

## **Fifteenth session of the IRENA Assembly**

### **Side Event**

13 January 2025, 13:00-14:30 GST  
St. Regis Hotel, Saadiyat Island, Abu Dhabi

### **GGA Annual Meeting**

#### **“Geothermal in action: Driving sustainable development and energy transition”**

#### ***Background***

Geothermal energy is a competitive, reliable and versatile renewable energy source with significant potential to contribute to the global energy transition in pursuit of meeting their climate and sustainable development goals. Geothermal energy offers more than just electricity generation through direct use applications, such as heating and cooling, agriculture, food processing and tourism, giving it a unique quality that most other energy forms do not possess.

Despite this potential, geothermal deployment lags behind. The installed capacity for geothermal electricity generation stands today around 16 GW and approximately 170 GW for heating and cooling. According to the UNFCCC NDC Synthesis Report 2023, only 9% of the NDCs refer to geothermal energy as one of their priorities for reducing emissions.

Geothermal energy can contribute significantly to achieving the COP28 global commitment for Tripling Renewable Energy and Doubling Energy Efficiency by 2030, underlining the need for increased focus, investment and innovative solutions to de-risk projects to accelerate the geothermal deployment.

Geothermal energy improves power system flexibility by providing reliable baseload power and is unaffected by weather, making it an ideal partner for intermittent renewable sources like wind and solar energy. It offers long-term economic benefits with lower operating cost and no fuel expenses which results in relatively predictable return on investment with a lifespan over decades.

Beyond electricity generation, geothermal energy offers significant benefits in agriculture and food processing. Direct-use applications such as greenhouse heating, aquaculture, and food drying can enhance food preservation and potentially increase food availability by 20%. This is particularly crucial as global food demand is expected to grow as the world population will reach almost 10 billion by 2050, according to the World Population Prospects 2022 report by UN DESA. By integrating geothermal energy into agri-food value chains, countries can strengthen resilience and boost economic activities across the sector.

IRENA's guidebook on "Powering Agri-food Value Chains with Geothermal Heat" provides a solid reference to accelerate the utilisation of geothermal energy across agri-food value chains. The learnings from the guidebook further inform country specific programme development in accelerating direct use of geothermal energy particularly in Sub-Saharan Africa.

Tourism is another example where geothermal derivatives can increase the economic growth of countries and local communities. A prime example of this is the Blue Lagoon in Iceland, a geothermal spa that uses mineral rich geothermal water from a nearby power plant to offer a unique bathing experience. It attracts over million visitors annually, expands the country's economy and showcases how geothermal resources can be leveraged for sustainable tourism.

High investment costs, drilling risk, inadequate policy and regulatory frameworks and limited awareness among policy makers and investors continue to be among the key obstacles hindering faster deployment of geothermal projects. To overcome these challenges, de-risking instruments such as government incentives, public-private partnership and innovative financial mechanisms can mitigate these uncertainties. It is important that countries develop a supportive policy and regulatory framework to attract investment and accelerate development to ensure that renewable energy reaches its full potential.

The Global Geothermal Alliance (GGA) plays a crucial role as a multi-stakeholder platform coordinated by IRENA, bringing together 55 member countries and 59 partners across the globe dedicated to advancing geothermal energy. The GGA encourages collaboration among public, private and governmental stakeholders to accelerate the deployment of geothermal energy, including electricity production, heating and cooling and agri-food applications. Through capacity building, policy support and knowledge sharing, the GGA aims to unlock geothermal potential as a key contributor to sustainable energy transitions.

### ***Objectives***

The Annual Meeting of the Alliance will bring together the member governments and partner institutions to have an exchange on the challenges and opportunities in the geothermal sector, share knowledge and experiences and provide feedback and guidance on the priority areas of focus for the Alliance to better support faster deployment of geothermal power and heat globally.

### ***Associated Publications***

1. [Renewable Energy Solutions for Heating Systems in Mongolia: Developing a strategic heating plan](#)
2. [Global Geothermal Market and Technology Assessment](#)
3. [Powering Agri-food Value chains with Geothermal Heat](#)
4. [Integrating Low-temperature Renewables in District Energy Systems](#)

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