Geothermal Potential and Exploration Opportunities in Central Tanzania, East Africa

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Abstract

Geothermal power presents a sustainable and renewable energy source that can enhance the country's energy independence and decrease its dependence on fossil fuels. Geothermal power generation provides a stable and reliable energy source that can support industrial growth and stimulate economic activities by creating employment opportunities, attracting investment, and fostering local expertise in the geothermal sector while enhancing international competitiveness. Also, geothermal power generation aligns with global initiatives to combat climate change and transition to a low-carbon economy. Tanzania is well known for its diverse and abundant natural resources and is increasingly focusing on the exploration and utilization of geothermal energy. Central Tanzania, situated in the East African Rift System (EARS), is a region characterized by tectonic activity spanning multiple countries and offers an ideal setting for geothermal energy generation. The presence of numerous fault systems, high heat flow, and active volcanism in the Central Tanzania Rift Valley (CTRV), are evidence of promising indicators of geothermal resources, with temperatures estimated to exceed 250 degrees Celsius at depths ranging from 2 to 3 kilometres. These conditions make central Tanzania a promising prospect for geothermal exploration and development. Harnessing geothermal energy in this area can yield substantial economic benefits for the region. Thus, comprehensive geothermal resource assessment studies are necessary to accurately determine the size and quality of the geothermal reservoirs.

Keywords: Central Tanzania, East Africa, Geothermal energy, Renewable energy, Geothermal exploration