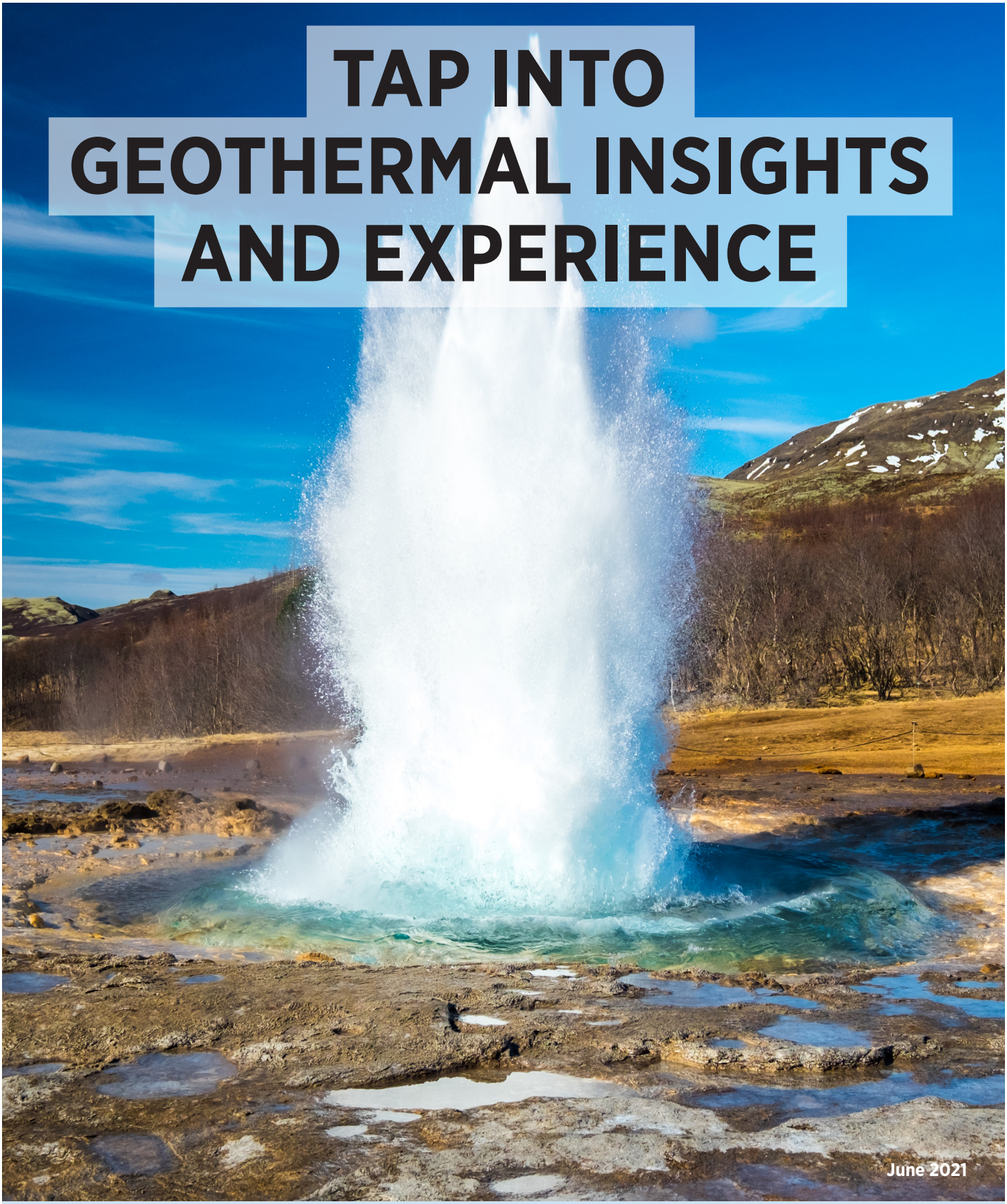
GLOBAL GEOTHERMAL ALLIANCE

Co-ordinated by

IRENA
International Renewable Energy Agency

TAP INTO GEOTHERMAL INSIGHTS AND EXPERIENCE



June 2021

The Alliance aims to foster an enabling environment to attract investments in geothermal power generation and direct use of geothermal heat

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The Global Geothermal Alliance (GGA) serves as a platform for dialogue, co-operation and co-ordinated action between the geothermal industry, policy makers and stakeholders worldwide.[1]

Launched at COP21,[2] the GGA is a coalition for action to increase the use of geothermal energy, both in power generation and direct use of heat. It calls on governments, business and other stakeholders to support the deployment of realisable geothermal potential.

The Alliance has an aspirational goal to achieve a five-fold growth in the installed capacity for geothermal power generation and more than two-fold growth in geothermal heating by 2030.[3]

What the Alliance does

The GGA aims to foster an enabling environment to attract investments in geothermal power generation and direct use of geothermal heat. The Alliance provides customised support to regions and countries with geothermal market potential and facilitates the exchange of insights and experience among key stakeholders in the geothermal energy value chain. It will identify and promote models for sharing and mitigating risks, attract private investment and integrate geothermal facilities into energy markets. It will help to streamline outreach efforts to give geothermal energy greater visibility in the global energy and climate debates.

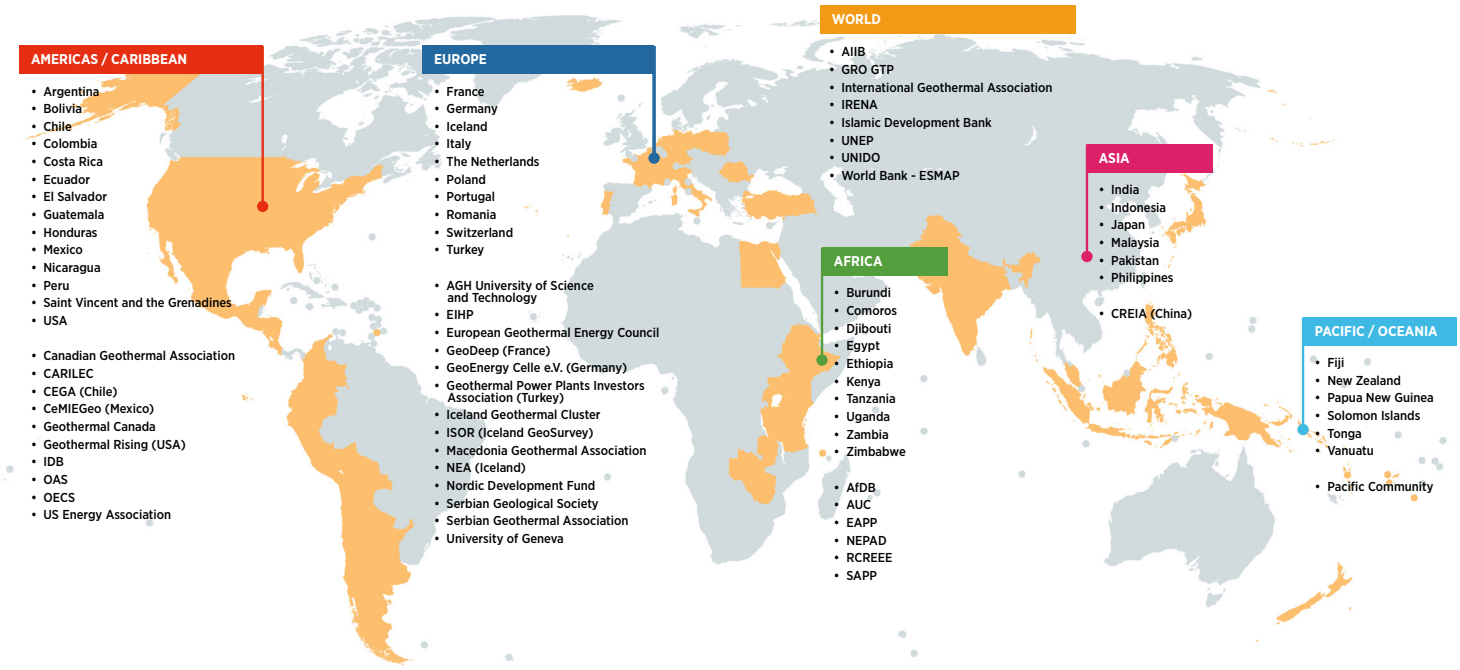
[1] Objectives and principles of the Alliance are stipulated in the Joint Communiqué on the Global Geothermal Alliance, available at www.GlobalGeothermalAlliance.org

[2] The 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), held in Paris, France, in December 2015.

[3] Based on REmap analysis – a global roadmap to double the share of renewables in the energy mix.

Members

Argentina, Bolivia, Burundi, Chile, Colombia, Comoros, Costa Rica, Djibouti, Ecuador, Egypt, El Salvador, Ethiopia, Fiji, France, Germany, Guatemala, Honduras, Iceland, India, Indonesia, Italy, Japan, Kenya, Kingdom of the Netherlands, Malaysia, Mexico, Nicaragua, New Zealand, Pakistan, Papua New Guinea, Peru, Philippines, Poland, Portugal, Romania, Saint Vincent & the Grenadines, Switzerland, Solomon Islands, Tonga, Turkey, Uganda, United Republic of Tanzania, United States of America, Vanuatu, Zambia, Zimbabwe.



Partners

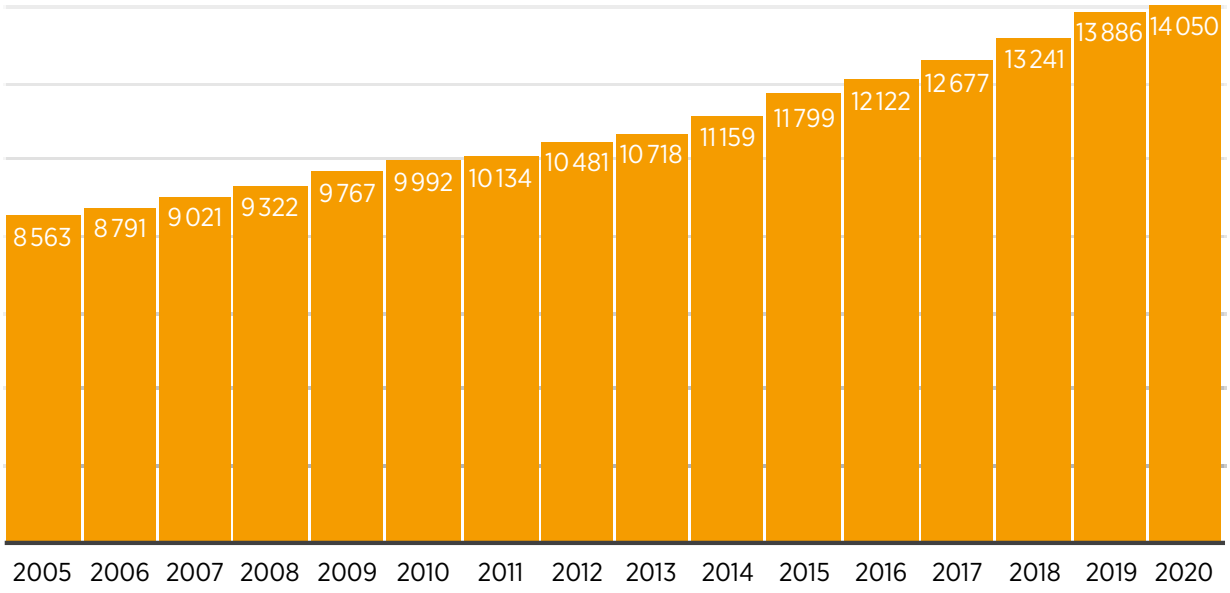
African Development Bank, African Union Commission, AGH University of Science and Technology (Poland), Andean Geothermal Center of Excellence (Chile), Asian Infrastructure Investment Bank (AIIB), Association GeoEnergy Celle e.V. (Germany), Canadian Geothermal Energy Association, Caribbean Electric Utility Services Corporation (CARILEC), Centro Mexicano de Innovación en Energía Geotérmica (CeMIEGeo), Chinese Renewable Energy Industries Association (CREIA), Eastern African Power Pool, Energy Institute Hrvoje Požar (Croatia), European Geothermal Energy Council, Geothermal Canada, GEODEEP – Geothermal Cluster for Heat and Power (France), Geothermal Resources Council (USA), Geothermal Power Plants Investors Association (Turkey), Iceland GeoSurvey, Iceland Geothermal Cluster Initiative, Inter-American Development Bank, International Geothermal Association, International Renewable Energy Agency, Islamic Development Bank, Macedonian Geothermal Association, National Energy Authority (Iceland), New Partnership for Africa's Development, Nordic Development Fund, Organization of American States, Organisation of Eastern Caribbean States, Regional Center for Renewable Energy and Energy Efficiency, Serbian Geothermal Association, Serbian Geological Society, Southern Africa Power Pool, Pacific Community, United Nations Environment Programme (UN Environment), United Nations Industrial Development Organization (UNIDO), United Nations University – Geothermal Training Programme (UNU-GTP), United States Energy Association (USA), University of Geneva, World Bank.

* GGA Members and Partners as of May 2021

GLOBAL TRENDS FOR GEOTHERMAL ELECTRICITY AND DIRECT USE

The installed capacity for geothermal electricity has continued to grow over the years, albeit at a modest rate. A multi-stakeholder approach can support the accelerated deployment of geothermal energy.

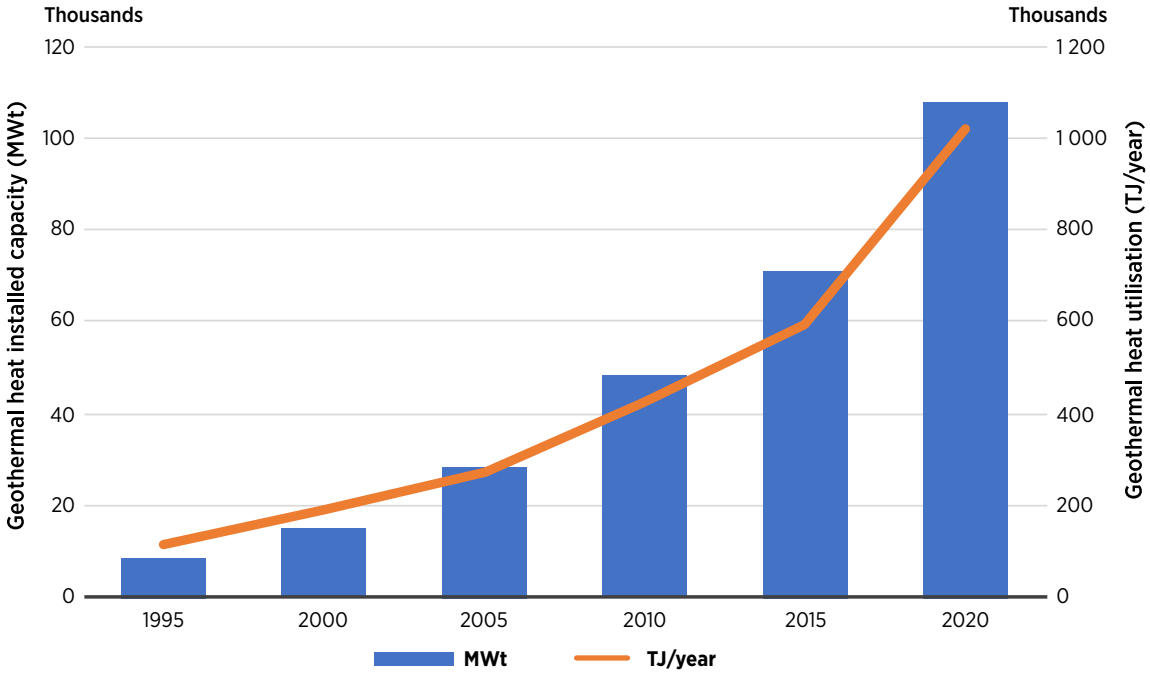
Global trends for geothermal electricity capacity (MWe)



Source: IRENA Statistics, 2021

Direct use is an important component of geothermal utilisation with applications in heating and cooling of buildings, bathing and swimming, greenhouse heating, aquaculture heating and industry.

Global trends for geothermal direct use (MWt)



Note: MWt = Megawatts thermal; TJ/year = terajoule/year
Source: Adopted from Lund and Toth (2020)

GGA ACTION PLAN

Based on the principles stipulated in the GGA Joint Communiqué at the launch in Paris, the GGA Action Plan was endorsed by Members and Partners in May 2016.

The Action Plan identifies focus areas for GGA action and the modalities for implementation and funding. The Alliance will co-ordinate closely with existing structures, programmes and facilities that share the common objective of promoting geothermal energy deployment at the international, regional and national levels. It will operate based on activities linked to the Action Plan, supported in implementation and funding by committed Members and Partners.

Priority Action Areas

- **Action 1 – Resource and Market Assessment:** Identification and mapping of geothermal resources for development, including existing and potential geothermal market status and near-term projects in the pipeline.
- **Action 2 – Needs and Obstacles Assessment:** Scoping the need for assistance of countries with transformative potential; can involve removing obstacles, such as policy, regulatory, funding capacity building.
- **Action 3 – Enabling Frameworks:** Supporting the development of effective enabling policy, regulatory and institutional frameworks as well as relevant legal, fiscal and capacity building activities, to achieve national objectives for geothermal energy deployment; facilitating access to and proposing improvements financing and risk mitigation instruments.
- **Action 4 – Global Geothermal Network:** Establishing and improving a robust global network of geothermal energy experts that builds upon existing networks; promoting geothermal energy's role in supporting decarbonisation strategies and the implementation of national climate plans.

Who can join?

The GGA is an inclusive and neutral multi-stakeholder platform that brings together public, private, intergovernmental and non-governmental actors that share a common vision of accelerating the deployment of geothermal energy for power generation and other applications.

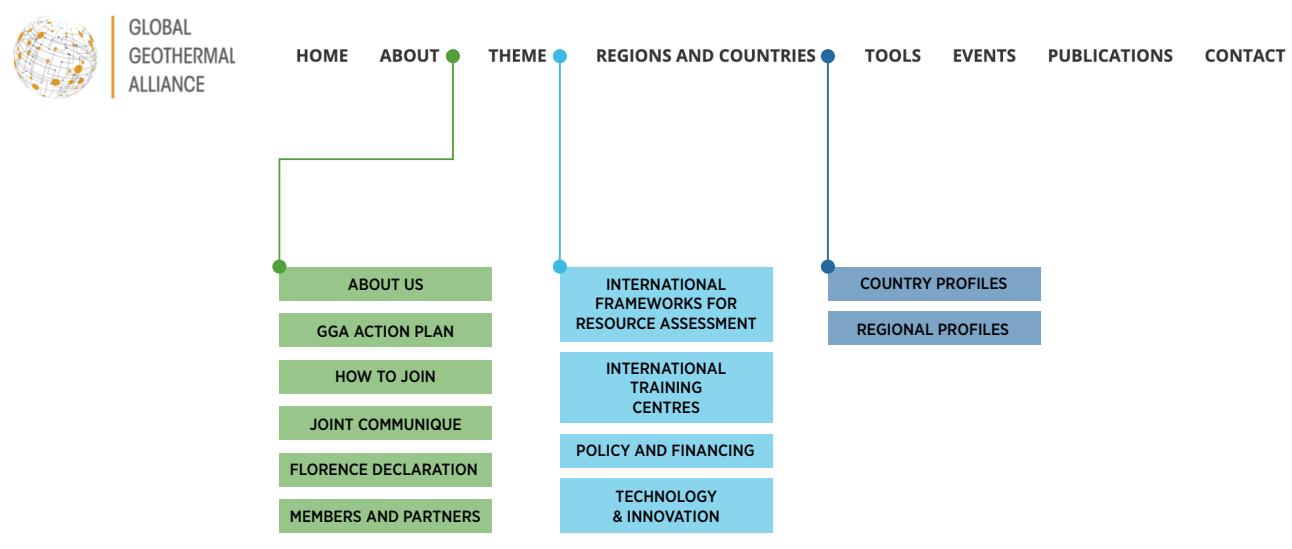
Member countries include those with resource potential that are established or emerging as geothermal markets, along with other countries that wish to support the activities of the Alliance.

Partner institutions include:

- Development partners, international and bilateral development organisations, international financial institutions, institutional investors, international organisations, and other geothermal energy development partners.
- Geothermal industry represented by geothermal business associations at the global, regional and national levels.
- Research and development (R&D) and academic organisations operating in the field of geothermal energy at the regional, national or subnational level.

Knowledge Sharing Platform

To enhance access to information, the GGA is developing a knowledge-sharing platform. The platform is an upgrade to the GGA website and aims to collate information from members and partners about their geothermal activities. The knowledge-sharing platform will streamline access to geothermal information to any interested party or individual.



The knowledge-sharing platform highlights activities being undertaken by different actors to address the barriers hindering geothermal development as well as those that have been implemented and resulted in a conducive environment for geothermal investment. Information about Installed capacity for geothermal electricity and heat, international frameworks for resources assessment, international training centers, and country and regional geothermal profiles is available.

Becoming a Member or Partner

In line with the inclusive and neutral nature of the GGA, applying for membership or partnership is straightforward. Requests by interested countries and institutions should be sent to the International Renewable Energy Agency (IRENA), the co-ordinator and facilitator of the GGA, by way of an official written request addressed to IRENA's Director-General.

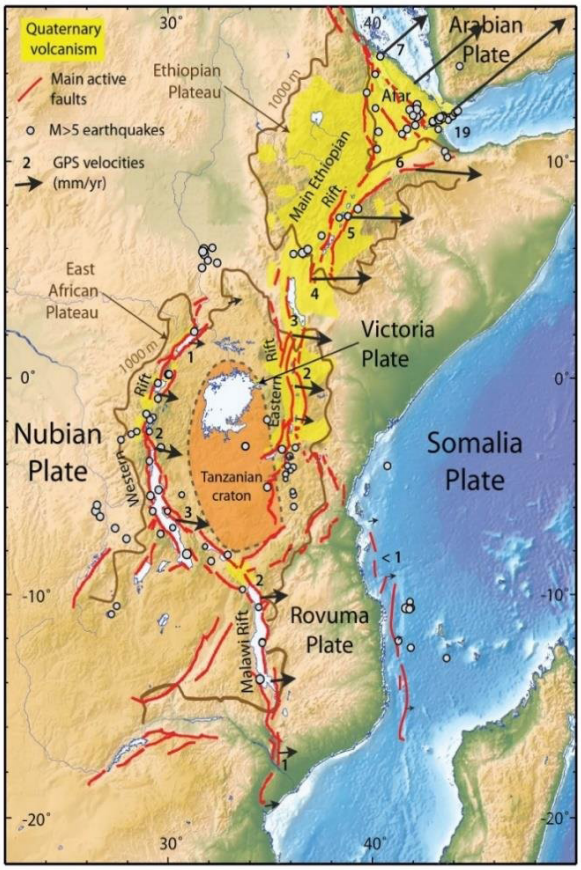
- For country applications, IRENA confirms membership with the country and informs GGA Members and Partners accordingly.
- For institutional applications, IRENA seeks the consent of GGA Members, as per the GGA Joint Communiqué. Upon approval, IRENA confirms the partnership with the institution and informs GGA Members and Partners accordingly.

Member countries and partner institutions are not required to contribute any membership fee. The costs associated with GGA activities, including co-ordination meetings, shall be borne by participants.

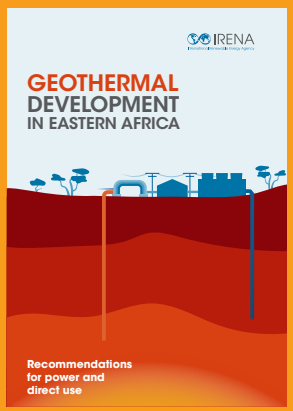
REGIONAL PERSPECTIVE

Geothermal Development in the East Africa Rift

The GGA takes a regional approach to support countries to establish enabling frameworks for geothermal development. The East Africa Rift Region is endowed with good quality geothermal resources which remain largely untapped.



Source: Calais, 2016



In the framework of the Global Geothermal Alliance, and in consultation with stakeholders from the East Africa Rift region a report on *Geothermal Development in Eastern Africa: Recommendations for power and direct use* was developed. It provides an updated status of geothermal development in the region (as of 2020) and identifies the key bottlenecks hindering accelerated development – drawing on lessons from Comoros, Djibouti, Ethiopia, Kenya, Uganda, the United Republic of Tanzania and Zambia.

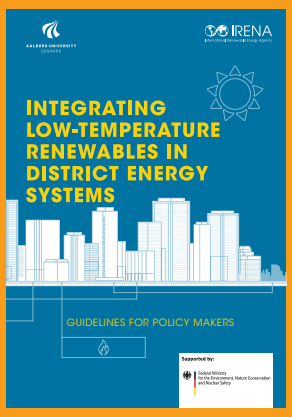
The report also offers recommendations to policy makers on the creation of enabling conditions to fast-track geothermal energy development for both electricity and direct use among the countries of the East Africa Rift.

The findings of this report will act as a guide for GGA's further engagement to support geothermal development in the region.

THEMATIC PERSPECTIVE

Geothermal applications in district heating and cooling

The GGA is encouraging the decarbonisation of heating and cooling in the building sector in cities through the development of district energy infrastructure that can support the utilisation of abundantly available low temperature renewable energy resources, including geothermal energy.



In the framework of the "Energy Solutions for Cities of the Future" project, and under the umbrella of the Global Geothermal Alliance, IRENA in collaboration with Aalborg University, and with the support of an advisory group of experts on district heating and cooling developed a guidebook for policy makers on *Integrating low-temperature renewables in district energy systems*. The guidebook provides policy makers with examples of available tools and options to facilitate the use of low-temperature renewable heat sources such as low-temperature geothermal in new and existing district energy systems.

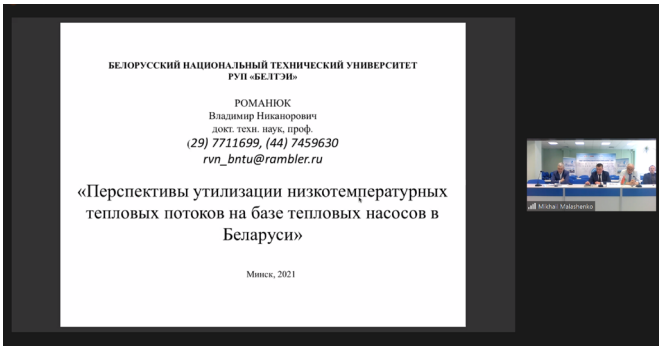
The guidebook is available in Chinese, English, Russian and Spanish; and includes a translated summary for policy makers.

The guidebook is been used for capacity building activities in countries and regions that have shown transformative potential to switch from the use of fossil fuels to clean heating options.

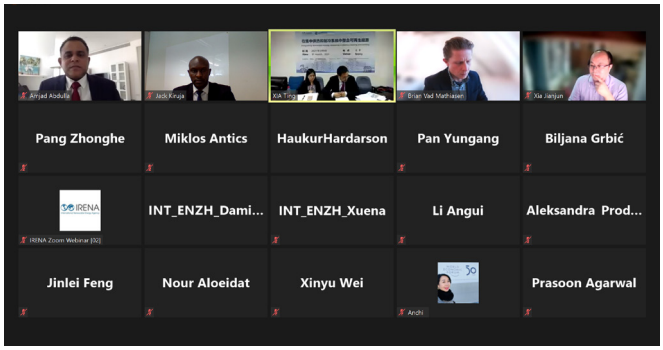
Capacity building workshop on district heating and cooling, Belgrade, December 2019.
Credits: Balkan Green Energy News portal

Series of global webinars on Energy Solutions for Cities of the Future: Enabling the Integration of Low-Temperature Renewable Energy Sources into District Heating and Cooling Systems.

Series of global webinars on district heating and cooling, May-June 2020



Capacity building Webinar on district heating and cooling, Belarus, February 2021.



Capacity building Webinar on district heating and cooling, China, February 2021.

Drilling of the first well in Tulu Moye geothermal project in 2020

Svarmi Drone Mapping and Survey for TMGO©2020

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For more information:

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www.GlobalGeothermalAlliance.org