

**ENERGY
CATALYST**

Country Guide: Malawi

June 2020



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Malawi is a landlocked country in southern Africa that was formerly known as Nyasaland. It is bordered by Zambia to the west, Tanzania to the north and northeast, and Mozambique surrounding on the east, south and southwest. Lake Malawi takes up about a third of Malawi's area. Its capital is Lilongwe, and its commercial centre is Blantyre with a population of over 800,000 people. The name Malawi comes from the Maravi, an old name of the Nyanja people that inhabit the area.

Table 1: Malawi at a glance

Capital	Lilongwe
Total Area	118,484 km ²
Population	17.6 million (2018)
Official languages	English
Rural Population	83 %
GDP	US \$ 25 037 M (2019)
GDP Per Capita	US \$ 1234 (2019)
Currency	Kwacha (MWK)
Exchange rate 01/03/2020	1 GBP = 947.7 MWK
Exchange rate 01/03/2018	1 GBP = 997.3 MWK
Access to Electricity	12.7% (2017)
Urban electricity access	57.5%
Rural electricity access	3.7%



Figure 1: Map of Malawi. Source: d-maps

Climate

The climate of Malawi is typically sub-tropical with the rainy season occurring between November and May and the dry season for the remaining months of the year. Variations in altitude in Malawi lead to wide differences in climate. Mean annual temperature is 24°C. November is the hottest month, with temperatures reaching an average daily maximum of 29°C. July is the coolest month, with temperatures dropping to an average daily maximum of 23 °C. Most of the country is well watered, receiving 800–2,500 mm of rain, with some areas in the high plateaux receiving 3,500 mm p.a..

Economy

The economy of Malawi is predominantly agricultural, with about 80% of the population living in rural areas. In 2017, agriculture accounted for about one-third of GDP and about 80% of export revenue. The main economic products of Malawi are tobacco, tea, cotton, groundnuts, sugar and coffee. The economy depends on substantial inflows of economic assistance from the IMF, the World Bank, and individual donor nations. The government faces strong challenges: to spur exports, to improve educational and health facilities, to face up to environmental problems of deforestation and erosion, and to deal with the problem of HIV/AIDS.

Malawi is a member of the African, Caribbean and Pacific Group of States (ACP), African Union (AU), Common Market for Eastern and Southern Africa (COMESA), Non-Aligned Movement and the Southern African Development Community (SADC).

In the yearly World Bank survey on “Doing Business”, a comparison of business regulation in 190 economies, Malawi scores below the regional average for Sub-Saharan Africa. The 2020 edition of Doing Business ranks Malawi as 153 out of the 190 with a score of 77.9 out of 100 for the ease of starting a business. Figure 2 provides a comparison of Malawi to similar economies for starting a business.

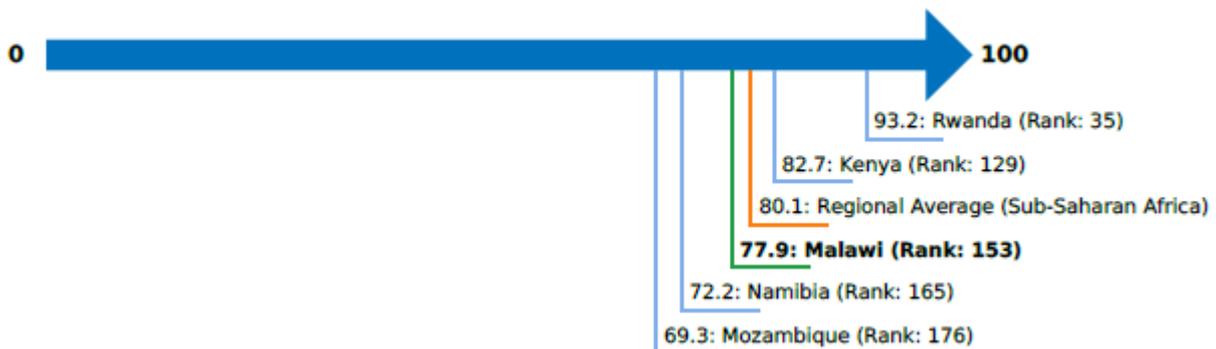


Figure 2: Doing Business 2020 score for starting a business. Data from: World Bank Group, 2020

The energy sector in Malawi

The country's current installed generation capacity is 482 MW, of which 75% is from hydropower resources and the remainder from diesel power, the latter in the form of emergency generation. Most of the country's hydroelectric power stations are situated in the Southern Region of the country, specifically on the Shire River, which makes power generation extremely dependable on the available water in this single river.

A new National Energy Policy (NEP) and Renewable Energy Strategy were launched in 2018 in parallel with Malawi's "Sustainable Energy for All" Action Agenda. These jointly outline strategies for increased deployment of renewable energy generation and the use of decentralised energy systems to support increased electricity access for underserved rural populations. Policy targets include access to electricity for every citizen in the country by 2030, and ensuring 100% of schools and health centres have access to modern, sustainable energy solutions by 2025. Given that 54% of Malawians live more than 5 km away from the national grid in peri-urban and rural areas, providing energy access for the 9 million people living there will most likely be achieved via more affordable and expeditious off-grid electrification. It is expected that micro-grids will play a significant role in implementing this policy and meeting the strategic objectives of increasing electricity access, evidenced with NEP targets of establishing at least 50 renewable energy micro-grids by 2025.

Table 2: Overview of actors in the energy sector

Institution	Role
Department of Energy Affairs (DOEA)	One of seven departments under the Ministry, which is responsible for all matters concerning the energy sector
Electricity Generation Company Malawi Ltd	National generation limited liability company
Electricity Supply Commission of Malawi	National transmission and distribution limited liability company
Malawi Bureau of Standards	Statutory organisation responsible for setting and enforcing standards on energy technology
Malawi Energy Regulatory Authority	Regulator in the power sector

Ministry of Natural Resources, Energy and Mining	Key policy-making institution in the Malawian power sector
National Resources and Climate Change Committee (NRPC)	Parliamentary committee responsible for oversight of energy affairs
Office of the President and Cabinet	Key decision-making institution, particularly on large-scale power projects

Small hydropower

In Malawi, small hydropower (SHP) is defined as plants with an installed capacity of less than 5 MW. Total installed capacity for SHP plants is approximately 5.6 MW, with an additional proven potential of at least 7.7 MW and a theoretical estimated potential of 150 MW. This indicates only about 4% of the country's known potential has been developed so far.

Currently there is one working SHP plant connected to the power utility grid with an installed capacity of 4.5 MW, run by ESCOM. There are other off-grid SHP plants that are also currently working: the Lujeri mini-hydropower plant with a capacity of 1 MW, the Mulanje Electricity Generating Agency (MEGA) with a capacity of 88 kW, and the Kavuzi mini-hydropower plant with a capacity of 10 kW.

In 2018, Practical Action received a grant from EEP Africa to develop the 300 kW Usingini hydro plant, which includes a mini grid with a coffee processing plant as an anchor client. It is expected that the plant will be commissioned in 2020.

Solar energy

The recent World Bank solar resource assessment qualifies Malawi as a country with highly feasible potential for PV power generation. The yearly sum of global horizontal irradiation for most of Malawi is in the range of 1680 to 2050 kWh/m². This translates to a specific yearly PV energy output in the range of 1350 kWh/kWp to more than 1700 kWh/kWp. The seasonal variability is smaller, compared to other countries further away from the equator.

Solar photovoltaic technology (PV) has been used over the last 10 years in the country and is recognised as a viable solution for improved electricity access. PV systems are particularly suited to a rural Malawian context, due to compounding economic and geographical factors such as limited rural coverage from the Malawian centralised grid, a mainly rural population, and low capital expenditure for PV system investment (when compared, for example, to the investment costs of a hydro mini grid).

Malawi's off-grid PV installed capacity (including Pico Solar Systems, SHS and mini-grid) has increased from 0.2 MW in 2007 to 10.4 MW in 2016. In 2012 there was an estimated 7000 PV systems present in the country, though many are known by practitioners to be not fully functional.

Biomass energy

Clean and efficient cook stoves are being promoted to reduce charcoal and firewood consumption. The Government has developed a National Charcoal Strategy covering the period 2017 to 2027, providing guidance on sustainable use of charcoal while promoting alternative energy sources for cooking and heating. A National Cook Stove Steering Committee was set to see to it that the country achieves a target of 2 million households with access to clean cook stoves by 2020, and 5 million by 2030.

The Government is promoting biomass briquette technology through training in stove and briquette production. UNIDO has in the past supported polythene tube biogas digesters for households for school lighting systems. With GEF support through UNDP, the Department of Environmental Affairs' Climate Change Proofing Project has installed biogas plants that are being used for cooking in Mangochi and Dedza prisons.

Currently, two sugar mills are able to generate electricity and feed into the grid. Although their combined potential is 62 MW, the current equipment is able to generate a maximum of 18 MW. At the moment electricity from bagasse is only available during cane-crushing season, for up to 200 days per year, as no

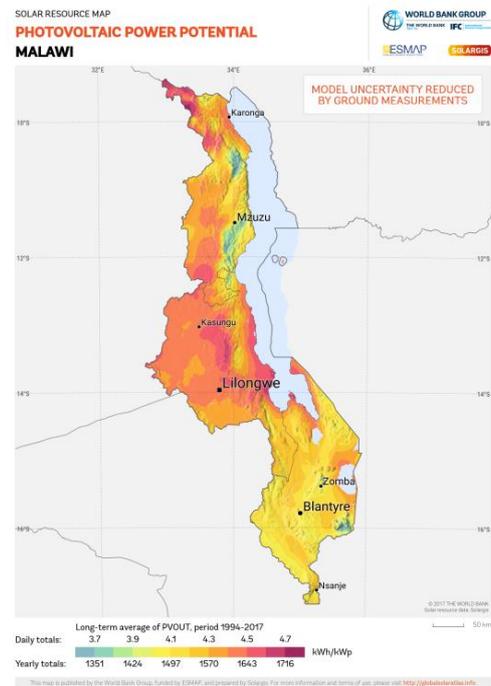


Figure 3: Solar resource Malawi (2019 The World Bank, Source: Global Solar Atlas 2.0, Solar resource data: Solargis)

bagasse is stored of off-season electricity production. Several new sugar schemes are currently being constructed, which could substantially increase electricity generation from bagasse in Malawi.

Malawi has two functioning ethanol distilleries: EthCo in the centre of the country, and PressCane in the far south. Each is located close to one of the country's two sugar mills. Malawi has an E20 blend mandate in place, although the blend rate enforced in practice is only 10% due to a shortage of the necessary feedstock molasses.

Wind energy

Malawi has potential for wind energy, with wind speeds averaging 2-7 m/s especially along the shores of Lake Malawi. A recent study on grid capacity indicates that development of solar and wind of 15 to 17 MW (dependent on location) could be accommodated across the network up to a maximum total capacity of 70 MW. However, with the exception of small-scale wind-powered water pumps, there is no wind-powered electricity generation both on-grid and off-grid at the moment.

Mini grid sector development

The mini grid sector in Malawi is relatively nascent compared to other Southern African countries. By 2018, Malawi had less than a dozen operating mini grids.

With an overall electrification rate of 11% (2016), the government plans to achieve at least 31% electricity access by 2030, with 83% output from renewable energy. The 2017 Renewable Energy Strategy and the NEP aim for the development of at least 50 micro-grids by 2025. The government has taken several steps to improve the enabling environment for private sector involvement in the electricity sector, though there is still much to be done.

Some of the mini grid specific elements include:

- Unbundling generation and distribution to allow for independent power producer (IPP) models
- Development of a feed-in tariff policy with differentiated feed-in tariffs for renewable energy projects
- Revision of the National Energy Policy with guidelines for the development and operation of mini grids, such as licensing, tariff structuring, provisions for the arrival of the main grid, and quality standards
- Introducing lifeline tariffs for low income households
- Setting up a Rural Electrification Fund to support on-grid and off-grid rural electrification projects; for private companies, priority will be given only to those with concession agreements, and projects looking to densify electrified areas
- Setting up a Renewable Energy Development Fund (REDF) to accelerate renewable energy utilisation
- A framework for mini grid development through a concession model, and procurement through a competitive bidding process
- Tax incentives for renewable energy equipment and appliance

Given the novelty of the mini grid sector in Malawi, the current policy framework for mini grids has yet to be fully developed and implemented in real life projects. There still remains a lot of room for policy reform and development, such as leveraging on existing funding to subsidise capital and/or operational costs for mini grids and developing an integrated master plan to inform development of electrification projects, among others.

Mini grids in Malawi have mostly been developed either by the government or development organisations, with most mini grids having a community ownership or co-ownership model. The following companies and organisations are active in the mini grid space in Malawi:

- Community Energy Malawi
- MEGA
- Practical Action
- The Catholic Church
- United Purpose (in partnership with the University of Strathclyde)

Table 3: Active support programmes in Malawi

Programme	Main activities
Malawi Electricity Access Project	<p>Funded by the World Bank (\$144 million debt, \$6 million grant) and implemented by the Ministry of Natural Resources Energy & Mining, and the Electricity Supply Corporation of Malawi. Funding will, up to 2025, support three main areas: grid electrification (\$105 million), off-grid electrification through an off-grid market development fund (\$30 million), and technical assistance and capacity building (\$15 million).</p> <p>The off-grid market development fund will provide financing through three windows: a working capital window for off-grid solar companies, a results-based financing window for off-grid solar companies, and a mini-grid window for mini-grid developers.</p>
USAID Power Africa Solar Home System (SHS) Kick-Starter Program for Malawi	<p>A three-year programme by USAID to accelerate uptake of quality solar products in Malawi. The programme has five main components: a \$1.5 million results-based financing facility to stimulate 150,000 new SHS connections; access to working capital for companies; technical assistance to solar companies; consumer awareness and education; and policy and regulatory reforms including improving fiscal incentives for solar products.</p>
Increasing Access to Clean and Affordable Decentralised Energy Services in Selected Vulnerable Areas of Malawi	<p>A \$4.8 million project implemented by the UNDP. The project aims to develop community based mini grids in partnership with local cooperatives and private companies in rural off grid areas.</p>
The GEF Small Grants Programme	<p>Managed by UNDP and the Global Environment Facility. The programme provides financial and technical support to projects across the world that conserve and restore the environment. Provides grants of up to \$50,000 directly to local communities.</p> <p>Focus in Malawi is on utilising solar PV systems in the milk cooling value chain, and utilisation of energy efficient appliances for fish processing.</p>

Table 3: Active support programmes in Malawi

AECF/REACT Household Solar programme	<p>A \$30 million fund by the Swedish government to support off-grid solar companies in electrifying rural communities.</p> <p>Funding support for SHS companies, mini grid companies, clean cook stove companies, innovative distribution models for off-grid energy, and innovative ideas to stimulate “next generation” approaches to renewable energy. Support is in the form of interest free loans, non-repayable grants, and technical assistance.</p> <p>Roll out to Malawi was done in the Round 1 call in 2017. Implementation is ongoing.</p>
The Green Mini Grid Help Desk	<p>Funded by the Africa Development Bank as part of the Green Mini Grid Market Development Programme (GMG MDP), and managed by Energy 4 Impact in partnership with INENSUS.</p> <p>Mini grid developers receive technical assistance, from support on demand assessments to technical sizing, capital raising, procurement and installation support, commissioning, and optimisation of operations.</p>
FEI OGEF	<p>A \$100 million blended finance debt fund managed by Lion’s Head Global Partners. Provides equity and debt to off-grid renewable energy companies to accelerate access to clean electricity in off-grid and underserved communities in Sub-Saharan Africa, and to involve local financial institutions in financing off-grid energy companies.</p>

Industry associations

Three industry associations are active in Malawi:

Renewable Energy Industries Association of Malawi (REIAMA) is a voluntary membership association established in 1999 to serve businesses, institutions and individuals dealing in Renewable Energy Technologies.

The **Cooperation Network for Renewable Energy in Malawi (CONREMA)** provides an exchange and learning platform for all stakeholders involved in the design, implementation and analysis of energy projects in the country or in related policies and strategies.

The **Solar Trade Association** supports, organises and champions the solar industry and industry associations.

References and further reading

Malawi Sustainable Energy Investment Study

<https://rmi.org/insight/malawi-study/>

World Small Hydropower Development Report Malawi

https://www.smallhydropower.org/fileadmin/user_upload/pdf/2016/Africa_Eastern/WSHPDR_2016_Malawi.pdf

World Bank Malawi Electricity Access Project

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Renewable energy mini-grids in Malawi: Status, barriers and opportunities

https://sunconnectnews.org/fileadmin/DATEIEN/Dateien/New/Eales_Unyolo_2018_Renewable_Energy_Mini_grids_in_Malawi.pdf

Malawi draft regulatory framework for mini grids (2018)

<http://conrema.org/wp-content/uploads/2019/01/MERA-Regulatory-Framework-for-Mini-Grids-2018.pdf>

Malawi National Energy Policy (2018)

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Assessing the market for solar PV microgrids in Malawi

https://sun-connect-news.org/fileadmin/DATEIEN/Dateien/New/JSR_1167.pdf

Doing Business - World Bank

<https://www.doingbusiness.org/en/data/exploreconomies/malawi>

Official UK Government travel advice for Malawi

<https://www.gov.uk/foreign-travel-advice/malawi>

Useful contacts

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