San salvador thermal energy storage

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Multilateral and bilateral finance institutions--such as the IDB, the World Bank, the Japan International Cooperation Agency (JICA), the German Agency for International Cooperation (GIZ), the Credit Institute for Reconstruction (KFW), and others--are ready to finance geothermal projects in Latin America. The IDB, World Bank, GIZ, and JICA offer concessional loans to government-led geothermal exploration and production projects. For example, in Costa Rica, JICA is financing around 50 percent of the cost to develop two new geothermal power plants at Borinquen.

IDB Invest and other avenues of direct foreign investment (DFIs) offer commercial loans to privately led geothermal production projects. For example, the Clean Technology Fund offered a contingency grant to Cerro Pabell?n--the first privately operated geothermal power plant in South America--for $30 million to finance the exploratory works of the project. In addition, the loan would have been converted to a grant if adequate geothermal resources were not found. This project was developed by a joint venture between Enel Green Power Chile and Empresa Nacional del Petroleo (ENAP).

Many benefits come from developing Latin America"s abundant geothermal resources, including stable, decarbonized, and indigenous electricity and heating; improved economic opportunities; and energy security. This section will discuss geothermal"s added value over other technologies, the ability to use geothermal heat for building heating and industrial processes, and the positive impacts it can have to both the global community and local communities.

Geothermal offers additional benefits when compared to other renewable energy sources. While geothermal, wind, and PV can all provide zero-carbon electricity generation, geothermal plants are compact and can provide dispatchable power for baseload generation.[1] Geothermal power plants can provide more electricity generation with less space because they have higher capacity factors--89 to 97 percent, compared to 26 to 40 percent for wind and 22 to 32 percent for solar PV.[2]

Solar PV and wind plants are variable renewable energy (VRE) and need the sun shining or the wind blowing to produce electricity. VRE sources can create fluctuations in the grid that need to be managed by energy storage systems or complemented by dispatchable power plants that can control power output on demand. Geothermal power plants are one of the few dispatchable zero-carbon options. Large capacities of solar PV and wind would have to be built with large battery storage at great expense to provide the same around-the-clock power as geothermal.

In addition to electricity generation, geothermal heat can have direct-use applications, such as heating and cooling buildings, greenhouses, and other industrial applications. Direct use requires lower-temperature geothermal resources than those used for electricity generation.

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In 2015, the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) launched the Global Geothermal Alliance (GGA) as a coalition for action to increase the use of geothermal energy. The GGA has 50 members, including Costa Rica, El Salvador, and Peru. Costa Rica is aiming for a decarbonized economy with net-zero emissions by 2050; El Salvador has set a target of 640 kilotons of CO2-equivalent annual emissions reduction from fossil fuel burning activities by 2030; and Peru has committed to reducing GHG emissions by 30-40 percent by 2030.

Like other power projects, geothermal power plants make expenditures for local, provincial, and federal taxes and royalties and can increase tax revenues for governments. Other local benefits of geothermal energy include social development initiatives made voluntarily by the geothermal company. For example, the Philippine National Oil Company - Energy Development Corporation gives 40 percent of its geothermal profits net of taxes to the municipalities hosting the geothermal resources and to a local development fund.