Costa Rica

Latin America & Caribbean

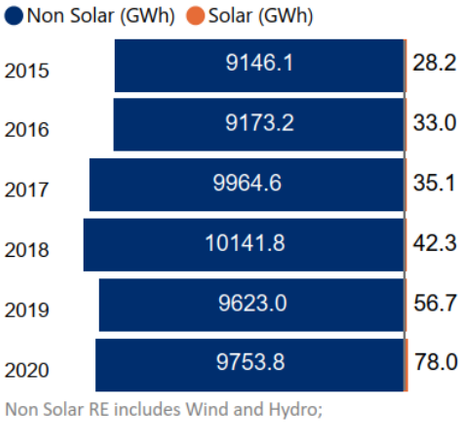
Ease of doing Solar classification

Influencer

Electricity Consumption in kWh/capita (2020)	Average PVout in kWh/kWp/day (2020)	Cumulative Solar Capacity in MW (2021)
2288.9	**4.1**	**73.7**

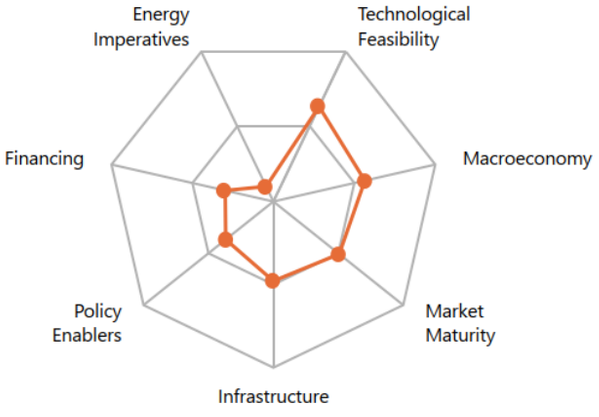
Getting Electricity Score (2020)	NDC Target by 2030 in $MtCO_2e$	Human Development Index (2021)
88.9	**9.1**	**0.8**

Renewable Energy Generation by Source

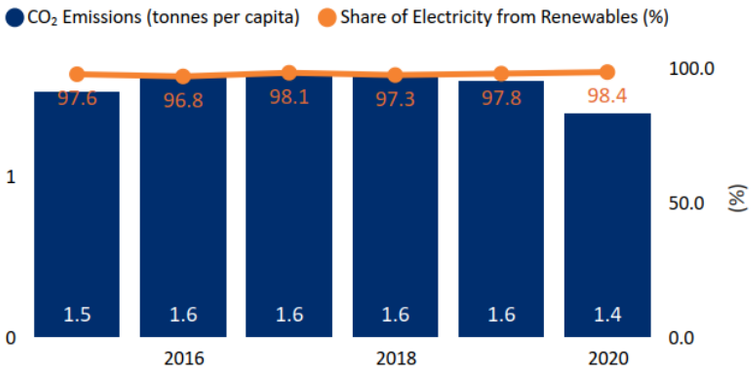


Non Solar RE includes Wind and Hydro;

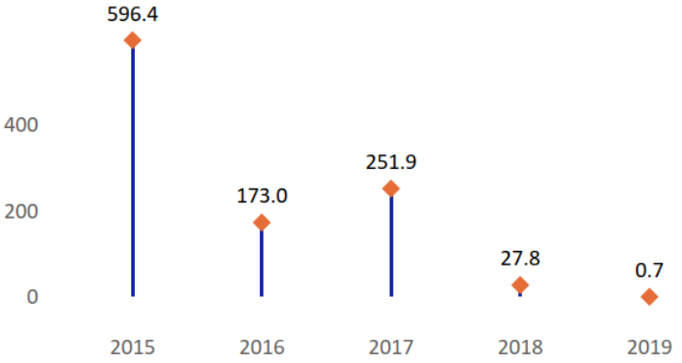
Performance against 7 Drivers



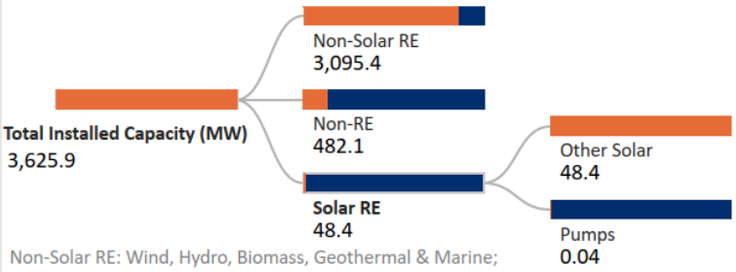
CO_2 Emissions vs Electricity share from Renewables



International Finance received for Clean Energy (Million US Dollars)



Installed Capacity by Source (2019)



Non-Solar RE: Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE: Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar: Utility Scale Solar, Rooftop etc.;
Data not available for other Solar RE segments;

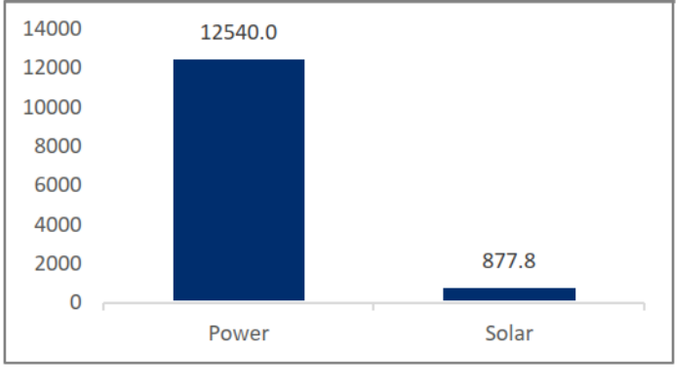
Support for Renewables (2020)

Feed-in-Tariffs for renewable energy supply to the grid?	Net metering/Gross metering policies and regulations?
No	**Yes**

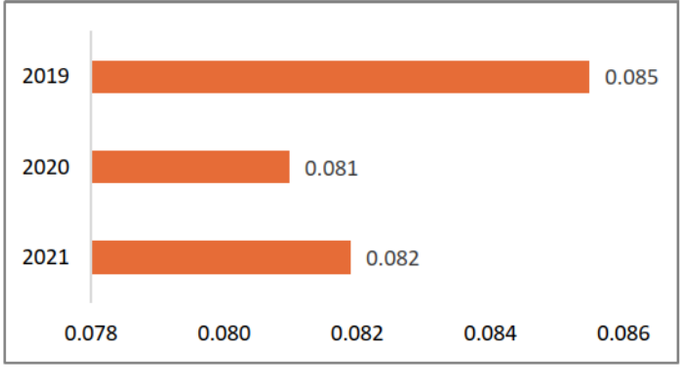
Renewable Energy Certificates?	Renewable Purchase Obligation?
No	**No**

Peak Demand in GW (2022)	Diesel based Electricity Generation in GWh (2021)	Average term of Solar PPAs in years (2021)
1.8	250.8	20

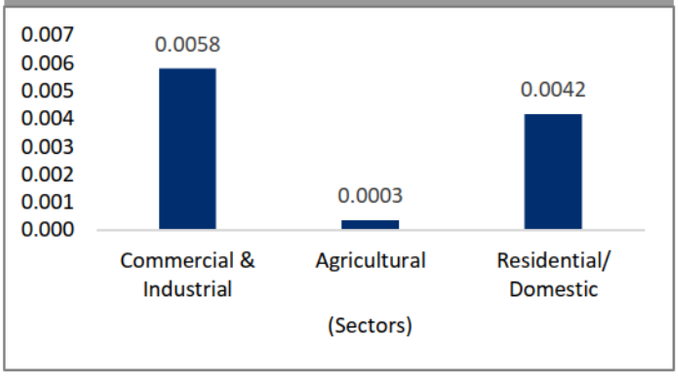
Electricity Generation in GWh (2021)



Average Solar Tariff in USD/kWh



Electricity Consumption in GWh (2022)



Financial Support Mechanisms (2021)

Duty waivers to solar developers for importing/procuring material from foreign land	Yes
Tax waivers for manufacturers of raw materials (modules, off grid appliances, etc.)	Yes
Credit facilitation for solar energy from financial institutions (FIs)	Yes

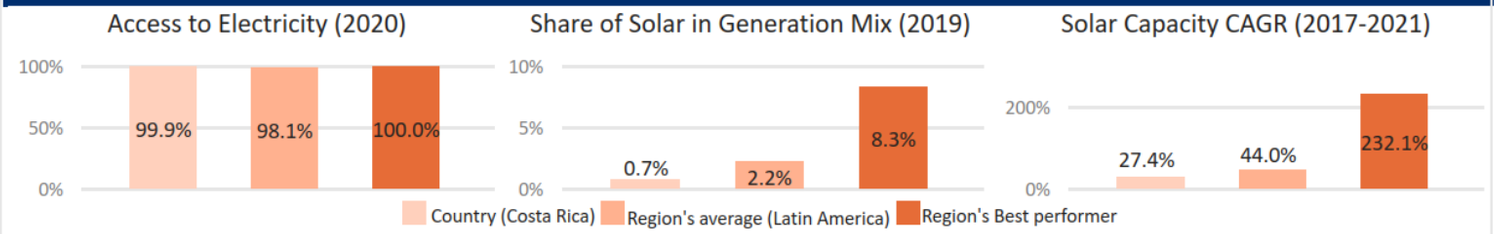
Policies/Schemes for Solar Segments (2021)

Rooftop Solar	Solar Mini Grids	Standalone solar systems	Utility scale solar	Solar Parks	Floating Solar	Solar heating and cooling system	Battery waste manage ment	Green Hydrogen
No	No	No	No	No	No	Yes	No	No

Emerging Technologies/Innovative Models (2021)

Hybrid technologies - combination of two or more technologies to achieve efficient systems (Example: wind + solar PV hybrid systems, solar + storage systems)	Yes
Emerging technologies - the next generation technologies (Example: Artificial Intelligence, Machine learning, Internet of Things, etc.)	Yes
E-mobility/Electric vehicles	Yes

Country's regional performance and characteristics



Areas of Strength: Macroeconomy; Technological Feasibility

Areas of Improvement: Energy Imperatives; Financing

Key Insights

Drivers	Insights
Macro-economy	• Costa Rica is an upper-middle income country with a GDP per capita (PPP) of USD 22,614 in 2021.[1,2] • Due to COVID-19 Pandemic, the GDP (Real) has contracted by 4.1% in 2020. However, in 2021, it has bounced back by growing at a rate of 7.8%.[1] • The inflation rate (CPI) of the country has increased to 1.7% in 2021 from 0.7% levels in 2020.[1] • The general government gross debt to GDP had marginally increased to 68.2% in 2021 from 67.2% levels in 2020.[1]
Policy enablers	• By 2030, the country aims to achieve 100% share of RE in the electricity generation mix.[6] • The National Decarbonization Plan 2018-2050 aims to make Costa Rica zero emission country by 2050. The plan envisions investing in clean initiatives for various sectors such as transportation, agriculture, energy, industry, waste management etc.[7] • To promote development of RE several incentives such as net metering, feed-in tariff, import duty and tax exemptions are being implemented in the country.[7,8] • To encourage the adoption of solar energy, the government has been actively conducting trainings and providing certifications. In 2021 alone, 8 trainings sessions has been conducted.[12]
Technological Feasibility	• Costa Rica receives high levels of solar irradiation (GHI) of 4.9 kWh/m^2/day and specific yield 4.1 kWh/kWp/day indicating very strong technical feasibility for solar in the country.[3] • In 2021, 26.1% of the country's electricity demand was met through RE sources (excluding large hydro).[4]
Market Maturity	• As of 2020, 99.9% of the population in the country had access to electricity.[2] • The Public Utilities Regulatory Authority is the designated agency that regulates the energy sector in the country.[7] • The Institute of Electricity is responsible for the generation, transmission, and distribution of electricity in the country. Besides this, a few public institutions and cooperatives are also allowed to generate and distribute electricity.[7]
Infrastructure	• In August 2022, the US Trade and Development Agency (USTDA) extended support for developing a monitoring and diagnostic system to enhance the utility's management of its power generation, transmission, and distribution assets.[11] • The transmission and distribution of the country operates at 60 Hz frequency and voltages ranging from 220 V to 230 kV, with the the total transformation capacity of transmission system reaching 12,116 MVA in 2022.[7,12] • In 2021, the country has reported transmission losses of 1.52% and distribution losses of 7.77%, indicating efficient power infrastructure.[12] • Between 2022 to 2026, the country aims to spend USD 89.75 Mn for upgrading its transmission and distribution infrastructure.[12]
Financing	• The Inter-American Development Bank in June 2022 has approved a USD 300 Mn loan to support country's decarbonization plan, which aims to achieve net zero carbon emissions by 2050.[10] • The IFC, to accelerate development of renewable energy in the country, had sanctioned a USD 35 Mn loan in 2019 to support and incentivize the issuance of a green bond by Davivienda Costa Rica.[9] • To promote the use of solar energy, the country has credit facilitation for solar energy sector from the FIs.[12]
Energy Imperatives	• In 2020, Costa Rica's per capita electricity consumption stood at 2.28 MWh which is relatively lower in comparison to the global average of 3.31 MWh.[4] • The total installed capacity of solar PV witnessed a CAGR of 27.4% reaching 73.7 MW in 2021 from 28 MW in 2017.[5] • The peak demand for electricity in the country has increased to 12.11 TWh in 2021 from 11.54 TWh levels in 2020.[4] • In 2021, the total installed capacity in the country stood at 3.65 GW with a significant share coming from hydro (65.2%) followed by oil (12.9%) and wind (10.7%).[4]