

**SREP Ethiopia  
Program Approval Request  
Public Document  
International Finance Corporation (IFC)**

<b>1. Country/Region:</b>	<i>Ethiopia</i>		<b>2. CIF Project ID#:</b>	(Trustee will assign ID)
<b>3. Source of Funding:</b>	<input type="checkbox"/> FIP	<input type="checkbox"/> PPCR	<input checked="" type="checkbox"/> SREP	
<b>4. Project/Program Title:</b>	<i>Lighting Ethiopia</i>			
<b>5. Type of CIF Investment:</b>	<input type="checkbox"/> Public	<input checked="" type="checkbox"/> Private	<input type="checkbox"/> Mixed	
<b>6. Funding Request in million USD equivalent:</b>	<i>Grant: USD 1.6 million for advisory services only</i>		<i>Non-Grant: n/a</i>	
<b>7. Implementing MDB(s):</b>	<i>IFC</i>			
<b>8. National Implementing Agency:</b>	<i>Private Sector</i>			
<b>9. MDB Focal Point and Project/Program Task Team Leader (TTL):</b>	<i>Headquarters- Focal Point: SREP Focal Point: Joyita Mukherjee</i>		<i>TTL: Arthur Itotia Njagi Senior Operations Officer – Clean Energy – Lighting Ethiopia</i>	

**10. Program Description (including objectives and expected outcomes)**

**I. Introduction:**

This Project Proposal responds to the advisory services/technical assistance component of the IFC-managed SREP Project 2 “Clean Energy SMEs Capacity Building and Investment Facility”, as listed in Ethiopia’s Investment Plan (IP), endorsed by the SREP Sub-Committee in March 2012.

As stated in Ethiopia’s IP, this Project is divided into two phases. Phase 1: *Capacity Building of Market Players*; and Phase 2: *Financing of Market Players (SMEs)*. IFC proposes to start implementation of Phase 1 of the Project (hereinafter called “Lighting Ethiopia”) with a focus on removing barriers to the development of a strong supplier base for clean energy products that help meet the Government’s energy access and GHG emission priorities, and provide access to modern energy services to bottom-of-the-pyramid (BoP) households. Lighting Ethiopia will also provide small and medium-sized enterprises (SMEs) access to market intelligence; business plan development; technology appropriateness; and management training to develop the market for clean energy in Ethiopia.

## II. Project Description

### 1. Context:

Ethiopia has population of about 86 million people with the large majority (83%) living in rural areas and growing at 2.6% a year. According to the most recent national statistics, only 3.7 million households in the country were connected to the grid (WMS, CSA, 2012)<sup>1</sup>. In other words, national grid covers of only 23% of households; of which 88% are in urban areas.

Most of the households not connected to the grid predominantly rely on kerosene and spend about 5% of their household consumption expenditure on lighting. Kerosene is unfortunately seen as the only affordable option for lighting for the rural households. It is however dangerous, increasingly expensive and a source of GHG emissions. The lack of clean and affordable lighting options also hinders development of small and medium sized enterprises, delivery of public services including health, security and education.

Recent developments in off-grid lighting industry present an opportunity to offer an affordable energy solution to households at the bottom-of-the-pyramid. Solar lanterns and dynamo powered lighting products are a clean, modern, and affordable lighting solution that have proven themselves as commercially viable alternatives to kerosene.

IFC's existing Lighting Africa pilot program in Kenya has demonstrated the commercial viability of these new products. The Lighting Africa pilot has been successful in addressing some of the key barriers in developing a market for clean, low-cost, and quality lighting products. The widespread acceptance of these products in rural communities in particular is transforming the social, health, and economic dimensions of the lives of those who have adopted these quality-certified products. Some of the impacts of the Lighting Africa program in Kenya are<sup>2</sup>:

1. **Increase in Energy access:** 9 million people have access to better lighting and thus displacing kerosene with the associated socio- economic drawbacks;
2. **Development of standards for solar lanterns:** the program has developed quality standards for the industry which have now been formally adopted (April 2013) by the International Electrotechnical Commission (IEC)<sup>3</sup>. The program has tested over 110 products under these standards;
3. **Increase in quality products:** in 2009, only 6 manufacturers had products meeting Lighting Africa standards, today there are 29 manufacturers with 50 products. In 2012 the market share of quality products was estimated at 40% up from 3% in 2009;
4. **Consumer education and awareness:** campaigns have to date reached over 17 million people and conducted 1,150 forums in Kenya across 250 villages mitigating market spoilage and promoting solar

<sup>1</sup> Welfare Monitoring Survey, Central Statistical Agency - Ministry of Finance and Economic Development, 2012.

<sup>2</sup> Source: IFC internal program completion report on Lighting Africa's development impact and the program's achievements from 2008 to 2013.

<sup>3</sup>The International Electrotechnical Commission is a non-profit international organization that prepares and publishes International Standards for all electrical and electronic-related technologies and products. The IEC is one of three global sister organizations (IEC, ISO, ITU) that develop International Standards for the world.

energy;

5. **Capacity building:** the program has set up the first quality testing lab in Africa (University of Nairobi, Kenya) with another one in Senegal under training.

IFC seeks to replicate the success in Kenya which is now averaging a 150% annual growth rate for off-grid lighting products<sup>4</sup> by addressing a similar set of market failures which impedes the development of the market for modern, clean off-grid lighting systems in Ethiopia.

## 2. Market barriers

The World Bank has carried a market study in Ethiopia that has identified the following barriers for market development of modern, clean off-grid lighting systems in the country:

- **High market entry costs:** entering the sustainable lighting market is an expensive undertaking for individual firms, most of which would be unable to carry "first mover" costs and risks. These new entrants require significant investment to understand consumer preferences, market insights, and appropriate distribution models.
- **Supply chain and distribution challenges:** lack of effective distribution channels for products in rural areas, inadequate working capital by distributors and manufacturers further constrains widespread availability of the products. In addition, distributors need sufficient capacity to provide after-sales service, back-up for warranties and technical/business/managerial expertise to meet the demands of a rapidly growing and evolving market.
- **Product quality/mitigating market spoilage:** Low quality products that have infiltrated the market erode confidence and can condemn innovative technologies (market spoilage). Consumers, especially those in rural areas do not have the capacity to assess good quality off-grid products. In addition, their low disposable incomes do not render them open to embracing new technologies. It is therefore important to provide a quality reference point as a purchase guide to both consumers and intermediaries (micro finance institutions (MFIs), supply chain, community based organizations, among others).

## 3. Project Objectives:

The overall project goal is to **increase access to better, cleaner and safer off-grid lighting for 2 million people** in Ethiopia. Specific objectives of the Lighting Ethiopia program are:

- a) **Develop a local private sector supplier market** that provides quality, affordable, clean and safe lighting products for bottom-of-the-pyramid households.
- b) **Accelerate the development of a sustainable commercial market for quality off-grid lighting products** in Ethiopia by facilitating the entry of 15 off-grid lighting products meeting IFC's Lighting

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<sup>4</sup> Source: IFC program completion report on Lighting Africa's development impact and the program's achievements from 2008 to 2013.

Africa's quality standards<sup>5</sup>.

- c) **Develop the capacity of local SMEs** in the low cost off-grid lighting segment to equip them with better management skills in service/maintenance (after sales service), distribution and marketing.
- d) **Mitigate climate change by switching from fossil fuel-based lighting to clean lighting** which will avoid 40,000 metric tonnes of CO<sub>2</sub>e per year<sup>6</sup>.

#### **4. Project Description:**

The Lighting Ethiopia project has four components that seek to address the market barriers and achieve the objectives described above, namely:

**1. Quality Assurance:** A key market barrier identified by the industry is the inability of consumers to distinguish between high and low quality products. Low quality products results in what is typically referred to as "market spoilage" which erodes consumer confidence and thwarts scale up. Lighting Ethiopia will develop a comprehensive quality assurance component that provides quality specifications, standards and quality testing methodologies to the industry.

**2. Consumer Education:** Consumers need to expand their knowledge on quality product tests and other factors relevant to their purchasing decisions. The Lighting Ethiopia consumer education campaign will create awareness of quality off-grid lighting products to bottom-of-the-pyramid consumers in Ethiopia and generate demand for off-grid lighting products.

**3. Market Intelligence:** Lighting Ethiopia will develop a market intelligence component to lower the entry barriers into the market, as well as help inform product and business models for the Ethiopian market. By undertaking part of this expensive "first mover" costs and making market information available to the industry and to the general public, the project significantly reduces the risks for new entrants. The market information disseminated by Lighting Ethiopia will inform product design and shape business and marketing strategies of the manufactures and distributors (mostly SMEs). Lowering barriers to entry will attract more manufacturers and distributors and will accelerate the development of this industry.

**4. Business Development and Access to Finance:** With a market penetration rate of less than 5%<sup>7</sup> for cleaner and affordable lighting alternatives for bottom-of-the-pyramid consumers, scaling up business models is a

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<sup>5</sup> To mitigate market spoilage, instill confidence in a new technology, and provide a reference point of quality, Lighting Africa has developed and institutionalized through IEC Technical Specification 62257-9-5, three complementary sets of standardized test methods to evaluate the performance and standards of off-grid lighting products. Developing a large, dynamic, and sustainable market for modern off-grid lighting requires careful attention to both product quality and pricing. This is a voluntary testing program that helps to minimize market spoilage and incentivize manufacturers and distributors to provide higher quality products. In addition, the standards have provided financial intermediaries (such as MFIs) with a benchmark upon which to evaluate products for either trade finance or consumer financing options.

<sup>6</sup> This is calculated based on the sales of 400,000 lanterns as a result of the Project's activities. Key assumptions: (i) kerosene lamp emission factor (t/Coe/ltr) = 0.0026 (ii) kerosene consumption per year for a lantern = 55 ltrs (iii) electric lamp to kerosene lamp displacement factor = 70%.

critical aspect of market growth. Limited access to finance and business management capacity undermine attempts to replicate and scale up viable business models. Lighting Ethiopia will provide a range of market and business development support activities directly to manufacturers, distributors and retailers under this component with the objective of fostering competition and creating a vibrant and competitive market.

IFC's Lighting Ethiopia Project complements the World Bank's Electricity Network Reinforcement and Expansion Project (ENREP) to improve reliability of the electricity network and to increase access to electricity services in Ethiopia. In addition, IFC, the World Bank (WB) and the Ministry of Water and Energy will be developing a joint country strategy for off-grid lighting products targeted at the bottom-of-the-pyramid. Moreover, the Lighting Ethiopia will be complemented by the WB FOREX Facility Project which aims to ensure a steady supply of clean energy products in the Ethiopian market by mitigating foreign exchange scarcity and its impact for SMEs importers. This Facility also enables non-interruption of a supply chain and provides a platform which will be used by the Lighting Ethiopia project to help scale-up the market of clean lighting products.

Furthermore, Lighting Ethiopia will contribute to the GoE's efforts to decentralize technical services provision in rural areas in order to provide customer services and minimize repair/warranty redemption costs. The GoE's initiatives will result in technicians available in small rural towns to offer technical after sales services, including to the new Lighting Ethiopia's products and technologies<sup>8</sup>.

## 12. Consistency with Investment Criteria:

### ***a) Increased access to energy through renewable energy sources:***

Lighting Ethiopia will increase access to better, cleaner and safer renewable off-grid lighting for 2 million people in Ethiopia living in rural areas.

### ***b) Affordability and competitiveness of renewable sources:***

The range of products supported under the Lighting Ethiopia project is wide and caters for a variety of income levels and needs for bottom-of-the-pyramid households, ranging from desk lighting for school children to multiple lights for a household. For example, solar lanterns provide the first step up the cleaner energy ladder as entry level good quality product, and they are priced at approximately US\$10 (1watt) which is within reach of these households.

<sup>7</sup> Lighting Africa Market Trends Report 2012 (<http://lightingafrica.org/lighting-africa-market-trend-report-2012-overview-of-the-off-grid-lighting-market-in-africa>)

<sup>8</sup> Currently, such service provision is available only in the country's capital making it time consuming and onerous for people living in remote areas.

**c) Productive use of energy:**

Studies have shown that off-grid lighting products contribute towards longer working hours and enhanced income, and therefore, the Lighting Ethiopia project will have an impact on the ability of poor households in particular to use energy services productively.

**d) Economic, social and environmental development impact:**

Lighting Ethiopia will have social, economic and environmental benefits by improving lighting services, reducing costs, improving health and safety for bottom-of-the-pyramid households while reducing GHG emissions. As explained in the sections above, the project seeks to replace inefficient, increasingly expensive and dangerous kerosene lighting with other clean alternatives which can help Ethiopia rapidly achieve development and energy access goals. More than 85% of household not connected to the grid in Ethiopia rely on kerosene for lighting which hampers learning and productivity given kerosene's low quality and adverse impacts it has on people's health. Recent developments in the off-grid clean lighting industry (which many of them will be supported by the Lighting Ethiopia project) offer an affordable, clean and modern lighting solution to the bottom-of-the-pyramid households. Moreover, the project will accelerate the development of a sustainable commercial market driven by SMEs which will contribute to economic development.

Furthermore, off-grid lighting products under the Lighting Ethiopia project will replace traditional sources of lighting predominantly kerosene and contribute to 40,000 m/tonnes of GHG emissions avoided. Indoor air quality will reduce the risk for respiratory diseases especially for children that are more exposed when using kerosene in close proximity for studying.

**e) Economic and financial viability:**

A key objective of Lighting Ethiopia is to accelerate the development of commercially viable off-grid lighting market in the country.

**f) Gender:**

Please see section 12 of this Proposal, "Gender Considerations".

**g) Co-benefits of renewable energy scale-up:**

Please see above "d) economic, social and environmental development impact".

**13. Stakeholder Engagement**

The project will engage with stakeholders at various levels:

**At a Governmental Level:** The GoE through the Ministry of Water and Energy and the Ethiopian Electricity Agency has integrated off-grid lighting into their rural electrification policies and has requested the participation of IFC to help scale up the adoption of these products. The IFC team has been in dialogue and working in coordination with the Government of Ethiopia throughout the process to develop the Lighting Ethiopia project, and it will continue to coordinate with the GoE during project implementation. Moreover,

IFC will work with the MoWE and the WB to develop a joint strategy for off-grid lighting products targeted at the bottom-of-the-pyramid. IFC will also work with Bureau of Standards to mainstream the Lighting Africa standards in Ethiopia.

**At a Private Sector Level:** The private sector has faced considerable barriers in penetrating off-grid markets in Ethiopia to provide services to those without access to modern energy. The Project engages with various private sector players throughout the value chain, including SMEs who are distributors of the energy products and service providers.

**At a Community Level:** Community Based Organizations (CBO) can take the form of women's savings groups, faith based associations or just regular self-help groups that can serve as effective supply chains given their reach in rural areas, broad based membership and knowledge of local needs. The project will engage CBO in the outreach and communication activities, training COBs on off-grid lighting products, provide educational training on key elements of quality assurance/warranty/after sales service, among other activities.

#### 14. Gender Considerations

Lighting Ethiopia's objective to increase access and promote market development of better, cleaner and safer off-grid lighting will have a **significant positive impact on rural women and children in Ethiopia**. The gender component carried out under IFC's Lighting Africa pilot program in Kenya included the following efforts to identify the market barriers and provide solutions to increase uptake of off-grid lighting solutions by women consumers and entrepreneurs:

- **Capacity building:** Some capacity building needs have been identified as necessary to enhance women's groups readiness to be a vehicle for solar lanterns dissemination. Primary areas that need capacity building include, but are not limited to, the following: solar lightings technologies, financial literacy, marketing and governance. The aim is to make women's groups strong institutions and effective agents in delivering the last mile (reaching remote communities) in partnership with other solar suppliers;
- **Financial Access:** Although most of the women's groups undertake savings and lending, the level of capitalization is not enough to support initiatives additional to the ones related to meeting their basic needs. It is therefore important to facilitate women groups' access to affordable financing. The capacity building component should be geared towards making these groups ready to access such funding.
- **Consumer education:** Women's groups lack the necessary skills and resources to effectively undertake widespread consumer education initiatives to stimulate the demand for clean energy products. Lighting Africa, Lighting Ethiopia and solar suppliers should invest in consumer education through the media – local radio stations, mini-road shows, community meetings and other mechanisms that will help demystify solar lighting at the same stimulate the uptake of solar products;

- **Viable business model:** Women’s groups should be guided on implementing viable business model that makes solar lanterns more affordable and accessible. Rural women have little or no disposable income which requires that the business model should be a facilitator for women livelihoods improvement (and not deprivation). The business model should be able to address the question of technical support on the products, and the cost of the products should be within the reach of rural women. The model used should also consider the social and cultural dimension of a region or a group, and build on existing infrastructures where possible in order to enhance ownership by local communities. A model that fulfills these requirements will eventually lead to solar lanterns adoption and scaled up.
- **Linkages with solar suppliers:** Women’s groups should be well informed about solar products as well as solar companies that are supplying Lighting Africa-certified products to avoid women’s groups becoming victims of sub-standard products that end up eroding people’s confidence on them. In addition, the connection of solar products suppliers to women’s groups will create an opportunity for developing business relations.

**Lighting Ethiopia project will build on the lessons learned and experiences from Lighting Africa program in Kenya as described above, and it will replicate the same efforts to promote clean energy solutions through women business associations, increase women’s participation in the sector, increase their access to energy, and ultimately improve their livelihoods.** Lighting Ethiopia’s technologies will help women to get engaged with more income generating activities that are not restricted to the day time only (e.g. embroidery and crafts) because of extended artificially lit hours. Moreover, adopting cleaner, affordable and safer lighting will contribute to the health, and socio-economic growth of women and their households.

#### 15. Indicators and Targets (consistent with SREP results framework):

Indicator	Target
<b>Project 1: Lighting Ethiopia</b>	
a) Number of people with access to new/improved energy services (30-50% expected to be women)	2,000,000
b) Increase in availability of private financing for renewable energy products	\$5 million
c) Savings in million tons of GHG emissions	40,000 tons of CO <sub>2</sub> e per year <sup>9</sup> .

#### 16. Budget

Project Costs	
<b>Total project costs</b>	<b>USD 1,896,000</b>

<sup>9</sup> See footnote 6.



## 17. Project/Program Timeframe

Expected MDB Management Approval Date: May/June 2014

Expected Mid-Term Review Date: June 2015 (estimated)

Expected Project closure Date: December 2016 (estimated)

## 18. Other

### **I. Implementation Arrangements** (including procurement of goods and services):

Projects activities will be implemented by IFC in coordination with the Ministry of Water and Energy. IFC will work closely with relevant departments within government ministries, with private sector partners, local government agencies and community organizations to implement the project. In terms of procurement of goods and services, World Bank Group procurement guidelines will be followed. For more information, please see:

[http://siteresources.worldbank.org/INTPROCUREMENT/Resources/278019-1308067833011/Procurement\\_GLs\\_English\\_Final\\_Jan2011.pdf](http://siteresources.worldbank.org/INTPROCUREMENT/Resources/278019-1308067833011/Procurement_GLs_English_Final_Jan2011.pdf)

### **II. Monitoring and Evaluation** (M&E)

The Monitoring and Evaluation process comprises of establishing baselines, target setting, data collection, tracking results, reporting and evaluation.

#### *1. Baseline Data*

The project will undertake research to collect baseline data on key outcome and impact indicators and monitor progress against market indicators. They includes (i) variety of off-grid lighting products available in the market (ii) number of retail channels selling these products and (iii) price of products (iv) consumer expenditures on lighting (v) level of awareness of off-grid lighting products, (vi) installed renewable energy capacity and generation.

#### *2. Tracking Results and Reporting*

The project will collect information and results that will be used to monitor progress and emerging market trends on a quarterly basis. Data collected will include: number of contracts that have been signed between manufacturers and distributors, volume sales of quality off-grid lighting products supported by the program, number of new off-grid products available in the market, pricing levels, number of loans disbursed and awareness of off-grid lighting products, and geothermal development contracts signed.

#### *3. Consumer Education Assessment:*

A media tracking agency will be recruited to assess the impact of the consumer education and media communication activities in terms of level of awareness created for off-grid lighting products as well as the Lighting Ethiopia's communication strategy's impact on sales. The monitoring system will collect data on the effectiveness of the project's consumer education campaign.

The project will undergo a mid-term evaluation half way through its implementation. The evaluation will allow IFC to understand how well the project is working, and whether the project is on track to achieve the objectives set as well as provide data on results against targets. At project completion, a final evaluation will be conducted to establish overall impact.