

Energy supply – Eastern Africa

Increased use of geothermal energy

Constraints in energy supply hamper economic growth throughout the whole of Eastern Africa. Alongside hydropower plants, which often need to be shut down in periods of drought, further energy sources are required to increase electricity production. Using geothermal energy (geothermal heat) has massive potential, a renewable source of energy that can be exploited across the Great Rift Valley in Eastern Africa. KfW Development Bank is promoting the use of this resource.

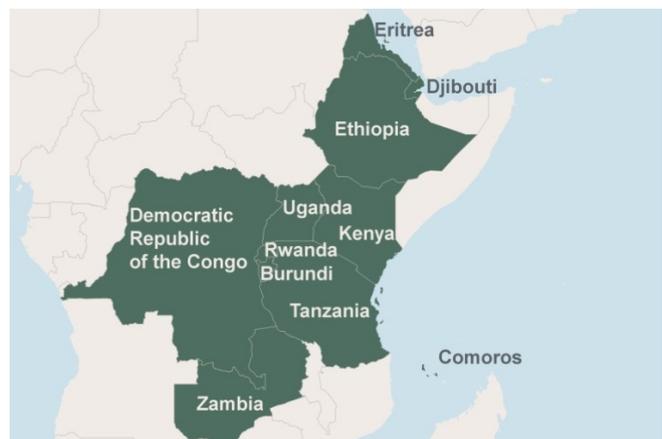
Context

Electric power is scarce in Eastern Africa. Fewer than one in every five inhabitants of the region has an electricity connection. In spite of this, demand significantly exceeds the volume of electricity produced. The largest proportion of electricity by far is generated by hydropower. In the dry seasons, hydropower plants can only generate little electricity, if at all, which results in power cuts. A sensible and long-term alternative to this is electric power generated by geothermal energy: it is cost-effective, reliable and environmentally friendly.

The countries along the Great Rift Valley have huge geothermal potential. More than 15,000 megawatts of electricity could be generated from geothermal sources alone. Yet despite these opportunities, geothermal energy is only used in Kenya (205 MW) and Ethiopia (4 MW) just now, and the main reasons for this are the substantial start-up costs and risks associated with utilising the resource. In order to paint a reliable picture about the suitability of a location, time-consuming and expensive drilling must first be carried out. This often ends without success, and is a risk many developers shy away from.

Eastern African countries would like to overcome these hurdles together. In June 2009, Energy Ministers from eleven Great Rift Valley countries signed a joint declaration on the development of geothermal energy in the

Project name	Geothermal Facility Geothermal Risk Mitigation Facility (GRMF)
Commissioned by	- Federal Ministry for Economic Cooperation and Development (BMZ) - EU via the EU-Africa Infrastructure Trust Fund (ITF) - Department for International Development (DFID)
Country/Region	Eastern Africa
Lead executing agency	- African Union Commission - Private and public geothermal energy developers in eleven countries of Eastern Africa (Ethiopia, Burundi, DR Congo, Djibouti, Eritrea, Kenya, Comoros, Rwanda, Uganda, Zambia, Tanzania)





Measurements at the Olkaria Geothermal Power Plant, Kenya. Source: KfW photo archives / Photo agency - auslöser fotografie.

Ethiopian capital of Addis Ababa. In this document they engaged the African Union Commission (AUC) with formulating a strategy for regional cooperation in utilising the geothermal potential in Eastern Africa. Using funds from the Federal Ministry for Economic Cooperation and Development (BMZ), the EU and the UK's "Department for International Development" (DFID), KfW is supporting private and public geothermal energy developers together with the AUC.

Project approach

The project objective is to engage public and private developers to prepare the construction of geothermal power plants. The "clean" and reliable energy produced there would then be fed into Eastern African electricity networks. The Geothermal Risk Mitigation Facility (GRMF) awards grants to explore potential geothermal energy locations in Eastern Africa. Public organisations can apply for funding in the same way as private enterprises.

The grants cover 80 % of the cost of conducting surface studies, which improve the efficiency of localising areas for exploratory drilling. This is complemented by a subsidisation of 40 % of the costs for up to two exploratory drillings and the necessary infrastructure at each geothermal energy location. Geothermal energy experts commissioned by the GRMF select the most suitable projects in a tender procedure. The aim is to support projects that are highly promising and suitable for generating electricity. KfW is working closely together in this project with the Federal Institute for Geosciences and Natural Resources (BGR) to facilitate a broad use of financing and advisory services to promote geothermal energy. The BGR supports

the AUC with a delegated staff member and advises the national authorities in GRMF partner countries on integrating geothermal energy into existing legal frameworks and national energy strategies. Additionally, BGR conducts surface explorations with national partner organisations.

Impact

The project contributes to providing high-quality and reliable information on the potential of geothermal locations in Eastern Africa. This forms the basis for private and public investment in constructing new geothermal power plants. Drillings in various locations around the region also improve knowledge about the resources available there. This reduces the development risks with future geothermal projects, which in turn improves the chance of being able to harness geothermal energy.

In the first year of the programme, four projects were supported, four further projects were awarded a grant in the second round of applications and even eight others in the third round. The fourth round of applications was launched in June 2016.



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