

NAME OF PROGRAM:

**LEAPFROGGING MARKETS TO HIGH EFFICIENCY PRODUCTS (APPLIANCES, INCLUDING LIGHTING,
AND ELECTRICAL EQUIPMENT)**

Child Project Concept Note

PART I: PROJECT INFORMATION¹

Project Title:	Global Project to leapfrog markets to energy efficient lighting, appliances and equipment
Country(ies):	Global
GEF Agency(ies):	UNEP
Other Executing Partner(s):	UNEP
GEF Focal Area(s):	Climate Change

FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²:

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1 Program 1	GEFTF	3,100,000	21,700,000
Total Project Cost		3,100,000	21,700,000

A. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To mitigate climate change by transforming national and regional markets to energy efficient products.					
Project Component	Financing Type	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
1. Support to partner countries	TA	1.1 Countries and regions have the guidance and training to successfully implement market transformation projects 1.2. Increased capacity of 15 countries officials to develop and implement projects and policies to advance energy efficiency	GEFTF	2,500,000	17,400,000

¹ This Concept Note is intended to convey whatever preliminary information exists at this stage on a child project and that is indicative of how it will contribute to the overall Program.

² When completing Table A, refer to the Program Results Framework, which is already mapped to the relevant [Focal Area Results Framework](#) in the [GEF-6 Programming Directions](#).

		of lighting, appliances, and equipment.			
2. Increasing the ambition of the Global Partnership on Efficient Appliances and Equipment	TA	2.1 At least 70 countries commit to advancing energy efficiency of lighting, appliances, and equipment. 2.2 Regional harmonization of standards	GEFTF	500,000	4,000,000
Subtotal				3,000,000	21,400,000
Project Management Cost (PMC)				100,000	300,000
Total Project Cost				3,100,000	21,700,000

***Co-financing will be determined once the agency will start developing the PPG.**

B. CO-FINANCING FOR THE PROJECT BY SOURCE, BY TYPE AND BY NAME

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
GEF Agency	UNEP	In-kind	300,000
GEF Agency	UNDP	In-kind	300,000
GEF Agency	Inter-American Development Bank (IADB)	Grants	1,000,000
GEF Agency	Inter-American Development Bank (IADB)	Loans	3,000,000
Others	International Partnership for Energy Efficiency Cooperation (IPEEC)	In-kind	500,000
Others	CLASP	In-kind	700,000
Others	Natural Resources Defense Council (NRDC, USA)	In-kind	50,000
Others	bigEE (Wuppertal Institute, Germany)	In-kind	550,000
Others	Topten	In-kind	300,000
Others	IEA-4E	In-kind	100,000
Others	Copenhagen Centre on Energy Efficiency (C2E2)	In-kind	800,000
Private Sector	Philips Lighting BV	In-kind	1,200,000
Private Sector	OSRAM Licht AG	In-kind	1,200,000
Private Sector	International Copper Association (ICA)	In-kind	1,200,000
Private Sector	ABB	In-kind	1,200,000
Private Sector	Mabe	In-kind	1,200,000
Private Sector	Arcelik A.S.	In-kind	1,200,000
Private Sector	BSH	In-kind	1,200,000
Private Sector	Haier	In-kind	1,200,000
Private Sector	Gree Electric	In-kind	1,200,000
Private Sector	Electrolux	In-kind	1,200,000
Private Sector	Southern African Power Pool	In-kind	700,000
Private Sector	Southern African Development Community	In-kind	700,000
Private Sector	Global Lighting Association	In-kind	400,000
Private Sector	National Lighting Test Center (NLTC, China)	In-kind	300,000

C. PROJECT OVERVIEW

i. The global environmental problems, root causes and barriers that need to be addressed;

The virtual Centre of Excellence that has been developed by UNEP, United Nations Development Programme (UNDP), the International Copper Association (ICA), CLASP and the Natural Resources Defense Council (NRDC), along with the UNEP-GEF global project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment” will support the child projects with consensus recommendations on best practice policies and strategies. Under Component 2 of this Program it will extend virtual Centre of Excellence work previously completed by providing in-depth “how to” guides (MEPS, MVE, supporting policies, and environmentally sound management), training for government officials, and also providing remote support for government officials. Further, under Component 3, a regional status reports will be developed and regional workshops will be hosted in order to increase the number of countries committing to transform their markets and increase regional harmonization.

By providing global funding for Component 2 and 3, the project will have immense impact in increasing the capacities of countries to implement projects on energy efficiency. These capacities will allow countries to successfully implement projects using their GEF Star allocation and also allow some countries to implement market transformation projects independently or with outside funding. Component 2 will provide light support and guidance to 15 countries to ensure that best practices are implemented and using a common approach across different countries, while adapting to national circumstances. By doing so, GEF resources will be able to be extended further (in scope and/or depth), while also providing higher impact results, translating into greater GHG emission reductions.

As described in Figure 1 of the PFD and further in description of the components below, the support to countries

Virtual Center of Excellence available to all country partners (Global Funding)

- **Countries included:** all countries that join as member of global partnership to the enlighten and/or U4E initiatives. It is expected that 100 developing countries and emerging economies will join. This will be broken down between 30 countries that committed to the partnership under the SE4ALL Project (GEF5) and the 70 countries that committed to the partnership on the Global Leapfrogging Program (GEF6).
- **Type of support provided:** countries will be supported through the virtual Centre of Excellence, including:
 - Technical how to guides on topics of interest for the advancement of energy efficient products;
 - Technical webinars on specific topics of the integrated policy approach;
 - Country assessments showing the financial, environmental and GHG benefits of a transition to energy efficient products;
 - Regional status reports describing the policies in place, potential benefits of a market transformation, and opportunities for harmonization;

Training provided to “non national-child project” countries (Global Funding)

- **Countries included:** The SE4ALL Global Project will prioritize the 15 countries that will receive this support.
- **Type of support provided:** The program will host in person training for trainers to bring together representatives from partner countries to increase capacities on implementing MEPS, supporting policies, MVE, and environmentally sound management.

Training provided to “national-child project” countries (Global Funding)

- **Countries included:** The program will provide support to up to 10 expected “national-child project” countries that submit a project under this program.
- **Type of support provided:** The program will host in person training for trainers to bring together representatives from partner countries to increase capacities on implementing MEPS, supporting policies, MVE, and environmentally sound management.

Outreach to countries (Global Funding)

- **Countries included:** outreach will be provided to developing countries and emerging economies. Countries will be prioritized under the SE4ALL Global Project.
- **Type of support provided:** the program will provide outreach to countries through regional workshops to promote coordinated action and side events alongside major environmental/energy events. The outreach will increase the number of governments committing to advance energy efficiency of lighting, appliances, and equipment, while also promoting regional coordination. It is expected 100 developing countries and emerging economies will join the en.lighten/United for Efficiency Global Partnership. This is broken down by the 30 countries that committed to the partnership under the SE4ALL Project and the 70 countries that committed to the partnership on the Global Leapfrogging Program.

ii. The baseline scenario or any associated baseline projects

Energy efficiency is the most cost-effective high-impact-opportunity to reduce greenhouse gas emissions globally. Efficient lighting, appliances and equipment represent one of the easiest and most cost-effective areas to accelerate efficiency. Yet, the level of deployment efficient appliances and equipment in most developing countries remains considerably below that of developed countries (such as the European Union and United States), which have had policies and strategies in place for a number of years now. For example, in some Sub-Saharan African countries the average unit electricity consumption is nearly 800 kWh per annum, while OECD countries have an average of approximately 420 kWh per annum. This is partly due to obsolete and highly inefficient appliances and equipment remaining in the market for longer periods and lack of minimum performance standards for new products on the market. A large majority of developed countries had energy efficiency labels and MEPS in place by the end of the 1990s for refrigerators, RACs, electric motors, and distribution transformers. As is shown in Table 1 mandatory MEPS and labels are also in place in some non-OECD countries, however there still remains a large amount of countries lacking MEPS. For each of the technologies (refrigerators, room air conditioners, motors and distribution transformers) between 60 per cent and 75 per cent of the non-OECD population can purchase products that are not subject to MEPS, meaning low efficiency products can still enter their markets.

Table 1: Non-OECD Countries with Mandatory MEPS and/or Labelling Programmes for Selected Products

		Number of Countries	Population	Per cent of non-OECD Population
Refrigerators	MEPS	22	2.38 billion	41%
	Labels	29	3.65 billion	64%
RACs	MEPS	15	2.00 billion	35%
	Labels	27	3.60 billion	63%
Motors (includes 3 Phase)	MEPS	14	1.83 billion	32%
	Labels	7	1.60 billion	28%
Transformers	MEPS	2	1.43 billion	25%
	Labels	2	1.44 billion	25%

Further, a large number of the non-OECD country norms and standards have become obsolete, since efficiency levels have not been updated following technology advancements. For instance, refrigerator labels in Argentina and the Philippines have not been updated since 1997 and 2000 respectively.

The effect of such standards being 10 or 15 years out of date could be estimated by studying the rate of improvement in the United States market shown in two successive periods of 10/11 years (1980 to 1990 and 1990 to 2001), where annual consumption reduced by 30% and then by 30% again. Thus standards that were set 10 or 15 years ago may be failing to achieve savings of between 30% and 45% in annual consumption compared with appliances under newly revised standards.

The problem of high-energy-consuming appliances and equipment in developing countries will be amplified in the future as those economies increase their population and purchasing power. For example, developing countries are expected to see the current stock of 500 million domestic air conditioner units nearly double by 2030 and more than triple by 2050 as populations increase their household income and increasingly live in urban environments. Similarly, as developing countries and emerging economies increase their electricity consumption and grid connection in the coming years, it is expected that their number of distribution transformers will triple by 2030. Without policies and strategies put in place in the near future, high-energy-consuming products will remain in the market for 10 to 15 years for refrigerators, RACs, and motors, while distribution transformers will remain in use for over 30 years. To avoid locking-in the high-electricity-consuming products, countries must begin transitioning their markets today.

iii. The proposed alternative scenario, with a brief description of expected outcomes and components of the project

The child project extends the activities of the virtual Global Centre of Excellence, founded under the Efficient Appliance and Equipment Global Partnership Programme and funded under GEF project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment.” The virtual Centre of Excellence is supported by a network of experts from partner public organizations and private sector companies, including UNDP, CLASP, bigEE (Wuppertal Institute) Topten, Department of Industry, Australia, IEA-4E, Copenhagen Centre on Energy Efficiency, Philips Lighting BV OSRAM Light AG, International Copper Association (ICA), ABB, Mabe, Arcelik, BSH, Haier, Gree Electric, and Electrolux.

The child project will result in countries being prepared to successfully implement the activities of a market transformation project while also ensuring that resources are not duplicated with each project (for example guides being used across all GEF project). This approach provides increased coordination between countries as they develop the policies in the country based off best practice recommendations. Further, this component will support 15 partner countries to have increased capacities to carry out projects and policies to transform their market. The 15 partner countries will be identified under the current GEF project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment.”

Component 1: Global services for partner countries

Component 1 of the Global Leapfrogging Program extends the activities of the virtual Global Centre of Excellence, founded under the Efficient Appliance and Equipment Global Partnership Programme and funded under GEF project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment.” The virtual Centre of Excellence is supported by a network of experts from partner public organizations and private sector companies, including UNDP, CLASP, bigEE (Wuppertal Institute) Topten, Department of Industry, Australia, IEA-4E, Copenhagen Centre on Energy

Efficiency, Philips Lighting BV OSRAM Licht AG, International Copper Association (ICA), ABB, Mabe, Arcelik, BSH, Haier, Gree Electric, and Electrolux.

Component 1 will result in countries being prepared to successfully implement the activities of a market transformation project while also ensuring that resources are not duplicated with each project (for example guides being used across all GEF project). This approach provides increased coordination between countries as they develop the policies in the country based off best practice recommendations. Further, this component will support 15 partner countries to have increased capacities to carry out projects and policies to transform their market. The 15 partner countries will be identified under the current GEF project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment.” The resources and support include:

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- **‘How to’ guides:** the in-depth steps to developing particular parts of the integrated policy approach, including MEPS, financial mechanisms, MVE, and environmentally sound management (such as recommendations on the transition to low or zero global warming potential refrigerants). The guides will be topical with chapters describing the particular differences for each appliance and equipment.
- **Remote support:** Through the virtual centre of excellence, the project will support country projects with call in centre functionality to address issues ranging from manufacturing to end of life of products. Experts on each subject of the integrated policy approach will be made available to support countries in developing and implementing their policies. Further, general support will be provided through a learning portal (available to the child projects but also the general public) of the program’s website with training video, online training courses, webinars, and calculators.
- **Regional status reports:** showing the level of policies, products in use, manufacturing, and potential savings (energy, financial, and climate savings) with a transition to energy efficient products. Potential regions: Russia (+Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), Eastern Europe plus Caucasus, ASEAN (+Papua New Guinea), China, India, MENA, ECOWAS, Eastern Africa, SADC, Central America (+Mexico), Mercosur.
- **Training for trainers:** The project will host in person training sessions to bring together representatives from partner countries to increase capacities on implementing MEPS, supporting policies, MVE, and environmentally sound management. The representatives of each session will then be qualified to return to their country and replicate the training within their departments and/or ministries. Training guides, material and PowerPoint presentations will be shared with participants to ensure they can adequately replicate the training. This approach ensures increased collaboration across countries while also increasing the use of a common methodology to transforming markets to energy efficient products. The criteria to receive this support will be based on the country being a partner to initiative, commitment to advance energy efficiency is shown through national communications; funding for project implementation is available (for example from a child project, other GEF Child Project, and other sources of funding, including domestic funding, Germany’s International Climate Initiative, European Commission); regional diversity of countries supported.

The ‘how to’ guides, remote support, and regional status reports will be available to all countries that partner with the initiative. The project will prioritize the countries that will be included in the training based on their ambition to implement policies, obtained funding to carry out the policies, and also based on GHG emission reductions.

The national child projects (currently including Costa Rica, Kazakhstan, Sudan), will be supported with the resources and tools of this component. The virtual Centre of Excellence will communicate the availability of the tools and ensure the child projects do not duplicate resources/tools within their own project.

Component 2: Outreach on Efficient Appliances and Equipment

Through Component 2 of the Global Leapfrogging Program, there will be increased number of governments committing to advance their markets to energy efficient appliances and equipment. The program will achieve commitment of 100 countries, increasing by 70 over the goal of the GEF SE4ALL Global Project (Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment - UNEP #5831). To complete this, the Global Leapfrogging Program will use the resources and tools developed under SE4ALL Global Project (#5831), such as the country-by-country assessments and best practice policy guides. Carrying-on the global campaign from the preparatory SE4ALL Global Project, this component will host regional workshops to gain the political commitment from governments to transform their markets, while also encouraging increased regional harmonization. The project will utilize tools and reports developed under GEF project #5831 to maximize GEF resources, such as using the country Assessments and policy brochures on best practice policies.

- Regional workshops launching regional status reports and regional/national commitment: Regional workshops will be hosted in each region to bring together each country’s ministry of energy, ministry of environment, and standard authority. The workshops will gain political commitment from governments to transition their markets to energy efficient products and also form agreement within the region to harmonize policies and standards. The workshops will provide the opportunity for increased coordination across projects with best practice policies and for countries to provide lessons learned on the existing policies and projects.
- Side events alongside major environmental and energy events: The project will host side events and workshops alongside major environmental and energy events to ensure that energy efficiency of lighting, appliances, and equipment stays at the top of the agenda in order to receive commitment for national decisions makers to advance their markets.

iv. Summary of benefits of a transition to energy efficient lighting, appliances, and appliance

Component 1

The support provided to partner countries that committed to shift their markets to efficient appliances will enable partner countries to achieve this goal with their own efforts or other resources. Following the same logic in the PFD Section 4 (Benefits), the project does not account for the full 100% of the savings, but for a share of 17% that relates to the services provided to partner countries.

Further, the calculation assumes a 10% causality factor meaning, of the full potential of emissions reductions coming from this category, only 10% will be captured through this project path. The 10% causality reflects that the country officials will have greater potential to implement projects or strategies for transitioning, however it does not result in the entire transition, which could be supported through other channels, such as a Child Project.

The following table shows the projected savings under the Program for Component 1 fifteen countries:

	Cumulative GHG reduction (tCO₂)
Post-project direct emission reduction excl. national child projects	Lower range: 17% · 10% · 2,314,883,861 = 39,353,026 Upper range: 17% · 10% · 5,529,409,982 = 93,447,029
Total direct and indirect	Range of 39,353,026 to 93,447,029

The expected post-project direct emission reduction under Component 1 in fifteen partner countries amounts to 39 to 93 Megatonnes CO₂ reduction.

Benefits under Component 2:

Under Component 2 of the program the project will extend the number of partner countries from 30 to 100, accounting for almost the entirety of the developing countries. Following the same approach as under the GEF project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment”, the project will account for 33% of the total savings for creating the political will of countries and stakeholders to transform their markets to efficient products. The project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment” accounted for 2/3 of the post-project direct and indirect emission reductions from the market transition to efficient appliances and equipment in three product groups (refrigerators, room air conditioners and distribution transformers taken into account for the calculation) in non-OECD markets over the ten years following the project completion. Therefore Component 2 of this project will account for the remaining 1/3.

Further, the calculation assumes a 5% causality factor meaning, of the full potential of emissions reductions coming from this category, only 5% will be captured through this project path.

	Cumulative GHG reduction (tCO₂)
Post-project direct emission reduction excl. national child projects	Lower range: $17\% \cdot 5\% \cdot 2,314,883,861 = 19,676,513$ Upper range: $17\% \cdot 5\% \cdot 5,529,409,982 = 46,723,514$
Total direct and indirect	Range of 19,676,513 to 46,723,514

A more detailed assessment on the potential GHG savings will be conducted at CEO endorsement for both the global components and the individual national projects.

v. Institutional Arrangements for project implementation in the countries including key stakeholders

Global Centre of Excellence: UNEP will continue to lead the global Centre of Excellence that will provide expertise and provide overall coordination of national projects. The Centre will be composed of experts on international energy efficiency of appliance, equipment and lighting. The Centre will work with its partners at UNDP and other partner agencies by providing expertise to project implementation in countries, including coordinating workshops to develop a national strategy, expertise in developing standards, and training to national officials to ensure effective implementation. The Centre of Excellence will be in regular communication with the national child projects to ensure that best practice policies are implemented in the country, while also receiving lessons learned on the national projects.

Program coordination and management: The program will be guided by a Program Steering Committee, which will meet annually to provide strategic advice and facilitate program level coordination and communication. The PSC will include representatives from each of the program’s countries, the GEF agencies (UNEP and UNDP), and other partners to the project.

NAME OF PROGRAM:

LEAPFROGGING MARKETS TO HIGH EFFICIENCY PRODUCTS (APPLIANCES, INCLUDING LIGHTING, AND ELECTRICAL EQUIPMENT)

Child Project Concept Note

PART I: PROJECT INFORMATION¹

Project Title:	Development of a market for energy efficient lighting, air conditioners and refrigerators in Costa Rica
Country(ies):	Costa Rica
GEF Agency(ies):	UNEP
Other Executing Partner(s):	Ministry of Environment, MINEA
GEF Focal Area(s):	Climate Change

FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²:

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1 Program 1	GEFTF	2,000,000	8,375,000
Total Project Cost		2,000,000	8,375,000

A. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: Accelerating improvements in energy efficiency under Costa Rica's public procurement programs and reducing Costa Rica's energy consumption and carbon dioxide emissions.					
Project Component	Financing Type	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
1. Demonstration projects to replace conventional appliances with energy efficient appliances in high energy consuming public institutions. [Contributing to Programmatic Approach - Menu Option 4]	TA	1.1 The public institutions with the highest energy consumption have permanent programs for procurement of energy efficient appliances including energy efficiency specifications for lighting, air conditioners and refrigerators.	GEFTF	500,000	2,000,000
2. Training and information program for market actors on the country's obligations to only procure efficient appliances and on mechanisms for product compliance. [Contributing to Programmatic Approach -	TA	2.1 Suppliers provide the public sector with electric appliances that comply with required energy efficiency specifications (lighting, air conditioners and refrigerators).	GEFTF	50,000	200,000

¹ This Concept Note is intended to convey whatever preliminary information exists at this stage on a child project and that is indicative of how it will contribute to the overall Program.

² When completing Table A, refer to the Program Results Framework, which is already mapped to the relevant [Focal Area Results Framework](#) in the [GEF-6 Programming Directions](#).

Menu Option 4]					
3. Establishment of a revolving loan fund for the financing of large-scale replacement programs in the public sector. [Contributing to Programmatic Approach - Menu Option 4]	TA	3.1 A revolving loan fund is in place for the financing of procurement of efficient appliances, that ensures sustainability of large-scale replacement programs.	GEFTF	1,200,000	4,600,000
4. Development of capacities for environmentally sound disposal of appliances [Contributing to Programmatic Approach - Menu Option 5]	TA	4.1 Specialized firms offer their services for the treatment of electronic waste and hazardous components of lighting, air conditioning and refrigerating appliances.	GEFTF	100,000	700,000
Subtotal				1,850,000	7,500,000
Project Management Cost (PMC)				150,000	875,000
Total Project Cost				2,000,000	8,375,000

*Co-financing will be determined once the agency will start developing the PPG.

B. CO-FINANCING FOR THE PROJECT BY SOURCE, BY TYPE AND BY NAME

Country	Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
Costa Rica	Recipient Government	Government of Costa Rica	In-kind	2,000,000
Costa Rica	GEF Agency	UNEP	In-kind	25,000
Costa Rica	GEF Agency	Inter-American Development Bank (IADB)	Loans	500,000
Costa Rica	Others	International Partnership for Energy Efficiency Cooperation (IPEEC)	In-kind	50,000
Costa Rica	Others	CLASP	In-kind	100,000
Costa Rica	Others	bigEE (Wuppertal Institute, Germany)	In-kind	100,000
Costa Rica	Others	Topten	In-kind	100,000
Costa Rica	Others	Copenhagen Centre on Energy Efficiency (C2E2)	In-kind	200,000
Costa Rica	Private Sector	Philips Lighting BV	In-kind	800,000
Costa Rica	Private Sector	OSRAM Licht AG	In-kind	800,000
Costa Rica	Private Sector	International Copper Association (ICA)	In-kind	800,000
Costa Rica	Private Sector	Mabe	In-kind	800,000
Costa Rica	Private Sector	BSH	In-kind	800,000
Costa Rica	Private Sector	Electrolux	In-kind	800,000
Costa Rica	Private Sector	National Lighting Test Center (NLTC, China)	In-kind	500,000

Total

8,375,000

C. PROJECT OVERVIEW

i. The global environmental problems, root causes and barriers that need to be addressed;

a. *Summary of national energy situation*

Energy consumption in Costa Rica is based on two commercial sources of energy: imported hydrocarbons, mainly diesel and gasoline for the transport sector, and electricity. The latter has today a high share of renewable energy sources but with a tendency to decrease, at the expense of higher shares of thermal electricity generation in the last years. This makes the energy matrix increasingly dependent on hydrocarbons and therefore more and more vulnerable to fluctuations in the price of crude oil on international markets.

b. *Summary of policies and strategies promoting energy efficient appliances, appliance*

The National Development Plan of Costa Rica (2015- 2018), an instrument of national planning and instituting sectoral policy proposals, sets a Program for the Strengthening of Institutional Environmental Management Plans (“PGAI”, in its Spanish acronym) in efficiency improvement in energy consumption in the highest electricity consuming public sector institutions. It is expected that institutions with the highest electricity consumption will incorporate, in measures of PGAI, regulations on energy efficiency for the procurement of electric appliances, as set out in Directive 011-MINAE, published in La Gaceta No 163 of August 26, 2014, which includes regulations for the procurement of appliances, luminaires and appliances with high energy efficiency requirements.

In addition, in Costa Rica’s third national communication to the UNFCCC the country defined three key strategies in the energy sector to reduce GHG emissions: energy efficiency, renewable energies and awareness raising education and information campaigns in companies to reduce energy consumption. Energy efficiency should be specifically improved in the residential, industrial and transport sector and reached by products with standards for energy efficiency.³

Within the focus products, policies in place are as follows:

- **Lighting:** Costa Rica is a partner to the en.lighten initiative and plans to phase out inefficient incandescent lamps by 2016 as it has endorsed the Central America Regional Efficient Lighting Strategy. Minimum energy performance standards for general service lamps and for CFLs are already in place since 2007, as well as labelling and test standards.
- **Residential refrigerators and air conditioners:** For refrigerators, minimum energy performance standards and comparative labelling are mandatory since 2008, and test standards are in place since 2012. For air conditioners, minimum energy performance standards are mandatory since 2012, and comparative labelling is also mandatory.

ii. The baseline scenario or any associated baseline projects

In the coming years, there is an expected larger growth for the products in focus as the population’s purchasing power increases and an increasing share of the population lives in urban areas. For example, in the Latin America and Caribbean region, between 2010 and 2030, energy consumption by refrigerators and freezers is expected to grow by 60% (BUENAS, 2014).

Public sector institutions in Costa Rica consume 12% of the total national energy and are the largest purchasers of electricity-consuming appliances in the country, thus their purchasing decisions have an enormous impact on the appliances market and the national electricity consumption. A product compliance platform exists in the country, and ensures that the appliances purchased meet minimum efficiency levels. Also, since 2014 it is mandatory for government institutions to acquire appliances compliant to minimum efficiency levels.

³ <http://unfccc.int/resource/docs/natc/crinc3.pdf>

There are technical and financial constraints on the part of public institutions for the full implementation of these measures, therefore, a momentum is necessary through the implementation of demonstration projects, involvement of market agents and appliance distributors, and the creation of a revolving fund to ensure the sustainability of the technological improvement of the country in the long term.

iii. The proposed alternative scenario, with a brief description of expected outcomes and components of the project

The main components of this proposal are the following:

Component 1 - Demonstration projects to replace conventional appliances with energy efficient appliances in high energy consuming public institutions: In order to raise awareness of the benefits of running large-scale replacement programs of conventional and obsolete appliances with energy-efficient appliances, it is proposed to implement demonstration projects in the 20 public institutions with the highest energy consumption. These demonstration projects will include components of technical and financial analysis, design of technical specifications, implementation of instruments for product conformity and final disposal of replaced appliance that include environmentally sound management of refrigerants, and recycling of valuable materials. The project will also support the use of refrigerants with low or zero global warming potential.

Expected Outcome: The public institutions with the highest energy consumption have permanent programs for procurement of energy efficient appliances including energy efficiency specifications for lighting, air conditioners and refrigerators.

Component 2 - Training and information program for market actors on the country's obligations to only procure energy efficient appliances and on mechanisms for product compliance: To ensure that actors of the electric appliances market know about the government's obligations to purchase energy efficient appliances and the processes of product conformity that their appliances must comply with, in the public procurement process.

Expected Outcome: Suppliers provide the public sector with electric appliances that comply with required energy efficiency specifications (lighting, air conditioners and refrigerators).

Component 3 - Establishment of a revolving loan fund for the financing of large-scale replacement programs in the public sector: To give continuity to the electrical appliance modernization process, it is proposed to set up a fund to provide loans to public sector institutions, in which depreciation assets return to the fund and can be used in new projects. One of the electricity distributors already has a program to fund government projects, however, resources are not constantly available and are insufficient to reach the entire public sector.

Expected Outcome: A revolving loan fund is in place for the financing of procurement of efficient appliances, that ensures sustainability of large-scale replacement programs.

Component 4 - Development of capacities for environmentally sound disposal of appliances: The project will support the development of companies specializing in the environmentally sound disposal of lighting products, air conditioners and refrigerators, focused on the recycling and disposal of hazardous substances such as mercury found in lamps and refrigerants and foams of air conditioners and refrigerators.

Expected Outcome: Specialized firms offer their services for the treatment of electronic waste and hazardous components of lighting, air conditioning and refrigerating appliances.

iv. Summary of benefits of a transition to energy efficient lighting, appliances, and equipment

The project aims to leverage the strong impact of the public sector in purchasing electrical appliances such as lighting, air conditioners and refrigerators. This is facilitated by government provisions requiring government institutions to purchase appliances compliant to minimum efficiency levels. Beyond the energy savings that will be achieved due to procurement of energy efficient products by government institutions, the large-scale government purchase programs will also make efficient product lines available on the general market.

According to UNEP estimates, energy savings resulting from a transition to efficient refrigerators and air conditioners in the residential sector would amount to more than 670 GWh per year by 2030 equivalent to 52,000 tonnes annual carbon dioxide emissions reduction, and 75 million USD reduction on end-users electricity bills (UNEP, 2014). While these savings are for the residential sector, they show the large potential of transforming a sector to energy efficient products.

As for the benefits of efficient lighting, the transition to energy efficient lighting through a switch to LEDs in the public sector for all major lamp types would result in the following benefits: 2.05 TWh cumulative electricity savings by 2030, 330 GWh saved in annual electricity consumption in 2030. These savings would result in 130 kilotonnes cumulative carbon dioxide emissions' reduction and 20 kilotonnes annually in 2030.

v. Institutional Arrangements for project implementation in the countries including key stakeholders

The project will be coordinated by the Ministry of Environment and Energy ("MINAE" in its Spanish acronym) with the participation of electricity distribution companies. Databases of distribution companies will be used to determine the 20 institutions with the highest consumption of electricity, which will be the main candidates to benefit from this project. For project implementation, distribution companies have the capacity to perform technical studies to determine the needs for technological replacement, estimate the investments to be made, calculate the projected savings and payback periods of investments. Also, the distributor will be responsible for the purchasing process, supervision and approval of the work, and activities of monitoring and verification of the expected energy savings.

NAME OF PROGRAM:

LEAPFROGGING MARKETS TO HIGH EFFICIENCY PRODUCTS (APPLIANCES, INCLUDING LIGHTING,
AND ELECTRICAL EQUIPMENT)

Child Project Concept Note

PART I: PROJECT INFORMATION¹

Project Title:	Energy efficient standards, certification, and labeling for appliances and equipment in Kazakhstan
Country(ies):	Kazakhstan
GEF Agency(ies):	UNDP
Other Executing Partner(s):	Ministry of Investment and Development of the Republic of Kazakhstan
GEF Focal Area(s):	Climate Change

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²:

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1 Program 1	GEFTF	3,500,000	17,500,000
Total Project Cost		3,500,000	17,500,000

B. CHILD PROJECT DESCRIPTION SUMMARY

Project Objective: Transform Kazakhstan's markets to energy efficient (EE) appliances and equipment providing benefits of climate change mitigation and decreasing energy poverty				
Project Components	Financing Type ³	Project Outcomes	(in \$)	
			GEF Project Financing	Co-financing
Component 1: Institutional, legal and regulatory framework and capacities for EE standards and labels (EE S&L)	TA	1.1 Road-map for introduction of Minimum Energy Performance Standards (MEPS) and supporting policies and regulations developed, agreed with stakeholders and officially adopted 1.2 MEPS designed and adopted for domestic appliances and key categories of energy-consuming equipment, including accompanying labelling scheme 1.3 Capacities of public officials strengthened to design and implement EE S&L policies strengthened	500,000	1,550,000
Component 2: Creation of monitoring, verification, and enforcement (MVE) system	TA	2.1 MVE capacities in place across all relevant public stakeholders to ensure enforcement of MEPS	835,000	650,000

¹ This Concept Note is intended to convey whatever preliminary information exists at this stage on a child project and that is indicative of how it will contribute to the overall Program.

² When completing Table A, refer to the Program Results Framework, which is already mapped to the relevant [Focal Area Results Framework](#) in the [GEF-6 Programming Directions](#).

³ Financing type can be either investment or technical assistance.

Component 3: Boosting demand for energy efficient appliances and equipment	TA	3.1 Enhanced awareness and improved access to non-partial information of residential and commercial buyers concerning energy efficiency of targeted appliances 3.2 Purchasers overcome the higher initial purchase price of energy efficient products	300,000	
	INV		1,000,000	10,000,000
Component 4: Ensuring supply of products compliant with EE S&L policies	TA	4.1 Enhanced interest and strengthened capacity of the local supply chain stakeholders to comply with new EE S&L regulation and to bring energy efficiency models to the market at competitive and for the majority of the population affordable prices	700,000	5,000,000
Subtotal			3,335,000	17,200,000
Project Management Cost (PMC) ⁴ GEFTF			165,000	300,000
Total Project Cost			3,500,000	17,500,000

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust

C. CO-FINANCING FOR THE PROJECT BY SOURCE, BY TYPE AND BY NAME

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
Recipient Government	Ministry of Investment and Development	In-kind	1,200,000
Recipient Government	National Energy Saving Program	Grants	11,000,000
GEF Agency	UNDP	Grants	300,000
Private Sector	Supply Chain Stakeholders	Equity	5,000,000
Total Co-financing			17,500,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS^{a)}

- No need to fill this table if it is a single Agency, single Trust Fund, single focal area and single country project.
- Refer to the [Fee Policy for GEF Partner Agencies](#).
- If Multi-Trust Fund project :PMC in this table should be the total amount; enter trust fund PMC breakdown here ()

N/a. this is single Agency, single Trust Fund, single focal area and single country project

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

PART II: PROJECT JUSTIFICATION

PROJECT OVERVIEW

A.1. Project Description.

- i. The global environmental problems, root causes and barriers that need to be addressed
 - a. *Summary of national energy situation*
1. Since the end of the economic recession in the late 1990s, Kazakhstan's electric power consumption has been steadily rising (see Figures 1 and 2). In absolute terms, total electric power use has doubled between 1999 and 2010 and is projected to grow further at 2-3% annually. According to the latest forecast by the Government, the demand is set to reach 100 bn kWh in 2015. Electricity use per capita has also increased and is now almost twice as high as the world average. At present around 87% of Kazakhstan's electricity comes from coal-powered plants and 13% from hydroelectric sources, the use of other types of renewable energy is less than 1%. Due to its heavy reliance on coal for electricity Kazakhstan has one of the world's highest grid emission factors – 0.914 tCO₂/MWh (based on EBRD estimates⁵). Therefore, policies to promote more efficient use of electric power by residential and commercial consumers can yield large and highly cost-effective GHG emissions reduction.

Figure 1: Electricity consumption per capita, kWh/capita

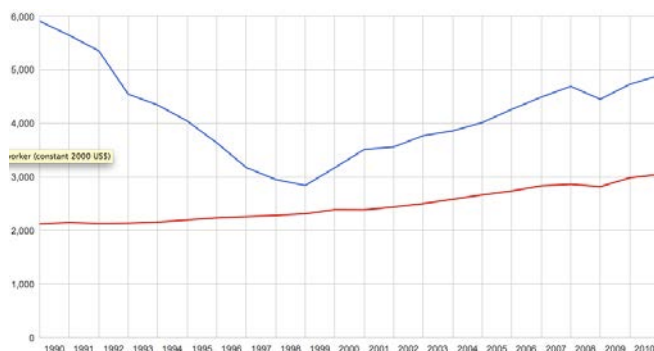
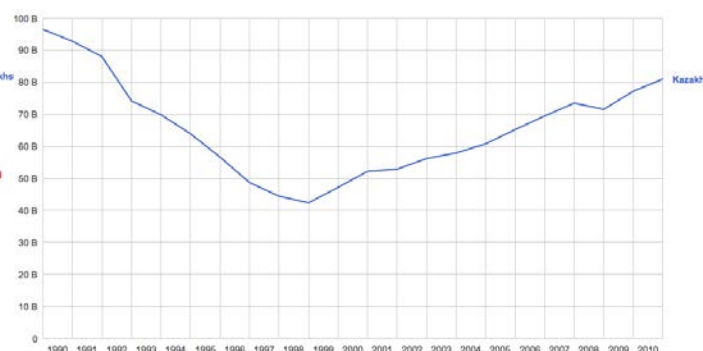


Figure 2: Electric power consumption, kWh



Source: World Bank

- b. *Summary of policies and strategies promoting energy efficient appliances, and equipment*
2. The Law “On Energy Saving and Energy Efficiency” of the Republic of Kazakhstan (adopted in January 2012, amended in January 2015) includes a number of important provisions regarding promotion of energy efficient appliances and equipment, specifically:
 - Minimal energy performance standards (MEPS) for key categories of energy-consuming devices
 - Requirements regarding mandatory energy labeling of energy-consuming appliances and devices;
 - Provision of economic incentives for end-users to stimulate up-take of more EE appliances and devices and penalties for producers/sellers for non-compliance with S&L policies;
 - Establishment of the state information system to monitor compliance of products and appliances with established standards and provide market information to end-users.
3. The situation in Kazakhstan in the field of technical regulation for energy efficiency and energy labelling of energy-using products should also be viewed in the context of global and regional integration processes within the WTO, Common Economic Area and Customs Union (Belarus, Kazakhstan and Russia). Following the 2011-2013 Plans for the Development of Customs Union Technical Regulations, the following Customs Union Technical Regulations have been drafted:
 - Policies and Regulations regarding Consumer Information about Energy Efficiency of Electric Energy-Using Appliances (the intergovernmental discussion completed, now in the final phase of consideration and adoption), and

⁵ http://www.kazenergy.com/images/stories/Pravovaia_baza/metodiki/27_06_2013/pril_1.pdf

- Requirements to Energy Efficiency of Electric Energy-Using Appliances (in the phase of summary of responses to public enquiry comments).
4. The elaboration of Customs Union Technical Regulations seeks to remove inefficient energy consumption technologies and develop a common market for energy-efficient products covered by all three members of the Customs Union (Belarus, Kazakhstan, Russia), as well as perspective member states (Armenia, Kyrgyzstan, Tajikistan). Technical Regulations will cover marketed household and industrial energy-using appliances of mass production and use which are characterized by both significant daily and/or yearly electric energy consumption and a potential for energy saving and the reduction of negative environmental impact. The existing draft Technical Regulations set mandatory requirements on energy labelling for 6 product groups and MEPS for 19 product groups.
 - ii. The baseline scenario or any associated baseline projects
 5. The Government of Kazakhstan adopted in 2013 the State Programme “Energy Saving 2020” which aims at achieving 10% annual reduction of GDP energy intensity and 40% reduction in energy intensity by 2020 (as compared to year 2008). The Ministry of Investment and Regional Development of the Republic of Kazakhstan is the main governmental agency in charge of Programme implementation. The programme, *inter alia*, envisages a set of measures aimed at promotion of EE standards and labels and uptake of EE appliances and equipment in industrial, residential and public sectors, such as:
 - Establishment of leasing financing mechanism for procurement of EE equipment;
 - Implementation of energy audits and preparation of EE plans for public buildings (schools, hospitals, offices), including recommendations on installation/replacement of EE equipment and appliances.
 - iii. The proposed alternative scenario, with a brief description of expected outcomes and components of the project
6. The objective of the proposed project is to transform Kazakhstan’s markets to energy efficient appliances and equipment providing benefits of climate change mitigation and decreasing energy poverty with a primary focus on residential, public and commercial sectors.
 7. The approach comprises of the following components:
 - *Component 1: Institutional, legal and regulatory framework and capacities for EE S&L.* The project will help set up national objectives and a detailed roadmap for introduction of EE S&L based on the integrated policy approach, for each individual product group. It will be linked to the regional efforts under the Custom Union and will capitalize on the initiatives in place (i.e. Energy Saving-2020 Programme) implemented by the Ministry of Investment and Development. The project will complement these baseline activities by a) helping address the shortcomings⁶ and improving quality of the draft technical regulations prepared by the Custom Union; b) bringing the stringency and scope of the regulations in line with best international practices⁷.and c) supporting introduction of additional national policies to promote EE in public sector through review and revision of public procurement rules and practices. In the case of refrigerators and air conditioners, the project will also support the country in transitioning to low or zero global warming potential refrigerants.
 - *Component 2: Monitoring, verification, and enforcement (MVE) system and capacities.* The project will support Kazakhstan in developing a well-functioning system of monitoring, surveillance, control, and testing facilities, including:

⁶ According to the parties participated in the public discussions of these draft Technical Regulations, the drafts has a significant number of shortcomings including conceptual ones in terms of both documents structure, lists of interrelated standards and alignment with

⁷ For example, EU policies on EE S&L currently set mandatory requirements on energy labelling for 11 product groups and MEPS for 23 product groups

- setting up standardized methods to test and measure energy efficiency parameters of energy-using products falling under MEPS;
- building up the required testing capacity (technical equipment of laboratories and staff qualifications) in the field of energy efficiency of energy-using products in accordance with the requirements of the international standard, ISO/IEC 17025;
- development of the accreditation system;
- training for specialists of conformity assessment and approval bodies;
- ensuring product market surveillance to monitor the observance of energy efficiency and energy labelling requirements.

- *Component 3: Boosting demand for energy efficient appliances and equipment.* Awareness will let industrial, residential and public sector end-users of appliances and equipment fully understand the benefit of more efficient products. The project will develop and deliver to consumers targeted information about appliance energy efficiency characteristics, costs and benefits of energy efficient products and easy-to-use comparison tools, including an internet-based information clearinghouse. The project will also work closely with manufacturers of energy-using products (household and technical building equipment), large retailer chains and local utilities to assure that all stakeholder groups understand the meaning of the energy label and how they can deliver proper information and arguments to recommend high efficient products to customers. Finally, the project will work with financial sector partners and distribution companies /retailers to help design and promote innovative financial mechanisms to enable consumers in overcoming their higher initial purchase price, such as leasing schemes for SMEs and “green” consumer credits for EE appliances.
- *Component 4: Ensuring supply of products compliant with EE S&L policies.* This project will work with domestic supply chain stakeholders (importers, assemblers, supply chain partners) to increase their capacities to deliver an adequate supply of good-quality energy efficient products and implement new S&L policies and regulations. It will provide technical support about product and production technologies used internationally for more efficient appliances and equipment, provide technical expertise (mainly via national technical institutes and/or universities, and international expertise where needed) to examine production facilities and suggest improvements, and assist in the preparation of joint strategies for the production and marketing (or import of components, assembly and marketing) of more efficient appliances. This will ensure that domestic production capacities for efficient appliances and equipment can be increased to meet the growing demand for efficient products that will result from the implementation of this project.

iv. Summary of benefits of a transition to energy efficient appliances, and equipment

8. International reference information suggests that EE S&L policies can lead to huge potential savings in Kazakhstan: efficiency gains of 20 to 50% are estimated for most major appliances (Energy Charter, 2009⁸). Realizing such potential only in residential and commercial sector would yield emission reduction in the range of 4.2 mln – 10.4 mln tCO₂/year and reduce total electricity demand by about 6%.

A.2. *Stakeholders.* Will project design include the participation of relevant stakeholders from civil society and indigenous people? (yes /no) If yes, identify key stakeholders and briefly describe how they will be engaged in project design/preparation:

9. The project will be executed by the Ministry of Investment and Development of the Republic of Kazakhstan and the lead GEF Agency will be UNDP. The initiative will follow the institutional structure as described in Section 6 of the Program Framework Document. The national project steering committee will be composed of the Ministry of Investment and Development, UNDP, UNEP and other relevant national and international partners and stakeholders. International project partners including international organizations, global manufacturers, and utilities will support the project to achieve its objectives. This support will come in form of in-kind co-financing

⁸ http://www.encharter.org/fileadmin/user_upload/document/EE_Standards_and_Labels_2009_ENG.pdf

such as expertise on setting levels MEPS, implementing collection and recycling schemes, and training on market surveillance activities.

10. Key civil society representative involved in the project design will be the Union for the Protection of the Consumers' Rights of Kazakhstan; the Union will be consulted in the design of Component 3 of the project regarding the scope and approaches for design and implementation of the consumer awareness raising campaign.

A.3 Risk. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable):

11. The most critical risk, which may undermine the success of the proposed project, is related to the delays and/or sub-optimal design of EE S&L policies under the Custom Union, the latter being inter-governmental body, is outside of the direct control of the proposed project. This risk will be mitigated through close coordination with on-going GEF-supported project in Russia "Standards and Labels for Promoting Energy Efficiency in Russia" and in Kazakhstan "Promotion of Energy Efficient Lighting" – both project teams have established good working relations with respective bodies within Custom Union, in charge of EE standards and technical regulations. Also, political authority and technical expertise of the UNEP-led global platform will be leveraged to initiate high-level dialogue with the Custom Union regarding scope and time-frame of the EE S&L policies and regulations, including harmonization of approaches to the design of S&L policies and incorporation of international best practices.

A.4. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives:

12. The project will build on and expand the scope of the on-going UNDP-GEF project "Promotion of Energy Efficient Lighting" which supports implementation of comprehensive market transformation strategy and policies for efficient lighting. The proposed project will exclude lighting from its scope, but will cover the rest of appliances and equipment in the residential and commercial sectors to be covered by the EE S&L policy framework.
13. The proposed project will also collaborate closely with the on-going EBRD-GEF "Reducing GHG Emissions through a Resource Efficiency Transformation Programme (ResET) for Industries in Kazakhstan", which supports the introduction of EE standards for industrial equipment and associated financial mechanisms.

DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes /no). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.:

14. The project is fully consistent with Kazakhstan's III-VI National Communication to UNFCCC which identifies demand-side energy efficiency measures, in particular in residential and industrial sector, among priority mitigation measures which cumulatively can yield up to 20-30% reduction in national GHG emissions by 2030.

NAME OF PROGRAM:

LEAPFROGGING MARKETS TO HIGH EFFICIENCY PRODUCTS (APPLIANCES, INCLUDING LIGHTING, AND ELECTRICAL EQUIPMENT)

Annex A

Child Project Concept Note

PART I: PROJECT INFORMATION¹

Project Title:	Leapfrogging Sudan’s markets to more efficient lighting and air conditioners (PIMS 5674)
Country(ies):	Sudan
GEF Agency(ies):	UNDP
Other Executing Partner(s):	Ministry of Water Resources, Irrigation and Electricity – Electrical Regulatory Authority
GEF Focal Area(s):	Climate Change

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1 Program 1	GEFTF	1,770,000	8,206,000
Total Project Cost		1,770,000	8,206,000

B. CHILD PROJECT DESCRIPTION SUMMARY

Project Objective: To transform Sudan’s markets for energy efficient (EE) lighting and air-conditioners and thereby providing climate change mitigation benefits and decreased energy poverty.					
Project Component	Financing Type	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
1. Development of a national strategy ³ to advance energy efficiency in lighting and air conditioners as part of the National Energy Efficiency Action plan	TA	1.1 Consensus is achieved by all energy stakeholders and policymakers on the goals, workplan, and key tasks in transforming the markets for energy efficient lighting and air conditioners; this will include a harmonization of roles, mandates and responsibilities of	GEFTF	85,000	500,000

¹ This Concept Note is intended to convey whatever preliminary information exists at this stage on a child project and that is indicative of how it will contribute to the overall Program.

² When completing Table A, refer to the Program Results Framework, which is already mapped to the relevant [Focal Area Results Framework](#) in the [GEF-6 Programming Directions](#).

³ Following a consultative process

(NEEAP)		all actors working in the EE sector. 1.2 National strategy developed and adopted for lighting and air conditioning sub-sectors under the NEEAP			
2. Development of regulatory mechanisms, including minimum energy performance standards (MEPS) for lighting products and air conditioners	TA	2.1 MEPS legal framework has been designed and adopted for domestic lighting products and air conditioners, including accompanying labelling scheme.	GEFTF	250,000	1,200,000
3. Creation of monitoring, verification, and enforcement (MVE) system for the MEPS	TA	3.1 MVE capacities have been improved to ensure lighting products and air conditioners comply with MEPS and labeling scheme is monitored 3.2 MVE capacities in place across all relevant public stakeholders to ensure enforcement of MEPS	GEFTF	600,000	2,400,000
4. Awareness-building of new MEPS	TA	4.1 End-users are aware of the benefits of energy efficient lighting products and air conditioners 4.2 Purchasers overcome the higher initial purchase price of energy efficient lighting products and air conditioners 4.3 Household and business surveys undertaken at end of project to verify cost savings from adoption of new technologies 4.4 Increased capacities of local supply chain stakeholders to comply with new MEPS and to bring energy efficiency models to the market at competitive and affordable prices	GEFTF	550,000	2,332,000
5. Enhanced environmentally sound management	TA	5.1 Reduction in hazardous materials used in the domestic production of lighting and air conditioners 5.2 Capacities are in place for a national system to collect, recycle and/or responsibly dispose of lighting products and air conditioners that contain hazardous materials	GEFTF	200,714	1,383,238
Subtotal				1,685,714	7,815,238
Project Management Cost (PMC)				84,286	390,762
Total Project Cost				1,770,000	8,206,000

C. CO-FINANCING FOR THE PROJECT BY SOURCE, BY TYPE AND BY NAME

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
International entity	Philips	Cash	1,000,000
International entity	Osram	Cash	1,000,000
International entity	Air conditioner manufacturers	Cash	1,000,000
International entity	National Lighting Test Center, China	Cash	200,000
International entity	International Copper Association (ICA)	Cash	500,000
GEF Agency	UNEP	Cash	50,000
International entity	CLASP	Cash	50,000
International entity	Copenhagen Centre on Energy Efficiency (C2E2)	Cash	50,000
National Government	Electricity Regulatory Authority (ERA)	Cash	1,000,000
National Government	Ministry of Water Resources, Electricity and Irrigation (MWRE)	Cash	200,000
National Government	Sudanese Standards and Metrology Organization (SSMO)	In-kind	2,756,000
National Government	Sudanese Electricity Distribution Company (SEDC)	Cash	200,000
National Government	Sudanese Thermal Power Generation Company	Cash	100,000
National Government	Merowe Dam Electricity Company	Cash	100,000
Total Co-financing			8,206,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS ^{a)}

- a) No need to fill this table if it is a single Agency, single Trust Fund, single focal area and single country project.
- b) Refer to the [Fee Policy for GEF Partner Agencies](#).
- c) If Multi-Trust Fund project :PMC in this table should be the total amount; enter trust fund PMC breakdown here ()

N/a. this is single Agency, single Trust Fund, single focal area and single country project

PART II: PROJECT JUSTIFICATION

Project Overview

*A.1. Project Description***i. The global environmental problems, root causes and barriers that need to be addressed****a. Summary of national energy situation**

Sudan's primary energy consumption is estimated at 11 million TOE of which about 60% comes from biomass resources; 36% from fossil fuels; and 4% from hydro. Currently Sudan has a total installed power generation capacity of 2,723 MW of which hydro-power generation constitutes 56% of current generation and fossil-fired power generation the remaining 44%. The principal fossil fuels currently used for Sudan's power generation are heavy and light fuel oils, with shares of 61% and 39% respectively.

Sudan has limited oil and natural gas reserves and depends mainly on imported fossil fuels for a large share of its produced electricity; GHG emissions from the energy sector were estimated at 8.54 million tCO₂ in reference year 2000. Several new fossil-fired power stations are scheduled to come on line during the next few years to meet the rising demand for electricity which has increased about 14% annually for the past five years, Load shedding is now a common occurrence in the country and in 2015 the national load dispatch center had to apply a harsh load shedding program on its largest industrial customers and all residential areas to cut electricity consumption for long hours during the day. Meanwhile over 60% of the population of Sudan – approximately 21 million people – do not yet have

access to electricity. The government's planned target is to reach an electrification rate of 75%-80% by 2030. To meet forecasted demand the Government has targeted an additional 12,000 MW of power generation capacity be installed by 2030 combined with introduction of various energy-saving measures. In September 2013 Sudan introduced the third and most dramatic in a series of fuel subsidy cuts, raising prices of petrol, diesel and liquefied petroleum gas (LPG) by 65 to 75 per cent each. This came in a context of high economic pressure, following the loss of oil revenue from South Sudan after July 2011.

Estimates show that the current level of electricity consumption in Sudan is 8,470 GWh of which 51% is consumed by the residential sector; 16% by industrial sector; 13% by the government sector; 5% by the agriculture sector; and 3.7% by the commercial and services sector. MED statistics have revealed that the total consumed power has increased in large part due to lighting and cooling demands. GHG emissions associated with a BAU energy use trajectory are expected to reach just over 24 million tons of CO₂-equivalent by 2030, a six-fold increase from year 2000 levels. The transport and electricity together are forecast to account for most of the growth in GHG emissions in Sudan, with these two sectors responsible **for around 70% of projected GHG emissions by 2030.**

A number of potential mitigation measures were assessed in the Second National Communication to the UNFCCC relative to their capacity to achieve long-term GHG emission reductions in Sudan associated with energy use. Of these measures, five (5) were selected for quantitative analysis by the national assessment team based on three main criteria: ease of implementation, consistency with existing sustainable development objectives, and potential magnitude of emission reductions under Sudanese conditions. **The top priority measures selected relate to energy efficient (EE) lighting and air-conditioners** (see table 1 below).

Table 1 - Priority GHG emission reduction measures as identified in Sudan's SNC

Table 4-2: GHG emission reductions from priority GHG mitigation options

GHG mitigation measure	GHG reductions (million tonnes CO ₂ e)		GHG reduction in 2030 as percentage of Baseline emissions in 2030
	In 2030	2015- 2030	
High efficiency air conditioning	1.22	8.25	5.0%
Compact fluorescent lighting	1.10	7.99	4.5%
Fuel switching in industrial subsectors	0.32	3.70	1.3%
Increased use of public transportation	1.10	7.62	4.5%
Increased fuel economy of the light duty vehicles	3.15	21.63	12.9%
Total	6.89	49.18	28.3%

As regards high efficiency air conditioning in the household sector, space cooling accounts for a significant share of annual electricity use in urban households. Typically, window-mounted air conditioning (A/C) units are low efficiency and are rated between 12,000 and 24,000 BTU/hr. In year 2000, urban households consumed an average of 370 kWh annually for space cooling. By 2011, energy statistics indicate that this level grew over threefold reaching an average of about 1,230 kWh per urban household. By 2030, the average annual electricity use for space cooling is projected to be 3,110 kWh per urban household per year. An increase in the efficiency of space cooling can be achieved through a combination of regulatory mechanisms (MEPS), price signals (i.e., taxation on imported A/C units, full cost electricity pricing), technology substitution (i.e., switching to high efficiency evaporative cooling), and new building codes (i.e. passive solar housing design, advanced construction materials for new buildings, etc).

Lighting also accounts for a significant portion of annual electricity use in Sudan. Typically households use low-efficiency incandescent lighting due to their lower costs and higher availability compared to more efficient alternatives. In year 2000, urban households consumed an average of 122 kWh annually for lighting. By 2011, energy statistics indicate that this level grew over three fold reaching an average of about 410 kWh per urban household. By 2030, the

average annual electricity use for lighting is projected to be 1,036 kWh per urban household per year. An increase in the efficiency of lighting can be achieved through regulatory mechanisms (mandatory MEPS) as well as fiscal incentives that promote the widespread penetration of LEDs, CFLs and other high-efficiency lighting technologies (i.e., full cost electricity pricing, lower tariffs on high-efficiency light bulbs).

Finally it is important to note that at present the structure of the energy sector in Sudan is fragmented between three ministries, all of which have energy efficiency departments.⁴ In terms of the formulation of energy-related policies, laws and legislation, there are clear overlaps in policy making and ratification procedures among these government actors. At present there is no existing coordination body to link efforts and develop synergies among all energy institutions in the country to effectively collaborate on energy efficiency initiatives.

b. Summary of policies and strategies promoting energy efficient lighting, appliances, and equipment

Sudan formulated its National Energy Efficiency Action plan (NEEAP) in December 2014. The overall objective of the plan is to achieve an annual savings of 12% of the total energy demand starting from the year 2016 until the year 2020. The NEEAP contains three measures to improve energy efficiency in the electricity sector:

- Reduce electricity consumption in lighting of the residential sector and promote the use of high efficient household appliances;
- Reduce electricity consumption in government buildings; and
- Improve the power factor in the industrial sector.

According to the Arab Future Energy Index (AFEX) for 2015, Sudan ranks 13 out of 17 Arab countries on a variety of EE indexes with the country's score for "policy framework" particularly low relative to neighboring countries. The AFEX (215) notes that: *"Sudan is one of the few countries in the region that has successfully utilized the system of prepaid meters. With this system, it was able to improve energy conservation efforts and reduce non-technical losses in the distribution networks, while substantially improving the collection rate of electricity bills. Sudan remains one of the early adopters of a national energy efficiency action plan, which contains a number of important measures for improvement of energy efficiency in the utility sector. It should still concentrate on implementing these measures and building a base for proper monitoring and evaluation."*

The implementation of the NEEAP as it regards reducing electricity consumption in the residential and government sectors is facing several barriers which need to be urgently addressed. First, a coordinating agency on EE initiatives is lacking and a specific strategy/action plan needs to be developed for the lighting and air conditioner sub-sectors. Secondly, there is a critical need for the introduction of appropriate regulatory mechanisms – including minimum energy performance standards (MEPS) – for lighting products and air conditioners, as well as accompanying monitoring, verification, and enforcement (MVE) system. The market is currently promoting window-mounted air conditioning (A/C) units that are low efficiency and relatively cheap incandescent light bulbs (60-100W). Thirdly, there is general lack of public awareness among end-users and energy stakeholders of the benefits of energy efficient lighting products and air conditioners. The upfront cost of EE lighting and A/Cs is also expected to be a barrier in the near-term and so consumer awareness is key to making sure that consumers are aware of the financial returns from energy savings amortized over the lifetime of the new technologies. Finally the transition to a market for EE lighting and air-conditioning products must be done in the context of enhanced environmentally sound management, particularly as regards 1) a reduction in the use of hazardous materials in the domestic production of lighting and air conditioners; and 2) a national system in place to collect, recycle and/or responsibly dispose of lighting products and air conditioners that contain hazardous materials.

ii. The baseline scenario or any associated baseline projects

Various ad-hoc efforts are being made by different government entities such as the Ministry of Water Resources, Electricity and Irrigation, which has an initiative to replace one million Incandescent Lamps (ICLs 60-100W) with high-quality, long life (10,000 hours) energy efficient Compact Fluorescent Lamps (CFL). In line with electricity

⁴ These are the energy efficiency departments within the Ministry of Oil, the Electricity Regulatory Authority within the Ministry of Water Resources, Electricity and Irrigation, the National Energy Research Center within the Ministry of Science and Communications.

efficiency efforts, the Sudanese Standards and Metrology Organization (SSMO) is establishing a laboratory for testing performance of all electrical appliances. Different electrical appliance performance testing equipment have been procured and are expected to be installed by December 2015. The Electricity Regulatory Authority is also keen on developing new regulatory measures for EE; at present the country has no MEPS for any appliances or equipment. Moreover the Arab Regional Center for Renewable Energy and Energy Efficiency (RCREEE) initiated a series of workshops targeting public utilities, companies, universities and other stakeholders on developing the capacities for promoting energy efficiency actions. The relevant indicative baseline co-finance is listed in Table C.

iii. **The proposed alternative scenario, with a brief description of expected outcomes and components of the project**

The baseline activities mentioned fall short of comprehensively addressing the challenges of radically transforming Sudan's markets for energy efficient (EE) lighting and air-conditioners, the two priority sectors under the SNC. The alternative project approach is comprised of the following components:

- 1) **Development of a national strategy to advance energy efficiency in lighting and air conditioners as part of the National Energy Efficiency Action plan (NEEAP):** The strategy will provide the overall framework by defining the scope of the country's ambitions for energy efficient lighting and air conditioners. The strategy – which will be developed under the umbrella of the NEEAP – will set national objectives and establish a detailed roadmap for lighting products and air conditioners. The strategy will also include a harmonization of roles, mandates and responsibilities of all actors working in the EE sector so that there is a clear delineation of accountabilities for achieving different milestones within the road map.
- 2) **Development of regulatory mechanisms, including minimum energy performance standards (MEPS) for lighting products and air conditioners:** Promoting available energy efficient products through mandatory energy performance standards and labelling has been the best-known and longest-running policy in the appliances and equipment sector. As part of the project the Ministry of Water Resources, Irrigation and Electricity – Electrical Regulatory Authority will develop and adopt MEPS for lighting products and air conditioners. The lighting component will aim to leapfrog CFLs and focus on LEDs while A/C MEPS will promote the most efficient A/C units for Sudan's climatic conditions (based on a SEER rating - Seasonal Energy Efficiency Ratio).
- 3) **Creation of monitoring, verification, and enforcement (MVE) system:** The project will support Sudan in developing a well-functioning system of monitoring, surveillance, control, and testing facilities, including: 1) setting up standardized methods to test and measure energy efficiency parameters of energy-using products falling under MEPS; 2) building up the required testing capacity (technical equipment of laboratories and staff qualifications) in the field of energy efficiency of energy-using products in accordance with the requirements of the international standard, ISO/IEC 17025; 3) development of the accreditation system; 4) training for specialists of conformity assessment and approval bodies; and 5) ensuring product market surveillance to monitor the observance of energy efficiency and energy labelling requirements. This will ensure products comply with the MEPS and will reduce the number of non-compliant products entering the market to an absolute minimum. Regional collaboration will be used to ensure that products comply with standards in each country.
- 4) **Awareness-building of new MEPS:** Awareness campaigns will let end-users of lighting and air conditioners fully understand the benefits of more efficient products and help overcome resistance to the higher initial purchase price; at the same time support is needed for importers and retailers to enable them to bring models to the market at competitive and affordable prices. Various awareness-building activities will be undertaken under this component for different stakeholders in the lighting and air conditioning sub-sectors. The component will assess the applicability of incentives and other measures to support compliance and uptake with the new EE products covered under the MEPS; these will include financial incentives (for products above and beyond the MEPS), procurement programs, endorsement schemes and other market-support measures focused on the most cost-effective, energy efficient products available. Studies show that while the product price often increases initially following the introduction of an energy performance standard, it generally drops

very shortly thereafter (IEA, 2010c); as such it is likely that most incentive schemes will be focused on suppliers (but this will be determined at PPG).

- 5) **Enhanced environmentally sound management:** The Component will develop capacities on environmentally sound management to safeguard the environment throughout the full lifecycle of the prioritized products (lamps and air conditioners⁵). Strict regulations, standards and procedures will be developed for handling and disposal of HCFC-22 (also known as R-22), which is a common refrigerant in Sudan's older stock of air-conditioning systems. Support will be given to enhance capacities for environmentally sound management, including collection and recycling schemes or safe disposal of hazardous substances (such as R-22). Lighting technologies may contain hazardous substances, particularly older and low-efficiency mercury-added lamps, and, old magnetic ballasts for discharge lamps, which may contain PCBs. The replaced ICLs will be collected and recycled or destroyed according to the highest environmental standards. This component will coordinate with UNEP's OzonAction Team in the development of Refrigerant Management Plans, standards and actions combining the objectives of eliminating ozone depletion with low or zero global warming potential.

iv. Summary of benefits of a transition to energy efficient lighting, appliances, and equipment

The transition to more energy efficient lighting and air conditioners will achieve benefits at both the public utility and the consumer level (monetary savings from the reduced energy consumption), as well as major emission reductions.

As regards savings from lighting, the Technology Needs Assessment for Climate Change Mitigation (2013) notes that: *“Given the high electricity consumption for household lighting, special emphasis has been put on lamp bulbs (lighting). It has been calculated that if the CFL lamps were replaced for only 6 million lamps then a saving of 835,200 MWh equivalent to 251,395 GHG reduction (CO₂/year) could be attained.”* LEDS can achieve per unit energy savings of 5-10% higher than CFLs so if the same lamps were replaced by LEDS the GHG emission reductions will be even higher.

If we look at the annual GHG emission reduction estimates from Table 1, the average yearly GHG savings (for the period 2015-2030) is 530,000 tCO₂/year from a national switch to CFLs. If we assume a conservative GEF 'causality factor' for these emission reductions targets of 60%, the estimated direct emission reductions attributable from project interventions in the lighting sub-sector would be approximately **320,000 tCO₂/year** by the end of the project period.

As regards emission reductions from transforming the air-conditioning sub-sector, it is important to note that because of the hot weather in Sudan, air conditioners are increasingly used in both residences and government offices which results in an annual increase in summer peak demand by 7.5%. The total number of air conditioners in Sudan is currently estimated to be 136,000 units (of equivalent 18000 BTU window type) and the annual energy consumption of air-conditioners (residential, commercial and governmental sectors) is currently estimated to be 746 GWh. Based on these values and excluding forecasted growth in consumption, a modest reduction of 20% in energy consumption for the A/C sub-sector would result in energy savings of 149,200 MWh per year, equivalent to reductions of **45,500 tCO₂/year** by the end of the project period.⁶

The combined direct emission reductions for the two sub-sectors based on the above scenarios would be **365,106 tCO₂/year**. A full analysis of the direct and indirect emission reductions of the project (and GEF attribution) will be done at PPG phase.

The amount of electricity saved will (at the utility level) free up funds for rural electrification and contribute to achieving the targeted electrification rate of 80% by 2031. The energy savings accrued to consumers will help

⁵ Most window air-conditioning units and dehumidifiers contain hydrochlorofluorocarbon (HCFC) refrigerant. CFCs and HCFCs are ozone-depleting substances (ODS) that, if released to the environment, destroy the protective ozone layer above the earth. Refrigerators and freezers manufactured since 1995 contain ozone-friendly hydrofluorocarbon (HFC) refrigerants; however, these refrigerants still need to be carefully handled since they are greenhouse gases.

⁶ Based on a weighted average grid emission factor in Sudan for operational plants and expected plants of 0.305 tons CO₂/MWh.

households save money and meet the nation's environmental objectives (in 2013 the electricity tariffs to consumers in Sudan – both residential and industrial – are approximately 8.2-8.3 US cents/kWh and so the savings will be substantial). A full assessment of the socioeconomic benefits of the energy savings from project interventions will be done at PPG phase

A.2. Stakeholders. Will project design include the participation of relevant stakeholders from civil society and indigenous people? (yes /no) If yes, identify key stakeholders and briefly describe how they will be engaged in project design/preparation:

The project will be implemented under the UNEP Efficient Appliances Global Program Framework Document (PFD). The lead GEF agency will be UNDP. The project will be executed by the Electricity Regulatory Authority (ERA) of Sudan with support from the Sudanese Electricity Distribution Company (SEDC), the Sudanese Standards and Metrology Organization (SSMO), and the Ministry of Oil and National Energy Research Center. ERA will take a lead role in the implementation of all project activities. The development of the project will include extensive consultations with end users, suppliers, importers and manufacturers.

The project will follow the institutional structure as described in Section 6 of the Program Framework Document. The national project steering committee will be composed of the ERA, SEDC, SSMO, UNDP and UNEP. International project partners, including international organizations, global manufacturers, and utilities, will support the project to achieve its objectives. This support will come in the form of in-kind financing such as expertise on establishing levels of MEPS; implementing collection and recycling schemes; training on market surveillance activities; and the development and execution of financing mechanisms.

A.3 Risk. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable):

The most critical risk, which may undermine the success of the proposed project, is related to any regulatory delays and/or sub-optimal design of MEPS under Component #2 or lack of monitoring, verification, and enforcement under Component #3. A full risk assessment will be done at PPG phase.

A.4. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives:

This project will closely coordinate with and learn from the UNDP/GEF Egypt Project *Improving the Energy Efficiency of Lighting and Building Appliances* (PIMS 4231) which is facilitating a comprehensive market transformation of the Egyptian market towards the use of more energy efficient electric appliances at a level where cost-efficiency is proven. This is being done through the combination of regulatory tools such as minimum energy performance standards (MEPS) and information labels, enhanced public awareness, capacity building and attractive financing mechanisms. The project has strengthened the regulatory and institutional framework, developed monitoring and enforcement mechanisms, and provided training to public authorities and other relevant stakeholders. The best platform for collaboration between the two projects will be established at PPG phase.

UNDP is implementing several other GEF-funded CCM projects in Sudan in the energy sector, including a new project on wind energy and another project (at PPG) phase on Solar PV pumping for irrigation. During the PPG phase, a full identification of related initiatives will be conducted with accompanying elaboration on coordination.

Description of the consistency of the project with:

B.1 Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes /no). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.:

The project is fully consistent with Sudan's Second National Communication to the SNC. Sudan's Technology Needs Assessment for Mitigation identifies electricity production/consumption and transportation as the priority mitigation areas for energy, with a focus on reducing energy consumption in households.