ENERGY
CATALYST

Country Guide: Malawi

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Country Guide: Malawi

Malawi (formerly known as Nyasaland) is a landlocked country in southern Africa located between latitude 9˚22'S and 17˚3'S and longitudes 33˚40'E and 35˚55'E. 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 total area. Its capital is Lilongwe, Malawi's largest city with 989,000 inhabitants, but its commercial centre is Blantyre with a population of over 800,000 people.The name Malawi comes from the Maravi, an old name for the Nyanja people that inhabit the area.

Table 1. Malawi at a glance	
Capital	Lilongwe
Total area	118,484 km²
Population	20.405 million (2022)
Official languages	English
Rural population	82%
GDP	US $ 12630M (2021)
GDP per capita	US $ 634.84 (2019)
Currency	Kwacha (MWK)
Exchange rate (as of 21/07/2023)	1 GBP = 1350MWK
Access to electricity	19% (2023)
Urban electricity access	54% (2023)
Rural electricity access	6.6% (2023)

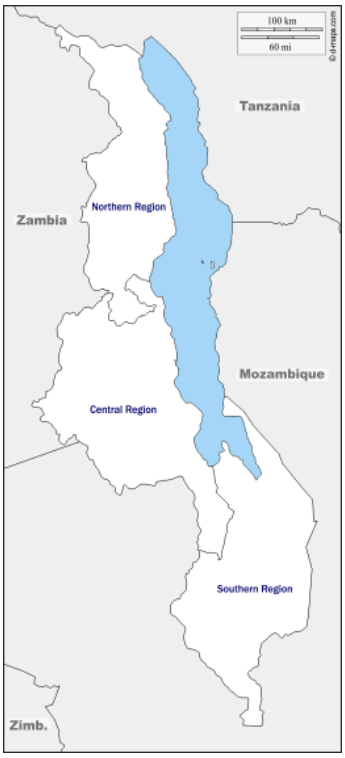

Figure 1. Map of Malawi. Source: d-maps

Climate

The climate of Malawi is typically subtropical with the rainy season occuring 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 annually, with some areas in the high plateau receiving 3,500 mm p.a.

Economy

With about 84.2% of the population living in rural areas, the economy of Malawi is predominantly agricultural. In 2021, agriculture, forestry and fishing accounted for about 22.7% of GDP and about 80% of export revenue. Led by tobacco, which accounts for 40% of the country's annual export earnings alone, the main economic products of Malawi are tea, cotton, groundnuts, dried legumes, sugar, coffee and maize. The economy depends on substantial inflows of economic assistance from the IMF, the World Bank, and individual donor nations. The government is currently contending with a deterioration in the macroeconomic conditions, which are largely attributed to the continued impacts of COVID-19 and the Russia-Ukraine war. Recent years have seen inflationary pressure, debt distress risk, and spiralling food costs, caused by rising prices for agricultural inputs like fertilisers, leading to food insecurity. The government responded by devaluing the Malawian kwacha against the US dollar by 25% in May 2022, dropping from 824.8 Malawi kwacha per US dollar to 1036.2 Malawi kwacha per dollar. In addition, the government has adopted fiscal consolidation to fund critical economic sectors like education and health while reducing expenditure in high capital sectors like infrastructure development. Other challenges Malawi faces include environmental problems of deforestation and soil erosion, and the complex healthcare commitments involved in tackling 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 now-discontinued annual World Bank ranking according to the 2020 edition of “ease of doing business”, a comparison of business regulation in 190 economies, Malawi scored below the regional average for sub-Saharan Africa. The 2020 edition ranked Malawi as 153 out of the 190 with a score of 77.9 out of 100 for ease of starting a business. Figure 2 provides a comparison of Malawi to similar economies for the ease of starting a business.

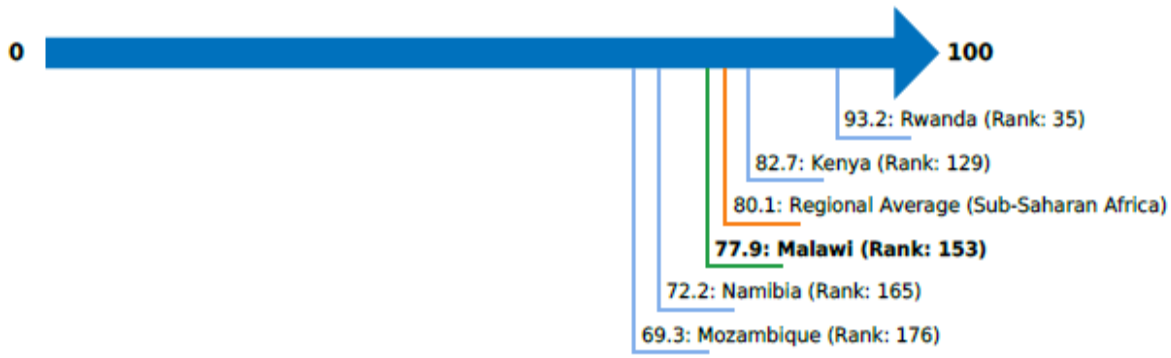

Figure 2. Source: World Bank Group, 2020

The energy sector in Malawi

According to the World Bank, over 16.5 million people in Malawi lack access to electricity as of 2023, out of a total population of 20.4 million. Since 2012, Electricity Supply Corporation of Malawi Limited (ESCOM), the national utility, has connected an average of 34,000 households annually, a rate of 2.8% of households in the nation each year. However, such gains are offset by the increases in population, which is growing annually at a rate of 2.9% according to United Nations Population Fund (UNFPA Malawi). The country's current installed generation capacity is 579MW against a peak demand of 700MW. Of these, 70.3 % is from hydropower resources, 9.1% from diesel power, 17.4% solar and 3.2% bioenergy. 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 reliant on the availability of water in this single river. This dependence increases the vulnerability of the electricity system to climate shocks and associated river regime flows.

In February 2022, Cyclone Anna damaged Kapichira hydroelectric power station, thus reducing generation to 129.6 MW, almost a third of its generation capacity at that point according to the Electricity Generation Company (Malawi) Limited (EGENCO). Malawi resorted to load-shedding as a coping mechanism, affecting households, businesses, and manufacturing sectors. As a stop-gap measure, the government engaged independent power producers (IPPs), most notably Aggreko, who generated power via diesel generators. They were subsequently deemed too expensive, and this arrangement was discontinued after a year. The government then made appeals for international donors to help fund the rehabilitation of the hydropower dam, as the works were too expensive to be met by the reduced exchequer. Malawi obtained a $60 million soft loan from the World Bank Group ($44.7 million for emergency dam restoration, restoring operations and increasing its resilience, and $15.3 million for repairs of the transmission and distribution network). The plant has now resumed operation in full.

The revised National Energy Policy (NEP) was launched in 2018 as a guidance document for the sector, setting the goal for universal access by 2030. In 2019, the Ministry of Energy (MOE) prepared a National Electrification Strategy (NES) in line with the NEP of 2018. The NES proposes a framework that guides the government towards accelerating electricity access to households and businesses at acceptable levels of quality in terms of consistent voltage and reliable frequency. It further defines how electrification expansion will be implemented, covering the institutional, policy and regulatory, and technical aspects of planning and financing for projects. The Integrated Resource Policy (2017-2037) sets out the roadmap for least-cost power generation, transmission, and distribution for 20 years.

These policy documents collectively outline strategies for increasing the deployment of renewable energy generation as well as 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 2030. Given that 54% of Malawians live more than 5km away from the national grid in peri-urban and rural areas, providing energy access for the 10.2 million people living in such areas 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 by NEP targets of establishing at least 50 renewable energy micro-grids by 2025.

In 2021, the MOE prepared the draft guidelines for Implementation of the National Electrification Program, which contains guidance on connection charge policies, provision of government financing, and the roles and responsibilities of government implementing agencies. The policy guidelines include criteria through which low-income households become eligible for free connections or a soft loan at zero interest to finance their connection to the grid. ESCOM is planning to introduce a cross-subsidy within the domestic category by allowing the initial 50 units of electricity per month be charged at a lower rate, thereby supporting the power needs of low-income families.

The Malawi government dissolved Power Market Limited (PML), a private off-taker, and handed over its functions to ESCOM. ESCOM has thus become the sole entity responsible for transmission and distribution of electricity. While pundits lamented the move at the time, arguing that it would exacerbate existing challenges in the power sector and worsen the macroeconomic difficulties, it lessened the bureaucracy occasioned with PML buying electricity from EGENCO and selling to ESCOM for distribution to customers, which often results to higher power tariffs.

According to the Annual Economic Report 2022[1] produced by the Malawi government, there has been a significant reduction in load-shedding during the financial year 2020/21 owing to an improvement in rainfall patterns, increased generation from solar farms and maintenance works in existing hydropower stations easing peak demand. ESCOM has also entered into 11 power purchase agreements, which will increase generation capacity by 328MW by the end of 2028. Additionally, there are a number of energy efficiency programmes that aim at managing demand and reducing system losses, with the latter improving over the last decade from 21% to between 17-18%. It is projected that energy efficiency and demand-side management will save around 40MW[2] of power annually.

Malawi is unlikely to reach its electrification targets by 2030 due to the cost associated with extending and densifying the grid, as well as deploying off-grid solutions like micro-grids and solar home systems. The total cost to achieve 5,420,754 new connections by 2030 is $3.63 billion, as reported in the Malawi Integrated Energy Plan (MIEP). According to the current budgeting of public finance, electrification targets are likely to be missed. Other factors that portend the slow implementation of policies include a lack of consistent political commitment, weak institutional capacity, bureaucratic procedures, and governance issues. However, private sector investment and end-user co-financing could be implemented to incentivise a faster deployment of solutions.

Table 2. Overview of actors in the energy sector

Institution	Role
Ministry of Energy (MoE)	To satisfy public need for quality modern energy services by effectively governing and facilitating the development of a robust, sustainable, and efficient private sector-driven energy industry.
Electricity Generation Company Malawi Ltd (EGENCO)	Company that generates electricity for Malawi by operating 4 hydropower stations: Nkula, Tedzani, Kapchira and Wovwe. Also generates power from thermal and solar plants.

[1] For a detailed account of the current status of power supply in Malawi, see chapter 7 on energy: psip.malawi.gov.mw/reports/docs/Economic_Report_2022.pdf.
[2] For more Information see Malawi section 7.1.2 on Demand Analysis and Planned Projects: psip.malawi.gov.mw/reports/docs/Economic_Report_2022.pdf.

Table 2. Overview of actors in the energy sector	
Electricity Supply Commission of Malawi (ESCOM)	Limited liability company involved in national transmission and distribution. Established in 1984 with the mandate to procure, transmit and distribute electricity in Malawi.
Malawi Bureau of Standards (MBS)	Statutory organisation responsible for setting and enforcing standards in energy technology.
Malawi Energy Regulatory Authority (MERA)	Regulator in the energy sector, through licensing, setting and approval of energy tariffs, compliance monitoring, development and enforcement of performance and safety standards for energy exploitation, production, transportation, and distribution.
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 5MW. The total installed capacity for SHP plants is approximately 7.6MW, with an additional proven potential of at least 7.7MW and a theoretical estimated potential of 150MW. This indicates that only about 4% of the country's known potential has been developed so far.

Currently there are two working SHP plants connected to the power utility grid: one run by EGENCO has an installed capacity of 4.5MW, and one run by Cedar Energy has 3.06MW. A plant at Mulosa River was commissioned in 2021 and is currently supplying power to southern Malawi.

There are other smaller-scale off-grid SHP plants that are also currently in operation: the Lujeri mini-hydropower plant with a capacity of 1MW, the Mulanje Electricity Generating Agency (MEGA) with a capacity of 300kW, and the Kavuzi mini-hydropower plant with a capacity of 10kW.

In 2018, Practical Action received a grant from EEP Africa and developed the 300kW micro-hydro mini-grid along the Zulunkhuni river. The mini-grid is managed by social enterprise Usingini Power Generation Company (UPGC), which supplies power to a coffee processing plant as an anchor client, whilst also supplying local coffee farmers, businesses and households.

Chipopoma Hydropower Project, a community-scale hydro power generating 50kW, began operations in 2018. It generates power that is used to mill maize within the community. Financing for the project was from the community and a local social enterprise. Owing to mismatches within their pipe system, the plant suffers occasional breakdowns.

In the northern region, the government initiated the Kavuzi mini-hydro power project, owned by the community through Kavuzi Electricity Generation and Supply Association (KEGSA), which generates 50kW in Nkhatabay District. With funding from Global Environment Facility (GEF) and UNDP under the 'Increasing Access to Clean and Affordable Decentralized Energy Services' project, the Kavuzi plant is earmarked for electrifying at least 500 homes and small businesses (SMEs), thereby serving approximately 2500 people.

The main challenge affecting the sustainability of Malawi SHP is they are community-owned and -managed, thereby lacking formality. When system components break down, it takes longer to rehabilitate the stations or obtain credit facilities from financial service providers, thereby posing a sustainability risk for long-term operations.

Solar energy

IRENA estimates Malawi had reached a cumulative solar capacity of 142MW by the end of 2021. Previous solar resource assessments confirmed the viability of solar power generation. The yearly sum of global

horizontal irradiation for most of Malawi is in the range of 1680 to 2050 kWh/m^2. 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 compounded 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).

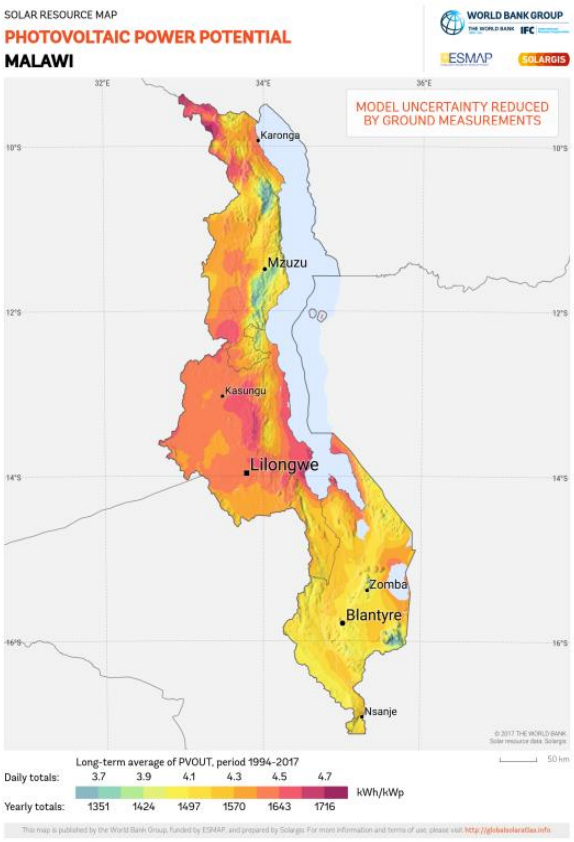

Figure 3. Solar resource map of Malawi (The World Bank, 2019)

Malawi's off-grid PV installed capacity (including pico solar systems, solar home systems (SHS) and mini-grids) has increased from 10.4MW in 2016 to more than 100MW in 2023. By the end of 2022, at least 400,000 solar home systems have been sold and two-thirds are currently functional, contributing 6% of access rates in the country. The faster pace of increases in the off-grid market is attributed to private sector operators like Yellow Solar, Vitalite, Solarworks and Zuwa, which have increased sale of high-quality SHS through Pay-As-You-Go (PAYG) contracts and fiscal policies that eliminate import duty, excise duty and value added tax (VAT) from 16.5%[3] on solar products and components, thus making the off-grid market more favourable for investors.

Some examples of newly installed capacity include Salima and Nkhotakota PV plants which contribute 81MW out of the 90MW increment, representing a 90% rise. Salima solar plant is a grid-tied 60MW utility scale photovoltaic plant contributing to the decarbonisation of electricity generation whilst promoting growth

[3] To find out more about the rate of VAT exempted on solar products, see the report Stand Alone Solar (SAS) Market Update: Malawi (ACETAF, 2021)

from increased energy access. It is a grid-tied 21MW solar power plant commissioned in February 2023 and the remaining phase will generate 17MW.

Other much smaller-scale PV projects include Sitolo solar-powered mini-grid, launched in 2019, which has an installed capacity of 80kW and is currently electrifying 149 households and businesses. The Likoma solar/diesel hybrid system generates 1MW, the Sokolo School system generates 6.6kW, St Gabriel solar diesel generates 150 kW[4] and Chipula energy kiosks generate an undisclosed volume. Other systems are community-scale solar systems that are off-grid by nature, such as the Muthembaji solar-micro grid, electrifying 60 homes and small businesses with 12kW.

The Mzuzu water treatment plant is powered by a 1.3MW solar and 4.5MWh storage system. This enables pumping and reticulation of water for more than 200,000 urban dwellers. The project was funded by the European Investment Bank with $2.99 million and expected to reach a power production output of 2.2GWh, avoiding 2000 tons of carbon dioxide in emissions.

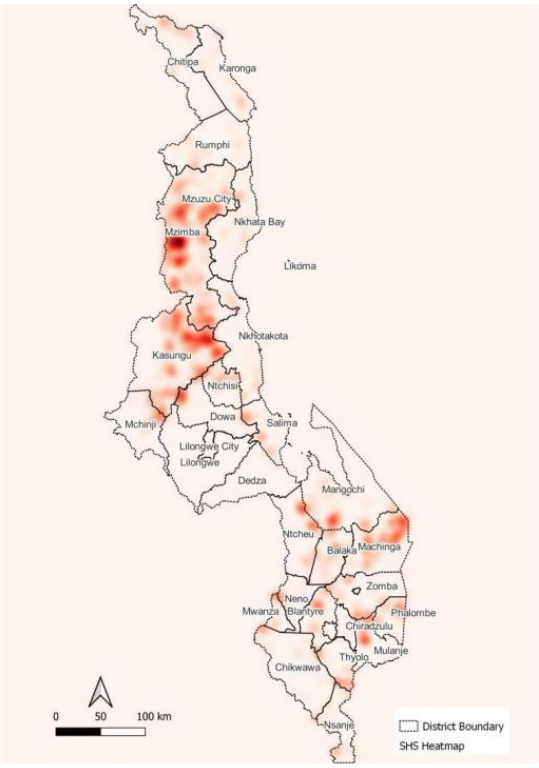

Figure 4. Solar resource map showing districts and areas where SHS would be deployed (SEforALL, 2019)

[4] For details of the St Gabriel solar project, see https://www.stgabrielshospital.org/healthcare-spectrum/infrastructure/

Region	District	Total Systems
Northern	Chitipa	37,590
Northern	Karonga	41,052
Northern	Nkhata Bay	29,495
Northern	Rumphi	30,244
Northern	Mzimba	108,677
Northern	Likoma	160
Northern	Mzuzu City	2,476
Central	Kasungu	81,267
Central	Nkhotakota	30,853
Central	Ntchisi	11,796
Central	Dowa	8,822
Central	Salima	21,783
Central	Lilongwe	16,034
Central	Mchinji	20,762
Central	Dedza	3,464
Central	Ntcheu	11,825
Central	Lilongwe City	-
Southern	Mangochi	32,355
Southern	Machinga	71,676
Southern	Zomba	61,990
Southern	Chiradzulu	9,864
Southern	Blantyre	26,992
Southern	Mwanza	13,833
Southern	Thyolo	34,774
Southern	Mulanje	20,247
Southern	Phalombe	25,347
Southern	Chikwawa	12,957
Southern	Nsanje	19,086
Southern	Balaka	39,529
Southern	Neno	14,075
Southern	Zomba City	-
Southern	Blantyre City	-

Table 3. Regions and districts with number of households where SHS would be deployed under the SDG scenario, according to the Malawi Integrated Energy Plan.

The Malawi Integrated Energy Plan has earmarked areas which cannot be served by either grid expansion, grid densification or mini-grids on account of higher than $2,000 cost per connection and recommended deployment of solar home systems. 37% of the population are deemed to qualify for electrification at least cost by solar microgrids. To attain SDG 5 by 2030, an additional 839,024 households have to be electrified through deployment of SHS as shown in Table 3. However, cost prohibitions will still be a barrier for some households installing SHS. Therefore, projects ought to be subsidised for realisation of targets.

Biomass energy

Clean and efficient cookstoves 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 Cookstove Steering Committee was set up to ensure that the country achieves a target of 5 million by 2030. 1,994,000 cookstoves were distributed under the initiative by 2020, just 6000 less than the target. It is anticipated that at least 5 million cookstoves will have been distributed by 2030.

The government realises the increased vulnerability that comes with the over-exploitation of biomass resources. The Ministry of Environment estimates Malawi loses 25,000 hectares of forest annually through unsustainable extraction of biomass for energy. Thus, efforts to reduce dependence on biomass resources for cooking is part of the drive to reduce the rate of deforestation, which is projected to increase as a higher population, estimated to reach 40 million people by 2040, exerts a higher demand.

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 and school lighting systems. With GEF support through UNDP, the Department of Environmental Affairs' Climate Change Proofing Project has installed biogas plants used for cooking in Mangochi and Dedza prisons. The project has since ended, but it continues to produce bio-fertilizers which enable them to harvest maize three times a year, adding to the nutritional security of inmates. Magonchi prison has reduced its wood-fuel demand, saving in excess of MK 7,760,001 ($7626 on July 2023 exchange rates) on fuel savings annually.

Currently, two sugar mills are able to generate electricity and feed into the grid. Although their combined potential is 62 MW, only Ilovo Sugar Company is capable of generating 18 MW for captive power needs and selling excess power to allied ethanol industries. At the moment, electricity from bagasse is only available during cane-crushing season, for up to 200 days per year, as no bagasse is stored for off-season electricity production. Several new sugar schemes are currently being constructed or already constructed; for example, the newly built Salima Sugar Mills crushes cane and manufactures sugar, meeting 15% of local demand. On top of job creation, sugar mills substantially increase feedstock for electricity generation from bagasse in Malawi, increasing the potential for enhanced rural electrification.

Malawi has two functioning ethanol distilleries: the Ethanol Company Limited (Ethco) in the centre of the country, and Press Cane Limited in the far south. Each is located close to one of the country's two sugar mills.

Malawi has an E20[5] blend mandate[6] in place, although the blend rate enforced in practice is only 10% due to a shortage of the necessary feedstock molasses. In 2021, a combined total of 14.9 litres of ethanol was produced and distributed to oil marketing companies for fuel blending. In 2022, Ethco invested $6.1 million in the construction of a 2MW[7] biogas plant from vinasse enabling it to control liquid waste (218 million litres annually) from the factory. The biogas will aid production at the ethanol distillery while dried sludge could be used as a soil additive, supplying potassium, nitrogen, phosphorus, zinc, and sulphur to degraded soils for improved agricultural production.

Wind energy

Malawi has significant potential for wind energy, with wind speeds averaging 2-7m/s, with stronger winds along the shores of Lake Malawi. A recent study on grid capacity indicates that development of solar and wind of 15 to 17MW (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 either on-grid or off-grid at the moment. 10 sites have been identified for across the country for development of wind farms, including Maoni, Lilongwe, Kindwe Lower Hills, Chikangawa, Magaga, Chitipa, Kapiri, Kumbawa, Kamphambale, Jonnathan and Nkula. Projects under construction include 50MW Droege wind farm project in Mzimba, which when finalised will generate 151MW in Dedza.

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, while currently 30 micro-grids operate in the country. 20 of these are community-scale micro-grids[8], powered by hydro, hybridised diesel-solar and solar technologies, ranging from 10kw to 10MW, which generate energy for utilisation within connected households and small businesses like barber shops, for hairdressing, phone charging, lighting, water pumping, irrigation and grain milling. The remaining 10 are mainly micro hydro constructed by Mulanje Electricity Generation Agency (MEGA) which supplies power to nearby tea factories and households.

[5] For more on fuel ethanol, see https://presscane.com/products/fuel-ethanol-99-5-v-v-alcohol-strength#:~:text=Malawi%20is%20among%20a%20few,Limited%20and%20TOTAL%20Malawi%20Limited.

[6] Meaning a blend of 80% petrol and 20% ethanol.

7 For more on this project, see https://www.maravipost.com/ethco-mk5-2-billion-project-to-produce-fertilizer-electricity/

[8] For an overview of community energy systems, see https://cesetproject.com/sites/default/files/An%20Overview%20of%20CES%20in%20Malawi_Nov21.pdf

These community-scale projects are promoting productive use of energy, thereby sustaining the growth of local economies. Community Energy Malawi (CEM) is planning to develop 80 more mini-grids by 2030 for communities to promote productive uses of energy.

The solar powered Sitolo 80 kW mini-grid exemplifies opportunities for leveraging mini-grids for rural electrification. By October 2022, 735 customers were already connected, with the possibility of increasing connections to 1200 and benefitting over 6000 people[9]. Through the initiative, at least 126,000 jobs are projected to be created across various value-chains and businesses.

With an overall electrification rate of 19% (2023), 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.

Through the Rural Energy Access through Social Enterprise and Decentralization (EASE) project, Muthembaji and Kudumbe in Dedza district are generating power for domestic and productive uses within a social enterprise framework, whereby the systems are owned by United Purpose UP and technical support including research is augmented by the University of Stathclyde. The project acts as a pilot for implementation of micro-grids in Malawi using the social enterprise framework. Muthembaji generates 11.5kW supplied to 60 customers while Kudembe 10.92 kW is distributed among 50 customers. Both employ smart meters for data collection, enabling informed decision-making with regards to reengineering of the current model to optimise the cost of set-up and operations.

Most of the 6 earlier diesel, solar and wind hybrid microgrids are not operational, as they were community-owned, thus contend with significant challenges at the operational stage arising from lack of clear governance structures. For example, Mthembaji micro-grid cables were vandalised in 2022, straining the grid and highlighting the need of community policing. Efforts to set up a village committee to oversee management has been dogged with local politics, amplifying the complexities of the community model and entrenching the vulnerabilities of the micro-grid system. In addition, the lack of proper handover of project sites to the community and lack of maintenance for the whole system has affected their robustness for providing rural electrification.

Some of the mini-grid-specific strategies include:

- Unbundling generation and distribution to allow for independent power producer (IPP) models.

[9] To find out more about this project, see https://miningtradenews.net/community-energy-malawi-to-develop-over-100-mini-grids/

- 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 waivers (import and excise duty) on solar products, lamps and fridges as presented in the February 2022 budget statement by the Minister of Finance.

Given the nascency 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. Regulations often only exist in draft form and policies are often disjointed across various acts and strategies which means the sector suffers from lack of clear guidance. Previous experience has shown that lack of policy guidance hinders communities from benefiting from quality connections. For example, most of the previous micro-grids are non-operational owing to design malfunctions, limited use options (such as lighting only) owing to poor quality of power supply, and lack of clear governance structures for optimal operation and maintenance. Despite these challenges, some projects have gone ahead, such as the community-scale micro-grids in Malawi developed by Kabvuzi youth, and 6 isolated mini-grid projects initiated by the government in Nkatha Bay, Mzimba, Nkohtakota, Ntcheu, Chiradzulu and Thylo. All of these mini-grids are non-operational due to technical breakdowns, due to the fact they are run on community ownership models without clearly defined governance structures.

There remains a lot of room for policy reform and development, such as leveraging existing funding to subsidise capital and/or operational costs for mini-grids, as well as developing an integrated masterplan to inform development of electrification projects, amongst other potential strategies. The draft mini-grid regulations set out requirements for approval and licensing, concession agreement, financing options, ownership arrangement and tariff guidelines. It further pegs approval on consistency to existing energy policy, energy strategy, and the rural electrification masterplan.

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
- Mulanje Electricity Generation Agency (MEGA)
- Practical Action
- The Catholic Church
- United Purpose (in partnership with the University of Strathclyde)
- Churches Action In Relief (Nyamvuwu, Chirrombo, Oleole and Mwalija with a combined installed capacity of 85kW)
- Government of Malawi

Some ongoing projects include:

- Bondo micro-hydro project
- Sustainable Energy for Rural Communities (SE4RC)
- Increasing Access to Clean and Affordable Decentralized Energy Services in Selected Vulnerable Areas of Malawi (by Government of Malawi)

Table 3. Active support programmes in Malawi	
Programme	**Main activities**
Malawi Electricity Access Project	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). 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. At least 280,000 households, small and medium enterprises, schools, and administrative buildings in close proximity to existing grid network will be connected up to 2025. These connections are anticipated to increase electrification rates to 32% by end 2024. However, this is unlikely owing to the slower pace of initiating new connections.
USAID Power Africa Solar Home System (SHS) Kick-Starter Program for Malawi	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. As of June 2021, 81,919 households had been electrified through solar home systems (SHS), with nearly 410,000 people having access to affordable, reliable, and clean energy. Project ended in 2021.
Increasing Access to Clean and Affordable Decentralised Energy Services in Selected Vulnerable Areas of Malawi	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. Project closed in October 2021.

Table 3. Active support programmes in Malawi	
The GEF Small Grants Programme	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. Focus in Malawi is on utilising solar PV systems in the milk cooling value chain, and utilisation of energy efficient appliances for fish processing.
AECF/REACT Household Solar programme	A $30 million fund by the Swedish government to support off-grid solar companies in electrifying rural communities. 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. Roll out to Malawi was done in the Round 1 call in 2017. Implementation is ongoing.
Facility for Energy Inclusion Off-Grid Energy Access Fund (FEI OGEF)	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.

Table 3. Active support programmes in Malawi	
Malawi Integrated Energy Planning Tool by SEforAll	Launched in October 2022, by the Government of Malawi, SEforAll and the Global Alliance for People and Planet. The tool can be accessed online thus providing an interactive platform to share the country's integrated energy plans for informed decision making towards advancing least cost access to electrification and clean cooking. The tool equally plans for refrigeration and cold storage needs. It quantifies $3.6 billion as investment needed to achieve electrification through grid extension and densification, mini-grids and solar home systems.
Malawi Energy Programme/Wala Malawi	A 4-year (2022-2026) technical assistance programme supporting the industrialization and diversification of the electricity sector by implementing reforms and promoting private sector investment. The project works to ensure policies, legal and institutional frameworks improve access and coordination between energy agencies, enhance governance and strategic planning of investments in the national grid, including securing financing for high priority projects, increasing diversification and productive use of energy with private sector participation, and increasing the participation of women and people with disabilities in the green and digital economies.
Rural Energy Access through Social Enterprise and Decentralization	Funded by the Scottish government with 1.3 million pounds and coordinated by the University of Strathclyde (UoS) with partnership of United Purpose Malawi (UPM), Community Energy Malawi and WASHTED. The project aims at increasing access to sustainable energy for rural communities in Dedza and Balaka, enabling local economic development and sustainable livelihoods.

Table 3. Active support programmes in Malawi	
EEP Africa - Wala	Funded by EEP Africa to the tune of EUR 200,000, Wala is a female-owned start-up specialising in distributing solar powered productive use equipment in the agricultural sector, that is meant to offer clean energy access and water for 660 rural populations in low-income communities. The project is envisaged to distribute 150 pumps and create at least 150 jobs for predominantly women, who will be transitioned from subsistence farming to agribusiness. Project began in 2022, and currently utilises the lease-to-own model for solar pumps.
Access to Clean and Renewable Energy (ACRE 2020-2023)	Funded through UNDP, GEF and Malawian government to the tune of $4.5 million, the goal of this project is to increase access to clean, safe, affordable, and modern energy by enhancing sustainability, efficiency and cost competitiveness of renewable energy technologies. It is expected the project will increase generation via small-scale mini-grids for productive use in rural areas, de-risk investment in the sector, improve access for health facilities and improve institutional governance in for continual research and development.
Green4Access	Supported by IKEA Foundation, CLASP and GreenMax Capital have introduced a blended finance risk mitigation tool for energy access enabling households to invest in home solar systems and appliances, deliver mini-grid installations and delivery at community health facilities.
Scaling Renewables in Malawi to Underpin Development	Launched in 2022 by GEAPP on the sidelines of the Malawi Integrated Energy Planning Tool launch, the programme seeks to support Malawi efforts at achieving universal energy access, whilst improving energy security and reliability, by 2030. The project is funded to the tune of $27.6 million with the funds earmarked for procurement and installation of battery storage to stabilise solar power.

Table 3. Active support programmes in Malawi	
Africa Mini-Grid Program	Malawi is one of the 21 Africa countries funded by the Global Environment Facility (GEF) in this programme implemented by UNDP. This is a technical assistance programme which catalyses the market for attracting private sector investment in the mini-grid sector to overcome financing challenges that inhibit growth of sector and its potential at electrifying Malawi. The programme seeks to electrify health facilities not connected to the grid. The initial co-financing for the program from both public and development sectors was $710 million[10]. It is expected that additional co-financing will be achieved as the project is implemented so that more facilities are reached. 3 types of mini-grids are piloted in this program namely greenfield mini-grid, hybridized diesel mini-grids and productive use overlays. Its implementation began in 2023 and is to run until 2027 and envisaged to impact 760 people with 51% of them being women[11].
Kick-Starter Program	As part of USAID's Southern Africa Energy Program, the Kick-Starter is a three-year initiative in Malawi launched in 2019 to incentivize market entry and scale-up of SHS companies through results-based financing (RBFs), operational support and access to working capital. Some companies who benefitted from the program include Solar Works, Vitalite, Yellow Solar and Zuwa Energy. The programme partners include local banks, SunFunder, Lion Head Global Partners, EnDEV and Maeve.
Malawi Energy Access Program	Financed by the World Bank and including on-grid, off-grid, and technical assistance components. The project aims to connect 170,000 people to the grid and 200,000 to off-grid solutions by end of 2024. Progress has been slow and only 10,000 connections had been made by ESCOM as of May 2022. The likelihood of missing the target with a bigger margin is rather high. Part of the TA component includes consumer awareness, support for efficient financial management, establishment of national off-grid solar product and conducting mini-grid feasibility studies.

[10] For more details, see https://www.undp.org/sites/g/files/zskgke326/files/2022-09/AMP-brochure-july-22-EN_0.pdf

[11] For more on this initiative, see https://www.undp.org/malawi/press-releases/malawi-kickstarts-new-gef-funded-initiative-scale-renewable-energy

Industry associations

Four 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.

National Association of Business Women (NABW) was formed In 1990 to uplift women socio-economically with its members participating in the green and inclusive energy project "Promoting inclusive development through the provision of modern, reliable and affordable energy solutions in Malawi". NABW provides a platform for advocating for gender mainstreaming in the energy transition, equity and harnessing of opportunities for women in the energy sector.

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Please contact your Client Relationship Manager if you want help with introductions to specific individuals with these institutions.