



# Country Report

## Ethiopia

### Knowledge Co-Creation Program Energy Policy

By Meron Tefera Amde

Nov 2020



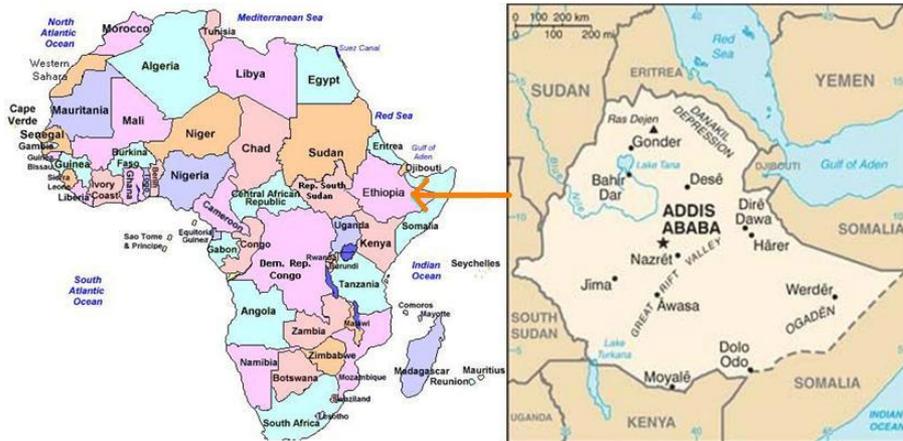
# Outline

1. Ethiopia Country Overview
2. Energy Status Overview
  - Resource
  - Supply and Demand
3. Policy and Regulatory Framework
4. Current Power Sector Development
5. Major challenge currently faced in formulating energy policies
6. Interest of study and reason



# Ethiopia Country Overview

# ETHIOPIA



- Country in the horn of Africa
- Total area - 1.13 million square km
- Over 100 million inhabitants
- Population growth rate – 2.6% per year
- Average annual GDP growth rate ~ 11 %



# Energy Status Overview



# ENERGY RESOURCES

- Hydropower potential 45,000 MW
- Geothermal potential ~ 10,000 MW
- Solar energy potential 5.5 kWh /sq. m/day – annual average daily irradiation
- Average wind speed > 7 meter/second at 50 m above ground level – 1,350 GW
- Wood – 1,120 million tones (annually exploitable)
- Agro-waste – 15 to 20 million tones (annually exploitable)
- Natural gas - 4 TCF (113 billion m<sup>3</sup>)
- Coal > 300 million tones.
- Oil shale – 253 million tones



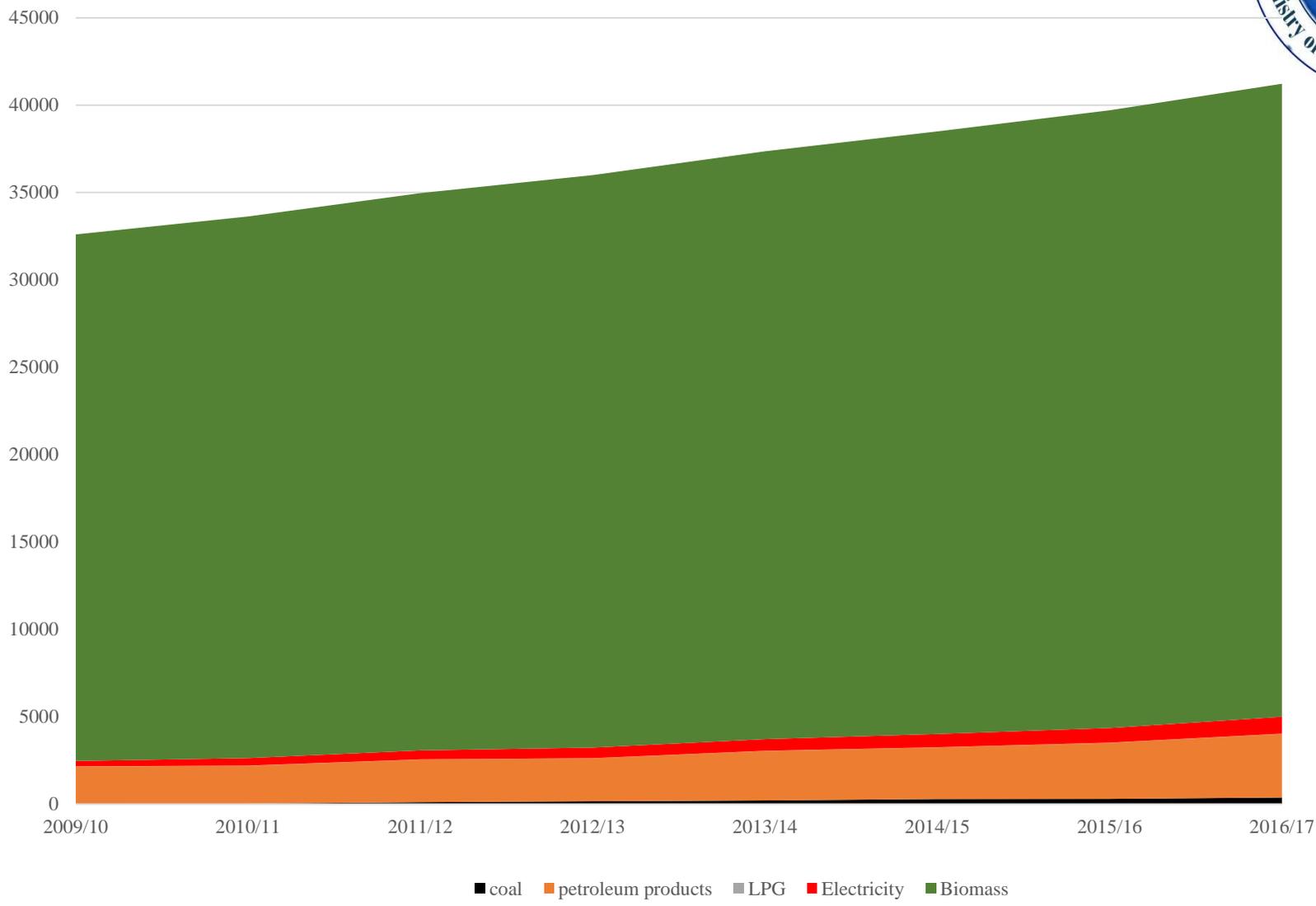
# SUPPLY AND DEMAND

- 89% of the National Energy Requirement is met from Biomass Resources
- 9% of the Final Energy Consumption is met by Hydrocarbons and Electricity covers the rest
- Petroleum Products are mainly used in the Transport Sector even though there is a small share of demand from Households and Industrial Sectors

# SUPPLY AND DEMAND



Total energy Requirement (ktoe)

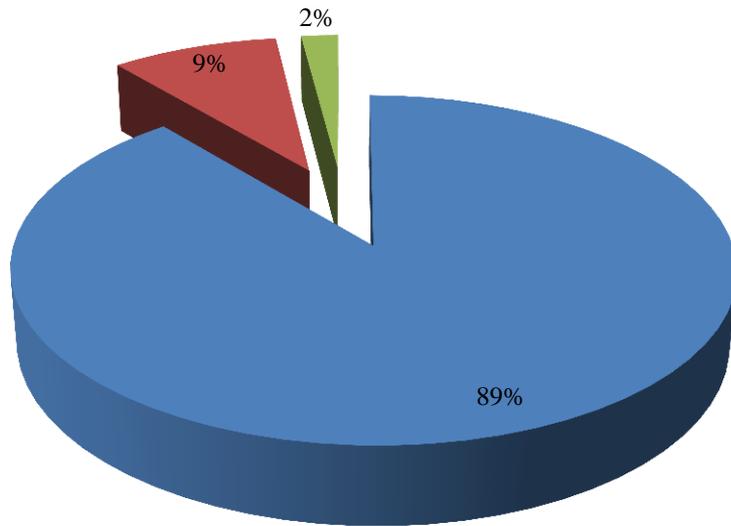


# SUPPLY AND DEMAND



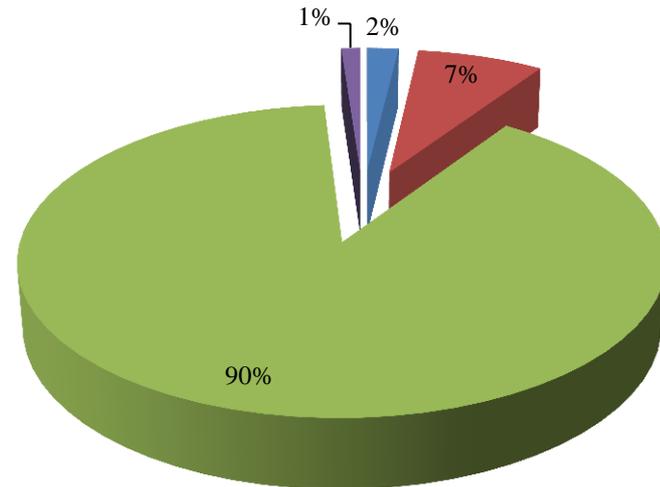
## Share of Fuel Consumption

■ Biomass ■ Hydrocarbons ■ Electricity



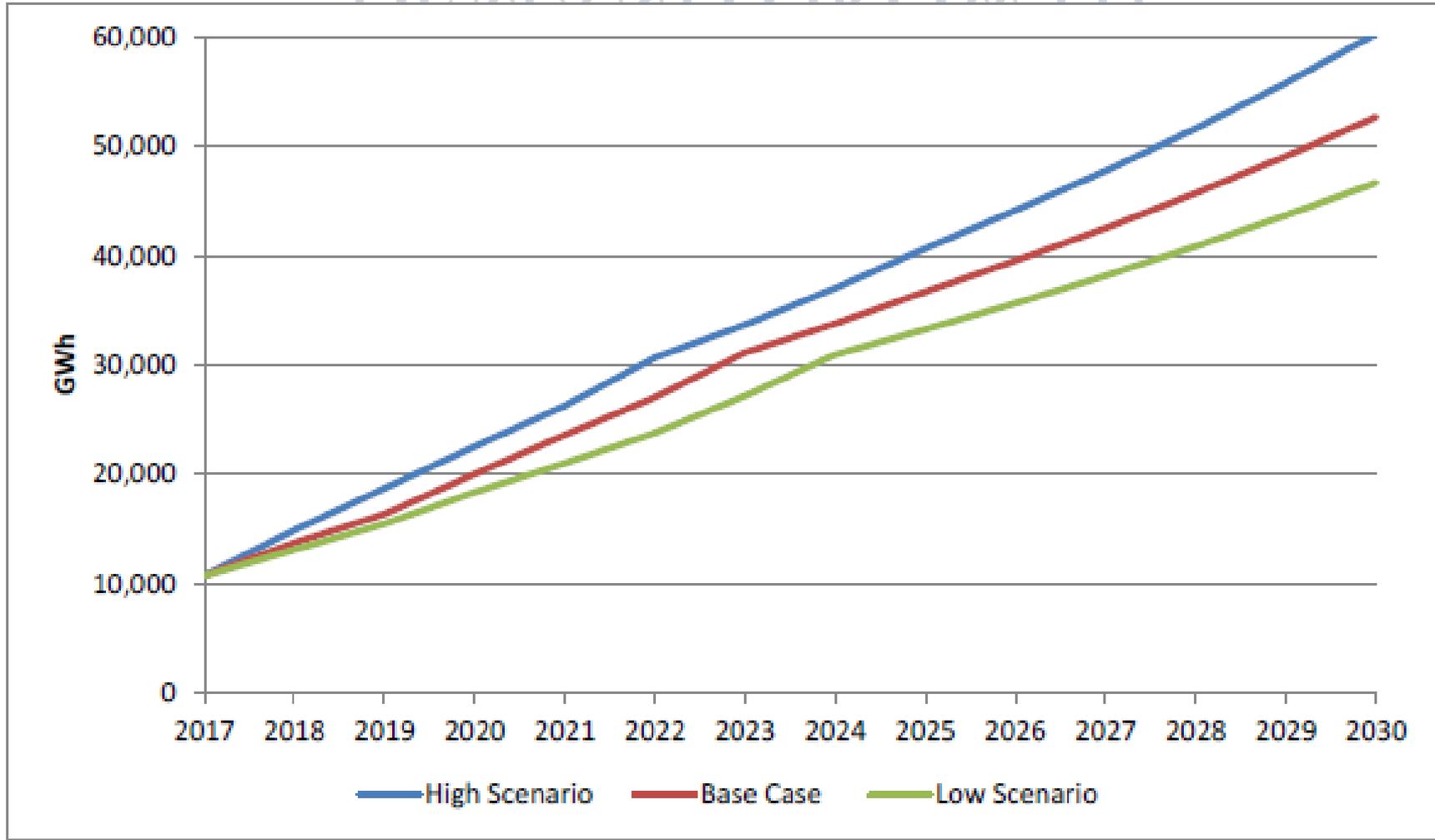
## Share of Consumption by Sector

■ Industry ■ Transport ■ Household ■ commercial



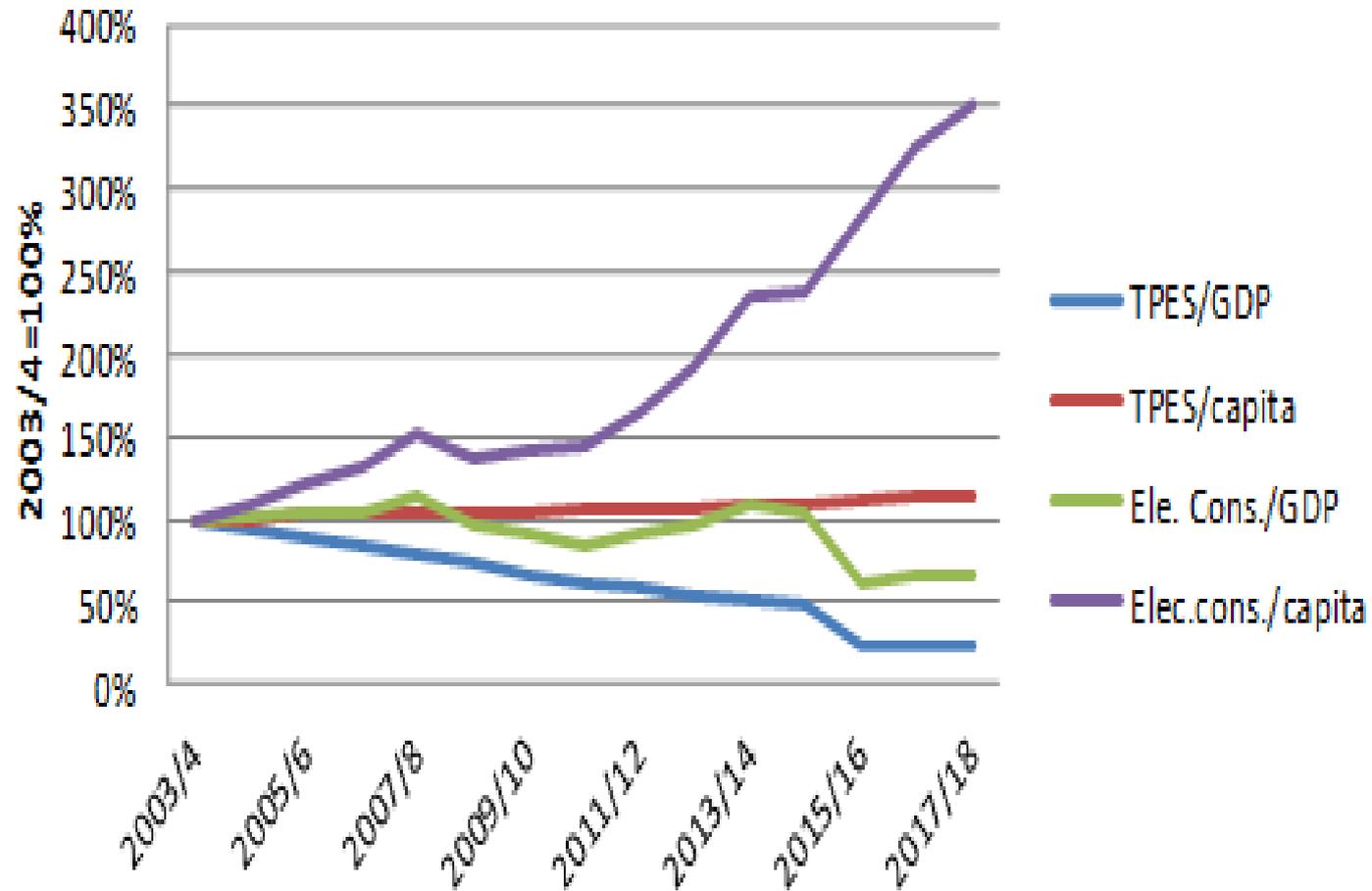


# ELECTRICITY LOCAL DEMAND GROWTH





## Selected indicators (GDP in USD)





# Policy and Regulatory Framework

# ENERGY POLICY FRAMEWORK



- The current National Energy Policy was drafted in 2013 and considers the continuous economic growth, the country's vision to bring about structural transformation and different policy dynamics worldwide.
- The overarching objective is to ensure reliable supply of energy at the right time and at affordable prices, particularly to support the country's agricultural and industrial development strategies.



# ENERGY POLICY FRAMEWORK

- Gives high priority to hydropower development, which is considered as the backbone of the country's energy sector development
- Wind, geothermal and solar
- Bio-fuels for transport and household use
- The supply of various household fuels
- Exploration for hydrocarbon fuels
- Energy efficiency and conservation
- Environmental sustainability
- Capacity building



# REGULATORY FRAMEWORK

- Major legislative provisions that have key role in governing and regulating the development of the power sector are
  - Energy proclamation
  - Energy regulation
  - Geothermal Resource Development Proclamation
  - Geothermal Operations Regulation
  - Public Private Partnership Proclamation



# Current Power Sector Development, Overview

# MAJOR POWER GENERATION PROJECTS



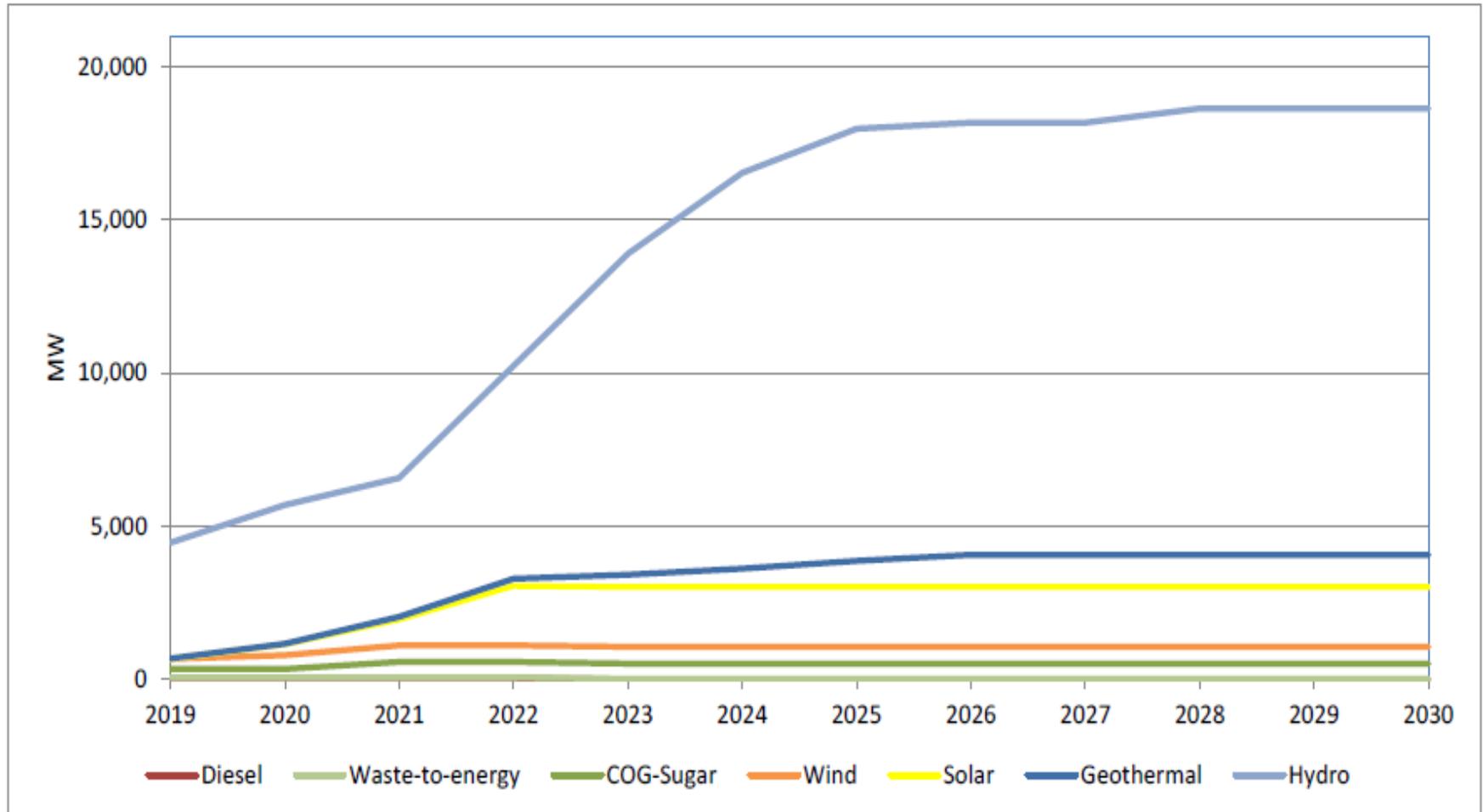
## Existing power plants

- Hydro - 4,076.6MW
- Wind - 324MW
- West to Energy - 25MW
- Geothermal - 7.5MW

## Power plants under construction

- Grand Ethiopian Renaissance Dam – 5,150MW
- Aluto Langano geothermal expansion – 70MW
- Melkasedi Power Plant (Biomass Fired) – 138MW
- Koysha HPP – 2,160MW
- Ayisha II Wind PP – 120MW
- Assela Wind PP - 100MW

# GENERATION CAPACITY BY RESOURCE TYPE



# RUNNING PROGRAMS TO INCREASE GENERATION



- Accelerating Wind Power Generation in Ethiopia
  - This program collaborate with the World Bank's ESMAP program in Wind Resource Mapping campaign and IPP framework development which aims to realize the first wind IPP tenders
- IFC's Scaling Solar Initiative
  - Ethiopia is one of the few countries in SSA to get involved in this initiative
  - It has a plan to develop up to 500MW (in two phases) through the assistance to this initiative.
  - The first phase has already been started at two sites and potential bidders are under evaluation process
- Geothermal Development Program
  - Involves support in production well, exploration well drilling and power plant installation at different geothermal prospect sites.
  - For this program World Bank IDA, AFD and JICA have rendered their technical assistance



Major challenge currently faced in formulating energy policies



# Major challenge currently faced in formulating energy policies

- Stakeholder participation
- Development priority
- Lack of the most current information & challenges of implementation
- Financial problem
- The internal chain of the country



# Interest of study and reason



# Interest of study and reason

- Energy Transition

Biomass -----> Renewable Energy

- Energy Modeling

Energy Analyses -----> Input for Policy Makers



Thank You For Your Attention!  
አመሰግናለሁ!