

## **Tanzania's large-scale solar power alternatives (CSP vs PV)**

The African continent has the lowest electrification rate and almost all the African population without electricity is concentrated in Sub-Saharan Africa. About 600 million people in Sub-Saharan Africa are still in the dark after nightfall, hospitals cannot refrigerate vaccine, school children often cannot read after sunset, businesses cannot grow, and industries are idled hindering economic growth. In Tanzanian rural villages only one in twenty-five has access to electricity.

The two main technologies to convert solar energy to electricity (i.e. Concentrated Solar Power (CSP) and Photovoltaics (PV)) will be investigated in the Tanzanian context.

The objectives of the study are to analyse the techno-economic feasibility of CSP and utility-scale PV technologies in Tanzania and to investigate the challenges that hinders the integration of such large-scale solar power technologies into the Tanzanian power plant portfolio.

Site ranking assessment (GIS-based study) will be conducted that includes solar resources potential (Direct normal Irradiance (DNI) and Global Horizontal Irradiance (GHI)), population density, water availability, different exclusion masks to determine nation-wide CSP and PV hotspots. Then a CSP plant and a utility-scale PV plant at three towns - which are located in three different climate zones (study seasonality of solar resources - will be modelled and analysed from technical, economic, and environmental perspectives.

As large-scale solar power has only very limited role on the Tanzanian national power expansion plan (until 2035), the challenges that faces such technologies from technological, institutional and regulatory viewpoints will be investigated as well.

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