

A. Sector Analysis

1. Current situation and major challenges of the sector:

This paper focuses on electric power generation and its distribution system because these are the sub-sectors of the entire energy sector where JICA is actively involved in Malawi.

Malawi has a very low national electrification rate estimated at 12.4 percent - the lowest in the Southern Africa Development Community (SADC) region. Rural and urban electrification rates are estimated at 3.9% and 48.7%, respectively¹. The Electricity Generation Company Ltd (EGENCO) is the national generation company with an installed capacity of 441.95 Megawatts (MW) (March 2022). A total of 390.55MW is hydro-generated and 51.4 MW is from thermal diesel generators. This is against an estimated demand of over 529 MW².

In order to meet the fast-growing demand for energy, EGENCO has ambitions to increase generation capacity to 521.5 MW by 2024; 1,256.5 MW by 2029 and 1,631 MW by 2034.

While pursuing these targets, EGENCO suffered a big setback when in January 2022 the country was hit by Tropical Cyclone ANA, which damaged its 129 MW hydropower plant at Kapichira Power Station rendering it non-operational.

Recently, there have been reforms in the sector that have attracted Independent Power Producers (IPPs) and these are going to contribute towards accelerating the attainment of zero energy deficit within a shorter period of time. Worthy mentioning among the IPPs is the project by JMC Power limited which commissioned its 60-megawatt solar powered plant in October 2021.

Apart from the low energy generation capacity, there is also a problem of insufficient transmission and distribution facilities resulting in frequent power outages rendering economic and social development difficult.

Two natural challenges have emerged in the sector, namely: (i) effects of climate change which are leading to less rainfall in some years and therefore less water available for generating power while in some years there are heavy and violent rains that cause damage to electricity generation infrastructure; and (ii) environmental degradation. One of the causes of this environmental degradation is deforestation which leads to siltation of water intakes at hydropower stations.

Considering the challenges and future energy demand projections, the Government of Malawi (GoM) needs to develop a long-term power generation plan with emphasis on future energy mix. In addition, the development of a reliable transmission and distribution system is a must. This will help in reducing transmission and distribution losses.

2. Sector policy, strategic plan, priority areas:

In 2021, Malawi started pursuing a development vision for the next forty years: **Malawi 2063 (MW2063)**. Industrialization is one of the three pillars in the vision. The pillar recognizes the important role that energy plays in social-economic development. In recognition of this role, the

¹ Malawi Sustainable Energy Investment Study, September 2019, Rocky Mountain Institute, p.8

² EGENCO Strategic Plan (2018-2033) p.5 & p.19

GoM wants to “...continue investing in the energy sector beyond hydro, which is currently the main source of energy.Our aim is to reduce the current shortage in power generation that has led to frequent power outages and affected the growth of mining and industry production” (MW2063, page 19).

The country’s Energy Policy which was approved by cabinet in 2018 and launched in November 2019, has the following objectives, among others: (a) to improve efficiency and effectiveness of the commercial energy supply industries; (b) to improve the security and reliability of energy supply systems; (c) to increase access to affordable and modern energy services; (d) to stimulate economic development and rural transformation for poverty reduction.

The country’s policy and strategy in energy are aligned to the Sustainable Development Goal 7 which seeks to “ensure access to affordable, reliable, sustainable and modern energy for all”.

The sector has an Integrated Resource Plan (IRP: 2017-2037) developed in 2017 which puts together all planned projects in the sector. They include those to which funding has been committed as well as those still awaiting financing. The main targets for the GoM are: (a) to be able to generate and transfer sufficient energy to meet the growing demands (b) to increase access to electricity from the current 10% to 30% by 2020. (Malawi’s Mini IRP, 2016-2020) p9.

Due to financial challenges, ESCOM has not been able to meet the 8,000 annual connection target. In March 2022, ESCOM requested applicants for electricity to procure their own connection materials, if they can, in order to accelerate the speed at which they can be connected. This was done in order to reduce the backlog of connections that it has.

According to a 2018 study by **Power Africa**, an agency supported by **USAID**, Malawi needed to increase annual electricity connections from 8,000 then to 90,000 per year if the 2020 target of 30% electrification was to be attained. This entailed an increase in generation from the current 441.95 MW to 1,100 MW. The transmission network also needed to be increased to 5,000 km at an estimated cost of US\$ 1.1 billion.

3. Donor activities and commitments:

A number of donors have been working in the energy sector in Malawi through the following projects:

- **The World Bank** has committed about US\$ 150 million on Access to Electricity Project through which over 250,000 households will be connected by 2025. The Bank is also in partnership with other donors and the private sector in developing the 340 MW Mpatamanga hydropower project. The Bank will provide US\$50 million. The Bank, in conjunction with the European Union is supporting the Malawi-Mozambique Interconnector project. The project is in implementation phase.
- **The European Union** will provide US\$ 23 million to finance the Malawi-Mozambique Interconnector, of which US\$ 20 million is a grant, and US\$3 million is a loan to the Government of Malawi.
- **USAID** is assisting ESCOM and EGENCO in Capacity Building through training of engineers in preparation for the operation of 400kva Mozambique-Malawi and Southern Africa interconnector project.

- Other donors in the sector include the UNDP, UNICEF, GIZ, and Irish Aid, each with various components of technical and grant assistance.

4. Budget situation:

For the 2022/2023, the GoM has earmarked MK 2.1 billion (approximately US\$ 2.57 million³) as its contribution towards projects that will be implemented with support from development partners. The Rural Electrification (RE) Act (2004) makes provisions for the promotion, funding, management and regulation of rural electrification. Through the Act, the GoM created a RE levy which is collected through fuel sales. Using the levy, the GoM has been able to finance RE Program. The fund is now financing Phase VIII through which more than six hundred sites will be electrified.

5. Dialogue structure of the sector:

The launch of MW2063 has necessitated a review of the dialogue structure between the GoM, development partners and other stakeholders. While maintaining the same spirit of having Sector and Technical Working Groups, these groups have been re-organized in order to align them to Pillars and Enablers of MW2063. This being the first year of pursuing MW2063 vision, most of these dialogue structures are still in their infancy stage and are not fully operational. The energy sector will be part of the Economic Infrastructure Enablers Group.

B. JICA's Position

1) History of JICA's cooperation:

JICA has been supporting the Energy Sector in the areas shown below:

【Planning】

(Exp) Advisor for Electric Power Development Plan (2013 May - 2016 Mar)

【Generation】

(GA) The Project for Introduction of Clean Energy by Solar Electricity Generation System (Grant Agreement signed in February 2010)

(GA) The Project for Expansion of Tedzani Electricity Hydropower Station (Grant Agreement signed in March 2015)

(Regional) Data Collection Survey on Development of Small Hydropower Rural Electrification (2021 Jun - 2022 Mar)

【Transmission/ Distribution】

(GA) The Project for Improvement of Substations in Lilongwe City (Grant Agreement signed in October 2021)

【Renewable Energy】

³ Note: 1\$=MK817.00 (as of 1st April 2022, Standard bank Malawi)

(Study)⁴ Feasibility Survey for Electrification of Upland Villages by Micro Hydro-Solar Hybrid Power Generating System with Battery (2016 Dec - 2018 Feb)

JICA supported the Government of Malawi in constructing a 19.1 MW Tedzani IV Hydropower Station which was handed over to the Government of Malawi in June 2021. This was an important contribution to the GoM's vision of attaining 1,000 MW energy by the year 2025. The estimated cost of the project was MK 38.33 billion (approximately US\$ 46.9 million).

From mid-2022 to 2024, JICA will assist the GoM in rehabilitating and upgrading Old Town and Kanengo substations in the city of Lilongwe. This project will assist in improving distribution efficiency. Up to 99,000 new connections will be made possible once the project is completed.

As ongoing assistance, JICA provides capacity building through short and long-term training courses to Malawians in the sector. The courses are held either in Japan or online.

2) Major outcomes:

- **The Project for Construction of Tedzani IV Hydropower Station:** increased energy available on the grid and has assisted in ensuring supply stability.
- **The Project for Introduction of Clean Energy by Solar Electricity Generation System:** assisted in showcasing the potential of solar energy. Malawian students and organizations visit the site to learn. A Follow Up project will be implemented in 2022. The aim of the Follow Up project will be to assist in replacing malfunctioning components and improving the efficiency of the facility.
- **Advisor for Electric Power Development Plan** (Expert: 2013 May to 2016 Mar): assisted the Department of Energy to plan for a proper energy mix sustainable for the future.
- **Malawi Rural Electrification Promotion (MAREP) Project** (TC: 2006 Dec to 2009 Nov): assisted GoM officials to have hands on experience on how to implement MAREP.
- **Master Plan Study on Rural Electrification** (Study: 2001 Aug to 2003 Mar): the document assists in showing the economic potential of major trading centers in the country. This helps in planning the rural electrification program.
- **Advisor for Rural Electrification Plan** (Expert: 1999 Apr to 2002 Mar): assisted GoM officials in the preparation of MAREP Master Plan.

3) Lessons learned:

Positive lessons can be drawn from the previous cooperation activities by JICA as follows: (a) Technical skills transfer was effective after the Follow-Up Study (F/S) to MAREP. The GoM, on its own, has been able to implement successfully Phases VI to VIII of MAREP. (b) The GoM agreed to co-finance the Tedzani IV project when there was a shortfall in the budget. This is a demonstration of the GoM's commitment to the sector.

4) Cooperation Assets:

Having completed and handed over Tedzani IV hydropower plant, JICA's focus now is to rehabilitate and upgrade two substations in Lilongwe. The project started in July 2022.

⁴ (Exp) Expert, (GA) Grant Aid Project, (Study) Technical Cooperation for Development Planning, Private Sector Partnership, Data Collection Survey

5) Comparative advantage of JICA's Cooperation:

JICA stands out as one of the few donors in the sector who provide assistance in form of grants. For a resource-constrained country like Malawi, this aspect cannot be taken for granted.

Having taken a leading role in the preparation of the MAREP MP, JICA understands the challenges of planning and implementing rural electrification programs in Malawi with grid extension. In addition, JICA has established long working relationships with the implementing organizations of the MAREP i.e., the DoE and ESCOM.

6) TICAD process:

At the Tokyo International Conference for African Development (TICAD) 7 held in 2019 in Yokohama, Japan, delegates made the following commitment under Economic Diversification and Industrialization:

3.1. “We adopt {the theme} “Advancing Africa’s Development through People, Technology and Innovation” as the overarching theme for TICAD 7. This theme is fully aligned with the 2030 Agenda for Sustainable Development and the AU Agenda 2063, as well as the continental priorities for integration, as reflected in the flagship programs. These includethe Program for Infrastructure Development in Africa (PIDA), the Presidential Infrastructure Championing Initiative (PICI)....” (Yokohama Declaration 2019) p5.

The above commitment from TICAD 7 supports **Sustainable Development Goal Number 7**. In view of the commitment and the SDGs, it is clear that JICA is already on the right path to fulfilling the proposed goals in economic development. What is required is continuity of the efforts in the areas of cooperation where JICA has started to invest. The continuity will ensure that the assets that have been developed and those that will be developed in the sector are properly followed and maintained. In this regard, JICA could focus on the following targets:

- 1) Assist the GoM in constructing and rehabilitating infrastructure in the sector;
- 2) Align JICA's assistance with GoM's development strategies: MW2063; the National Energy Policy (2018); and the Integrated Resource Plan (2017 to 2037).
- 3) Transfer of expertise and know-how as well as capacity building of GoM officials in the energy sector through Knowledge Co-creation Program

7) Possible areas of Future Cooperation:

Japan's Country Development Cooperation Policy for Malawi focuses on 'Building a foundation for economic growth, taking into account climate change and urbanization'. It puts high priority on improving quality infrastructure that contributes to economic activities by stabilizing power supply in urban areas through Japanese cooperation. Based on the JICA's Development Cooperation Policy, cooperation in the energy sector can focus on the following areas:

- 1) Rehabilitation and upgrade of transmission and distribution facilities in urban areas in order to stabilize electric power supply and reduce transmission losses.
- 2) Capacity building programs for core staff in the energy sector through short and long term Knowledge Co-Creation Programme
gets connected to Mozambique and to the Southern African Power Pool.