

# THE UNITED REPUBLIC OF TANZANIA MINISTRY OF ENERGY



## COUNTRY REPORT



**PREPARED  
BY  
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# General information



**Official Name:** United Republic of Tanzania

**Location:** Tanzania is located in Eastern Africa between longitudes 29 and 41 East, and latitudes 1 and 12 south.

**Total Area:** 947,300km<sup>2</sup>

**Capital City:** Dodoma (legislative) & Dar es Salaam (executive)

**Official Language:** Swahili and English

**Population:** ~ 53M (growth 2.7%)

**Climate:** Varies from tropical to arid to temperate.

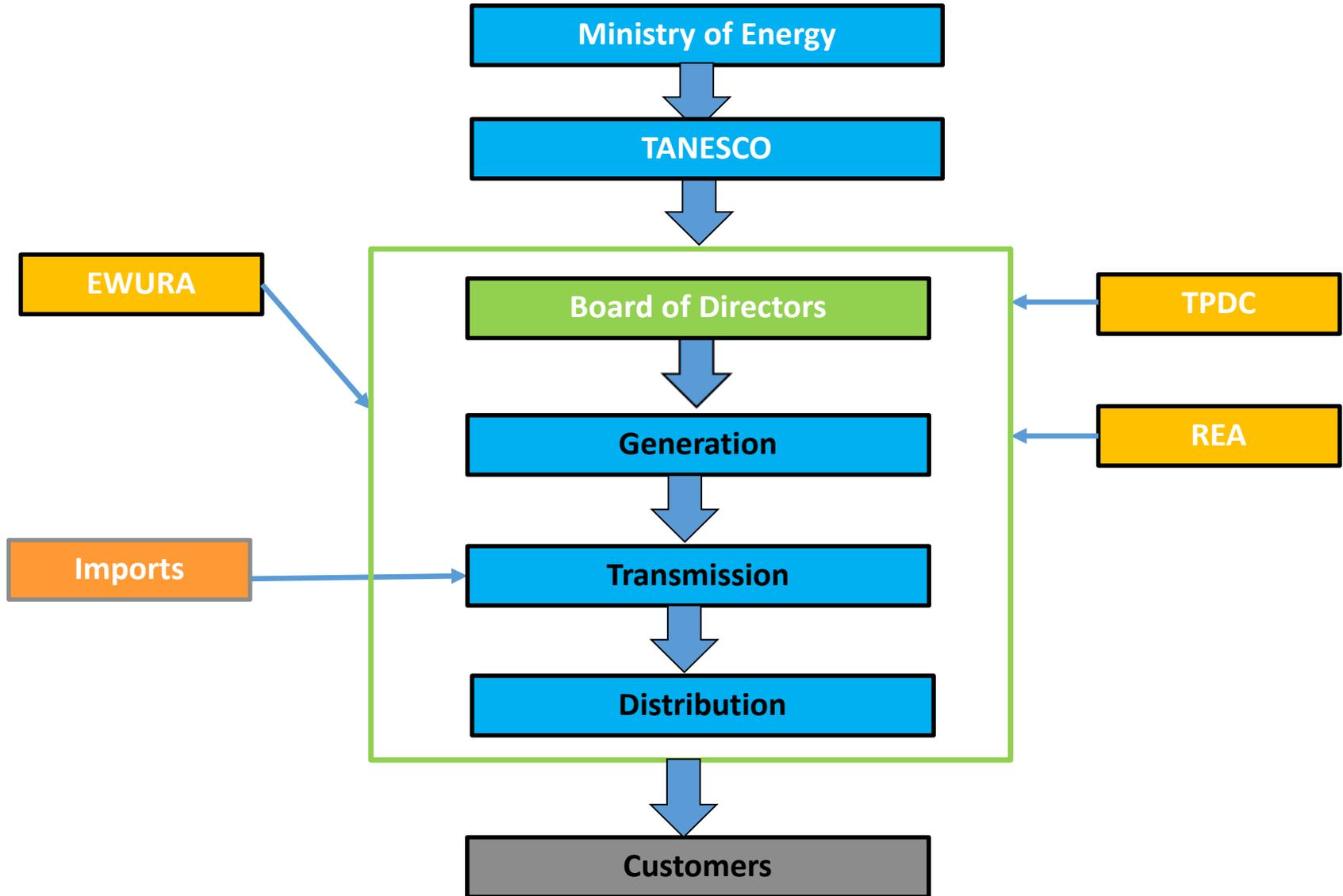
**Currency:** Tanzanian Shilling (TZS)



# Economic Indicators

| INDICATOR   | MEASURE             |
|---|---------------------|
| Total Population (million - EST)                    | ~ 53M (growth 2.7%) |
| GDP (USD Billion)                                   | 48 (growth 7.1%)    |
| GDP Per Capita (USD)                                | 1,038               |
| Employment to population ratio                      | 77.8%               |
| Unemployment Rate                                   | 10.3% (15+ yrs)     |
| Underemployment Rate                                | 11.8% (15+ yrs)     |
| Number of Households                                | ~ 9,362,758         |
| Average Household size                              | 5 people            |
| Total Life Expectancy                               | 61.8yrs             |
| Total Fertility Rate (number of children per woman) | 5.2                 |

# Organizational Structure



# INSTITUTIONAL, LEGAL AND REGULATORY FRAMEWORK GOVERNING THE POWER SECTOR IN TANZANIA

## Institutional

- ❑ **TANESCO:** Responsible for power generation, transmission and distribution
- ❑ **REA:** Responsible for provision of modern energy to rural areas
- ❑ **TPDC:** National Oil Company
- ❑ **EWURA:** Energy and Water Utilities regulator
- ❑ **PURA:** Petroleum Upstream Regulator
- ❑ **PBPA:** Petroleum Bulk importation Coordinator
- ❑ **TGDC:** Geothermal promotion company

## Legal and Regulatory

- ❑ The National Energy Policy, 2015
- ❑ The Model Power Purchase Agreement, 2015
- ❑ The Petroleum Act, 2015;
- ❑ The Model Production Sharing Agreement, 2013;
- ❑ The Standardized Power Purchase Agreement and Tariffs (<10MW) (2008);
- ❑ The Electricity Act, 2008;
- ❑ The EWURA Act, 2001;
- ❑ The Rural Energy Act, 2005;
- ❑ The Electricity Supply Reform Strategy and Roadmap 2014 - 2015
- ❑ The Electricity (Market Reorganization and Promotion of Competition ) Regulations, 2016
- ❑ Occupational Safety and Health Act, 2003
- ❑ Environmental Management Act, 2004
- ❑ Public-Private Partnership Policy, 2009
- ❑ Public-Private Partnership Act, 2010 and its Regulations (2011)

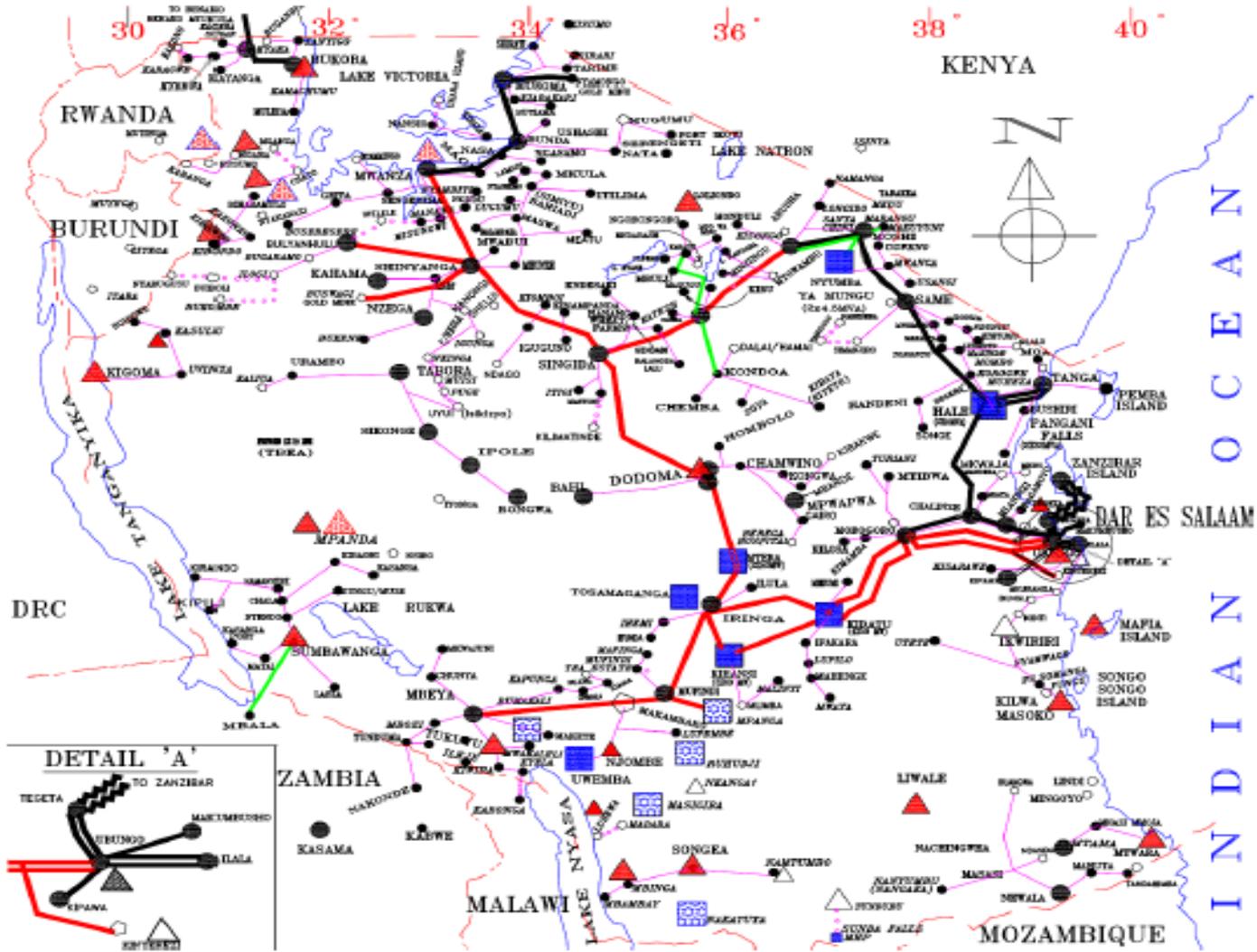
# Energy Situation in Tanzania

| INDICATOR  | MEASURE   |
|--|---|
| Total Grid Installed Capacity  | 1517.47MW   |
| Grid installed capacity  | 1435.56MW   |
| Off-grid installed capacity plus imports   | 81.91MW   |
| Generation mix <ul style="list-style-type: none"> <li>➤ Hydro power</li> <li>➤ Natural gas</li> <li>➤ Heavy Fuel Oil and Diesel</li> <li>➤ Biomass and cogeneration</li> </ul> | <ul style="list-style-type: none"> <li>➤ 567.7 MW (43.0%)</li> <li>➤ 670.94 MW (50.9%)</li> <li>➤ 70.4MW (5.3%)</li> <li>➤ 10.5MW (0.8%)</li> </ul> |
| Currently electricity customers  | 2.05 million  |
| Population with access to electricity  | 67.5%   |

## Energy Situation Cont...

| INDICATOR                               | MEASURE                       |
|---|-------------------------------|
| Rural areas with access to electricity  | 49.5%                         |
| Urban areas with access to electricity  | 97.3%                         |
| population are connected to electricity | 32.8%                         |
| Connections in rural areas              | 16.9%;                        |
| Connections in rural areas              | 65.3%;                        |
| Power Demand Growth                     | 10%-15% per annum             |
| Peak Power Demand per Day               | 1,051.27 MW                   |
| Electricity Consumption per Capita      | 136 kWh                       |
| Main Power Transmission Network         | 400 kV, 220kV, 132kV and 66kV |

# Existing Grid System



# Energy Reserves

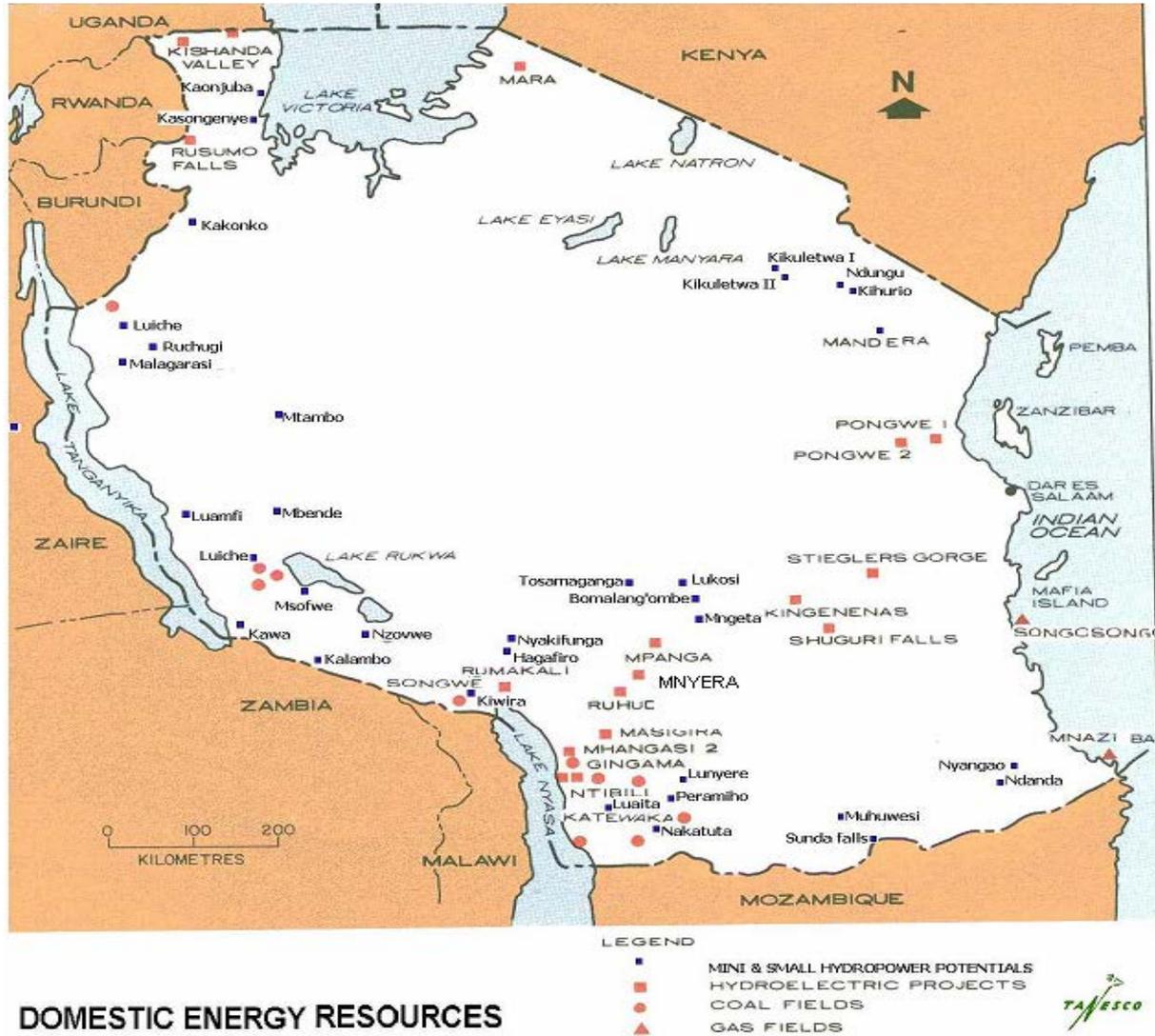
- ❖ Tanzania has abundant indigenous energy resources which include natural hydropower, natural gas, coal, geothermal, solar, nuclear, biomass, and wind.

| RESOURCE    | POTENTIAL                          | APPLICATION   |
|-------------|------------------------------------|---|
| Large hydro | 4,700 MW                           | 12% harnessed for power generation  |
| Natural Gas | Enormous deposit                   | More than 55 tcf discovery, currently used for 615 MW power generation and some domestic applications |
| Small hydro | 500 MW                             | 5% harnessed for power generation   |
| Biomass     | Woodland and agricultural residues | Electricity generation from biomass in the country is more than 35MW, some of which is grid-fed       |
| Solar       | 200Wm <sup>-2</sup>                | >6MW electricity installed capacity   |

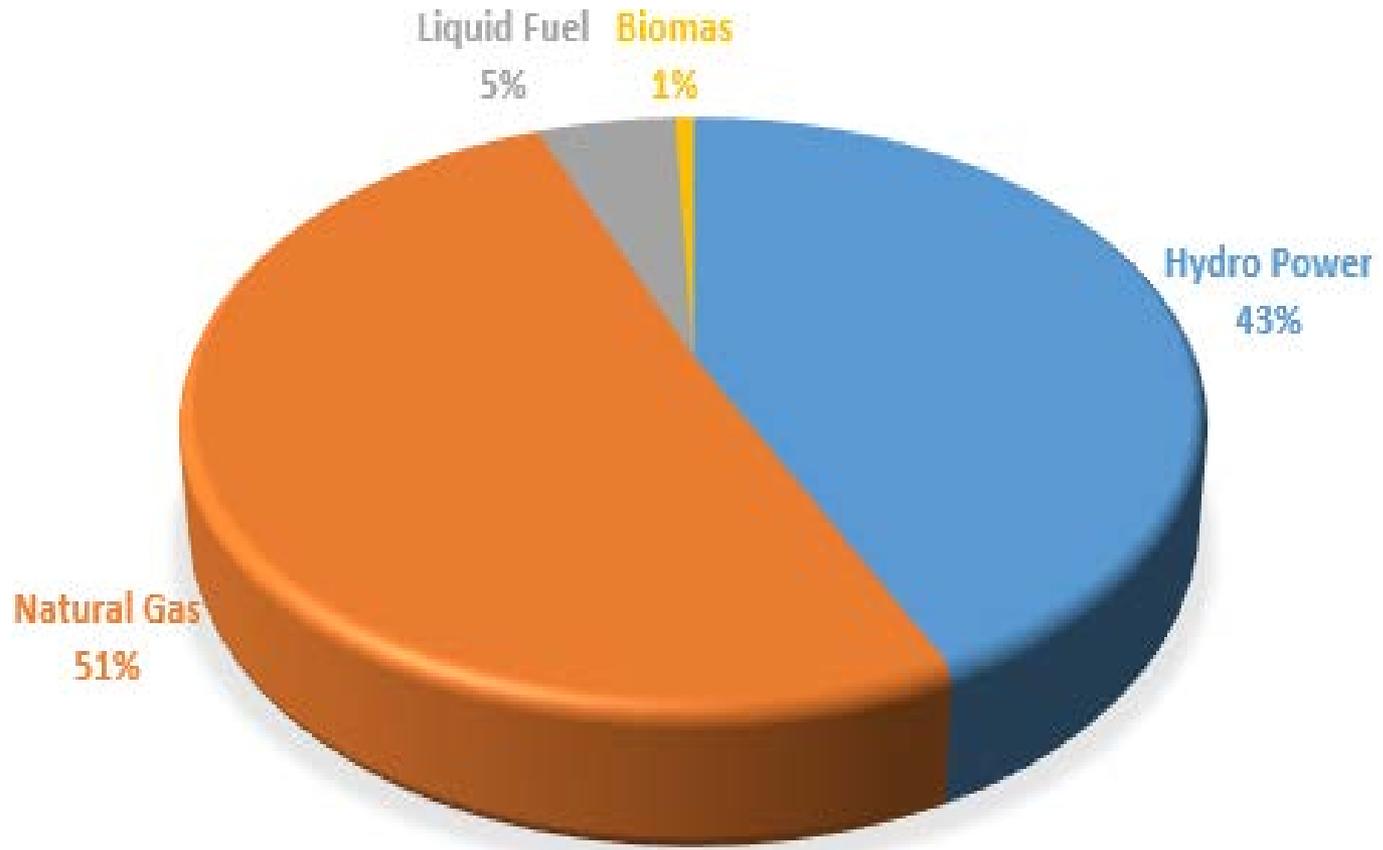
# Energy Reserves Cont..

| RESOURCE    | POTENTIAL   | APPLICATION  |
|-------------|---|--|
| Wind        | Speed: 0.8 - 4.8 m/s<br><br>Some area over 8m/s               | Already > 100 MW capacity is lined in the Power System Master Plan 2009-2033 |
| Geothermal  | More than 650 MW  | Not exploited  |
| Coal        | 1.2 – 5 billion tonnes  | < 150,000t/year  |
| Nuclear     | Uranium deposits exists in Dodoma, Ruvuma and Singida Regions | Not exploited  |
| Tidal/waves | Significant   | Not exploited  |

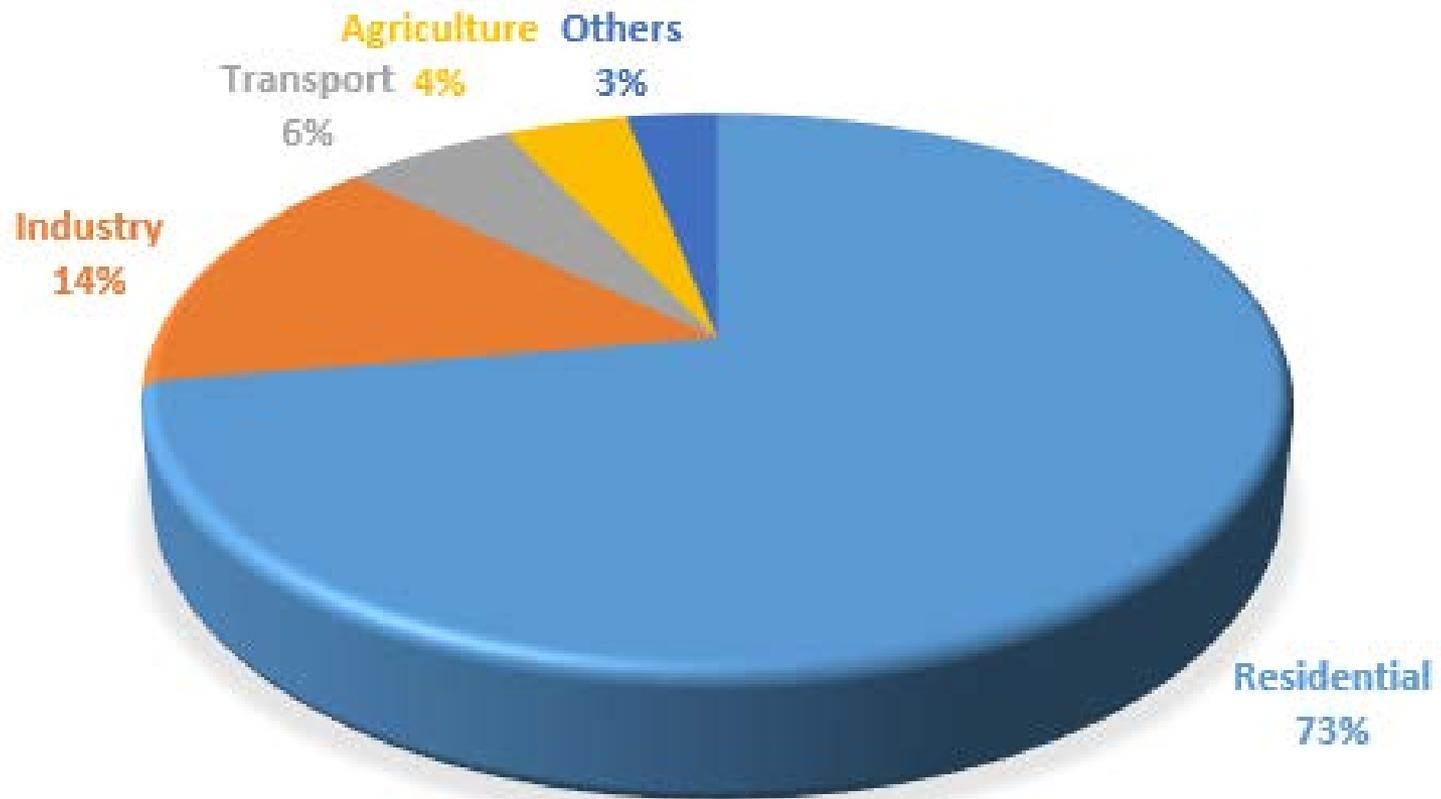
# Map for Energy Resource Potential



# Primary Energy Supply by Energy Source

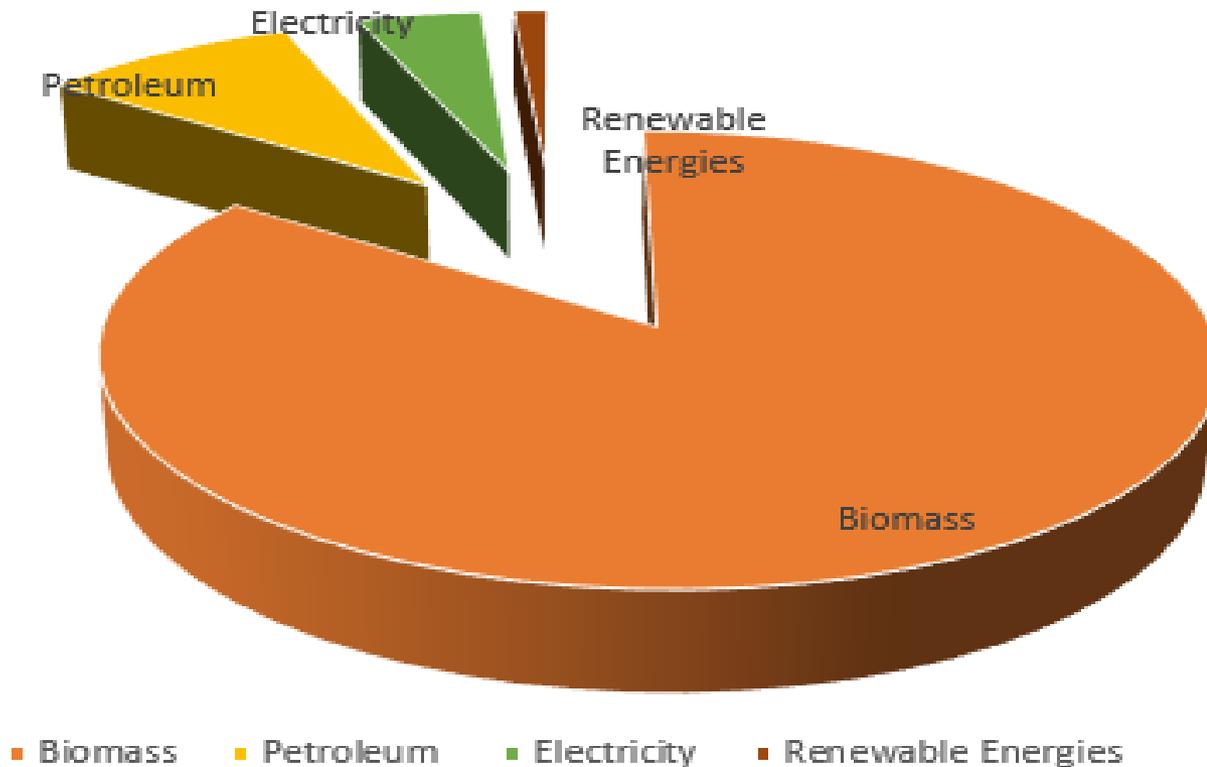


# Final Energy Consumption by Sector



# Final Energy Consumption by Energy Source

- Biomass 85%
- Petroleum 9.3%
- Electricity 4.5%
- Renewable Energies 1.2%



# Energy Policy in Tanzania

## □ Vision

A vibrant Energy Sector that contributes significantly to economic growth and improved quality of life of Tanzanians.

## □ Main Objective

To provide guidance for sustainable development and utilization of energy resources to ensure optimal benefits to Tanzanians and contribute towards transformation of the national economy.

□ In 1992, the First National Energy Policy (NEP) was formulated due to socio-economic reforms which took place in 1990s in the country.

□ In 2000, the former National Energy Policy was reviewed and launched in 2003 with the main objectives of reforming the energy market and attracting private sector participation in the Energy sector.

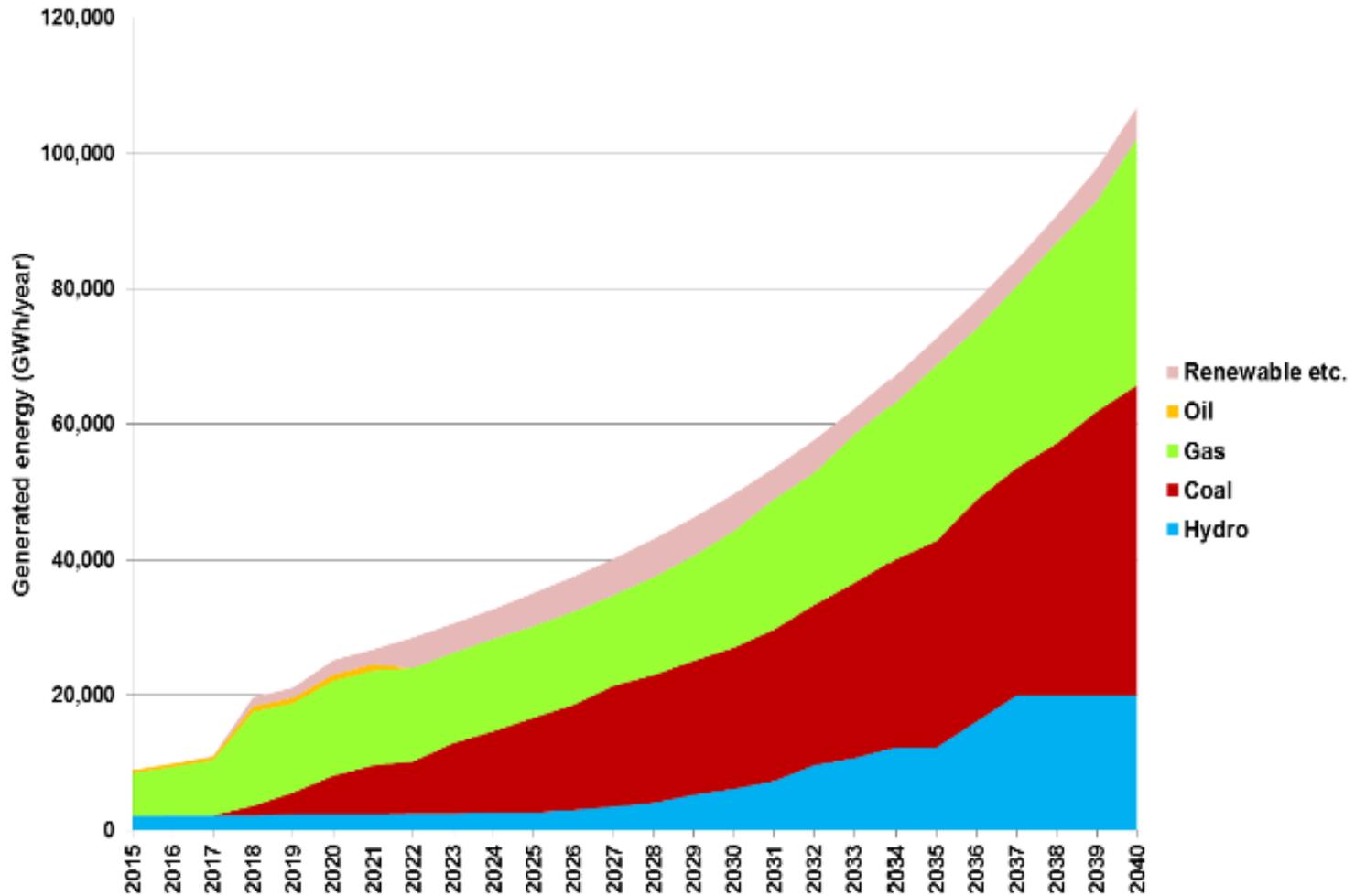
□ In 2015, the National Energy Policy was reformulated “NEP, 2015” with the aims of improving business environment to attract more private investments and local participation in the Energy sector, particularly in power generation; and participating in cross-border power trading.

# Current Energy Policy and Measures

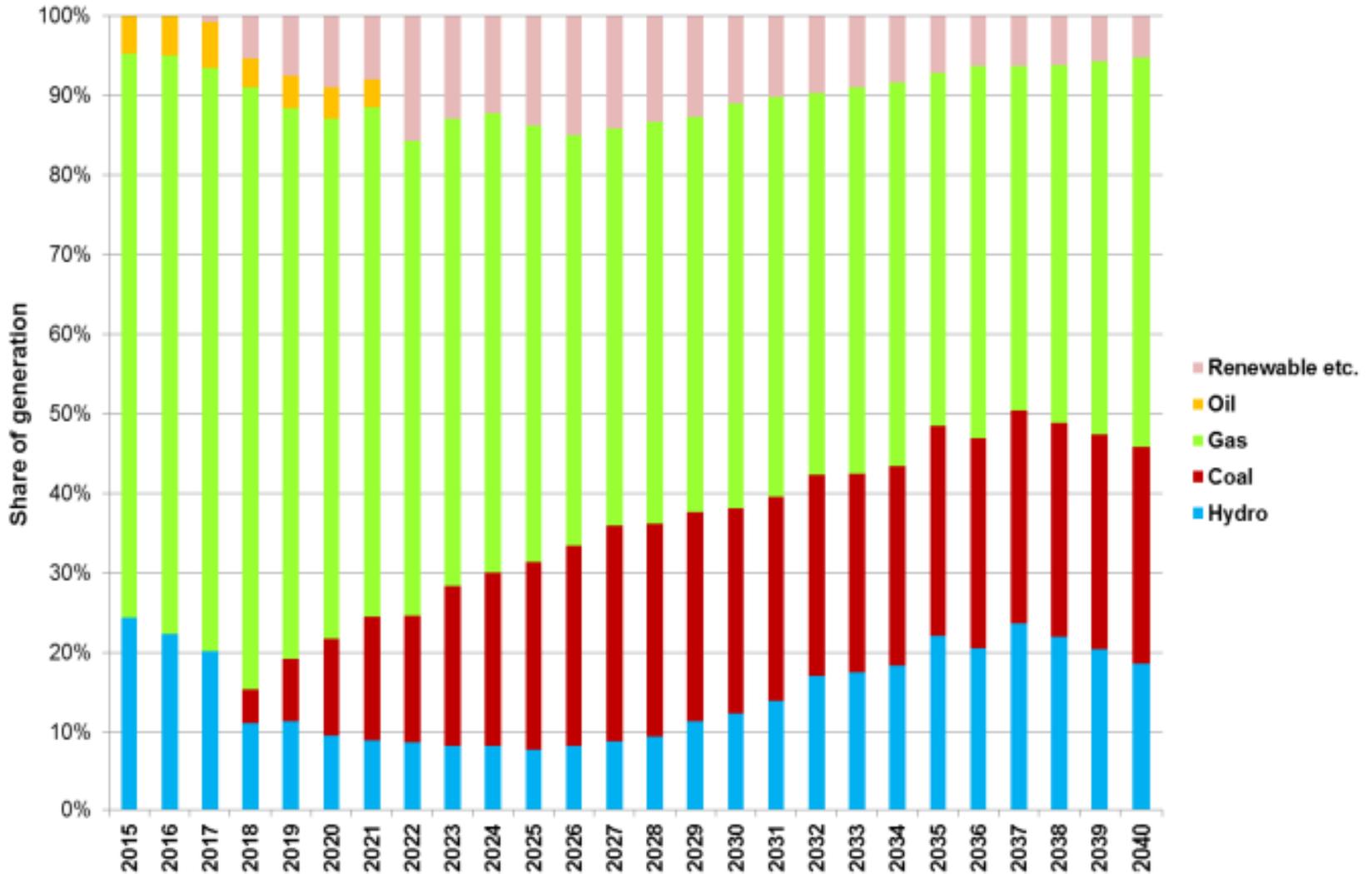
- ❑ The NEP, 2015 taking into consideration global initiative of providing sustainable energy for all, and focuses on increasing access to modern energy services and increasing the share of renewable energies in electricity generation mix to enhance availability, reliability and security of supply.
- ❑ NEP, 2015 is there to facilitate provision of adequate, reliable and affordable modern energy to Tanzanians in a sustainable manner which will able to achieve the desired objectives enshrined in the National Development Vision 2025.
- ❑ The ultimate goal of the policy is to ensure energy security and enhance development in the country.
- ❑ The Policy provides comprehensive legal, regulatory and institutional frameworks for petroleum, electricity, renewable energies and local content issues.



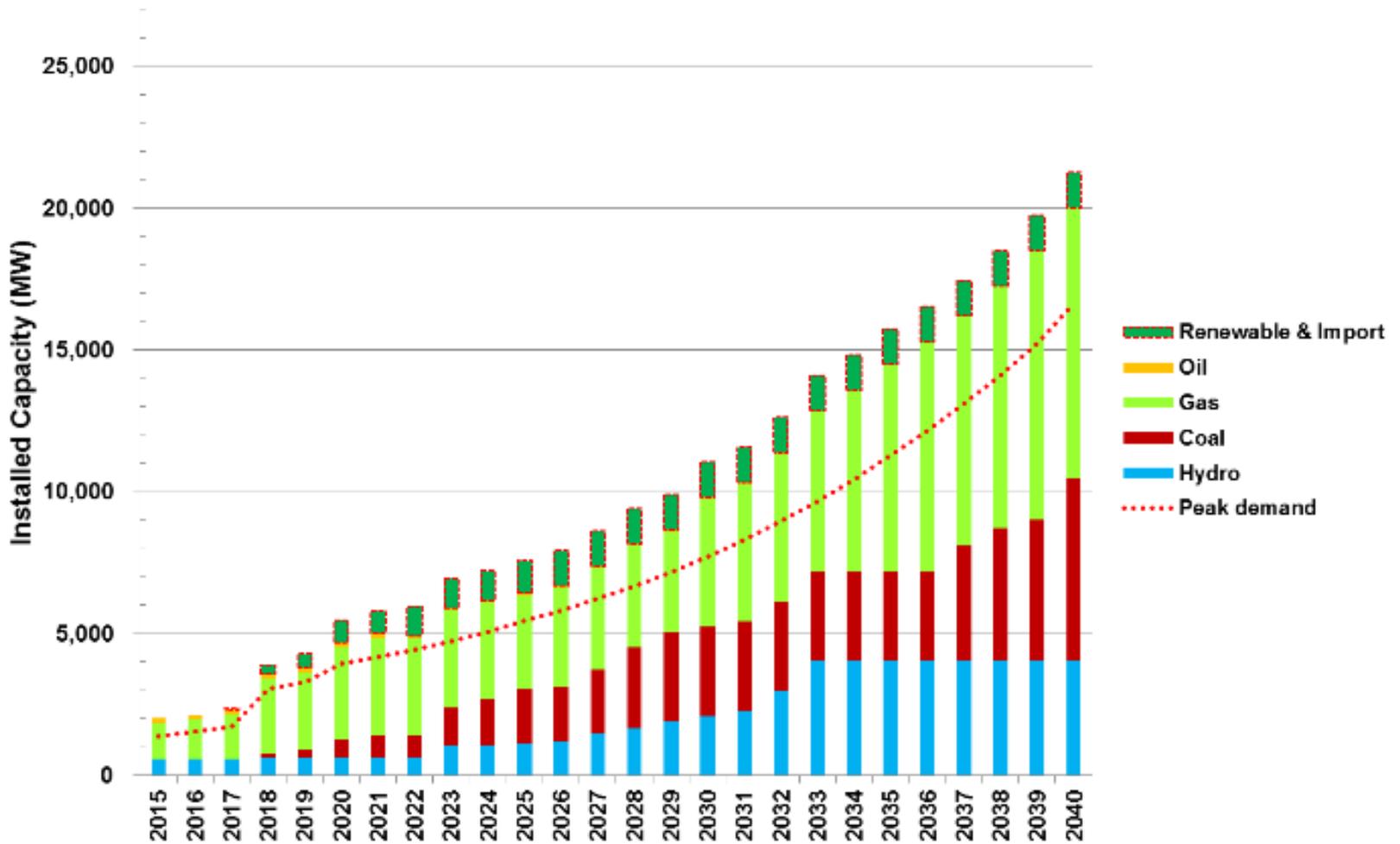
# Outlook of Energy Generated



# Outlook of Energy Generated



# Outlook of Generation Capacity



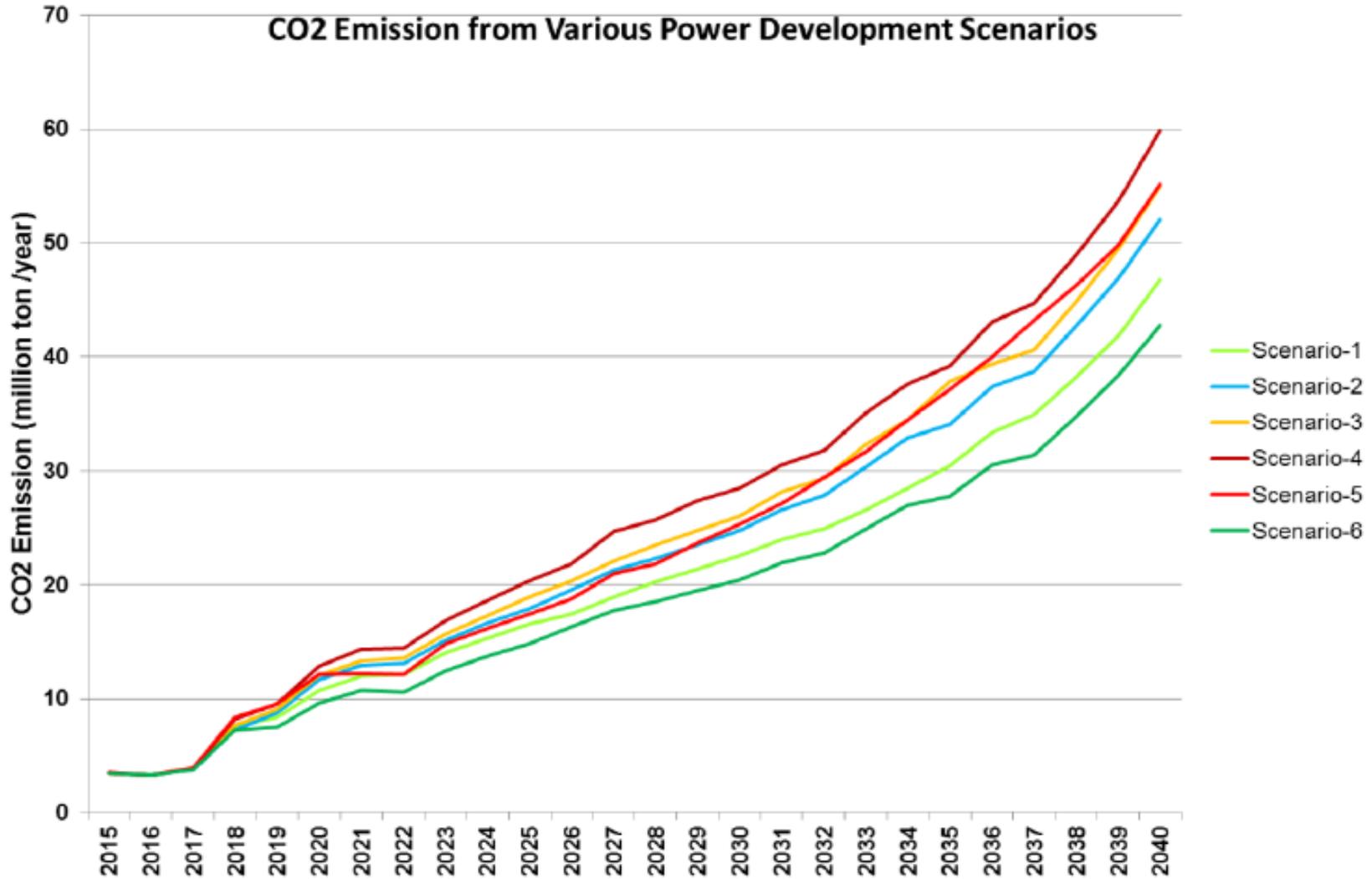
# Power Demand Forecasts

| Year      | Unit GWh |        |        |
|-----------|----------|--------|--------|
|           | High     | Base   | Low    |
| 2015      | 6,310    | 6,310  | 6,310  |
| 2016      | 7,870    | 7,820  | 7,640  |
| 2017      | 9,070    | 8,970  | 8,650  |
| 2018      | 10,460   | 10,270 | 9,780  |
| 2019      | 12,040   | 11,740 | 11,060 |
| 2020      | 13,840   | 13,440 | 12,470 |
| 2025      | 24,640   | 22,430 | 19,450 |
| 2030      | 45,270   | 36,000 | 29,250 |
| 2035      | 82,830   | 57,340 | 43,660 |
| 2040      | 145,470  | 87,890 | 63,090 |
| 2040/2015 | 13.4 %   | 11.1 % | 9.6 %  |

# Peak Power Demand Forecasts

| Year      | Unit MW |        |        |
|-----------|---------|--------|--------|
|           | High    | Base   | Low    |
| 2015      | 974     | 974    | 974    |
| 2016      | 1,280   | 1,270  | 1,250  |
| 2017      | 1,480   | 1,460  | 1,410  |
| 2018      | 1,700   | 1,680  | 1,600  |
| 2019      | 1,960   | 1,920  | 1,800  |
| 2020      | 2,260   | 2,190  | 2,030  |
| 2025      | 4,020   | 3,660  | 3,170  |
| 2030      | 7,380   | 5,870  | 4,770  |
| 2035      | 13,510  | 9,350  | 7,120  |
| 2040      | 23,720  | 14,330 | 10,290 |
| 2040/2015 | 13.6 %  | 11.4 % | 9.9 %  |

# Outlook of CO2 Emission



# Energy-related Investment for Domestic and Overseas

## ☐ Petroleum Sub-Sector

- ❖ Exploration of oil and gas (open acreages in deep-sea in the Indian Ocean, inland basins and Lake Tanganyika North Block);
- ❖ Construction of petrochemical industries;
- ❖ Construction of infrastructure for transportation and distribution of natural gas in Mtwara, Lindi, Dar-es-Salaam and neighboring regions;
- ❖ Construction of infrastructure for transportation of oil products;
- ❖ Establishment of the storage facilities for petroleum products - transit fuel.

## ☐ Power Projects (Generation and Transmission Lines)

# Major Difficulties and Bottlenecks Currently Faced in Formulating Energy Policies

- Inadequate human resource with requisite skills and knowledge.
- Low participation of key stakeholders including the energy end users during policy formulation process.
- Inadequate Financial resources.
- Inadequate research and development.



*Thank You*

ASANTE