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Project title: Leapfrogging Sudan’s markets to more efficient lighting and air conditioners		
Country: Sudan	Implementing Partner: Ministry of Water Resources, Irrigation and Electricity (MWRIE) – Electricity Regulatory Authority (ERA)	Management Arrangements : National Implementation Modality (NIM)
UNDAF/Country Programme Outcome: Outcome 2: Populations vulnerable to environmental risks and climate change become more resilient and relevant institutions are more effective in the sustainable management of natural resources.		
UNDP Strategic Plan Output: Outcome 1: Growth and development are inclusive, and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded. Output 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy) Indicator 1.5.1: Number of new development partnerships with funding for improved energy efficiency and/or sustainable energy solutions targeting underserved communities/groups and women. Indicator 1.5.2: Extent of change in: a) energy efficiency, and/or b) modern energy coverage by users and specific sectors.		
UNDP Social and Environmental Screening Category: Low Risk		UNDP Gender Marker: GEN 2: Gender is mainstreamed in all project activities
Atlas Project ID/Award ID number: 00101915		Atlas Output ID/Project ID number: 00104159
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Planned start date: 1-June-2018		Planned end date: 31-May-2022
LPAC date: TBC		
Brief project description: The main objective of the project is to transform Sudan’s markets for energy efficient (EE) lighting and air-conditioners providing climate change mitigation benefits and decreased energy poverty. The baseline activities fall short of comprehensively addressing the challenges of radically transforming Sudan’s markets for energy efficient (EE) lighting and air-conditioners. The alternative project strategy consists of a top-down component integrated with several bottom-up activities including mainstreaming gender into project activities. The top-down component comprises the development of standards, enforcement of regulations supporting energy efficient products, and building the institutional framework capable of maintaining steady market development. Bottom-up activities target the creation of positive ambience for the implementation of the new regulations on the levels of distributors and end users.		

FINANCING PLAN		
GEF Trust Fund	USD 1,770,000	
(1) Total Budget administered by UNDP	USD 1,770,000	
PARALLEL CO-FINANCING <i>(all other co-financing that is not cash co-financing administered by UNDP)</i>		
Ministry of Water Resources, Irrigation and Electricity (MWRIE)	USD 1,000,000	
Electricity Regulatory Authority (ERA)	USD 1,000,000	
Sudanese Standards and Metrology Organization (SSMO)	USD 2,756,000	
Sudanese Electricity Distribution Company (SEDC)	USD 200,000	
Sudanese Thermal Power Generation Company (STPG)	USD 200,000	
Merowe Dam Electricity Company (MDEC)	USD 200,000	
UN Environment	USD 50,000	
National Lighting Test Centre (NLTC), China	USD 200,000	
(2) Total co-financing	USD 5,606,000	
(3) Grand-Total Project Financing (1)+(2)	USD 7,376,000	
SIGNATURES		
Signature: Eltahir Suliman Aidam Undersecretary, Ministry of International Cooperation, Sudan	Agreed by Government	Date/Month/Year:
Signature: Musa Omer Abu Elgasim Undersecretary, Ministry of Water Resources, Irrigation and Electricity, Sudan	Agreed by Implementing Partner	Date/Month/Year:
Signature: Marta Ruedas Resident Representative, UNDP, Sudan	Agreed by UNDP	Date/Month/Year:

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II. DEVELOPMENT CHALLENGE

Electricity generation and consumption

Sudan has limited oil and natural gas reserves and depends mainly on imported fossil fuels for a large share of its electricity production. In 2015, the total installed power generation capacity reached 2,723 MW, of which hydro-power generation constitutes 56% and the remaining 44% are fossil-fired power stations.

Reported transmission and distribution losses during the last few years ranged from 4.8-6.2% in transmission, and 18-19% in distribution. Load shedding is also a common occurrence in Sudan. In 2014, 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. The load shed reached 511.22 GWh in 2014 and decreased to 128.71 GWh in 2015.

Although the power generation has increased, yet over 60% of the population of Sudan (about 24 million persons) do not yet have access to electricity. The Government's target is to reach an electrification rate of above 80% by 2030. To meet the demand forecasted, the Government has targeted an additional 8,000 MW of power generation capacity to be installed by 2030 combined with various energy-saving measures.

The consumption of electricity in Sudan has been increasing by about 14% annually during the last 5 years. Several new fossil-fired power stations are scheduled to come on line during the next few years to meet the rising demand. The following charts show the ratio between electricity generation from hydro and thermal stations, and the increase in total generation and consumption from 2011 to 2015.

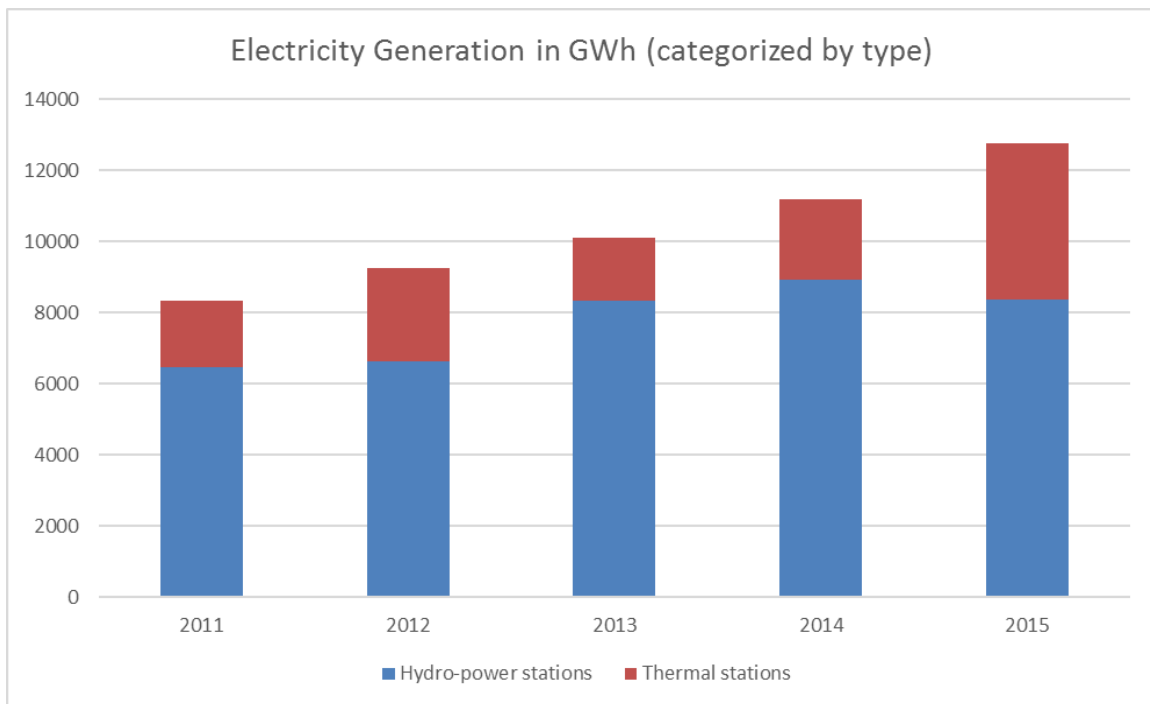


Figure 1: Electricity generation by type from 2011 to 2015

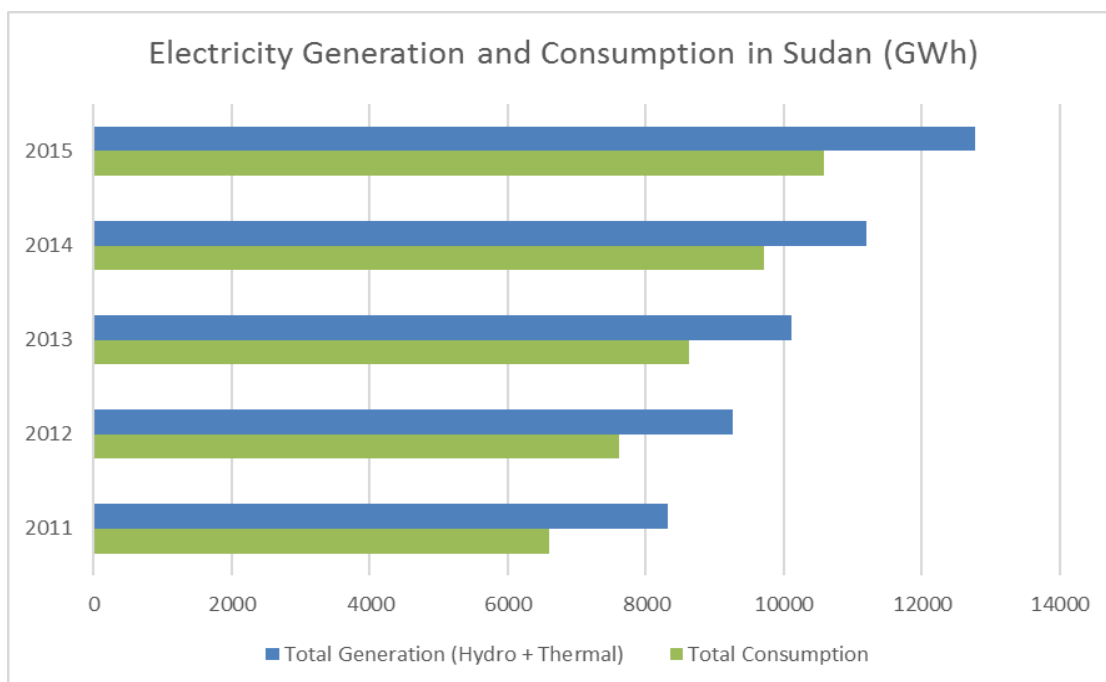


Figure 2: Increase in total generation and consumption from 2011 to 2015

Cost of electricity

Electricity tariffs in Sudan vary by sector and consumption. There are neither special tariffs encouraging rational use of energy, nor time-differentiated price structure to encourage consumption shifting from peak hours. The following table presents the electricity tariffs for the governmental, residential and commercial sectors.

Table 1: Electricity tariff price categorization for different sectors in Sudan (2017)

Sector	Price category	Tariff in SDG (per kWh)	Equivalent US cents (official rates)
Governmental	No categorization	0.70	11
Residential	0 - 200 kWh/month	0.15	2
	200-400 kWh/month	0.26	4
	400-600 kWh/month	0.32	5
	600-800 kWh/month	0.52	8
	Above 800 kWh/month	0.85	13
Commercial	0-400 kwh/month	0.34	5
	Above 400 kWh/month	0.85	13
Agricultural	No categorization	0.16	2
Industrial	Three categories	0.16-0.18	2-3

The cost of subsidizing electricity has been increasing gradually since 2011. In September 2013, Sudan introduced the third and most dramatic yet in a series of fuel subsidy cuts, raising prices of petrol, diesel and liquefied petroleum gas (LPG) by 65-75% each. This came in a context of high economic pressure following the loss of oil revenue after July 2011. In 2016, the LPG prices witnessed a series of escalations raising its price from SDG 25 to SDG 75 to SDG 85 to SDG 103 to SDG 114 per 12.5 kg. However, the subsidy cuts on LPG did not influence the total value of electricity subsidies, since the main subsidy receiver is the fuel oil. Due to the rise in thermal generation capacity between 2013 and 2014, electricity subsidies jumped from 623.27 Million SDG in 2013, to 2,459.72 Million SDG in 2014 (an increase equivalent to 302.19 Million USD).

Access to electricity (demographic and social context)

The population in Sudan is split almost evenly in terms of gender. Data for 2015 show that of the population of 38.44 million 50.7% are males while 49.3% are females. Urban communities represent about 36% of the population while 64% live in rural areas. The ratio of males to females in urban and rural communities is the same.

Women’s participation in revenue generating activities is relatively high, yet their share of business ownership is small. Data from the Sudan Bureau of Statistics indicate that while 28.61% of households are headed by women only 3.2% of employers are women, and only 24.4% of individual-owned business are run by women.

Figure 3: Demographic and gender distribution of the population in 2015

In attempting to cope with the increase in population (12% between 2011 and 2015), the Government of Sudan has been developing the country’s electricity infrastructure. The number of people with access to electricity increased by 23% during the same period (2011-2015). However, the development is not enough to keep up with the country’s growth. Figure 4: Population growth and access to electricity shows the increase in population versus the increase in the number of people with access to electricity.

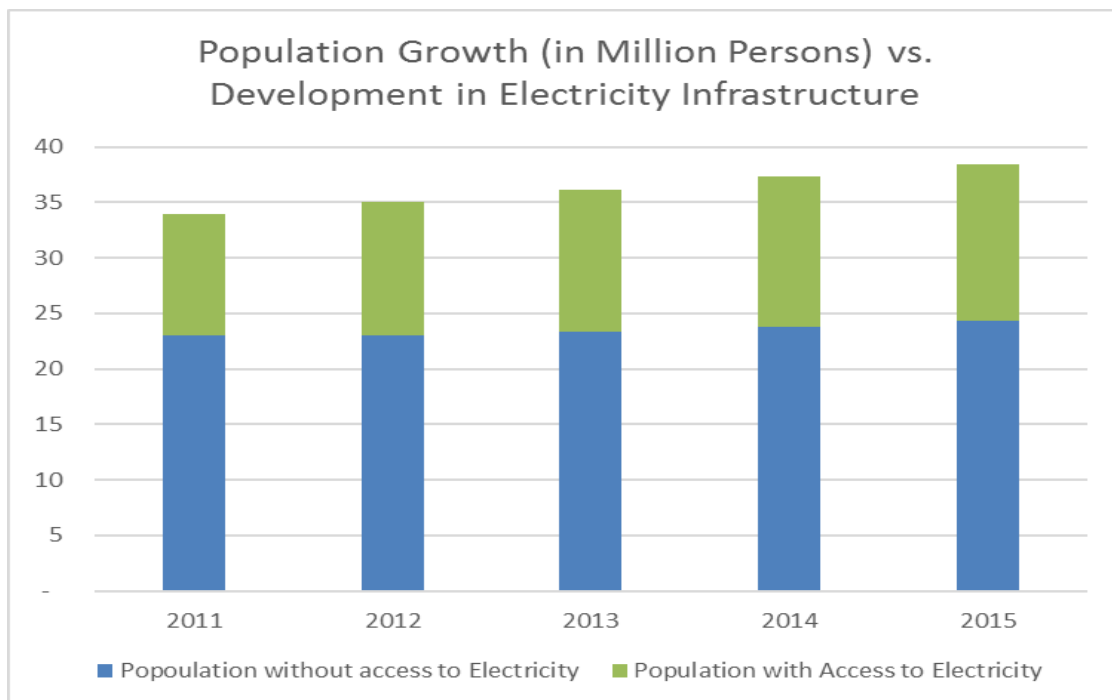


Figure 4: Population growth and access to electricity (2011-2015)

Electricity consumption in lighting & air conditioning

A study was conducted to analyze electricity consumption patterns in urban households. The results of the study are presented in the following table:

Table 2: Average consumption of electricity in lighting and space cooling per urban household (2000-2011)

Average electricity consumption per urban household	2000	2011
For lighting	122 kWh	410 kWh
For space cooling (typically, window-mounted air conditioners)	370 kWh	1,230 kWh

The study estimated that 51% of the total electricity consumption is consumed by the residential sector. The remaining amount is consumed by the industrial sector (16%), the government sector (13%); the agriculture sector (5%), and 15% by the commercial and services sector.

The National Energy Administration (of The Ministry of Petroleum) conducted a study to analyze the share of each appliance in the overall consumption in the different sectors in Sudan. The results indicated that the share of lighting and air conditioning in the consumption of the industrial and agricultural sectors is small. Machinery represents 80% of the electricity consumption in the industrial sector while the consumption in the agricultural sector is practically 100% pumping.

According to the same study, the combined consumption for lighting and air conditioning comprises 50% of the consumption in the residential sector, 80% in the commercial sector and over 90% of electricity consumption in the governmental sector. The following charts show the share of each sector in the overall electricity consumption in Sudan between 2011 and 2015, and the contribution of the different appliances in each of the residential, commercial, and governmental sectors in 2015.

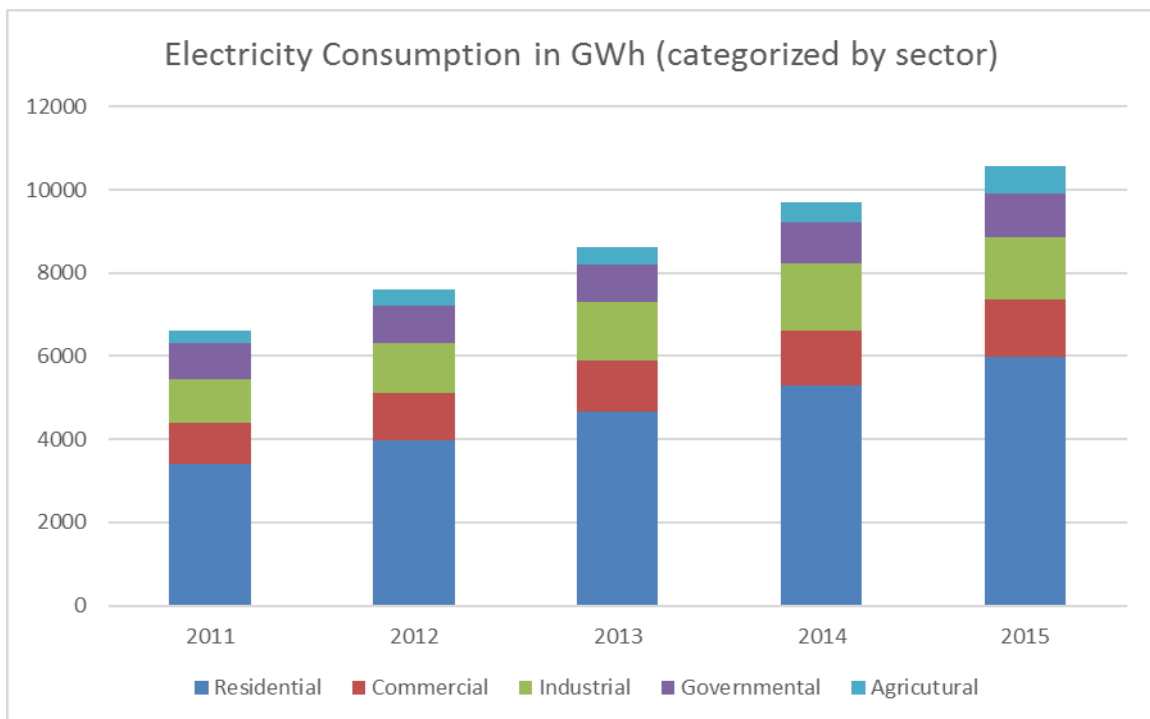


Figure 5: Energy consumption categorized by sector (2011-2015)

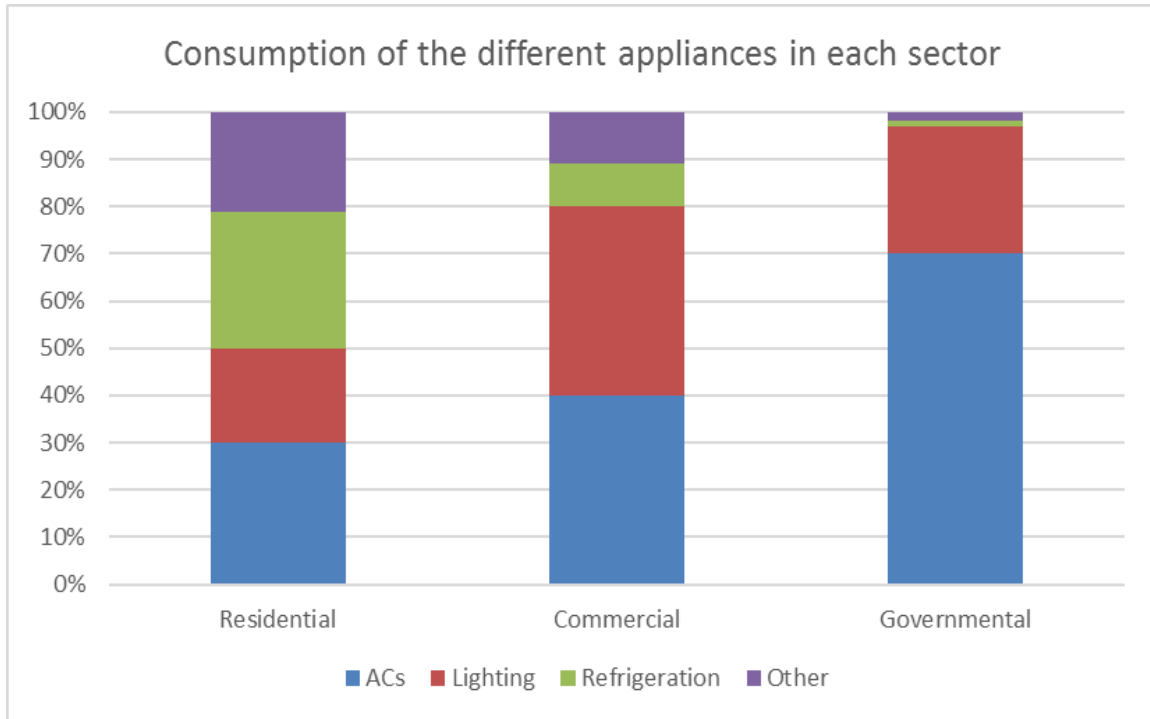


Figure 6: Energy consumption categorized by appliance type for each sector in 2015

Overview of lighting and air conditioning products in the Sudanese market

Sudan depends solely on imported products for lighting and air conditioning (space cooling). There are no local manufacturing facilities for lamps. Some manufacturers of air conditioners have local assembling facilities, but all the components are imported. Data from the UN Comtrade database show that the trade value of lighting equipment (i.e. the total value of imported products under the lamps and lighting fittings and illumination signs category) exceeded 20 Million US dollars in 2014, but decreased to 12 Million US dollars in 2015. For air conditioning equipment the trade value exceeded 41 Million US dollars in 2014, and – as with lighting – decreased in 2015 to 27 Million US dollars.

The importation procedure involves submission of a certificate of origin and a quality assurance certificate. In case of non-conformity the goods are rejected and returned to the exporting country. There are no importation requirements or incentives of relevance to power consumption or energy efficiency. There is presently no procedure for management of the lifecycle of electrical product on the national level. While there is a second-hand market for air conditioners, there are neither regulations nor incentives for the reuse, recycling or sound disposal of lighting products and air conditioners.

i) Lighting products:

The lighting market in Sudan is composed of the following technologies; Incandescent Lamps, Fluorescent Tube Lights (Linear Fluorescent), Compact Fluorescent Lamps (CFL), Light Emitting Diodes (LED), and High Intensity Discharge Lamps (HID Sodium, and HID Metal Halide). Halogen lamps are also used in small percentages in governmental and commercial buildings.

A typical household in Sudan usually contains a total of 400 W of lighting units; 50% incandescent, 35% CFL, and 15% Linear Fluorescent. Studies show that consumers favor low-efficiency incandescent lighting due to their low cost compared to more efficient alternatives.

Based on information obtained from the Sudanese Electricity Distribution Company for the year 2015, the sales volume of lamps is estimated to be about 30 million units (lamp). The market is dominated by CFL lamps, representing 46% of the total number of lamps sold during the year. The sales percent for LED lamps is reported to have been negligible. The following figure shows the shares of each technology in the total number of lamps sold in 2015.

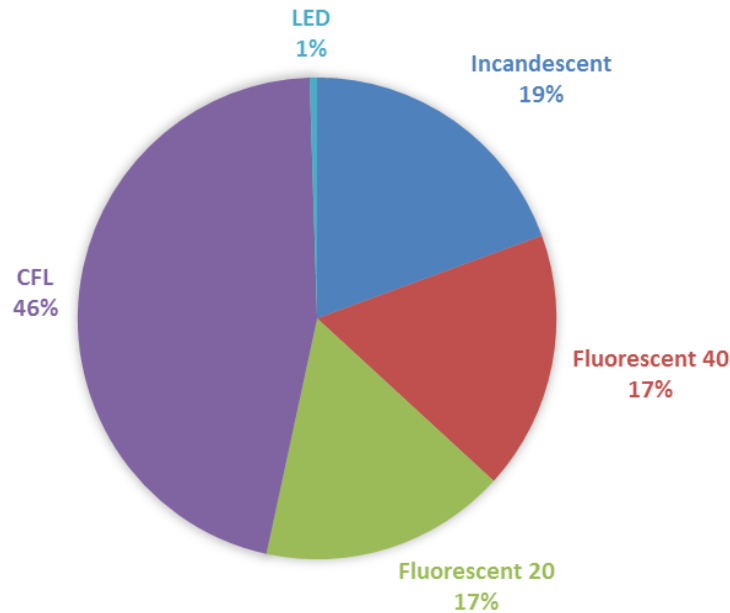


Figure 7: Share of each lighting technology in the sales of lamps in 2015

ii) Air conditioners (ACs):

The most commonly used air conditioner type in households is the window-mounted type. Portable and split systems are also found on the market. In 2015, 68,632 air conditioning units were sold (60% window units, and 40% split units). The annual growth rate of sales of air conditioners is 14%.

The price difference between window and split air conditioners varies with their capacity (horsepower). It ranges from 700 to 4,550 SDG (approximately 115 to 750 US dollars). Both types are available in the same capacities.

NEEAP development

In 2012, the Sudanese government adopted a National Energy Efficiency Action plan (NEEAP), in collaboration with the MED-EMIP project of the League of Arab States, and the Regional Center for Renewable Energy and Energy Efficiency (RCREEE). The overall objective of the NEEAP is to achieve annual savings of 10% of the total energy demand starting the year 2017 to reach 12% by the year 2020.

The NEEAP was reviewed and updated in October 2015. It presently contains three proposed 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.

Of the three sub-entities dedicated to energy efficiency in Sudan, only the Electricity Regulatory Authority has so far been involved in the implementation of the NEEAP. Within the Sudanese electricity sector, the Electricity Regulatory Authority is the body whose focus is energy efficiency.

With regards to standardization, the entity responsible is the Sudan Standards and Metrology Organization (SSMO). To develop new MEPS, the Ministry must submit a request to SSMO listing the specific equipment for which MEPS is required. The General Manager of SSMO reviews the request, and if approved,

assigns a technical committee to undertake the work and report progress on quarterly basis. Once the final MEPS is approved by the General Manager of SSMO it is published through official media channels and automatically becomes effective.

Status of other EE-related initiatives

In addition to the NEEAP, various efforts are being made by different government entities to promote energy efficient products but there is no existing coordination body to link efforts and develop synergies between the actions of all energy institutions in the country to effectively collaborate on energy efficiency initiatives. The following are samples of reported initiatives and their status:

- The Ministry of Water Resources, Irrigation and Electricity, has an initiative to replace one million Incandescent Lamps (ICLs 60 to 100 W) with high-quality long-life (10,000 hours) energy efficient Compact Fluorescent Lamps (CFLs). The initiative is still in the planning phase. The government has not yet managed to obtain the necessary funding for its implementation.
- The Sudanese Electricity Distribution Company (SEDC) reported that specification for CFLs was presently being developed by a joint committee from SEDC and SSMO.
- In line with the government's efforts to promote energy efficiency, SSMO was planning to establish a laboratory for testing the performance of all electrical appliances. It was reported that different electrical appliance performance testing equipment have been procured and are expected to be installed by December 2015. More recent information indicate that the plan was postponed to 2017, with no clear identification of the status of the procured equipment.
- International organizations have also made an effort in raising awareness of energy efficiency in Sudan. The Regional Center for Renewable Energy and Energy Efficiency (RCREEE) recently initiated a series of workshops targeting public utilities, companies, universities and other stakeholders on developing the capacities for promoting energy efficiency actions. Products in the market are not labelled based on their efficiency in electricity consumption, to allow consumers to make conscious decisions when purchasing products.

III. STRATEGY

The baseline activities fall short of comprehensively addressing the challenges of radically transforming Sudan’s markets for energy efficient (EE) lighting and air-conditioners. Although the NEEAP exists, the implementation of the NEEAP measures concerned with reducing electricity consumption in the residential and government sectors is facing several barriers:

1. None of the stakeholders acts as a national coordinating agency on EE initiatives; and there is no specific strategy/workplan developed for the lighting and air conditioning sub-sectors.
2. There is a critical need for the introduction of appropriate regulatory mechanisms – including Minimum Energy Performance Standards (MEPS), as well as an accompanying Monitoring, Verification, and Enforcement (MVE) system. The market is currently promoting inefficient window-mounted air conditioning (A/C) and inexpensive, but also inefficient, incandescent light bulbs (60-100W).
3. There is a general lack of public awareness by end-users and energy stakeholders of the benefits of energy efficient lighting products and air conditioners.
4. 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 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.

At present, there are no energy-related standards utilized for electric products in the Sudanese market. Lighting products and air conditioners in Sudan are neither tested for compliance with MEPS nor are there regulations to control the import of energy efficient products. No testing laboratories for electrical appliances are available in the local market. According to the Arab Future Energy Index (AFEX) for 2015, Sudan ranks 13 out of 17 Arab countries on a variety of EE indexes. The country scored particularly low for “policy framework”, with the final AFEX report stating 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 proposed project strategy consists of top-down activities integrated with several bottom-up activities. The top-down fragment of the strategy comprises the development of standards, enforcement of regulations supporting energy efficient products, and building the institutional framework capable of maintaining steady market development. Bottom-up activities target the creation of positive ambience for the implementation of the new regulations on the levels of distributors and end users.

Top-Down Activities: Developing the institutional framework

The existing Electricity Act of 2001 is concerned with generation, transmission and distribution, and sets the governing laws and regulations under which licenses are given. In terms of the formulation of energy-related policies, laws and legislation, there are clear fragmentations of policy-making and ratification procedures among the various government actors. The Electricity Regulatory Authority is keen on developing new regulatory measures for energy efficiency, but the regulations require that MEPS are in place and labels are utilized, where both are associated to a testing procedure to ensure compliance with the standards and conformity with regulations. Regulatory measures should also be accompanied by suitable importing regulations to control the products imported and distributed in the Sudanese market.

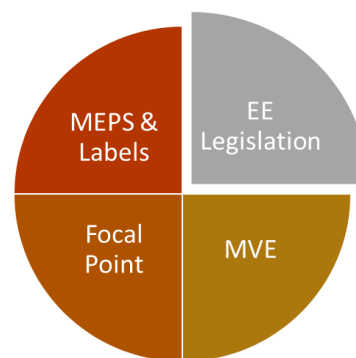


Figure 8: The cornerstones of the proposed institutional framework to be developed under this project

Tackling the cornerstones of creating a suitable regulatory framework able to address the existing, and anticipated, obstacles in the implementation of the NEEAP starts with identification/development of the MEPS to be used to classify products as efficient or non-efficient, and building the capacity for monitoring, in terms of equipment and personnel, to enable product testing. In parallel, appropriate legislation shall be developed and gazetted, while the capacity for monitoring, verification and enforcement (MVE) of the developed legislations is built and structured within the existing framework of energy products' trading in Sudan.

The present structure of the energy sector in Sudan involves three ministries, all of which have EE departments:

- The Electricity Regulatory Authority, under the Ministry of Water Resources, Irrigation and Electricity;
- The Energy Efficiency Departments, under the Ministry of Oil; and
- The National Energy Research Center, under the Ministry of Higher Education and Scientific Research.

The project plans to create a focal point to be responsible for overseeing all activities related to energy efficiency on the national level and optimizing the collaboration between the different stakeholders (public and private sectors, national and international entities, etc). In addition, the focal point will be directly involved in streamlining fiscal incentives to encourage the use of EE products, especially in light of the heavily subsidized electricity cost for the residential, governmental and commercial sectors. Examples for financial tools to promote the widespread penetration of LEDs, CFLs and other high-efficiency lighting technologies are full cost electricity pricing, or lower tariffs on high-efficiency light bulbs. An increase in the efficiency of space cooling could be encouraged by 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.)

Bottom-Up Activities: Awareness raising

The transition to efficient lighting and air conditioners will achieve benefits at both the public utility and the consumer level. It is crucial for end users to understand the benefits of EE products before they find the products most commonly used either prohibited from entering the country (per importing legislation), or available at higher prices (due to taxation or additional customs).

The last increase in electricity tariffs occurred at the end of 2016. This is expected to help drive consumers to work in the direction of reducing their consumption. Through proper awareness, consumers should consider purchasing efficient lighting products and air conditioners as a mean for reducing their overall electricity consumption and can estimate the financial benefits of the different products.

While the leapfrogging requires the top-bottom approach related to market-control (regulations and compliance), but the sustainability of the EE marketing plan must consider the present convictions and preferences of consumers in the Sudanese market. In this regard, the project focuses on building awareness, not only towards EE practices and the financial payback of buying a more expensive efficient product, but also the specific MEPS and regulatory mechanism to be implemented in Sudan. The public should be considered a stakeholder throughout the project duration. In case the final approved regulatory framework prohibits the importation of inefficient (or non-certified) products, the regulations should be advertised for as a measure to help protect the people from inefficient products, rather than a limitation enforced by the government. In case the regulation allows for the importation of less efficient products and put incentive for making conscious decisions to buy efficient products, then the additional taxes or customs on inefficient products should be introduced as restructuring or subsidy, rather than a penalty.

Similarly, the private-sector is a stakeholder in the project and shall be considered key in the success of the market shift to EE products. Capacity building sessions will be held for the different tiers of manufacturers and distributors, educating them on the new MEPS, and how to comply with the regulations. The sessions could also introduce internal training plans aiming to raise the performance level of sales people in direct interaction with consumers, and consequently, allowing for higher sales value of EE products.

Overall objective: Reduction and mitigation of GHG emissions

The principal fossil fuels currently used for Sudan's power generation are heavy and light fuel oils, with shares of 61% and 39% respectively. In 2000, the GHG emissions from the energy sector were estimated at 8.54 million tons of CO₂-equivalent. GHG emissions associated with energy use trajectory are expected to reach just over 24 million

tCO₂eq by 2030, a six-fold increase from year 2000 levels. The transport and electricity together are forecasted to account for close to 70% of the projected levels.

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 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. As shown in the table below, the top priority mitigation measures include energy efficient lighting and air conditioners.

Table 3: GHG emission reductions from priority GHG mitigation options defined in Sudan’s National Communication to the UNFCCC

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%

Lighting in Sudan is commonly provided through the use of inefficient incandescent lamps which use 80% more power than CLF for the same level of illumination. Reducing power consumption for lighting by up to 80% is estimated to achieve an accumulated power saving of 1007 GWh by 2020. This potential saving from promoting efficient lighting will result in an annual emissions reduction equivalent to 66,462 tCO₂/year of which 50% (33,231 tCO₂/year) can be attributed to the project intervention.

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 estimated to be 136,000 units (of equivalent 18000 BTU window type). The annual consumption of air-conditioners (residential, commercial and governmental sectors) is currently estimated to be 746 GWh. With an estimated saving of 20%, the potential annual saving from promoting efficient air conditioners will be 149.2 GWh which will result in an emissions reduction equivalent to 49,236 tCO₂/year. Due to high investment costs related to air conditioner replacement, only 30% of energy saving and emission reduction can be attributed to the project intervention which is estimated to equal 44.76 GWh and 14,770.80 tCO₂/year respectively.

The energy savings that will result from the shift to CFLs, LEDs and high efficiency air-conditioners have been established and used to calculate the project’s emissions reductions. Using GEF Tracking Tool and baseline data, the project is estimated to result in 463,759 tCO₂ reductions at the end of its operation (4 years), and 1,224,461 tCO₂ reductions during its lifetime (24 years). These values represent the cumulative amount for Direct GHG Reductions. However, as agreed with the GEF Secretariat, the Direct benefits attributable to each of the child projects under the “Leapfrogging markets to high efficiency products (appliances, including lighting and electrical equipment)” Program shall represent 50% of the projects’ estimated Direct GHG emission reductions. Under this condition, the project’s target of Direct GHG emission reductions is 231,879 tCO₂ by year 2021 (612,230 tCO₂ by year 2041). This estimation does not take into account indirect emissions reductions achieved through replication of technology investments and additional demonstration projects.

Collection of data necessary to quantify project targets at project end

The project contributes to solving the problem of data availability by including several activities concerned with data collection or developing a system for data collection. In addition, one of the project’s components is

dedicated to adopting a suitable Monitoring, Verification and Evaluation (MVE) system, which aims to develop a system for collection of compliance data, as well as put in place a mechanism for collection of market data.

Nevertheless, it is crucial for the project to have quantifiable baseline data, medium-term and end-of-project targets. At project start (during inception phase), the project team shall collect the baseline data listed in the following table:

Table 4: Template for mandatory baseline data collection at project start

#	Description of required data for baseline year	Unit
1	Electricity consumption in lighting and air conditioning	MWh
2	Number of electricity consumers	Persons (or meters)
3	GHG emissions resulting from lighting and air conditioning in the residential, commercial and governmental sectors	tCO ₂
4	Number of lighting products in the market (categorized by technology, manufacturer and capacity)	Lighting unit
5	Number of energy efficient lighting products in the market (categorized by technology, manufacturer and capacity)	Lighting unit
6	Number of air conditioners in the market (categorized by technology, manufacturer and capacity)	AC
7	Number of energy efficient air conditioned in the market (categorized by technology, manufacturer and capacity)	AC
8	Sampling plan indicating the number of people to be included in the public pulse survey	Persons
	Description of targets to be determined during project implementation	Unit
9	Number of key tasks integrated in the developed EE work plan	Key tasks
10	Number of key tasks, under end-of-life management plan, integrated in the work plan	Key tasks
11	Number of staff contracts stating specific role and responsibilities related to the implementation of the approved work plan	Persons (or contracts)
12	Number of personnel to be involved in adopting the MVE system	Persons (or contracts)
13	Number of products distributed using incentives offered by the financial mechanism	Product

During inception phase, the above data shall be collected. Actual data shall be presented in the inception workshop and documented in the inception report (with their sources). This is a mandatory step towards project implementation. UNDP CO in Sudan shall ensure that the table is populated with reliable data at project start.

The Project Result Framework (Section VI) shall be updated using the newly collected baseline data, such that all medium-term and end-of-project targets are quantified. The updated version of the table shall be presented for UNDP CO review, and approved by the UNDP RTA, within six months of project start. The final version of the Project Results Framework table shall be documented in the project's 1st PIR and used by internal and external auditors to assess the progress throughout the project's lifetime.

Theory of Change

The Theory of Change (ToC) for the project presents a semi-structured map to link strategic actions with desired outcomes. It sets out to identify explicitly assumptions underlying the proposed actions and how we believe reality could unfold in the near future subject to certain strategic actions that we intend to take (and thus believe are within our capability). The following diagram demonstrates the envisioned Theory of Change for this project.

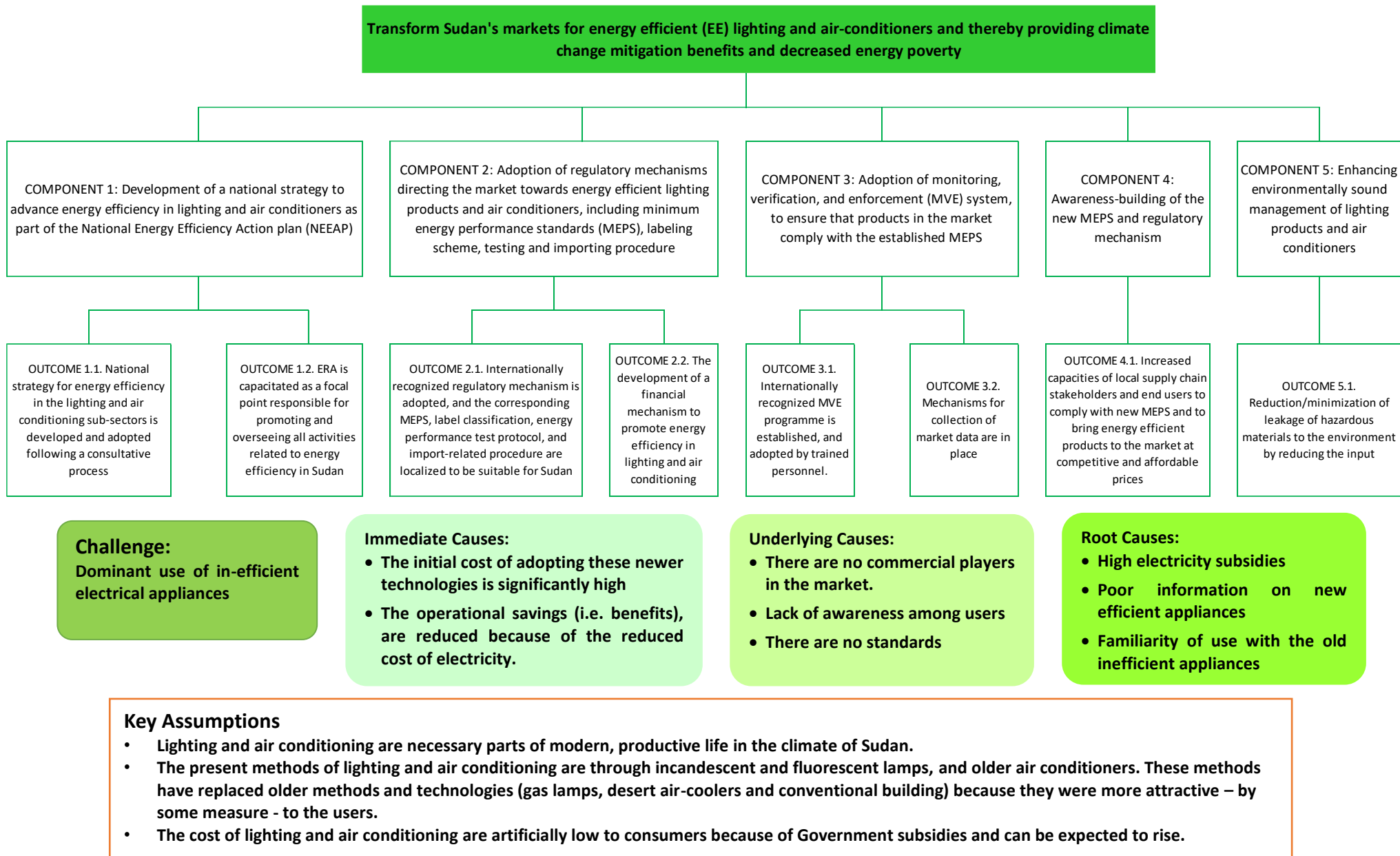


Figure 9: Theory of Change (ToC) diagram for the project

The proposed project seeks to enable transformative change.¹ The project seeks to transform the way in which electricity is consumed for lighting and indoor cooling applications in Sudan.

This project rests specifically on certain baseline data and assumptions on what is likely to happen in the future. These assumptions are in-line with studies prepared by national and international parties, or self-evident as reported by the stakeholders who are most directly affected by them. The following is a list of the main assumptions:

- Lighting and air conditioning are necessary parts of modern, productive life in the climate of Sudan.
- The present methods of lighting and air conditioning are through incandescent and fluorescent lamps, and older air conditioners. These methods have replaced older methods and technologies (gas lamps, desert air-coolers and conventional building) because they were more attractive – by some measure - to the users.
- The cost of lighting and air conditioning are artificially low to consumers because of Government subsidies and can be expected to rise.
- The use of modern, efficient LED lighting and air conditioning provides several advantages, such as a better quality of light, a better indoor climate, and of course reduced electricity consumption.
- Reduced electricity consumption in particular has a five-fold benefit: reduce cost to the user; reduced operational cost to the public utility because of reduced demand; reduced capital costs to the utility because of reduce growth in loads requiring less infrastructure to support them; reduced pollution as a result of power generation; and reduced environmental impact of disposal at the end of the equipment's life.

Despite the above, efficient LED lighting and air-conditioning have not been widely adopted. We also hold assumptions about why this is the case. These are:

- The initial cost (i.e. capital cost) of adopting these newer technologies is significant
- As relatively new technologies, there is not widespread familiarity with them. The risk of an expensive lightbulb burning out is one most households would not take.
- The operational savings (i.e. benefits), are reduced because of the reduced cost of electricity.
- Both LED lighting and efficient air-conditioning may not be well supplied – i.e. readily available at all major outlets where a buying decision is to be made by a consumer.
- There are no commercial players in the market with the combination of vision, knowledge, capital, authority, and potential benefit from the proliferation of efficient lighting and air-conditioning, that they are willing to undertake the cost and hassle of developing a programme to demonstrate, promote, and regulate these technologies. These qualities may exist separately in certain governmental and non-governmental entities.

Hence, there is a clear role for GEF and UNDP to play that other entities are unwilling or unable to play.

With the above assumptions, we also hold assumptions about how the future is likely to unfold, in particular based on actions which we believe we can take. These assumptions are:

- If appropriate standards, guidelines and methods for testing are developed, and regulated, it is within the capacity and benefit of market players to comply.
- Such actions are in accordance with Sudan's present energy objectives.
- If the technologies and their benefits are appropriately demonstrated such that consumers become familiar with the technologies and their benefits to them and the society; the barrier of initial cost

¹ Transformative in the sense described in Theory of Change as "Crisis and stagnation prepare the ground for change. This type of change is based on un-learning and liberating oneself from those mindsets, relations, identities, formal and non-formal institutions, etc. which hinder and delay the probability of enacting new realities that are more just and fair in economic, social and political terms."

lessened through financing; and the market appropriately regulated, consumers would adopt these new technologies.

- Thus, if the Project is able to undertake and catalyse the steps immediately above, it is highly likely that efficient lighting and air-conditioning will be adopted.
- If efficient lighting and air-conditioning are adopted, these would represent a transformational change in the way electricity is consumed to better modern life; and the ability of the public utility to distribute electricity to populations who do not have public electricity presently. This would thus be, for many Sudanese and the country as a whole, a transformation on the order of the introduction of electric lighting and air-conditioning.
- The amount of electricity saved by using energy efficient appliances will free up funds for rural electrification and contribute to achieving the targeted electrification rate of 80% by 2031. The electricity generation capacity savings from CFLs and LEDs will also allow for greater grid stability as Sudan's electricity demand increases.

Hence, subject to the assumptions above, if the Project is able to play the role envisioned for it, a logical sequence can be expected. The sequence would build upon steps and initiatives presently in progress, through actions proposed under this Project, to a future that is different, and measurably better, than it would be in the absence of the Project actions.

IV. RESULTS AND PARTNERSHIPS

i. Expected Results

The main objective of the project is to transform Sudan's market for energy efficient (EE) lighting and air conditioners, and thereby providing climate change mitigations benefits and decreased energy poverty. The baseline activities fall short of comprehensively addressing the challenges of radically transforming Sudan's markets for energy efficient (EE) lighting and air-conditioners. The alternative project approach is comprised of the components, outcomes, outputs, and activities mentioned below. To achieve each of these Outputs, specific Activities should be undertaken, but they are subject to change during implementation, based on future developments on the national or sectoral levels.

COMPONENT 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 different parts of the road map.

OUTCOME 1.1. National strategy for energy efficiency in the lighting and air conditioning sub-sectors is developed and adopted following a consultative process

Output 1.1.1. Strategic goals of relevance to lighting products and air conditioners under the NEEAP are defined, and a work plan to achieve them is developed in accordance with the integrated policy approach recommended by the United for Efficiency (U4E) initiative

Activity 1.1.1.1. The NEEAP is studied to define and extract the strategic goals of relevance to the lighting and air conditioners' sub-sectors.

Activity 1.1.1.2. The integrated policy approach recommended by the U4E initiative is studied, based on which a work plan is drafted.

Activity 1.1.1.3. During the inception phase, the project team shall collect baseline data to be validated at the inception workshop. The project results framework table should be updated with quantified targets based on newly collected baseline data.

Activity 1.1.1.4. The list of strategic goals and the draft work plan, including the updated project result framework, are circulated among stakeholders. The list should prioritize the activities related to developing systems for data collection. These systems will be utilized during the project lifetime and used to collect the data required to assess the project's progress.

Output 1.1.2. All actors working on project EE sector are identified, with description of their roles, mandates, and responsibilities in implementing the key tasks of the work plan

Activity 1.1.2.1. Promulgate necessary legislations to define the role of each NEEAP stakeholders, e.g. Energy Efficiency Act

Activity 1.1.2.2. A list of the stakeholders involved in the development of the NEEAP, and in the implementation of the developed work plan is prepared.

Activity 1.1.2.3. A stakeholders' meeting is held to discuss the roles and assign responsibilities to representatives from each entity.

Activity 1.1.2.4. The work plan is updated based on the comments of stakeholders and is distributed for approval with notification letters to the assigned personnel advising them of their roles and responsibilities.

Output 1.1.3. Consensus is achieved by all energy stakeholders and policymakers on the goals, work plan, timeline, and the responsibility of each party in transforming the markets for EE lighting and air conditioners

Activity 1.1.3.1. The final work plan is distributed to stakeholder with the final timeline, tasks and the names of personnel to be involved in the implementation.

Activity 1.1.3.2. A workshop to present the final work plan to policymakers is held, including a description of how the work plan achieves some of the goals of the NEEAP.

Activity 1.1.3.3. Periodical meetings are held with the representatives of stakeholders update the working team on the progress of the tasks assigned to them.

OUTCOME 1.2. Electricity Regulatory Authority (ERA) is capacitated as a focal point responsible for promoting and overseeing all activities related to energy efficiency in Sudan

Output 1.2.1. A focal point is operating, with official representations in the different ministries involved in the implementation of the NEEAP, collection and analysis of supplier-end data, sales data, and electricity consumption data, etc.

Activity 1.2.1.1. A focal point is established to serve as a center of excellence for energy efficient lighting products and air conditioners.

Activity 1.2.1.2. The organizational structure of the focal point is designed and the obligations and level of authority of its members are approved by EE stakeholders, including internal and external auditing functions.

Activity 1.2.1.3. The budget allowing the focal point to operate is identified, and the source(s) of finance is secure to allow for its operation after project end.

Activity 1.2.1.4. Capacity building needs are assessed, and relevant training workshops are held to equip the designated personnel with the skills and tools necessary for performing the responsibilities of the focal point efficiently.

COMPONENT 2. Adoption of regulatory mechanisms directing the market towards energy efficient lighting products and air conditioners, including minimum energy performance standards (MEPS), labeling scheme, testing and importing procedure

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 implementing partner (MWRIE and ERA) will develop and adopt MEPS for lighting products and air conditioners. The project will consider Model Regulations that United for Efficiency will soon be releasing on both lighting products and air conditions. The Model Regulations have been developed with a diverse range of stakeholders (governments, manufacturers, etc) and provides an excellent starting point for Sudan. GEF funds will also be used to assess the financing mechanisms previously implemented by the Government of Sudan and provide technical assistance to support the development of a financing mechanism to promote the use of energy efficient appliances and oversee its implementation.

OUTCOME 2.1. Internationally recognized regulatory mechanism is adopted, and the corresponding MEPS, label classification, energy performance test protocol, and import-related procedure are localized to be suitable for Sudan

Output 2.1.1. Economic and financial cost/benefit analysis is performed, to determine the appropriate level of regulatory measures for the residential, governmental and commercial sectors, including assessment of benchmark mechanisms, and suitability for adoption in Sudan

Activity 2.1.1.1. Assess existing legislation and administrative procedures to select a regulatory mechanism which the authorities in Sudan are already established to enforce.

- Activity 2.1.1.2. Observe how different enforcement models work with other pieces of legislation and how industry responds to these, to understand whether they can be adapted for energy efficiency regulations or modifications are required.
- Activity 2.1.1.3. Benchmark energy efficiency regulations from other countries, based on their effectiveness and how they compare to the existing enforcement capacity in Sudan.
- Activity 2.1.1.4. Perform an economic and financial cost/benefit analysis to assess which of the selected regulatory measures provide positive economic benefit to consumers and is suitable for adoption in Sudan.
- Activity 2.1.1.5. The result of the cost/benefit analysis is shared with stakeholders, and an appropriate MEPS legal framework is selected.
- Output 2.1.2.** MEPS legal framework has been selected, localized, and adopted, including the accompanying labelling scheme and test procedure/certification
- Activity 2.1.2.1. Comprehensive MEPS legal framework is set up through localizing policy approaches and detailing the MEPS for energy efficiency in lighting products and air conditioners to be presented to government officials for gazettment.
- Activity 2.1.2.2. Based on the selected MEPS, minimum data needs are established, and a plan is developed for collecting the data necessary to conduct analysis to support the implementation of the programme. This includes information on the market, technology, engineering and usage of the product.
- Activity 2.1.2.3. The associating labelling scheme and test procedure/certification are identified, localized, and published on a website accessible to manufacturers and traders with information on the grace period from the date of regulations' gazettment.
- Activity 2.1.2.4. The legal and administrative foundation for monitoring of all manufacturing and trading channels supplying the Sudanese market with lighting products and air conditioners is established.
- Activity 2.1.2.5. The MEPS regulatory framework is approved by the government and implemented by the relevant authorities.
- Output 2.1.3.** Compliance checking on imports and pre-export inspections are integrated in import regulations
- Activity 2.1.3.1. The developed energy performance test procedures are harmonized with international protocols (such as International Electrotechnical Commission test standards and the U4E Model Regulation) to facilitate testing and reduce barriers to trade.
- Activity 2.1.3.2. Verification processes are developed, including the procedure of pre-export inspections and the certificates to be submitted at the point of entry to the Sudan.
- Activity 2.1.3.3. The developed processes are integrated in the existing importing procedure and other relevant permissions, including the proper actions in case of non-conformity with the MEPS.
- Activity 2.1.3.4. Additional procedure is developed to help identify the authenticity of test certificates to be submitted by importers and manufacturers, including initiating communication with accredited labs to verify reference numbers, validity, etc.

OUTCOME 2.2. Provide technical support for the identification and development of an appropriate financial mechanism to promote energy efficiency in lighting and air conditioning

- Output 2.2.1.** Financing mechanism is developed and implemented
- Activity 2.2.1.1. Eligibility criteria for selection of the beneficiaries are defined based on the consumer-sector with least access to finance yet a high impact on electricity consumption for the purpose of lighting and air conditioning.

Activity 2.2.1.2. Assessment of financing mechanism previously implemented by the government of Sudan are studied, and modifications are proposed to develop a similar mechanism for energy efficient products.

Activity 2.2.1.3. Based on availability of external sources of finance are available (not part of GEF fund), and provided that reliable means for re-collection and return of funds are in place, the project will provide technical support towards the implementation of the proposed financing mechanism.

It is noted that GEF fund shall not be used as to finance the purchase or selling of equipment and that an agreement on the mechanism for collection of installments from consumers and return of funds to co-finance sources must be signed prior to the implementation of the proposed financing mechanism.

Activity 2.2.1.4. A system for consumption data collection for beneficiaries is developed and implemented to continuously monitor the effectiveness of the products supported by the financing mechanism.

COMPONENT 3. Adoption of monitoring, verification, and enforcement (MVE) system, to ensure that products in the market comply with the established MEPS

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.

The new series of MVE guidance notes, developed under the U4E initiative, provides a practical resource for governments in establishing and implementing an effective MVE programme. The series consists of six guidance notes:

- 1) Developing Lighting Product Registration Systems
- 2) Efficient Lighting Market Baselines and Assessment
- 3) Enforcing Efficient Lighting Regulations
- 4) Good Practices for Photometric Laboratories
- 5) Performance Testing of Lighting Products
- 6) Product Selection and Procurement for Lamp Performance Testing

Each guidance note focuses on an individual aspect of a MVE infrastructure, provides best practice guidance and examples for its implementation, and describes how it contributes to improved product compliance and the success of policies aimed at transforming the market to efficient lighting. Although the guidance notes focus on lighting products, the advice they contain is equally relevant to MVE programmes for other equipment and appliances. The exception to this is the photometric laboratories guidance note, which contains specific information for good practices in the testing of lighting products.²

Implementing an effective MVE programme will ensure products comply with 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.

This component is also concerned with developing mechanisms for data collection based on best practices and tailored for the situation in Sudan. The developed market-data collection tools shall be aligned with the product registration forms developed under the U4E initiative.³

² <http://united4efficiency.org/> - Accessed on April 16, 2018

³ <http://registrationprototype.enlighten-initiative.org/Account/Login> - Accessed on April 16, 2018

OUTCOME 3.1. Internationally recognized MVE programme is established and adopted by trained personnel.

Output 3.1.1. Establish and implement an effective MVE programme using the six guidance notes developed under the U4E initiative.

Activity 3.1.1.1. The six guidance notes of the U4E initiative are studied, based on which an MVE programme is designed.

Activity 3.1.1.2. A system is developed for collection of compliance data with the regulatory requirements through market surveillance activities, to seek out potential cases of non-compliance for further verification testing.

Activity 3.1.1.3. Auditing processes (supplementary verification testing) are developed to determine whether the product available in the market actually performs according to its claimed energy performance value. This is often a third-party test.

Output 3.1.2. In collaboration with technical experts from the U4E initiative, the personnel to be involved in the implementation of the MVE system across all relevant public stakeholders are trained and equipped with the tools necessary to ensure enforcement of the MEPS and associated regulations.

Activity 3.1.2.1. Develop a series of training workshops to introduce the developed MVE programme, and how to implement the different stages.

Activity 3.1.2.2. Identify the entities to be involved in the implementation of the MVE programme and define the responsibilities of each in a stakeholders meeting.

Activity 3.1.2.3. Prepare a manual standardizing the actions to be taken in response to non-compliance offences with a suite of timely and appropriate procedure interlinking the relevant authorities.

Activity 3.1.2.4. Undertake training workshops for representatives of the relevant authorities who will be in charge of implementing the MVE programme.

Output 3.1.3. In collaboration with technical experts from the U4E initiative, the developed testing protocol, including identification of appropriate in-country and out of country testing and certification, is implemented

Activity 3.1.3.1. Appropriate budget for the implementation of the developed MVE programme is assigned and approved.

Activity 3.1.3.2. Baseline assessment for in-country capacity to undertake the required testing procedure is assessed, including the cost efficiency of establishing a testing facility.

Activity 3.1.3.3. The output of the baseline assessment is presented to stakeholders, including manufacturers and traders, to achieve consensus on the tests to be carried out in-country, the available resources (equipment and personnel), and the budget assigned for the establishment, capacity building and operation.

OUTCOME 3.2. Mechanisms for collection of market data are in place

Output 3.2.1. Supplier, distributor and retailer surveys undertaken at the end of project, to assess how much purchasers overcome the higher initial purchase price of energy efficient products

Activity 3.2.1.1. Develop a communication plan, including a grievance mechanism for the supply-side, through which complaints and recommendations can be received.

Activity 3.2.1.2. Design a survey form to capture the information to be collected for the purpose of demonstrating the behavior of purchasers and the influence of the project activities on the sales value of energy efficient products.

Activity 3.2.1.3. Undertake an end-of-project survey to collect feedback from sample suppliers, distributors and retailers, and document the findings.

- Activity 3.2.1.4. Develop a set of lessons learned through the implementation of the project.
- Output 3.2.2.** Household and business surveys undertaken at end of project to verify cost savings from adoption of new technologies
- Activity 3.2.2.1. Develop a communication plan, including a grievance mechanism for the demand-side, through which complaints and recommendations can be received.
- Activity 3.2.2.2. Design a survey form to capture the information to be collected for the purpose of demonstrating the value and savings encountered by end-users as a result of purchasing energy-efficient appliances.
- Activity 3.2.2.3. Undertake an end-of-project survey to collect feedback from sample households and businesses and document the findings.
- Activity 3.2.2.4. Develop a set of lessons learned through the implementation of the project.

COMPONENT 4. Awareness-building of the new MEPS and regulatory mechanism

Awareness will let end-users of lighting and air conditioners fully understand the benefits of more efficient products and enable consumers to overcome 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.

OUTCOME 4.1. Increased capacities of local supply chain stakeholders and end users to comply with new MEPS and to bring energy efficient products to the market at competitive and affordable prices

- Output 4.1.1.** End users are aware of the benefits of energy efficient lighting products and air conditioners, understand the benefits of appliance efficiency, and recognize the labels when they see it
- Activity 4.1.1.1. Develop information packages for consumers, users and industry explaining the new labels' scheme and the cost effectiveness of purchasing energy-efficient lighting products and air conditioners.
- Activity 4.1.1.2. In consultation with stakeholders, produce guidance materials and support tools for sales-people, training them on how to encourage end-users make energy-considerate decisions regarding the products they purchase.
- Activity 4.1.1.3. A pilot-project is implemented to show case the cost of shifting to energy efficient lighting and air conditioning, and the resulting cost saving. The size of the pilot-project will depend on the available resources.
- Output 4.1.2.** Governmental agencies, local distributors, and retailers integrate the labels and product-certification in advertisement campaigns and marketing material for lighting products and air conditioners
- Activity 4.1.2.1. The focal point administers a public campaign promoting actions to phase out inefficient lighting and air conditioning in the different consumer-sectors.
- Activity 4.1.2.2. The government advocates the political road map towards phasing out inefficient lighting products and air conditioners in newspaper and media.

Activity 4.1.2.3. The private-sector is incentivized to promote high performance products and contribute to the market's leapfrogging efforts towards energy efficiency.

COMPONENT 5. Enhancing environmentally sound management of lighting products and air conditioners

The Component will develop capacities on environmentally sound management to safeguard the environment throughout the full lifecycle of the prioritized products (lamps and air conditioners). Support will be given to enhance capacities for environmentally sound management, including collection and recycling schemes or safe disposal of hazardous substances. The replaced ICLs will be collected and recycled or destroyed per the highest environmental standards. The project will support Sudan in meeting the objectives of the Minamata Convention on Mercury, to which it is a signatory but has not ratified. It will do this by supporting Sudan to leapfrogging over CFLs that contain mercury and directly to LED lighting (does not contain mercury).

OUTCOME 5.1. Reduction/minimization of leakage of hazardous materials to the environment by reducing the input

Output 5.1.1. Life-cycle assessments for lighting products and air conditioners are carried out to identify products containing hazardous material, and develop a national end-of-life appliance management plan, in line with global best practices and the recommendations of the U4E initiative

Activity 5.1.1.1. Life-cycle assessment for lighting products and air conditioners presently available in the Sudanese market is performed to identify those containing hazardous material and the baseline end-of-life destination.

Activity 5.1.1.2. A national end-of-life management plan for lighting products and air conditioners is developed.

Activity 5.1.1.3. The developed plan is reviewed to ensure conformity with global best practices and the recommendations of the U4E initiative.

Activity 5.1.1.4. The final plan is presented to stakeholders for comments and approval.

Output 5.1.2. In collaboration with technical experts from the U4E initiative, the end-of-life management plan is integrated in the national strategy for EE, the regulatory mechanism, the MVE programme, and the awareness campaigns undertaken as part of this project, where the key tasks of relevance to end-of-life management are assigned to the relevant authorities

Activity 5.1.2.1. The final end-of-life plan is integrated in the work plan developed to implement the national strategy for energy efficiency, and the relevant roles and responsibilities are assigned to representatives of stakeholders.

Activity 5.1.2.2. Compliance with recommendations of the U4E initiative is integrated in the regulatory framework.

Activity 5.1.2.3. Verification procedure to ensure safe waste disposal at end-of-life is achieved is integrated in the MVE programme.

Output 5.1.3. Communication campaigns are delivered to stakeholders to raise awareness on proper disposal of used products and the incentives/penalties developed in the new regulations.

Activity 5.1.3.1. End-users are educated on how to recycle and re-use used lighting products, whether by introducing re-use options, creating recycling facilities, or trading used products with recycling facilities abroad.

Activity 5.1.3.2. Information on the end-of-life management plan is incorporated in the awareness raising campaigns and communication plans with the supply and demand sides.

ii. Partnerships

Leapfrogging Sudan’s markets to more efficient lighting and air conditioners is a child project under a parent programme titled “Leapfrogging markets to high efficiency products (appliances, including lighting, and electrical equipment)”.

The parent programme (ID No. 9083) is designed to include eight national child projects in Chile, Costa Rica, Indonesia, Kazakhstan, Myanmar, South Africa, Sudan and Tunisia, as well as a global child project aiming to increase capacity of 15 countries’ officials to develop and implement projects and policies to advance energy efficiency of lighting, appliances, and equipment. The project is to be implemented under the UNEP Efficient Appliances Global Program Framework Document (PFD). The lead GEF agency will be UNDP.

The child project in Sudan will be executed by the Electricity Regulatory Authority (ERA) 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 the project activities.

The national project steering committee will be composed of the ERA, SEDC, SSMO, UNDP and UN Environment. International project partners, including international organizations 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.

On the national level, UNDP/GEF is implementing several other CCM projects in Sudan in the energy sector, including projects on wind energy, promoting solar energy in Darfur Region and Solar PV pumping for irrigation.

Regionally, the 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, develop monitoring and enforcement mechanisms, and provide training to public authorities and other relevant stakeholders.

iii. Risks and assumptions

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 and/or lack of monitoring, verification, and enforcement under Component #3.

As per standard UNDP requirements, the Project Manager will monitor risks quarterly and report on the status of risks to the UNDP Country Office. The UNDP Country Office will record progress in the UNDP ATLAS risk log.

Risks will be reported as critical when the impact and probability are high (i.e. when impact is rated as 5, and when impact is rated as 4 and probability is rated at 3 or higher). Management responses to critical risks will also be reported to the GEF in the annual PIR.

Table 5: Assessment of project risks (the scale of impact and probability is from 1 to 5, low to high respectively)

Project risks						
#	Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
1	Issuance of MEPS and Regulations	Regulatory	P = 2 I = 5	Issuance of regulations as regulations not as law	Project Board	N/A

2	The security situation in Sudan may pose some risks or perceived risks. Such perception may hinder investment by main parties.	Political/ Operational	May slow investment P = 2 I = 3	Implementation sites are in Khartoum and Port Sudan where the places are stable and secure.	Project Board	Risk Map available
3	Currency risk	Financial	If the local currency falls against international currencies the price difference between energy efficient goods and less efficient goods is magnified. P = 4 I = 4	Establishment of a financing mechanism with the electricity distribution company	Sudan Electricity Distribution Company (SEDC)	Ongoing
5	Novelty and adoption risk	Organizational	Slow uptake of energy efficient equipment by the population P = 2 I = 4	Highlighting operational advantages of energy efficient equipment	Project Board	N/A
6	Technology risk – Technical failures, either due to equipment failure or bad installation, or bad design/sizing can lead to lack of adoption by others and loss by the financiers	Technological	Have to repurchase equipment P = 2 I = 3	Quality control of equipment should ensure the quality and performance.	NA	N/A
7	Financial Risks – The capital required to invest in energy efficient equipment may be significant	Financial	Lack of financing is likely to mean low adoption rates P = 2 I = 4	The project will work the electricity distribution company to facilitate financing	Government	Ongoing
8	Lack of adequate and reliable market data to facilitate the monitoring of project impacts and planning of further policy measures.	Operational	Reduced information on the reaction of the market to the measures implemented. P = 2 I = 2	Establishment of baseline data through a baseline survey. Robust MRV arrangements will be put in place.	National Project Manager (NPM)	Ongoing
9	Inadequate and/or non-capacitated human resources to successfully implement the project and support the mainstreaming of its results.	Operational	Project not meeting the stated targets. P = 2 I = 3	Early training of key project proponents and later intensive training of key actors.	National Project Manager (NPM)	N/A

iv. Stakeholder engagement

The project aims to involve stakeholders that represent the government, private sector and civil society, including: government standards and test agencies; customs; standardization institutes; certification and accreditation bodies; test laboratories; manufacturers; suppliers and distributors of lamps; technology research institutes; and consumer organizations.

The main stakeholders involved in carrying out the activities of this project are:

- Ministry of Water Resources, Irrigation and Electricity (MWRIE);
- Electricity Regulatory Authority (ERA), under MWRIE;
- Sudanese Standards and Metrology Organization (SSMO);
- Sudanese Electricity Distribution Company (SEDC);
- Ministry of Foreign Trade;
- Sudan Customs Authority, under the Ministry of Interior;
- National Energy Administration, under the Ministry of Petroleum;
- Sudan National Information Center (NIC)

Other target groups and potentially affected groups by the project include:

- Manufacturers and distributors of lighting products and air conditioners;
- End-users of lighting products and air conditioners.
- Institutions in charge of gender issues at national level such as: Ministries with gender components in their mandates, the gender focal point for the Ministry of Energy, civil society organizations working in the fields of gender and climate change as well as research institutions and development partners working on gender issues.

In addition to the role described under section IIV of this document, detailing the responsibility of the MWRIE towards project management and governance, MWRIE will also be responsible for maintaining continuous engagement of stakeholder for ensuring that target group sand potentially affected communities are aware of, and have access to, mechanisms to submit concerns about the social and environmental impacts of the project.

Environmental and social grievances will be reported to the GEF in the annual PIR.

v. Gender equality and empowering women

The Global Programme Framework Document, developed by UN Environment, for Leapfrogging markets to high efficiency products (appliances, including lighting, and electrical equipment) states that:

“During project preparation adequate consultation will be carried out with all stakeholders and special consideration will be given to gender, allowing for equal inputs from both men and women. The view, experiences, and interests of women and men will be sought and considered during the program and child projects. The child projects will undertake consultations with organizations working on climate change and gender equality to analyze expected roles and responsibilities of men and women in the development of the project outputs. Through these consultations, the countries will include a section on gender consideration in their Implementation Plans.”

In line with the above, the UNDP CO in Khartoum contracted an independent consultant to undertake a gender mainstreaming study (attached in Annex G). The main objective of the study was to explore the dynamics of how different resources that are generated with or which come into the household, are accessed and controlled by its members. The study also aimed to recommend suitable measures to be undertaken during project implementation, to ensure the inclusion and engagement of women in the different phases.

The study was completed in December 2016, and included the following conclusions/recommendations:

- Integrating gender into project cycle is strategic to development, and make women participate in the assessment, action and monitoring and evaluation of the project, by considering them as main partners and not passive beneficiaries.

- Mobilization of local community, women in particular around their strategic needs lead to improve their social and economic status, and this will be realized by training them on energy saving and efficient technologies.
- Creation of small scale income generating projects will increase productivity and alleviate poverty.
- To address the identified gaps, minimize gender inequality and empower women to maximize energy efficiency.
- Energy policies and programming should address intra household resource allocations and power relations so as to promote gender equality.
- Increase women access to new technologies, e.g. radios and televisions could promote women empowerment.

The above remarks were taken in consideration during the design of the project. During implementation, efforts will be made to have acceptable gender representation in project management structures (committees, institutional frameworks) and capacity building actions (trainings, workshops, etc) under this project. Furthermore, specific actions and project design analysis of gender equality and women’s empowerment in the Sudanese energy context will be considered during the monitoring and evaluation stages.

vi. South-South and Triangular Cooperation (SSTrC)

South-South Cooperation (SSC) is an essential cross-cutting mechanism designed to enhance the ability of UN Environment to deliver environmental capacity building and technology-support activities in developing countries and regions of the South.⁴ Triangular cooperation (TrC) is defined by UN as Southern-driven partnerships between two or more developing countries (emerging, middle-income or least-developed), supported financially by a developed country(ies) or multilateral organization(s), to implement development cooperation programmes and projects.⁵

UNDP has a Special Unit for South-South Cooperation titled UN Office for South-South Cooperation (UNOSSC). It was established in 1974 to promote technical co-operation among developing countries and coordinate SSTC globally and within the United Nations system. This UN Office is able to achieve its objectives through the building and strengthening of broad-based partnerships among developed and developing countries, the United Nations system, and private-sector and civil society organizations.⁶

Leapfrogging Sudan’s markets to more efficient lighting and air conditioners is a child project to be implemented under the Efficient Appliances Global Program Framework Document (PFD), developed by UN Environment. The parent programme is designed to include eight national child projects in Chile, Costa Rica, Indonesia, Kazakhstan, Myanmar, South Africa, Sudan and Tunisia, as well as a global child project aiming to increase capacity of 15 countries’ officials to develop and implement projects and policies to advance energy efficiency of lighting, appliances, and equipment. Therefore, in terms of SSTC the project involves:

- Collaboration within the UN system, where it builds upon the technical experience of both UNDP and UN Environment in the field of energy efficiency, as well as their regional experience in Africa; and
- Collaboration between developing countries and sharing of experience among the partners, e.g. building upon the lessons learned and replication of success factors.

Furthermore, the project design (detailed above) bases several components on the guidance and recommendations of the United for Efficiency (U4E) initiative, developed by UN Environment, which was

⁴ <https://www.unenvironment.org/about-un-environment/evaluation/our-evaluation-approach/un-environment-documents> - Accessed on April 16, 2018

⁵

http://www.undp.org/content/dam/undp/library/Poverty%20Reduction/Development%20Cooperation%20and%20Finance/SSC_FAQ%20v1.pdf - Accessed on April 16, 2018

⁶ <https://www.unsouthsouth.org/about/about-unossc/> - Accessed on April 16, 2018

showcased at the 1st Arab South-South Development Expo as a powerful and cost-effective solution to tackle energy issues in the Arab World.⁷

Within the U4E initiative, two projects are of specific relevance to SSTC efforts: 1) the Global Efficient Lighting Partnership; and 2) regional conferences established by U4E to promote inter-country information exchange, dialogue, policy alignment. During implementation of the project in Sudan, the project team will be advised to shadow the U4E initiative in the technical recommendations, and benefit from the initiative's successful demonstration of useful information exchange and other SSTC efforts.

vii. Sustainability and Scaling Up

The project aims to reduce GHG emissions through efficient use of electricity. It also dedicates a component for enhancing environmentally sound management system for wastes, further promoting environmental sustainability.

There are three important factors involved in the sustainability of the project:

- *Financial competitiveness:* Electricity is subsidized in Sudan, which has been cited as a barrier slowing down the progress on the NEEAP. It is also identified as a financial risk for project implementation. If the subsidies are lifted, the purchase of energy efficient products would become considerably more economical than the use of cheaper non-efficient products.
- *Access to efficient products:* With an appropriate financing mechanism in place, it would be expected to see widespread adoption and scaling up of the use of energy efficient lighting products and air conditioners. However, the major risk to this sustainability is the stability of the Sudanese pound. If the pound loses value, the price of imported products increases. If the attractiveness of energy efficient products to individual end users is reduced, distributors will lose incentive to supply high-end products to the market.
- *Institutional framework:* The Project takes a market-based approach by establishing a regulated supply-chain, developing technical expertise and a financing mechanism. With these elements in place, the spread of energy efficient products in the Sudanese market can be expected to be self-sustaining. Therefore, a major risk to this sustainability has been identified as the inability of the government to adopt mandatory MEPS, or lack of capacity for enforcement of the developed regulations.

⁷ <http://united4efficiency.org/1st-arab-south-south-development-expo-showcases-en-lighten-initiative/> - Accessed on April 16, 2018

V. PROJECT MANAGEMENT

i. Cost efficiency and effectiveness

In 2009, the United Nations Environment Programme (UN Environment), in partnership with the Global Environment Facility (GEF) and other international partners established the United for Efficiency (U4E) initiative to accelerate a global market transformation to environmentally sustainable, energy efficient lighting technologies, as well as to develop strategies to phase-out inefficient incandescent lamps. Among the findings of the U4E initiative are the following:⁸

- The gap between electricity supply and demand in most developing countries is increasing rapidly. The demand is not being met due to the high cost of new power generation and increasing fuel prices.
- The phase-out of inefficient incandescent lamps and their replacement with higher efficiency products such as light emitting diodes (LEDs) or compact fluorescent lamps (CFLs) provides one of the most straightforward and cost-effective ways to significantly reduce carbon emissions.

The assessment of the cost efficiency and effectiveness of using energy efficient products involves analyzing several direct and indirect cost factors. Direct cost factors are monetary values paid by the end user. These include the cost of purchasing the product (product market price), as well as the costs endured during product operation. The operating cost is calculated based on the electricity consumption of the product, the cost of electricity, and the lifetime of the product. The following table presents direct cost calculation for different types of lighting products.

The project requires US\$1.77 million of GEF financing. Per the calculation of GHG reductions, using GEF Tracking Tool and baseline data, the project is estimated to result in 1,224,461 tCO₂ reductions during its lifetime (24 years), i.e. the cost of GEF funds US\$1.45/tCO₂ reduction.

Table 6: Cost comparison between LEDs, CFLs and incandescent light bulbs

Description	LED	CFL	Incandescent
Light bulb projected lifespan (hours)	50,000	10,000	1,200
Watts per bulb (equiv. 60 watts)	7	14	60
Cost per bulb (in SDG)	45	28	5
KWh of electricity used over 50,000 hours	350	700	3,000
Cost of electricity (@ 0.5 SDG/KWh)	175	350	1,500
Bulbs needed for 50k hours of use	1	5	42
Equivalent 50k hours bulb expense (in SDG)	45	140	210
Total cost for 50k hours	SDG 220	SDG 490	SDG 1,710

Indirect cost factors include the cost saving on the supply-side resulting from the use of energy efficient products on the demand-side. For example, energy efficient ACs can greatly reduce peak energy loads. In addition, efficient lighting and air conditioning could significantly increase the utilization of available power without having to build expensive generation facilities. According to a press release by Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI), published in December 2015, the global cost of limiting global warming to 2°C by 2030 can be reduced by implementing energy efficiency measures up to 2.8 trillion US dollars, compared to pursuing a more energy intensive pathway.

⁸ <http://united4efficiency.org/> - Accessed on April 16, 2018

The first output under component 2 is concerned with performing an “Economic and financial cost/benefit analysis, to determine the appropriate level of regulatory measures for the residential, governmental and commercial sectors, including assessment of benchmark mechanisms, and suitability for adoption in Sudan”.

Complete analysis of an investment in a technology or a project requires the analysis of each year of the life of the investment, taking into account relevant direct costs, indirect and overhead costs, taxes, and returns on investment, plus other externalities, such as environmental impacts, that are relevant to the decision to be made.

In 1995, the National Renewable Energy Laboratory (NREL) developed a manual for the Economic Evaluation of Energy Efficiency and Renewable Energy Technologies. This manual provides guidance on economic evaluation approaches, metrics, and levels of detail required, while offering a consistent basis on which analysts can perform analyses using standard assumptions and bases. It not only provides information on the primary economic measures used in economic analyses and the fundamentals of finance but also provides guidance focused on the special considerations required in the economic evaluation of energy efficiency and renewable energy systems.⁹

The project team is advised to follow the guidelines offered in NREL’s manual when performing the economic and financial cost/benefit analysis. It is also recommended that the study involves a comparison between the financial returns resulting from allocating the electricity subsidies on reducing tariffs verses reducing the cost of energy efficient products in the Sudanese market.

ii. Project management

The project will be nationally executed by the Ministry of Water Resources, Irrigation and Electricity (MWRIE), under the National Implementation Modality (NIM). UNDP will be accountable for the disbursement of funds and the achievement of the project goals, according to the approved work plan.

A Project Board/Project Steering Committee (PB/PSC) will be established at the inception of the project to monitor project progress, guide project implementation and to support the project in achieving its listed outputs and outcomes. It will be chaired by an MWRIE representative and will include representatives from MoF, Bank of Sudan, NERC, SSMO, HCENR, UN Environment and a Project Assurance Officer from UNDP. Other members can be invited at the decision of the PSC on an as-needed basis, but taking due regard that the PSC remains sufficiently lean to be operationally effective. The final list of the PSC members will be completed at the outset of project operations and presented in the Inception Report by taking into account the envisaged role of different parties in the PSC.

The national project manager will participate as a non-voting member in the PSC meetings and will also be responsible for sharing required documents sufficiently in advance of the meeting and compiling a summary report of the discussions and conclusions of each meeting. He/She will be supported by international and national experts taking the lead in the implementation of specific technical assistance components of the project. Contacts with experts and institutions in other countries that have already gained experience in developing and implementing energy efficiency policies, MEPs and regulatory mechanisms are also to be established.

In addition to the NPM, a **Government Project Coordinator (GPC)**, will be appointed by MWRIE, to coordinate project operations and support the NPM with overall administration, oversight, coordination of activities and maintaining a liaison with UNDP. The GPC will: (i) coordinate the project activities with activities of other Government entities; and (ii) certify the expenditures are in line with approved budgets and work-plans and his remuneration will be incurred by the government.

UNDP, through the Project Assurance Officer (UNDP Programme Officer), will maintain the oversight and management of the overall project budget. It will be responsible for monitoring project implementation, timely reporting of the progress to the UNDP Regional Centre and the GEF, as well as organising mandatory and possible complementary reviews and evaluations on an as-needed basis. It will also support the executing agency in the procurement of the required expert services and other project inputs and administer the required contracts.

⁹ A manual for the Economic Evaluation of Energy Efficiency and Renewable Energy Technologies, NREL, March 1995 - <http://www.nrel.gov/docs/legosti/old/5173.pdf>

Furthermore, it will support the coordination and networking with other related initiatives and institutions in the country.

The project will be hosted by ERA. ERA will provide the premises for project implementation. Operationalisation of new regulations on imports for ACs will be mainly at Port Sudan and for lighting will be Medani and outskirts.

iii. Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information

In order to accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware.

Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy¹⁰ and the GEF policy on public involvement¹¹.

¹⁰ See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

¹¹ See

VI. PROJECT RESULTS FRAMEWORK

<p>This project will contribute to the following Sustainable Development Goal (s): SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all</p>					
<p>This project will contribute to the following country outcome included in the UNDAF/Country Programme Document: Outcome 2: Populations vulnerable to environmental risks and climate change become more resilient and relevant institutions are more effective in the sustainable management of natural resources.</p>					
<p>This project will be linked to the following output of the UNDP Strategic Plan: Output 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)</p>					
	Objective and Outcome Indicators	Baseline (2017)	Mid-term Target (2020) ¹²	End of Project Target	Data Collection Methods and Risks/Assumptions
<p>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</p>	<p>Total amount of electricity saved as a result of introducing more energy efficient air conditioning units and lamps/luminaires.</p>	<p>0 GWh</p>	<p>517 GWh</p>	<p>1,435 GWh</p>	<p><u>Source of data:</u></p> <ul style="list-style-type: none"> Electricity consumption data obtained from SEDC and analyzed by the National Energy Administration. National Electricity Efficiency Action Plan (2013-2016) to achieve 12% annual reduction in the energy consumption. <p><u>Risks:</u> Baseline data on electricity consumption in lighting and air conditioning is likely to have shifted by project start date.</p> <p><u>Assumptions:</u> Analysis of consumption data is performed annually to identify the consumption of lighting and air conditioning. Baseline survey is undertaken to determine baseline consumption. At PPG direct project savings at end of project are calculated as 1,435,000 MWh.</p>

¹² Although no mid-term review is required for this project, Mid-Term Targets are provided to serve as guidance for the project implementation team.

	Number of direct project beneficiaries.	0 households	600,000 households	1,000,000 households	<p><i>Source of data:</i> Primarily project surveys, monitoring and evaluation; import records and sales records. Number of consumers and target to be determined and refined at initial stage of survey.</p> <p><i>Risks:</i> Data are difficult to collect and quantify.</p> <p><i>Assumptions:</i> Consumers are direct beneficiaries. Other beneficiaries are indirect, such as the entire population benefiting from reduced electricity loads and Government expenditure on power.</p>
	Reduction in GHG emissions resulting from improved energy efficiency of lighting and air conditioning appliances in the residential, commercial and governmental sectors	0 t-CO ₂	220,003 t-CO ₂	463,759 t-CO ₂	<p><i>Source of data:</i> Electricity consumption data obtained from SEDC and used to fill the GHG tracking tool.</p> <p><i>Risks:</i> Baseline energy consumption data used to calculate the potential GHG reductions is incomplete inaccurate.</p> <p><i>Assumptions:</i> Electricity consumption in lighting and air conditioning are reported by distribution companies on regular basis.</p>
Component 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)					
Outcome 1.1: National strategy for energy efficiency in the lighting and air conditioning sub-sectors is developed and adopted following a consultative process.	Number of key tasks integrated in the mandates of energy stakeholders including setting standards, testing, certification, labeling, and regulation for lighting and air conditioning sub-sectors.	1 (NEEAP 2013-2016 included some tasks such as campaigns and replacement of lighting system in the government offices)	3 (tasks include studies of the lighting and air conditioning subsector, set a system for data collection, analysis and verifications)	5 (including setting standards, testing, certification, labeling, and regulation for lighting and air conditioning sub-sectors.)	<p><i>Source of data:</i> Progress reports by the project team should include the number of key tasks and number of staff contracts.</p> <p><i>Risks:</i> Consensus is achieved by stakeholders on the key tasks at the beginning of the project.</p>
Outcome 1.2:	Number of trained	2 (Two of ERA staff	8 (To be able to cover	18 (ERA staff to be	<i>Assumptions:</i> Each of the energy

ERA is capacitated as a focal point responsible for promoting and overseeing all activities related to energy efficiency in Sudan.	personnel on the implementation of the national strategy.	participated in the NEEAP formulation and a focal point for RECREE)	different regions of the country)	present in each state and a focal point trained for updating information on complaints products in each of the 18 States)	stakeholders with mandates under the work plan will allocate personnel to undertake the newly assigned tasks, and update their manuals or organizational structures accordingly.
Component 2: Adoption of regulatory mechanisms directing the market towards energy efficient lighting products and air conditioners, including minimum energy performance standards (MEPS), labeling scheme, testing and importing procedure					
Outcome 2.1: Internationally recognized regulatory mechanism is adopted, and the corresponding MEPS, label classification, energy performance test protocol, and import-related procedure are localized to be suitable for Sudan.	Percentage of compliant products in the market	2% of compliant products in the market	25% of lighting products and air conditioners available in the market are compliant with the adopted regulations	75% of lighting products and air conditioners available in the market are compliant with the adopted regulations	<i>Source of data:</i> Market surveys <i>Risks:</i> Labelled products are not available in the Sudanese market at the time of issuance of the newly developed regulation. <i>Assumptions:</i> The newly developed regulation will allow for a grace period, during which labelled and non-labelled products will be available in the Sudanese market.
Outcome 2.2: Provide technical support for the identification and development of an appropriate financial mechanism to promote energy efficiency in lighting and air conditioning.	Number of products distributed using incentives offered by the financial mechanism	- 0 lighting lamps - 0 air conditioning units	- 2,000,000 Lighting lamps - 35,000 air conditioning units	- 3,000,000 Lighting lamps - 50,000 air conditioning units	
Component 3: Adoption of monitoring, verification, and enforcement (MVE) system, to ensure that products in the market comply with the established MEPS					
Outcome 3.1: Internationally recognized MVE programme is established, and adopted by trained personnel.	Number of trained personnel on the adopted of MVE system.	Zero, since the adoption and training should take place during project implementation)	4 ERA staff to be involved in the implementation of the MVE system are trained.	40 staff from relevant entities to be involved in the implementation of the MVE system are trained.	<i>Source of data:</i> The focal point (ERA). Large manufacturers and distributors <i>Risks:</i> The development of the MEPS and MVE programme move in parallel and are ready for implementation at the same time.
Outcome 3.2: Mechanisms for collection of market data are in place.	Annual sales volume of energy efficient lighting products and air conditioners (number of units categorized by manufacturer and capacity)	Assumed to be zero for lack of sufficient baseline data	25% of the sales volume of lighting products and air conditioners is generated from EE products	75% of the sales volume of lighting products and air conditioners is generated from EE products	<i>Assumptions:</i> Personnel to be involved in the MVE system implementation are identified with the assignment of entities during

					the national strategy development.
Component 4: Awareness-building of the new MEPS and regulatory mechanism					
Outcome 4.1: Increased capacities of local supply chain stakeholders and end users to comply with new MEPS and to bring energy efficient products to the market at competitive and affordable prices.	Number of campaigns by the government and the private-sector.	One	Two campaigns	Four campaigns	<i>Source of data:</i> Market surveys.
	Public Pulse (% change in public perception of the impacts of purchasing EE products)	Assumed to be zero for lack of sufficient baseline data	25% of the public inquire about energy efficiency of products before making the decision to purchase	75% of the public inquire about energy efficiency of products before making the decision to purchase	<i>Risks:</i> Other factors influencing consumer choices and prohibiting the change to more efficient options, such as high prices, may be confused as lack of awareness. <i>Assumptions:</i> Proper sampling is achieved, such that the data collected is representative.
Component 5: Enhancing environmentally sound management of lighting products and air conditioners					
Outcome 5.1: Reduction/minimization of leakage of hazardous materials to the environment by reducing the input.	Number of key tasks, under the end-of-life management plan, integrated in the original mandates of energy and waste reduction stakeholders.	Zero, since the key tasks should be developed during project implementation	50% of the key tasks are integrated in mandates of stakeholders.	100% of the key tasks are integrated in mandates of stakeholders.	<i>Source of data:</i> Progress reports by the project team should include the number of integrated key tasks. <i>Risks:</i> Stakeholders of waste reduction in Sudan are identified, and involved with the focal point in the development of this component. <i>Assumptions:</i> Recycling companies are interested in the Sudanese market and can contribute to offering incentives to encourage the implantation of end-of-life programmes.

VII. MONITORING AND EVALUATION (M&E) PLAN

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results. Supported by Component Three and Four, the project monitoring and evaluation plan will also facilitate learning and ensure knowledge is shared and widely disseminated to support the scaling up and replication of project results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the [UNDP POPP](#) and [UNDP Evaluation Policy](#). The UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the [GEF M&E policy](#) and other relevant GEF policies¹³.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.¹⁴

M&E Oversight and monitoring responsibilities

Project Manager: The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager will inform the Project Board, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Project Manager will develop annual work plans based on the multi-year work plan included in Annex A, including annual output targets to support the efficient implementation of the project. The Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. e.g. ESMP, gender action plan, stakeholder engagement plan etc..) occur on a regular basis.

Project Board: The Project Board will take corrective action as needed to ensure the project achieves the desired results. The Project Board will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Implementing Partner: The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national

¹³ See https://www.thegef.org/gef/policies_guidelines

¹⁴ See https://www.thegef.org/gef/gef_agencies

institutes, and is aligned with national systems so that the data used by and generated by the project supports national systems.

UNDP Country Office: The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the [UNDP POPP](#). This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager.

The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed. The UNDP-GEF Regional Technical Advisor will liaise, as needed, with the UN Environment United for Efficiency initiative on quality assurance and troubleshooting support.

Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.¹⁵

Additional GEF monitoring and reporting requirements

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
- c) Review the results framework and finalize the indicators, means of verification and monitoring plan;
- d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
- g) Plan and schedule Project Board meetings and finalize the first-year annual work plan.

¹⁵ See guidance here: <https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx>

The Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board.

GEF Project Implementation Report (PIR): The Project Manager, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.

The PIR submitted to the GEF will be shared with the Project Board, including the UN Environment. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

GEF Focal Area Tracking Tools: The following GEF Tracking Tool(s) will be used to monitor global environmental benefit results: Tracking Tool for GEF 6 Climate Change Mitigation Projects. The baseline/CEO Endorsement GEF Focal Area Tracking Tool(s) – submitted as Annex B to this project document – will be updated by the Project Manager/Team (not the evaluation consultants hired to undertake the TE) and shared with the terminal evaluation consultants before the required evaluation missions take place. The updated GEF Tracking Tool(s) will be submitted to the GEF along with the completed Terminal Evaluation report.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center](#). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board. The TE report will be publically available in English on the UNDP ERC.

The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

Final Report: The project’s terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Mandatory GEF M&E Requirements and M&E Budget

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ¹⁶ (US\$)		Time frame
		GEF grant	Co-financing	
Inception Workshop	UNDP Country Office (UNDP CO)	US\$ 5,000	None	Within two months of project document signature
Inception Report	Project Manager (PM)	None	None	Within two weeks of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None	None	Quarterly, annually
Risk management	PM and UNDP CO	None	None	Quarterly, annually
Monitoring of indicators in project results framework	Project Manager (PM)	Per year: US\$ 2,500 (i.e. a total of US\$ 10,000)	None	Annually before PIR
GEF Project Implementation Report (PIR)	PM and UNDP CO and UNDP-GEF team	None	None	Annually
NIM Audit as per UNDP audit policies	UNDP Country Office	Per year: US\$ 2,000 – 4,000 (i.e. a total of US\$ 8,000 – 16,000)	None	Annually or other frequency as per UNDP Audit policies
Lessons learned and knowledge generation	Project Manager (PM)	Per year: US\$ 1,000 (i.e. a total of US\$ 4,000)	None	Annually
Monitoring of environmental and social risks, and corresponding management plans as relevant	Project Manager and UNDP Country Office	US\$ 1,000	None	On-going
Stakeholder Engagement Plan	PM and UNDP CO	US\$ 1,000	None	On-going
Gender Action Plan	PM and UNDP CO and UNDP-GEF team	US\$ 1,000	None	On-going
Addressing environmental and social grievances	Project Manager UNDP Country Office	US\$ 1,000	None	On-going
Project Board meetings	Project Board UNDP Country Office Project Manager	Per year: US\$ 500 (i.e. a total of US\$ 2,000)	None	At minimum, annually
Supervision missions	UNDP Country Office	None ¹⁷	None	Annually
Oversight missions	UNDP-GEF team	None ¹⁶	None	Troubleshooting as needed
GEF Secretariat learning missions/site visits	UNDP CO and PM and UNDP-GEF team	None	None	To be determined
Terminal GEF Tracking Tool to be updated by the project team	Project Manager	US\$ 7,500	None	Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP Country Office and Project team and UNDP-GEF team	US\$ 20,000 - 40,000	None	At least three months before operational closure
TOTAL indicative COST Excluding project team staff time, and UNDP staff and travel expenses		US\$ 60,500 – 88,500	None	

¹⁶ Excluding project team staff time and UNDP staff time and travel expenses.

¹⁷ The costs of UNDP Country Office and UNDP-GEF Unit’s participation and time are charged to the GEF Agency Fee.

VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

i. Roles and responsibilities of the project’s governance mechanism

The project will be implemented following UNDP’s national implementation modality, according to the Standard Basic Assistance Agreement between UNDP and the Government of Sudan, and the Country Programme.

The **Implementing Partner** for this project is the Ministry of Water Resources, Irrigation and Electricity (MWRIE) – Electricity Regulatory Authority (ERA). The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources.

The Implementing Partner is responsible for:

- Approving and signing the multiyear workplan;
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

The project organisation structure is as follows:

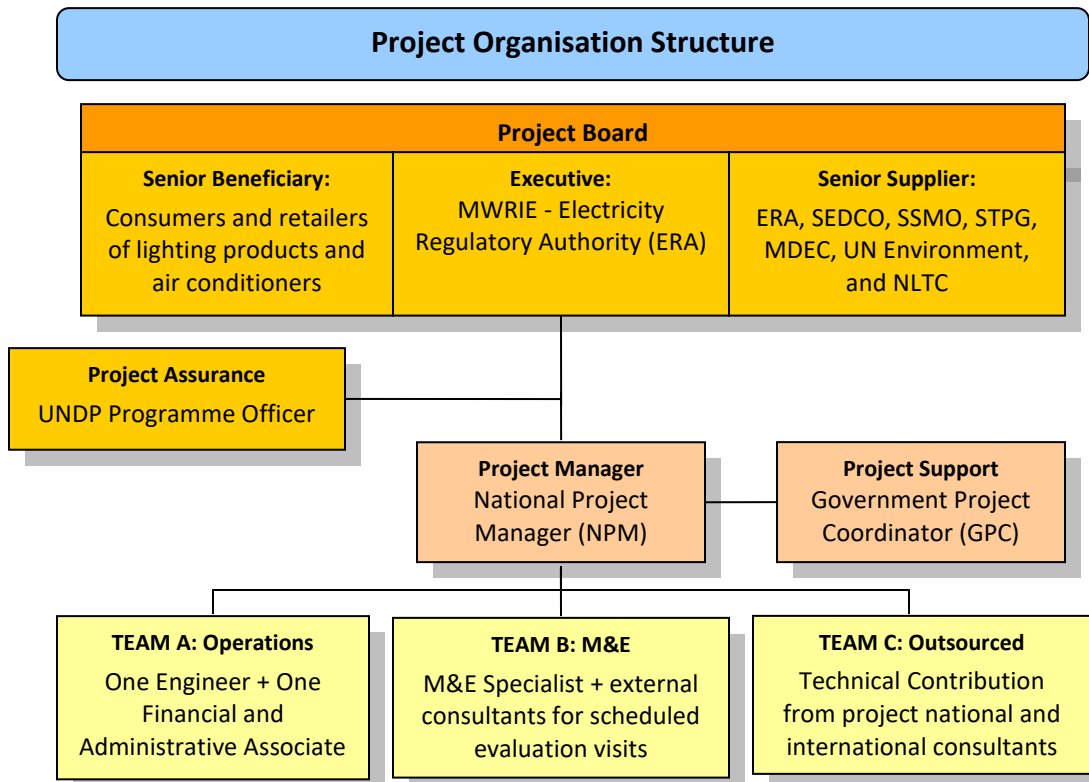


Figure 10: Project organization structure

Project Board: The Project Board (also called Project Steering Committee) is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendations for UNDP/Implementing Partner approval of project plans and revisions, and addressing any project level grievances. In order to ensure UNDP’s ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager.

Specific responsibilities of the Project Board include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the project manager;
- Provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks;
- Agree on project manager's tolerances as required;
- Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the workplan;
- Provide ad hoc direction and advice for exceptional situations when the project manager's tolerances are exceeded; and
- Assess and decide to proceed on project changes through appropriate revisions.

The composition of the Project Board must include the following roles:

Executive: The Executive is an individual who represents ownership of the project who will chair the Project Board. This role can be held by a representative from the Government Cooperating Agency or UNDP.

The Executive is: Mr. Musa Omer Abu-algasim, Undersecretary general of the Ministry of Water Resources, Irrigation and Electricity.

The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and supplier.

Specific Responsibilities: (as part of the above responsibilities for the Project Board)

- Ensure that there is a coherent project organisation structure and logical set of plans;
- Set tolerances in the AWP and other plans as required for the Project Manager;
- Monitor and control the progress of the project at a strategic level;
- Ensure that risks are being tracked and mitigated as effectively as possible;
- Brief relevant stakeholders about project progress;
- Organise and chair Project Board meetings.

Senior Supplier: The Senior Supplier is an individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The Senior Supplier role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. Typically, the implementing partner, UNDP and/or donor(s) would be represented under this role.

The Senior Supplier is:

- Electricity Regulatory Authority (ERA)
- Sudanese Electricity Distribution Company (SEDCO)
- Sudanese Standards and Metrology Organization (SSMO)
- Sudanese Thermal Power Generation Company (STPG)
- Merowe Dam Electricity Company (MDEC)
- UN Environment
- National Lighting Test Center (NLTC), China

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Make sure that progress towards the outputs remains consistent from the supplier perspective;
- Promote and maintain focus on the expected project output(s) from the point of view of supplier management;
- Ensure that the supplier resources required for the project are made available;
- Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes;
- Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts.

Senior Beneficiary: The Senior Beneficiary is an individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries. The Senior Beneficiary role is held by a representative of the government or civil society.

The Senior Beneficiary is:

- Households Consumers of lighting and ACs appliances
- Private sector companies & retailers

The Senior Beneficiary is responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Senior Beneficiary role monitors progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Prioritize and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes;
- Specification of the Beneficiary's needs is accurate, complete and unambiguous;
- Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target;
- Impact of potential changes is evaluated from the beneficiary point of view;
- Risks to the beneficiaries are frequently monitored.

Project Manager: The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

The Implementing Partner appoints the Project Manager, who should be different from the Implementing Partner's representative in the Project Board.

Specific responsibilities include:

- Provide direction and guidance to project team(s)/ responsible party (ies);
- Liaise with the Project Board to assure the overall direction and integrity of the project;
- Identify and obtain any support and advice required for the management, planning and control of the project;
- Responsible for project administration;
- Plan the activities of the project and monitor progress against the project results framework and the approved annual workplan;
- Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications, and overseeing all contractors' work;

- Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
- Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
- Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
- Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
- Manage and monitor the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
- Capture lessons learned during project implementation;
- Prepare the annual workplan for the following year; and update the Atlas Project Management module if external access is made available.
- Prepare the GEF PIR and submit the final report to the Project Board;
- Based on the GEF PIR and the Project Board review, prepare the AWP for the following year.
- Identify follow-on actions and submit them for consideration to the Project Board;
- Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the Project Board;

Project Assurance: UNDP provides a three – tier supervision, oversight and quality assurance role – funded by the GEF agency fee – involving UNDP staff in Country Offices and at regional and headquarters levels. Project Assurance must be totally independent of the Project Management function. The quality assurance role supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. This project oversight and quality assurance role is covered by the GEF Agency.

ii. Governance role for project target groups

The coordination between the different stakeholders will be carried out by MWRIE with the support of UNDP. The coordination will begin with the establishment of a Local Project Appraisal Committee (LPAC) and the invitation of stakeholders to an inception meeting. The PSC will identify and put in place steps for initial activities to support, for example, undertaking training and capacity building activities in the period when the MEPS structure and regulatory framework are being selected and localized.

Another goal of project coordination is to maintain continuous engagement of stakeholders and regular updates on the progress in each of the activities against the project timeline. This will assist the project keep pace of the consequential components of the project and make sure specific outcomes are in place when they are needed: e.g. importing procedure are ready when regulations come into place; technical capacity and equipment supply are available at the appropriate time, etc. The PSC will meet semi-annually during project implementation, and it will have the responsibility of coordinating and harmonizing the actions of all the key stakeholders.

IX. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is **USD 7,376,000**. This is financed through a GEF grant of **USD 1,770,000**, and **USD 5,606,000** in parallel co-financing. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

i. Parallel co-financing

The actual realization of project co-financing will be monitored during the terminal evaluation process and will be reported to the GEF. Letters of co-finance are attached in Annex I.

The planned parallel co-financing will be used as follows:

Table 7: Planned co-financing and the corresponding activities/outputs

Co-financing source	Co-financing type	Co-financing amount (in USD)	Planned Activities/Outputs	Risks	Risk Mitigation Measures
National Government Co-finance					
Ministry of Water Resources, Irrigation and Electricity (MWRIE)	Cash	1,000,000	<ul style="list-style-type: none"> - Supervise the awareness campaign to encourage all end users use EE appliances. - Implement an exemplary project fixing EE lamps in MWRIE offices throughout Sudan. - Take measures to issue the EE law and associated regulations and policies. 	Low	N/A
Electricity Regulatory Authority (ERA)	Cash	1,000,000	<ul style="list-style-type: none"> - Legalization action plan to adopt Energy Efficiency law and the related regulations. - Action plan for advertisement related to EE law. - Capacity building for EE, energy auditing, cost and tariff. - NEEAP following up. 	Low	N/A
Sudanese Standards and Metrology Organization (SSMO)	Cash	2,756,000	<ul style="list-style-type: none"> - Set MEPS for the electrical appliances. - Proceed to obtain testing laboratories for all appliances both at its HQ and branches as well as the import ports of Sudan. - Implement energy efficiency labels on all appliances both local and imported. - Promulgation of regulations necessary for implementation of EE labels and/or MEPS. - Surveillance of manufacture and import of appliances. 	Low	N/A
Sudanese Electricity Distribution Company (SEDC)	Cash	200,000	<ul style="list-style-type: none"> - Conduct awareness campaign to encourage all end users use EE appliances. - Implement a pilot project on energy saving in large governmental buildings. - Implement an exemplary project fixing EE lamps in SEDC offices throughout Sudan. - Capacity building on EE, energy auditing. - Take necessary action to implement NEEAP measures pertaining to SEDC. 	Low	N/A

Sudanese Thermal Power Generation Company (STPG)	Cash	200,000	<ul style="list-style-type: none"> - Conduct awareness campaign to encourage all STPG staff save energy. - Implement a project to reduce the Thermal Plants auxiliary consumption. - Implement a project to optimize the fuel consumption in thermal plants. - Implement a pilot project fixing EE lamps in STPG offices and premises. 	Low	N/A
Merowe Dam Electricity Company (MDEC)	Cash	200,000	<ul style="list-style-type: none"> - Conduct awareness campaign to encourage all MDEC staff save energy. - Implement a pilot project to reduce the Merowe HPP auxiliary consumption. - Implement a pilot project fixing EE lamps in MDEC offices and premises. 	Low	N/A
GEF Agency					
UN Environment	Cash	50,000	<p>The contribution will comprise staff time during the 4 years from the UN Environment Energy and Climate Branch, including:</p> <ul style="list-style-type: none"> - USD 20,000 of staff time from the Head of the Energy Unit (P-4) in order to coordinate perspective partners and provide strategic advice to the project. - USD 20,000 of staff time from a United for Efficiency Programme Officer (P-3) to support outreach to partner initiative and support country training. - USD 10,000 of staff time from the Africa Climate Change Coordinator (P-4) to support collaboration with ongoing UN Environment initiatives and projects in the region. 	Low	N/A
International Co-finance					
National Lighting Test Center (NLTC), China	In-kind	200,000	The in-kind contribution will mainly focus on support through the delivery of tools, remote assistance and activities to strengthen monitoring, verification and enforcement (MVE) capacities to ensure an effective transition to efficient lighting in Sudan.	Low	N/A

ii. UNDP direct project services as requested by Government (if any):

The UNDP, as GEF Agency for this project, will provide project management cycle services for the project as defined by the GEF Council. In addition, the Government of Sudan may request UNDP direct services for specific projects, according to its policies and convenience. The UNDP and Government of Sudan acknowledge and agree that those services are not mandatory, and will be provided only upon Government request. If requested the services would follow the UNDP policies on the recovery of direct costs. These services (and their costs) are specified in the Letter of Agreement (Annex I-2).

As is determined by the GEF Council requirements, these service costs will be assigned as Project Management Cost, duly identified in the project budget as Direct Project Costs. Eligible Direct Project Costs should not be charged as a flat percentage. They should be calculated on the basis of estimated actual or transaction-based costs

and should be charged to the direct project costs account codes: “64398- Direct Project Costs – Staff” and “74598- Direct Project Costs – General Operating Expenses (GOE)”.

The following direct project services are to be provided by UNDP:

- Identification and/or recruitment of the project and programme personnel
- Identification and facilitation of training activities
- Procurement of goods and services

iii. Budget revision and tolerance

As per UNDP requirements outlined in the UNDP POPP, the project board will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Project Board. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team to ensure accurate reporting to the GEF:

- a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more;
- b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

iv. Refund to GEF

Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

v. Project closure

Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP.¹⁸ On an exceptional basis only, a no-cost extension beyond the initial duration of the project will be sought from in-country UNDP colleagues and then the UNDP-GEF Executive Coordinator.

vi. Operational completion

The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.

vii. Transfer or disposal of assets:

In consultation with the NIM Implementing Partner and other parties of the project, UNDP programme manager (UNDP Resident Representative) is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project. In all cases of transfer, a transfer document must be prepared and kept on file¹⁹.

¹⁸ see <https://info.undp.org/global/popp/ppm/Pages/Closing-a-Project.aspx>

¹⁹ See https://popp.undp.org/layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default.

viii. Financial completion

The project will be financially closed when the following conditions have been met: a) The project is operationally completed or has been cancelled; b) The Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed within 12 months of operational closure or after the date of cancellation. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

X. TOTAL BUDGET AND WORK PLAN

Atlas Proposal or Award ID:	00101915	Atlas Primary Output Project ID:	00104159
Atlas Proposal or Award Title:	Leapfrogging Sudan's markets to more efficient lighting and air conditioners		
Atlas Business Unit	SDN10		
UNDP-GEF PIMS No.	5674		
Implementing Partner	Ministry of Water Resources, Irrigation and Electricity (MWRIE) – Electricity Regulatory Authority (ERA)		

GEF Component/ Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
COMPONENT 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)	MWRIE	62000	GEF	71200	International Consultants	\$ 20,000	\$ 10,000	\$ 10,000	\$ -	\$ 40,000	a
				71300	Local Consultants	\$ 10,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 25,000	b
				71600	Travel	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 4,000	c
				72100	Contractual Services - Companies	\$ -	\$ 30,000	\$ -	\$ -	\$ 30,000	d
				74200	Audio Visual & Print Prod Costs	\$ 1,800	\$ 1,800	\$ 1,800	\$ 1,800	\$ 7,200	e
				75700	Workshops and Meetings	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 8,000	f
					Sub-total GEF	\$ 34,800	\$ 49,800	\$ 19,800	\$ 9,800	\$ 114,200	
	Total Component 1			\$ 34,800	\$ 49,800	\$ 19,800	\$ 9,800	\$ 114,200			
COMPONENT 2: Adoption of regulatory mechanisms directing the market towards energy efficient lighting products and air conditioners, including minimum energy performance standards (MEPS), labeling scheme, testing and importing procedure	MWRIE	62000	GEF	71200	International Consultants	\$ 50,000	\$ 40,000	\$ 30,000	\$ 30,000	\$ 150,000	g
				71300	Local Consultants	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 40,000	h
				71600	Travel	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 4,000	i
				72100	Contractual Services - Companies	\$ 20,000	\$ 10,000	\$ -	\$ -	\$ 30,000	j
				74200	Audio Visual & Print Prod Costs	\$ 1,600	\$ 1,600	\$ 4,000	\$ 4,000	\$ 11,200	k
				75700	Workshops and Meetings	\$ 2,000	\$ 2,000	\$ 2,500	\$ 2,500	\$ 9,000	l
					Sub-total GEF	\$ 84,600	\$ 64,600	\$ 47,500	\$ 47,500	\$ 244,200	
	Total Component 2			\$ 84,600	\$ 64,600	\$ 47,500	\$ 47,500	\$ 244,200			

GEF Component/ Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
COMPONENT 3: Adoption of monitoring, verification, and enforcement (MVE) system, to ensure that products in the market comply with the established MEPS	MWRIE	62000	GEF	71200	International Consultants	\$ -	\$ 160,000	\$ 80,000	\$ 120,500	\$ 360,500	m
				71300	Local Consultants	\$ -	\$ 40,000	\$ 30,000	\$ 30,000	\$ 100,000	n
				71400	Contractual Services - Individual	\$ 5,500	\$ 6,500	\$ 6,500	\$ 7,000	\$ 25,500	o
				71600	Travel	\$ -	\$ 1,000	\$ 1,000	\$ 1,000	\$ 3,000	p
				72100	Contractual Services - Companies	\$ -	\$ 25,000	\$ 15,000	\$ 15,000	\$ 55,000	q
				74100	Professional Services - Auditing	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 16,000	r
				74200	Audio Visual & Print Prod Costs	\$ -	\$ 1,800	\$ 1,800	\$ 1,800	\$ 5,400	s
				75700	Workshops and Meetings	\$ 5,500	\$ 2,500	\$ 2,500	\$ 2,500	\$ 13,000	t
					Sub-total GEF	\$ 15,000	\$ 240,800	\$ 140,800	\$ 181,800	\$ 578,400	
	Total Component 3	\$ 15,000	\$ 240,800	\$ 140,800	\$ 181,800	\$ 578,400					
COMPONENT 4: Awareness-building of the new MEPS and regulatory mechanism	MWRIE	62000	GEF	71200	International Consultants	\$ -	\$ 80,000	\$ 80,000	\$ 80,000	\$ 240,000	u
				71300	Local Consultants	\$ -	\$ 30,000	\$ 30,000	\$ 30,000	\$ 90,000	v
				71600	Travel	\$ -	\$ 2,800	\$ 2,800	\$ 2,800	\$ 8,400	w
				72100	Contractual Services - Companies	\$ -	\$ 20,000	\$ 12,515	\$ 20,000	\$ 52,515	x
				74200	Audio Visual & Print Prod Costs	\$ -	\$ 12,000	\$ 12,000	\$ 12,000	\$ 36,000	y
				75700	Workshops and Meetings	\$ -	\$ 30,000	\$ 40,000	\$ 40,000	\$ 110,000	z
					Sub-total GEF	\$ -	\$ 174,800	\$ 177,315	\$ 184,800	\$ 536,915	
	Total Component 4	\$ -	\$ 174,800	\$ 177,315	\$ 184,800	\$ 536,915					

GEF Component/ Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
COMPONENT 5: Enhancing environmentally sound management of lighting products and air conditioners	MWRIE	62000	GEF	71200	International Consultants	\$ 40,000	\$ 20,000	\$ 10,000	\$ 10,000	\$ 80,000	aa
				71300	Local Consultants	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 40,000	ab
				71600	Travel	\$ -	\$ 2,000	\$ 2,000	\$ 2,000	\$ 6,000	ac
				72100	Contractual Services - Companies	\$ -	\$ 15,000	\$ 15,000	\$ 20,000	\$ 50,000	ad
				74200	Audio Visual & Print Prod Costs	\$ -	\$ 2,000	\$ 2,000	\$ 2,000	\$ 6,000	ae
				75700	Workshops and Meetings	\$ -	\$ 10,000	\$ 10,000	\$ 10,000	\$ 30,000	af
					Sub-total GEF	\$ 50,000	\$ 59,000	\$ 49,000	\$ 54,000	\$ 212,000	
	Total Component 5	\$ 50,000	\$ 59,000	\$ 49,000	\$ 54,000	\$ 212,000					
Project Management Unit (PMU)	MWRIE	62000	GEF	71400	Contractual Services - Individual	\$ 10,500	\$ 10,500	\$ 10,500	\$ 10,500	\$ 42,000	ag
				71600	Travel	\$ 800	\$ 800	\$ 800	\$ 800	\$ 3,200	ah
				72800	IT Equipment	\$ 1,020	\$ 800	\$ 800	\$ 800	\$ 3,420	ai
				74200	Audio Visual & Print Prod Costs	\$ 800	\$ 800	\$ 800	\$ 800	\$ 3,200	aj
				74598	Direct project costs	\$ 8,115	\$ 8,115	\$ 8,115	\$ 8,120	\$ 32,465	ak
					Sub-total GEF	\$ 21,235	\$ 21,015	\$ 21,015	\$ 21,020	\$ 84,285	
	Total Management	\$ 21,235	\$ 21,015	\$ 21,015	\$ 21,020	\$ 84,285	4.8% of total GEF fund				
PROJECT TOTAL						\$ 205,635	\$ 610,015	\$ 455,430	\$ 498,920	\$ 1,770,000	

Summary of funds:

Amount/year (USD)	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total (USD)
GEF	205,635	610,015	455,430	498,920	1,770,000
GEF Agency: UN Environment	12,500	12,500	12,500	12,500	50,000
Ministry of Water Resources, Irrigation and Electricity (MWRIE)	250,000	250,000	250,000	250,000	1,000,000
Electricity Regulatory Authority (ERA)	250,000	250,000	250,000	250,000	1,000,000
Sudanese Standards and Metrology Organization (SSMO)	689,000	689,000	689,000	689,000	2,756,000
Sudanese Electricity Distribution Company (SEDC)	50,000	50,000	50,000	50,000	200,000
Sudanese Thermal Power Generation Company (STPG)	50,000	50,000	50,000	50,000	200,000
Merowe Dam Electricity Company (MDEC)	50,000	50,000	50,000	50,000	200,000
National Lighting Test Center (NLTC), China	50,000	50,000	50,000	50,000	200,000
TOTAL	1,607,135	2,011,515	1,856,930	1,900,420	7,376,000

Budget Notes:

#	Comments
a.	International consultants to support Component 1
b.	Local consultants to support Component 1
c.	Travel expenses under Component 1, primarily in relationship with establishing dedicated work forces and organizing several stakeholders' meetings
d.	Contracted companies to support Component 1, including assistance on the establishment of the focal point
e.	Communication and publishing expenses under Component 1, primarily in relationship with establishing dedicated work forces and organizing several stakeholders' meetings
f.	Expenses of organizing stakeholder meetings and workshops held to achieve the outcomes under Component 1
g.	International consultants to support Component 2
h.	Local consultants to support Component 2
i.	Travel expenses under Component 2, primarily for assessing the adoption criteria
j.	Contracted companies to support Component 2, including legal drafting service providers
k.	Communication and publishing expenses under Component 2, primarily for assessing the adoption criteria and preparation printout for labels and manuals
l.	Expenses of organizing stakeholder meetings and workshops held to achieve the outcomes under Component 2

m.	International consultants to support Component 3, including US\$ 40,000 for terminal evaluation consultancy contract (planned under the M&E budget)
n.	Local consultants to support Component 3
o.	Contracted individuals for monitoring of indicators in project results framework and assessing the performance of the project per GEF M&E requirement detailed under Section VII (US\$ 25,500 planned under the M&E budget)
p.	Travel expenses under Component 3, primarily for market surveying and training
q.	Contracted companies to support Component 3, including testing and certification facilities
r.	Professional service providers contracted to undertake NIM Audit as per UNDP audit policies (US\$ 16,000 planned under the M&E budget)
s.	Communication and publishing expenses under Component 3, primarily for market surveying and training
t.	Expenses of organizing stakeholder meetings and workshops held to achieve the outcomes under Component 3, including US\$ 5,000 for organizing the inception workshop and a US\$ 500 per year for organizing project board meetings (planned under the M&E budget)
u.	International consultants to support Component 4
v.	Local consultants to support Component 4
w.	Travel expenses under Component 4, primarily for holding public workshops and awareness raising sessions and advertisement campaigns
x.	Contracted companies to support Component 4, including media, marketing and advertisement companies
y.	Communication and publishing expenses under Component 4, primarily for holding public workshops and awareness raising sessions and advertisement campaigns
z.	Expenses of organizing stakeholder meetings and workshops held to achieve the outcomes under Component 4
aa.	International consultants to support Component 5
ab.	Local consultants to support Component 5
ac.	Travel expenses under Component 5, primarily for market surveying and holding awareness and communication campaigns.
ad.	Contracted companies to support Component 5, including media, marketing and advertisement companies
ae.	Communication and publishing expenses under Component 5, primarily for market surveying and holding awareness and communication campaigns.
af.	Expenses of organizing stakeholder meetings and workshops held to achieve the outcomes under Component 5
ag.	Contracted individuals for project manager (staff salary)
ah.	Travel expenses by PMU staff as part of the project management
ai.	IT equipment, e.g. computers, office network equipment, software, printers for the PMU
aj.	Communication and publishing expenses by PMU staff as part of the project management
ak.	Direct Project Costs, including costs associated with staff selection, recruitment, benefits, management, payroll and banking. The costs also include procurement and disposal of equipment. Detailed breakdown is provided in the LoA presented in Annex I-2

XI. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the *Government of Sudan* and UNDP, signed on *October 24, 1978*. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by the *Ministry of Water Resources, Irrigation and Electricity (MWRIE) – Electricity Regulatory Authority (ERA)* (“Implementing Partner”) in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

Any designations on maps or other references employed in this project document do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

XII. RISK MANAGEMENT

Consistent with the Article III of the SBAA, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.

The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).

The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement.

Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

XIII. MANDATORY ANNEXES

- A. Multi-year Work Plan
- B. GEF Tracking Tool (s) at baseline
- C. Overview of Technical Consultancies
- D. Terms of Reference
- E. UNDP Social and Environmental Screening Procedure and Plans (SESP)
- F. Stakeholder Engagement Plan
- G. Gender Analysis and Action Plan
- H. UNDP Risk Log
- I. Additional agreements:
 - I-1. UNDP Sudan SBAA
 - I-2. LOA on DPC
 - I-3. Letters of Co-finance