

# The Geothermal Exploration Project

## Geothermal Development in East African Rift Valley Countries

Jointly funded by the Icelandic International  
Development Agency (ICEIDA) and the Nordic  
Development Fund (NDF)

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# Background

- Support for geothermal development in East Africa is defined as a priority in Iceland's Development Cooperation Strategy
- Links with a Compact between Iceland and World Bank, also cooperates with Argeo UNEP, AUC and others
- The aim is to assist countries in conducting reconnaissance and surface exploration studies and build capacity and expertise for geothermal utilization
- The project started in January 2013 and currently almost all funding has been committed in sub-projects, it is expected that most sub-projects will be finalized by mid 2018.

# Getting the first steps right

- Emphasis on holistic surface exploration studies, quality control and identification of drilling targets
- Finalizing these first steps is essential for further work, reduces risk and provides the grounds for informed decisions on next steps
- Providing assistance for getting projects into the next pipelines for exploration drilling

# Brief overview to date

- The project is based on demand and requests from countries, sub-projects jointly developed to meet the status of knowledge, priorities and needs in each country, taking into consideration the involvement of other donors and organizations.
- Progress has been made on various fronts to date, moving closer to the objective of assisting countries to enhance their knowledge on their potential geothermal resources.
- Cooperation started with **Rwanda** in June 2013, drill training provided, and cooperation with EUD in Rwanda for regional project
- Cooperation started with **Ethiopia** in September 2013, focus on surface exploration studies and capacity building. Links with the World Bank programme

# Brief overview to date

- Cooperation with **GDC in Kenya** started in December 2014, with a focus on capacity building and technical assistance
- Cooperation with **UNEP** for surface exploration study in **Eritrea** started in December 2014
- Cooperation with **Djibouti** started in September 2015 with a focus on capacity building in geothermal drilling, surface exploration and geothermal project management.
- Cooperation project with **Tanzania** started in December 2015
- Support for reconnaissance work in **Burundi, Zambia** and technical assistance in relation to a World Bank funded surface exploration study in **Malawi**

# Regional activities

- AUC donor collaboration meeting hosted in Iceland 2014
- Support to AGID geothermal information portal which was launched at the Argeo C5 conference
- Support to Western Rift Workshop held in Rwanda 2016
- Cooperation with UNEP on technical review meetings
- Various regional training activities, including at Argeo conferences and in Kenya
- Actively supported the conceptual development of a regional training centre, Africa Geothermal Centre of Excellence
- ESMAP/World Bank GDDP Roundtable held in Iceland in April 2016 in relation to Iceland Geothermal Conference

# Capacity building

- More emphasis on capacity building than originally anticipated, based on demands and gaps identified by the countries
- Collaboration with UNU-GTP and emphasis on regional knowledge sharing, through collaboration with GDC and KenGen in Kenya.
- Emphasis on hands-on and outcome oriented training activities, for instance interwoven with surface exploration studies,

# Regional Geothermal Training Centre

- How can we work towards cost-effective and coordinated training activities in a regional perspective?
- Discussions at the donor coordination meeting in Iceland in May 2014 on the concept of a regional geothermal training centre
- With GDC, KenGen, AUC, UNEP and UNU-GTP the project supported a feasibility study for the concept
- Stakeholder meeting held in Nairobi in August 2015 and feasibility report submitted
- Hopeful to see the AGCE take off and be a part of the initiative





# Geothermal - low temperature and direct use

- Efforts to explore the viability of geothermal uses in lower temperature areas
- Study on binary power plants with temperatures from 90-150°
- Some efforts to explore the viability of direct uses, including drying of food items, fish, tea fruit
- Currently exploring with GDC to start a pilot geothermal drying project, which could provide important lessons for feasibility



# Cooperation with Ethiopia

- Geological Survey of Ethiopia and Ethiopian Electric Power Corporation are the implementing agencies
- Surface exploration in Tendaho Alalobeda and Aluto Langano are finalized, links with the World Bank programme pipelines
- Surface exploration in Meteka planned to start early 2017
- Numerous capacity building activities
- Technical assistance and equipment



# Cooperation with Djibouti

- ODDEG is the implementing agency, under to Office of the President
- Training in geothermal project planning and management
- Training in geothermal drilling
- Training in surface exploration and assistance for developing conceptual model for the Lake Abhe area and other potential areas



# Cooperation with Tanzania

- Started in December 2015, with TGDC as the implementing agency
- Initial reconnaissance study of three areas
- Surface exploration studies in Luhoi and Kiejo-Mbaka started in June 2016 with strong training components and equipment provision
- Technical assistance for finalizing surface exploration in Ngozi in cooperation with UNEP
- Training



# Cooperation with Kenya

- Started in 2014, with GDC as the implementing agency, under the Ministry of Energy
- Support for surface exploration review in Suswa geothermal area, about to be finalized
- Technical assistance for ISO 17025 accreditation of the GDC laboratory with training, to be finalized 2016
- Training in geothermal project management
- Training attachments for GDC staff with institutions in Iceland



# Cooperation with UNEP in Eritrea

- Previous work carried out funded by ICEIDA in Eritrea 2008
- Through cooperation with Argeo/UNEP surface exploration is being carried out in the Alid geothermal area
- Currently on hold, recommence in 2017



# Lessons learned

- Finalize quality surface exploration studies, including a review process before decisions on further steps
- Determine training needs in relation to what has been established about the geothermal potential and development strategies
- Link training with tangible outputs and define training opportunities in ongoing activities
- Encourage regional knowledge sharing and cooperation, AGCE is important in this regard
- Technical assistance to fill gaps and imminent needs in order to assist countries to move projects forward, where geothermal potential has already been demonstrated