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This brief discusses the viability of renewable energy to tackle energy poverty in West Africa. It delves further into the importance of establishing a regionally-focused renewable energy policy to stimulate the necessary investments in the renewables sector by overcoming the barriers prevalent in West Africa's fragmented energy markets.

A REGIONAL POLICY PERSPECTIVE ON IMPROVING ELECTRICITY ACCESS THROUGH RENEWABLE ENERGY IN WEST AFRICA

Deea Ariana, Energy Access Consultant, World Bank

INTRODUCTION

There is significant potential for renewable energy resources in West Africa to help bridge the region's electricity access gap, but with the right policies in place. Regional-level policies aimed at improving low access rates through renewable energy have gained traction among governments. Yet, a lack of proper planning and coordination has prevented most policies from being effectively implemented. Considering the wide extent of socio-economic disparity among countries in West Africa, renewable energy options can accelerate progress toward electrification targets. This scenario can be achieved by policies that can create a conducive political and business environment for renewable energy deployment.

ELECTRICITY ACCESS CHALLENGE IN WEST AFRICA

Sub-Saharan Africa suffers an overwhelming deficit in terms of access to electricity. Nearly half of the population (180 million people) in the Economic Community of West African States (ECOWAS) region¹ do not have access to electricity today². On average, access rates across ECOWAS are significantly lower than Africa's overall access rate of 42 percent. Moreover, substantial socio-economic disparities between countries imply that the electricity access situation in the poorest ECOWAS countries is even worse. For example, in Guinea Bissau where more than two-thirds of the population live below the poverty



People stand next to solar panels of a solar energy power plant in Burkina Faso. Source: AFP.

¹ The Economic Community of West African States (ECOWAS) is composed of 15 West African countries namely Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

² Kojima, Masami, and Chris Trimble. Making Power Affordable for Africa and Viable for the Utilities. World Bank. 2017.

line³, the country has an overall access rate as low as 14.7 percent and just 4 percent in rural areas. Moreover, historically, West Africa's electricity access rate has not grown fast enough to achieve SDG 7 that ensures access to affordable, reliable, sustainable and modern energy for all by 2030. Political instability, lack of investment and affordability are some of the main issues driving low access rates.

ECOWAS continues to struggle with power deficits compounded by unconstrained energy demand of 10 percent per year in most countries. Countries have acknowledged that past efforts to achieve self-sufficiency in national electricity supply have been uneconomical due to the high cost of building power generation and transmission infrastructure. On the other hand, annual consumption of electricity in ECOWAS is also among the lowest in the world. At 160 kWh per capita, the annual consumption per person in the countries is equivalent to the amount of energy needed to power one 40W lightbulb for 12 hours per day. The low consumption indicates that economies are not deriving the potential benefits of electricity access. This is further reflected on the tariffs that are below cost-recovery rendering utilities unable to recover the cost of additional household connections. Utilities also have little incentive to invest in grid extension as they are not well-positioned to make pro-poor or subsidized investments given their own reliance on government subsidies. Furthermore, connection charges in ECOWAS countries are frequently between USD 150-250, making connecting to the grid prohibitively expensive for poorer households. The associated administrative processes are equally not adapted to the constraints faced by the poor, which include lengthy waiting times, sometimes more than 10 weeks.⁴

HARNESSING RENEWABLE ENERGY POTENTIAL

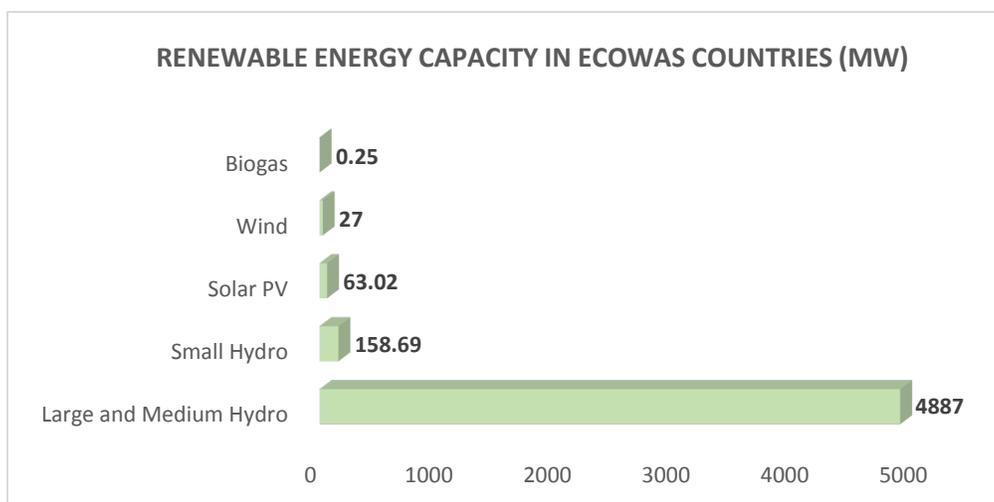
West Africa is endowed with vast renewable energy resources that can close the region's electricity access deficit. For example, wind potential is concentrated in coastal zones of Cape Verde, Senegal, The Gambia, and possibly Ghana, Mali and Nigeria; potential for micro-hydro schemes is found particularly in Cote d'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Togo and Sierra Leone; solar is abundant in northern regions such as Niger, Burkina Faso, Mali and the north of Ghana and Nigeria; and except for Cape Verde and the northern areas of Mali, Burkina Faso and Niger, there are substantial biomass resources.⁵ Yet, out of the total available installed capacity in the region (16.3 GW), renewable energy capacity accounts for approximately 32 percent (5.14 GW) of the total.⁶

³ WFP Guinea-Bissau Country Brief. July 2018.

⁴ Blimpo M.P., and Malcolm Cosgrove-Davies. Electricity Uptake for Economic Transformation in Sub-Saharan Africa. World Bank. 2018.

⁵ Cape Verde is a pioneer in prioritizing renewable energy and aiming to achieve 100 percent access rate by 2020. It is also the only ECOWAS state with a high access rate of 97 percent as of 2016 according to the International Energy Agency (IEA).

⁶ ECREEE. Regional Progress Report on Renewable Energy, Energy Efficiency and Energy Access in the ECOWAS Region. 2016.



Source: ECREEE

Policymakers are looking to utilize the region’s renewable energy potential in rural electrification planning to supplement grid extension initiatives. But the fact that less than 3 percent of the region is served by off-grid and decentralized electricity services, equivalent to approximately five million individuals⁷ does not reflect this potential. Institutional, regulatory, legal, tariff structure and frameworks for renewable energy in the region are either non-existent or weakly implemented. Only a few current policies exist to incentivize private capital to invest in the renewable energy sector in West Africa. For instance, a 2012 study found that total renewable investments accounted for only 5 percent of the total USD 2.2 billion invested in the ECOWAS energy sector. Independent Power Producers (IPPs) investment—mostly related to power production through natural gas—accounts for 3.5 percent.⁸

“Regional initiatives are expected to offer the much-needed economies of scale to establish a regional market and build the enabling environment necessary for renewable energy investments.”

Renewables are becoming increasingly competitive, mainstream sources of energy in many countries due to their increasing reliability, short installation time, improved cost-benefit ratio and the emergence of financial schemes that reduce the upfront cost burden. Renewable energy systems are also being considered as either a complement to or, in some situations, a substitute for centralized power generation. Across Africa, interest is growing in solar PV as a means to diversify the energy mix, meet rising energy demand and provide energy access.⁹ In East and West Africa, decentralized energy service companies have established a thriving market for off-grid solar PV pay-as-you-go (PAYG) companies. In 2017, these companies raised about USD 260 million in capital, up 19 percent from 2016, and served more than

⁷ Numbers do not include Cabo Verde, The Gambia, Ghana, Guinea, and Togo as this specific data was not available for these countries

⁸ Elayo et al. 2012.

⁹ REN 21. Renewables 2018 Global Status Report.

700,000 customers through contracts based on mobile payment systems.¹⁰ However, a lack of appropriate policy support and an enabling environment is often seen as one of the key challenges impeding growth of the sector. While private sector investments can help alleviate the electricity crisis in Africa¹¹, regional initiatives are expected to offer the much-needed economies of scale to establish a regional market and build the enabling environment necessary for growth in renewable energy investment.

REGIONAL IMPERATIVE TOWARDS RENEWABLE ENERGY POLICY

West Africa operates in a web of regional, sub-regional, and national electrification and energy access policies. Governments have implemented a variety of policy approaches to increase access rates, including private concessions, public private partnerships (PPPs), rural electrification agencies (REAs), rural electrification funds (REFs) and PAYG approaches. Some countries like Senegal and Mali have adopted purely private concessions to scale up electrification in rural areas, while others such as Nigeria and Ghana have improved grid expansion to rural areas through public investment while simultaneously developing partly publicly subsidized schemes for introduction of mini-grids and stand-alone solar systems owned and operated by private companies providing matching investment.

The creation of a regional electricity market has proven to be challenging given the uneven level of development of electricity markets at the national level across the region. It was not until 1999 that the implementation of a regional agenda materialized with the establishment of the West African Power Pool (WAPP), a regional transmission network and the backbone of all interstate electricity trading in West Africa. The fourteen ECOWAS states that are members of the WAPP (excluding Cabo Verde, which is an island nation and not part of the interconnected system) range from vertically integrated, state-owned electricity sectors, to partially and fully unbundled and privatized power markets. Another constraint for regional integration is the huge difference in size and corresponding electricity demand between the countries, two important factors that contribute to competing priorities for governments and utilities.

The ECOWAS Renewable Energy Policy (EREP), adopted by the fifteen ECOWAS states in 2013, is the only existing policy dedicated to regional-level renewable energy development in West Africa, and which “aims to assist member states with the design and implementation of appropriate legal and regulatory frameworks to promote development of renewable energy technologies, including decentralized services (mini-grids and stand-alone systems), with the long-term objective of achieving universal energy access in the region by 2030.”¹² EREP builds on the existing efforts of WAPP towards creating regional power markets and stands to mobilize development of additional grid-connected renewable energy for nations to diversify their energy mix, and to support the growth of off-grid and stand-alone applications at the household level.¹³ The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), founded earlier in 2010, is tasked by ECOWAS with coordinating the implementation of the regional energy policies including EREP.

Regional renewable energy policy creates added value to by complementing the adoption of national-level

¹⁰ Wakeford, Jeremy. “When mobile meets modular: pay-as-you-go solar energy in rural Africa”, LSE – Centre for Africa, 29 January 2018.

¹¹ Muzenda, Dambudzo. “Increasing Private Investment in African Energy Infrastructure”. Background paper presented at NEPAD-OECD Africa Investment Initiative, 11-12 November 2009.

¹² ECREEE. “ECOWAS Renewable Energy Policy,” 2013.

¹³ ECREEE. *Regional Progress Report on Renewable Energy, Energy Efficiency and Energy Access in the ECOWAS Region*. 2016.



**Initiative for
Sustainable Energy Policy**
Energy, Resources and Environment
Rome Building, 4th Floor
1619 Massachusetts Ave, NW
sais-isep@jhu.edu
[@sais_isep](https://twitter.com/sais_isep)
www.sais-isep.org

policies. It can encourage the adoption of national targets and action plans, which contribute to the achievement of the regional targets, harmonize national-level framework for developing standard PPA, FIT, concession schemes etc. through a close collaboration between ECREEE and the ECOWAS Regional Electricity Regulatory Authority (ERERA), enable the harmonization of tax and duty policies and common standards and regional quality labelling for equipment and systems as well as the certification of skills, create a knowledge base on renewable energy technologies and resources through institutional capacity building networks, and promote a regional market for renewable energy investments, generation and equipment manufacturing entailing job creation.¹⁴

POLICY RECOMMENDATIONS

- *Political commitment from members states is fundamental to successful regional renewable energy cooperation. To avoid friction between member countries, considering their different energy priorities and approaches to national approaches to renewable energy development, the actual aims of cooperation and the specific benefits related to it*

should be publicly defined, explained and discussed to generate public support and ultimately, political will to cooperate.

- *Given the asymmetry of power markets between countries, a regional policy should afford particular attention to countries with less developed or nascent renewable energy markets in terms of helping build the institutional capacity necessary for deploying renewable energy technology.*
- *Countries should set realistic renewable energy targets under EREP that are achievable and consistent with national-level targets as defined in their respective National Renewable Energy Policy (NREP).*

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¹⁴ Ibid.

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About ISEP

The Initiative for Sustainable Energy Policy (ISEP) is an interdisciplinary research program that uses cutting-edge social and behavioral science to design, test, and implement better energy policies in emerging economies.

Hosted at the Johns Hopkins School of Advanced International Studies (SAIS), ISEP identifies opportunities for policy reforms that allow emerging economies to achieve human development at minimal economic and environmental costs. The initiative pursues such opportunities both pro-actively, with continuous policy innovation and bold ideas, and by responding to policymakers’ demands and needs in sustained engagement and dialogue.

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