

Lighting Africa Policy Report Note—Cameroon

**Policy
Report Note
Cameroon**

This note summarizes a report prepared by Lighting Africa to identify key policy barriers to the adoption of modern lighting products and services in Cameroon, and offers recommendations for their mitigation. (Lighting Africa Policy Report: Cameroon, March 2011, prepared by Marge and Econoler with subsequent updates by the Lighting Africa team.) The report involved consultations with a range of stakeholders—across the supply chain—to obtain an independent, objective assessment of the prevailing policy environment for low cost lighting and electrification services in the country. Cameroon is one of eight countries studied.

Energy Sector Overview

The total energy consumption of Cameroon in 2008 was estimated at 6,027 oil kiloton equivalents (ktep) per year. Biomass was the predominant energy source, representing 77 percent (4,636 ktep) of total energy consumption. Electricity (426 ktep) and oil products (965 ktep) represented seven percent and 16 percent, respectively.

Cameroon possesses the second greatest hydroelectric potential in Africa, after the Democratic Republic of Congo, with an estimated 20 gigawatts (GW). However, only five percent (1,000 megawatts, MW) of this potential is currently realized. Consumption of hydrocarbons has declined over the last three decades. Cameroon consumes approximately 80,000 barrels of oil each day, down from 190,000 in the mid 1980s.

Regarding renewable energy, Cameroon possesses significant forest resources on the Adamaoua plateau, a large potential source of dendro energy. This ligneous biomass, evaluated at 21 million hectares, covers almost half of the nation (45 percent). It is the most abundantly used energy source for households, especially in rural zones. Cameroon also possesses good sunlight in the northern part of the country, and to a lesser extent, in the more humid, southern part of the country, which can be used to generate solar energy.

In 1998, the electricity sector was liberalized, and in 2001 the national utility company SONEL was opened to private American investors through the company AES SONEL. AES SONEL is responsible for the production, transport, and distribution of electricity. AES SONEL manages over two thirds of the electric infrastructure in Cameroon. In 2008, Cameroon had an installed electric capacity of 1,413 MW which produced a total of 5,552 gigawatt hours (GWh) of electric power. The national grid is composed of three distinct networks—the south interconnected network (RIS), the north interconnected network (RIN), and the east network (RE).

In Cameroon, only 48 percent- less than half- of the total population has access to electricity yet most of this access is concentrated in the urban centers; 90 percent of urban households are electrified as compared to a mere 23 percent of rural households. Moreover, the high rate of access to electricity in urban areas masks several regional and socioeconomic disparities. 35 percent of poor urban households and 88 percent of poor rural households do not have

Cameroon at a Glance

- Population: 20 million people
- GDP Per Capita: US\$1,150
- GDP Growth Rate: 3.8 percent
- Energy Use Per Capita: 226 kWh
- Electricity Access Rate: 48.7 percent
- Key Sectors: Oil and Mining Industry, Agriculture
- Endowed with natural resources



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access to electricity, which suggests that the poorest strata in both the urban and rural areas are the most disadvantaged groups. The regions that suffer the most from a lack of electrification are mainly those with large rural concentrations, notably, the Adamaoua, East, Extreme North, North, North-West, and South-West regions, where the average rate of electricity access is 10 percent among the poor and 33 percent among non-poor populations.

Table I. Key Government Agencies in Cameroon’s Energy Sector

- **Ministry of Energy and Water (MINEE).** Responsible for implementing government action in the energy sector and national energy policy, and overseeing energy sector activities. The MINEE is responsible for formulating policy and regulation and providing administrative and technical oversight of state and partially state-owned establishments in the energy sector
- **Rural Electrification Agency (AER).** Created in 1999, the AER is responsible for promoting and implementing rural electrification in Cameroon. The AER manages the Rural Energy Fund (FER).
- **Electric Sector Regulation Agency (ARSEL).** The second institutional arm of the electricity sector. ARSEL is responsible for regulating the electricity sector as well as setting electricity rates and determining electrical standards.
- **Electricity Development Corporation (EDC).** Created in 2006, the EDC is a state company that plays a strategic role in the development of the electricity sector while ensuring conservation of the public heritage in the sector. The EDC is also in charge of construction and development of all hydroelectric projects in the country.

Lighting Africa

The Cameroon Lighting Africa program supports the government in its efforts to help bring reliable and affordable modern lighting to Cameroon’s people. It complements current grid extension and off-grid rural electrification efforts by creating an enabling environment for the introduction of innovative new off-grid lighting solutions and the phase out of traditional lighting sources. Recent advances in lighting technology, including Compact Fluorescent Lamps (CFLs) and Light Emitting Diodes (LEDs), promise improved lighting solutions- ones that are clean, portable, durable, lower cost, and higher quality- than conventional lighting options. The larger Lighting Africa Program operates across Africa in addition to Cameroon, helping to mobilize the private sector to provide affordable, renewable, and clean lighting to rural, urban, and peri-urban customers without electricity access and focusing mainly on low-income households and micro businesses.

Lighting Options in Cameroon

Several types of lighting products and methods are used in Cameroon. Examples include kerosene lamps, candles, car battery systems, photovoltaic (PV) systems, solar lanterns and lamps, and rechargeable and non-rechargeable LED lamps. The study specifically investigated the use of kerosene lamps and modern off-grid technologies.

Kerosene lamps are used for lighting by over two-thirds of the rural population and 10 percent of the urban population. Household consumption of kerosene is estimated at 1.9 liters per month in rural areas and 0.8 liters per month in urban areas. The primary factor affecting consumption, especially among the poor, is the high price of oil products, approximately 350 FCFA (US\$0.7) per litre. Table 2 provides the annual household consumption of kerosene from 2001 to 2008.

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Table 2. Annual Consumption of Kerosene by Households in Cameroon

Year	Kerosene Consumption (metric tons)
2001	103,993
2002	107,321
2003	129,116
2004	120,202
2005	102,311
2006	88,783
2007	82,298
2008	69,375

In general, kerosene consumption has decreased annually in recent years. This is attributed to the near complete elimination of kerosene subsidies in Cameroon, which has led to an 80 percent increase in the price of kerosene, as well as increased electricity access in some areas. Despite this elevated cost, households still manage to supply themselves. This provides a good indicator of the non-negligible purchasing power of the population, especially the non-poor population, who can afford electricity but use kerosene due to electricity's unavailability or unreliability. Additionally, the large percentage of the population that still uses kerosene, paired with the high poverty rates in the country, suggest that modern alternatives for lighting have an important role to play in augmenting the quality of life in rural areas and in the pockets of poverty still found in urban areas.

Investigation of modern off-grid lighting technologies found that PV products are largely absent from the market in Cameroon. This is due to the weak development of the market, in both rural and urban areas, where there exists greater purchasing power.

Most of the modern lighting products are imported from Asia, especially from China. Some products are imported from Nigeria.

Existing solar companies. According to the National Statistics Institute, there is marginal use of PV-based lighting products in Cameroon. The market for solar powered lighting products is just starting to develop and is very small. Official suppliers of PV equipment and materials are listed by the GICAM (*Groupement interpatronal du Cameroun*) and the CCIME (*Chambre de commerce, de l'industrie, des mines et de l'artisanat*). Companies sometime offer more specialized services which include installation of PV systems.

Direct importers of products identified by the study are:

- ETS J. KOBI
- OFRELEC
- Ste MAT-LEC

The supply chain of modern lighting products in Cameroon is fairly standard. The country has importers, wholesalers, electrical distributors, and informal vendors that can obtain their supply from anywhere along the supply chain.

The fast moving goods market. This sector is characterized by a multitude of actors and points of sale. Primarily, it offers lamps that operate off non-rechargeable batteries. The market is dominated by low quality and low price lighting products sold by informal vendors who obtain merchandise (primarily from Nigeria) from wholesalers supporting the informal market.

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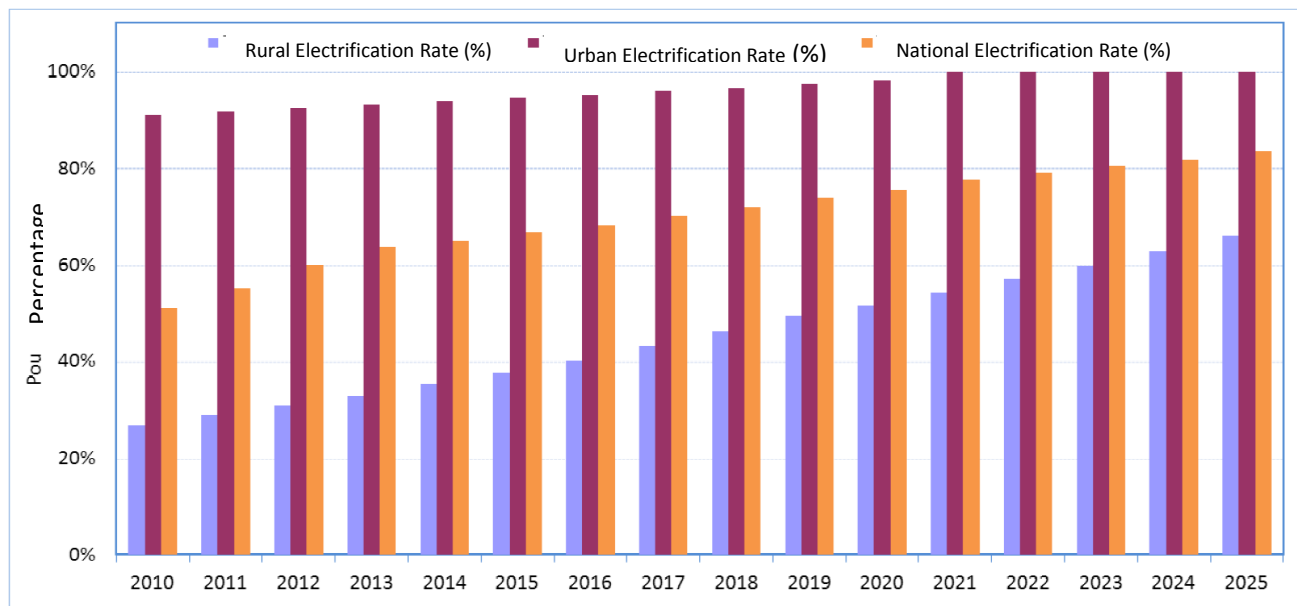
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Newly established companies. None specifically mentioned.

Where is the Off-Grid Market Going?

The Lighting Africa Cameroon Policy Report sought to evaluate the potential market for off-grid lighting products in rural and urban areas. This market was evaluated by analyzing the projected rate of electrification through 2025. Figure 1 shows the modeled growth of electrification in Cameroon between 2010 and 2025.

Figure 1. Modeled Growth of Electricity Access in Cameroon



Electrification growth goals in rural areas are 7 percent and 5 percent, respectively, between 2010-2020 and 2021-2025. In urban areas, growth goals are 6 percent over the period 2010-2020. The country is seeking to obtain an urban electrification rate of nearly 100 percent beginning in 2021.

The results show that despite the ambitious goal of the model, over 60 percent of rural households will remain without electricity in 2015, with 48 percent still lacking access in 2020. This corresponds to 1.8 and 1.5 million households without electricity in 2015 and 2020 respectively. This segment of the population would benefit the most from new off-grid lighting options.

There is also a need for off-grid lighting products in households that are currently connected to the grid due to high outage levels and insufficient and unreliable connectivity. To better characterize the potential markets for off-grid lighting products, a summary analysis of the market profile was conducted by segmenting the urban and rural market constituents into three groups: those currently with access to electricity, those without access that are above the poverty line (commercial market), and those without access to electricity below the poverty line. In total, six potential market groups were identified, as shown in Figure 2.

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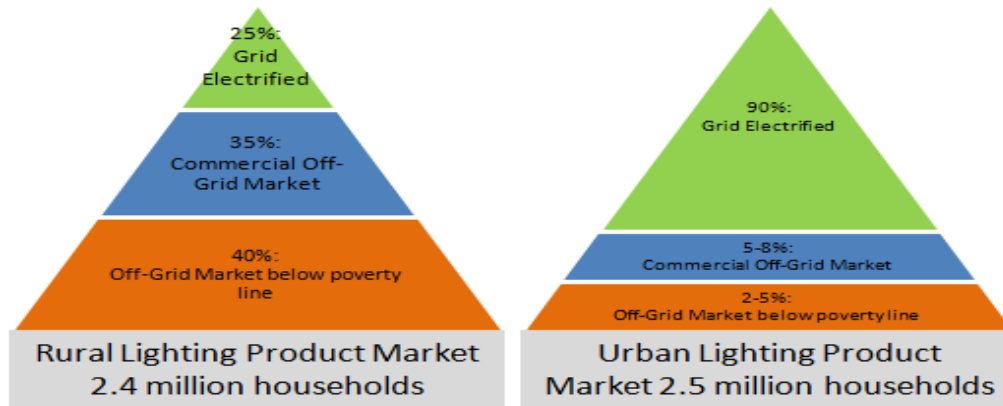


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Figure 2. Rural and Urban Lighting Product Markets



This analysis of different market segments helps to determine which groups are likely to be able to most easily purchase modern lighting technologies if they are made available. The study noted that the grid electrified population would have no trouble purchasing modern off-grid lighting products. This market segment could aid in the rapid development of the market because they could purchase the products without any incentives, driven simply by the appeal of superior lighting quality. In the framework of creating subsidies to benefit the poor population, this market segment could create distortions in the market as it may profit from such actions without any need for them. The study noted that improvements in the reliability and availability of grid electricity could affect this market considerably.

Under proper conditions, the commercial off-grid market could develop rapidly as well. The majority of constituents in this market would include rural and urban non-poor households, currently without access to electricity. It is estimated that in urban areas five to eight percent of non-poor households do not have access to electricity, while in rural areas thirty-five percent of households lack access to the grid. As in the currently electrified market, the study recommended the availability of high quality products and campaigns aimed at the promotion and dissemination of modern off-grid technologies.

For the base of the pyramid—the poverty market—significant political initiatives would be required to make modern lighting technologies affordable. However, even with these incentives, given the extreme poverty, a portion of this segment would not be able to attain these new technologies, including cheaper products of low quality. It was estimated that this market would include two to five percent of urban households and 40 percent of rural households, but that only five percent of this population would be able to purchase modern lighting products due to poverty and more immediate priorities.

Additionally, building on the segmentation described above, market penetration rates were used to estimate the potential benefits of the Lighting Africa program in disseminating modern off-grid lighting products. This analysis estimates that over 630,000 households could participate in the modern off-grid market over a period of two to three years, with the majority of participants from commercial market segments. Participation of the poverty segment would be very limited but could increase substantially with favorable political action.

The total market size of modern technologies, assuming one unit was bought per household, was estimated at 10.5 billion FCFA (US\$21 million). These products have the potential to save 19.7 million liters of oil, valued at 6.9 billion FCFA (US\$8.8 million). Additionally, households that would buy more than one unit of product must be added to these estimates. Given the potential size of the market, the savings it would yield, and a subsidized oil price of 350 FCFA,

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return on investment would occur in about 18 months. At the household level, given US\$35 of oil bought each year (corresponding to 1 liter per day), buying a US\$40 solar lamp would allow a return on investment within the year.

The size of this market could be even larger if businesses, vendors, schools, health centers, and other commercial and public entities were accounted for. As of 2008, 65 percent of schools lacked electricity and 68 percent of health centers were without continuous access.

Policy and Institutional Environment for Modern Off-Grid Lighting

Fiscal Measures.

- **Kerosene and Fuels.** The price of kerosene benefits from a special tax exemption of 120 XAF (US\$0.24) applied to all oil products. Kerosene is differentiated depending on use. It is categorized as “out of network” for professional or industrial use. In domestic applications (cooking or lighting) it is categorized as a “network” because it is distributed by the network of oil providers. “Network” kerosene is subsidized in order to maintain its price at the consumer level. This results in a price differential of 18 percent between “network” and “out of network” kerosene.
- **Other Fuels.** Other fuels are also subsidized in Cameroon such as domestic gas. In 2008, for each kilogram of domestic gas sold at the price of 480 FCFA, 241 FCFA were paid for by government subsidies, or approximately 50 percent of the price.
- **PV and Lighting Products.** PV lighting or “out of network” products and technologies are not subsidized in any specific manner. In the large majority of cases, they are imported and submitted to the fiscal and customs system of Cameroon, which is part of the *Tarif extérieur commun* (TEC) of the six member countries in the *Communauté économique et monétaire d’Afrique centrale* (CEMAC). This system fixes the duty tax rates applicable to products imported from countries outside the CEMAC into the following categories: (i) five percent, Category I for goods of basic needs; (ii) 10 percent, Category II for raw materials and capital goods; (iii) 20 percent, Category III for intermediate goods; and (iv) 30 percent, Category IV for convenience/frequent consumer goods. After the duty tax, a value added tax (VAT) is applied at a rate of 19.25 percent. The Rural Energy Fund does anticipate subsidies on studies and investments in rural energy projects, up to 80 percent and 70 percent, respectively.

Financing Mechanisms

Presently, there are no fiscal measures specifically designed to foster the uptake of modern lighting technologies. Consequently, private enterprises interested in investing in the distribution and sale of lighting products and technologies will not benefit from subsidies, which create a substantial obstacle for large scale investment in this domain.

In order to promote private investment in general, Cameroon’s investment code offers a set of fiscal and tax incentives to investors. They include the following:

- Exemption of all taxes during a period of 10 years (followed by a 15 percent tax on profits starting on the 11th year but exempted for life from all other taxes).
- Life-long exemption of all imports and exports from all duty and other taxes.
- Right to open accounts in foreign currency in the local banking system.
- Right to transfer abroad any profits made on capital investments.

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Conditions of eligibility include social and economic development, creation of employment, and an investment of 500 million FCFA for small or medium sized companies or 5 billion FCFA for large corporations during a 5 year investment period. The investments must also be made in priority sectors, such as the energy sector, which includes solar technologies.

Private Sector Effectiveness

In order to attract investors and support market development, the business environment in Cameroon needs to improve significantly. . However, while considerable efforts on this front have yet to be undertaken, the Cameroon Country Study notes that in the last few years there has been a slight improvement in the investment climate. According to the IFC/World Bank's *Doing Business 2011* report, Cameroon's business climate is improving, albeit slowly.. According to the report, Cameroon ranked 173 out of 183 countries in 2010 and 168 in 2011. The report ranks 183 countries against each other across several economic metrics which, in aggregate, paint a portrait of the country's business environment. Cameroon scored as follows: starting a business (rank 173/183); getting credit (rank 138/183); protecting investors (rank 120/183); and enforcing contracts (rank 173/183). It is clear that much work remains to be done to foster a favorable business environment in Cameroon- a country where it can take as many as 800 days to enforce a contract, where total taxes are 49 percent of income, and where resolving insolvency can take up to three years.

Product Quality

The market in Cameroon, as in other regions, is heavily dominated by products of low quality and low price.

Conclusions and Recommendations

Key Barriers

- **Limited Recognition of Off-grid Lighting Products as an Interim Option for Rural Access to Modern Energy.** Modern off-grid lighting solutions are not explicitly mentioned in the current rural energy development policy discourse.
- **Absence of Incentives for Off-grid Lighting.** Unlike many countries where fiscal incentives are established to promote the use of clean energy, particularly solar energy, the prevailing framework in Cameroon does not encourage the widespread use of clean technologies. High customs duties and other taxes do not favor the dissemination of high quality modern lighting products.
- **High Cost of doing Business in Cameroon.** The existing business environment is a hindrance to private investment. Customs procedures and tax requirements make it cost prohibitive for private enterprises to invest in the off-grid lighting arena, and increase the perceived risks of doing business in the country, particularly in a new market.
- **Existing Fiscal Measures lead to High Initial Cost of Quality Off-grid Lighting Products in the Formal Market.** In fact, importers and distributors of these products in Cameroon increase the price of their products due to these fiscal measures. Therefore, households with an already low purchasing power cannot afford improved lighting technologies.
- **Low Priority of Off-grid Lighting Products by Consumers.** Lighting is not currently valued by consumers in the same way as other widely disseminated products, such as mobile phones. Among consumers, lighting powered by grid electricity has always been perceived as the ideal to replace traditional sources of lighting (such as fuel-based lighting). This is irrespective of the fact that consumers recognize that grid-connectivity is yet a long way off in many regions of the country. This has resulted in a mindset among households that attributes a low value to off-grid lighting. Furthermore, a major bottleneck to consumer uptake exists as a result of the lack of awareness about off-grid lighting among the Cameroon population.

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- **Low Quality Products.** The market is dominated by low cost, low quality products. This is in part a result of the absence of quality standards and methods for consumers and other buyers to distinguish high quality from low quality products, the latter of which can spoil the market.
- **Lack of Off-grid Lighting Market Research.** The market for modern off-grid lighting products is nascent in Cameroon. Without market maturity, there is little market research available to help investors and potential private sector entrepreneurs gain confidence in the business case and profit motive for investing in off-grid lighting technologies in Cameroon.
- **Low Purchasing Power of Off-grid Lighting Users.** The main market is in rural non-electrified areas where the purchasing power of households is very low and they are unable to meet the initial product cost.
- **Absence of Big Players.** There are very few substantive companies that specialize in PV products and modern off-grid lighting in Cameroon. The few companies and establishments surveyed are small and operate primarily in the informal sector. They lack sufficient assets to make investments in stock.
- **Lack of Off-grid Lighting Products in the Marketplace.** Unlike other Sub-Saharan African countries, where a range of good and poor quality products can be found in the market, Cameroon's off-grid lighting market is very limited, with very few products available to consumers.
- **Difficulty Accessing Financing.** Private companies find it challenging to obtain credit from commercial banks due to high interest rates and huge collateral requirements (up to 215 percent of a loan).

Key Recommendations

- **Create an Enabling Environment for Private Sector Participation.** The Rural Energy Fund can enable the private sector and cooperatives to benefit from its financing in rural areas. A guarantee scheme through the Fund could also be considered, targeting distributors who want to invest in the modern off-grid lighting market.
- **Enhance Political Participation.** The superiority of modern off-grid lighting over traditional sources of lighting needs to be clearly recognized in the country's policy and strategy papers. As an important step in the political buy-in process, the Committee on Planning and Programming of Rural Energy (COPPER) should include the dissemination of solar-based off-grid lighting products as an option in the development of rural energy programs, ensuring that it is explicitly considered by the Rural Energy Fund, the Rural Energy Master Plan, and other relevant programs/activities.
- **Increase Awareness and Education.** Awareness-raising and education of key stakeholders is fundamental to creating an enabling environment for rapid, modern off-grid lighting market development. All market players should be targeted. They include government agencies (information and capacity building), the private sector (information on opportunities), and the public sector. There is a need to inform consumers through a national awareness campaign about the mechanisms put in place to facilitate acquisition of the products, as well as their benefits for health, education, and income generation.
- **Address Product Quality Issues.** There is a need for Cameroon to adopt and use internationally recognized quality standards, such as those promoted by Lighting Africa, to enable successful product uptake and sustainable market development over the long term. This will create interest and confidence in the formal sector. The establishment of standards must be accompanied by the labeling of products certified under the standards. Financial incentives should only be given to products complying with the standards, to reduce their prices in order to compete with lower quality products.
- **Make High-Quality Products Available in the Market and Affordable to Consumers.** There is a case to adopt the following three measures. First, apply duty and tax reductions on imports of high quality modern off-grid lighting products through the existing low income exemptions scheme. This will make high quality modern off-grid lighting devices more affordable. Second, offer flexible mechanisms for upfront cost payment. The payment facility should build on current habits for purchasing food, kerosene, and other goods (i.e.,

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disbursing small amounts at a time) and work through a network of microfinance institutions and cooperatives financed by the Rural Energy Fund. Third, conduct a pilot operation to stimulate the market and inform consumers. This will have the advantage of developing the commercial segments of the market first, which can further lower prices for other market segments.

- **Provide Subsidies to the Bottom of the Pyramid.** Subsidies will be required at a later stage to reach people living below the poverty line. The Rural Energy Fund has already established subsidies for rural energy in its operations, however, social equity questions have been raised as to whether these benefit all segments of the population.

About Lighting Africa

Lighting Africa, a joint World Bank and IFC program, seeks to accelerate the development of markets for modern off-grid lighting products in Sub-Saharan Africa where an estimated 10 to 30 percent of household incomes are spent on hazardous and low quality fuel-based lighting products. The goal is to mobilize and provide support to the private sector to supply quality, affordable, clean, and safe lighting to 2.5 million people by facilitating the sale of 500,000 off-grid lighting units by 2012 (target achieved), while at the same time creating a sustainable commercial platform that will realize the vision of providing 250 million people with modern off-grid lighting products by 2030.

About the Public-Private Infrastructure Advisory Facility (PPIAF)

PPIAF is a multi-donor trust fund that provides technical assistance to governments in developing countries in support of the enabling environment conducive to private investment, including the necessary policies, laws, regulations, institutions, and government capacity. It also supports governments to develop specific infrastructure projects with private sector participation. PPIAF is a major donor of the Lighting Africa program, supporting off-grid lighting policy studies and international off-grid lighting conferences.

About the Africa Renewable Energy Access program (AFREA)

AFREA was established in 2009 to help meet energy needs and widen access to energy services in Sub-Saharan African countries in an environmentally responsible way. AFREA funds support the implementation of the World Bank's Africa Energy Unit (AFTEG) strategy and its clients, through analytical and advisory activities, while also providing recipient-executed technical assistance and investment grants that help speed up the deployment of renewable energy systems regionally. AFREA is a donor of the Lighting Africa program.

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