

Solar power colombia



Overview

As of 2023, Colombia's renewable electricity generation capacity was 14.3 GW. Most of this capacity is hydro. Hydro is growing fast, and in 2023 accounted for about 5% of the renewable capacity, up from almost zero five years earlier. The country has significant wind and solar resources that remain largely unexploited. According to a study by the World Bank's (ESMAP), exploiting the country's significant wind potential alone could cover more than the country's current total energy needs. Colombia has set targets for diversifying its energy by incorporating wind, solar, and hydro resources. The country announced a target at the COP28, as well as a Net Zero (NDC) aiming for a 51% reduction in greenhouse gas emissions by 2030. The wind regime in Colombia is among the best in South America. Offshore regions of the northern part of Colombia, such as in the Caribbean, have been classified with class 7 winds (over 10 meters per second (m/s)). The only other region in Latin America with such high classification is the Patagonia region of Chile and Argentina. Colombia has an estimated theoretical wind power potential of 21 GW just in the Caribbean—enough to generate sufficient power to meet the national demand almost twice over. However, the country only has an installed capacity of 19.5 MW of wind energy, tapping only 0.4% of its theoretical wind potential. This capacity is concentrated in a single project, the Jepírachi Wind Project, developed by Empresas Públicas de Medellín (EPM) under a mechanism arranged by the government. There are several projects under consideration, including a 200 MW project in Ipapure. In the first renewable energy auction for the country, over 1 GW of wind power was awarded in 2019 for a 15-year term from 2022. The former Colombian Institute of Electrical Energy, today IPSE, and the Latin American Energy Organization have identified three areas with potential: • Azufral, in Cauca, where the Volcano is located; • Cerro Negro-Tufiño, also in Cauca, near the Chiles Volcano; and • Cauca, located in the Cordillera Oriental in Cauca. The first small-scale geothermal project began operations in 2021, generating 100 kW. Colombia has some potential to generate energy from agricultural residues (banana, coffee pulp, and animal waste). Its annual biomass power potential is estimated to be over 16 GWh, which is still less than 0.1% of current electricity production. The potential is distributed as follows: • 11,828 MWh/yr from agriculture residues • 2,640 MWh/yr from bioethanol • 698 MWh/yr from natural forest residues • 658 MWh/yr from biodiesel • 442 MWh/yr from planted forest residues The region of Urabá in the

north of the Department of has approximately 19,000 hectares of banana plantations, producing more than 1 million tons annually. It has also been estimated that approximately 85,000 /yr could be produced from the 190 million m³/yr of generated from coffee plantations, equivalent to 995,000 MWh. In addition, the landfills in the four main cities in Colombia (Bogotá, Medellín, Cali, and Barranquilla) are estimated to have the potential to provide for an installed capacity of 47 MW (0.3% of current installed capacity).

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From extending solar power to remote rural areas to significant investments in new solar parks, Colombia is positioning itself as a key player in the global solar energy market.

Renewable energy in Colombia

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