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Chile's solar market is leading the way in South America

The hot, barren lands of northern Chile make it an ideal location for generating solar energy, and the sector is flourishing

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In Latin America, Chile has grown into the region's leading solar market. It has 400 megawatts (MW) of solar photovoltaic (PV) generation under construction - more than any other nation in the region. For comparison 400MW is nearly half the capacity of an average nuclear reactor. Unlike wealthier nations, Chile is building large solar projects without subsidies, and is breaking ground with new business models. The nation is also building a number of landmark solar thermal projects, which may pave the way for broader deployment in Latin America.

Solar developers have flocked to the hot, barren lands of northern Chile to take advantage of some of the best natural conditions for solar in the world. The high horizontal solar radiation in areas in and around the Atacama Desert make solar technologies more productive in these regions, translating into lower costs per unit of electricity generated.

With excellent natural conditions and rising electricity demand, particularly in parts of the north, there is a sound economic rationale for building solar PV plants in Chile.

However, the long-term financial advantages of solar generation do not guarantee a strong PV market in the country, or anywhere else in the world. The nations that have widely deployed solar - including Germany, Italy, Spain and Japan - did so while initially paying high prices for solar PV.

Chile has not set the price of electricity from solar PV through policy the way that these nations have. What it has done to help move projects forward, is to offer a higher degree of financial security than most Latin American nations and an easier regulatory environment.

Yet the growth in Chile's solar market did not happen in the way that many in the industry had anticipated. As early as 2011, European developers were pursuing solar projects on Chile's Northern (SING) grid, with the intention of selling power to mining companies.

Mining is big business in Chile, and represents a large portion of the nation's electricity demand. However, mining companies have been reluctant to sign long-term agreements for a resource that could not yet guarantee a consistent supply of energy. Years passed and the number of proposed projects grew, but few if any were able to sell their power or obtain financing.

This has all changed in the last nine months. More than a dozen large solar PV projects have started construction, almost all of them in northern Chile, on the nation's central grid.

Most of these projects sell power to utilities, not to mining companies. And while mining companies represent much of the region's electricity demand, this means that solar PV will

help to feed the growing demand for power in northern Chile and Santiago.

There has been a rush of projects, including Latin America's largest solar PV plant and SunEdison's Amanecer Solar CAP, which was completed in early 2014.

Even in relatively financially stable Chile, the support of development banks for these initial projects has played a role. San Andres and at least four other large Chilean solar PV projects have received loans from the World Bank's International Finance Corporation, and projects by American developers such as SunEdison and SunPower have been supported by the US Government's Overseas Private Investment Corporation.

In addition to its solar PV market, Chile leads Latin America in the deployment of solar thermal technologies, including solar thermal for electricity generation (also known as concentrating solar power or CSP).

Recently, with the backing of the Chilean government Spain's Abengoa began work on plant in Chile that will be the first full-scale CSP plant in Latin America and one of the largest in the world. Even more significant, the Cerro Dominador plant will be able to provide electricity on demand 24 hours per day, due to the use of thermal energy storage.

This concept of round-the-clock solar electricity has been proven before with a CSP plant in Spain. Chile's Cerro Dominador however will be five times as large as Spain's Gemasolar.

While what Chile is doing with solar is already impressive, it is likely to be just the beginning for the region. Mexico is not far behind, and at the end of 2013 had over 200 MW of solar PV under construction.

As has been proven in other nations, large-scale deployment of solar inevitably spurs greater market adoption, which brings down costs for communities. And while no one can predict what will happen next, the future looks promising for solar in Chile and Latin America.

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