

CAPACITY BUILDING IN GEOTHERMAL ENERGY DEVELOPMENT IN AFRICA: SUCSESSES AND CHALLENGES

MARIITA
WP 9.5

DEDAN KIMATHI UNIVERSITY OF
TECHNOLOGY, KENYA

LEAP-RE STAKEHOLDER FORUM
KIGALI, 10-13 OCTOBER 2023



LEAP-RE

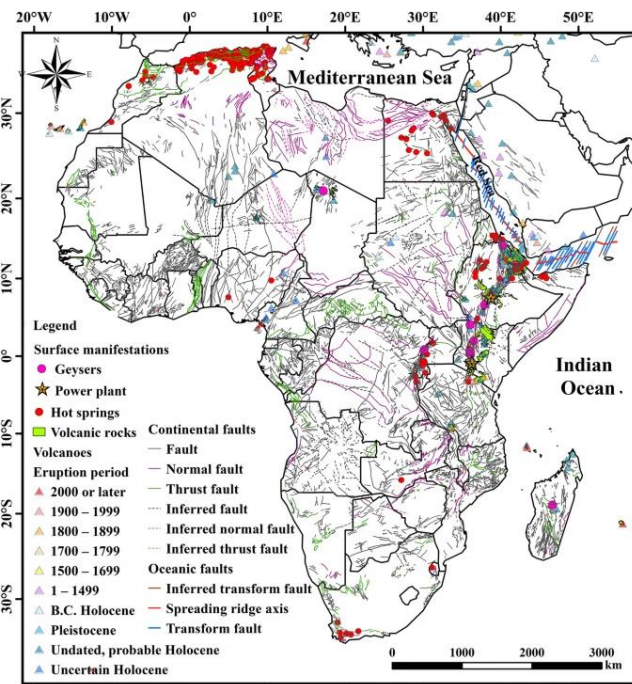
Long-Term Joint EU-AU Research
and Innovation Partnership on Renewable Energy



The LEAP-RE project has received funding from the European Union's Horizon 2020 Research and Innovation Program under Grant Agreement 963530.

Over the years, the energy demand in Africa has steadily increased due to population and economic growth. In many countries, electrical energy is a major component in the energy mix. Geothermal Energy is being touted to improve generation capacity expansion of environmentally friendly sources, innovations and application of latest and appropriate technologies

BUT Development of geothermal resources relies on a spectrum of professionals with varying technical backgrounds and experience

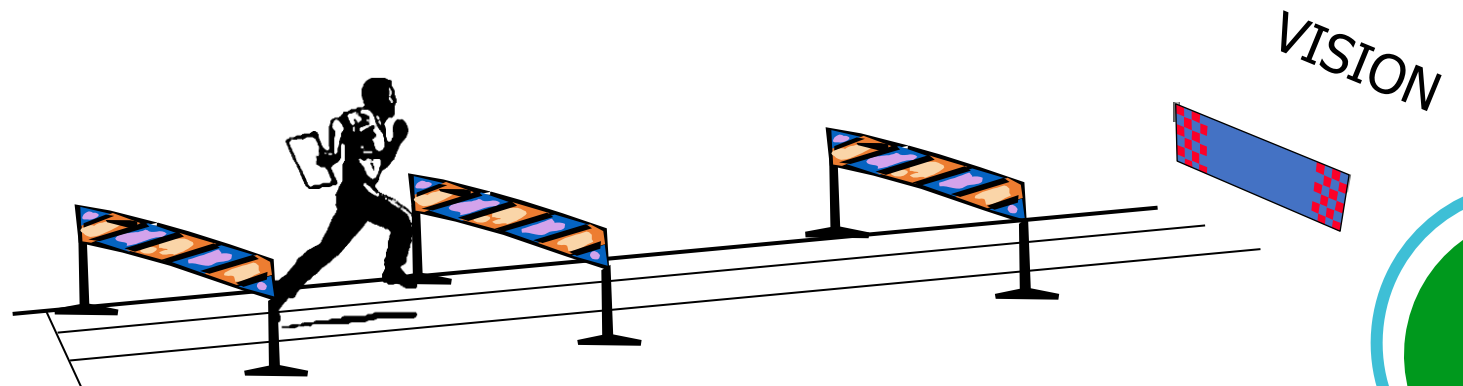


Barriers to development



LEAP-RE

- ➔ Large up-front investment in exploration, appraisal and production drilling
- ➔ Technological Constraints: Manpower (development and retention) & Equipment
- ➔ Environmental & Social issue: Pollution, Land
- ➔ Commercial & Legislative Framework Risks



Alleviating Technological Constraints



LEAP-RE

Through TRAINING and CAPACITY BUILDING



Past Capacity Building Efforts



LEAP-RE

For a long time, no geothermal training institutions existed in Africa and the majority of geothermal energy professionals currently working in the continent have attended courses at various international geothermal schools, including:

- ✓ United Nations University in Iceland,
- ✓ University of Iceland,
- ✓ Pisa University in Italy,
- ✓ Kyushu University in Japan and
- ✓ Geothermal Institute of Auckland in New Zealand
- ✓ Short Course in Kenya, UNU-GDC- KenGen



utilising financial sponsorship of the host institutions, international and bilateral agencies

Past Capacity Building Efforts ...



LEAP-RE

Kenya has the largest number of trained and experienced geothermal workers in the East African region. The majority of the trained Kenyan geothermal experts are working in the country's geothermal industry (KenGen, MoE, GDC, and universities)

This has resulted in the Kenya Electricity Generating Company and the Geothermal Development Company offering consultant services, mainly surface exploration and drilling for geothermal resources to several countries in the region, including Zambia, the Comoros, Rwanda, Djibouti, Malawi, the Sudan and Ethiopia

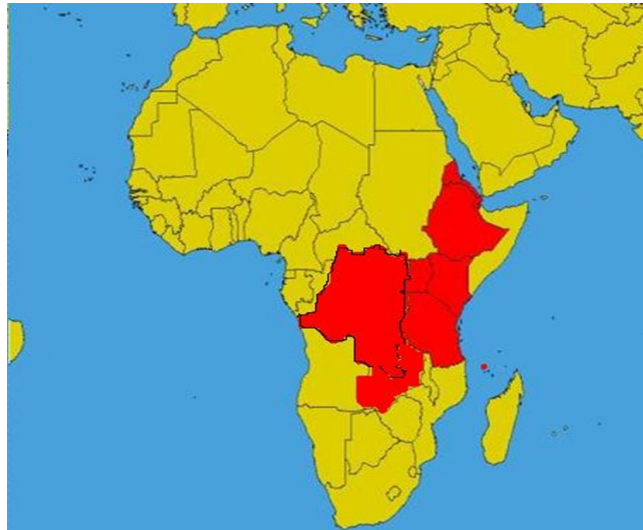
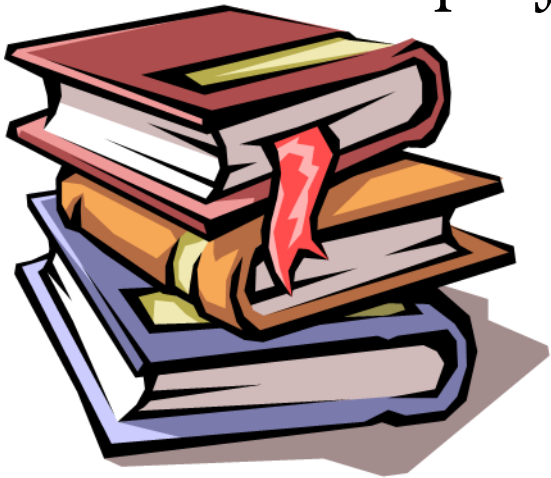


Methodology



LEAP-RE

In this paper, we have shared some of the successes and challenges encountered in Capacity Building for developing African geothermal resources. The review has used various reports on geothermal development in Kenya, Ethiopia, Djibouti and UN ARGeo project.



All these was meant to give an overview of the state of geothermal development in the continent vis-à-vis the contributions of trained Africans

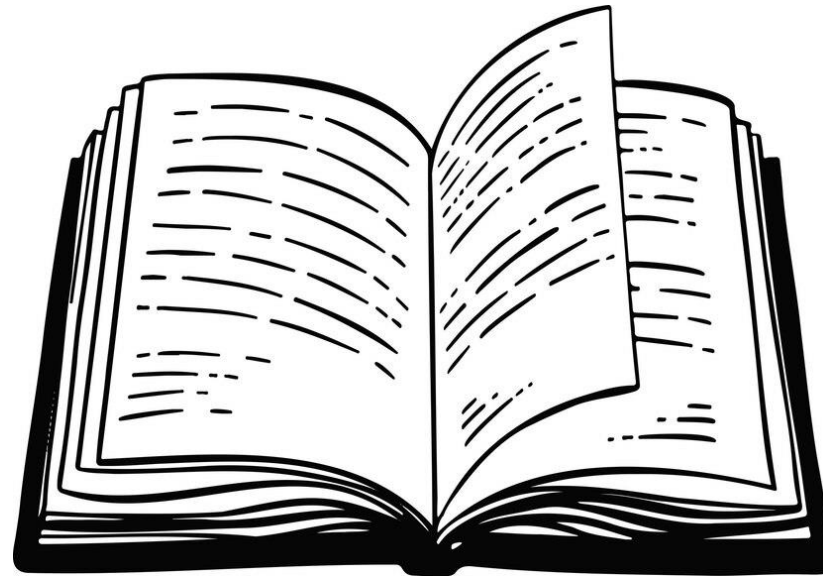
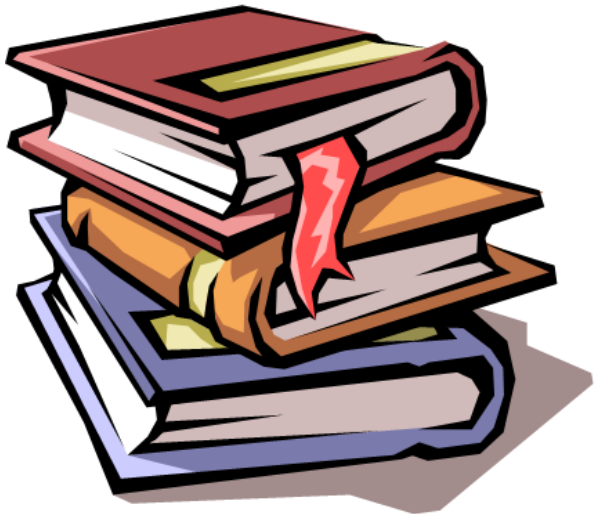
Methodology ...



LEAP-RE

The Reports reviewed included:

1. Conference Proceedings such as WGC
2. Short Courses Training Materials such as UNU-GTP
3. Geothermal Energy Companies internal reports such as KenGen
4. Geothermal Association of Kenya Public documents
5. UN Environment documents such as ARGeo Project reports



Results



LEAP-RE

One study found out that most utilities in Africa have developed their own training centres which offer training that respond to the needs of the organizations. Such trainings focus mainly on the induction of new employees, staff specialisation and refresher courses.



Results ...



LEAP-RE

A market and customer analysis of geothermal energy in Africa indicated that the geothermal sector in the countries of the East African Rift System have a potential to generate more than 25GW of electricity and for DU

Requiring a critical mass of experts and wide range of expertise for its development.

The necessary skilled expertise required for geothermal development include geothermal geology, hydrogeology, geochemistry geophysics, reservoir engineering, drilling technology, and geothermal engineering

Conclusions



LEAP-RE

The skills and capacities required cannot be obtained through only training in foreign institutions but will need establishment of an African owned and led facility to help bridge the gap in the shortest time possible

The proposed Africa Geothermal Centre of Excellence (AGCE) will address the practical skills gap in the geothermal energy science and technology in Africa.

The proposed courses will focus on theoretical and hands-on experience in use of the various methods and technologies for exploration and development of geothermal resources.

Thank you



LEAP-RE



CAPACITY BUILDING IN GEOTHERMAL ENERGY DEVELOPMENT IN AFRICA: SUCSESSES AND CHALLENGES

MARIITA

LEAP-RE STAKEHOLDER FORUM
KIGALI, 10-13 OCTOBER 2023



LEAP-RE

Long-Term Joint EU-AU Research
and Innovation Partnership on Renewable Energy



The LEAP-RE project has received funding from the European Union's Horizon 2020 Research and Innovation Program under Grant Agreement 963530.