Malawi Sustainable Energy Investment Study Briefing Note

Introduction

Launched in November 2019, the Malawi Sustainable Energy Study was prepared in partnership with the Rocky Mountain Institute (RMI) and jointly commissioned by the Government of Malawi's Ministry of Natural Resources, Energy and Mining and UN-OHRLLS. Support for the study was also provided by the United Nations in Malawi. The project is funded by the 2030 Agenda for Sustainable Development Sub-Fund of the United Nations Peace and Development Trust Fund (UNPDF).

This study offers a roadmap for the energy sector to meet Malawi's national policy goals in electricity and clean cooking, reaching universal energy access and SDG 7 by 2030. It guides the Malawian Government, development partners, investors and the private sector to unlock investments in the energy sector. The study identifies least-cost pathways for developing this infrastructure and shows how US$3 billion of investment, from a range of sources, can make this possible.

Targets and investment needs

Today, around 12% of the population has grid access, and estimates suggest another 6-8% have access through off-grid systems. Outages are frequent, caused by insufficient generation capacity and unreliable infrastructure. Further, Malawi's dependence on hydroelectricity leaves it vulnerable when there is low rainfall, illustrated by extended load shedding in 2016 and 2017.

The government is committed to improving Malawi's energy infrastructure, aiming to connect 30% of the country to a reliable grid by 2030, and to give the remaining population access to solar lighting and charging systems. There is an opportunity to save $500 million by 2030 by updating the integrated resource plan to fully leverage renewable energy and battery storage. This optimal scenario reduces capital and operational expenditures while providing reliable power. It also saves nearly 20Mt of CO2 emissions.

Under this scenario, investment of $2.5 billion is required for the power sector by 2030, in order to triple generation capacity to 1200MW and add 1.2 million new on-grid connections, shown in Figure 1. The power sector investment includes power generation ($1400m), transmission ($350m), distribution ($500m), off-grid lighting ($130m), productive use-minigrids and stand-alone systems ($10m+) and demand side management ($70m). Investment is also required to increase use of improved alternative cooking solutions and to reduce deforestation and supply sustainable biomass, estimated at $600 million by 2030.

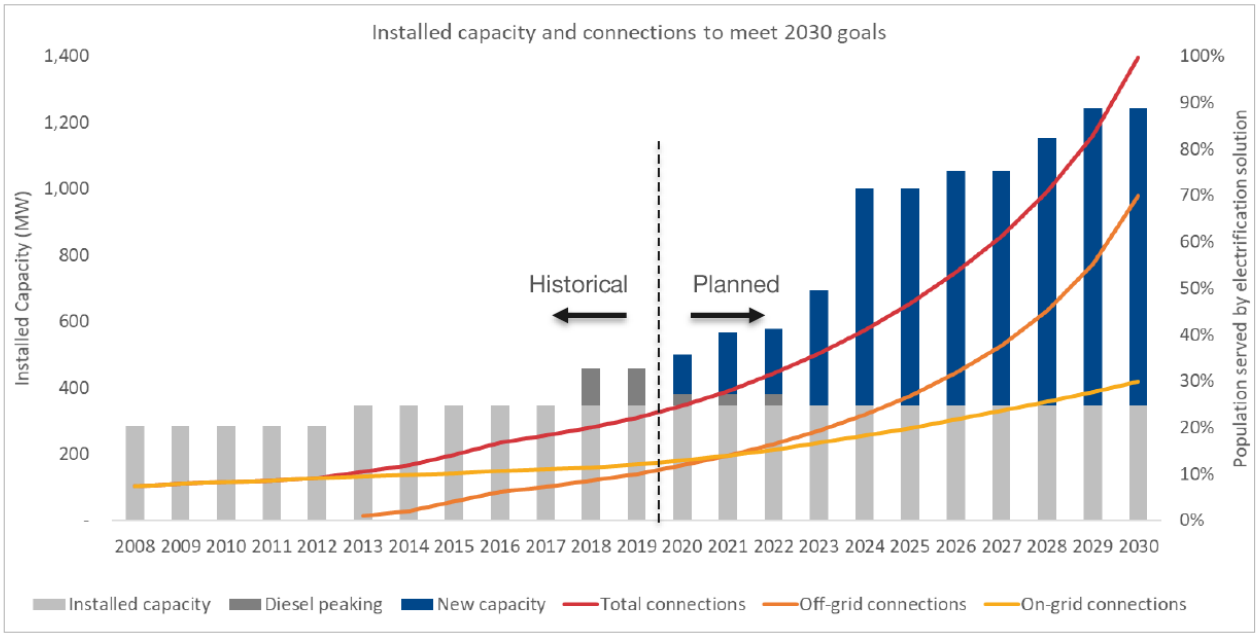

Fig 1: Historical and planned installed generation capacity and number of connections

Unlocking the finance

In order to enable this pathway and drive rapid improvement in Malawi's energy infrastructure, a few key steps must be taken.

1) National leadership in the power sector must drive the prioritization of projects through integrated planning and improved demand forecasts.
2) Quick-win projects must be implemented, to demonstrate progress and start improving power quality.
3) The electricity sector must be de-risked, to enable the entry of private capital, reduce the cost of finance for power projects, and reduce the need for project guarantees over time.
4) Funding must be sought from a range of areas, drawing on climate finance, concessional funding, private finance, and government spending.
5) Institutional frameworks must be strengthened, to support growth of the market.

For this to happen quickly and effectively, the Ministry of Energy will need to work closely with the Ministry of Finance, development partners, and investors.

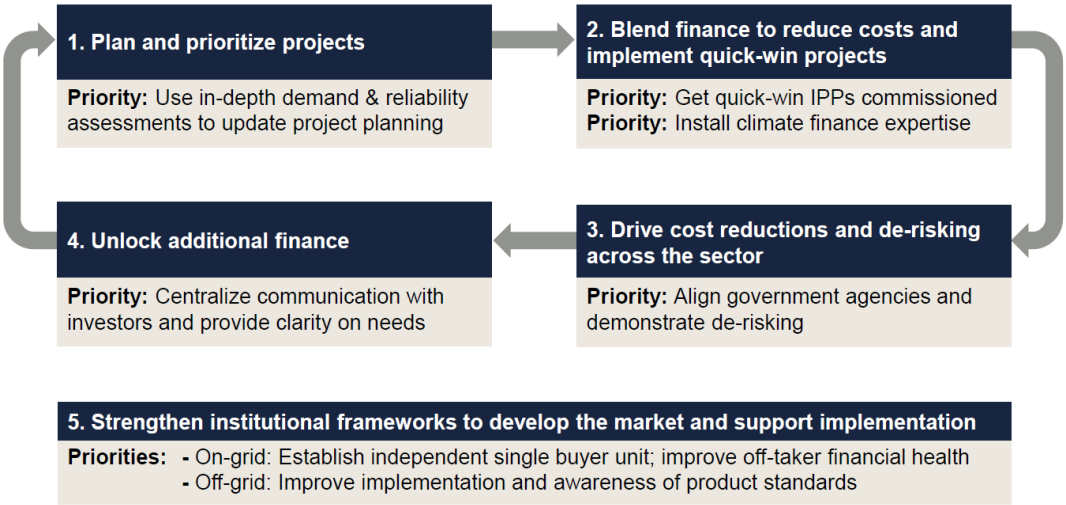

Fig 2: Five action areas for scaling up sustainable energy investment

What happens next

Drawing on the 2019 Study, UN-OHRLLS and RMI in close collaboration with United Nations in Malawi will continue to offer support the Government of Malawi as they seek to implement the recommendations of the study. This work will cover the following main activities:

1. Modelling power generation for resilience and baseload: expanding on the work in the 2019 Study, a user-friendly model will be developed, to demonstrate the costs of providing reliable, firm power from renewables and storage, as compared to other options. Climate change impacts on Lake Malawi which would affect hydropower availability will be incorporated into the power sector scenarios being modelled.
2. Investment expertise: support will be provided to the Government of Malawi to implement de-risking actions from the 2019 Study, identifying potential sources of finance and support for other recommendations of the study. This will include investigating requesting further climate finance advisory support.
3. Capacity building: the Ministry of Energy will be provided with support related to integrated system modelling, project investment appraisal approaches and greenhouse gas modelling for climate finance project requests.
4. Case study: as the Government's implementation plans become clear, a case study and briefing document on the Malawi experience will be prepared.