

Desde Santiago (*from Santiago*)

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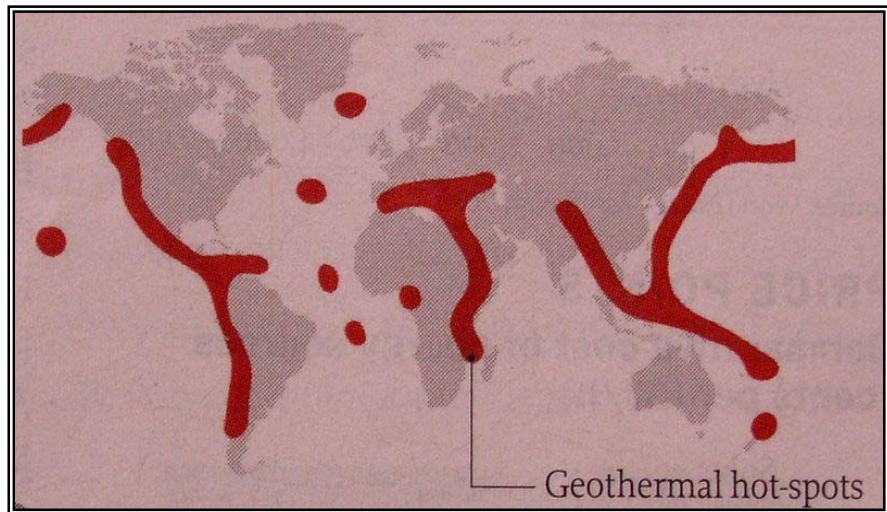
Geothermal Power: Chilean Government Proactively Moving Towards a Renewable Domestic Energy Source

Chilean Ministry of Mining announced a tender for twenty Geothermal Exploration Permits and foresees granting a greater number of them in the near future.

By Cristopher Scolari*

Once again Chile's geography has endowed the country with yet another privileged position; this time in the energetic field. True, Chile does not have important coal, oil or natural gas resources as do other regional neighbors but what it does have is an undeniably cleaner, renewable source: geothermal energy. Quite a head-start for positioning itself among the developed countries of the post-Kyoto era!

The Chilean Minister of Mining, Mr. Santiago González, announced this past June 1st the tender of 20 new geothermal exploration licenses, bids of which are due this July 31. Said licenses shall be granted in areas ranging as far north as the Tacora volcano, in the Arica y



Map of suitable locations to build geothermal power plants (Source: Reykjavik Energy Invest).

Parinacota Region and as far south as Sollipulli in the Ninth Region (Araucanía). Traditionally the mine-dense northern region of the country has depended on the influx

of foreign energy sources for power generation, whereas the central and southern regions – belonging to Chile's Central Interconnected System ("SIC") – have mainly

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depended on hydroelectric output. Given the energy squeeze of 2008 which saw drought conditions affect hydroelectric output as well as Argentine-imposed restrictions on natural gas imports and the global rise in oil and diesel prices, Chilean authorities feel that the time is right for Chile to seize the advantage of the clean domestic fuel sources that it has. In addition to energy

20 geothermal exploration concessions are to be awarded, which cover 766,800 of land throughout Chile's territory

independence, diversification of the Chilean energy grid is central to the push toward domestic energy exploitation.

Mr. Santiago González heralded the move as a *new and important step for the country* and said that utilizing Chile's natural geothermal energy supply could help to provide energy security in the future while reducing the country's dependence on foreign energy. With current levels of dependency, González believes that a failure to utilize this source of power now will serve to harm future Chilean competitiveness on the international stage. In his opinion, Chile must have a developed plan for energy independence by 2012, when the Kyoto Protocol will expire. Specifically addressing the geothermal energy potential in Chile, the Ministry of Mining has

estimated that geothermic output could ultimately exceed 16,000 megawatts. Indeed, an attractive number when compared to Chile's



Chile's territories in which Geothermal Exploration Permits shall be granted.

currently installed capacity of approximately 13,000 megawatts. Furthermore, Mr. González stated that *given the interest that the development of geothermic energy*

has generated... we could reach a much greater number [of concessions] in the near future. The geothermic zones currently available for exploration under the 20 new tenders total roughly 766,800 hectares of land throughout the country, a majority of which is located in the Chilean north, where some of the world's largest copper deposits are situated and where 90% of the energy used must presently be imported. The largest individual piece of land available under the tenders is a 92,400 hectare block located near the northern town of San Pedro de Atacama, famous for its geysers.

The Geothermal Energy Source

As an energy source, geothermic electricity generation is seen as both cost effective in the long term and environmentally friendly, particularly valuable given Chile's exceptional vulnerability to climate change.

In a basic sense, the process by which electricity is generated for geothermic sources uses a transfer of heat from subterranean superheated rock formations to water. In much the same manner as a natural geyser, the water is then rapidly heated, causing a conversion to steam. As the steam expands and rushes outward it may be harnessed and used to power a generator, turbine or other equipment.

The positive aspects of geothermal energy development, however, do not

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come without a literal price tag. The fact remains that geothermic energy development is presently characterized by high costs. Investigations into geothermic potential must still be conducted both above and under ground, exploratory wells must be built to test geothermic potential and the actual power plants will have to be constructed to produce electricity.

The Mining Minister acknowledges that only a select few companies are in a position to cope with the financial requirements involved. Furthermore, the Chilean government estimates companies that bid successfully will likely have to invest between US\$500,000 and US\$3 million per block in exploration costs. *In the applications processed so far, there are about US\$100 million involved in*



The El Tatio geysers, near San Pedro de Atacama.

Hard Facts

- ▶ Prior to this announcement, only 25 permits had been granted since 2000.
- ▶ Each megawatt produced by a geothermal plant requires an estimated investment of US\$1 million.
- ▶ The National Energy Commission is considering offering subsidies or insurance plans to make initial investment more attractive. Said subsidy would apply, for example, if the wells did not produce at levels of anticipated energy yield.
- ▶ Again, 20 concessions are to be awarded for geothermal exploration, bids for which are due by July 31.
- ▶ Resolution No.1062, which approved the conditions for taking part in the bidding process, can be found [here](#) (in Spanish).

the exploration alone, said González.

Financial concerns, however, have been insufficient to halt similar development in other countries throughout the world. The Philippines, not generally associated with great technological advancement, already receives at least a quarter of its energy from natural geothermal sources. Iceland's high concentration of volcanoes and subterranean heat sources, similar to that of the Chilean landscape, currently provides its populace and economy with geothermal energy accounting for 85% of the total energy used. Indonesia, a country which cannot compete with Chile in terms of development, owes 3,500 megawatts of its installed capacity to geothermic energy.

Despite the initial need for capital outlay, a number of private energy firms have already expressed an interest in exploring and utilizing the possibilities of Chilean geothermal energy. For instance, GeoGlobal Energy, a United States-based company plans to invest US\$1.5 billion in 500 megawatts of geothermal capacity in Chile. Their initial research at the San Gregorio geothermal fields showed temperatures of 275 degrees Centigrade, the highest ever recorded in Chile. GeoGlobal is initially planning to construct a 75 megawatt plant, an ample supply for both Temuco and Valdivia in the southern part of Chile.

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Getting to know us...

- **Chambers & Partners** (2008), one of the best known reference books for legal services worldwide, recognized Núñez, Muñoz y Cía., Abogados as *one of the most prestigious* firms in the country in the areas of *energy and natural resources*.
- The British guide **Latin Lawyer** in its 2009 edition highlighted Núñez, Muñoz y Cía., Abogados as *one of the 250 most important firms in the region* and one of the *16 most recommended firms in Chile*.
- In its Law Awards 2009 edition, the British magazine **ACQ Finance** granted Núñez, Muñoz y Cía., Abogados a joint award as "*Mining Law Firm of the Year*", and an additional award as "*Chilean Corporate Law Firm of the Year*" in the ACQ Country Award Supplement. ACQ Finance analyzes the main transactions on a world-wide scale and the leading law firms that counsel them. The awards are particularly significant due to their absolutely independent nature, given that the awarded firms have been chosen by their equals. Therefore, said awards seek to highlight "the exceptional performance of those that deserve recognition".

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