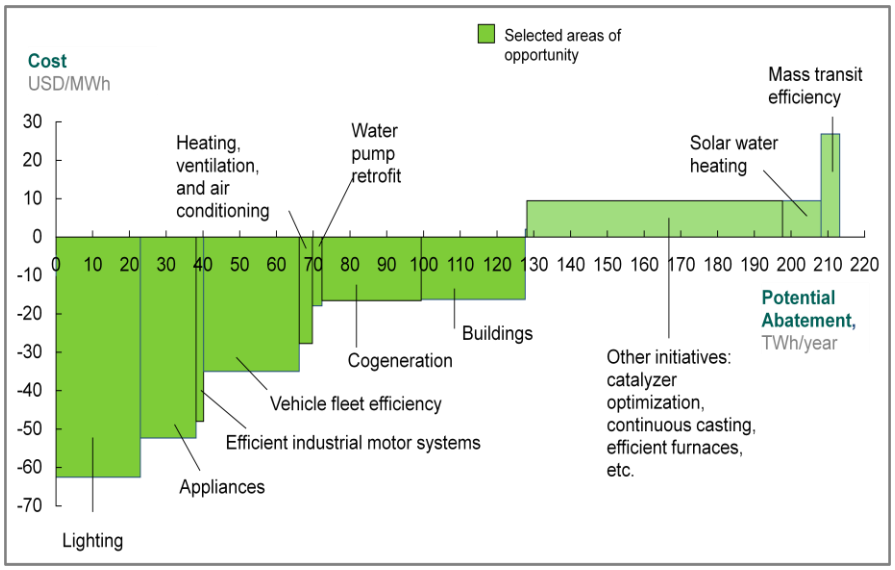
## SECTOR AND COUNTRY CONTEXT

### Energy Efficiency, Climate Change Mitigation and Local Financial Intermediaries

4. GHG emissions due to the combustion of fossil fuels in Mexico were 383 million tons of carbon dioxide equivalent (Mt $CO_2e$) in 2006, or 54% of total national emissions. Mexico's Special Climate Change Program (PECC)[1] articulates the country's commitment to doing its part toward stabilizing global atmospheric concentrations to 450 PPM of $CO_2e$ by 2050. As compared to a business-as-usual scenario, where emissions would reach 1,100 Mt $CO_2e$ in 2050, PECC sets forth the aspirational goal of reducing GHG emissions in 2050 to 340 Mt $CO_2e$, or 50% of year 2000 level. Energy efficiency (EE) is identified as a key element to achieve these overall reductions.

5. Delivering EE is also an important part of Mexican energy and economic policy. Aggressive EE initiatives will provide the country with net economic benefits and competitive advantages over the long term. In addition, energy security concerns are becoming more relevant, especially now that the decline in oil exports coupled with increases in imports of natural gas, gasoline and coal risk turning Mexico from an energy exporter into a net energy-importing country in the coming years. As part of the National Energy Strategy (ENE),[2] the National Energy Efficiency Program (PRONASE)[3] identifies 7 national priority areas of opportunity for energy efficiency: vehicle efficiency; lighting; appliances, heating and air conditioning; cogeneration; buildings; industrial motors, and irrigation pumps (see Figure 1). Residential and non-residential buildings are one of the most important areas of opportunity in terms of long-term impact, since the way they are designed and built is a crucial factor that determines the energy consumption for air conditioning and other energy services. Mexico's national EE policy is proposed and executed by the National Commission for the Efficient Use of Energy (CONUEE).

**Figure 1. Marginal Energy Efficiency Cost Curve for Mexico**




Source: PRONASE, bit.ly/Pronase.

[1] *PECC* (*Programa Especial de Cambio Climático*), 2009. tinyurl.com/pecc2009.

[2] *ENE (Estrategia Nacional de Energía)*, 2010. bit.ly/ENE2010.

[3] PRONASE (*Programa Nacional para el Aprovechamiento Sustentable de la Energía*, 2009, bit.ly/Pronase) was prepared with the collaboration of IDB and the consultancy McKinsey.

### *Energy Efficiency and Local Financial Intermediaries*

6. Energy efficiency opportunities with net economic and financial benefits exist in all sectors of the economy. This includes the seven areas of opportunity identified in PRONASE. The "negative" net costs shown in Figure 1 mean that the economic benefits exceed the costs, even without considering environmental benefits. Therefore, the corresponding investments in energy-efficient technologies, processes, or infrastructure can be repaid through the ensuing energy savings. These investments can be made as retrofits to existing facilities, or used to cover the incremental cost of including efficient equipment or other energy-efficient assets in new infrastructure investments. Access to appropriate forms of financing is key for these investments to take place, and LFIs have a major role to play in providing such appropriate financing to businesses and individuals.

7. LFIs involved in the sectors where the areas of opportunity in EE lie include commercial banks, non-deposit-taking financial institutions (SOFOMES), national development banks (NDBs), and other purpose-specific public or private/public financing institutions.[4] Each of these institutions is able to finance EE in different ways. This Proposal focuses on commercial banks - mostly in the context of retrofit projects - and on NDBs - and their role of providing on-lending to other LFIs.

### *Commercial Banks*

8. Commercial banks provide first-tier finance to customers in Mexico. Repeated crises and subsequent reforms have produced a commercial banking sector that is now relatively robust and insulated from external shocks. As such, these institutions weathered the 2008-2009 financial crisis relatively well.[5] The country's commercial banking sector today is reformed, privatized and active. It is 90% foreign-owned and most banks have good levels of capitalization and liquidity. However, this success is due in part to the development of extremely conservative lending practices, which have become only more conservative in the current risk-adverse financial environment. Such caution severely restricts lending and economic growth in the market.[6] This has been especially problematic for small and medium-sized enterprises (SMEs) which have generally higher risk profiles: only 20% to 30% of Mexican SMEs have access to bank credit.[7] While commercial banks provide most of the lending in the country (USD65 billion in 2008), and are well-placed to be a primary source of first-tier debt financing for EE retrofit projects, their extreme risk aversion generates an avoidance of new markets and products and they provide almost no finance to EE on a project basis.

### *SOFOMES*

9. Through the Multiple-Purpose Financial Institution (SOFOMES),[8] non-deposit-taking financial institutions, the GoM aims to facilitate foreign and local investments into sectors such as the housing, the agricultural and SME sector that are traditionally short of sufficient financial resources. Most SOFOMES focus on a specific market niche, e.g. housing. The recent financial crisis has had a serious impact on SOFOMES, and especially on those that are dedicated to residential building finance. The crisis led to

---

4 This includes the housing financing institutions, such as the National Institute for the Workers' Housing Fund (INFONAVIT), the Housing Fund of the State Workers' Social Security and Services Institute (FOVISSSTE), and other housing agencies of the Federal and state governments. Although not considered an LFI under Mexican law, the Trust Fund for Electricity Savings (FIDE), a public/private institution closely linked to the public utility (CFE), has been the primary source of energy efficiency financing for end-users, placing hundreds of millions of dollars of investment in EE across the economy on a cost-recovery basis.

5 See: Buchanan, R. and Bussey, J. 2010. "Banks Buck the Crisis", in: LatinTrade Magazine, Jun 22. bit.ly/bbuckc.

6 Commercial lending to enterprises in Mexico increased at only 3.7% in the period 1996-2009, whereas it grew at 11.1% for other financial intermediaries in the same period. Source: Banxico statistics, July 2010.

7 Source: Banxico statistics, July 2010.

8 Single-Purpose Financial Institutions (SOFOLES), created by law in 1992, are the predecessors of the SOFOMES, which were created in 2006. SOFOLES and SOFOMES are herein generically referred to as SOFOMES.

many investors in SOFOMES recalling their investments. Increasing unemployment within Mexico as well as the USA (remittance payments have dropped significantly since 2008) led to a higher non-performing loan ratio within SOFOMES and as a result further reduced access of SOFOMES to local and international financial markets. In the wake of the crisis, 79% of the SOFOMES market has been affected by bankruptcy, mergers or the credit crunch. Today, in 2010, the market is in the beginning stages of recovery.

### *National Development Banks*

10. Amongst other duties, Mexico's NDBs have a critical role in providing second tier financial support (including liquidity, guarantees and some TC) to the other LFIs. NDBs have tended to each specialize in providing on-lending and/or direct financing for specific sectors, namely: for infrastructure to states and municipalities (BANOBRAS); to industry (NAFIN); for foreign trade (BANCOMEXT); for agriculture (Financiera Rural), and for housing (SHF).

11. As indicated by the government of Mexico (GoM), Mexico's NDBs have a potentially key role in scaling-up investment in sustainable projects and delivering reductions in GHG emissions, including renewable energy and EE. As public development institutions with a political mandate to combat climate change, Mexico's NDBs enjoy high visibility and a strong lead role in fostering sustainable investments in the market. Therefore the promotion of sustainable energy investment products and services by national development banks is necessary to enable delivery of low-carbon policy objectives and targets.

12. In their role as second-tier banks, NDBs are therefore well-positioned to mainstream energy efficiency investments throughout the financial sector of Mexico. NDBs can promote innovative financing for energy efficiency investments through their provision of financial support to LFIs, as well as facilitate such investments through offering TC products and services to their clients.

13. Due to their unique nature, NDBs have obligations to both making profit-oriented investment decisions, and delivering national development goals, including those relating to poverty reduction. Through innovative finance and guarantee programs, the national development banks are often better positioned than commercial banks and sponsors to bear certain risks which the private market is not yet ready to take. 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 for renewable energy projects, as well as energy efficiency investments.

## Barriers for Energy Efficiency Financing in Mexico

14. Affordable financing for EE is very limited within Mexico, and this is one of the key factors stunting the development of this high-potential market. Despite the financial attractiveness of most EE investments, they are not financed by LFIs across all sectors because of several barriers, including (i) a lack of *knowledge*, (ii) perceived high *risks*, and (iii), on occasion, a lack of *liquidity*. In some important respects these issues are interrelated, as explained in further detail below. These barriers typically affect both first- and second-tier banks, respectively LFIs that serve end consumers, and the commercial banks or NDBs that in turn finance other LFIs.

### *Knowledge Barriers*

15. Entering the EE field presents a large cost for LFIs due to the learning curve for this industry. Knowledge gaps for EE amongst Mexican LFIs include: lack of awareness of the potential benefits and profitability of EE investments; lack of technical skills to assess and appropriately structure investments; and lack of understanding of products and marketing that are necessary to facilitate such investments. LFIs also lack experience and a track record of EE investments including standard contracts and data on costs and savings that would guide future investments, mitigate risk, and reduce project and transaction costs. This knowledge barrier results in three specific EE financing problems in the market.

16. *Limited provision of finance.* Since Mexican banks lack knowledge and familiarity with energy efficiency investments, they are unable to assess the cash-generating potential of EE projects, and are therefore unwilling to secure loans against the future cash flows of a project.[9] As banks are not familiar with the risk profile of energy efficiency investments, they don't count on the potential benefits of EE measures but solely rely on asset-based lending, where the loan is secured by the assets of the company itself or some kind of asset belonging to the owners of the company. This approach requires that loan recipients have a strong balance sheet, or strong personal collateral of the project owners. As a result, only the strongest or largest (and often international) companies can qualify for reasonably priced energy efficiency investments. Companies with a weaker balance sheet, especially SMEs, often lack access to affordable financing for energy efficiency measures. Consequently, EE activities among Mexican enterprises are almost nil aside from the programs of a few government agencies.

17. *Mismatch in financial terms.* Energy efficiency project value is based on the cash flow accruing to the project host and generated from savings in energy expenditures. Many potential EE projects provide savings that can be used for repayment at a steady, but low rate, over a long term. However, Mexico's constrained financing market currently provides primarily short-term lending. Certain EE measures do have a high enough return to be paid back on these terms, but undertaking only these projects represents a sort of 'cherry picking' throughout the economy, leaving longer-return measures stranded.

18. More appropriately structured finance can provide terms that enable (i) a portfolio of investments that covers a more comprehensive range of EE measures, and (ii) greater participation of SMEs and other enterprises in the market. Currently such finance terms are unavailable in Mexico to all but the largest firms. This especially hinders the growth of the market for EE technical intermediaries ('ESCOs' herein[10]), which are a crucial component of energy efficiency retrofit activities.

19. *High transaction costs.* Structuring a new and unfamiliar investment typically results in relatively high transaction costs and high interest rates, discouraging potential borrowers, even when EE projects themselves may be clearly cost-effective. Furthermore, energy savings are often spread across many small investments which lead to a further increase of transaction cost per unit (scale is therefore a global problem inherent to EE retrofit finance). This is a particular issue in reaching SMEs, as the investments are smaller still. Without reducing these knowledge gaps and learning how to group projects, any given investment's returns are too small to justify the costs of learning about EE investments for a given LFI.

20. Despite many international examples that prove that this activity is profitable, conservative Mexican banks have no particular incentive to invest the resources required to surmount these knowledge barriers. Previous attempts in Mexico and elsewhere to provide EE financing have demonstrated that funds will not be mobilized for EE investments without (i) knowledge building and TC within the financial institutions, and (ii) knowledge building and TC to other parties involved in the projects, such as technical intermediaries and SMEs.

21. Financing for the housing sector faces similar knowledge gaps and barriers, which prevent funds from being allocated to build energy-efficient homes. LFIs currently have no incentive to structure their

---

[9] Efficiency Valuation Organization, 2009. International Energy Efficiency Financing Protocol. bit.ly/ieefp.

[10] Energy efficiency technical intermediaries, which will be generically referred to as ESCOs herein, may include energy service companies (ESCOs), nonprofit agencies, equipment suppliers and distributors, or individual consultants. ESCOs perform services including marketing and outreach, audits, financial analysis, equipment procurement, equipment installation, equipment maintenance over an extended period, and monitoring and evaluation. They serve as a storehouse of technical expertise, they lead and develop the EE projects, and they guarantee the project's technical aspects. Because ESCOs are essentially small service companies that are compensated through the energy savings they generate, they have little collateral with which to leverage financing for EE projects on a corporate finance basis. Equipment installed during EE retrofits has a high installation or removal cost per unit of value and is not highly fungible, therefore make poor collateral. The few successful ESCOs existing in Mexico have used the assets of their owners or wealthy angel investors' equity in order to finance projects.

financing in ways that recognize the value of energy-efficient features or cater to this high-potential market.[11] Banks and SOFOMES that provide mortgages to home-buyers determine the maximum amount for a mortgage depending on the credit rating of the client. In particular the payment to income ratio is usually fixed at 30%. When clients buy energy-efficient homes, the ensuing energy savings create a cash flow to them, but due to a lack of both familiarity with this market and incentive to change, LFIs fail to acknowledge that such savings can decrease the burden of debt and cash flow needs for the client. Home buyers often choose the most expensive home they can get according to their credit rating, but since the ceiling value is capped by a fixed ratio which does not consider efficiency savings, a client that is interested in a more expensive energy-efficient home needs to give up other features - e.g., square footage – in order to compensate for the incremental cost of the energy efficient features. This generates a disincentive to purchasing energy-efficient homes.

***Risk Barriers***

22. Lack of familiarity of all LFIs with EE projects creates a perceived and unwarranted high-risk lending profile for EE investments across the economy. Risk in these projects is perceived to be higher than the LFIs' existing portfolio, equating to above-market interest rates and collateral requirements. This can generally be considered a problem of perceived risk as EE has proved profitable in other markets.[12] Coupled with lack of knowledge, this also becomes a problem of real risks to investors: LFIs are both unwilling and unable to consider the potential cash flows of the project because they lack technical expertise to properly assess the project. As such, it is rational that the LFIs consider EE risk as high, and therefore charge higher interest rates as a compensation for bearing it. The high risk of entering this new line of business is a substantial barrier to banks, as explained in the knowledge barrier section. So aside from a few unsuccessful attempts, Mexican LFIs have largely focused efforts on their traditional lines of business where profits are viewed as secure.

***Liquidity Barriers***

23. Today's financial climate for new investments is poor. The five largest foreign-owned LFIs in Mexico are relatively well capitalized, but continue to enforce restricted lending. Some national LFIs are however indeed facing a simple lack of funds, as a result of the immediate global financial condition. This is particularly true for smaller banks and for construction-focused SOFOMES whose resources are scarce due to the collapse of the North American housing construction market in 2008/2009. This provides an opportunity for second-tier NDBs, in providing scarce resources to financial intermediaries, to positively influence new construction by requiring a focus on energy efficiency in housing design.

## PROGRAM DESCRIPTION

24. The Mexico CTF-IDB Group Energy Efficiency Program is composed of two complementary components: The Public Sector Component and the Commercial Banking Component. Here, Part I of the Program Proposal is outlined, with CTF resources being requested for the Commercial Banking Component, including a package of TC and KM activities to support its effective implementation, and a single TC activity aimed at assisting in the preparation of the Public Sector Component. A further detailed proposal for the Public Sector Component will be submitted to the CTF Trust Fund Subcommittee in the coming months. A preliminary outline and information on the Public Sector Component is presented in Annex I of this document.

[11] 'Green' building (including EE measures) is expected to reach US$35.5 billion in investment in the US this year and then grow at 19% CAGR for the next 5 years. Source: Environmental Leader; Zpryme, July 2010

[12] EE retrofits are expected to reach US$6.6 billion in revenue by 2013. Source: Pike Research, Environmental Leader Insights, July 2010.

## Previous and Ongoing Activities

25. The Program builds upon the experience of a number of activities addressing EE finance that have been carried out with the participation of IDB and other institutions in the past. In particular, IDB has supported FIDE since 1997 through several operations, including the Energy Efficiency Market Transformation Program (2005). In recent years, IDB supported CONUEE in the development of PRONASE. Furthermore, through a climate change policy-based loan (PBL), the IDB has supported the GoM in the establishment of specific climate change goals, such as the implementation of sustainable energy regulations, in the framework of the November 2008 energy reform package. The PBL also included supporting the Environment Ministry (SEMARNAT) in the development of the climate change program (PECC).

26. In addition to building upon the experience of these activities, the Program will profit from synergies with several ongoing activities. In particular, the new tranche of the climate change PBL seeks to support the development of CDM projects, and provide assistance to NDBs in structuring CDM projects. This tranche will also support implementation of PECC adaptation and mitigation activities, including regulations and institutional strengthening. The Inter-American Investment Corporation (IIC) has approved a line of credit for up to USD6M to CELSOL, S.A. de C.V. (Optima Energía, an ESCO), for carrying out energy efficiency initiatives in Mexico's public lighting systems. The IIC will also carry out a feasibility study as a first step in the CDM Program of Activities for reducing $CO_2$ emissions through EE in public lighting in Mexico. These actions support the first ESCO public lighting EE project in Mexico which does not require an initial investment by the municipalities. It is expected to have a strong demonstration effect in-country and in the region. Finally, TC activities by the IDB and other institutions can also contribute towards achieving the goals of the Program, through cooperation with the package of TC and KM activities. (These *associated* components are listed in Table 5, p. 18).

## Commercial Banking Component

27. This Component seeks to transform the commercial side of the energy efficiency finance market. It will achieve this by providing financial guarantees or funding necessary to enable banks to expand their loan portfolios into EE finance, capacity building in order to implement the funds, and a KM program that will collect and disseminate crucial information on the industry to key stakeholders, including past data and lessons learned from the Program.

28. The IDB will work with three commercial LFIs in Mexico to reduce emissions through funding for either direct financing of the LFIs' EE on-lending portfolio or for a partial credit guarantee mechanism. The type of support provided will be structured to respond to the financial needs of each bank: some banks are well capitalized but may want guarantees to mitigate risk while others may need softer-term loan financing to help develop a long-term portfolio of EE sub-loans. Concessionality will address the knowledge costs of entry and increased risks associated with LFIs developing SME-targeted EE lines of credit. EE lines of credit would be oriented primarily towards existing clients within each bank's portfolio, and also expanded to new customers through marketing and outreach.

29. By involving large and small banks in the energy efficiency financing or guarantees component, the Component will have a demonstration impact for different classes of commercial banks. Support will respond to the specific needs of each bank, and provide what is identified as necessary to enable them to develop and disburse new lines of credit for EE projects. The involvement of just three banks is expected to have a large impact on the Mexican market due to its concentrated nature, where five banks dominate.[13]

[13] Almost 90% of banking system assets are allocated to five banks: BBVA Bancomer 26%, Banamex 25%, Santander 16%, Banorte 13%, and HSBC 10%. The same banks dominate 73% of market share: BBVA Bancomer 27%, Banamex 15%, Banorte 12%, Santander 11%, and HSBC 8% (tied with Inbursa for fifth place). Source: CNBV statistics, March 2011.

If several banks develop a lucrative new business line, it will provide a competitive incentive to other banks, and their entry will be facilitated by the KM program.

30. Central to achieving this transformative goal in LFIs will be building the capacity of selected personnel through the KM program and TC. The TC for the LFIs will be complemented by and coordinated with parallel TC to their partner technical agencies and clients. Together these components are crucial to strengthen the local financial market's ability for mobilizing local finance and achieving scaled-up investments in energy efficiency.

31. Efforts by several international and national agencies (including the IDB) and domestic enterprises to finance EE projects have generated some success and experience to build upon. For instance standard energy efficiency project legal and financial structures have been adapted from international markets for Mexico, utilizing existing legal traditions of the country. These experiences indicate that the combination of domestic technical capacity and a growing interest amongst LFIs are sufficient to form a foundation for the transformation of the very nascent EE market, provided adequate support is supplied to overcome identified barriers relating to knowledge gaps, risk and liquidity. The Commercial Banking Component will seek to build upon these precedents and lessons learned.

32. The further goal of this Component of the Program is to maximize the potential for replication by institutionalizing a business line that can scale-up EE investment in Mexico, while demonstrating its environmental and commercial attractiveness so that it can later be replicated in other LFIs. It is expected that other LFIs will be able to participate in the short to medium term as these types of EE investments become commonplace and as costs associated with their implementation reduce over time, due to learning and technical improvements.

33. This commercial component will simultaneously leverage other activities and initiatives the IDB is carrying out with the banking sector, such as planetBanking,[14] GreenPyme, carbon footprint reduction, and access to carbon markets for LFIs. Lending to Mexico's commercial banks will take place in partnership with planetBanking. This product helps financial intermediaries effectively develop the expertise necessary to grow a green loan portfolio by financing projects related to energy savings/efficiency, small-scale renewable energy generation and other carbon-mitigating investments. CTF participation will leverage the following planetBanking main objectives: (i) building capacities and knowledge on climate change risk and opportunities, (ii) addressing the environmental footprints of LFIs, and (iii) promoting LFI's participation in carbon markets.

34. Financial assistance and TC will be geared towards building capacity of the client banks and technical partners, as well as maximizing the replicability of investments. To the extent possible, domestic banks and technical agencies will lead investments, supported by the Program's TC and the KM program. In order to ensure fast and effective implementation of the CTF investments, the Component will work with LFIs that have recently received training on financing efficiency projects via planetBanking or other initiatives, and have demonstrated keen interest in the field.

***Sample Project: 'Bank A'***

35. In the first financial assistance to be considered under the Commercial Banking Component, USD10M in CTF funds will be combined with USD20M in IDB funds to provide the financial assistance necessary to set up new lines of credit for energy efficiency projects within SMEs. The financial assistance will be in the form of direct financing to Bank A with the purpose of supporting on-lending and the growth of an energy efficiency portfolio. The bank will also receive targeted TC and KM support,

[14] planetBanking is one of the key areas of the beyondBanking program (www.iadb.org/beyondbanking). beyondBanking promotes principles of environmental, social and corporate governance sustainability in LFIs in LAC. The program seeks to contribute to Banking of the Future - a type of banking that combines financial profitability with social returns. planetBanking's goal is to respond to climate change challenges through promoting adaptive measures and reducing the direct and indirect carbon footprints of LFIs in LAC.

tailored for the Mexico market. This will build on previous training, and be delivered to select internal personnel. The package of learning will include model legal structures and contracts, models that take into account cash flows from energy savings, procedures and eligibility criteria tools, as well as information on any available guarantees or incentives in the market. Technical and legal support for product development and investment structuring will also be available.

***Investment Terms***

36. This Component includes USD22M in CTF financing for an envelope of projects. It is expected that for each dollar of CTF participation in the form of direct financing or risk sharing facilities, at least other four will be mobilized through IDB and LFI participation. Table 1 summarizes the expected terms and conditions of CTF financing.

**Table 1. Summary of Potential Investment Terms**

| | |
|---|---|
| Aggregate amount of all investments: | At least USD75M |
| **If structured as a senior loan (all CTF interventions under this program are expected to be senior unsecured loans):** | |
| Tenor | 7 - 10 years dependent on needs of the underlying project; grace period to be determined based on program and project need. |
| Seniority / security | Senior unsecured; pari passu with IDB. |
| Pricing | Not less than 75 to 100 basis points. Actual pricing will be determined on a project by project basis. In order to provide a material concession and to tangibly improve project returns so that they are acceptable to early entrants, CTF loans will need to be priced at low rates and longer tenors, hence the minimum rate proposed. |
| **If structured as risk-sharing guarantee facility:** | |
| Tenor | 7 - 10 years dependent on needs of the project. |
| Seniority / security | Senior to sponsor equity, pari passu with IDB and LFI mezzanine product.<br>The CTF loan would have either a subordinated security position in the transaction or be unsecured but in all cases pari passu with IDB's mezzanine product. |
| Pricing | Guarantee Fee not less than 20 to 50 basis points. Actual pricing will be determined on a project by project basis. |
| **These funds are expected to be committed by December 2012.** | |

## Introduction to Public Sector Component

37. As outlined above, NDBs play a crucial role in transforming the Mexican financial sector towards EE investments: Due to their high visibility, public mandate and clear leading role in fostering sustainable investment, NDBs are well-positioned to mainstream energy efficiency into the financial sector lending practices.

38. Towards this end the IDB is working closely with Mexico's NDBs and is currently assessing how a portion of the existing IDB conditional credit lines (CCLIPs) with different banks (such as the USD1.2 billion CCLIP with NAFIN/BANCOMEXT, the USD1.2 billion CCLIP with BANOBRAS, and the USD2.5 billion CCLIP with SHF) could be targeted towards dedicated financing instruments for renewable energy projects and energy efficiency. An important co-benefit of this will be to promote mainstreaming of climate change objectives into the IDB's CCLIPs in the future.

39. As set out in IDB's "Mexico Public-Private Renewable Energy Program" that was approved by the CTF Trust Fund Committee in November 2009, the IDB will seek approval from the CTF Trust Fund Committee to utilize around USD70M of CTF resources to leverage financing from the national development banks and facilitate their role in scaling-up financing for renewable energy projects. In this regard, the IDB has been working with NAFIN in various ways as the government of Mexico has tapped NAFIN to become the main development bank to finance sustainable projects, including renewable

energy and energy efficiency. Among other activities, IDB is currently working closely with NAFIN on the design of a Renewable Energy Finance Facility.

40. In the area of energy efficiency the IDB anticipates to utilize CTF resources of USD50M to leverage a portion of the existing SHF CCLIP to promote energy efficiency and sustainable investments in the Mexican housing sector. Annex I of this proposal outlines the Public Sector Component of this Program in more detail, with the focus on having a transformational impact on the local financial sector, which, through its role in financing construction and mortgages for housing, can in turn catalyze transformation of the green housing sector.

41. The envisioned Public Sector Component of the Energy Efficiency Program will be conducted over various phases in order to allow a step-by-step transformation of both the local financing market and the housing sector. The IDB has hired with its own resources a consultant to develop initial studies for this part of the Program. In addition, in anticipation of full development of the Public Sector Component by the second quarter of 2011, IDB is requesting a USD 265,000 CTF grant to carry out a technical cooperation activity (see Table 2).

**Table 2. Technical Cooperation for the Public Sector Component**

| Component | Activities | Amount |
|---|---|---|
| **Technical cooperation** | • An assessment of the additional resources needed to incorporate feasible changes in architectural designs, building materials, building processes, and urban design, aimed at reducing the energy consumption of houses and housing developments<br>• A strategy to enable SHF to incorporate the new Greener Housing program into its operations | 265,000 |

## Knowledge and Capacity Building Programs

***Rationale***

42. The present Phase I proposal includes TC and KM components that will benefit both private and public sector actors and that will be executed by IDB. Experience in Mexico and other markets in financing EE demonstrates that not only do KM and capacity-building programs significantly amplify the impact of funding, but they are in fact crucial for the success of the program. Lack of knowledge and capacity creates higher transaction costs per unit of savings and has proved to be a major barrier to EE financing attempts in Mexico in the past. Public and private LFIs require knowledge building on a range of issues, including a basic understanding of EE concepts, specialized technical financial and legal understanding, and standardized contracts and legal structures. This understanding will allow LFIs to effectively assess the risks and returns of EE projects, structure financing, and develop new EE credit lines. This is especially important in EE where returns tend to be spread across a large number of measures and transaction costs are high.

43. In order to develop a sustainable energy efficiency financing market, knowledge building and TC for ESCOs that banks can partner with is also important. ESCOs can handle the technical aspects of energy efficiency investments and development and implementation of the projects (see footnote 10). Currently there is almost zero technical or financial data available in Mexico's market for ESCOs working for clients, or for end-users to rely upon and utilize to structure projects. These players need better knowledge and understanding of the market, including data on domestic projects. They would benefit from internationally developed models for financial and technical contracts, and standardized auditing procedures that produce investment-grade audits. Making these more widely available, and providing necessary training for their use, will strengthen the ability of all project developers to successfully finance a project. Lastly it is also important to provide information and training to the energy end-users: in this case Mexico's SMEs, which currently receive little information on the benefits of EE. Strengthening the

flow of information across all of these players is necessary to maintain strong demand for EE services and financing and strengthen the ability of local EE institutions to complete their work.

44. The TC and KP programs will develop data and ready-made informational materials to be delivered by public institutions like CONUEE, in order to assist them in completing their mandate to increase energy efficiency in the economy, thereby enhancing the durability and replicability of this program.

45. The KM and capacity-building programs described here will address needs in both the public and private sectors. This proposal seeks USD825,000 for the TC component, and USD590,000 for the KM program. The project team is also currently seeking other donors to provide cost-sharing, including sourcing internal IDB funds. The precise scope of these components will depend on available resources.

***Knowledge-management Program***

46. The KM program will include support for the Commercial Banking component (see Table 3). The target audience for the KM program includes: LFIs; ESCOs, public EE institutions, and energy end-users. The KM program will target consolidation, creation, management and dissemination of relevant EE information and serve as a cornerstone for delivering the objectives of the Program. Objectives of the KM program include building capacity amongst the target audience, promoting a better regulatory/market environment and reducing perceived risks for future project developers and private financiers. The program will include most or all of the following steps.

47. Before the program begins, a **Knowledge Report** on the EE market in Mexico will be performed in order to update knowledge on the state of the industry, lessons learned, successful contract structures, best technical intermediaries and investment opportunities, any market incentives, etc. This report will be designed to be shared with all public and private LFIs in the market. It will aim to centralize lessons and data from previous work and international best practices, and create and distill an analysis on market opportunities, so that it is accessible for dissemination in a useful format. This will reduce knowledge costs for market entrants. It can serve to communicate any new changes in energy policy.

48. **Capacity-building training materials** for public and private banks, ESCOs, and SME end-users will be developed for use by the TC program, and delivery to and dissemination by partners. These will communicate basic EE financing knowledge as well as the information gathered in the Knowledge Report, and include: commercial banks basic training materials (to be tailored for each); SME basic training materials and booklet, ESCO/technician basic training materials for investment grade audits and best standards.

49. **Standard Contracts** will be developed using existing successful contract structures in Mexico and abroad and tailored for the domestic business, financial and legal environment. These include loan agreements and energy savings agreements, and are to be used as a template or base in order to facilitate future transactions. They will be distributed and made available along with other materials.

50. The KM program will identify local institutional **Partners** (public or private), which will be supported by the data and reports created, and facilitate their dissemination. Through providing support to Partners such as CONUEE and other trade organizations such as the Mexican Banking Association (ABM), the KM program will have greater impact on key sectors of the Mexican economy, promote sharing of data and information existing within these organizations, as well as build their capacity and experience for implementation of existing and new codes and standards.

51. **Monitoring, Evaluation and Dissemination** of project data will take place. This is geared to track the success of the program, and make economic and qualitative data available to players in the market, including SMEs, technicians, and banks, on the projects. This comprises ongoing tracking and reporting, gathering and organization, analysis, and delivery and dissemination of data from SMEs, ESCOs and banks, insofar as confidentiality will allow.

52. **Domestic Communication and Dissemination** of materials developed will take place, through cooperation with Partners. Materials will be made available through the existing online portals of GoM EE Partners and other industry ally Partners.

53. **University Cooperation** will be sought, whereby graduate students are invited to prepare an analysis of the project's success and its context in the domestic industry and given access to public program data. Materials developed through the KM will also be closely shared with the university in order to strengthen educational capacity. This will strengthen the technical skills of graduating students and create a better supply of technicians.

**Table 3. Summary of KM program Package**

| Component | Activities | Amount |
|---|---|---|
| **Knowledge Report** | • Gather and assess all reports and data on energy efficiency in Mexico (sectors, institutions, barriers, players, incentives, lessons learned, resources, successful contract and financial structures, best technical agencies, GoM new policy and incentives, financing)<br>• Develop extensive report for distribution to LFIs and EE agencies, technicians and ESCOs, energy efficiency project developers, SMEs etc<br>• Provide copies for distribution by CONUEE, Mexican Banking Association, Mexico Standards Association, Industry Associations, etc. | 240,000 |
| **Develop Standard Training Materials** | • Develop bank training, drawing on knowledge report and international standards for energy efficiency<br>• Cooperate with, and provide support to existing technician and auditor training programs or trainers to develop or improve curricula | 150,000 |
| **Standard Contracts** | • Using as a base existing work, develop a set of contracts and legal agreements that can be used as a model for future transactions<br>• This includes Energy Savings Agreements (technical party to energy end user), and Loan Agreements (bank to energy end user)<br>• Deliver to CONUEE or other GoM or non-government Partner for distribution | 75,000 |
| **Monitoring, Evaluation, Data Collection and Dissemination** | • Track the success of the interventions, require reporting from banks, SMEs, and technical parties, as much as possible, and make this project and investment data publicly available<br>• Collect required CTF data | 75,000 |
| **Domestic Communication** | • Disseminate materials developed in print, and electronically. Work with domestic Partners as much as possible<br>• Work with GoM and/or domestic organizations to distribute data and materials through their online portals | 50,000 |
| **University Cooperation** | • Invite University students to study Program, assess state of energy efficiency<br>• Share program materials closely with University for training | -- |
| ***Total*** | | ***590,000*** |

***Commercial Banks, ESCOs and SMEs Technical Cooperation***

54. The TC component will target building the capacity of Mexico's banks, SMEs and technical intermediaries. To address the aforementioned knowledge and risk barriers, the Program will include comprehensive **training on energy efficiency lending** to three commercial banks, tailored to each of their needs. Training will seek to build banks' capacity on a full range of energy efficiency financing options relevant to Mexico, from simple equipment loans/leasing agreements to setting up innovative and sophisticated structures using special purpose vehicles and ESCOs, focusing on SME access.

55. The highly practicable training will present a full tool-kit for energy efficiency lending, including:

- Basic EE concepts and how to assess risk and return in EE;
- Lending based on energy savings versus lending solely on a collateral asset basis;
- Special types of contracts needed, including standard loan agreements and types of energy savings agreements or performance contracts (building on contract models developed by the KM program), as well as the best available legal structures to scale up investments and reduce risk;
- The utilization of technical partners to reduce financial risk and knowledge needs, and to generate deal flow (including a revision of the best technical partners in the market), and
- Opportunities in the market, including the policy, regulatory, fiscal and other financial incentives.

56. The TC will also include a **portfolio and market assessment** for each bank that leverages off the market-wide lessons of the KM program and the EE potentials assessment in the Knowledge Report. It will then specifically assesses the comparative strengths and opportunities of each commercial bank according to their portfolio, and make suggestions regarding most effective EE investing strategies. It will involve expert technical support in the setting up of a first round of legal and contracting arrangements whereby the investments will take place.

57. Technical cooperation will also include **capacity-building events for ESCOs**/technicians. Technicians will be identified and trained for the auditing standards being taught to banks. They will be then matched with banks and supported in their first audits, equipment installations, and maintenance, monitoring and evaluation activities – as needed (each ESCO is expected to require different sorts of support).

58. ESCOs/technicians will receive **targeted training** on EE auditing standards and methods, and the same investment-grade audit standards being taught to banks (in order to facilitate their access to finance). Through the program, they will be hired to perform investment-grade **audits** for interested SMEs, and the program will provide funds to **subsidize these audits**. They will receive support for audits, installation, and measuring, monitoring and evaluation from program trainers. ESCOs will later benefit from the circulation of Program evaluation materials from the KM program, including project data.

59. SMEs will also be trained through events taking place in partnership with banks. They will receive KM materials and basic **training courses** on energy efficiency benefits and opportunities, co-sponsored by private sector parties, and hosted by client banks that have developed the new EE credit lines. They will receive a training developed specifically for Mexico SMEs, and coordinated with the technical and banking training courses. An extensive marketing/advertizing campaign will be launched in order to reach the SMEs and their participation costs will be subsidized. If interested, they will receive subsidized, investment-grade energy audits of their facilities.

60. Training materials for these technical components will be developed under the KM program (see above) and structured expressly so as to maximize their potential for wide dissemination to other banks, ESCOs and SMEs, GoM EE agencies, and/or other industry partners.

**Table 4. Summary of TC Package**

| Component | Activities | Amount |
|---|---|---|
| **Financial Institutions** | • Deliver training to three banks, developed under KM program, tailored for each bank<br>• Carry out portfolio assessment, market assessment, strategic advisory<br>• Industry advisory on setting up energy efficiency investments<br>• Industry expert advice in adapting model contracts<br>• Support sourcing, bundling and executing first investments | 225,000 |
| **Technical Intermediaries (technicians, consultants, ESCOs, equipment providers, etc.)** | • Find, contact, engage, and assess 80 technicians<br>• Work with existing technical agencies or training organizations to support new training courses, or hire them directly to give trainings on professional audits, international standards, contracts, and presentation of deals to FIs<br>• Link technicians/ESCOs with work for banks, support them in putting together deals, execution<br>• Technical advisory for professional auditing, auditing support | 175,000 |
| **SMEs** | • Train 800 SMEs (CEOs and technical staff)<br>• Subsidize participation costs for SMEs<br>• Deliver 16 training courses on benefits of energy efficiency<br>• Advertize (radio, trade associations, newspaper etc) and organize logistics | 225,000 |
| **Energy Audits** | • Subsidize energy audits of SME facilities. At average of 6,000 apiece, this is 33 audits. Cost sharing with ESCOs and FIs is expected, and will increase this number | 200,000 |
| ***Total*** | | ***825,000*** |

## Strategy for Transformational Impact of the Program

61. By providing learning and financial support to LFIs in the market, the Program will allow them to overcome market barriers and finance energy efficiency investments. The first tranches of EE finance executed by LFIs will allow them to gain confidence in the market and raise investor interest in energy efficiency products. The new credit lines will provide strong demonstration value to subsequently interested financial institutions in the country, and supporting components of the KM program will help them to structure and offer their own EE lines.

62. Financial assistance will be complemented with TC to the LFIs. As noted, this will include basic training on EE and help with structuring the new credit lines, as well as relevant legal or other specialized support depending on client needs. Standard materials developed, including training and didactic materials, standard loan agreements, energy savings contracts and green mortgages, will be made widely available to other LFIs in the market, so as to facilitate replication and accelerate market transformation. The Program will also ensure knowledge transfer and sharing of lessons learned in structuring EE projects, costs, benefits and technical information to other market players.

63. By also focusing on strengthening capacity and technical capabilities of local technical intermediaries, including industrial ESCOs and green housing construction firms, the likelihood of transformational impact of the Program is significantly increased. These capacity-building activities include support for technical intermediaries with audits, project development, implementation of EE transactions, and structuring and securing finance.

## Fit with Mexico's Country Investment Plan

64. 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 deployment of energy efficiency technologies and processes was a key strategic area for CTF resources,

including through the private sector. The CIP includes five programs: One for renewable energy (IDB-IFC), one for sustainable transport (IBRD), two for energy efficiency (IDB and IBRD), and another IFC energy program, which includes energy efficiency components. The three programs that involve energy efficiency are mutually complementary: IBRD's program focuses on the replacement of lighting and appliances in the residential, commercial, public buildings, and street lighting sectors. IFC's program focuses on large industries. Finally, IDB's Program, set out here, focuses on transformation of the financial sector, targeting LFIs in their role for financing EE investments and for developing a track-record and experience that allows them to focus their own resources for making appropriately structured finance available, scaling up investment in EE across various sectors of the Mexican economy.

## Financing

65. Table 5 below shows the direct components of Part I of the Mexico CTF-IDB Group Energy Efficiency Program. It shows in addition the indicative components of Part II (Public Sector Component, to be submitted to the CTF Trust Fund Subcommittee in the coming months), and a number of associated activities that contribute to achieving the goals of the Program.

**Table 5. Direct and Associated Loans and Activities of the Program (USD million)**

| Description | CTF resources | IDB Group resources | Other resources | Total | Para-graphs |
|---|---|---|---|---|---|
| **Part I (this proposal)** | | | | | |
| Loans or guarantees for banks (IDB:FMK / IIC) | 22.0 | 44.0 | 44.0 | 110.0 | §27 |
| Technical capacity for Commercial Banking Component (IDB:FMK) | 0.825 | | | 0.825 | §54 |
| Technical cooperation for Public Sector Component (IDB:CMF) | 0.265 | | | 0.265 | §41 |
| Knowledge-management Program (IDB:MIF) | 0.590 | | | 0.590 | §46 |
| Implementation and supervision costs for Commercial Banking component | 0.720 | | | 0.720 | Annex II |
| ***TOTAL PART I*** | ***24.4*** | ***44.0*** | ***44.0*** | ***112.4*** | |
| **Indicative costs of Part II (to be submitted in the coming months)** | | | | | |
| SHF Loan (IDB:CMF) | 49.0 | 50.0 | | 99.0 | Annex I |
| Technical assistance and knowledge management activities | 1.6 | | | 1.6 | |
| German financial cooperation loan by KfW to SHF[a] | | | 100.0 | 100.0 | Annex I |
| ***TOTAL PART II*** | ***50.6*** | ***50.0*** | ***100.0*** | ***200.6*** | |
| **Associated loans** | | | | | |
| Bancomer Financing for green construction (IDB:FMK) | | 20.0 | | 20.0 | |
| Loan for CELSOL (Optima Energía) (IIC) | | 6.0 | | 6.0 | §26 |
| PBL Energy Transition for Climate Change, 3rd tranche (IDB:ECC) | | 400.0 | | 400.0 | §26 |
| ***TOTAL associated loans*** | | ***426.0*** | | ***426.0*** | |
| **Associated technical cooperation activities** | | | | | |
| ECC Retainer planetBanking Technical Cooperation (IDB:ECC) | | 0.080 | | 0.080 | |
| ECC Retainer for energy efficiency (IDB:ECC) | | 0.035 | | 0.035 | §41 |
| TC for ESCOs Study (Optima) (IDB:MIF) | | tbd | | | |
| ***TOTAL associated technical cooperation activities*** | | ***0.115*** | | ***0.115*** | |

[a] The German Government has earmarked up to EUR80M for the program starting in 2011, subject to approval.

## FIT WITH INVESTMENT CRITERIA

### Potential GHG Emissions Savings

66. The Commercial Banking Component will provide funding for EE investments in SMEs. A number of opportunities for thermal and electrical EE exist in industrial, commercial and service SMEs (see Table 6). As reflected in PRONASE and in studies carried out in Mexico,[15] the most relevant opportunities for SMEs, in terms of their potential for emission reductions, are high-efficiency industrial motors, cogeneration, air conditioning, and lighting. Assuming that the envelope resources (USD110M) were available as lending products for these four technologies, the estimated emission reductions that would be achieved over the lifetime of the technologies would be 4.33 Mt $CO_2e$ (see Table 7). This is a conservative assumption: the use of envelope resources for guarantee products would increase the availability of resources for lending, and therefore increase the emission reductions.

**Table 6. Energy Efficiency Opportunities in SMEs**

| Sector | Applications | Energy use, PJ | Typical EE technologies |
|---|---|---|---|
| Industrial SMEs | Thermal | 340 | • Cogeneration<br>• Boiler retrofit<br>• Thermal insulation<br>• Solar water pre-heating |
| | Electrical | 233 | • Efficient motors<br>• Variable speed controls |
| Commercial /services SMEs | Thermal | 76 | • Cogeneration<br>• Solar water heating |
| | Electrical | 128 | • Air conditioning<br>• Refrigeration<br>• Lighting<br>• Thermal insulation |

Source: Energy use based on the 2008 Energy Balance (bit.ly/bne2008), excluding heavy industrial sectors (steel, cement, chemical, mining, glass, and pulp and paper).

**Table 7. Emission Reductions and Cost-Effectiveness of the Commercial Banking Component**

| Technology | Mitigation potential (Mt $CO_2e$) | CTF investment (USD M) | Overall investment (USD M) | Emission reductions (Mt $CO_2e$) | CTF cost-effectiveness (t $CO_2e$ / USD) | Overall cost-effectiveness (t $CO_2e$ / USD) |
|---|---|---|---|---|---|---|
| Cogeneration | 61 | 5.9 | 29.6 | 0.34 | 0.057 | 0.011 |
| Industrial motors | 94 | 9.1 | 45.6 | 2.52 | 0.277 | 0.055 |
| Commercial lighting | 47 | 4.6 | 22.8 | 1.25 | 0.275 | 0.055 |
| Commercial air conditioning | 25 | 2.4 | 12.1 | 0.21 | 0.087 | 0.017 |
| **TOTAL/AVERAGE** | **227** | **22** | **110** | **4.33** | **0.197** | **0.039** |

Source: Mitigation potentials and investment effectiveness based on assumptions by Johnson et al., 2009. Investment allocation is proportional to mitigation potential. The calculations assume transaction costs of 20%. The figure for emission reductions is cumulative over the lifetime of the technology.

[15] Johnson et al., 2009. *Low-carbon Development for Mexico*, World Bank. bit.ly/lcdmex; and: McKinsey and Centro Mario Molina para Estudios Estratégicos sobre Energía y Medio Ambiente, A.C., 2009. *Low-carbon Growth. A Potential Path for Mexico.*

67. The technologies considered are technically viable and commercially available, and the mitigation potential is high, because wide-spread replication of the technology across the sector will contribute to a significant proportion of emissions reduction at country level.

## Cost-Effectiveness

68. The Commercial Banking Component's envelope would therefore achieve 0.039 t $CO_2$e per dollar invested, or 0.197 t $CO_2$e per CTF donor dollar invested (5.08 USD/t $CO_2$e; see Table 7). These figures assume no change in current technology costs (technological progress is not accounted for).

## Demonstration Potential at Scale

69. The total emission reductions that could be achieved if the CTF intervention were to be replicated throughout the targeted businesses across the economy, using these four technologies, would be 227 Mt CO2e. The emission reductions would be larger if other technologies are accounted for.

## Development Impact

70. As detailed previously, Mexico is a country with tremendous potential for efficiency-based GHG reductions throughout the economy. Replacing old technologies with more efficient ones, or adding more productive capacity with efficient instead of inefficient technology will reduce the carbon intensity of Mexico's GDP and make its economy more competitive. A reduction in energy consumption will also make Mexico's economy less vulnerable to the volatility of fossil fuel prices. This is particularly relevant for imported fuels such as natural gas, used as a residential, industrial, and power generation fuel.

71. Building the clean, productive and profitable new business lines of EE financial and technical services in Mexico will create not just banking jobs but new jobs throughout the EE industries, including construction, manufacturing, equipment sales, equipment servicing, auditing, energy services, and all of the supply chain employment leading up to the production of new energy-efficient equipment or buildings, as well as the services that support these activities. International experience has shown the labor-intensive nature of green growth.

72. By supporting the development of these industries (green housing, EE services, finance, and efficient equipment manufacturing), and making associated data available, it is expected that perceived risks will be lowered and a replication effect can be induced, including to other Latin American countries.

73. The Program will also favor achieving the Millennium Development Goals. In addition to the indirect effects of the Program on the economy as a whole, it will directly impact households that will benefit from savings in their energy bills, allowing for investment in other basic needs such as health and education. A significant portion of the Public Sector Component will benefit low-income households.

74. The focus of this Component is LFIs. As such its immediate outcomes will relate to the client banks and the individuals that they hire. Table 8 shows some indicators that are anticipated to result from the Component.

**Table 8. Anticipated Development Indicators**

| Indicator | Direct | Indirect employment and direct contractors | Total |
|---|---|---|---|
| Jobs Created | 12 | 45 | 57 |
| High Value Jobs Created | 12 | 45 | 57 |
| Gender Equality (%) | 39% | 48% | 46% |
| Individuals Trained | - | - | 3,865 |

Assumptions and Sources: Gender statistics based on 2010Q1 tertiary professional employment statistics, INEGI. Only employed nationals, formal sector are assumed. Direct Employment: is total number of new full-time direct employees in the client companies as of the end of the client company's fiscal year. Indirect Employment: employees hired by a third party with direct contractual relations to the client company. Direct Contractors: employees hired by third party with direct contractual relations to the client company. Individuals Trained includes employees of LFIs, ESCOs, independent technical contractors, and SMEs.

## Implementation Potential

75. EE is an important part of Mexican energy policy. During the last two decades, the GoM has carried out a number of EE efforts, including the development of a fairly comprehensive set of efficiency standards. The role of EE in the energy sector's policy has been strengthened since the passage in November 2008 of two laws for renewable energy and EE, included within a wider energy reform legal package. The Energy Efficiency Law (LASE) provided CONUEE with a more solid legal standing, while the Law for the Use of Renewable Energy and the Financing of the Energy Transition (LAERFTE)[16] established the Energy Transition Fund (FTEASE), designed to offer financial support to promote both renewable energy and EE. As noted above, the PRONASE, directly stemming from the LASE law, includes GoM priority action areas that would be addressed by this Program. In particular, the Public Sector Component will tackle the opportunities in buildings and air conditioning, while the Commercial Banking Component would mainly address industrial motors, cogeneration, and air conditioning and lighting in commercial buildings.

76. The already strong political interest in Mexico on climate change actions and low-carbon development was further fuelled last year by the 16th Conference of the Parties to the UNFCCC that was held in Cancun. In particular, a sustainable housing initiative was launched by the GoM and private sector representatives in COP16. National attention to the matter makes this a highly opportune time to implement the Program.

77. Timing is also opportune to address sustainability of the building sector. Due to the recent global recession, the building construction sector is suffering a severe lack of financing in Mexico. Builders and the financial intermediaries financing construction are therefore highly receptive to any new terms (such as efficiency requirements) that may be attached to available finance. It is now possible, therefore, to have a significant and lasting impact on the sector in terms of setting higher standards for building efficiency.

78. The implementation potential of the Commercial Banking Component also benefits from and will leverage other activities and financial resources in the market. The USD22M CTF investment will leverage at least USD44M in IDB (international) funds, and USD44M in finance from client (domestic) LFIs. LFIs and other private sponsors are expected to provide their resources for SME workshops, and the Program will also cooperate with knowledge resources and infrastructure of domestic institutional Partners. IDB TC will be provided to at least one commercial bank to assess the potential of their portfolio to support the development of CDM projects. The assistance will also include technical advice to LFI clients on accessing carbon finance and financing project development. The IDB is developing a TC program to assess, enhance capacity-building and development of programmatic CDM and other Carbon Finance opportunities in Mexico. A key focus is on the role of national development banks, such as NAFIN, SHF and BANOBRAS, as well as other public entities including the Energy Regulatory Commission (CRE) and the agriculture sector funds FIRA and FIRCO. This assistance, which was approved for CTF grant funding under the "Mexico Public – Private Sector Renewable Energy Program," will also support implementation of the objectives set out in this EE Program.

## Additional Costs & Risk Premium

79. Despite the potentially substantial profitability of energy efficiency investments, lack of knowledge currently makes this a high-risk investment for Mexican banks, and therefore they have been unwilling to provide finance at commercially viable terms to competent actors in the market. Even given the training and technical support provided by the Program, LFIs may still be hesitant to undertake EE investments as a result of their lack of experience, and entry cost barriers. They will have to dedicate internal human and financial resources towards building a competent team, training, creating new financial products, advertizing and other items associated with developing a new business line. They will also bear the cost

[16] *Ley para el Aprovechamiento Sustentable de la Energía*, 2008. bit.ly/LpeASE. *Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética*, 2008. bit.ly/laerfte.

of risks associated with entering a new line of business where they lack a track record. For these reasons, the LFIs will receive concessional CTF financing tailored to their specific needs in the form of guarantees or loans, in order to compensate for these internal cost barriers, and make entry into these new sustainable and potentially profitable investments feasible.

## Financial Sustainability

80. For an aspiring small energy efficiency project developer in Mexico, the very high costs of financing for efficiency projects (higher than for other sectors) are generally prohibitive, and when procuring financing is possible, the requirement for high returns means that only certain measures can be undertaken, therefore hobbling the development of the industry. By helping the financial sector provide loans on more appropriate terms, a whole industry may open up for skilled technical parties, as well as possibly large end-users that may want to take out financing and manage their own projects. However in order to spur the transition into this field, meaningful economic signals are needed, and utilizing concessional finance to lower costs of finance, coupled with support for activities to strengthen knowledge and capacity of LFIs in these areas, can achieve this. Several attempts by Mexican LFIs and ESCOs to develop this field indicate both interest and will, but also illustrate the barriers that must be surmounted.

81. Experience within the financial sector will become self-reinforcing, as a growing track record and experience built amongst LFIs and technical partners will work to reduce perceived risks and therefore lower the costs of capital. The capacity-building and KM components of the program will generate a virtuous cycle of information to reduce costs of entry for LFIs entering the market, lowering the need for concessional finance. (KM will be crucial to provide transmission of data and therefore learning). Moreover, as global financial markets improve, investments within EE will become more attractive and increasingly profitable in those sectors where regulatory standards and/or incentives are in place. Once substantial learning has taken place, transaction costs will be reduced and investments will be able to be scaled up to a level at which EE investments are financially sustainable, and concessionary finance will no longer be necessary.

82. It is expected that the GoM will continue its long-term and increasing trend of developing and implementing more regulatory incentives and supports for energy efficiency, and these will provide key additional support to the EE industry. It is also anticipated that through this Program cooperation with CONUUE and CONAVI will further strengthen these agencies' role in providing useful EE data and information necessary to support the development of the EE market, which in turn will make future projects more tenable. The Program's ambitious KM program will also foster a better regulatory environment.

## Effective Utilization of Concessional Finance

83. Despite the tremendous potential of EE savings in Mexico, a range of barriers constrain investment. First and foremost is a lack of access to affordable, and appropriately structured, financing for EE investments. While large companies or project developers generally can access less expensive financing and are therefore able to undertake EE investments, small-scale enterprises are largely 'unbanked' and effectively excluded from these projects. In order to develop a sustainable national economy of market-based EE activities, involving many small EE project developers and SMEs, financing on the domestic market must be affordable and available for investments. For that to occur they must take into account the value of EE savings as opposed to other assets.

84. Directly financing millions of small investments in Mexican SMEs would not be an efficient use of CTF resources as the transaction costs would be very high. In order to effectively reach SME customers, the Commercial Banking Component of this Program will direct resources through existing commercial LFIs serving SMEs, by building their capacity to on-lend appropriately structured products for EE. Strengthening the capacities and practices of a few highly interested banks, and then making relevant

knowledge widely available on an ongoing basis to other players in the market, is an effective way to have a transformative impact on the market as a whole. The Program therefore aims to strengthen other players in the market: existing financial institutions, institutional Partners, ESCOs, and SMEs to maximize the impact and sustainability of the Program for delivering scaled-up investments in EE.

85. Whilst EE investments can be seen as win-win in terms of the payoffs, and therefore have self-evident value, international experience demonstrates that financial and non-financial barriers actually constrain them. In a country where EE investing is not a very common practice and typically investments have been led by government-based agencies, it is considered relatively high risk by private investors. Due to barriers relating to lack of information, and limited experience with appropriate financial products and cost structures that recognize the value of energy efficiency, other more conventional lines of business will be favored as they offer greater expected returns on investment. Mexican LFIs would therefore not readily enter this market without support for overcoming these barriers. (Refer to p. 21 for an explanation of the costs associated with this new practice.) Currently there is very limited assistance for entering this field for commercial banks or private enterprises in the market. Some success has been demonstrated by government-supported programs yet these are insufficient to deliver the scale of investment required. Given adequate learning and measures to help reduce costs that will be borne by these first-movers, local LFIs will be able to enter the market, and grow EE business lines to a level where the financial returns of EE projects can finance the upfront costs of projects and provide adequate returns to project sponsors and financiers. This will create sustainable momentum in the market, driven by economic incentives.

86. CTF concessional finance will be blended with other finance to provide reduced interest rates, lower guarantee fees and/or extended tenors that will allow the LFIs to develop appropriate financing products and lending programs for EE investments. The concessional terms and conditions will help LFIs: (i) off-set the upfront costs of product development, marketing and training, and (ii) provide appropriate financial structures to their clients, such as lower interest rates and fees and/or longer tenors.

87. No other concessional resources are currently available to the industry at this time. The government has issued PRONASE including several proposed incentives and regulations but has yet to make these available. The IDB is working with CONUEE to develop the implementation of this policy, however to date, EE activities have been limited to a few large government entities and large companies, and a very few skilled entrepreneur/project developers unaided by economic incentive policies. Therefore, the CTF funds are expected to have a forceful effect in the market, and especially in the financing of the housing sector.

88. CTF finance is needed to provide an economic signal to market participants to change their behavior and develop new approaches for scaling up low-carbon and sustainable investments. By lowering the high cost barriers of making such a transition, the Program will enable realizing the inherently favorable economics of the EE industry and drive the new market forward. In the medium term it is expected that the policy-making process in Mexico will provide further regulatory support for recognizing and appropriately rewarding the value of EE. However, based on current market conditions which lack regulations that create economic incentives, this very early-stage industry requires concessional finance for creating the signals to kick-start LFIs financing of EE investments. Through TC funded by IDB and CTF, the potential for carbon finance to support the investments in EE will also be pursued.

89. Given the different incentives needed by LFIs and their different risk profiles, risk appetite and readiness for deploying an EE program, the structuring of CTF direct financing or a risk-sharing guarantee facility will need to be tailored on a project-by-project basis, whilst ensuring the use of other sources of funding (MDB, private sector, carbon finance and other concessionary sources) is maximized. As such, recognizing the concessionary nature of the funding, CTF resources will be used in the most cost-effective way for delivering greatest impact. As the financial markets in Mexico are relatively liquid and mature, interest rates are generally competitive and low. However, risk perception for financing SME

EE investments is high. In order to provide a material concession and to tangibly improve returns so that they are attractive to early market entrants, CTF loans will therefore need to be priced at low rates. It is expected that for a senior debt loan, the interest rate to be charged to the LFI will range between 75 and 100 basis points, with a maximum tenor between 7 and 10 years.

90. In the case of CTF participation under a risk-sharing guarantee facility, the availability of donor funding willing to cover a first loss position has proven to have a catalytic role in engaging local banks and helping them to set up large-scale financing facilities for EE. CTF, IDB, and the participating LFI will share the risk on a loan portfolio of EE projects that are originated by a financial institution from its own account. First and second tier tranches, as well as the proportion of the loss to be shared by the institutions on the second tranche, will be determined on a project-by-project basis. It is expected that CTF participation under a risk-sharing facility will have a minimum guarantee premium of 20 to 50 basis points, while maximum tenors are expected to reach 7 to 10 years.

## Mitigation of Market Distortions

91. The Program is designed specifically to provide crucial support to nascent EE activities and economic actors in the market – not to displace them. It will stimulate commercial EE lending programs (lines of credit) where there are currently none available in the market, in order to provide finance to diversified range of EE investments which are currently very few in number. The Program will also provide KM tools and resources that are crucial for overcoming barriers to EE investments, including those relating to costs. Furthermore, by making available relevant data, information and learning materials on EE financing to other banks, it will provide benefits to the market as a whole. It is expected to stimulate new economic activity, business growth, and hiring, and open up a previously almost nonexistent market.

92. The Program is structured to have a sustainable impact on the financing of EE across a range of sectors of the economy, and to encourage business practices that recognize and appropriately reward the economic benefits of EE investments and make them commercially attractive options.

## Risks

93. Table 9 shows the identified risks that may affect the implementation of the Commercial Banking Component, as well as the mitigant strategies that will be followed.

**Table 9. Risks and Mitigants**

| Risk | Description | Mitigant |
|---|---|---|
| *First Mover* | The first EE-based lines of credit in the country will face challenges in terms of capacity and experience | The program will provide adequate financial support, as well as technical support all through the project cycle, and to all key members of the projects. LFIs will benefit from the technical support of experienced IDB staff and consultants |
| *Policy* | It is possible that the presidential election of 2012 will result in an administration with a lower priority on EE | Even given this possibility, it is unlikely that the incumbent would reverse EE legislative reforms that have been passed through Congress. The IDB is currently providing policy support to the government's implementation of current EE mandates, and expects significant progress by then. Furthermore the country has a long history of progressive EE actions and institution-building including a substantial catalogue of energy efficiency standards |
| *Demand* | Some past attempts by international bodies to provide EE finance resulted in a failure to be disbursed | Past experience indicates that there was insufficient TC to the LFIs, technical agents and project hosts, and the Program is designed specifically to address these needs. Clients will be sourced from existing bank portfolios, as well as sourced through other channels with the help of experienced technical parties. By empowering local agents to lead projects, the Program expects to also optimize local political navigation |
| *Political Economy* | Mexico is now reeling from the impacts of lost tourism revenues, dropping oil revenues and escalating gang violence. Weak diversity of fiscal revenue sources and falling oil revenues are expected to perpetuate Mexico's vulnerability to external shocks. If these factors were to spiral out of control, economic and political instability could ensue, undermining the project | The current administration is stepping up a long-term development of EE codes and standards with new targeted legislation, and problems in the energy sector only support this trend. This program will be designed for and implemented during already highly austere economic conditions when financing for capital investments is scarce. CTF finance will be invested alongside IDB funds, and the IDB will closely assess expected political stability before executing the investments |
| *Technology* | This risk is common to EE activity in any region, but extremely low if using the right technical intermediary and adequate monitoring maintenance is given to the measures | The Program will use competent technical intermediaries, as well as provide support to them |

## Performance Indicators

94. The performance indicators outlined below are derived from the CTF Results Measurement Framework. These indicators will be tracked at least annually. Suggested performance indicators for the project include:

**Table 10. Performance Indicators for the Commercial Banking Component**

| Indicator | **Baseline** (as of Dec 2010) | Commercial Banking Component Results | | | | |
|---|---|---|---|---|---|---|
| | | **2012** | **2013** | **2014** | **2015** | **2016** |
| Number of commercial banks with specific EE credit lines in operation | 0 | 3 to 4 | 4 | 5 | 5 | 6 |
| Outstanding portfolio of EE Loans to SMEs (USD M) | 0 | 20 | 70 | 140 | 210 | 315 |
| Number of EE Loans to SMEs | 0 | 60 | 230 | 450 | 675 | 1,012 |
| Annual emission reductions* (Mt $CO_2e$) | 0 | 0.13 | 0.26 | 0.39 | 0.40 | 0.40 |
| Annual energy savings* (PJ) | 0 | 1.4 | 3.0 | 4.5 | 4.6 | 4.6 |

* These figures correspond only to the impacts of the loans financed by the Component's envelope. Energy savings are expressed in terms of fossil fuels, including fossil fuels to generate electricity, assuming 7.6 GJ/MWh.

# Annex I.
# Outline of the Public Sector Component

## IDB's support to Mexico's Housing Sector in promoting Energy Efficiency through SHF

### THE ENERGY EFFICIENCY POTENTIAL OF THE HOUSING SECTOR

1. Toward 2030, as projected by the Social Development Ministry (SEDESOL), demand for residential construction in Mexico will intensify especially in cities due to a significant growth in the urban population. The National Population Council (CONAPO) estimates that in the time period from 2005 to 2030 the housing stock in Mexico will increase by 56%. In addition, electricity demand in Mexico is expected to grow at 4.8% a year, with the residential sector currently accounting for around 15% of total energy use in the country.[17] Poorly built buildings are one major contributor to a significant increase in energy use in the commercial and residential sectors. Lighting, air-conditioning especially in warm climate areas of the country, and home appliances are expected to be the main growth areas of residential electricity demand in Mexico. It can be concluded that aggressive energy efficiency measures in the building sector will be a crucial element to enable the country to reach its goal of GHG emission reductions of 50% by 2050.

### ON-GOING DEVELOPMENT TOWARDS ENERGY EFFICIENCY IN THE HOUSING SECTOR

2. The National Housing Commission (CONAVI) and the National Institute for the Workers' Housing Fund (INFONAVIT) have jointly started to promote energy-efficient housing, especially among the lowest-income segment of the population. CONAVI, which provides a housing subsidy to low-income applicants (i.e. those with an income under 4 minimum wages and a family income under 5 minimum wages) through the "Esta es tu casa" program, established that from November 2009, all houses that receive its subsidy under the new house purchase modality should comply with a set of *green* criteria. CONAVI has a fixed amount of money for this Program every year, and subsidies are given on a first-come first-served basis. In parallel, INFONAVIT started offering a premium above its mortgage ceiling to houses complying with the same set of criteria, through a program called *Hipoteca Verde* (green mortgage) and announced in December 2010 that as from 2011 all its mortgages will need to comply with these criteria.

3. CONAVI and INFONAVIT jointly defined the *green* criteria as a set of basic eco-technologies: (i) Fluorescent energy efficient lighting; (ii) solar water heater; (iii) high-efficiency gas heater (hybrid of solar and gas); (iv) thermal insulation; (v) water saving toilets, shower-heads and faucets; (vi) organic and inorganic waste containers, and (vii) water and electricity meters. The use of some of these criteria, such as the solar water heater and the thermal insulation, are dependent on the climate zone.

4. The CONAVI subsidy in its new house purchase modality is given to the home-buyers through the LFI that is giving the mortgage, and is used therefore as a down-payment. Although the subsidy is offered through any LFI, INFONAVIT, FOVISSSTE (which is the equivalent to INFONAVIT for employees of the Mexican Federal Government), and other housing institutions of the Federal and state governments have concentrated virtually all subsidies (96.3% of the total amount in 2009). Only few other LFIs offer green mortgages, and can do it on attractive terms for low-income home-buyers because of the CONAVI subsidy which goes along with it. There is currently no independent market for green mortgages outside of the one linked to the subsidy or to INFONAVIT's *Hipoteca Verde*.

[17] Johnson et al., 2009 (bit.ly/lcdmex).

5. To date the largest number of green mortgages is given through INFONAVIT. In its dual role as mortgage provider and manager of the Workers' Housing Fund, INFONAVIT is restricted to offer a once-in-a-lifetime mortgage to every formal worker i.e. those working in formal institutions obliged by law to give monthly fees to the Fund. As of December 31, 2009, INFONAVIT offered 95,285 green mortgages, 58% of which were made with the CONAVI subsidy. In comparison, in 2009, the supply of mortgages to the Mexican market was approximately 893,000. The maximum *Hipoteca Verde* premium is MXN 16,000. INFONAVIT estimates that financial savings from having a green house is MXN 215 per month or between MXN 65,000-85,000 over the life of the mortgage. However, CONAVI estimates the cost savings is even greater at around MXN 261 pesos per month and that inhabitants can reduce their energy costs by nearly half.

6. Green housing in Mexico is currently known as a product for the poor, which is interesting given the fact that it is the middle and upper classes that have ecological concerns in more developed countries.

**Table AI.1. Major Actors in the Mexican Mortgage Sector**

| Organization | What They Do | Target Market |
|---|---|---|
| **INFONAVIT** | Provide mortgages and pensions for workers by automatically deducting 5% of paycheck | Private sector employees with formal salary |
| **FOVISSSTE** | Provide mortgages and pensions for workers by automatically deducting 5% of paycheck | Public Sector Employees |
| **SHF** | Provide funding for construction loans, mortgages and microfinance loans through financial intermediaries to all market segments with a focus on the lower middle class and poor. | Independent worker, worker in informal sector |
| **CONAVI** | Sets the policies and programs within the housing sector to develop market conditions so that all Mexican families can have a home; provides housing subsidy to poor. | The entire housing market |

## THE CRUCIAL ROLE OF SHF IN INITIATING THE MARKET TRANSFORMATION

7. The Federal Mortgage Corporation (SHF) was created in 2002 as a second-tier housing development bank to help develop the local financial market for the housing sector. It was born out of a crisis in housing as the SOFOMES and commercial banks could not fund the high demand for housing both in terms of mortgages for customers as well as loans to housing developers. SHF mandate is to support financial intermediaries, including SOFOMES and microfinance institutions, by providing funding, guarantees and some TC to help them develop their mortgage and construction lending portfolios. SHF (as of February 2011) works with 23 SOFOMES and microfinance institutions, 3 savings and credit institutions, and 2 banks. 6 further LFIs are currently in the process of entering into the SHF network. As such, since 2007 SHF has dramatically expanded its network of intermediaries.

8. **On the mortgage finance side** SHF's mandate is to develop the local lending market for a target population that is not affiliated with INFONAVIT or FOVISSSTE, in particular workers without social security benefits. SHF's target group represents 19% of the market of those needing homes.

9. SOFOMES play a large role in lending to consumers who either are not covered by INFONAVIT and FOVISSSTE or to consumers who want an additional mortgage beyond the cap offered by each of these institutions. SOFOMES cover 13% of the market. SHF provides a lot of the funding for SOFOMES to operate and its contribution to market share is slightly less than 13%.

10. **On the housing construction finance side**, SHF is required to support local financial intermediaries in the development of their construction lending portfolios. Within the market of short-term bridge loans for housing developers, SHF has traditionally offered guarantees to SOFOMES, in order to ease their access to financing from commercial banks. However in the current context of lack of liquidity within the

market, there is a high demand for SHF to fund this segment through providing financing lines to SOFOMES.

11. Currently housing developers who are building green houses are focused on covering the demand created by INFONAVIT's *Hipoteca Verde* program. Beyond this market, developers have shown little interest in building with green technologies as they have little incentive to produce more expensive houses. As outlined above, the demand for houses far outstrips the supply and therefore the major objective of developers it to feed the demand in the cheapest and fastest way. However, if a market shift towards a high demand for green houses would occur, the incentives for developers to build these types of houses would increase significantly.

12. The potential for significantly increasing the energy savings due to energy-efficient housing in Mexico lie in two areas:

a) Expanding the green housing market by creating tailor-made financing schemes in LFIs beyond INFONAVIT and FOVISSSTE, and by creating demand among the population;

b) Making the green houses more energy-efficient. The existing CONAVI/INFONAVIT criteria include only eco-technologies that are added to standard homes, and do not include any guidelines for architectural design, building processes and materials, or urban design, aimed at increasing the homes' passive heating or cooling attributes. Furthermore, the criteria are defined in terms of specific *features* of the homes, and not on their *performance*. By establishing performance-based criteria, such as a given energy consumption reduction vis-à-vis a baseline, developers would be able to compete to find the most cost-effective ways to achieve energy savings.

## PUBLIC SECTOR COMPONENT

13. The IDB anticipates utilizing USD50M of CTF resources leveraged with at least USD50M of its CCLIP with SHF to provide attractive financial terms and an appropriate TC package to enable SHF to support its clients, namely financial intermediaries, in the development of financing products to support a transformational shift towards a sustainable energy-efficient housing market. The timing for such an intervention in the market is opportune. In the current context of the financial crises, SOFOMES face difficulties to borrow from commercial financial institutions. Therefore SHF is currently the major, if not the only, provider of financial resources to the local housing lending sector and therefore has a unique window of opportunity to set new standards for LFIs with regards to lending criteria to housing construction and mortgage lending in Mexico. Furthermore the German Government is considering a participation in the envisaged program with SHF for the year 2011 via a Financial Cooperation loan assigned by the German development bank KfW. The participation still has to be defined by the German Government, but could indicatively amount to up to EUR80M (approximately USD100M).

14. For this purpose, the Component considers using a mix of instruments:

a) The provision of bridge loans or guarantees with concessional rates to housing developers, aimed at reducing the price of energy-efficient homes to the final buyers.
It is anticipated that the lifecycle energy consumption of these houses (including both the construction and the lifetime stages) will be reduced through the gradual incorporation of energy-efficient design, building materials, building processes, and energy service technologies. SHF, working with CONAVI, would seek to raise the energy efficiency of green housing and to put in place performance-based criteria. As these more energy efficient criteria become the requirement for CONAVI's subsidy, this will have a transformational impact on Mexican housing construction market towards highly energy-efficient homes, resulting in additional significant GHG emission reductions.

b) As discussed above and earlier in the full Program proposal, in order to make this Component transformational, it is crucial to generate the demand for highly energy-efficient houses in the Mexican population. Therefore CTF resources leveraged by SHF, IDB and other resources will also be utilized for providing a comprehensive Training, Capacity-building and Awareness Building Program for housing developers, LFIs, and home-buyers that will include among others the following elements:
   i. Training and information material will be designed and presented to foster the understanding in the population of the long-term benefits of energy-efficient homes. Key energy saving data gathered from the monitoring and tracking of the newly constructed "greener houses" will be presented to the Mexican population in awareness and training courses.
   ii. Nation-wide marketing and promotion of green houses will be taking place through various media channels such as newspapers, television, internet etc.
   iii. Training and capacity building programs for LFIs will be offered to incentivize and mobilize local financial resources for green mortgage programs beyond the existing *Hipoteca Verde* program that is implemented through INFONAVIT.
   iv. Training and capacity building programs will enable a wide range of developers to construct greener houses.

c) The development of the energy-efficient housing market needs to go hand-in-hand with the development of standards. Currently there are no clear standards that enable home-buyers to believe that any energy-efficient premium will be translated into effective energy savings, which limits the growth of an unsubsidized market. Monitoring the implementation of these standards will also be critical. The Component will contribute to the creation and monitoring of such standards, in collaboration with CONAVI and CONUEE.

15. Rationale for CTF Finance: The Mexican mortgage sector is expected to grow at a rate from just under MXN 1 trillion (≈USD75 billion) in 2007 to over MXN 2 trillion (≈USD150 billion) in 2020.[18] In order to utilize the available CTF resources of USD50M in an highly efficient and transformational way, the Public Sector Component aims to provide the CTF resources leveraged with at least USD50M of IDB's CCLIP with SHF, as bridge loans or guarantees to housing developers, or other financial instruments. The provision of bridge loans with concessional rates will set incentives for the developers to construct over time more and more energy efficient houses through the gradual incorporation of energy-efficient design features, building materials, building processes, and energy service technologies.

16. Based on conservative estimates, the Component aims to mobilize at a minimum USD5 billion annually for the financing of the green mortgages (see Table AI.2). These financing resources will be coming from both public financial institutions such as INFONAVIT, SHF or FOVISSSTE, as well as the local commercial market. These estimates are based on the following preliminary calculations

a) Making existing green homes more energy-efficient. During 2009, slightly more than 100,000 homes were built under the existing CONAVI/INFONAVIT criteria (i.e. having access to CONAVI's subsidy and/or to INFONAVIT's *Hipoteca Verde*). Assuming an average house price of USD30,000 and the annual amount of green mortgage stays at 100 in the following years, INFONAVIT and FOVISSSTE would be providing 3 billion worth of green mortgages annually.

b) Expanding the green housing market to other LFIs. As of 2008 the combined market share of commercial banks and SOFOMES in the Mexican mortgage market was around 25%, which is equivalent to 200,000 houses on an annual basis. The experience of INFONAVIT shows that 40% of home buyers are interested in green homes even in the absence of the CONAVI subsidy. Assuming conservatively that in the following years 20% of the houses financed by LFIs will be

[18] SHF, 2009. *Hipoteca Verde SHF*.

energy-efficient and will have an average house price of USD50,000, LFIs, including commercial banks, would be mobilizing USD2 billion annually for the green mortgage market.

The preliminary preparatory activities for this Component are addressed in §41 of the main body of this document.

**Table AI.2. Indicative Finance Mobilization of the Public Sector Component (USD million)**

| Source | Amount |
|---|---|
| CTF | 50 |
| IDB | 50 |
| German Government via KfW | 100<br>(80 million Euros) |
| INFONAVIT and FOVISSSTE | 3000<br>(annually) |
| LFIs | 2000<br>(annually) |
| **Total** | **5200** |

# Annex II.
# Provisional Implementation and Supervision Budget

**Table AII.1. Indicative Implementation and Supervision Budget for the Mexico CTF-IDB Group Energy Efficiency Program, Part I**
**Summary for 10 Years**

| Activity | | Amount |
|---|---|---|
| **TC and KM** | TC and KM administration costs | 84,000 |
| **IDB Commercial Banking Envelope** | Implementation | 103,000 |
| | External legal counsel expenses | 180,000 |
| | Internal legal counsel expenses | 38,000 |
| | Supervision, monitoring and evaluation | 315,000 |
| **Total** | | **720,000** |

Notes:

- TC and KM costs calculated as 5% of TC+KM budget.
- It is assumed that 3 banks benefit from CTF funding within the IDB Commercial Banking Envelope (fees will be lower if fewer banks are served).
- Per project costs will be requested from the Trustee at the time of approval of each individual project approved by the IDB Board of Directors.
- Supervision costs will decline if the terms and conditions for any project funded through the IDB Commercial Banking Envelope are less than 10 years.
- Supervision budget includes a 20% increase on standard operations in order to cover still-undefined reporting requirements.