

STAKEHOLDER WORKSHOP

Focus On Tanzania

Second External Stakeholder Workshop,

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RICHARD STANSLAUS MUYUNGI, PhD

**Manager Responsible for Environment and Climate
Change Issues –TANESCO, Ministry of Energy
Tanzania**

**Member of the Green Climate Fund Board and
Former SBSTA Chair**

**IMPACTS OF CLIMATE TO THE ENERGY
SECTOR IN TANZANIA**

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INTRODUCTION- The energy Sector

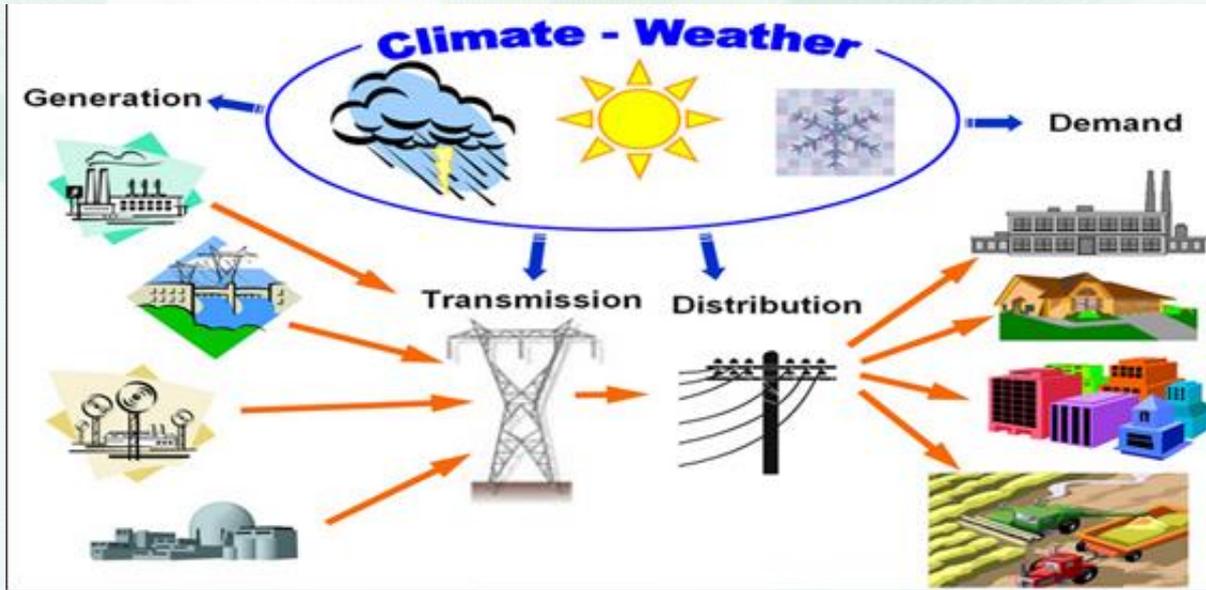
- Tanzania has abundant and diverse indigenous energy resources. They include; biomass fuels, hydropower, natural gas, coal, uranium, wind, geothermal and solar
- The Energy supply depends mainly on biomass making up about 90% of the primary energy consumption in the country.
- About 80 % of the total population have access to the grid electricity with more than 10,300 villages connected to the grid. The households electrified by solar photovoltaic technology are over 30.4%
- The installed capacity by 2020 was 1574 MW consisting of hydro 573.70MW, natural gas 901.32MW, liquid fuel 88.80MW and biomass 10.50MW

Introduction – Energy Sector

- The high dependence on biomass as primary energy leads to the deforestation of over 100,000 h per year, of which only about a quarter is reforested.
- About 63.5% of the households in Tanzania Mainland use firewood as the main source of energy for cooking, followed by charcoal 26.2%, liquefied petroleum gas 5.1% and electricity 3.0%.
- Other energy sources are petroleum, which makes up 7.8% of total primary energy consumption, natural gas (2.4%), hydropower (1.2%) and coal/peat (0.3%).^[3] About 6.6 per cent of primary energy needs to be imported, primarily from Uganda (17 MW), Zambia (8 MW), and Kenya (1 MW) [Ministry of Energy June 2020].

Impact of climate Change to the Energy Sector

Changes in temperature and precipitation patterns will have significant implications for Tanzania's existing and future power system infrastructure. Changes will affect all major aspects of the electric power sector, including electricity generation, transmission and distribution systems, and end-user demand for power



IMPACT OF CLIMATE CHANGE

- Climate change impacts, including : sea level rise, flooding and drought threaten renewable energy generation, particularly hydropower that need reliable water sources.
- As a result, energy security and the ability of Tanzania to meet her GhGs targets under the NDCs is compromised.
- At thermal power plants, electricity generation becomes less efficient as the ambient air temperature increases.
- Inadequate water supply has regularly led to power shortages and rationing, which occurred on average one out of every three years between 1991 and 2010.
- In 2004-2005, the incremental cost of substituting thermal resources for hydropower losses in Tanzania was \$67 million and these could increase with increased climate change

Impact of sea level rise

At Msibati, Mtwara Region In 2015 about 150 meters of land was submerged due to sea level rise, leaving only 25 meters of space between the sea and the Gas Power plant



Impacts of climate change on other Infrastructure

- Tanzania has more than 3224.7 km of 220kv transmission lines, 1672.57km of 132kv transmission lines, 543km of 66kv transmission lines, and 670km of 400kv transmission lines -totaling to 6110.27km as of October, 2020. The nation has also 58 grid substations and 3 off grid substations at 66kv
- These infrastructure are highly vulnerable to extreme weather events caused by climate change. Some of such disastrous events are floods, storm surges, droughts and desertification causing wild fires, turbulent wind speed which are increasing across the country.

Impacts on other infrastructure and systems

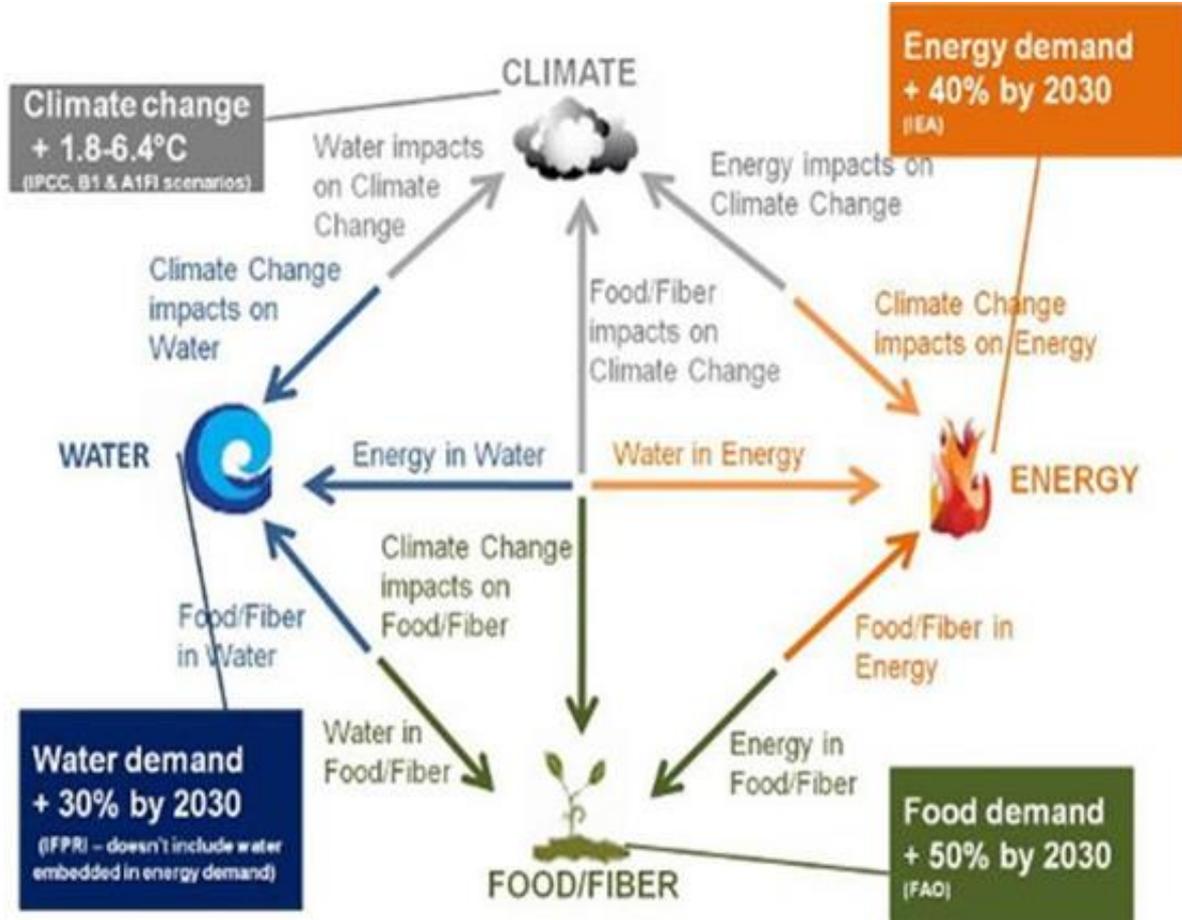


- **Solar sites are affected by cloud cover and solar insolation – Same, Kishapu and Dodoma**
- **A change in wind patterns at potential wind sites such as Singida and Mafia may impact on future wind power generation.**
- **During transmission, thermal expansion of transmission and distribution power lines causes line sag, decreasing the amount of power that can be securely transported. Thermal line expansion is exacerbated by higher ambient air temperature.**

Conclusion

The Climate Change, Energy, Water and Food Production Nexus at the global level can be downscaled and applied at the National level.

The social economic development and community welfare in Tanzania will depend on how climate change impacts the energy sector and thus in turn the food security; and human health and wellbeing.



CONCLUSION

- In addressing these impacts TANESCO, the Ministry of Energy and the government in general is enhancing actions related to:
- Energy diversification as noted earlier;
- Energy efficiency and demand response-side management through the use of various demand side management green technologies;
- Improvement of energy efficiency during Generation; transmission; distribution and service provision ;
- Carbon sinks enhancement for Sequestering CO₂ generated by the sector; and
- Promotion of social-economic development for increased energy demand for economic transformation

THANK YOU
