CATALYZING INVESTMENT FOR ENERGY ACCESS: MAKING THE CASE FOR CHANGE

POWER FOR ALL

ENERGISE AFRICA

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Pioneering Green Partnerships, Investing in Impact

ABBREVIATIONS

ADELE	Access to Distributed Electricity and Lighting in Ethiopia
AfDB	African Development Bank
AREAR	Annual Report on Exchange Arrangements and Exchange Restrictions
CBE	Commercial Bank of Ethiopia
DBE	Development Bank of Ethiopia
DFI	Development finance institution
DRC	Democratic Republic of the Congo
DRE	Decentralized renewable energy
EEA	Ethiopian Electric Authority
EEP	Ethiopian Electric Power
EEU	Ethiopian Electric Utility
EIU	The Economist Intelligence Unit
ER	Exchange Rate
ESMAP	Energy Sector Management Assistance Program
FX	Foreign Exchange
GD	Growth Diagnostics
GIZ	German Agency for International Cooperation
GOGLA	Global Off-Grid Lighting Association
GTP	Growth and Transformation Plan
IEA	International Energy Association
IMF	International Monetary Fund
IPP	Independent power producer
KOSAP	Kenya Off-Grid Solar Access Project
MFI	Multilateral financial institution
MDCL	Market Development Credit Line
MGP	Mini-Grid Partnership
MoWIE	Ministry of Water, Irrigation and Electricity
NBE	National Bank of Ethiopia
NEP	National Electrification Program
NES	National Electrification Strategy
NGO	Non-governmental organization
OWID	Our World in Data
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PayGO	Pay-as-you-go
REA	Rural Electrification Agency
SDG	Sustainable Development Goal
SHS	Solar home systems
SSA	Sub-Saharan Africa
UN	United Nations
USD	U.S. Dollar
WB	World Bank Group
WDI	World Development Indicators
WGI	World Governance Indicators

EXECUTIVE SUMMARY

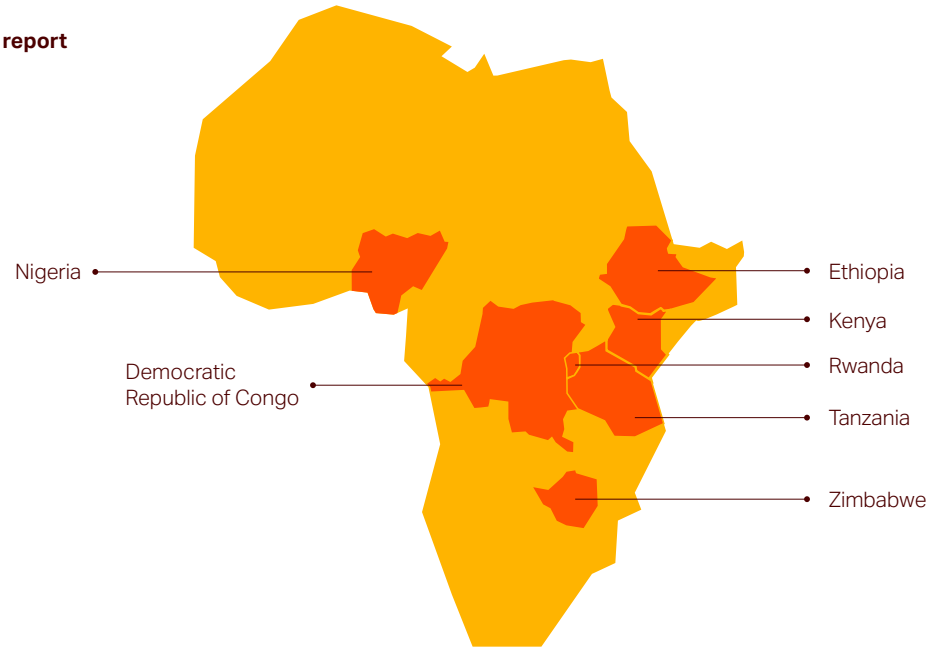
This report evaluates the business environment for investments in decentralized renewable energy (DRE) in Ethiopia and six regional benchmarking countries[2], identifying policy interventions to accelerate electricity access expansion targets.

Although Ethiopia has rapidly developed its power sector and increased access to electricity over the last twenty years, the country still has a long road ahead to meet SDG7, with more than 53% of the population lacking access to electricity services.

To meet the government's ambitious electricity program – which sets a goal for universal access by 2025 – the government will have to address the financial and policy barriers that currently constrain the expansion of the power sector, and in particular the nascent DRE sector.

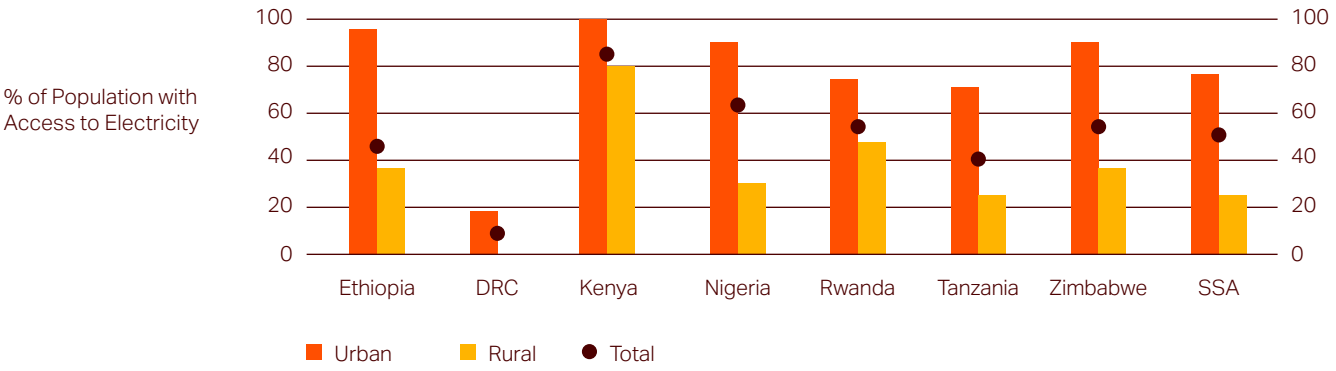
The following research examines Ethiopia's access to electricity challenge, benchmarking the country's power sector to six regional peers: Democratic Republic of the Congo, Kenya, Nigeria, Rwanda, Tanzania and Zimbabwe (Figures 1 and 2). The "Growth Diagnostic" methodology (Hausmann, Rodrik, Velasco 2008) is used to identify what are the most binding policy barriers to investment in the DRE sector, and distinguish the long-term reforms that are necessary for DRE development and short-term actions that can be rapidly implemented to introduce new dynamism in the country's energy ecosystem. These recommendations are also of relevance to countries in the region facing similar growth constraints.

Figure 1.
Ethiopia and regional peers included in this report



[2] The six peers were selected to exemplify the distinct situation that different countries in SSA face, both in terms of access to energy and economic and investment environment.

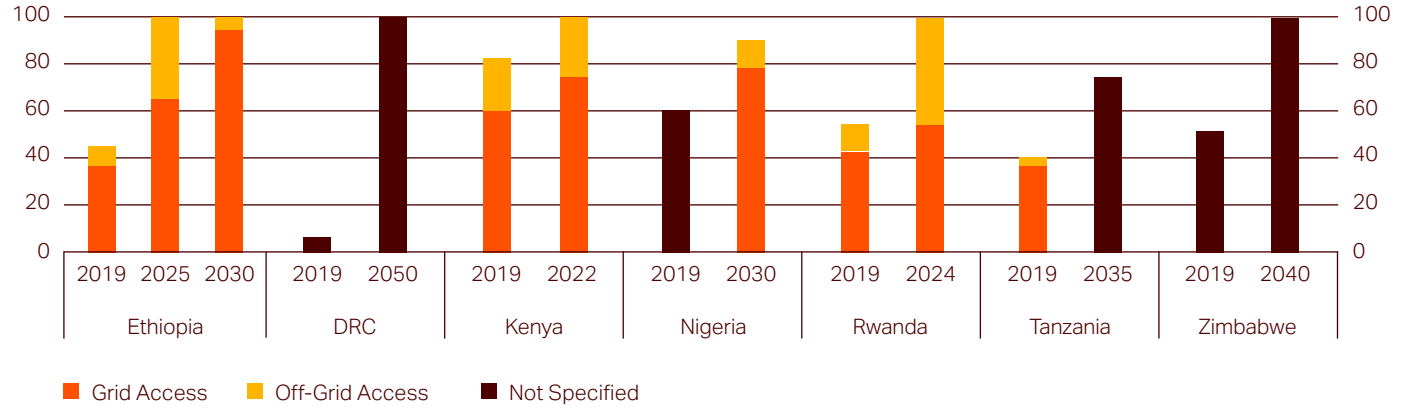
Figure 2.
Access to Electricity, Urban and Rural
(Source: IEA)



Countries in Sub-Saharan Africa have set ambitious targets to expand electricity access. Ethiopia and the six benchmark countries have all seen a significant increase in access rates since 2000, with Kenya and Rwanda making the largest progress in the period. As of 2019, Ethiopia has an access rate below Kenya, Nigeria, Rwanda and Zimbabwe (as well as the regional average), but above DRC and Tanzania's. In terms of population, Ethiopia is the third country in Africa (and the world) with the largest population without access to electricity, with 60 million (below DRC and Nigeria). Whereas the country's urban population has an access rate of 96%, the energy access rate outside cities (where 79% of the population lives) is below 34%.

In official plans, documents and public statements, all seven countries analyzed have announced objectives to achieve, or level closer to, universal access in the next decades (Figure 3). In the case of Ethiopia, the latest the National Electrification Program 2.0 sets a goal for universal access by 2025. Countries' ability to meet these goals will depend on multiple factors, many of them exceeding the influence of energy policy. Beyond current access rates, countries' population, urbanization rate, and density will determine the necessary effort (and ultimately the financial cost) of achieving SDG7. The institutional and power structure of the electricity sector also delimits what the instruments are currently available to increase access.

Figure 3.
Access to Electricity, National Targets
Sources: IEA (World Energy Outlook 2020), National Plans



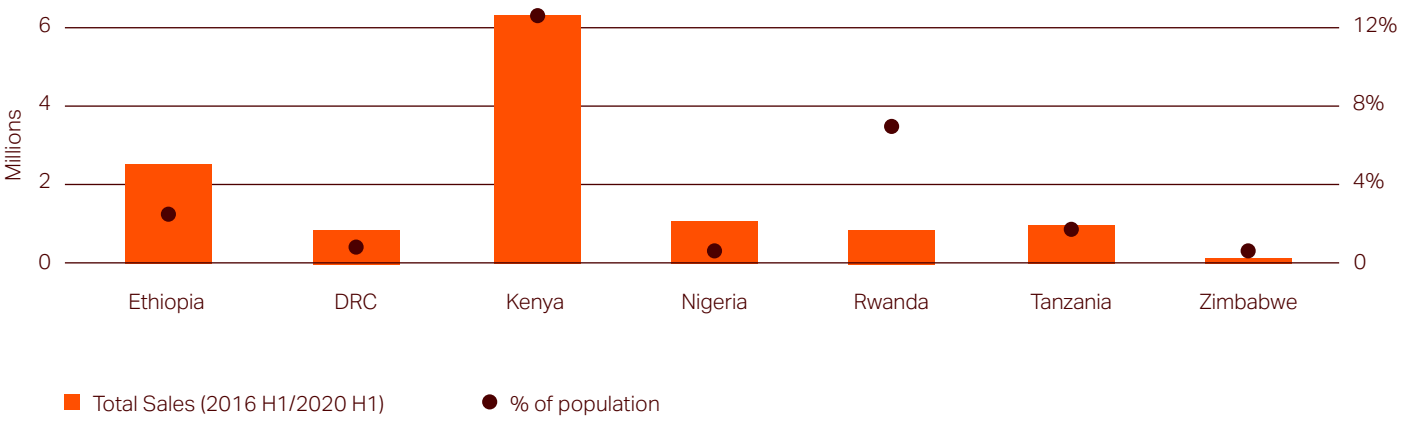
In the last five years, Ethiopia's performance attracting investment in small solar power systems has improved, although the country has not made the same progress with regards to mini-grid investments.

Image courtesy of SolarNow

Ethiopia's past energy strategies and its current National Electrification Program have incrementally prioritized off-grid energy technology as a means to increase access to energy throughout the country.

The latest strategy explicitly acknowledges the need for both supply- and demand-side interventions to expand the reach of the DRE sector. In Ethiopia, the government has so far been the single key stakeholder behind power sector development – for a long time, limiting options for expansion. However, more recently, the government has shown a clear commitment to crowd-in the private sector. Ethiopia has progressively adapted its regulatory environment for DRE to reduce uncertainties for foreign and domestic investors. As a result, the country has managed to capture a significant share of the global surge in the off-grid solar market, in particular with regards to Pico and SHS systems (Figure 4). With regards to mini-grids, the country has made scarce progress relative to its regional peers and is only now beginning to adapt its regulatory frameworks to incentivize foreign investment.

Figure 4.
Sub-Saharan Africa – Off-grid Solar Lighting Products
Source: GOGLA



A Growth Diagnostics tree for DRE investments identifies "access to foreign exchange" and "regulatory barriers to entry" as the binding constraints to the expansion of off-grid electricity supply in Ethiopia.

To understand better the current needs of electrification policy in Ethiopia, and better prioritize and focus the attention of policymaking, we have adapted the Growth Diagnostics (GD) methodology developed in Hausmann, Rodrik and Velasco (2008) to a context of investment in decentralized renewable energy. The GD methodology allows the analyst to decompose the problem of lack of aggregate investment to its plausible "demand" and "supply" roots; by testing for each branch of a decision tree, the analyst can identify which constraints are the most binding in a particular location. As the analysis shows, the development of the DRE sector is currently held back by firms' inability to access the foreign exchange they need to complete their investments. This is ultimately the results of the economy's macroeconomic imbalances and will require major fiscal and exchange rate reforms to be resolved.

Moreover, Ethiopia's stringent regulatory barriers both to foreign investment but also to vertical integration and licensing in key sectors is also constraining the development of the sector, as it limits the country's ability to bring in key international actors, and have them set up their businesses in a competitive manner. Other intermediate constraints to the development of the sector is the high degree of currency risk – also driven by the country's macroeconomic imbalances – an insufficient development of the ICT and banking sectors (which add further difficulties to the provision of both consumer finance and working capital), and informational asymmetry at the level of product quality between firms and consumers (Figure 5). Taxes and import tariffs, human capital, logistics and political stability are not considered at present to be key binding constraints in the development of the sector.

Figure 4.
Growth Diagnostics Results

Major Constraints	Intermediate Constraints	Not Currently Constraints
Access to Foreign Exchange	Currency Risk	Taxes and Import Tariffs
Regulatory Barriers to Entry	ICT Infrastructure	Insufficient Human Capital
	Financial Intermediation	Logistics
	Information Asymmetry	Political Stability

A sustainable transformation of Ethiopia's DRE business environment will require long-term macroeconomic and structural reforms, but the country's energy institutions are still in a position to promote policies to accelerate the growth of the DRE sector.

The binding constraints to the development of the DRE sector are not all within the scope of action of the institutions that lead the electricity sector in Ethiopia, in particular the economy's external and fiscal imbalances, as well as broad investment regulations in specific sectors such as banking and ICT. Addressing these constraints is necessary for the construction of an enabling environment that is suitable for the type of investments needed for the development of the DRE sector. Nevertheless, Ethiopia's past policy successes and other regional experiences provide instructive examples of how sectoral policy can indeed create pockets of efficiency for the development of DRE without needing to address macroeconomic or other structural inefficiencies. Taking stock of past policy performance in Ethiopia, as well as past and current policies in the peer countries, there are areas which present significant opportunity for sector expansion at a relatively low risk, not only in Ethiopia, but in other countries facing similar constraints.

Image courtesy of SolarWorks!

The following initiatives have been identified as possibilities to support sector expansion:

Image courtesy of Opmeer Reports

01.
Expansion of Market Development Credit Line

The MDCL, an energy-specific credit line, has proven to be very successful in alleviating the foreign exchange constraint for firms and increasing the number of participating private sector companies and microfinance institutions (the two direct beneficiaries of the credit) in the market. Expanding the program for it to meet the current demand for Pico and SHS systems, especially in rural areas, will be necessary to strengthen the sector's performance.

02.
Market-based Incentives for Investment

Regional electricity access expansion programs have increasingly included facilities for result-based financing (RBF) that competitively award incentives to companies according to their financing requirements: Kenya Off-Grid Solar Access Project (KOSAP) approach towards pay-for-delivery, and Nigeria's minimum tender for mini-grid development, are two of many regional initiatives that Ethiopia and other countries could seek to learn from.

03.
Remittance-based Financing

The possibility of using mobile money to provide households with an option to purchase off-grid solar equipment through remittance income can alleviate foreign exchange shortages by providing hard currency. A pilot for a similar project in Rwanda has shown significant potential and should be further explored.

04.
Public Information for Sectoral Development

Providing quality public information can be a low-cost instrument to reduce informational asymmetries and uncertainties that can often prevent investments from happening. Regional experience in creating publicly available energy access maps – such as the Nigerian Energy Database – could be domestically replicated.

05.
Industrial Policy for Local Manufacturing

Given Ethiopia's comparative advantage for low-skill manufacturing – and recent successful local and regional experiences – the government should continue to explore the possibility of attracting investments for the creation of an exporting manufacturing cluster of off-grid solar products, that can serve other SSA markets, as well as the Ethiopia market in the medium-term.

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