



COUNTRY REPORT FOR MALAWI
JICA TRAINING CENTER, TOKYO, JAPAN
BY
AUSTIN PATIKANI THEU
DEPARTMENT OF ENERGY AFFAIRS

31ST MAY, 2016



GENERAL COUNTRY INFORMATION

2

- **Malawi is situated in South-East Africa and is a land-locked country.**
- **Occupies 118,484 square kilometers with an estimated population of 17,419,395 (2015 est.).**
- **Bordered by Zambia to the northwest, Tanzania to the northeast, and Mozambique on the east, south and west**
- **Capital city is Lilongwe and English is the country's official language**
- **Gained independence from the United Kingdom in 1964**

GENERAL COUNTRY INFORMATION

3



GENERAL COUNTRY INFORMATION

- The country identified energy as a priority sector in order to address developments in other sectors such as Agriculture and Industry
- Has the lowest installed electricity generation capacity and electricity access at around 10% in the SADC region
- The government is committed to improving the security and reliability of energy supply through implementation of a number of development projects which are aimed at increasing the installed capacity and expansion and strengthening of the electricity network

CURRENT ENERGY POLICY AND MEASURES

1. National Energy Policy (2003)

- Has outlived its life span and currently finalizing its review together with other associated legislations
- A draft Energy Policy(2016) in place awaiting national validation by stakeholders

2. Legal Instruments

- i. Energy Regulation Act (2004)
- ii. Electricity Act (2004)
- iii. Rural Electrification Act (2004)
- iv. Liquid Fuels and Gas Act (2004)



PAST ENERGY DEMAND AND SUPPLY STATISTICS

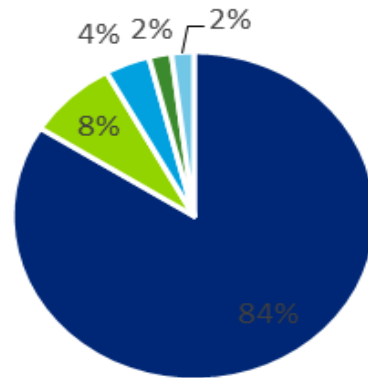
6

| YEAR | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Installed Hydro Capacity (MW) | 245.85 | 245.85 | 245.85 | 265.85 | 285.85 | 285.85 | 285.85 | 285.85 | 285.85 | 285.85 | 351 |
| Maximum (Peak) Demand (MW) | 212.5 | 231.69 | 241.7 | 251.03 | 241.88 | 259.67 | 273.01 | 277.75 | 277.88 | 279.73 | 323.91 |
| Energy generation (GWh) | 1,179.30 | 1,368.83 | 1,390.81 | 1,453.06 | 1,543.00 | 1,642.02 | 1,809.17 | 1,871.88 | 1,911.51 | 1,828.2 | 1,906.51 |
| Number of Consumers | 128,396 | 155,589 | 163,147 | 164,795 | 175,157 | 189,166 | 194,459 | 205,045 | 218,164 | 238,211 | 269,469 |
| Consumption Domestic (GWh) | 308 | 389.91 | 418.60 | 434.63 | 461.56 | 502.08 | 571.56 | 593.85 | 596.10 | 577.65 | 614.20 |
| General (GWh) | 149 | 182.54 | 183.78 | 197.55 | 213.73 | 226.16 | 253.70 | 250.43 | 244.47 | 214.96 | 183.26 |
| Power Demand (GWh) | 483.4 | 490.24 | 502.76 | 512.17 | 527.08 | 577.84 | 580.76 | 612.23 | 604.88 | 613.82 | 639.27 |
| Export (GWh) | 6.5 | 8.6 | 10.2 | 11.85 | 17.17 | 15.94 | 20.66 | 19.08 | 21.1 | 23.82 | 23.62 |
| Total Consumption GWh) | 946.9 | 1071.29 | 1115.34 | 1156.2 | 1219.54 | 1322.02 | 1426.68 | 1475.59 | 1,466.52 | 1,429.68 | 1460.35 |



PAST ENERGY DEMAND AND SUPPLY STATISTICS

Biomass Consumption in Malawi



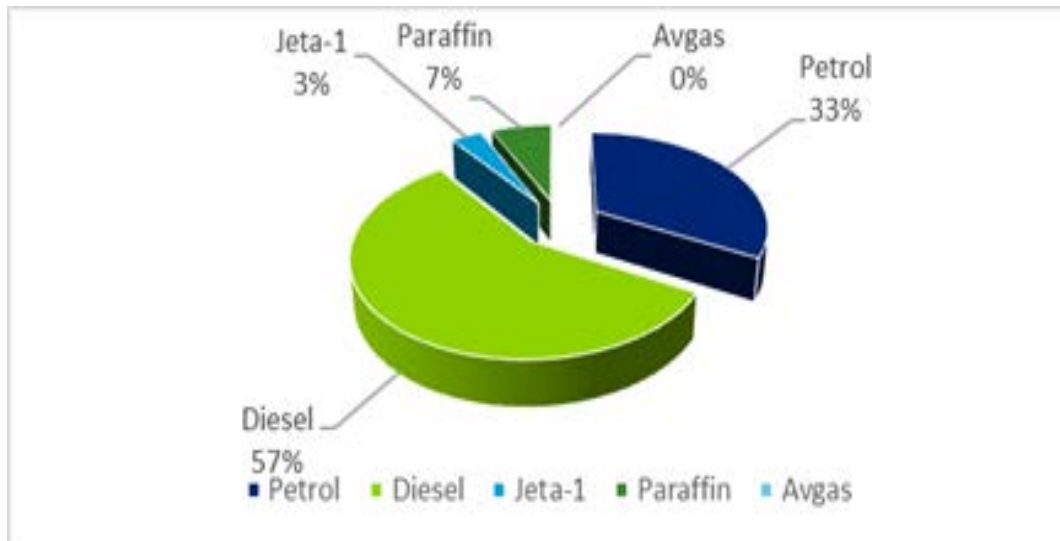
- Households
- Agriculture and Natural Resources
- Transport
- Industry and Mining
- Other Social Services

PAST ENERGY DEMAND AND SUPPLY STATISTICS

8

Supply of Petroleum Products in Malawi

- Malawi imports all its petroleum requirements through Mozambique and Tanzania.
- The daily fuel demand for the country is 1.124 million litres.
- The dominant petroleum products used are diesel and petrol as shown in figure below.



OUTLOOK OF ENERGY DEMAND AND SUPPLY FOR MALAWI

- Malawi is one of the least electrified countries in the world with just 10% of the overall population connected to electricity
- Biomass is the dominant fuel for cooking both in the urban and rural areas
- Biomass is projected to remain dominant in the country's energy mix, but its contribution will significantly decrease from over 90% in 2000 to below 50% by 2030 as shown in the figure below.



OUTLOOK OF ENERGY DEMAND AND SUPPLY FOR MALAWI

10

Energy Mix Projections 2000 – 2050

| | 2000 | 2010 | 2020 | 2050 |
|--------------|------|------|------|------|
| Biomass | 93 | 75 | 50 | 30 |
| Liquid Fuels | 3.5 | 5.5 | 7 | 10 |
| Electricity | 2.3 | 10 | 30 | 40 |
| Coal | 1 | 4 | 6 | 6 |
| Renewables | 0.2 | 5.5 | 7 | 10 |
| Nuclear | 0 | 0 | 0 | 4 |
| TOTAL | 100% | 100% | 100% | 100% |

ENERGY DEMAND SITUATION

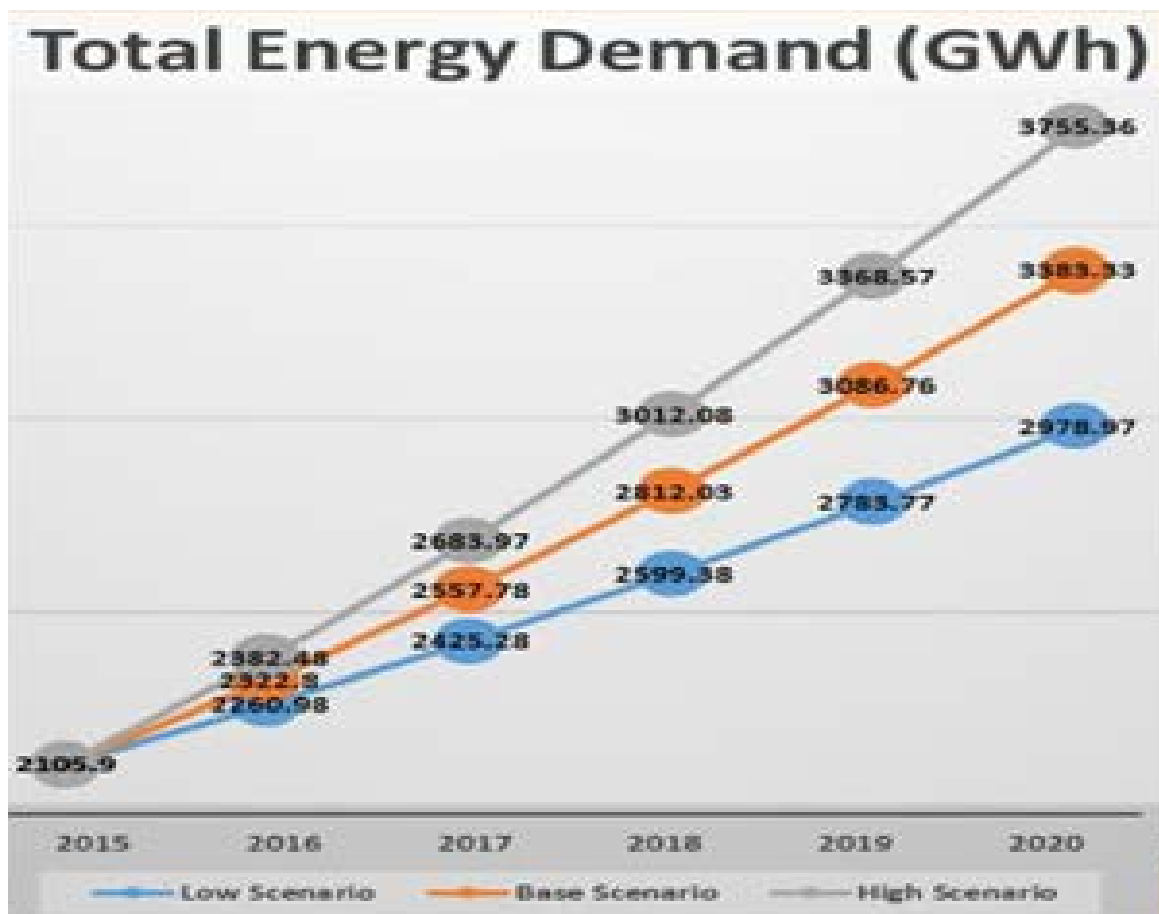
11

- The current suppressed electricity demand in the country is around 400 MW against the total generation capacity of 351 MW giving a deficit of around 49 MW
- Recent studies done by Government and ESCOM shows that the total electricity use in the country increases from 2105.9 GWh in 2015 to 2978.97 GWh in 2020 for the Low Scenario and to 3383.33 GWh and 3755.36 GWh for the Base and High Scenarios respectively as shown in the figure below.



ENERGY DEMAND SITUATION

Total Energy Demand (Gwh)

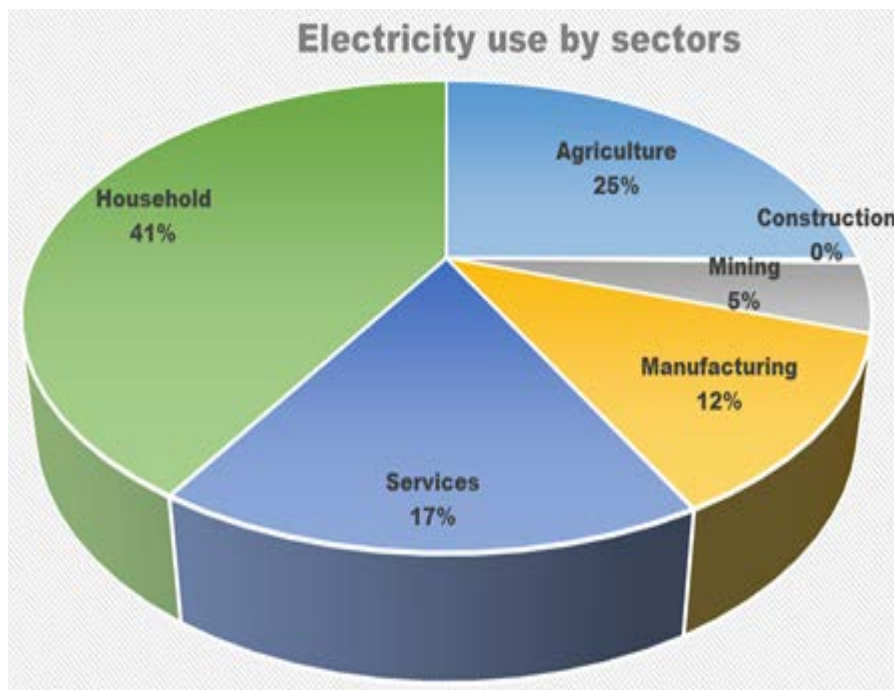




ENERGY DEMAND SITUATION

➤ ELECTRICITY CONSUMPTION BY SECTOR

Electricity consumption in Malawi is mainly dominated by the household sector at 41% as shown in the figure below.





ENERGY DEMAND SITUATION

14

ELECTRICITY DEMAND GROWTH DRIVERS

- Mining Sector (800MW)
- Manufacturing and processing (700MW)
- Domestic Demand (700MW)
- Service Sector (500MW)
- Green Belt Irrigation Initiative (130MW)

Among other strategies in place to meet this demand, GOM is planning to develop additional power stations from different sources

ENERGY SUPPLY OPTIONS AND RESOURCES

15

1. FOSSIL FUELS

- Coal
- Hydrocarbons
- Uranium

2. RENEWABLE ENERGY RESOURCES

- Hydro-Malawi's electricity system is currently 100% fed from renewable energy resource, hydro in particular and 99% from one river (shire)
- Wind-speeds of 2-7m/s

ENERGY SUPPLY OPTIONS AND RESOURCES

- **Solar-8 to 12 sunshine hours per day of round 244w/m²/day. The total available solar energy potential estimated at 356,284,837MWh/year**
- **Biomass- Main source of energy for cooking at 97% of primary energy consumed in the country**
- **Geothermal- over 60 hot springs documented in Malawi with maximum surface temperatures recorded at 79° C**

CHALLENGES FACED IN FORMULATING ENERGY POLICIES

17

- **Inadequate Human Resources**
- **Nonexistence of National Energy Data Base**
- **Inadequate Funding for The Energy Sector**

SUBJECTS OF INTEREST

18

- **Survey Techniques for Energy Data Collection**
- **Construction of Energy Mixes and Balance Tables**
- **Energy Supply and Demand Forecasting**

THANKS FOR
LISTENING
ZIKOMO
KWAMBIRI
ARIGATO