



## HARNESSING LOW-COST, LOW-CARBON POWER: The Geothermal Dialogues



### ✓ The Challenge

Geothermal energy has the potential to provide significant amounts of low-carbon, low-cost electricity in many developing countries and is the cheapest reliable source of power available in some. Its ability to provide low-cost, low-carbon power reliably, flexibly, and continuously means it is well-placed to meet developing countries' growing energy needs while displacing polluting fossil fuel power plants.

High costs and high risks of development, however, significantly limit geothermal expansion in many markets. Up to 90 percent of geothermal project investments use some aspect of public debt or equity support. The private sector has demonstrated willingness to invest in geothermal technologies but rarely in early exploration and drilling phases. Enabling developing countries to benefit more from this renewable energy resource requires determining the most effective use of public funds and private financing.

### ✓ The Solution—Who Did What?

Climate Investment Funds (CIF) is a leader in driving global investments to support climate-smart development planning and action. CIF partnered with the Climate Policy Initiative (CPI) on in-depth analytical work to produce recommendations for effectively targeting public finance and public policy to scale up geothermal deployment. Comparative analysis of various financing and policy models around the world, including case studies on projects in Indonesia, Kenya, and Turkey, provided useful lessons in how public finance and public policy can work together to increase private investor confidence and participation.

CPI and CIF organized a series of three stakeholder dialogues—the Geothermal Dialogues—that brought together key industry leaders and major financing actors to share experiences and explore emerging lessons in the quest to scale up effective geothermal finance. The dialogues assembled countries receiving CIF support for geothermal projects, host countries involved in other (non-CIF) geothermal projects, donor countries, project developers and financiers, multilateral

development banks, representatives of the CIF Administrative Unit, and selected additional participants.

The Energy Sector Management Assistance Program, administered by the World Bank, partnered with CPI and CIF on the first dialogue, which took place in Copenhagen, Denmark, in 2014, under the theme "Effective Financing of Geothermal Development—What Have We Learned?" Among other topics, participants discussed a case study on the Gümüşköy Geothermal Power Plant Project by BM Holding Group in Turkey. This relatively small-scale project was entirely developed by the private sector from the exploration stage, providing significant lessons for the expansion of geothermal development in Turkey and globally. The second dialogue, hosted by Munich Re in Munich, Germany, in 2015, focused on the same theme. One session discussed a case study on the Olkaria III Geothermal Power Project in Kenya, the first privately funded and developed geothermal project in Africa and the first in the country to be operated by a private independent power producer. The third dialogue, held on the

sidelines of the 2015 Vienna Energy Forum in Austria, discussed “Lessons on the Role of Public Finance in Geothermal.” Building on the first two dialogues, it examined different policies and public finance instruments that can enable more private exploration. Participants discussed regulatory and institutional frameworks, access to finance, private sector participation, innovative solutions, and the role of international development finance in supporting commercial banks to assist geothermal projects.

During each dialogue, country representatives shared the status of their geothermal development—resources, policies, targets, investments, technologies, and business models—and of CIF-financed projects. A country knowledge exchange immediately followed the third dialogue, with participants from Armenia, Colombia, Mexico, the Philippines, Turkey, and the private sector. Armenia and Colombia shared challenges faced and progress made so far. The Philippines presented how its well-designed regulatory framework has encouraged private sector participation in geothermal development. Turkey discussed challenges—common to countries in early stages of market development—like predictability of a regulatory and institutional environment, finance and local capacity constraints, and access to quality data on resource availability.

#### ✓ Results

The dialogues resulted in the development and co-creation of case studies on geothermal power development in Indonesia, Kenya, and Turkey, and a comparative

analysis of various financing and policy models around the world.

Following the dialogues, and drawing lessons from the three case studies, a 2015 Webinar, “Driving Geothermal Deployment in Developing Countries,” shared recommendations from policy makers and development finance institutions on the effective delivery of public finance to enable fast and cost-effective deployment of geothermal in developing countries.

Policy makers and donors gained knowledge on how to cost-effectively support the scale-up of geothermal energy deployment in developing and emerging countries, particularly through the use of financing and nonfinancing tools that encourage private investment.

#### ✓ Lessons Learned

- » Sustained engagement of relevant stakeholders—in a series of knowledge-sharing events on a single thematic topic—enhances knowledge exchange, uptake, and use.
- » Link the topics/questions addressed in the series. Outcomes of one dialogue should feed into the next.
- » A multi-pronged approach (for example, combining dialogues with case studies and a Webinar) effectively deepens knowledge and learning.
- » Invite participants who can be effective change agents and influence policy development or implementation.
- » Including practitioners from outside the usual networks (in this case, countries involved in non-CIF projects) increases knowledge exchange and learning.
- » Piggybacking on a major event (for example, holding the third dialogue in conjunction with the Vienna Energy Forum) ensures maximum, relevant, and useful participation.
- » Involvement of key partners broadens participants’ knowledge. Munich Re, host of the second dialogue, shared its experience in underwriting geothermal risk, opening up opportunities for further exploration of financing geothermal risk.

#### ✓ Instruments

Multi-stakeholder dialogue

#### ✓ Knowledge Brokers

Joint team from CPI and CIF

#### ✓ Multimedia

- » First Geothermal Dialogue: Effective Financing of Geothermal Development—*What Have We Learned?*; Copenhagen, October 24, 2014
- » Second Geothermal Dialogue: Effective Financing of Geothermal Development—*What Have We Learned?*; Munich, March 2, 2015
- » Third Geothermal Dialogue: Lessons on the Role of Public Finance in Geothermal; Hofburg, Vienna, June 16, 2015
- » San Giorgio Group Report: The Role of Public Finance in Deploying Geothermal—Background Paper: <https://bit.ly/2zLNzp>
- » The Climate Investment Funds: <https://www.climateinvestmentfunds.org/theme/geothermal>