

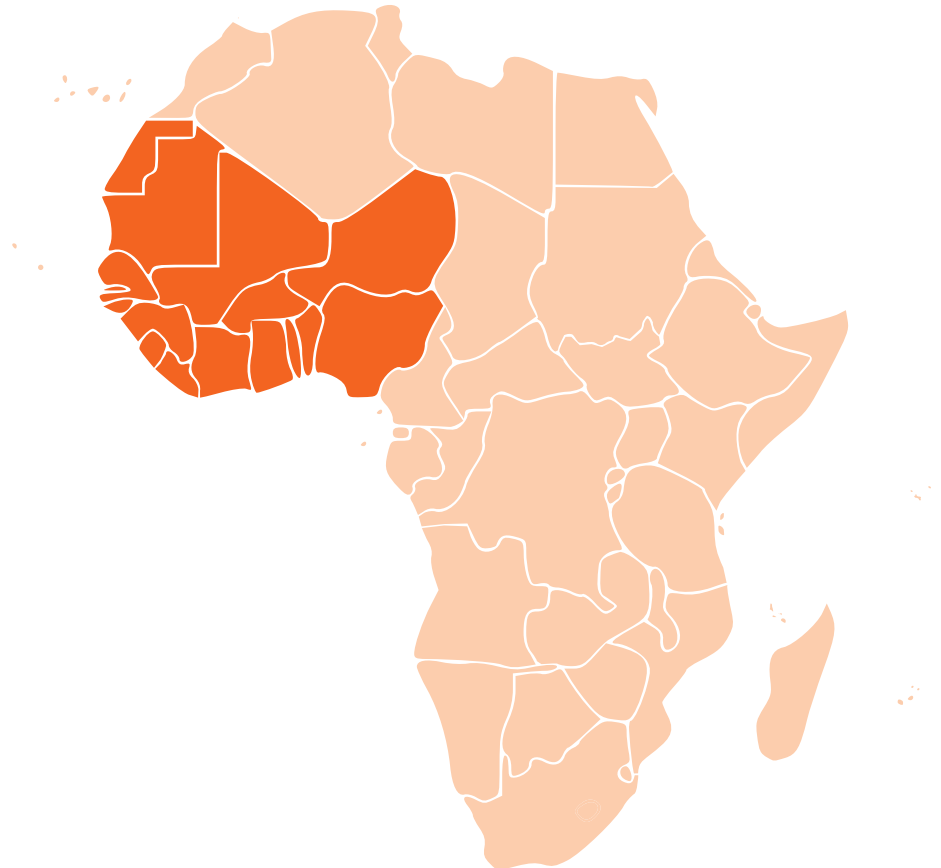


# Energy access in West Africa



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A high percentage of the West African population lives in remote rural areas without access to modern energy services. Clean energy mini-grids (CEMGs) have been identified as essential to helping achieve universal electricity access in the region and they feature as important parts of national targets and renewable energy action plans for all ECOWAS (Economic Community of West African States) countries. It is estimated that mini-grids and standalone systems will be needed to supply electricity to 25% of the ECOWAS region's population. Therefore, ECOWAS states aim to build 128, 000 CEMGs by 2030 to supply power to about 107 million of their citizens. Considerable effort will be required to ensure that the operating environment is conducive to the set up and operation of CEMGs across the ECOWAS region in order to achieve this target.



To shed light on the status of energy access and particularly the role of CEMGs in reaching the underserved, the Smart Villages Initiative (SVI), in collaboration with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) and the European Union Energy Initiative Partnership Dialogue Facility (EUEI PDF), held a workshop titled 'High-level workshop on energy access in West Africa'. Held in March

2017, this served as a kick-off event to a wider capacity-building engagement on CEMGs in the ECOWAS region and provided insights into the challenges faced by ECOWAS countries with regards to CEMGs. The Smart Villages Initiative also used the workshop as an opportunity to share, reflect on, and refine the conclusions and recommendations from its West Africa regional engagement programme.

This brief summarises the key findings and recommendations of the workshop for policymakers, development organisations and other stakeholders as follows:

- 1. CEMGs in national energy plans:** The economic space occupied by clean energy mini-grids (CEMGs) lies between solar home systems for dispersed communities and national grid extension for larger populations

close to the grid. CEMGs are a priority for all the ECOWAS member states, and are included in their national energy plans to complement main grid extension and increase the chances of achieving the region's 2030 energy access goals. However, the national master plans ought to go beyond merely acknowledging the importance of CEMGs and include substantial details about incorporating CEMGs into the national energy plans, rather than considering them in isolation. This may require the establishment of additional rural electrification strategies and plans, which give clear long-term direction (in terms of grid expansion and integration, energy needs assessments, policies and regulations for tariffs, technology, quality assurance, financing, etc.) to mini-grid developers who operate on 10-15-year business models. There are examples of how this is already being done, with varying reports of successes and challenges within ECOWAS and in other African countries. There were at least 271 operational CEMGs in the ECOWAS region as of December 2016, with a total of 21 MW installed capacity and average installed capacity of 390 W per household.

**2. Energy access as a driver for development:** Across the region there have been improvements in policy and regulatory frameworks. Nevertheless, further progress is necessary. There is a need for regulators to take more interest in rural electricity initiatives and for governments to implement more supportive and transparent policy and regulatory frameworks. Energy access should be seen as an

integral part, and enabler, of national development plans, which is as important, and is necessary for, the delivery of other infrastructure initiatives, e.g. education, healthcare, clean water, and sanitation. The CEMGs currently installed in ECOWAS are generally small, with an average capacity of 13 KW, and based on solar. This provides for varied levels of service in different countries and communities, and indicates that considerable effort is needed to achieve the regional energy access targets and to support sustainable energy-dependent productive enterprises.

**3. Learning from experiences of other ECOWAS member states:**

There is a need to assess and map the experiences ECOWAS member states have had with CEMGs. So far, reports of experiences have been limited and records of lessons learnt, also drawing on negative experiences, are difficult to come by. There should be more and better monitoring and evaluation to help enhance our understanding of what has worked, what has not, and why. ECREEE's 2016 report "Mapping & assessment of existing clean energy mini-grid experiences in West Africa", which was launched at the workshop, helps in this regard. To address the knowledge and information issues, ECREEE has also developed a knowledge management platform called ECOWAS Observatory for Renewable Energy and Energy Efficiency (ECOWREX).

**4. Private sector participation in the CEMGs sector:**

There is a desire to include the private sector in the national energy plans

in all the ECOWAS countries. However, the extent to which the private sector is intended to be involved varies across the member states. The majority of the existing CEMGs in ECOWAS were established with funds from development or donor partners, i.e. with very little private sector involvement. Efforts are now underway (for example, the technical assistance facility for the improvement of the policy and regulatory framework for mini-grids in West Africa launched at the workshop) to improve the operating environment and implement capacity-building and technical assistance for the CEMG sector.

**5. Supporting local manufacturing of CEMG equipment:**

As in other regions of Africa, there is no local manufacturing of most energy system components and equipment in West Africa, and the sector is crippled by the supply of low-quality products and poor-quality installations. There is a need to create supportive policy and regulatory frameworks that make local manufacturing more attractive than direct imports and support capacity development to professionalise the installers sector. One key aspect of local manufacturing is the establishment and enforcement of quality standards that are compatible with the local conditions. While the standards need to be focused on the CEMGs sector and customised to individual country requirements, they need to align with the main grid sector and allow for regional harmonisation.

**6. Tariff regimes for CEMGs:**

Regarding tariffs, the workshop found that there is a lot of inter-

est in harmonising tariffs in the regional market. However, a one-size-fits-all model for achieving this harmonisation is not practical: each member state has different approaches and requirements. It will therefore take time before regional harmonisation can be realised. In each country, clear and reliable fiscal policy and regulations are needed to foster investor confidence and lower mini-grid electricity tariffs. The main consideration is having in place mechanisms to support payment for the extra cost of mini-grid electricity generation, e.g. through cross-subsidies and harmonised tariffs nationwide (irrespective of location and electricity source). A range of approaches incorporating these ideas is being applied or considered in Ghana, Cape Verde, Mali, and Niger.

#### 7. Raising awareness of CEMGs:

There is a need to increase the general public's awareness of mini-grids, with a particular focus on rural villages. The benefits of such awareness are two-fold. Firstly, if villagers understand the benefits of mini-grids they will put pressure on governments to support them. Secondly, improved awareness will help sensitise the community to the opportunities for productive enterprises arising from energy access.

**8. Insights from the SVI regional engagement programme:** SVI related the experiences, views, and recommendations of frontline individuals and organisations to policymakers in West Africa on how off-grid energy access can be achieved so as to catalyse productive enterprise and the provision of essential services,

such as healthcare and education, in rural villages. These can be summarised thus:

- o There is a need to improve the operating environment for companies implementing mini-grids and selling solar home systems, through better access to finance, supportive policy frameworks, and high-level political commitment.
- o Energy access initiatives should improve awareness of the options for energy technologies and energy-driven productive enterprises amongst villagers and be inclusive for women and the youth. The focus should be on building markets, not giving things away.
- o Solar home systems have become cheaper, affordable, and more efficient, but suppliers still struggle with finance, and quality standards are largely absent or not enforced.
- o It is still early days for mini-grids as costs still generally exceed revenues, business models and technologies are not fully developed, tariffs are still uneconomical, and the target communities are not fully engaged in the development and implementation process.
- o Clean cooking technologies reduce health risks from smoke and fume exposure, environmental impacts in terms of deforestation and climate change, and the time and effort required to gather cooking fuel. Their wider adoption depends on user and culture-sensitive design, improved financing schemes, and technical and

business support along the value chain.

- o While there are close linkages and interactions within the water-energy-food nexus, there is often a silo approach and lack of coordination between organisations and government ministries concerned with water, energy, and food. There is a need for integration of policies and initiatives, informed by better understanding of the synergies and competing interests. Particularly, governments should ensure that there is a supportive environment in place for the multiple actors in the WEF nexus, including private sector, financiers, policymakers, smallholder farmers, women, and the youth.
- o Regarding working towards Sustainable Development Goals (SDGs) in the ECOWAS region, SDG 7 on energy access requires an appropriate level of ambition that will provide a level of energy services capable of supporting productive enterprise. For SDG 17 (strengthening the means of implementation) there is a need for better coordination between different countries, sectors, and actors to improve the sharing of information and solutions to operational issues. Integration and capacity development are also necessary for the efforts across all SDGs so as to make full use of potential synergies between SDGs and appropriately evaluate development outcomes of energy access initiatives.

## 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.

### EUEI PDF

The European Union Energy Initiative Partnership Dialogue Facility (EUEI PDF) is a multi-donor facility that contributes to the achievement of the Sustainable Development Goals, and in particular, on energy. It is a flexible instrument of the European Union since 2004 to promote sustainable energy for equitable development in Africa, Latin America and Asia. The EUEI PDF offers a range of services from coordination and strategic political dialogue to implementation in partner countries and focusing on:

- Strengthening the coordination of European donors and the common European contributions;
- Supporting high-level political dialogue and processes;
- Providing policy advice, institution and capacity building services;
- Working towards accelerating the development of sustainable energy markets;
- Conducting research and facilitating knowledge sharing in collaboration with academia and energy research institutions.

The EUEI PDF together with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) are currently implementing a regional capacity building and technical assistance project on Clean Energy Mini-grids in

the ECOWAS region and training on a toolbox for Renewable Energy tariff setting.

### ECREEE

The Economic Community of West African States (ECOWAS) is a regional organisation of fifteen countries in West Africa. ECOWAS was established in May 1975 with the main goal of promoting economic integration among the member states. ECREEE is a specialised agency of ECOWAS which acts as an independent body, within the legal, administrative and financial framework of ECOWAS rules and regulations. The overall objective of ECREEE is to contribute to the sustainable economic, social and environmental development of West Africa by improving access to modern, reliable and affordable energy services, energy security and reduction of energy-related green house gas (GHG) emissions and climate change impacts on the energy system. ECREEE aims for the workshop were to promote the exchange of experiences on policy and regulatory framework for clean energy mini-grids among and with the ECOWAS member states and launch a multi-stakeholder partners for the provision of technical assistance and capacity building on this topic.

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