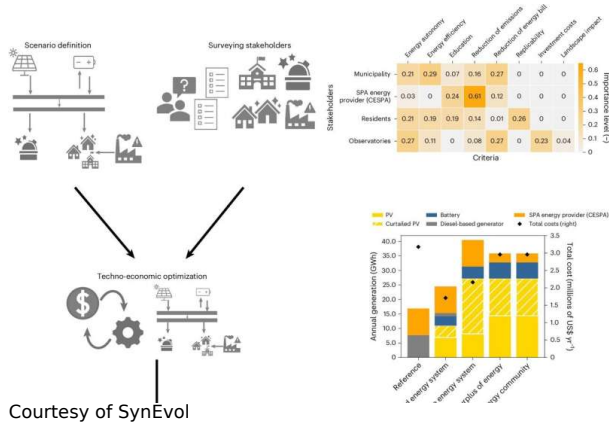


Telescopes can Assist Gaining Access to Renewable Energy.

Posted by [Okachinepa](#) 10/11/2024



Courtesy of SynEvol

Constructing a renewable energy system for a telescope in the distant Atacama Desert of Chile might also provide 66% of the energy needs of a local town, raising the prospect of cooperative development around other out-of-the-way infrastructure projects.

By incorporating renewable energy sources into the AtLAST telescope's design, more environmentally friendly energy systems would be made available to the neighboring residential areas and the astronomical community on the Chajnantor plateau. By integrating renewable energy sources, this integration would lessen the local need on fossil fuels.

According to the research, installing comparable energy systems at neighboring telescopes could lower the amount of energy generated by fossil fuels by 30GWh per year, resulting in emissions reductions of 18–24 kilotonnes of carbon dioxide equivalent. Additionally, this would help the local communities have access to reasonably priced renewable energy sources.

Chile's Chajnantor plateau in the Atacama Desert is home to observatories such as the Atacama Pathfinder Experiment (APEX) and the Atacama Large Millimeter/submillimeter Array (ALMA), making it a top location for astronomy worldwide. Astronomical facilities are frequently isolated from the national energy grid as a result of their distant location, and thus depend on gas and diesel generators to operate their power-intensive operations.

Chile's Chajnantor plateau in the Atacama Desert is home to observatories such as the Atacama Pathfinder Experiment (APEX) and the Atacama Large Millimeter/submillimeter Array (ALMA), making it a top location for astronomy worldwide. Astronomical facilities are frequently isolated from the national energy grid as a result of their distant location, and thus depend on gas and diesel generators to operate their power-intensive operations.

Due to its exceptional sun radiation levels, the Atacama Desert is also a highly desirable site for solar energy projects. Atacamenjos pay more for their electricity than those in the capital region, despite the fact that the region is home to 85% of Chile's solar energy developments. For instance, San Pedro de Atacama, one of Chile's most popular tourist sites outside of Patagonia, is 100 kilometers from the national electricity grid's end...

Up until 2022, the town and the areas around it relied only on diesel and natural gas generators, and there are often power outages. Lithium mining in the area are primarily powered by renewable energy, which is then exported to neighboring provinces.

The possibility of supplying San Pedro de Atacama with excess energy from the AtLAST telescope's energy system was determined by the researchers. "Without additional capacities in PV or battery, San Pedro de Atacama could cover 66% of its electricity demand with a solar renewable energy system sized to supply the telescope," says co-author Luis Ramirez Camargo, an assistant professor at Utrecht University's Copernicus Institute of Sustainable Development.

This concept focuses on transparent and equitable decision-making and is built on "energy communities," which are associations of public, private, and commercial organizations that collectively invest in or share energy infrastructure or offer energy services.

The researchers set up forums where locals and other impacted parties could discuss the prospects and difficulties of moving toward a more sustainable energy system in the San Pedro de Atacama region. Lead author Guillermo Valenzuela Venegas, a researcher at the University of Oslo, states that "it is essential to arrive at just, locally applicable solutions for the energy transition to allow those who are truly affected to participate in the discussion and be able to influence decision-making."

"Distributing benefits to multiple stakeholders through an energy community can lead to a more socially accepted and just energy transition," claims Ramirez Camargo. "Our research shows that astronomy can lead by example in the urgent transition to an equitable net-zero world, keeping our planet habitable and ensuring no one is left behind."