

## Costa rica solar energy policy

These efforts to diversify the energy mix are in line with current government plans to expand renewable electricity generation by 653 MW (wind power 43% increase, geothermal 25%, solar 25%, hydro 7%). These plans foresee to also replace diesel-powered thermal plants with renewable plants.

Currently, Costa Rica generates less than 1% of its energy production using solar power. In November 2021, Costa Rica approved bill 22.009 "Promotion of the generation of energy resources distributed from renewable sources," and Costa Ricans are now able to produce their own renewable electricity and sell their surplus energy.

Currently, Costa Rica generates less than 1% of its energy production using solar power. The rest of the production is 79% Hydro, 12% Wind and 8% Geothermal. The final users of solar equipment are found in the residential, commercial, utility and in a lesser degree off-grid mostly in the inaccessible mountains and Cocos Island.

Costa Rica's abundant renewable energy resources can supply all required energy across all sectors, including increased electricity demand for electric vehicles. Utilising about 6% of total solar power potential and 25% of Costa Rica's wind power potential would suffice to supply enough energy to do so.

Renewables are an increasingly important source of energy as countries seek to reduce their CO<sub>2</sub> emissions and dependence on imported fossil fuels. Renewables are mainly used to generate electricity, though renewable technologies can also be used for heating in homes and buildings. Renewable biofuels are also an emerging technology solution to decarbonise parts of the transport sector.

Note that modern renewables excludes traditional uses of biomass, such as burning collected wood, agricultural byproducts or dung for cooking or heating. This has serious negative consequences on health and the environment, including contributing to millions of deaths annually from air pollution, and is targeted for phase-out in international development and climate goals and in the IEA's Net Zero scenario.

Biofuels, mostly made from plants, and waste products, such as household trash and industrial wastes, can be burned to generate electricity or heat. This can have environmental and climate advantages compared to burning fossil fuels, though the impact varies widely depending on the fuel source and how it is used. Traditional uses of biomass for heating and cooking, which remain a major source of energy in many developing countries, are targeted for phase-out in international climate goals and IEA scenarios.

Biofuels are used in all parts of the energy system: as replacement for oil-based fuels in transportation, to generate electricity, for heating buildings, or to provide heat for industrial processes.

Renewables such as solar panels, wind turbines and hydroelectric dams generate electricity without burning fuels that emit greenhouse gases and other pollutants. As the costs of solar panels and wind turbines have fallen dramatically in recent years, renewables now represent the cheapest source of new electricity generation in many parts of the world.

Renewable heat sources have made fewer inroads in industry, as many important industrial processes such as steelmaking require higher heat than renewable fuels can achieve. New techniques and technologies will be needed to decarbonise these areas.

The 100% Renewable Energy Project is an initiative of the World Future Council and La Ruta del Clima to support Costa Rica in achieving its decarbonization objectives. The project developed a technical study led by the Institute for Sustainable Futures of the Technological University of Sydney, which looks to provide contributions to the efforts of Costa Rica to achieve 100% renewable energy and decarbonize its economy.

In Costa Rica, decarbonization is a common goal and the country has great achievements in electricity generation based on almost 100% renewable sources. Unfortunately, this is not the case for its energy matrix, which generates approximately 80% of the country's total emission of greenhouse gases. This represents a challenge for the decarbonization process but an opportunity for the development of renewable energy. These documents present the research results of this initiative and a roadmap to achieve an economy based on 100% renewable energy.

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