

## A. Sector Analysis

### 1. Current situation and major challenges of the sector:

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

Malawi has a very low national electrification rate estimated at 12.0 percent - the lowest in the Southern Africa Development Community (SADC) region. It trails Madagascar and Mozambique which are at 23% and 24% respectively. Rural and urban electrification rates are estimated at 3.9% and 48.7%, respectively<sup>1</sup>. Installed generation capacity (as of October 2017) was 367.3 MW (350.8 MW being hydro and 16.57 MW thermal diesel generators run by the Electricity Generation Company (EGENCO) Limited against a peak demand of over 470 megawatts<sup>2</sup>. The main source of electricity is hydropower which generates about 95% of the power in this country. In order to meet the fast growing demand for energy, EGENCO has projected to increase generation capacity to 521.5 MW by 2024 to 1,256.5 MW by 2029 and to 1,631 MW by 2034. Three of the four hydropower generating stations are situated along the Shire River in the southern region of the country.

Apart from the low energy generation capacity, there is also a problem of insufficient transmission and distribution facilities. As a result, of all these problems, the country faces 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 and therefore less water available for generating power; and (ii) environmental degradation. One of the causes of this environmental degradation is deforestation which is leading to siltation of water intakes at hydropower stations.

The International Energy Agency (IEA), in its 2018 edition of The World Energy Outlook (WEO), projects that an increase in affordability for renewable energy, especially solar PV and wind may positively impact on energy policy in Malawi. With a set of low carbon emission, the government would positively develop power generation by installing renewables.

Considering the challenges and future projections, the following actions need to be taken in the energy sector.

- Firstly, the government needs to increase the rate of electrification for economic and social development.
- Secondly, in order to increase access to electricity so that the set target is met, it is necessary to produce sufficient power.
- Thirdly, the government needs to increase and strengthen transmission and distribution facilities.

This entails that prior to the development of power generation facilities, a long-term power generation development plan with emphasis on future energy mix is required. In addition, the development of a reliable transmission and distribution system is a must in order for the delivery

<sup>1</sup> Malawi Sustainable Energy Investment Study, September 2019, Rocky Mountain Institute, p.8

<sup>2</sup> EGENCO Strategic Plan (2018-2033) p.5 & p.19

of services and industrial activities to continue smoothly. It is also very important to decrease transmission and distribution losses in the system if the power supply is to be stable and efficient.

## 2. Sector policy, strategic plan, priority areas:

The third Malawi Growth and Development Strategy (MGDS III: 2017-2022) identifies energy as one of the Key Priority Areas (KPA). The country's Energy Policy 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 with the Sustainable Development Goal 7 which seeks to ensure access to affordable, reliable, sustainable and modern energy for all.

Based on the policy and the strategies, 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 in need of financing. The main targets for the Government of Malawi (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.

According to a 2018 study by **Power Africa**, an agency supported by **USAID**, Malawi needs to increase annual electricity connections from the current 8,000 to 90,000 if the 2020 target of 30% electrification is to be attained. This will entail an increase in generation from the current 417 megawatts to 1,100 megawatts. The transmission network will also need to be increased to 5,000 km at an estimated cost of US\$1.1 billion.

Through Millennium Challenge Corporation (MCC) Compact, the power sector was liberalized in order to let Independent Power Producers (IPPs) to take part in power generation. With the coming in of IPPs and through efforts by government and donors, there are a number of projects that may be implemented soon, especially in solar power generation. The immediate challenge will be how to effectively transmit and distribute the generated power since the transmission and distribution network is not good enough.

## 3. Donor's activities and commitments:

A number of donors have been working in Malawi in the sector in the following areas:

- **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. It is also partnering with other donors and private sector in developing the 340 megawatts Mpatamanga hydropower project. The bank will provide \$50 million dollars. As at November 2020, the project was in procurement phase.
- **The European Union** will provide US\$23 million to finance the Malawi-Mozambique Interconnector, of which US\$20 million is a grant, and the remaining US\$3 million is a loan to the Government of Malawi. As of November 2020, the project was in procurement phase of most of its components.
- Other donors in the sector include the UNDP, UNICEF, USAID, GIZ, and Irish Aid, each with various components of technical and grant assistance.

**4. Budget situation:**

The GoM does not contribute significant amounts of money to the development of the energy infrastructure through the national budget. It only contributes Part II to projects that are being financed by 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, GoM has been able to finance five phases of the RE Program where more than five hundred trading centers were electrified.

**5. Dialogue structure of the sector:**

Until 2017, there was no forum for dialogue among donors let alone between donors and government. In early 2018 USAID initiated a donor forum for the energy sector. The forum is yet to meet the government. Apart from this effort, the government, assisted by UNDP, proposed to have a form of sector working group where donors and government will meet and discuss sector issues. Its first meeting took place on 9<sup>th</sup> October 2018.

**B. JICA's Position**

**1) History of JICA's cooperation:**

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

	-06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	
Planning					(TC) Electric Power Dev.*1												
Generation														(GA) Tedzani Hydropower*2			
Transmission/Distribution															(GA) Lilongwe Substations*3		
Rural Electrification	(TC) Rural Electrification*4																
Environment Protection		(TC) COVAMS*5						(TC) COVAMS II*6									
Renewable Energy					(GA) Clean Ergy.*7												
								*8									
Private Sector												*9					

\*1 (TC) Advisor for Electric Power Development Plan

\*2 (GA) Project for Extension of Tedzani Hydropower Station (~2022)

\*3 (GA) The Project for Improvement of Substations in Lilongwe City (~2023)

\*4 (TC) Malawi Rural Electrification Promotion Project

\*5 (TC) Project for community vitalization and afforestation in the Middle Shire

\*6 (TC) Project for Promoting Catchment Management Activities in Middle Shire

\*7 (GA) The Project for Introduction of Clean Energy by Solar Electricity Generation System

\*8 (TC) Data Collection Survey on Geothermal Energy Development in Southern Africa (Malawi, Mozambique, Zambia)

\*9 (TC) Feasibility Survey for Electrification of Upland Villages by Micro Hydro-Solar Hybrid Power Generating System with Battery

JICA has been supporting the government through: (i) construction of an 18.3 megawatts Tedzani IV Hydropower Station which commenced in June 2018 and will end in September 2021. The estimated cost of the project is MK38.33 billion (approximately US\$50 million). (ii) Studying to rehabilitate and upgrade Old Town and Kanengo substations (iii) provides capacity building through short-term training courses to Malawians in energy related issues in Japan.

**2) Major outcomes:**

- **The Project for Extension of Tedzani IV Hydropower Station** (Grant Aid: 2018 to 2022): will increase energy available on the grid and assist in ensuring supply stability.

- **The Project for Introduction of Clean Energy by Solar Electricity Generation System** (Grant Aid: 2010 to 2013): assisted in showcasing the potential of solar energy. Solar energy can greatly assist in electrifying Malawi. Malawian students and organizations visit the site to learn.
- **Advisor for Electric Power Development Plan** (Expert: 2010 to 2015): assisted the Department of Energy to plan for a proper energy mix that would be sustainable for the future.
- **Malawi Rural Electrification Promotion (MAREP) Project** (Technical Cooperation: 2006 to 2009): assisted the government to have hands on experience on how to implement MAREP.
- **Master Plan Study on Rural Electrification** (Study: 2001 to 2003): the document assists in showing the economic potential of major trading centers in the country. This helped in planning the rural electrification program.
- **Advisor for Rural Electrification Plan** (Expert: 1999 to 2004): assisted in GoM officials in the preparation of MAREP Master Plan.

### 3) Lessons learned:

Positive lessons can be drawn from the previous assistances from JICA as follows: (a) Technical transfer was effectively done after the Follow-Up Study (F/S) to MAREP. It has been demonstrated that the GoM, on its own, has been able to successfully implement Phases VI and VII of MAREP and is now implementing Phase VIII. (b) There has been good retention of personnel in the DoE since most of the people who took part in the preparation of MAREP Master Plan and implementation of Phase V are still working in the department.

### 4) Cooperation Assets:

Apart from the construction of the Tedzani IV hydropower plant which is underway, there is no physical asset that JICA has provided to the energy sector. The MAREP Master Plan had a horizon of 2020 which means it is due for updating; in order to take into account recent socio-economic developments.

### 5) Comparative advantage of JICA's Cooperation:

JICA stands out as one of the very few donors in the sector which provide assistance in form of grants albeit using limited ceilings. For a resource-constrained country like Malawi, this aspect cannot be taken for granted and is a big bonus.

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. Department of Energy (DoE) and Electricity Supply Corporation of Malawi (ESCOM). This makes JICA a reliable partner in implementing the MAREP programs as one way of assisting the GoM to achieve its objective of increasing access to electricity from the current 10% to 30% by 2030.

## 6) TICAD process:

At the TICAD 7 held in 2019 in Yokohama, Japan, among others, 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 include .....the Program for Infrastructure Development in Africa (PIDA), the Presidential Infrastructure Championing Initiative (PICI),.....”**

The above commitment from TICAD 7 is supported by **Sustainable Development Goal Number 7** which states: “Ensure access to affordable, reliable, sustainable and modern energy for all”. In view of the above commitments from the TICAD 7 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 already started in the areas of cooperation where JICA has started to invest massively. The continuity will ensure that the assets 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 energy sector that ensures economic efficiency
- 2) Align JICA’s assistance with Malawi Government development strategies in this case the MGDS III; the yet to be launched National Energy Policy; and the Integrated Resource Plan
- 3) Transfer of expertise and know-how as well as capacity building of Malawi government 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. In addition, we consider that it is highly valuable to contribute to an increase in electricity supply volume that contributes to revitalizing industries in rural areas since “Promoting diversified and market oriented agriculture” is also our priority areas. Based on the JICA’s Development Cooperation Policy, cooperation in the energy sector will focus on the following three areas:

- 1) Expansion of hydropower generation facilities. (Increase in power generation)
- 2) Rehabilitation and upgrade of transmission and distribution facilities in urban area to stabilize electric power supply and reducing transmission loss which also result in contributing to improvement of ESCOM’s financial situation. (Stable power supply in urban areas as well as improving financial management of power utility)
- 3) Improvement of efficiency of Japan’s cooperation through encouraging participation of private enterprises in the power sector.
- 4) 2 cases of data collection survey, one for micro hydro power generation and rural electrification, the other for improvement of access to electric power in sub-Saharan countries in Africa region are conducted to collect essential information of energy sector of Malawi.