

When necessity is the mother of invention

Constrained by geography and a lack of fossil fuel resources, the French outpost of Reunion has long been a test bed for European innovation, with solar power and energy storage being no exception, notes Marion Lafuma of Reuniwatt, a cloud and solar energy yield monitoring specialist

Reunion is a French overseas department in the Indian Ocean at the crossroads of European, African, and Asian cultures. It has exceptional environmental wealth and natural heritage with Reunion National Park – listed as a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage site since 2010 – covering more than 40% of its surface. More than 885,700 people live on an island roughly the size of Luxembourg, mainly on coastal areas and mid-slopes. The population is expected to reach 1 million before 2040, presenting energy supply challenges amid climate change.

This remote small island is vulnerable to cyclones, tsunamis, and volcanic eruptions, as well as public sanitation problems, and has few conventional, finite resources, which constrains its economy. More than one-third of the island is covered by forest and wild plants, but numerous endemic species are threatened by population and urbanization pressures.

Renewable ambition

Reunion wants 100% renewable energy by 2030 and could be an R&D hotbed. Reunion's energy company, global French energy giant EDF, expects demand will be 3.1 TWh in 2024, which population growth could drive to 3.3 TWh by 2028.

The lack of an interconnected electrical network has been a strong incentive to come up with innovative solutions since the early 2000s. Rising renewable energy penetration into the power mix was enabled early on by the installation of energy storage units, forecasting, and advanced energy management systems.

Reunion was a pioneer in the use of local microgrids featuring “prosumers” – people who generate and consume electricity.

A 1 MW PV power plant developed in Reunion in December 2006 was, at that point, the biggest solar project on French territory. It was seven times larger than the biggest PV site on the French mainland.

EDF's Pégase demonstrator project, initiated in 2009 and completed in the east of Reunion in 2011, saw the company deploy a 1 MWh capacity battery – a first for the European industry. In 2018, it had a centralized storage capacity of 6 MWh across two locations.

Reunion was one of the first territories to set up agrivoltaics. Solar greenhouses saw crops such as tomatoes, watermelons, red peppers, eggplants, and passion fruit cultivated as early as 2011. Several precious and rare flowers, such as lilies, anthuriums and orchids, are also grown in these greenhouses, where experiments are made with new cultures and old vegetable varieties.

Today, more than 60% of Reunion's homes have solar water heaters installed on their roofs, thanks to a local scheme to harness abundant solar resources, engage with the population, and fight energy poverty. Reunion was the second EU region to have installed so many solar water heaters, behind Cyprus.

In the early 2010s, France massively invested in solar energy on Reunion. The island's average of 340 days of sunshine



Photo: Reuniwatt

There has been significant investment in PV on Reunion since the early 2010s.



Reunion is an overseas region of France, east of Madagascar in the Indian Ocean. Its relative remoteness and lack of interconnections has incentivized renewables development.


every year made it the ideal laboratory for such a development. By the end of 2022, Reunion's PV capacity had reached 233 MW – including 12 MW of self-consumption solar – out of a total domestic power generation capacity of 933 MW. Reunion reached 38% of variable renewable energy in its electricity mix.

The necessity for further progress and the vulnerability of Reunion became clear when looking at its energy import dependency rate, which reached 85.8% in 2022. Nevertheless, the island's people are highly motivated and want to take further steps toward a sustainable and responsible primary energy supply from renewable resources.

ADEME, the French energy agency, has been providing technical and financial support to the nation's overseas regions. It backed more than 120 projects on Reunion in 2023. The agency has also been supporting the development of regional sustainable energy policies and forecasts that solar energy alone will supply 37% of the island's total electricity production by 2030.

Mother of invention

With hydropower making up 20.7% of Reunion's domestically generated electricity in 2022, the territory has strong solar and wind capacity potential and can harness bagasse residue from the sugar cane industry, the island's main agricultural industry. The presence of active volcano Piton de la Fournaise offers geothermal energy potential, and several innovative marine energy approaches are being tested in the area.

Reunion Island is a natural gem that needs to be protected. This is particularly true as it faces challenges such as an ever-growing population and significant energy dependence. At the same time, the territory possesses all the necessary tools to overcome these obstacles including abundant renewable resources, an innovation ecosystem, and a resilient population, as well as enjoying not only local, but also national and European support. Reunion continues to be a test bed for renewable energy and a land of ground-breaking solutions. 

Marion Lafuma

About the author

Marion Lafuma joined Reuniwatt in 2011 and launched its Mauritian subsidiary. She moved to the Paris office, in charge of business development, in 2013. Lafuma has been responsible for expanding Reuniwatt's sales in renewable energy, defense, space, and atmospheric sciences. She holds a Bachelor of Business Administration degree from France's ESSEC Business School and an MBA in operational management and sustainable performance.

