The Voice of the Off-Grid Solar Energy Industry

Ethiopia

Introduction

This note was developed by GOGLA with the support of the World Bank Group Lighting Global Program, the Energy Sector Management Assistance Program (ESMAP), the Shell Foundation, USAID, Power Africa, the UK Foreign Commonwealth & Development Office (FCDO), Africa Clean Energy Technical Assistance Facility (ACE TAF) and Sustainable Energy for All (SEforAll). It is part of a series of briefing notes that provide a high-level overview of the status of countries' off-grid solar markets, as well as relevant policies and programs[1].

Key statistics[2&3]

Demographics	
Total Population	112,078,730
Population Density per km^2	96.7
GDP per Capita	USD 855.8
GDP Growth	8.4%
Energy Access Deficit	
National Electrification Rate	48.3%
Urban Electrification Rate	92.8%
Rural Electrification Rate	36.3%
Number of people without access to electricity[4]	57,976, 509
% of quality-verified[5] (QV) vs non-QV products in the market[6&7] (H1, 2021)	QV: 67% Non-QV: 33%
Electrification Planning	
Electrification Targets[8]	Universal access by 2025

Impact[9]

3,000,000
people currently accessing Tier 1 energy services

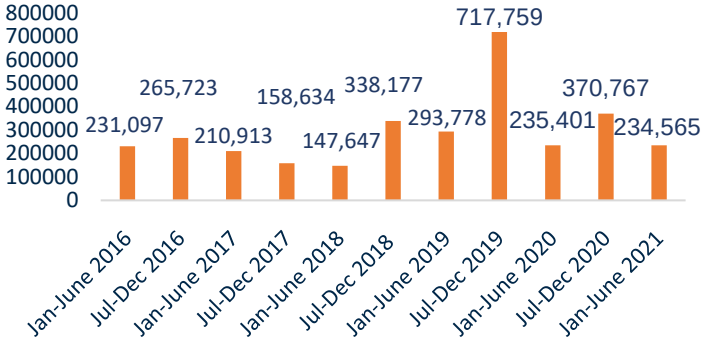
16,500
people currently accessing Tier 2 energy services

3,300,000,000
additional light hours unlocked for study, productive tasks or leisure time

160
change in quality of light in lumens per household.

9,600,000
people currently living with improved energy access

Sales[10]



Sales of Portable Lanterns, Multi-light Systems and Solar Home Systems

[11] The information and views expressed in this brief are GOGLA's alone and are based on our current understanding of the policy situation in this country. We welcome any updates, revisions or clarifications at info@gogla.org.

[2] https://data.worldbank.org/ (last updated in 2019)

[3] https://www.usaid.gov/powerafrica

[4] https://trackingsdg7.esmap.org/

5Quality-verified products are tested according to the IEC TS 62257-9-8. For more information please see the Verasol quality assurance programme.

6 Share of quality-verified (QV) products and non-QV products sold by GOGLA and Lighting Global affiliates.

7 Data on a specific region, country or product category is only included when it has satisfied the three-data point rule, meaning that at least three separate product manufacturers have reported data for any single data point. When we have fewer than three responses for a region, country or product category, no results are shown to protect the proprietary interests of the companies who have supplied data in support of this industry report.

[88]8 Ethiopia Electrification Program, World Bank Group, 2018

[9]Impact numbers have been estimated on the basis of the Standardized Impact Metrics for the Off-Grid Solar Energy Sector. The reported estimates differ from the previous edition of the country briefings due a change in the calculation approach. Note that while the numbers shown represent the aggregate impact of key players in the off-grid solar sector, these estimates do not present the full country impact of off-grid solar lighting products sold.

[10] All sales data included in this briefing is derived from the "Global Off-Grid Solar Market Report Database", result of a joint primary data collection effort carried out by GOGLA in partnership with IFC Lighting Global and the Efficiency for Access Coalition. The public version of the resulting report of the effort is available here.

Current Status

Approximately 57 million people in Ethiopia do not have access to electricity.[11] This is a significant portion of the country's population of 112 million. To address this electrification deficit, the Ethiopian government aims to achieve 100% national electrification by 2025 through both grid and off-grid connections.[12]

Sales of off-grid solar lighting products in Ethiopia totalled approximately 234,565 units between January and July 2021. This represents a 37% decrease compared to the second half of 2020. The decline in sales volume has been influenced by factors such as the COVID-19 pandemic and political instability caused by the Tigray conflict.[13]

Ethiopia is predominantly a cash sales market, with PAYGo representing only 3% of sales volumes in the first half of 2021. It is also predominantly a solar lantern market, as solar lanterns represented 77% of the sales volume in the first half of 2021. In 2021 there was a notable shift in sales volumes, which saw more sales of solar lanterns in the smaller 0-1.5 Wp category[14] than the 1.5-3 Wp category.

Ethiopia, like many other countries in sub-Saharan Africa, has experienced the negative impacts of the COVID-19 pandemic. Containment measures in Ethiopia included travel restrictions and lockdowns that affected a number of regions including Amhara, Oromia and Afar. During the pandemic, off-grid solar companies in Ethiopia were not recognized as delivering an essential service, and consequently had limited ability to offer products and services during this period.[15]

In addition to the public health crisis, the political situation in Ethiopia remains volatile, with intermittent partial lockdowns affecting sales in certain regions. The conflict between the Ethiopian government and the Tigray People's Liberation Front in the Tigray region has further destabilized the country. Tigray is one of the key markets for off-grid solar companies.[16]

Policy, Regulation and Sector Planning

The Ethiopian National Electrification Program – Implementation Roadmap (NEP-IRM) indicates that by 2025, 65% of energy access will be provided through grid-connected electricity and 35% through Stand Alone Solar and mini-grid solutions[17]. The National Electrification Program 2.0 provides the framework for Rural Electrification in Ethiopia and describes the policy measures that will be implemented to realize these targets.

In 2021, the Ethiopian government, with support from the Africa Clean Energy Technical Assistance Facility, launched the 2021 Refreshed Energy Africa Ethiopia compact. The 2021 compact seeks to accelerate the expansion of the household solar market to achieve universal energy access by 2030. It aims to align supportive policies with coordinated development partner support to improve market conditions and increase off-grid investments.[18]

Promoting Quality & E-Waste Management

Mandatory standards are in place for pico-PV systems (up to 15W), whilst voluntary standards, adopted by the Ethiopian Standards Agency, are in place for solar home systems up to 350Wp. Pico-PV standards are fully in line with the IEC quality standards.[19] In 2021, the Ethiopian National standardization Council approved IEC quality standards for stand alone solar systems less than 350Wp.

To leverage adoption of the IEC standards for SAS kits, the government of Ethiopia is strengthening the national quality assurance framework by building a robust conformity assessment program. This program includes administering a quality label and carrying out market surveillance activities.[20] The Africa Clean Energy Technical Assistance Facility (ACE TAF), supported the Ethiopian Ministry of Trade and Industry (MoTI), in the development of a pre-shipment verification of conformity (PVoC) program, which was launched in September 2021. The PVoC will be used to check that imported SAS products meet the required standards before they leave their port of origin. The Ethiopian Standards Agency will be responsible for the issuance of the national quality mark for imported SAS kits that comply with the national quality standards.[21]

[11] https://trackingsdg7.esmap.org/
[12] Ethiopia Electrification Program, World Bank Group, 2018
[13] Global Off-Grid Solar Market Report H1 2021, GOGLA
[14] Global Off-Grid Solar Market Report H1 2021, GOGLA
[15] Global Off-Grid Solar Market Report H2 2020
[16] Global Off-Grid Solar Market Report H2 2020
[17] https://www.lightingafrica.org/country/ethiopia/
[18] https://www.ace-taf.org/wp-content/uploads/2021/09/ENERGY-AFRICA_ETHIOPIA-REFRESHED-COMPACT-2021_Final.pdf

[19] Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.
[20] Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.
[21] Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.

VeraSol, with support from the World Bank and in collaboration with ACE TAF, offered expert technical assistance on good practice for the administration, issuance and enforcement of a quality mark or label for SAS kits. With support from ACE TAF, the off-grid solar test lab at the Ethiopian Conformity Assessment Enterprise (ECAE) is receiving lab equipment and training that will enable it to test products according to the applicable IEC methods (ES IEC TS 62257-9-5:2021). Once equipped and trained, ECAE will be able to carry out market surveillance testing and potentially expand their services to further support the market for SAS systems.[22]

Currently, Ethiopia has no specific laws and regulations on e-waste.

Taxation

Solar products such as solar lights and some components of solar home systems and related appliances are subject to sales tax and import duty.

Solar home systems with quality certificates are exempt from import duty, but they are subject to a 15% Value Added Tax (VAT) and a 3% withholding tax.[23] Some solar components, agricultural productive use appliances and solar-powered healthcare equipment are also duty exempt. The exemptions are to enhance the affordability of off-grid solar solutions.

Companies using PAYGo business models face financial constraints as they are required to file VAT every month for credit sales they expect to collect over several months. This severely limits their cash flow and working capital. [24]

Investments

Investments in stand alone solar (SAS) companies in Ethiopia totalled approximately US$51.7 million between 2012 and 2019, and an additional US$200 million has been committed since 2020. [25]

The African Development Bank (AfDB) plans to provide a US$100 million credit facility to support off-grid electrification in Ethiopia. AfDB will partner with the Commercial Bank of Ethiopia (CBE) to work on the credit facility. The facility is aimed at financing off-grid energy solutions through a market development approach by providing credit to Private Sector Enterprises (PSE), cooperatives and Micro-Finance Institutions (MFIs) for the provision of off-grid energy technologies and productive use appliances to Ethiopians in peri-urban and rural areas.[26]

Obtaining investments in Ethiopia has been difficult for SAS companies due to challenges in obtaining foreign currency exchange, stringent collateral requirements and high interest rates for loans.[27] National restrictions on foreign investments, including in retail and distribution continue to limit international investment and market entry by foreign firms.

Sector Support Programs

In 2021, the World Bank, under the Access to Distributed Electricity and Lighting in Ethiopia (ADELE) Project, approved a US$500 million International Development Association (IDA) credit to support Ethiopia's in achieving universal electricity access by 2025. An important feature of ADELE is the deployment of decentralized renewable energy technologies, particularly solar PV mini-grids and individual solar systems for both household and productive use, which will be deployed through a combined public and private delivery modalities that further increase affordability and inclusion.[28]

The World Bank is also supporting the Ethiopian National Electrification Program through the Ethiopia Electrification Program (ELEAP), a US$375 million International Development Association (IDA) credit which earmarked US$14.5 million for the off-grid component[29]. The program was launched in 2018 and is due to end in 2023.[30]

Ethiopia is part of the Africa Clean Energy Technical Assistance Facility (ACE-TAF), an FCDO funded program to cultivate a market-based approach for private sector delivery of renewable energy electrification technologies, focusing on quality stand alone solar (SAS) systems[31].

The United Nations Capital Development Fund (UNCDF) is working to support low-income households and micro-enterprises in Ethiopia to

[22] Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.
[23] Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.
[24] Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.
[25] Ethiopian stand-alone solar: Investment map, Africa Clean Energy Technical Assistance Facility, 2021.
[26] https://www.afdb.org/sites/default/files/afdb_cif_annual_report_2020_-_the_year_in_review.pdf
[27] Ethiopian stand-alone solar: Investment map, Africa Clean Energy Technical Assistance Facility, 2021.
[28] Visit the World Bank for more information.
[29] Visit Lightning Africa for more information.
[30] Ethiopia's Transformational Approach to Universal Electrification, the World Bank, 2018.
[31] Visit Africa Clean Energy website for more information.

access low-cost clean energy through micro-finance.[32]

The German Agency for International Cooperation (GIZ) through its Energising Development (EnDev) Ethiopia program supports the off-grid solar sector. EnDev Ethiopia promotes and finances the hardware and installation of solar systems at rural health centers. EnDev Ethiopia also trains solar technicians and technicians from the regional health bureaus on simple repairs and maintenance of solar systems. [33]

Industry Association

The Ethiopia Solar Energy Development Association (ESEDA) is an independent non-profit association dedicated to facilitating the growth and development of the solar energy business in Ethiopia. ESEDA (previously SEDA-E) was established in September 2010 by dedicated solar energy market stakeholders in Ethiopia. ESEDA promotes the interests of members of the solar energy industry among the government, the public sector, the general public and other organizations that may impact industry development. ESEDA also acts as an information forum and ideas exchange on matters relating to solar energy development and adoption in Ethiopia.

Opportunities and Barriers

The off-grid energy sector in Ethiopia is growing steadily, with increasing involvement from both the public and private sector. The design of an off-grid implementation program, including roles and responsibilities for sector institutions, investment requirements, business models for implementation and the establishment of a policy framework, shows that the government is committed to universal electricity access by 2025.

It is vital that access to foreign exchange and local currency working capital is made available to the sector to prevent finance barriers. Another barrier is affordability, with rural households struggling to afford SAS products, and consumer financing mechanisms currently falling short in improving affordability

Further Information

- Stand Alone Solar Market Update: Ethiopia, Africa Clean Energy Technical Assistance Facility, 2021.
- Ethiopian stand-alone solar standards: guidance for adoption and implementation, Africa Clean Energy Technical Assistance Facility, 2021.
- Ethiopian stand-alone solar: Investment map, Africa Clean Energy Technical Assistance Facility, 2021.
- Global Off-Grid Solar Market Report H1 2021, GOGLA
- Global Off-Grid Solar Market Report H2 2020, GOGLA
- Ethiopia Fact Sheet, USAID Power Africa.
- Lighting Africa Country Page - Ethiopia
- Regulatory Indicators for Sustainable Energy (RISE) - Ethiopia

[32] https://www.uncdf.org/ethiopia

[33] Visit EnDev Ethiopia for more information.