Dodoma energy storage for renewable energy

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Tanzania is endowed with diverse renewable energy resources, ranging from biomass and mini-hydro to geothermal, solar and wind. Tanzania"s power sector is dominated by state-owned TANESCO (Tanzania Electricity Supply Company Limited). TANESCO owns most of the country"s transmission and distribution network, and more than half of its generating capacity. Currently, Tanzania"s total power installed capacity is 1,602 MW. From this total, 244 MW were added in the past four years.

Tanzania"s electricity generation comes mostly from natural gas (48%), followed by hydro (31%), petrol (18%), solar (1%), and biofuels (1%).The traditional dependence on hydropower combined with the droughts that are affecting the country, often result in power supply shortages. To bridge the electricity supply gap in the country, TANESCO contracted Emergency Power Producers (EPP).

The average electricity consumption per capita in Tanzania is 108kWh per year, compared to Sub-Saharan Africa"s average consumption of 550kWh per year, and the 2,500kWh average world consumption per year. In 2019/2020, 37.7% of all households in Tanzania Mainland are connected to electricity, compared to 32.8% in 2016/17.

According to the National Census of 2012, about 70% of Tanzanians reside in rural areas whereas 69.8% had access to electricity. In rural areas, households connected to electricity accounted for 24.5% in 2019/20 compared to 16.9% in 2016/17. Therefore, the Government of Tanzania plans to increase rural connection levels to 50% by 2025 and at least 75% by 2033.

The Rural Energy Board (REB), the Rural Energy Agency (REA), and the Rural Energy Fund (REF) were established to promote, stimulate and facilitate access to modern energy services in rural areas of Tanzania.

Feasibility studies, Land acquisitions and other preliminaries works - Shinyanga Solar Project (150 MW), Zuzu, Dodoma (60 MW), Same (50 MW) & Next Gen-Kigoma (5MW).

Tanzania Off-Grid Solar PVOff-grid solar PV has been installed in Tanzania for various applications in schools, hospitals, health centers, police posts, small telecommunications enterprises and households, as well as for street lighting. More than half of this capacity is utilized by households in peri-urban and rural areas.

In 2019, the World Bank (WB) signed a grant agreement with the Government of Tanzania amounting to USD 4.5 million to finance the access to a sustainable water supply through improved solar pumping systems in 165 rural Tanzanian villages.

Tanzania Grid-Connected Solar PVIn central Tanzania, 1 MWp of solar PV generates about 1,800 MWh per

year and requires about 1 hectare of land. Theoretically, solar PV could generate large shares of electricity.

Tanzania Wind ResourcesTanzania"s wind resource assessments indicate that the Kititimo and Makambako areas have adequate wind speed for grid-scale electricity generation. At Kititimo wind speeds average 9.9 miles per second and at Makambako they averaged 8.9 miles per second at a height of 30 meters.

In June 2020, Tanzania"s first-ever wind farm in Mwenga in the Mufindi district of Tanzania"s Iringa region started generating electricity as part of its startup testing procedures. Construction of the 2.4MW power plant was completed in May 2020. It was made possible thanks to a loan from the Renewable Energy Performance Platform (REPP) and is operated by the Rift Valley Energy Group.

Tanzania Biomass SourcesBiomass is Tanzania"s largest energy source, although much of it is produced in traditional and unsustainable ways. It is estimated that more than 95% of households in Tanzania use firewood and charcoal as their source of energy for cooking. In urban areas, about 71% of all urban households consume charcoal and about 19% consume firewood. Biomass in Tanzania is presently used for grid generation (around 18 MW) and by the agro-industry to generate its own electricity (about 58 MW estimated).