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**Topic: The Status and challenge of Energy sector in Ethiopia**

**Title: The status of nuclear power Development in Ethiopia**

# Outlines

1. Back ground
2. Domestic energy source potentials and exploited status in Ethiopia
3. Key Issues in the Energy Sector
4. On going efforts to develop and utilize energy in the country
5. The status of nuclear energy in the country
6. Summary

## Back ground

**Location:-** located in East Africa, in the sub-region known as the Horn of Africa.

**Area:-** has an area of 1.14 million skm and is the 7th largest country in Africa by size

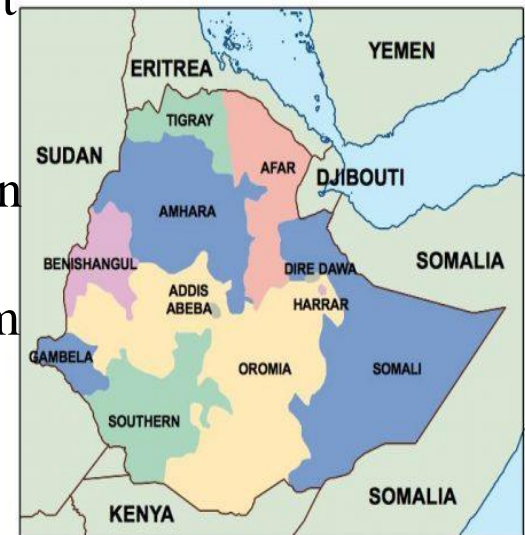
**Capital City:-** Addis Ababa, which means new flower

**Population:-** around 120mil. 13<sup>th</sup> most populous country in the world, the 2nd populous in the Africa after Nigeria.

**Religion:-** Nearly 62.8% Christianity and 34% are Muslim and the are traditional African religions

**Boundary:-** has borders with Eritrea to the north and northeast, Djibouti and Somalia to the east, Sudan and South Sudan to the west, and Kenya to the south.

**Administrative:-** consists of the federal government, nine regional states, and two city administration councils. At the regional state level, there exist over 70 zonal and 600 woreda administrations.



# Domestic energy source potentials and exploited status in Ethiopia

No	. Resource	Unit	Potential	Exploited
1	Biomass	Mt/year	1400	<50%
2	Hydropower	MW	45,000	11%
3	Solar	kWh/m <sup>2</sup> /day	5–6	<1%
4	Wind	MW	10,000	<1%
5	Geothermal	MW	10,000	<1%
6	Natural Gas	Bcm	113	0%
7	Coal and Oil-shale	Mt	600	0%

## Key Issues in the Energy Sector

- **Energy poverty:** Energy poverty is severe in Ethiopia due to insufficient choice in accessing adequate, affordable, reliable, quality, safe, and environmentally benign energy services to support human and economic development.
- **High dependence and unsustainable use of biomass resources:** Nearly 70 million tons of biomass is consumed. of 86% consumers, the estimated 60 million lack access to electricity 90 people lack access to clean cooking fuel(using firewood, leaves and dung cakes).

# Key Issues in the Energy Sector

## **Wasteful and inefficient energy production, transportation and utilization:**

- There is also wasteful and inefficient use of energy in the transport, high loss in electricity transmission and distribution.

## **Low private sector participation:**

- Private sector participation in the development and supply of energy services is very limited.

## Key Issues in the Energy Sector

- **High dependence on imported petroleum fuels:** Ethiopia spends large amount of its export earnings for importing petroleum products.
- 90% of petroleum consumed by transport sector
- This disrupts security of energy supply threaten the country's economy and balance of payment.

### **Big challenge to finance the energy sector program:**

- The energy sector is highly capital intensive sector.
- Substantial investment is required for development and promoting the transition from traditional solid biomass fuels to modern energy services.



## Key Issues in the Energy Sector

### **Absence of sufficient information and data:**

- Absence of well-organized and up-to-date data, on resources, supply, consumption, and finance.
- It becomes bottleneck for proper planning and management for increasing supply and demand.

### **Lack of supportive industries (Localization):**

- There is low level capacity of industries for manufacturing of electric components, such as transformers, turbines, generators.
- There is a heavy reliance on imported technologies that accounts for high proportion of project cost.

## On going efforts to develop and utilize energy in the country

- By 2030, Ethiopia aims to reach 100% electricity access from renewable energy sources and around 20 million households will benefit from clean cooking fuels.
- The Government is intensely working to increase the current 5.2 GW to 19GW in 2030 through diversifying the renewable energy mix with wind, solar, geothermal and building hydropower dams including GERD
- With our policy intervention, the energy sector plans to contribute less than 4% of the total CO<sub>2</sub> emissions in the country by 2030 which is one of the lowest CO<sub>2</sub> emitters in the world.

## On going efforts to develop and utilize energy in the country

- Creating the favorable environment is being done. Eg. PPP
- Ensuring the variety of generation mix serves better in terms of reliability, cost reduction and security of supply.
- preparing a power sector reform roadmap to include further restructuring and liberalization of the wholesale and retail electricity markets

## **Nuclear Development status**

- The government of Ethiopia decided to go for nuclear energy and signed a cooperation agreement with the Russian Federation in 2017 first.
- 2019 updated with some improvements and it is indorsed by the parliament in 2020
- nuclear power is included as an option in the energy police and strategy
- Preparatory work for the contracting and construction of a nuclear power plant will be carried out.

## **Nuclear Development status**

- Three Key Organizations that to be involved in the construction of a nuclear power plant have been identified.
- The legal and regulatory frameworks have been established.

### **1. NEPIO**

The Ministry of Innovation and Technology.

- To transfer the nuclear technology, facilitate the infrastructure and Prepares pre-feasibility reports and help the government to make knowledge based decision.

## **Nuclear Development status**

### **2. O/O (Operating Organization);**

MOWE is expected to play the role of the owner operator.

- To prepare policy regarding, Performs feasibility study, signs bids and trains experts that operate the plant.

### **3. Regulatory;**

It is the Ethiopian Technology Authority

- controls the safety of all activities of the program from design, construction, commissioning, decommissioning

## Summary

To allow energy sector to play a significant role for socio-economic development and transformation of the country through provision of a sustainable, reliable, affordable and quality energy service for all sectors in an environmentally benign manner, encouraging variety of generation mix from renewable source such as nuclear power that serves better in terms of reliability, cost reduction and security of supply is very critical.

With those few words, I would like to  
thank you for your kind attention!