



Unlocking Geothermal Investments in Central America: Strengthening Enabling Policy and Regulatory Frameworks

21-22 August 2017 – San Salvador, El Salvador

BACKGROUND

Central America holds some of the world's most promising geothermal resources. The exploitation of geothermal energy for power generation began in the region in the 1970's with the Ahuachapán field in El Salvador, followed by other fields in Nicaragua, Costa Rica, Guatemala and Honduras. To date, these countries rank among the top 10 globally in terms of the share of geothermal energy in their electricity mix, with El Salvador behind only Iceland. Despite the resource potential, Panama does not yet use geothermal energy for power generation. Belize is believed to have resources suitable for low enthalpy technology, but no study has so far been undertaken.

As a cost-competitive and sustainable source of energy, geothermal can help lower the region's high electricity prices while contributing to its low-carbon growth. Expanding geothermal deployment, however, has been hampered by several barriers, among others, the lack of adequate policies and regulations for the use/development of geothermal resources.

Since 2013, the International Renewable Energy Agency (IRENA) has been actively supporting the Latin American region in its efforts towards wider deployment of geothermal energy. As the first regional geothermal energy programme, the Agency, in collaboration with the Latin America Energy Association (OLADE) and the International Geothermal Association (IGA), successfully implemented the "Geothermal Initiative in Andes" to support the development of the vast but largely untapped geothermal potential of Andean countries, specifically addressing some of key issues related to technical, legal, regulatory, and financial frameworks.

Under the Global Geothermal Alliance (GGA) initiative, IRENA has started implementing a regional capacity building program in Central America to support the development of capabilities of various stakeholders along the geothermal value chain. This workshop constitutes part of this programme to strengthen the institutional and human capacities of Central American countries in the areas of geothermal technology, policy, regulation and finance. The workshop is co-organized by IRENA and LaGeo in coordination with GIZ.

OBJECTIVES

- Exchange views on the gaps and barriers in geothermal policy and regulation in the region – of short term or long term nature
- Share knowledge, experiences and best practices in geothermal policy and regulation within Central and South America and outside the region.
- Explore synergies and potential areas for collaboration amongst IRENA, countries of the region and development partners.

TARGETED AUDIANCE

- Experts in geothermal energy from governments of all Central American countries (Belize, Guatemala, El Salvador, Honduras, Costa Rica, Nicaragua and Panama).
- Representatives from private sector, academia and development partners.

AGENDA

Monday, 21 August

- 08:30 – 09:00 **Arrival and Registration**
- 09:00 – 09:45 **Welcoming remarks:**
- Mr. Bernd Finke, German Ambassador for El Salvador
 - Mr. Gurbuz Gonul, Director of the Country Support and Partnerships, IRENA
 - Arq. David Antonio López Villafuerte, Grupo CEL
- 09:45 – 10:15 **Group Photo/ Coffee break**
- 10:15 – 10:30 **Keynote Address: What Future for Geothermal?**
- Alexander Richter, President of International Geothermal Association (IGA)
- 10:30 – 11:00 **Session I: Country in Focus: El Salvador**
- Presentation: Arq. David Antonio López Villafuerte, President Grupo CEL
- Q&A
- 11:00 – 13:00 **Session II: Geothermal Energy in Central America**
- Moderator: Gurbuz Gonul, IRENA
- Scene-setting presentations:
- Status of geothermal energy in Central America. Tanja Faller, GIZ
 - Geothermal energy and its prospects within the Regional Electricity Market in Mesoamerica. Hugo Ventura, ECLAC

Panel discussion:

- Panellists: Francine Solera, Costa Rica; Ing. Kevin Padilla, LaGeo, El Salvador; Miguel García, Honduras; Claudia Maldonado, Guatemala; Juan M. Lucero, Panamá

13:00 – 14:30

Lunch break

14:30 – 16:00

Session III: Unlocking geothermal investment in Central America

Moderator: Ing. José Estévez, LaGeo

Presentations:

- Understanding bankability requirements for geothermal power projects with the IRENA Project Navigator: Simon Benmarraze, IRENA.
- Geothermal Development Facility: Roberto Navarro, KfW

Panel discussion:

- Panellists: Simon Benmarraze, IRENA; Roberto Navarro, KfW; Fernando Diaz, Panamá

16:00-16:30

Coffee Break

16:30 – 18:00

Session IV: Optimizing licensing procedures for Geothermal Energy – International Experience

Moderator: Luca Angelino, IRENA

Scene-setting presentation: Geothermal transparency guide: Regulatory frameworks for geothermal exploration and exploitation Baldvin Björn Haraldsson, BBA.

Case-study presentations:

- Chile: Rubén Eduardo Muñoz Bustos, Director of Geothermal, Ministry of Energy
- Mexico: Michelle Alejandra Ramirez Bueno, Director of Geothermal, SENER

Panel discussion: Country-specific highlights from Central America (all country representatives)

18:15

Reception - hosted by LaGeo

20:00

Return to the Hotel

Tuesday, 22 August

- 08:15 – 09:30 **Session V: Minimizing Environmental and Social Footprint of Geothermal Development**
- Moderator: Rigoberto Salazar, GIZ
- Scene-setting presentation: Geothermal Development, Learned Lessons in Costa Rica, Leonardo Solís, ICE, Costa Rica
- Panel discussion:
- Michelle Ramirez, Mexico; Leonardo Solís, Costa Rica; Ing. Luis Franco, El Salvador; Balvin Björn, BBA; Prof. Sigurjón Arason, University of Iceland
- 09:30 – 09:45 **Coffee break**
- 09:45 – 11:30 **Session VI: Promoting Direct Uses and Applications in Central America:**
- Moderator: Alexander Richter, President of International Geothermal Association
- Scene-setting presentation: Prof. Sigurjón Arason, University of Iceland
- Country case presentations:
- Kenya: Esther Nyambura, Geothermal Development Company
 - Guatemala: The benefits of developing direct uses of geothermal energy. El Ceibillo, Guatemala Case: Ing. Luis Merida, USGeothermal
- Panel discussion:
- Panellists: Arq. Rosy Escobar, El Salvador; Ing. Luis Merida, Guatemala; Michelle Ramirez, Mexico; Esther Nyambura, Kenya; Rigoberto Salazar, GIZ
- 11:30 – 12:00 **Closing Remarks**
- Afternoon **Site Visit**
- Ahuachapán Geothermal Field and Power Plant**