

Expanding Electricity to Low-Income Customers in Liberia

Development Challenge

Much of Liberia's infrastructure to generate, transmit, and distribute electric power was destroyed during 15 years of civil conflict. At the time the project was being prepared in 2009, most of the population surveyed for the project lived on less than US\$2 per capita per day. Households not connected to the electricity grid were estimated to have devoted nearly 15 percent of their monthly disposable income to energy for lighting and other applications—and as much as 50 percent considering all energy expenditures, including fuel for cooking.

Reestablishing and expanding access to modern energy services is critical to facilitate social integration in the country and support the government's efforts in post-conflict reconciliation and reconstruction. A rapid expansion of the power network and a widespread program to connect more households in Monrovia aims to help achieve maximum improvements in electrification. But Liberia had its own challenges: at the project start, Liberia had the highest power tariffs in Africa and was the only country in the world without a public distribution network. Moreover, during implementation, the Ebola pandemic struck..

The Project and Its Partners

In 2011, GPOBA provided a grant to the local power utility, Liberia Electricity Corporation (LEC), to ensure broad-based and inclusive access to electricity and significantly improve living conditions among the poor in low-income households in Monrovia. This project was part of a larger greenfield effort, the Liberia Electricity System Enhancement project, backed by the International Development Association (IDA) to rebuild the power infrastructure in Monrovia and strengthen LEC. The OBA performance-based grant aimed to connect 16,806 households in 21 priority low-income communities (identified through geographic targeting)

as well as provide reliable and affordable power. The average subsidy per household was \$595, or \$124 per person. LEC pre-financed the connections. Once an independent verification agent (IVA) had verified that the connections had been made, GPOBA reimbursed LEC for 80 percent of the costs of making the connections. The remaining 20 percent was reimbursed after confirmation from IVA that the households had been using the service for three months.

The project was implemented by LEC which was managed by Manitoba Hydro International, a management contractor procured by the World Bank Group's International Finance Corporation (IFC). Three partners supported the project. The Government of Norway provided seed money for LEC to pre-finance the connections. The International Development Association (IDA) provided an additional \$6.8 million and GPOBA contributed \$10 million..

Results

In total, 17,165 low-income households were connected and verified, exceeding the target of 16,806 households. Moreover, by subsidizing connection of low-income households, the project helped scale up electrification and raise LEC's customer base to the minimum needed to operate efficiently.

The project has been extremely important in Liberia's efforts to recover from the civil war and modernize. The availability of electricity service has provided important security benefits such as street lighting to reduce petty crime, as well as complementing modern and extended services such as cell phone charging. The GPOBA component has helped improve basic social services such as education by providing lighting to dwellings in the low-income areas of Monrovia who would otherwise have gone unserved.

Moreover, the project helped improve the quality of service delivery to poor households. The verification of connections and initial service provided useful feedback on consumer usage that helped improve the design of further expansion of the utility to poor customers. It also highlighted the need to strengthen LEC's commercial department particularly to better understand the needs and usage patterns of low-income households and improve customer service.

Lessons Learned

1 Having a secure source of donor funding to pre-finance connections is a necessary condition for the project to succeed in fragile countries. The project required the utility to pre-finance the investment for the connections. The government of Norway provided funding that enabled LEC to pre-finance the initial connections for low-income households. When these funds run out, resources under the larger project through the International Development Association (IDA) continued to pre-finance the connections for the target customers.

2 Monitoring and evaluation (M&E) of connections and consumption helps troubleshoot problems. The monitoring and evaluation of the number of households connected to the grid and their consumption pattern for the first three months made it possible for LEC to identify and resolve issues, such as broken meters and interruptions in power, arising from the connections, in a timely way.

3 More flexibility is needed in the minimum consumption requirement, and a constant power supply should be ensured. The mid-term review revealed that the minimum credit purchase of \$10 was making it difficult for low-income households to make the mandatory three purchases within three months to be eligible for validation. The situation was compounded by inadequate power generation

following the Ebola pandemic. When LEC reduced the credit purchase in half to \$5 and the power supply improved, the number of verified connections increased rapidly. With the spread of mobile money transactions, future project design may try to eliminate the cap in the minimum credit purchase to allow low-income customers to purchase what they can only afford, as they would with kerosene or batteries for their lamps. The availability of constant power supply should also be considered in future project designs.

4 Expanding the utilities' customer base to more affluent customers provides incentives for utilities to cover the costs of serving poorer customers. IDA funds were also used to extend the backbone medium voltage network more broadly to the targeted communities. This expansion made it possible for LEC to connect more affluent customers who were not eligible for connection under the GPOBA program. This provided an adequate revenue base for LEC and served as an incentive for it to roll out the program to low-income households. Future projects should ensure that the design criteria for the MV network does not limit connections only for lower income communities.

5 Expanding the utilities' customer base to more affluent customers provides incentives for utilities to cover the costs of serving poorer customers. The definition of "poor-customer" in targeting for connection subsidies needs to be flexible and country-context specific. A significant part of Liberia population lives in poverty and there is a large informal economy. The definition of 'poor' needs to take into account to consider the country context. The criterion of excluding any household that had some type of economic activity was very constraining because many poor households in Monrovia have also some type of economic activity on their premises (mom and pop store, or meals services for instance).

All currency amounts are in US\$ unless otherwise noted.

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