Energy storage technologies chile

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Currently, 36 of the 129 large-scale projects Latin America projects with an energy storage component under development are in Chile, including 32 out of 71 of the region"s early works projects. The storage technologies either in use or being considered include:

While many projects are under development, lithium - ion battery storage is still limited. According to data from Acera, the Chilean Renewable Energy Association, there are only 64MW of battery storage capacity currently active, representing 0.2% of national capacity. AES Andes, a subsidiary of U.S. company AES Corp. operates all 64MW at their Angamos and Los Andes substations. In addition, AES Andes announced plans to invest $400 million to double its storage capacity by 2023.

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Chilean president Gabriel Boric (centre) at the inauguration of an energy storage plant in the northern region of Antofagasta in April 2024. Chile has strong conditions for wind and solar energy, and is pursuing storage to help overcome intermittent supply (Image: Ximena Navarro / Direcci?n de Prensa, Presidencia de la Rep?blica de Chile)

In 2023, the region generated 64% of its electricity from clean sources, far above the global average of 39%. As production continues to ramp up, the need to store this energy is increasing alongside it.

"Simply put, the reason for storing electrical energy is that you can decide when you use it," explains Claudio Seebach, Dean of the Science and Engineering Faculty at Adolfo Ib??ez University in Santiago, Chile. "Energy can be stored for when demand is highest - it solves the natural imbalance between moments of supply and demand."

This is of particular importance in the renewables sector, where solar and wind generation provide clean, but intermittent power: when the sun isn"t shining or the wind drops, generation stops with it.

The country benefits from a unique geography and climate: in the north, the Atacama Desert boasts the highest levels of solar irradiance on Earth and, in the far south in Patagonia, Chile is buffeted by some of the strongest

winds on the planet.

But at times, these features count against it, too. For half the year, the sun sets at a similar time all along the slender tract of land it occupies on South America"s coastline, creating an immediate need for energy storage - a sector in which the country is already making progress, with the launch of ambitious targets, strategies to incentivise investment in technology, and multiple projects already online and in the pipeline.

Today, energy can be stored in multiple ways, including using banks of large-scale batteries, which can store electricity before it is injected back into national grids. Though lithium-ion batteries are the most efficient on the market, the wider use of lead or sodium alternatives could be just around the corner.

"Battery storage is efficient, but very short term," says Enzo Sauma, a professor in industrial and systems engineering at Chile"s Pontifical Catholic University. "If you store energy in a battery one month and want to use it the next, then there will be nothing there because the energy dissipates. But you can use the energy very efficiently by storing it on a day where there is lots of sunlight and then releasing it overnight."