ENERGY PROFILE

Costa Rica

SUSTAINABLE DEVELOPMENT GOAL 7: ENERGY INDICATORS (2017)

Renewable energy (% of TFEC)	36.2	Access to electricity (% of population)	99.6
Energy efficiency (MJ per $1 of GDP)	2.8	Access to clean cooking (% of population)	95
Public flows renewables (2017 USD M)	243.8	Per capita renewable capacity (W/person)	608.1

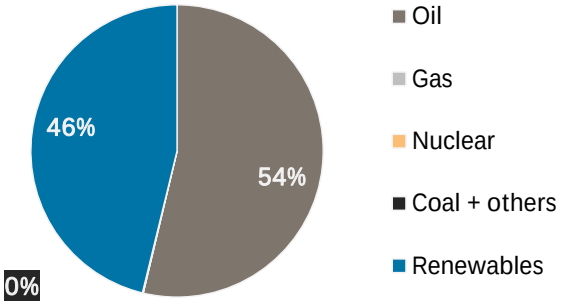
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2012	2017
Non-renewable (TJ)	95 454	111 520
Renewable (TJ)	107 704	95 720
Total (TJ)	203 158	207 240
Renewable share (%)	53	46

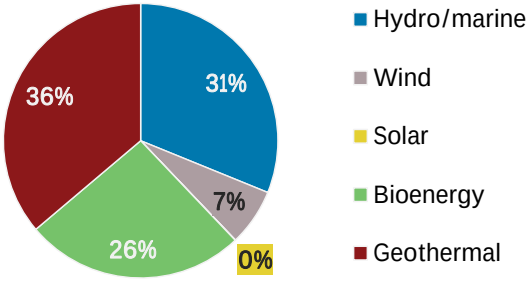
Growth in TPES	2012-17	2016-17
Non-renewable (%)	+16.8	+6.1
Renewable (%)	-11.1	-7.9
Total (%)	+2.0	-0.8

Primary energy trade	2012	2017
Imports (TJ)	105 522	123 639
Exports (TJ)	4 902	3 227
Net trade (TJ)	- 100 620	- 120 412
Imports (% of supply)	52	60
Exports (% of production)	5	3
Energy self-sufficiency (%)	53	47
Net trade (USD million)	- 2 321	- 1 525
Net trade (% of GDP)	-5.0	-2.6

Total primary energy supply in 2017



Renewable energy supply in 2017



RENEWABLE ENERGY CONSUMPTION

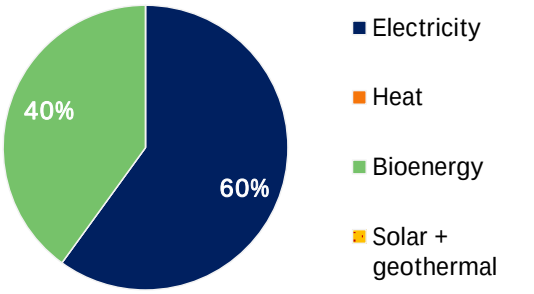
Consumption by source	2012	2017
Electricity (TJ)	28 195	35 302
Heat (TJ)	0	0
Bioenergy (TJ)	25 136	23 544
Solar + geothermal (TJ)	0	0
Total (TJ)	**53 331**	**58 846**
Electricity share (%)	53	60

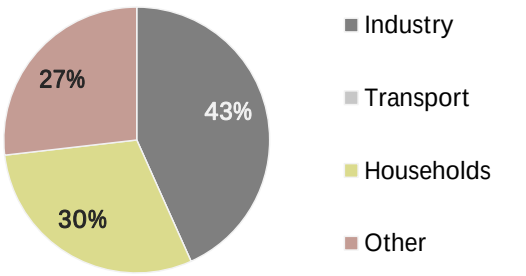
Consumption growth	2012-17	2016-17
Renewable electricity (%)	+25.2	-2.9
Other renewables (%)	-6.3	-3.8
Total (%)	**+10.3**	**-3.3**

Consumption by sector	2012	2017
Industry (TJ)	23 156	25 480
Transport (TJ)	0	0
Households (TJ)	17 787	17 583
Other (TJ)	12 388	15 782

Renewable share of TFEC	36.2

Renewable energy consumption in 2017





ELECTRICITY CAPACITY AND GENERATION

Capacity in 2019	MW	%
Non-renewable	**474**	**13**
Renewable	**3 146**	**87**
Hydro/marine	2 343	65
Solar	47	1
Wind	411	11
Bioenergy	82	2
Geothermal	262	7
Total	**3 620**	**100**

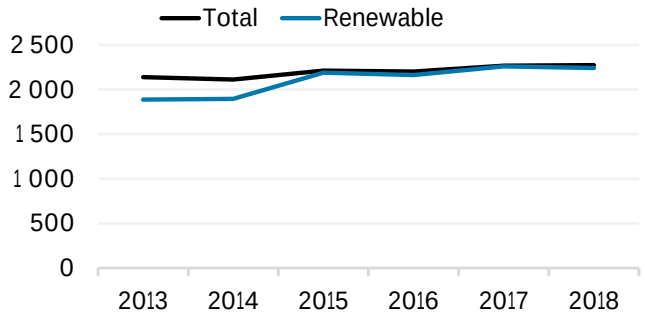
Capacity change (%)	2014-19	2018-19
Non-renewable	**- 24**	**- 3.4**
Renewable	**+ 40**	**+ 2.2**
Hydro/marine	+ 32	- 1.2
Solar	+ 185	+ 69.7
Wind	+ 113	+ 0.8
Bioenergy	+ 127	+ 31.5
Geothermal	+ 20	+ 26.6
Total	**+ 26**	**+ 1.4**

Net capacity change in 2019 (MW)

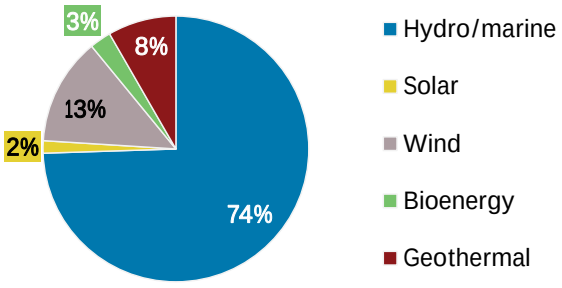
Non-renewable - 17	Hydro and marine - 29
Solar + 20	Wind + 3
Bioenergy + 20	Geothermal + 55

Generation in 2018	GWh	%
Non-renewable	**159**	**1**
Renewable	**11 207**	**99**
Hydro and marine	8 343	73
Solar	10	0
Wind	1 799	16
Bioenergy	86	1
Geothermal	969	9
Total	**11 365**	**100**

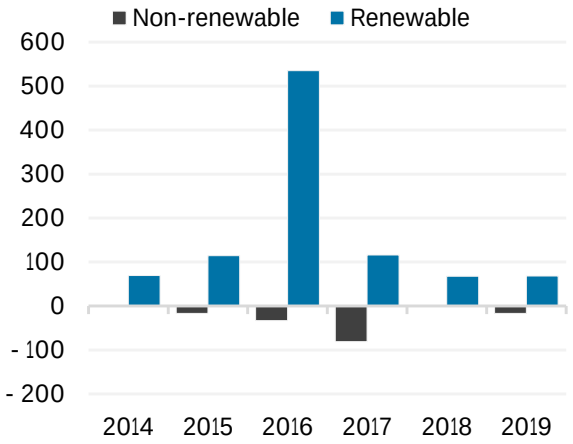
Per capita electricity generation (kWh)



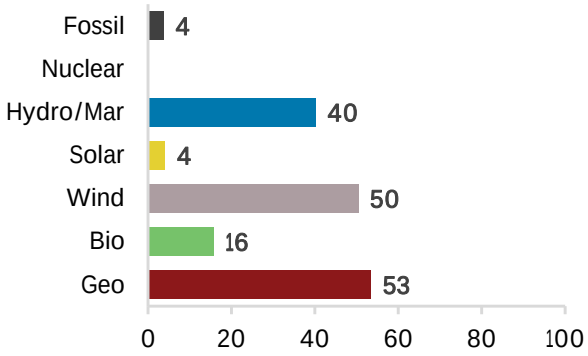
Renewable capacity in 2019



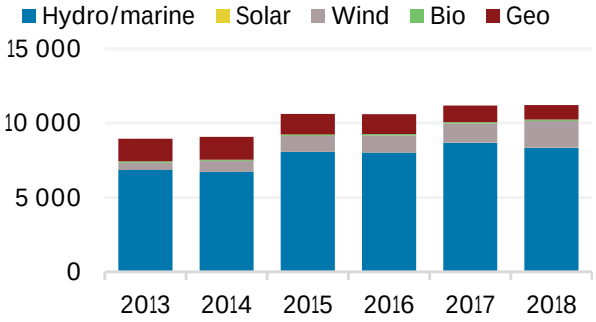
Net capacity change (MW)



Capacity utilisation in 2018 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target	unit
Renewable energy:			
Renewable electricity:	2027	85	%
Renewable capacity:			
Renewable transport:			
Liquid Biofuel blending mandate:			
Other transport targets:			
Renewable heating/cooling:			
Renewable Hydropower	2030	- 2 514	Gg CO2 (cumulative)
Off-grid renewable technologies:			
Energy efficiency (Energy):	2033	25	% increase
Energy efficiency (Electricity):	2033	30	% Increase electricity

Latest policies, programmes and legislation

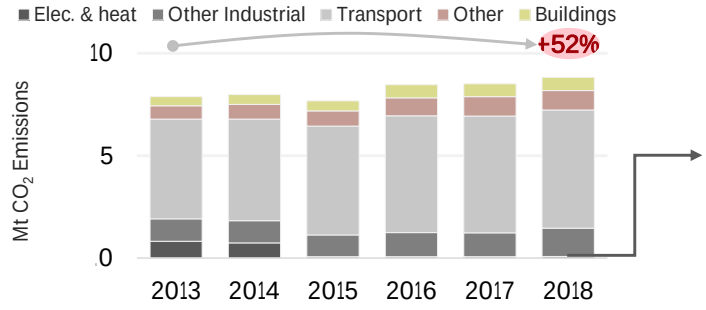
1	Exemption excise tax	2018
2	Exemption general sales tax	2018
3	Law 9518 - Incentives and promotion for electric transport	2018
4	Costa Rica Electricity Generation Expansion Plan 2016-2035 (Plan de Expansion de la Generacion Electrica) 2017	2017
5	Costa Rica Regulation of liquid biofuels and their mixtures 2017	2017

References to sustainable energy in Nationally Determined Contribution (NDC)

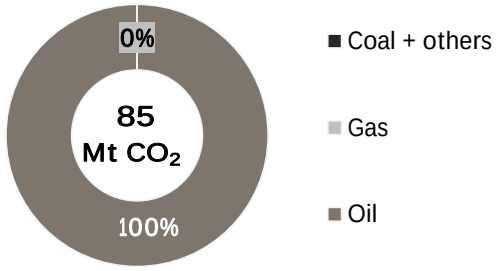
	Conditional	Unconditional	unit
- **Renewable energy**			
- electricity	**85**		**%**
- transport			
- heating/cooling			
- Energy efficiency			

ENERGY AND EMISSIONS

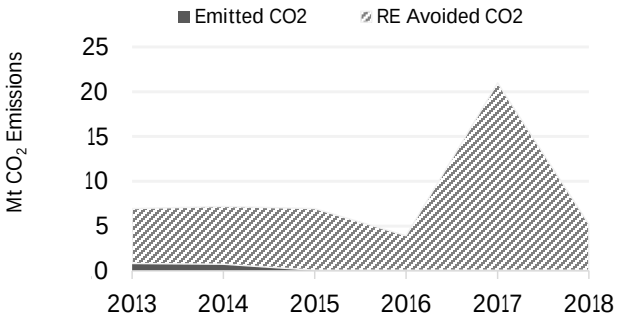
Energy-related CO_2 emissions by sector



Elec. & heat generation CO_2 emissions in 2018

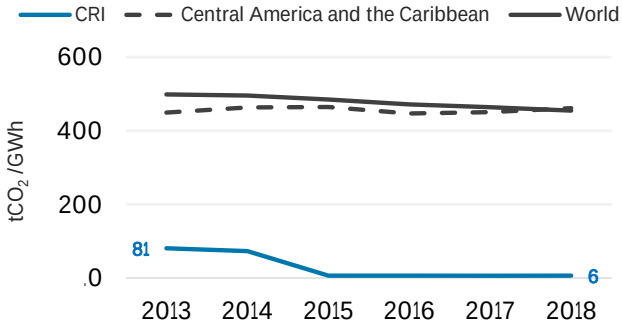


Avoided emissions from renewable elec. & heat



Avoided emissions based on fossil fuel mix used for power

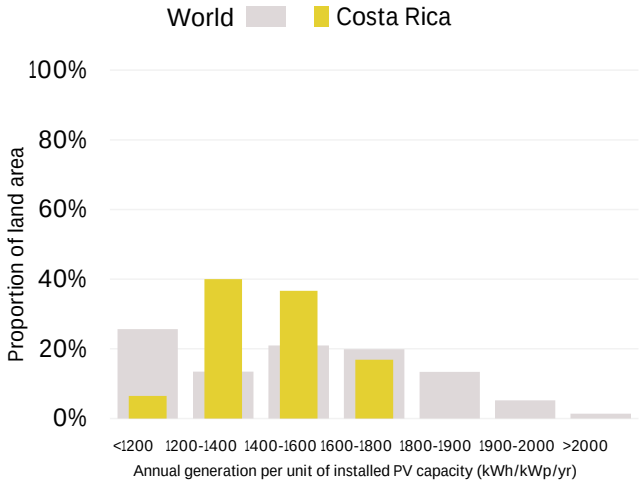
CO_2 emission factor for elec. & heat generation



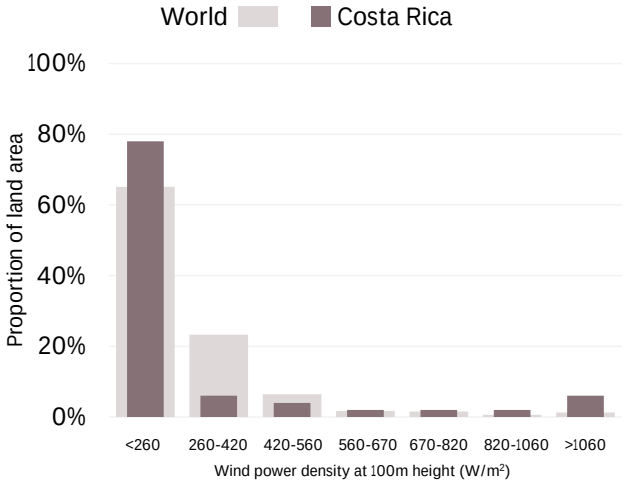
Calculated by dividing power sector emissions by elec. + heat gen.

RENEWABLE RESOURCE POTENTIAL

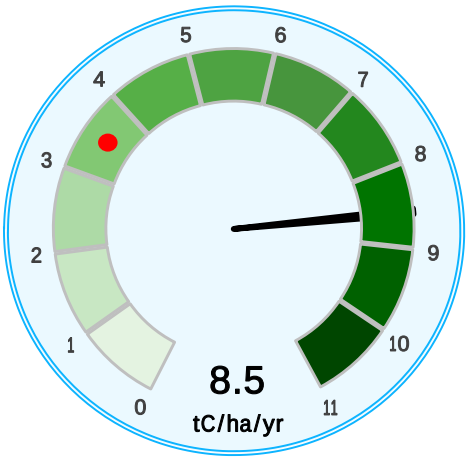
Distribution of solar potential



Distribution of wind potential



Biomass potential: net primary production



Indicators of renewable resource potential

Solar PV: Solar resource potential has been divided into seven classes, each representing a range of annual PV output per unit of capacity (kWh/kWp/yr). The bar chart shows the proportion of a country's land area in each of these classes and the global distribution of land area across the classes (for comparison).

Onshore wind: Potential wind power density (W/m2) is shown in the seven classes used by NREL, measured at a height of 100m. The bar chart shows the distribution of the country's land area in each of these classes compared to the global distribution of wind resources. Areas in the third class or above are considered to be a good wind resource.

Biomass: Net primary production (NPP) is the amount of carbon fixed by plants and accumulated as biomass each year. It is a basic measure of biomass productivity. The chart shows the average NPP in the country (tC/ha/yr), compared to the global average NPP of 3-4 tonnes of carbon per year.

Sources: IRENA statistics, plus data from the following sources: UN SDG Database (original sources: WHO; World Bank; IEA; IRENA; and UNSD); UN World Population Prospects; UNSD Energy Balances; UN COMTRADE; World Bank World Development Indicators; EDGAR; REN21 Global Status Report; IEA-IRENA Joint Policies and Measures Database; IRENA Global Atlas; and World Bank Global Solar Atlas and Global Wind Atlas.

Additional notes: Capacity per capita and public investments SDGs only apply to developing areas. Energy self-sufficiency has been defined as total primary energy production divided by total primary energy supply. Energy trade includes all commodities in Chapter 27 of the Harmonised System (HS). Capacity utilisation is calculated as annual generation divided by year-end capacity x 8,760h/year. Avoided emissions from renewable power is calculated as renewable generation divided by fossil fuel generation multiplied by reported emissions from the power sector. This assumes that, if renewable power did not exist, fossil fuels would be used in its place to generate the same amount of power and using the same mix of fossil fuels. In countries and years where no fossil fuel generation occurs, an average fossil fuel emission factor has been used to calculate the avoided emissions.

These profiles have been produced to provide an overview of developments in renewable energy in different countries and areas. The IRENA statistics team would welcome comments and feedback on its structure and content, which can be sent to statistics@irena.org.

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