"2009, Año de la Reforma Liberal"

Oficio No. 347.A.- 257

Subsecretaría de Hacienda y Crédito Público
Unidad de Asuntos Internacionales de Hacienda
Dirección General Adjunta para América del Norte,
Asia-Pacífico y el Caribe

SECRETARÍA DE HACIENDA
Y CRÉDITO PÚBLICO

SHCP

SRA. GLORIA GRANDOLINI
Directora para Colombia y México
Banco Mundial
Insurgentes Sur No. 1605, piso 24,
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Del. Benito Juárez, C.P. 03900,
México, D.F.

México, D.F., a 21 de octubre de 2009.

Asunto: Endoso al proyecto "Lighting and Appliances Efficiency Project"

En mi carácter de Punto Focal para México del Fondo para el Medio Ambiente Mundial (GEF, por sus siglas en inglés), me permito confirmar a Usted que el citado proyecto propuesto: (a) es acorde con las prioridades nacionales del gobierno y con los compromisos de México bajo las convenciones globales correspondientes; y (b) ha sido analizado por los interesados, conforme con las políticas del GEF sobre participación pública.

La implementación del citado proyecto se realizará con el Banco Mundial como agencia implementadora y por la Secretaría de Energía (SENER) y Nacional Financiera (NAFIN) como agencias ejecutoras. El financiamiento total requerido del GEF para este proyecto es USD 7,830,460, el cual incluye USD 7,118,600 para su implementación y USD 711,860 (10% de los gastos inherentes al proyecto) para la comisión por los servicios asociados al manejo del proyecto de la agencia implementadora. En ese sentido, el Gobierno de México no tiene inconveniente en la utilización de este monto dentro del Marco de Asignación de Recursos del GEF-4 para México, en el área focal de Cambio Climático.

Sin otro particular por el momento, aprovecho la ocasión para reiterar a usted la seguridad de mi más atenta y distinguida consideración.

Atentamente,
La Directora General Adjunta,

Claudia Grayeb Bayata

Claudia Grayeb Bayata


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GEF

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PROJECT IDENTIFICATION FORM (PIF)
PROJECT TYPE: Full-sized Project
THE GEF TRUST FUND
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Submission Date: Sept. 14, 2009
Resubmission Date: October 19, 2009

PART I: PROJECT IDENTIFICATION

GEF PROJECT ID[1]: **PROJECT DURATION: 60** months
GEF AGENCY PROJECT ID:
COUNTRY(IES): Mexico
PROJECT TITLE: Lighting and Appliances Efficiency Project
GEF AGENCY(IES): World Bank
OTHER EXECUTING PARTNER(S): SENER, NAFIN and CONUEE
GEF FOCAL AREA (S)[2]**:** Climate Change
GEF-4 STRATEGIC PROGRAM(S): CC-SP1-Building EE
NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable)**:**

INDICATIVE CALENDAR*	
Milestones	**Expected Dates mm/dd/yyyy**
Work Program (for FSP)	Jan 2010
CEO Endorsement/Approval	May 2010
Agency Approval Date	Jun 2010
Implementation Start	Jul 2010
Mid-term Evaluation (if planned)	Dec 2012
Project Closing Date	Jun 2015

* See guidelines for definition of milestones.

A. PROJECT FRAMEWORK

Project Objective: To enhance the country's energy security and support its efforts to mitigate climate change by expanding the increased use of energy efficient equipment and services. The project will promote the development of a sustainable market for energy efficiency equipment among the fastest growing energy end-use sectors for lighting, refrigeration, and air conditioning.

Project Components	Inv, TA, or STA[b]	Expected Outcomes	Expected Outputs	Indicative GEF Financing[a]		Indicative Co-Financing[a]		Total ($M)
				($M) a	%	($M) b	%	c =a + b
1. Replacement of Incandescent Bulbs (IBs) with Compact Fluorescent Lamps (CFLs) in the Residential Sector	Inv	CFL program implemented reducing energy consumption by 960 Gwh and 0.5 millon tons of CO_2e reduced	5 million IBs are replaced by CFLs	2.0	17	10.0	83	12.0
2. Replacement of Refrigerators and Air-Conditioners (ACs)	Inv	Large-scale appliances replacement program implemented reducing energy consumption by 1,500 Gwh and 0.75 million tons of CO_2e are reduced.	300,000 inefficient refrigerators and ACs replaced by efficient appliances.	5.0	4	110.0	96	115.0
3. Public Street Lighting and Other Municipality-Level Energy Efficiency Activities	Inv	More efficient street lighting in municipalities	Approximately 30 municipalities implement efficient street lighting projects	0	0	100.0	100	100.0
4. Technical Assistance and Institutional Strengthening	TA	Key institutions have improved capacity to adequately implement the project as well as other energy efficiency	Adequate implementation capacity of the key project implementing agencies.	0.118	2	5.0	98	5.118

[1] Project ID number will be assigned by GEFSEC.
[2] Select only those focal areas from which GEF financing is requested.

		measures contemplated in the new Energy Efficiency Law.	Key studies in the area of energy efficiency delivered allowing the advance of the energy efficiency agenda of the GoM in various areas.					
Total project costs				A7.118	3	B225	97	232.118

[a] List the $ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.
[b] TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE and by NAME (in parenthesis) if available, **($)**

Sources of Co-financing	**Type of Co-financing**	**Project (US$M)**
Counterpart Financing	Cash	40
World Bank/IBRD/CTF	Loan	185
Total Co-financing		B225

C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT ($)

	Previous Project Preparation Amount (a)[3]	**Project (b)**	**Total c = a + b**	**Agency Fee**
GEF financing		A7,118,600	7,118,600	711,860
Co-financing		B225,000,000	225,000,000	
Total		232,118,600	232,118,600	711,860

D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES)[1]

GEF Agency	**Focal Area**	**Country Name/ Global**	**(in $)**		
			Project (a)	**Agency Fee (b)[2]**	**Total c=a+b**
World Bank	Climate Change	Mexico	7,118,600	711,860	7,830,460
Total GEF Resources			7,118,600	711,860	7,830,460

[1] No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.
[2] Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

1. Mexico is a major producer, exporter and consumer of energy. The country has for a long time relied on a generous endowment of fossil fuels to meet domestic energy needs as well as to contribute substantially to the balance of trade in international markets; however, oil production has dropped from a high of approximately 3.4 million barrels per day in 2004 to approximately 2.6 million barrels per day in 2009. Natural gas production, on the other hand, has been growing rapidly (gas production has grown at a rate of 3 percent), but demand is still not fully met and Mexico will continue to import more than 20 percent of its gas requirements, with projections for increasing imports. Energy diversification, including energy efficiency and a greater use of renewable resources, is an important alternative for the long-term sustainability of the Mexican energy system.

2. Climate change is a major policy objective of Mexico. In May, 2007, President Calderón announced the National Climate Change Strategy (*Estrategia Nacional de Cambio Climático* – ENACC), thereby committing the country to place climate change at the heart of the country's national development policy. The ENACC sets the long-term climate change agenda, together with medium to long-term goals for adaptation and mitigation. In the ENACC, the country commits itself, on a voluntary basis, to reduce its 2002 GHG emissions by 50 percent by 2050. To operationalize ENACC, the GoM developed a Special Climate Chance Program (*Programa Especial de Cambio Climático* - PECC). The PECC sets

[3] Include project preparation funds that were previously approved but exclude PPGs that are awaiting approval.

out a four-part program that includes (i) a long-term vision for government action; (ii) sectoral plans for GHG mitigation; (iii) plans for adaptation; and (iv) cross-cutting policy initiatives. PECC identified two sectors as the key focus for mitigation activities - transport (in particular the urban transport sub-sector) and energy sectors - which together represent about 45 percent of Mexico's GHG emissions.

Mexico's Electricity Sector

3. Mexico's 2007-2012 energy policy is based on its National Development Plan, and establishes the commitments, strategies and lines of action of the Federal Government in the energy field. Energy security and diversification are a paramount component of the national agenda as was observed by the recent approval of the Mexican Energy reform (*Hydrocarbons Law*), the *Ley para el Aprovechamiento de las Energías Renovables y el Financiamiento de la Transición Energética* (*Renewables Law*) and the *Ley para el Aprovechamiento Sustentable de la Energía (the Sustainable Use/Energy Efficiency Law)* approved by Congress during the second half of 2008. These reforms aim to overhaul the energy sector in Mexico.

4. GoM's Energy Sector Program (*PROSENER*) provides a comprehensive policy framework focused on energy security, technical efficiency, environmental sustainability and climate change. Indeed, its policy objectives and specific targets provide the enabling policy framework necessary to advance the country's climate change agenda. In electricity, *PROSENER* focuses on strategies to promote the efficient use and production of energy (e.g., increase energy savings from 21,686 GWh in 2006 to 43,416 by 2012) and to promote reduced energy consumption in the residential sector.

5. Electricity consumption in 2006 was 197,435 GWh and it has grown at a continuous pace of 4.1 per cent in the last 10 years. The residential sector accounts for about 18 percent of total end-use energy in Mexico. The commercial and public sector in Mexico are also important electricity consumers, accounting for over 11 percent of total electricity use. Lighting, air-conditioning, and home appliances are expected to be the main growth areas of residential electricity demand. Under the Government's *prospectiva*, electricity demand was expected to grow at 4.9 percent per year from 2008 to 2017, compared with the projected annual GDP growth rate of 3-3.5 percent. However, the GoM growth estimates are now closer to 2 percent as a result of the international financial crisis and related economic slowdown. Estimates of required additional capacity to meet the increased demand under the lower growth scenario are being calculated, given that longer-term growth is expected.

Climate Change and the Energy Sector in Mexico

6. Mexico ranks twelfth in the world based on total GHG emissions and is the second largest emitter in Latin America after Brazil. According to Mexico's Third National Communication to the UNFCCC, the country emitted 643 million tons of carbon dioxide equivalent (Mt CO_2e) in 2002, of which almost 400 Mt CO_2e result from combustion of fossil fuels (over 60 percent of total emissions). The sources of Mexico's GHG emissions are energy generation (24 percent), transport (18 percent), forests and land-use change (14 percent), waste management (10 percent), manufacturing and construction (8 percent), industrial processes (8 percent), agriculture (7 percent), fugitive emissions (6 percent), and other uses (5 percent).

7. Although, as a non-Annex I country, Mexico is not mandated to limit or reduce its GHG emissions under the Kyoto Protocol, the country has firmly adopted the UNFCCC principle of "common but differentiated responsibilities" and pledged to reduce its GHG emissions voluntarily. At the 14th Session of the Conference of the Parties to the UNFCCC, in December 2008, Mexico announced that it would reduce by 2050 its GHG emissions by 50 percent below 2002 levels.

8. *PROSENER* (described above) for 2007-2012 which is consistent with PECC focuses on mitigation, highlighting the need to decouple economic growth and GHG emissions through more efficient production and use of energy, less dependent on fossil fuels. The program sets further targets, including an annual electricity-related emissions reduction ranging between 14 Mt CO_2 and 28 Mt CO_2 by 2012. Energy efficiency (EE) is an important thrust of the program.

9. According to the Low-Carbon Development for Mexico study (*MEDEC*), managing the growth of electricity demand through EE measures in the end-use sectors will be critical to Mexico's GHG emissions mitigation strategy. The industrial, residential, commercial and public sectors combined, account for 95 percent of electricity consumption in Mexico, and about 48 percent of total end-use energy consumption. Air-conditioning, home appliances and electronics, and to a lesser extent, lighting are expected to be the main growth areas of residential electricity demand in Mexico. Currently, these three end-uses account for about equal shares of residential electricity consumption. Policies to improve efficiency in the residential, commercial, and public sectors - including tightening and enforcing efficiency standards for lighting, air conditioning, and refrigeration - will be critical to avoid future GHG emissions.

GoM's Energy Efficiency Strategy

10. In the context of the dual need of energy security and climate change, the Government has adopted a strategy to strengthen its energy efficiency program. This expanded strategy builds on a variety of efforts that were initiated almost two decades ago. Since the early 1990s, the GoM has devoted important efforts to fostering EE activities. These include the establishment of the Private Trust Fund for Electricity Savings (*Fideicomiso para el Ahorro de Energía Eléctrica, FIDE*), the creation of the *Programa de Ahorro de Energía del Sector Eléctrico* (*PAESE*) and pilot related programs on lighting, replacement of appliances, electricity generation and other areas. However, after significant improvements in the 1990s, the downward trend in the energy intensity of GDP in Mexico has stalled. This is primarily due to the rapid increase in electricity consumption, which has grown significantly faster than GDP. In this context, the GoM has decided that EE measures aimed at reducing electricity demand, and thereby reducing the need for incremental generation and related expenditures, are a priority for the country.

11. In November 2008, the *Ley para el Aprovechamiento Sustentable de la Energía (the Sustainable Use/Energy Efficiency Law)* was enacted. The objective of this law is to provide incentives for the sustainable use of energy in all processes and activities related to its exploitation, production, transformation, distribution and consumption, including energy efficiency measures. A regulatory framework is being developed, to make this Law fully operational.[4]

12. In this context, the Government is carrying out the following specific activities: (i) a program aimed at replacing incandescent bulbs (IBs) for Compact Fluorescent Lamps (CFLs) in the residential sector targeting over 20 million CFLs over a five year period, (ii) an appliances replacement program targeting about 500,000 appliances over a 5-year period, (iii) the modernization of the public transport system for long distances and surroundings, (iv) a program for EE in municipalities including lamps substitution for more efficient public lighting, (v) industrial and commercial EE programs, (vi) supply side EE in the electricity sector, and (vii) EE in *PEMEX*. The GoM is looking for support from multilateral banks and other financial institutions, including World Bank, GEF and CTF,[5] to support the implementation of these activities.

13. The proposed project supports the GoM in reducing electricity consumption by introducing more efficient technologies in lighting systems throughout the country (residential and public sector lighting in municipalities) and by replacing inefficient domestic appliances (refrigerators and air conditioners). The proposed EE measures bring about direct benefits to end-users, such as households (lower electricity bills), and government (deferred investment in electricity generation for new capacity), plus reduce the country's GHG emissions and contribute to the country's commitment towards global environment.

14. The Project's objectives are to enhance the country's energy security by increasing efficient use of energy and to support its efforts to mitigate climate change. Energy security and climate change goals would be achieved by promoting an increased use of energy efficient equipment and services and by developing a sustainable and growing market for energy efficiency equipment that will reduce GHG emissions caused by electricity generation based on fossil fuel consumption. Four preliminary components have been developed to achieve these objectives:

Component 1: Replacement of Incandescent Bulbs (IBs) with Compact Fluorescent Lamps (CFLs) in the Residential Sector (Estimated total cost: US$12 million – IBRD $10 m, and GEF US$2 m in the form of a Guarantee Facility).

15. This component will finance the acquisition and distribution of 5 million CFLs for low-income urban and rural households, as part of the first phase of the Government's national program on energy efficiency which aims to replace 20 million incandescent bulbs (IBs) with compact fluorescent lights (CFLs) in the residential sector over a 5-year period. The higher up-front costs are one key barrier, for which a large bulk purchase program is expected to provide substantial reductions in prices needed to enable all consumers to switch their lighting technology choices. Other barriers include the lack of information among residential consumers about CFLs and the significant transactions costs for millions of rural and poor households to access retail stores carrying CFLs. The GEF is needed to finance an innovative guarantee scheme to cover the risks associated with establishing carbon credits for the CFL program.

[4] Importantly, the Use of Renewable Energy and Financing for Energy Transition Law (simultaneously signed into law in the same date) allows CRE to regulate externalities, which would overcome the barrier to energy efficiency, and renewable energy currently created by the Constitutional mandate for least-cost investment.

[5] The Clean Technology Fund (CTF) is one of the Climate Investment Funds (CIFs) created in 2008 to provide scaled-up resources to invest in projects and programs that contribute to demonstration, deployment and transfer of low carbon technologies with a significant potential for long-term greenhouse gas savings.

16. *Replication and scalability potential*: This component will be designed as a Clean Development Mechanism (CDM) Program of Activities (PoA) thus promoting a rapid scale up through carbon credits once the program proves successful and the carbon credits begin to flow into the program. This project component has the potential to trigger the transformation of the incandescent bulb market over the longer term and thus will require significant investment and coordination. If emissions reductions result successfully certified under the CDM, preliminary estimates show that each CDM Program Activity (CPA) would be fully repaid with carbon credits over the implementation period[6]. Additionally, the Bank is assisting SENER in the dialogue with private sector partners and other banks to dramatically expand the program to replace at least additional 20 million lamps in the short term[7]. In order to capture carbon credits, an adequate monitoring and verification plan needs to be set up during the entire lifetime of the PoA.

17. This replacement program involves not just the purchase and distribution of new CFLs but also the collection and proper disposal of the replaced IBs. Even though prices of CFLs may go down to US$0.85/CFL as a result of bulk procurement, the distribution scheme, plus the collection/disposal of replaced IBs, the management/marketing of the program, and the monitoring/verification will raise the overall cost to about US$2/CFL. Under the TA component of this project, a policy framework will be developed to gradually phase out the use of IBs in the country, also promoting incentive schemes through private sector participation to ensure a sustainable transformation of the market. Once the program is fully implemented, prices of CFLs are expected to be at competitive/affordable prices.

18. *Borrower and Implementing Agency:* NAFIN (*Nacional Financiera*) will be the borrower and FIDE (*Fideicomiso para el Ahorro de Energía Eléctrica*), with the coordination of SENER (*Secretaria of Energía*), will be the implementing agency for this component, together with strategic partners. NAFIN has proven experience working with multilateral banks, with strong financial management capacities in place. This will ensure proper tracing of the GEF resources. The CFLs would be procured in bulk by the implementing agency, FIDE, in multiple tranches based on (i) mutually agreed technical specifications, (ii) ensuring open competition (i.e., ICB), (iii) performance of independent testing, and (iv) designing measures to ensure bulk purchase does not create future monopolies. A phased procurement would allow ongoing testing of purchasing and delivery mechanisms and to evaluate technical savings which would provide information to adjust subsequent phases.

19. *Guarantee facility scheme:* The US$ 2 million GEF grant will capitalize a back-stop/guarantee facility that will be triggered in the event that a CPA (CDM Program Activity) under the PoA (CDM Program of Activities) does not generate carbon revenues. The borrower, NAFIN, will access a line of credit from IBRD in US$ 2 million tranches each year for five years so as to match protection provided by the guarantee facility. The entire CDM cycle (starting with the purchase of the CFLs up till the actual CERs or Certified Emissions Reductions are issued) involves a chain of risks that need to be mitigated for the program to prove successful and then gain scale through additional investment. The guarantee facility will provide NAFIN with that risk coverage in the following way: NAFIN will invest in a CPA (valued approximately at US$2 million for replacing 1 million CFLs), and if the carbon credits are not generated for any reason, the guarantee facility will be triggered, NAFIN will recover their investment and the program will stop. However, in the likely case that carbon credits flow successfully into the program, the guarantee facility will not be triggered. If this is the case after the first 36 months, NAFIN may consider continuing the CFL replacement program at its own risk and reallocating the GEF US$ 2 million to the appliances component (Comp 2) to expand its scope. In either case, at the end of the 5 year project any remaining non-used GEF resources from the guarantee facility will be reallocated to other energy efficiency activities, including TA under component 4, to be defined by the GOM at mid term review in consultation with GEF.

20. *Target population*: A social evaluation was conducted in order to compare options for most inclusively defining the target population as well as exploring the various options for distribution. The evaluation concluded that *Oportunidades*, a conditional cash transfers program for poor families in Mexico, had the most inclusive roster of identified low-income families who fit the criteria for CFL replacement eligibility. The program has a roster of 3.4 million poor households in rural areas, which covers 62.2% of all rural households and 1.6 million poor households in urban areas. The *Oportunidades* roster will be used to identify and notify beneficiaries and the exchange will take place through local SEPOMEX (*Sistema Postal de México*) offices or by mail. SEPOMEX will also be in charge of collecting and safely destroying IBs. During distribution of the first tranche of lamps to low-income consumers, various options for distributing to other customers will be tested and further developed as part of the scaling up plan to transform the market.

21. *Pilot program*: The GoM will finance a pilot program, to be implemented by FIDE. The pilot is expected to be launched by the end of 2009 and to be implemented over a three month period. The aim of the pilot program is to test the

[6] Assuming 10,000 hrs CFL lifetime by technical specifications (6 yrs to be conservative), CERs@9euros/tCO2e

[7] Annual consumption of IBs in Mexico has been estimated at about 200 million

targeting, distribution and collection scheme by replacing 500,000 working IBs with CFLs. The pilot program will be mainly implemented in the states of Veracruz, Chiapas, Jalisco and Michoacán.

22. *Electricity savings and Emissions Reductions*: Electricity savings from the replacement of 5 million lamps over the five year period (2010-2014) are estimated to total 960 GWh in consumption. Total CO_2e emissions reductions (ERs) have been estimated to be 0.5 million tons over such period, at a 1- CPA-per year pace. However, if the number of replaced IBs was to increase to 20 million as planned if the program proves successful for additional investments, total ERs would increase to 2.7 million over a 5 year period. Given that a PoA can last as long as 28 years and each CPA 10 years, the ERs potential alluded above would increase accordingly and prove quite promising (pay-back could be completed in 5 years even allowing some additional revenues). The ERs calculations estimated above refer to direct ERs following CDM approved methodologies and Mexico's grid emission factor. Estimated Indirect ERs will be calculated following GEF methodologies during project preparation.

23. *Additional co-benefits*: Among the environmental benefits of reducing electricity consumption are: the reduction in local air pollutants (particulates, SO_X, NO_X, HC), and the reduction of greenhouse gas emissions, specifically CO_2. Additionally, such interventions in the residential sector may bring significant social benefits by reducing the electricity bills while improving the comfort level.

24. *Environmental aspects:* With regards to potential environmental concerns, SENER is preparing an Environmental Assessment (EA) and an Environmental Management Plan (EMP) to ensure proper disposal of used bulbs and particularly the handling of the mercury in used CFLs. Through the TA component, the analytical aspects for the development of CFL collection/recycling centers and disposal schemes will be supported.

25. *Cost effectiveness of Emissions Reductions*: The cost effectiveness of GEF resources for 5 million CFLs over a 5-year period would result in 4 US$/tCO2e.

Component 2: Replacement of Refrigerators and Air-Conditioners (ACs) (Estimated total cost: US$ 115 million – IBRD 50 million, CTF 25 million, NAFIN US$25, GEF US$ 5 million, GoM US$10 million)

26. The Appliance Substitution Program provides incentives for consumers to trade in their old refrigerator or air conditioner – which will be dismantled in specially designated recycling centers – for new more efficient appliances. Appliances eligible for replacement need to be in working condition and at least 10 years old or more[8]. In order to qualify, the new appliances must be certified to have a minimum energy performance. The removal of old inefficient appliances is a crucial aspect of the program because it involves the adequate collection of refrigerants with high global warming potential.

27. There are three types of incentives used in the program: (i) a subsidy to cover the cost of delivering (exchanging) and dismantling the old appliances, (ii) a rebate on the purchase of the new appliance, and (iii) attractive financing terms for the purchase of the new appliance. The mix of incentives varies between different categories of consumers – denominated "Tiers"- based on the levels of electricity consumption. Those Tiers with lower levels of consumption receive a rebate, as well as the subsidy for exchanging appliances and access to the credit facility. Consumers in the highest consumption Tier only have access to the credit facility. Under the preliminary Project design proposal, World Bank/IBRD/CTF and GEF financing would be used to: (i) provide incentives to low/middle income customers based on the alluded tiered incentive scheme, and (ii) set up a guarantee facility for NAFIN to provide credits to qualifying consumers to finance part of the appliance cost.

28. The main barriers for the substitution of old and inefficient appliances are high initial investment costs of new more efficient refrigerators and ACs and the lack of awareness and incentives to shift to more efficient equipment. Without the appropriate financial benefits and incentives, the households would not choose to buy more efficient equipment unless old equipments are outdated beyond repair and the cost of new energy efficient equipment is equal or less than a cost of conventional equipments. By providing incentives to low-income households to purchase new equipment, this component removes the financial barrier, ensures that the old equipment is scrapped and recycled properly to prevent any leakage and assure a proper monitoring system.

29. *Borrower and Implementing Agency:* NAFIN (*Nacional Financiera*) will be the borrower and FIDE (*Fideicomiso para el Ahorro de Energía Eléctrica*), with the coordination of SENER (*Secretaria of Energía*), will be the implementing

[8] At least 8 million appliances have been estimated to be over 10 years old in Mexico

agency for this component. NAFIN has proven experience working with multilateral banks, with strong financial management capacities in place. This will ensure proper management of GEF resources.

30. *Program scheme*: Customers who are eligible for the replacement program can purchase a qualifying appliance directly from a retailer. If a retailer is interested in participating as a supplier in the program, they must sign a "contract of participation" and present for record-keeping a complete list of models and prices they have available. The customer purchases a new appliance from the retailer, and receives a line of credit from NAFIN, in coordination with FIDE, to finance their new appliance. The customer then pays monthly installments on their new appliance directly through the electricity utility company (CFE), who in turn makes the payment to NAFIN. For the destruction of the replaced appliance, the retailers are responsible for delivering the old, inefficient appliances to a Center for Collection and Destruction (Scrapping Center). The Center will scan in the bar codes, check the functioning of the equipment, record to the brand, color, model, and serial number before destroying the equipment. If emissions reductions result successfully certified under the CDM, preliminary estimates show that carbon revenues would approximately offset the exchange/scrapping costs.

31. *Replication and scalability potential*: This component will be designed as a CDM PoA to benefit from carbon credits for the expansion of the program. Carbon finance potential is difficult to ascertain at this stage given that a proper baseline needs to be determined. Any working refrigerator/AC 10 years old or older is eligible; however, efficiencies vary significantly between appliances in the range of 10-30 years old. The Bank is assisting SENER and NAFIN in the dialogue with another development bank interested in co-financing further expansion of the program. This would increase its scope significantly in the short term. Under the TA component of this project, support will be provided to raise the EE standards for appliances. A policy framework will also be developed to ban the imports of inefficient appliances to ensure a sustainable transformation of the market. The latter would also imply the training customs officers for proper enforcement purposes.

32. *Pilot program*: The GoM is financing an ongoing pilot program that was launched in Q1 2009, which has already contracted about 100,000 beneficiaries to date. The program provides incentives in the form of discounts and preferred financing rates to low/middle income customers, based on a tiered scheme following monthly electricity consumption. The default rate from end users that has been estimated by NAFIN to determine the size of the guarantee facility is 15 percent. However, this rate will be reassessed after the two years of running the program based on actual defaults. Although early for drawing conclusions, so far the default rate has proven to be <1%.

33. *Guarantee facility scheme:* The GEF resources (US$5 million) would support the US$10 million GoM contribution for the establishment of a guarantee facility for NAFIN to provide credits to qualifying consumers to finance part or all of the appliance cost. The program will be designed in such a way for the appliances to be repaid through the electricity savings over a 4 year period. The counter-guarantee facility will cover repayment default risks from end users. Assuming a 15 percent default rate, a US$15 million guarantee facility will allow NAFIN to finance the replacement of approximately 120,000-215,000 appliances over a 5 year period. Assuming a 5% default rate, the range of replacements would increase to 280,000-500,000. The reason for referring to a range of appliances is because the amount of financing varies between the different tiers depending on the rebate provided as an incentive of the program. At the end of the 5 year project, any remaining non-used GEF resources from the guarantee facility will be reallocated to other energy efficiency activities to be defined by the GOM at mid term review, in consultation with GEF.

34. *Electricity savings and Emissions Reductions*: As mentioned above, actual electricity savings and carbon finance potential are difficult to ascertain at this stage given that a proper baseline needs to be determined (consumption varies significantly between appliances 10 -30 years old). Under a low electricity savings scenario, total savings resulting from the replacement of 300,000 inefficient appliances by more efficient ones during the period 2010-2014 are estimated at about 1,500 GWh of electricity thereby reducing around 750,000 tons of CO_2e over the five-year period. The World Bank's carbon finance team is supporting SENER in the process of registering these energy savings through the CDM. Given that a PoA can last as long as 28 years and each CPA 10 years, the ERs potential alluded above could increase significantly. The ERs calculations referred to are direct ERs following CDM approved methodologies and Mexico's grid emission factor. Estimated Indirect ERs will be calculated following GEF methodologies during project preparation.

35. *Additional co-benefits*: This program will monitor and verify that the refrigerants from old appliances (mostly CFC-12) are properly collected and stored/disposed at qualified servicing/scrapping centers. Most old appliances (>10-15 years old) suffer from leakages of refrigerants, thus requiring regular servicing/recharges. Given that only 5,500

technicians have been trained to date in Mexico on good practices in refrigeration[9], the volume of refrigerants annually vented to the atmosphere due to improper practices is significantly high. New appliances typically do not leak nor require servicing during the first 4-5 years and even if that was the case, the global warming potential (GWP) of the most common refrigerant currently used for appliances in Mexico is about 1,300 (R-134a) whereas the GWP of CFC-12 is as high as 10,700. This means that the replacement of an average of 300,000 old appliances would avoid the emission of about 700,000 additional tCO2e over a 5 year period[10]. These emissions reductions (ERs) cannot be accounted for under the CDM, given the rules of the Kyoto Protocol concerning substances controlled by the Montreal Protocol, but are actual emissions that this program would help avoid from venting. Additionally and with regards to the destruction of refrigerants, the Bank is assisting SENER/FIDE for scrapping centers to apply to the voluntary carbon market for claiming carbon offsets for collecting and destroying CFCs using available approved technologies.

36. Additionally and, as mentioned in component 1, environmental benefits of reducing electricity consumption include the reduction in local air pollutants (particulates, SOX, NOx, HC) and the reduction of greenhouse gas emissions, specifically CO2. Additionally, such interventions in the residential sector may bring significant social benefits by reducing the electricity bills while improving the comfort level.

37. *Environmental aspects:* SENER is preparing an Environmental Assessment (EA) and an Environmental Management Plan (EMP) to ensure proper scrapping of replaced appliances in qualified and certified scrapping center. All environmental guidelines as established by SEMARNAT will be followed. As the overall coordinator, SENER delegates the responsibilities of ensuring proper supervision to FIDE, which will be the entity in charge of establishing policies and procedures for supervision and ensure that the Operations Manual is followed appropriately. This supervision process will include telephone calls, periodic check-up visits, review of processes, and conducting polls with the beneficiaries. FIDE will also maintain a system database of all customers as well as information received from detailed monthly reports from the Centers for Collection and Destruction. FIDE has the authority to suspend the store's participation if the contract is breached.

38. *Cost effectiveness of ERs*: The cost effectiveness of GEF resources for an average of 300,000 appliances over a 5-year period would result in 7 US$/tCO2e if only the energy displacement ERs are taken into account. However, considering the avoided volumes of CFC-12 to the atmosphere this CE would drop to 3.5US$/tCO2e.

Component 3: Public Street Lighting and Other Municipality-Level Energy Efficiency Activities (Total estimated cost: US$ 100 million – IBRD 75, CTF 25)

39. This component would support municipalities in developing energy efficiency projects. Initially, investments would focus on simple retrofits, notably street lighting, with the potential to expand energy efficiency investments into other areas such as public buildings and water pumping. GEF support will be utilized to strengthen CONUEE's capabilities to design, initiate, and manage their efforts under Component 4.x (see below).

40. The main barriers to efficiency investments in municipalities include high transaction costs, cumbersome processes, need of multi-year contracts, and lack of financing. These barriers would be mitigated under the proposed scheme, where *CONUEE (Comisión Nacional para el Uso Eficiente de Energía)* would work with *BANOBRAS (Banco Nacional de Obras y Servicios Públicos*), a Trust Fund (FIPATERM or another existing trust fund) and CFE (the largest utility in the country) to help the municipalities implement street lighting replacement projects.

Component 4: Technical Assistance and Institutional Strengthening (Estimated total cost: GoM US$ 5.118 million – GEF US$ 0.118 million)

41. The technical assistance and institutional strengthening for SENER and CONUEE (*Comisión Nacional para el Uso Eficiente de Energía*) fits in to the broader framework of Mexico's new Energy Efficiency Law (*Ley para el Aprovechamiento Sustentable de la Energía*), which was enacted in November 2008. The purpose of the Energy Efficiency Law is to provide a legal framework for the development and implementation of strategies, policies and programs that promote the sustainable, efficient use of energy. The law provided with new responsibilities to SENER and granted CONUEE with the authority to issue recommendations to states, municipalities and individuals in relation to best practices for sustainable use of energy; facilitate the optimal use of energy from the point of exploration to its consumption; develop and issue methodologies for the quantification of GHG emissions originating from the exploration, production, processing, distribution and consumption of energy, as well as the emissions avoided as a result of actions

[9] *Source*: National Ozone Unit, SEMARNAT

[10] Considering an average leakage of 55 grs of CFC-12/year per refrigerator

promoting more sustainable use of energy; provide technical assistance on sustainable use of energy to the agencies of the Federal Public Administration and to state governments and municipalities that request it; and implement the National Information Subsystem for the Sustainable Use of Energy.

42. The resources, technical expertise, and institutional capacity to carry out the new responsibilities are not adequate. Specifically, the law mandates that SENER is now responsible for a new program for the Sustainable Use of Energy (*Programa Nacional para el Aprovechamiento Sustentable de la Energía)*, which has ambitious goals of strengthening energy efficiency standards for appliances and other equipment, and generating increased scientific and technological research in energy efficiency. In addition, the Energy Efficiency Law also established a new organization, CONUEE whose purpose is to advise the administration on energy efficiency issues, lead the energy efficiency dialogue, and promote the implementation of best practices related to energy efficiency at the national level.

43. The purpose of this technical assistance and institutional strengthening project component is to help provide SENER and CONUEE with the capacity and technical expertise necessary to effectively achieve the objectives of this project, consistently with the new responsibilities that the Energy Efficiency Law specifies. The Law provides a solid legal framework for new energy efficiency activities, but now has left SENER and CONUEE in the difficult position of executing these new responsibilities with their already limited resources. SENER and CONUEE enumerated specific activities they need to achieve through technical assistance and institutional strengthening. Some specific activities funded under this component include, but are not limited to, the activities specified below:

i. Analytical aspects for the development of CFL recycling centers and disposal schemes;
ii. Analytical aspects for the development of a policy framework to gradually phase out the use of IBs in the country and thus ensure a sustainable transformation of the market;
iii. Analytical aspects and studies for assessing the raising the EE standards for appliances and the development of a policy framework to ban the imports of inefficient appliances to ensure a sustainable transformation of the market. The latter may include the training of Customs officers for proper enforcement;
iv. Assistance in developing the certification of energy efficient processes in industries;
v. Organization of training on EE;
vi. EE capacity building in local Banks;
vii. Promotion of EE equipment in Mexico;
viii. Harmonization of energy efficiency standards with Central American countries, the USA and Canada;
ix. Organization of energy efficiency training sessions on the regional level through CONUEE's regional offices;
x. Designing of energy efficiency programs in municipalities and the Federal Public Administration facilities (especially as linked to Component 3 above);
xi. Design of commercial and industrial lighting projects; and
xii. EE monitoring and evaluation programs.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS:

44. The proposed project is consistent with the GoM's Special Climate Chance Program (*Programa Especial de Cambio Climático* - PECC) and its 2007-2012 PROSENER (energy program). In particular, the proposed project contributes to the energy efficiency measures to reduce the consumption of energy at the end user level, thereby, reducing the GHG emissions from the energy sector. The project also contributes to the GoM's commitment to reduce Mexico's GHG emissions and to the United Nations Framework Convention on Climate Change (UNFCCC).

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:

45. The project is consistent with GEF Climate Change Focal Areas, in particular with GEF Operational Program 5 – Energy Efficiency, and the following strategic programs under GEF-4: SP1 "Promoting Energy Efficiency in Residential and Commercial Buildings". The GEF incremental financing would contribute to ensure that project activities would promote global environmental benefits in addition to national and state benefits in Mexico. The activities that would be included to achieve this would encourage the adoption of globally beneficial energy efficient appliances in households, efficient lighting and contribute to the Government's National Strategy on Climate Change. In particular, Component 1 will contribute to the reduction of GHG emission by providing guarantees to invest in the efficient lighting programs. Component 2 will contribute to the reduction of GHG emission by providing guarantees to invest in the replacement of energy intensive appliances at household level and their safe scrapping. Component 4 will provide necessary support to the national and local institutions to strengthen their capacity to implement not only the project but also to apply the Government's PECC in particular to promote energy efficiency measures.

D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES:

46. The proposed project uses an innovative mechanism to support the GoM's energy efficiency program by establishing a guarantee facility for the Mexico's development bank, NAFIN, to on-lend financial support to eligible households to safely recycle their old appliances (refrigerators and air conditioners) for energy efficient appliances. The guarantee facility will also lower the risks for NAFIN to use its resources to finance the acquisition and distribution of CFLs for low-income urban and rural households to reduce the consumption of energy, thereby reducing GHG emissions.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

47. The climate change agenda in Mexico has been growing rapidly in the last few years and expanding to include all carbon-emitting sectors. The World Bank is working closely with the Government of Mexico on its low-carbon growth agenda through several studies, projects and Development Policy Lending. Coordination among these activities is assured through "focal points" within both the Government and the Bank. The Country Partnership Strategy is also being revised to include a growing climate change agenda as part of the Bank's policy and strategy discussions. The GEF has also supported the GoM in removing financial and technical barriers to promote energy efficiency, renewable energy and sustainable transport projects including the Action Plan for Removing Barriers to the Full-scale Implementation of Wind Power project and the Grid-connected Photovoltaic Project both implement by UNDP, and the Integrated Energy Services for Small Localities of Rural Mexico, the Mexico Rural Development project and the Large Scale Renewable Energy Development Project implemented by the World Bank. The proposed project complements the overall GEF support in Mexico for reducing the GHG emissions through energy efficiency measures, renewable energy investments, and greening the transport sector. The project team will seek opportunities to strengthen the coordination among these on-going projects to enhance project impacts and to avoid duplication. The coordination at the executing agency level will also be facilitated as most of these projects are coordinated by SENER.

F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING :

48. Without the GEF support, the potential significant global environmental benefit in terms of GHG (CO_2) emission reductions from adopting energy efficiency measures in the residential sector will not be fully realized and several of the key components of the planned program for CFLs and appliances would be dropped. The GEF support will help to ensure the involvement of the country's development banks, which are essential to the mainstreaming of GoM climate change mitigation agenda. With incremental GEF support, and specifically by reducing the risks associated with consumer default and the payment of carbon revenues, a major barrier will be removed in the residential end-use sector to allow the adoption of more energy efficient appliances and the exchange of incandescent bulbs for CFLs. Without incremental GEF financing, the required guarantee facilities for the Appliances and the CFL components cannot be established, therefore reducing the viability of the implementation of the two components.

49. The combination of IBRD, CTF, GEF and Carbon Finance resources will ensure the design of a sustainable and innovative mechanism that will promote transformational and large-scale energy efficiency activities in Mexico and has potential for replication in other countries. The Bank/GEF involvement is needed not only for financial considerations, but also for the expertise and international experience that are vital to pioneering projects of this type.

G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MITIGATION MEASURES THAT WILL BE TAKEN:

50. Potential risks and mitigation measures include:

Risk	Risk mitigation measure	Risk rating with mitigation
Guarantee facility for CFL component is used with a CPA at a time	The guarantee facility will be used if the carbon credits are not obtained. This possibility is unlikely because an already approved CFL replacement project in Mexico has been approved by the CDM Board. SENER and the WB Carbon Finance group are discussing with the project promoters the possibility of using that approved program for this component.	Low
Market uptake does not occur at the rate expected for the residential lighting and appliances components	An attractive package of credits will be put in place for the low-income end-users accompanied by an aggressive awareness and education campaign to maximize market uptake.	Medium

Risk	Risk mitigation measure	Risk rating with mitigation
Slow disbursement rate especially on the municipalities component	The project design will incorporate the experience gained through existing pilot programs and will be reflected on the implementation arrangements for each component facilitating a more rapid disbursement rate. For the Municipal Component, the project proposes a scheme that will reduce most of the risks from the municipalities. These schemes will also lower transaction costs/risks. Other mitigation measures will be explored during project preparation.	Medium
Program leakage – subsidized CFLs may be redeployed to non-target sectors or beyond project areas	The GoM plans to replace a large portion of IB with CFLs in all residential sectors, aiming at the transformation of the market. These investments will be supported by policy measures. Therefore, even some small leakages of subsidized CFLs to non-targeted sectors would not pose high risks to the project.	Low
Technical risks	Only well proven technology would be used.	Low
Procurement risk for CFL component	ICB would apply to acquisition of CFLs and other energy efficiency devices depending on amounts. *FIDE* have extensive experience in international bidding following World Bank Procurement Guidelines.	Medium
Environmental management for old equipment	Disposal of old equipment will follow *SEMARNAT's* (Secretariat of Environment) approved procedures and annual performance audits will be carried out to ensure adequate enforcement.	Medium
Implementation capacity of the different implementing agencies given size and scope of the first three components	Technical assistance will be provided to *SENER*, *CONUEE*, *FIDE*, *BANOBRAS,* CFE and other implementing agencies to strengthen their implementation capacity.	Medium
Complex financial management arrangements	Specific mitigation measures will be determined when the FM assessment is conducted, but are likely to include internal control systems for the flow of funds and information (component 2) and capacity strengthening in *BANOBRAS* for supervision of municipal use of funds (component 3).	Substantial (at PCN stage)
Overall risk rating		**Medium**

H. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

51. A detailed economic and financial analysis will be carried out during project preparation which will provide quantitative and/or qualitative information to assess the cost effectiveness of the project. Since the proposed project will be integrated with the proposed IBRD loan, CTF loan, and carbon financing, the cost-effectiveness of the project would be maximized through the benefit of shared costs. The proposed project would apply the least cost options to generate maximum possible impacts by selecting energy efficient technologies. Furthermore, the proposed project establishes a guarantee facility that will assess financial and technical risks before making investments, and therefore, is expected to adopt cost effectiveness principals. Where feasible, quantifiable models to estimate the reduction of tons of GHG emission would be developed and presented at CEO endorsement.

I. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:

52. The proposed project is an investment operation and is consistent with the comparative advantage of the World Bank as stipulated in the Comparative Advantage matrix.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

NAME	POSITION	MINISTRY	DATE *(Month, day, year)*
Claudia Grayeb Bayata,	GEF Focal Point,	Secretaria de Hacienda y Crédito Publico, Mexico	

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.	
Steve Gorman GEF Executive Coordinator The World Bank	Jocelyne Albert Project Contact Person
Date: October 19, 2009	Tel. and Email: (202) 473-3458 Jalbert@worldbank.org