

Invest with Impact

Increasing renewable energy access for all

Land of Lakes and Volcanoes

The largest country in Central America, Nicaragua is home to a diverse population of 6 million. With a string of volcanoes, its biodiversity, coral reefs and islands, the country has been a popular tourist destination.

Despite Nicaragua's richness in natural resources, the full potential of Nicaragua has yet to be realized which more capital can unlock. Nicaragua went through several political upheavals and unrest, and monetary crises which have contributed to higher unemployment rates and poverty.

Clever use of volcanoes

For much of its history, Nicaragua relied on oil-based products and expensive fossil fuels. Electricity rates were some of the highest in Central America. In the early 2000s the government decided to revamp its electrical grid and require the private sector in promoting and distributing hydroelectric and geothermal plants. These efforts were successful; 58% of the energy now comes from renewable sources, making Nicaragua a regional frontrunner for renewable energy production.

Polaris Energy Nicaragua S.A. (Polaris) developed, operates, and owns geothermal facilities across the country, including the San Jacinto-Tizate plant, a two-phased geothermal project near several young active volcanoes. The project is home to a plant with a basic capacity of 72 MW. A binary power plant recently increased the installed power generation capacity to 84 MW. The technology is critical for standardizing use of geothermal electricity locations across multiple locations.

Geothermal plants typically use flash steam, which pumps water of 250-300°C from underground from high pressure into low pressure tanks, which causes the water to partially flash into steam, producing liquid and steam at the surface. The steam expands into a turbine to produce electricity via a generator thus creating power.

A binary plant uses two separate fluid cycles, with the first cycle extracting geothermal energy from the separated brine, and the secondary cycle converting heat to run the generator and generate electricity. The primary cycle transfers hot geofluid to the secondary cycle via a heat exchanger and cools it down. The secondary cycle heats and vaporizes cold high-pressure fluid with hot geofluid. The high-pressure vapor expands in a turbine before getting cooled and condensed.

As it's a closed-loop system, nothing but water vapor escapes, meaning the geofluid can be reheated and reused, making binary plants a more accessible, sustainable method of geothermal production.

Since 2013, the main plant has been operational, with the binary plant reaching completion in 2022.

The FMO Loans

FMO first provided financing to Polaris in 2009 and 2010 to fund the development and construction of the geothermal power plant. The project has since been refinanced twice, in 2015 and 2021.



Nicaragua

130,370 Sq KM
6,359,689 Inhabitants



THE GLOBAL GOALS
For Sustainable Development

A broader perspective

Much has changed since the 20th century for Nicaragua's energy grid. As of 2022, the total installed capacity in Nicaragua was 1.6GW, with 54.7% thermal, 9.8% hydro, and 9.5% geothermal. The goal of the San Jacinto Tizate plant to help offset over 350,000 tons of CO₂ equivalent per year, which it is well on its way to doing so, while also increasing the energy supply to reduce power cuts. Polaris is committed to contributing to diversifying the electrical grid not just in Nicaragua, but in other countries across the region.

And far from having a "set and forget" mentality, Polaris remains fully engaged on all ESG issues, both on a project and corporate level: some examples include mitigating any potential E&S risks, maintaining their positive relations with neighbouring communities, consistent monitoring of the local biodiversity, and strict emission parameters. More recently, Polaris launched a WINGman program, an initiative promoted by the NGO Women in Geothermal, which aims to promote the advancement of women in the geothermal sector. Through initiatives like these, Polaris clearly demonstrates its commitment to leaving the world a better place than it found out, while increasing renewable energy access for all.



The development of

Impact



Total Installed Renewable Energy Power

84 MWe



Goal: avoided CO₂ GHG p.a.

~350,000 tons

Financials

Total loan

USD 39,4 mln

Total Fund part

USD 4 mln

“Polaris is fully engaged on all ESG issues and demonstrates its commitment to leaving the world a better place, while increasing renewable energy access for all.”



The Fund Manager

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The Investment Advisor

FMO Investment Management BV ('FMO IM') is a MiFID licensed Dutch investment firm and 100% subsidiary of the Dutch development bank FMO NV. FMO IM advises on the loan portfolio at the request of the Fund Manager. All loans offered to the fund have successfully completed the investment process of FMO and have thus been added to FMO's own loan portfolio.

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