



USAID
FROM THE AMERICAN PEOPLE



ETHIOPIA

OFF-GRID SOLAR ENERGY MARKET ETHIOPIA

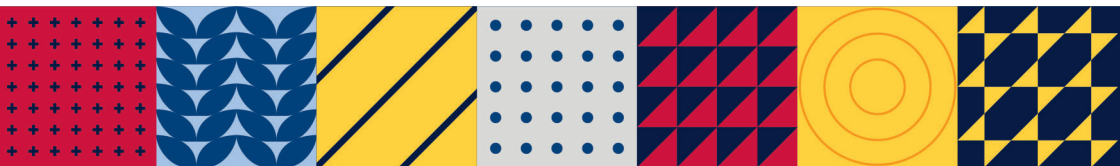
Summary Version of the 2019 Power Africa Off-grid Solar Market Assessment Report

Full report available online at: [usaid.gov/powerafrica/beyondthegrid](https://www.usaid.gov/powerafrica/beyondthegrid)



INVESTMENT OPPORTUNITIES

- Ethiopia's gross domestic product (GDP) topped \$84 billion in 2018 and grew at 10% over 10 years, while its poverty rate declined 20% between 2006 and 2017. **The government of Ethiopia is currently implementing ambitious growth and transformation policies aimed at achieving carbon neutrality by 2025, which will require expansion of the off-grid solar sector.**
- With 90% of Ethiopia's population living within 10 km of the grid, on-grid electrification is a priority. However, the Ethiopian grid is unreliable with frequent outages and voltage fluctuation. **Mini-grids and solar home systems may be complementary solutions to grid extension to improve reliability of electricity service.**
- Agriculture makes up about 40% of GDP and 78% of employment in Ethiopia. **Productive use solar for agriculture, including irrigation, poultry, cold supply chains can significantly increase agricultural productivity in the country.**
- Most Ethiopians have limited access to financial services and mobile money, but remittances from overseas are a major source of income for Ethiopian families. **Increasing mobile money penetration and helping Ethiopians purchase solar energy using remittance income can help increase solar energy adoption through financial sector innovation.**
- Ethiopia limits the foreign companies' ability to invest in solar product distribution in the country and access to forex for importing solar products is limited. **Allowing more foreign investment in the solar industry and enabling a supply of forex loan products for importing solar systems may help lower these barriers to industry growth.**



ON-GRID AND OFF-GRID ELECTRIFICATION

Actual access rate vs. electrification target



Main provider of electricity. The Ministry of Water, Irrigation, and Energy (MOWIE) is the overall governing body of the energy sector in Ethiopia. Under MOWIE sits the Ethiopian Electric Utility (EEU), which is in charge of power distribution; the Ethiopian Energy Authority (EEA), which is the regulator; the Ethiopian Electric Power (EEP), which oversees power generation and transmission; and the State Minister, which is in charge of the electricity sector.



Plan to increase electricity access. The National Electrification Plan (NEP 2.0) aims for universal electrification by 2030, about 4% of which will come from off-grid solutions. More than 90% of Ethiopia's population lives within 10 kilometers of the national grid, although many households in this range depend on non-grid lighting sources.



Constraints to rural electrical grid extension. Ethiopia's closed trade system prevents foreign companies from distributing solar products and prevents foreign exchange of currency, making cashflow a challenge. Ethiopia also has a large population of unbanked adults: 65% use no banking services, and less than 3% use mobile money services.



Policy and regulation. The Council of Ministers adopted the Energy Regulations, a solid step toward engaging private-sector mini-grid companies. The Government of Ethiopia has drafted but has yet to pass two additional regulations. Off-grid companies must go through the Ethiopian Energy Authority licensing process, which can be difficult to navigate.



Associations. The Solar Energy Development Association (SEDA-E) is a non-profit association formed by stakeholders in the off-grid energy sector in Ethiopia to promote the interests of the solar industry to the government and public sectors.

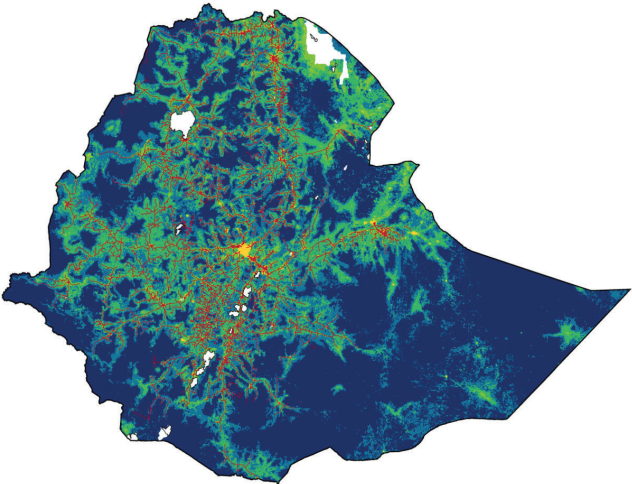
Percent of households dependent on non-grid lighting sources per square kilometer in relation to medium voltage lines, Ethiopia, 2019

Percent of households that are dependent on non-grid lighting sources

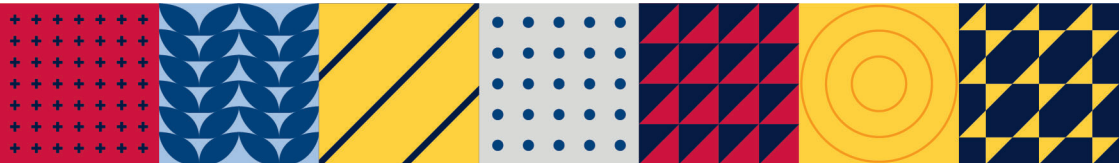
0 100%

- Medium voltage network
- Water bodies or no data

Source: Power Africa Geospatial Analysis 2019



KEY STATISTICS	
GDP	\$84 billion
GDP growth potential	10% over 10 years
Population size	109 million
Population density	83 people per km ²
Population growth rate	2.5%
Household size	4.9
Rate of urbanization	4.6% (2015-2020)
Urban Rural population	Urban: 20% Rural: 80%
Languages	Oromo and Amharic, 15+ other languages



SHS AND PICO-SOLAR

Ethiopia's solar market is well developed. At least eight significant players in the market offer a range of solar photovoltaic (PV) or pico-solar solutions for use at the household level. However, the majority of these companies operate in only four regions—Amhara, Oromia, SNNP, and Tigray. While the largest off-grid markets are in these regions, there are still opportunities for off-grid energy in markets that have been largely untapped by the larger, well-known solar companies.

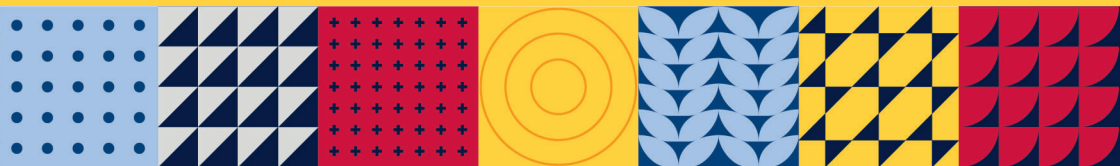
Consumer Finance. Ethiopia's 35 microfinance institutions (MFIs) hold 6% of financial sector assets and have over 11 million accounts. The government plans to locate an MFI branch in every woreda (district) of the country to serve on average 24,000 households each. More than 10 of these MFIs lend to off-grid solar companies and their customers, and most MFIs have access to the Development Bank of Ethiopia's (DBE's) credit line for end users purchasing renewable energy products, such as SHS. Additionally, there are 19,000 savings and credit cooperatives (SACCO) nationwide with four million users. The NBE is looking into expanding and leveraging these for increased financial inclusion.

Commercial Finance. There is no comprehensive information regarding what Ethiopia's commercial banks will lend to the solar sector, but Power Africa staff have found that most banks are open to lending to the solar sector if loans meet their general requirements.

Productive Use. Solar products for productive uses in agriculture hold significant potential in Ethiopia for irrigation, cold supply chains, and poultry. The government has done significant work to identify the locations in which water-intensive crops are grown to inform the business strategies of solar water-pump distributors.

MINI-GRID

In two Ethiopian counties, Ethio Resource Group and Rensys Engineering and Trading PLC are developing mini-grids. Power Africa's geospatial analysis has identified communities with a concentration of higher-consumption households located farther than ten kilometers from the national grid. These communities, which are particularly promising areas for mini-grid expansion, include the woredas of Bedeno, Gemechis, Girawa, Malka Balo, Mesela, Midega Tola, Beyeda, Janamora, and Tselemt.

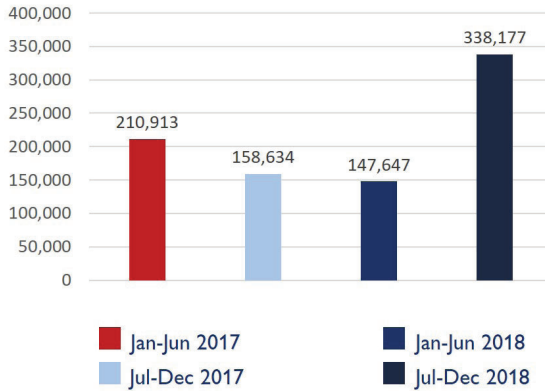


MARKET INTELLIGENCE USING GOGLA DATA

Sales and investment data from the Global Off-Grid Lighting Association (GOGLA) provide details on the off-grid solar sector in Ethiopia. Ethiopia's pico-solar sector has seen strong growth in the last few years. Most of the pico-solar sector's growth pertains to systems ranging in size from 0- to 1.5-watt-peak (Wp) systems.

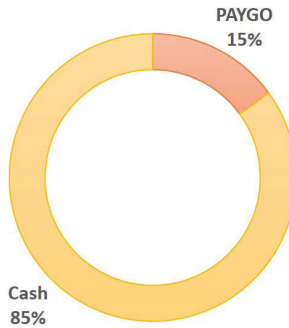
Sales of pico/SHS units

Jan 2017 - Dec 2018

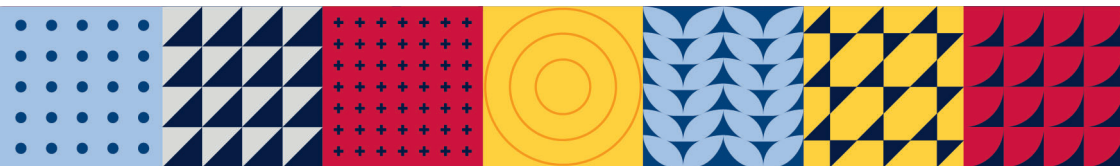


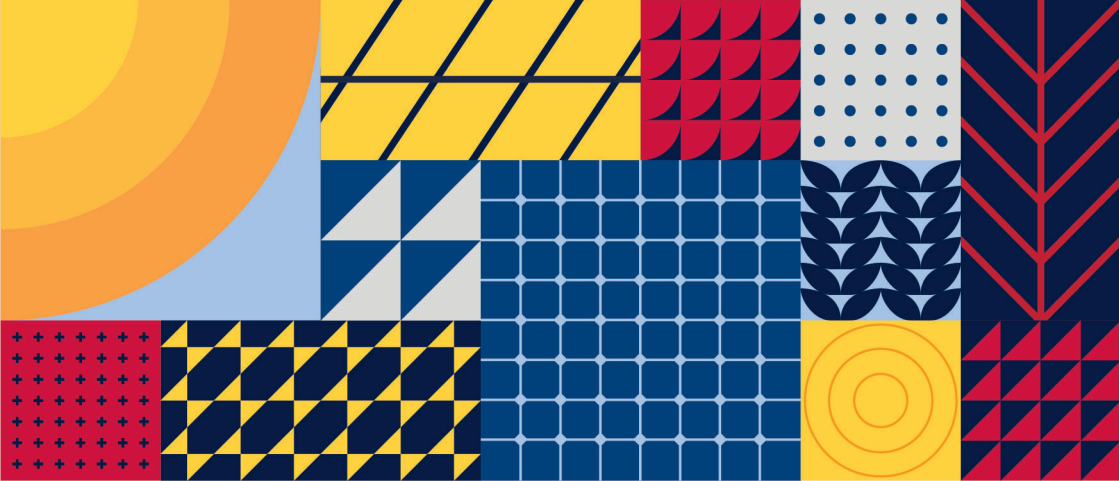
Sales by business model

Jul-Dec 2018



From mid-2014 to late 2017, portable lanterns with single lights or single lights with mobile charging (0–3 Wp) were the best-selling product in Ethiopia, followed by SHS (3–20 Wp). Companies have not sold systems with more than 21 Wp in Ethiopia. SHS sales have been steadily increasing. GOGLA estimates that solar market penetration is around 17 percent in Ethiopia, showing clear room for growth.





Power Africa aims to achieve 30,000 megawatts of new generated power, create 60 million new electrical connections, and reach 300 million Africans by 2030.



usaid.gov/powerafrica



PowerAfrica



PowerAfricaUS



Power-Africa

The information presented in this brief is not official U.S. Government information and does not represent views or positions of United States Agency for International Development (USAID) or the U.S. Government. The statements included here should not be construed as investment advice on behalf of either particular securities or overall investment strategies.