

## Solar thermal energy dominica

A small but growing number of countries are well on their way to producing all of their electricity from renewable sources. Dominica, in the eastern Caribbean, is planning to join these pioneers and become the first small island developing State (SIDS) to stop using fossil fuels for energy generation.

It's called geothermal energy, and it's an exciting prospect for the country. Geothermal has none of the intermittency issues of wind and solar - in other words, it provides stable energy day and night - and doesn't take up any surface real estate, keeping the Roseau Valley in its pristine state.

Most SIDS are dependent on imported fossil fuels for electricity generation and transport, putting a major strain on their resources and jeopardising their energy security by exposing them to the vagaries of the international fuel markets.

Dominica, however, has a powerful clean power source lying in wait below the Roseau Valley, a popular tourist destination a short drive from the capital, Roseau, that is clean, completely renewable and could provide so much energy that the government could even sell excess electricity to neighbouring islands.

Pipes are drilled deep underground until they hit a "geothermal reservoir", an accumulation of water warmed by the Earth's subterranean heat to approximately 250° Celsius. Because Dominica lies atop a volcanic ridge, this heat is relatively close to the surface. When the pipes reach the reservoir, the high pressure drives it to the surface, where it is converted to steam to drive turbines that produce electricity.

"We've found an excellent geothermal reservoir in Roseau Valley, around a thousand metres down," said Fred John, the head of the government-owned Dominica Geothermal Development Corporation. "We've built two wells - one to bring up the hot water and another to return it back down to the reservoir - so it's a closed loop system. We have chosen the technology that is the most environmentally friendly and best in class."

The Government of Dominica has been convinced for decades that geothermal could be transformative for livelihoods, slashing the cost of electricity in a country which is currently reliant primarily on expensive imported diesel as a power source and supplemented by hydropower and a small amount of wind and solar.

"Dominica has been pursuing this energy source as long ago as 1969," says Vince Henderson, Minister of Foreign Affairs, International Business, Trade and Energy. "Studies carried out with the assistance of the United Nations determined that we have the potential to power the island. We've had the ambition to realise that potential since 1974, when we created the Geothermal Development Corporation."

It took the government almost four decades to secure the funding needed to drill test wells, which confirmed that geothermal would be commercially viable, allowing them to sell to neighbouring Martinique and

Guadeloupe.

"Developing geothermal power is very expensive, particularly for remote island States. We were fortunate because we received a combination of grants and concessional loans in order to get to where we are," said Mr. Henderson, pointing to funding that has come from a variety of sources, including the Caribbean Development Bank, American Development Bank and the World Bank as well as the governments of New Zealand, United Kingdom and the United States. "However," he added, "if the international community is serious, there has to be some upfront investment by way of grant funding."

The Government of Dominica is confident that geothermal energy from the plant could be powering the island within the next two years, a small time to wait given the decades-long struggle to get the project off the ground.

"I think this gives the country a real shot to transform itself economically," Mr. John said. "The first step will be cheaper electricity for everybody, which will make a huge difference. But then we go on to sell it, bringing revenue to Dominica and allowing the entire island economy to rise."

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