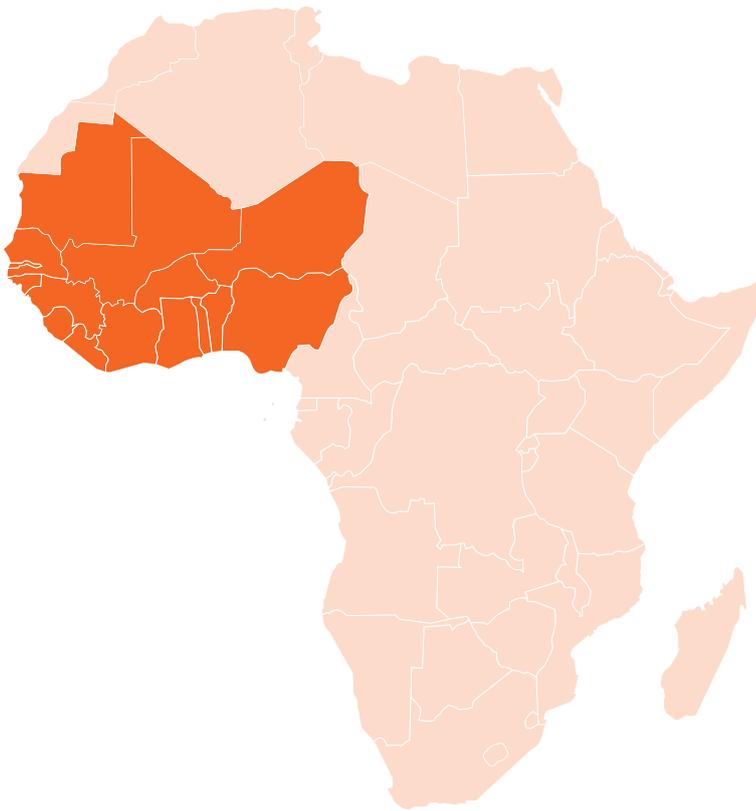




# Findings from the Smart Villages West Africa Regional Workshop

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There is substantial potential across West Africa to develop renewable energy resources for electricity generation. Despite the potential, a substantial portion of the population across the region remains without access to electricity. For cooking, a large majority of the population remains dependent on using biomass as the basic fuel in rudimentary cook stoves to meet their cooking needs. Energy poverty, especially in the case of those based in rural areas, has a markedly negative impact on agricultural productivity and the quality of life. This brief for policy-makers, development agencies and other stakeholders in energy access

in West Africa summarises the key findings and recommendations of a workshop held by the Smart Villages Initiative in Accra, Ghana in May 2016. The workshop examined the challenges and opportunities of off-grid energy provision in West Africa.

There are a number of reasons for the under exploitation of the potential for renewable energy generation in West Africa. Some of the major constraints include:

- **Economic:** High upfront capital costs and a lack of large-scale regional integration. A common

constraint that emerged throughout the workshop was the lack of access to finance that hinders private and public sector investment in improving energy supply and the implementation of renewable energy projects.

- **Institutional/Policy:** Despite the rhetoric, many countries in the region lack renewable energy targets. The policy space does not provide a level playing field for renewable energy based solutions in comparison with incumbent technologies. Even in cases where national agencies have been established to promote renewable energy based solutions, the institutional and policy environment remains unclear. These national agencies have also been unable to set and enforce environmental standards.
- **Capacity/Technology:** There is a lack of requisite skills, especially in rural areas. There is no local manufacturing base for renewable energy equipment which means that all the components have to be imported. There is also a lack of local research and development.

Despite these constraints, progress in the off-grid electricity sector over the last decade means that there are multiple technological and business models that can be deployed to

supply electricity to off-grid communities. The emergence of these models means that it is easier for consumers based in off-grid rural areas to climb the energy ladder. For continued uptake of off-grid energy solutions, it is necessary to ensure that there is a quality assurance mechanism in place so that consumers procure certified products. Apart from the product quality, it is also important to develop and set quality standards for installation of standalone solar home systems. This can be achieved by developing programmes to provide the requisite training for installers. The private sector has to develop a viable working relationship with local governments to implement training programmes and avoid conflicts of interest.

Lack of requisite skills for operations and maintenance acts as a disincentive for the adoption of off-grid energy solutions. From the perspective of private entrepreneurs, having local electricians to fix problems lowers the cost of maintenance, while for local communities it leads to both increased incomes as well as reduced downtime. It is therefore extremely important for entrepreneurs to invest in worker training in remote communities.

Awareness campaigns at the local and regional level can play a key role in increasing consumer knowledge and adoption of off-grid energy solutions. Community engagement has played an important role in the adoption of solar home systems in rural areas in Burkina Faso, Ghana, and parts of Nigeria. It is important to show people the product and for entrepreneurs to understand local communities.

Access to finance remains a serious issue across the value chain for the growth of off-grid energy solutions in the region. This constraint is faced by both mini-grids and standalone home firms as well as by those engaged in the improved cookstoves value chain. Banks lack an understanding of the opportunities and issues facing the off-grid energy sector. It is therefore important for the private firms operating in the sector to develop training programmes to sensitise bank staff and other financial institutions. The government also has a role to play in this regard. Governments across the region can help support the off-grid energy sector by reducing interest rates. Governments can also provide finance for a longer time period as compared to most private sector organisations that have a much shorter time horizon. Local communities can also provide support by providing their labour in the form of sweat equity. In the process they can also become owners of off-grid energy projects, which can have a positive impact on the long-term sustainability of these projects.

To deal with capital constraints faced by consumers based in rural areas, credit facilities are extremely important. Micro-finance institutions have a role to play in supporting consumer financing of stand-alone systems, especially for consumers at the bottom of the pyramid, however, the support of such institutions has been missing till now. For their part, private entrepreneurs need to develop bankable projects that are in-sync with the lending criteria of banks and other financial institutions. Multi-lateral funding organisations can provide technical assistance to these

entrepreneurs to help them with developing bankable projects.

Ensuring the availability of quality products requires the development of a viable distribution network and a value chain, which is often missing. For their part, governments need to understand and recognise the importance of off-grid energy technologies as a means of improving lives in rural areas. They need to remove policy barriers that hinder the availability of off-grid energy technologies to consumers based in villages. In many of the countries, the domestic private sector is often missing the competencies required to develop effective business models across the value chain. This raises the importance of training programmes implemented by multi-laterals to develop the competencies of the local private sector.

In the case of mini-grids, there are a number of other factors that impact the decisions of potential investors. There are various mitigating strategies to deal with these risks; however, they often act as a disincentive for potential investors. Problems encountered by developers of mini-grids include:

- Potential investors are unaware of when policymakers might extend the national grid to the areas where mini-grids have been established.
- Pervasive regulatory risk: Governments in the region do not have the necessary regulatory and legal frameworks in place. Even if there are national/local regulations, their application remains missing.

- Access to land for medium-scale projects can be problematic.
- Bureaucratic red tape and lack of political patronage: Political interference can have a marked negative impact on the market.
- Technical problems because of a lack of availability of local technical staff. Successful operation of mini-grids requires a higher level of education and technical training as compared to stand-alone systems.
- Implementing tariff rates that people based in rural areas can afford but which are consistent with the economic viability of the project

While access to electricity is important, the provision of basic levels of electricity is unlikely to substantially improve the lives of those based in rural areas. It is therefore necessary to link interventions aimed at improving access to electricity with the

productive use of energy to improve incomes and livelihoods. Such interventions should also identify some of the complementary investments that are required to create jobs in rural areas. Rural enterprises can be in the agriculture sector as well as the non-farm rural economy. Access to energy can have an impact on local productivity, especially in agriculture which in turn has a knock-on effect on the economy as people have higher incomes and contribute to rural development. Improved energy access can help local communities capture a greater share of the agricultural value chain. For rural enterprises, ensuring access to quality electricity supply can also impact profitability. Local businesses are often willing to pay a higher price for electricity, however, the it is important to provide uninterrupted supply of energy to these enterprises.

Energy poverty in the region is substantially gendered and a majority of those affected are women and

children. In the case of initiatives to improve access to energy it is extremely important to involve women and build on their leadership at all levels. While much of the focus remains on electricity, a major issue, especially for women in rural areas is the lack of access to improved cookstoves. In the case of interventions to promote the adoption of such improved cookstoves, it is extremely important to involve local women at the design stage as they are the primary users of cookstoves within the household. Taking advantage of the high level of trust women enjoy in the local communities, they can also act as champions to highlight the positive effects of improved cookstoves and can galvanise support for products aimed at improving energy access. Projects that aim to increase access to energy in rural areas need to incorporate women and promote their involvement in micro and small enterprises. Women can play an extremely important role in the associated supply chain.

## Notes

We aim to provide policymakers, donors, and development agencies concerned with rural energy access with new insights on the real barriers to energy access in villages in developing countries—technological, financial and political—and how they can be overcome. We have chosen to focus on remote off-grid villages, where local solutions (home- or institution-based systems and mini-grids) are both more realistic and cheaper than national grid extension. Our concern is to ensure that energy access results in development and the creation of ‘smart villages’ in which many of the benefits of life in modern societies are available to rural communities.

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