Costa Rica

IRENA
International Renewable Energy Agency

COUNTRY INDICATORS AND SDGS

GDP per capita ■ — **8.1.1 Real GDP growth rate**

7.3.1 Energy intensity

— 7.1.1 Access to electricity (% population)
— 7.1.2 Access to clean cooking (% population)
— 7.2.1 Renewable energy (% TFEC)

7.a.1 Public flows to renewables

7.b.1 Per capita renewable capacity

11.6.2 Air particulate matter (PM₂.₅)

■ Urban ■ Average ■ Rural — WHO safe
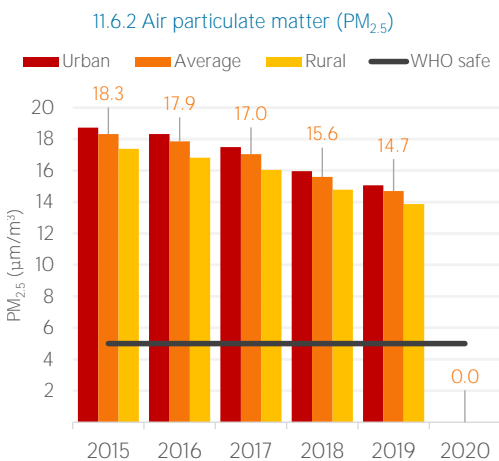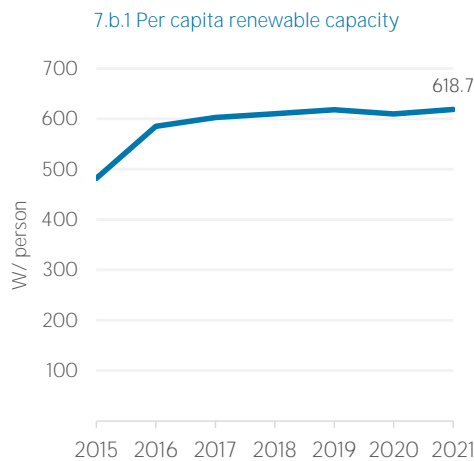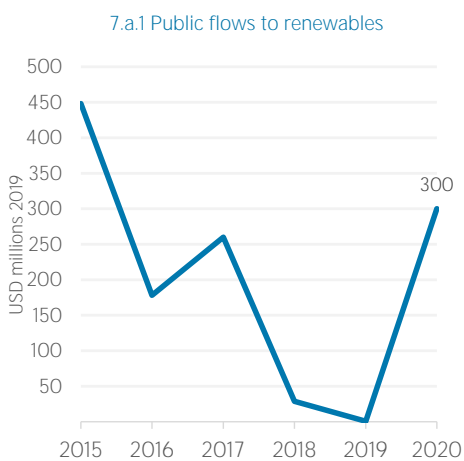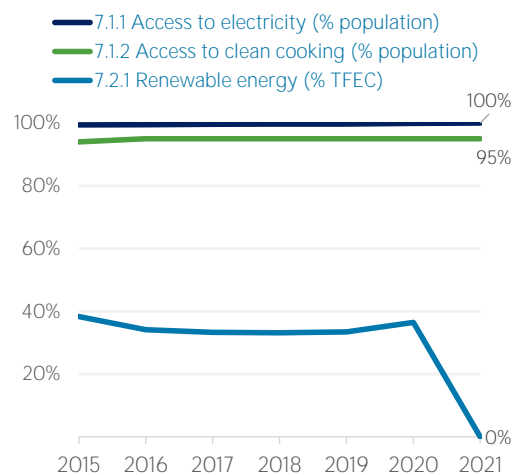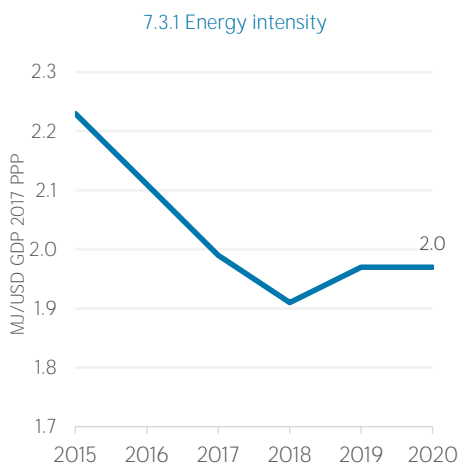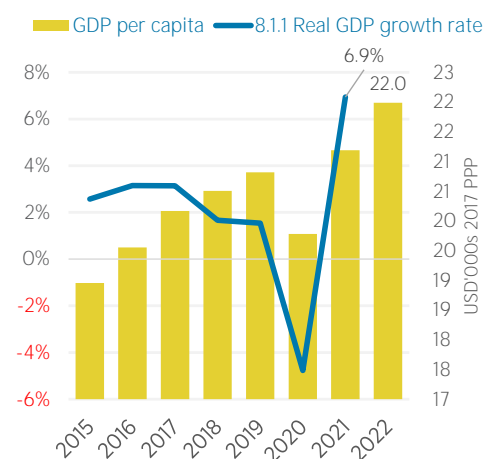
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	98 530	93 439
Renewable (TJ)	107 619	114 117
Total (TJ)	206 149	207 556
Renewable share (%)	52	55

Growth in TES	2015-20	2019-20
Non-renewable (%)	-5.2	-13.8
Renewable (%)	+6.0	+1.5
Total (%)	+0.7	-6.0

Primary energy trade	2015	2020
Imports (TJ)	107 879	96 036
Exports (TJ)	2 950	2 905
Net trade (TJ)	- 104 929	- 93 131
Imports (% of supply)	52	46
Exports (% of production)	3	2
Energy self-sufficiency (%)	53	56

Total energy supply in 2020

■ Oil
■ Gas
■ Nuclear
■ Coal + others
■ Renewables
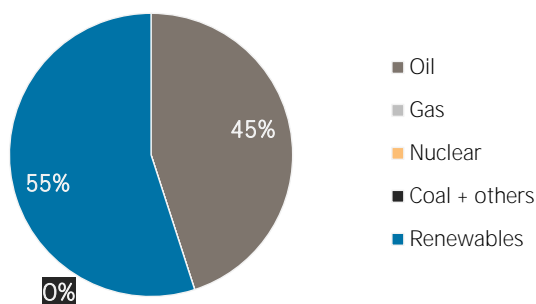
Renewable energy supply in 2020

■ Hydro/marine
■ Wind
■ Solar
■ Bioenergy
■ Geothermal
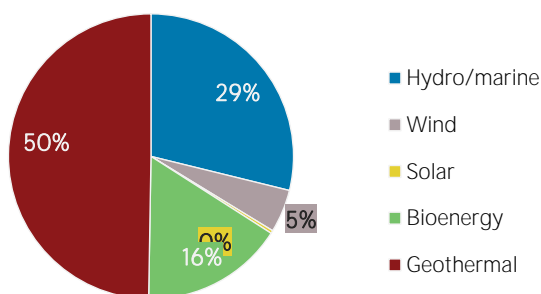
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend

Legend: ■ Electricity ■ Commercial heat ■ Bioenergy ■ Geothermal ■ Solar direct

Petajoules (PJ)

147 — 141 — 135 — 129 — 147 — 161 (2015–2020)
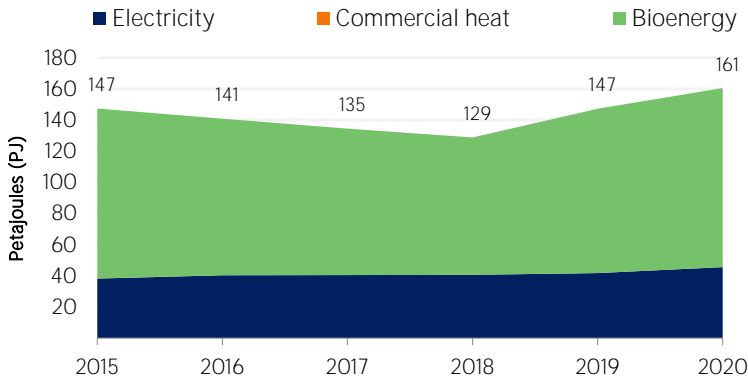
Renewable energy consumption in 2020

28%

72%

n.a.

13%

13%

73%

Legend: ■ Industry ■ Transport ■ Households ■ Other
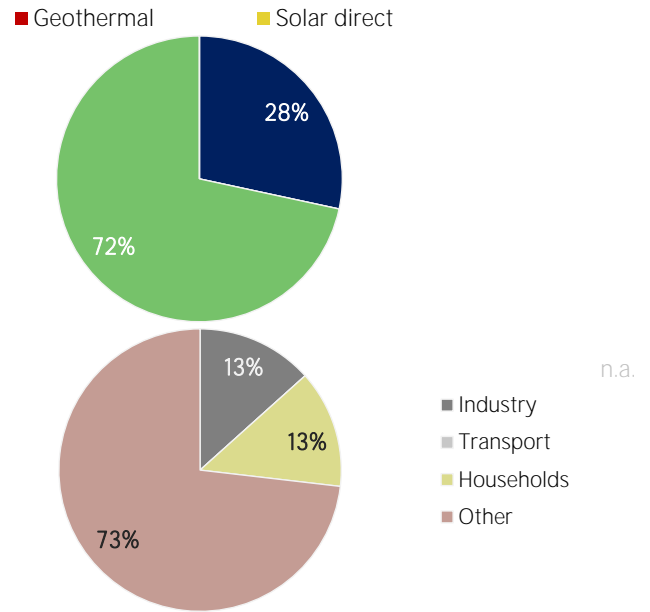
Consumption by sector	2015	2020
Industry (TJ)	26 426	21 446
Transport (TJ)	0	0
Households (TJ)	19 856	21 651
Other (TJ)	101 110	117 449

ELECTRICITY CAPACITY

Installed capacity trend

Legend: ■ Fossil fuels ■ Nuclear ■ Other Non-RE ■ Hydro/marine ■ Wind ■ Solar ■ Bioenergy ■ Geothermal — Renewable share

Gigawatts (GW) / Renewable share (%)

3.1 — 3.5 — 3.6 — 3.7 — 3.6 — 3.6 — 3.6 — 3.5 (2015–2022)

89%
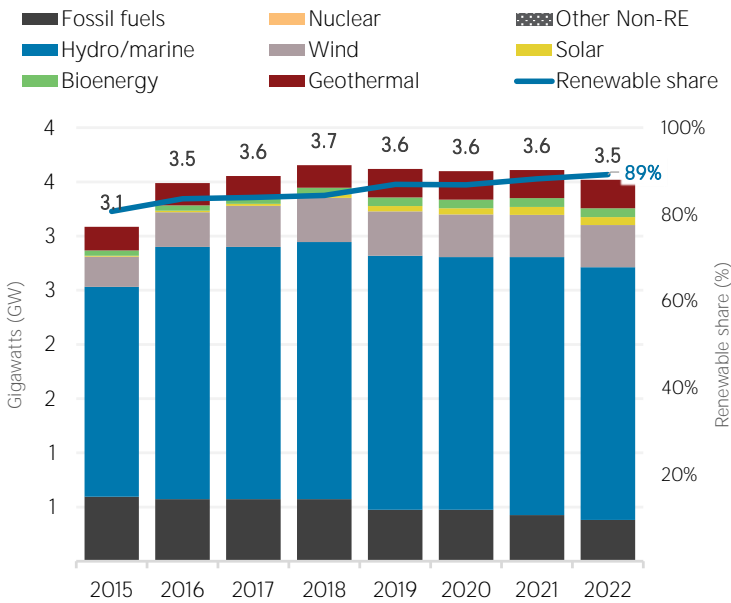
Renewable capacity in 2022

3%
8%
12%
2%
74%

Legend: ■ Hydro/marine ■ Solar ■ Wind ■ Bioenergy ■ Geothermal
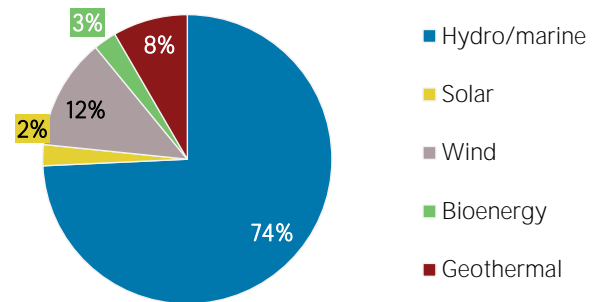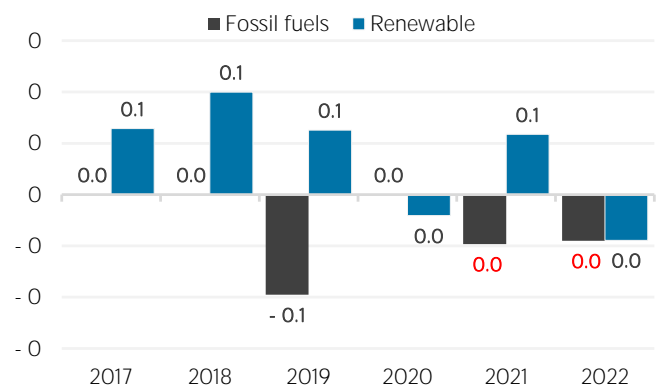
Net capacity change in 2022 (MW)

Non-renewable	Hydro and marine
- 45	- 48

Solar	Wind
0	0

Bioenergy	Geothermal
+ 0	+ 4

Net capacity change (GW)

Legend: ■ Fossil fuels ■ Renewable

Year	Fossil fuels	Renewable
2017	0.0	0.1
2018	0.0	0.1
2019	- 0.1	0.1
2020	0.0	0.0
2021	0.0	0.1
2022	0.0	0.0
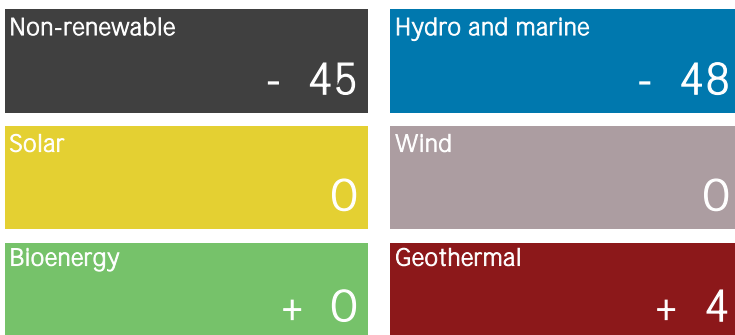
Capacity utilisation in 2021 (%)

	%
Fossil fuels	0%
Nuclear	
Hydro/Marine	45%
Solar	19%
Wind	46%
Bioenergy	12%
Geothermal	70%
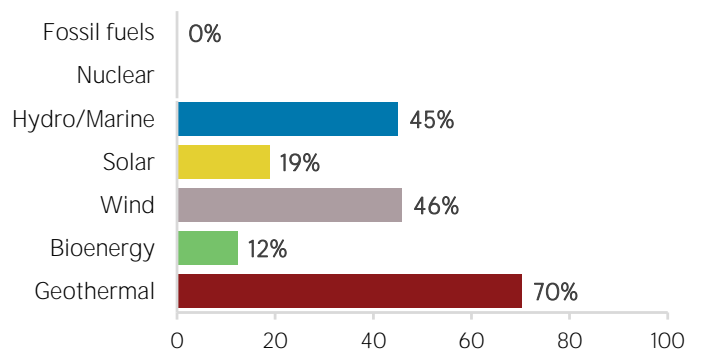
ELECTRICITY GENERATION

Generation in 2021

Generation in 2021	GWh	%
Non-renewable	3	0
Renewable	12 656	100
Hydro and marine	9 287	73
Solar	107	1
Wind	1 573	12
Bioenergy	87	1
Geothermal	1 602	13
Total	12 659	100

Per capita electricity generation (kWh)
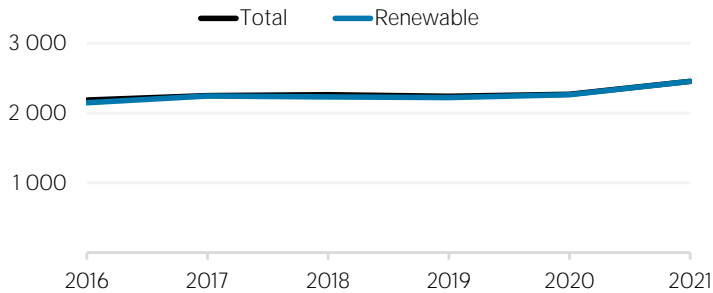
Electricity generation trend
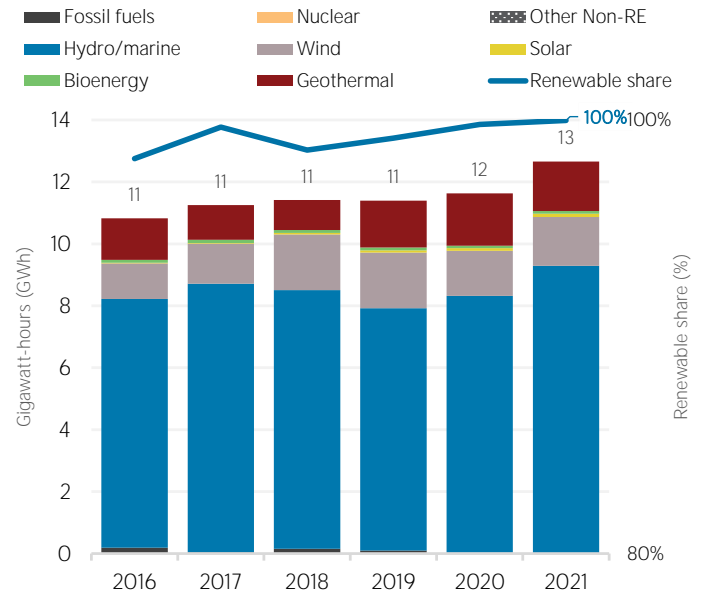

LATEST POLICIES, PROGRAMMES AND LEGISLATION

|		
1	Exemption excise tax	2018
2	Law 9518 - Incentives and promotion for electric transport	2018
3	Costa Rica Electricity Generation Expansion Plan 2016-2035 (Plan de Expansion de la Generacion Electrica) 2017	2017
4	Costa Rica Regulation of liquid biofuels and their mixtures 2017	2017
5	INTE E14-1:2015 Energy efficiency. Air conditioners window type, divided and package. Requirements	2015

ENERGY AND EMISSIONS

Energy-related CO_2 emissions by sector
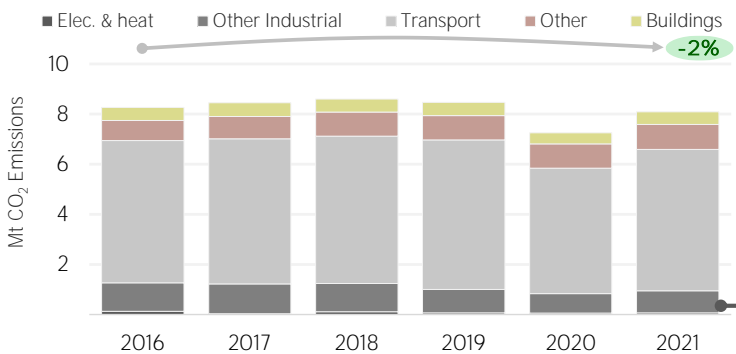
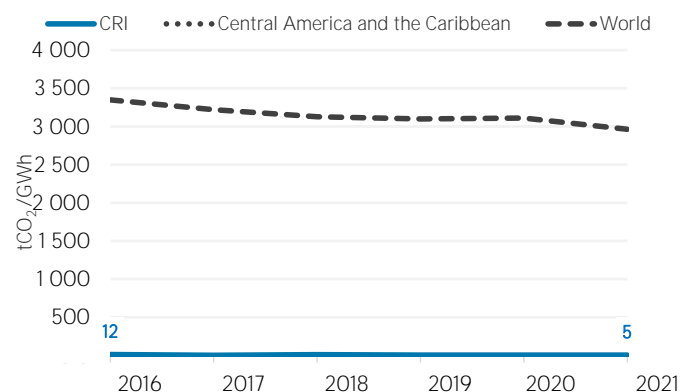## Elec. & heat generation CO_2 emissions in
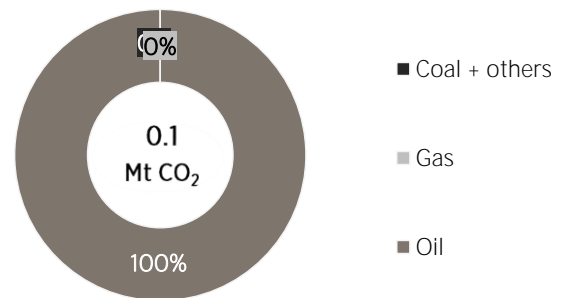
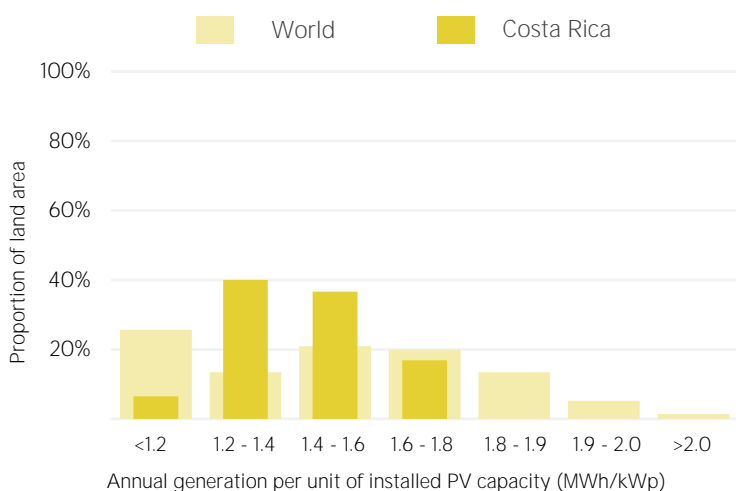## Avoided emissions from renewable elec. & heat
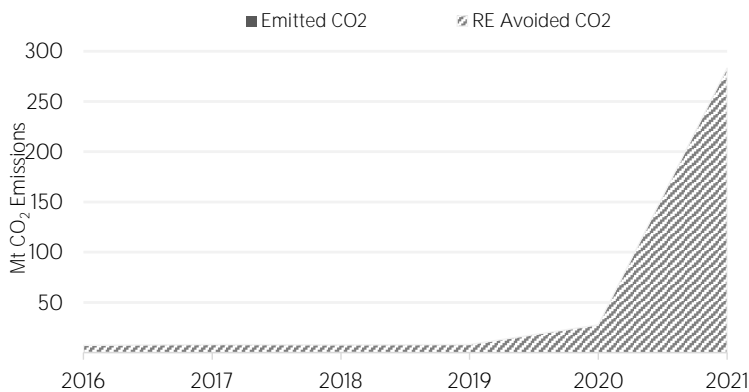
Avoided emissions based on fossil fuel mix used for power

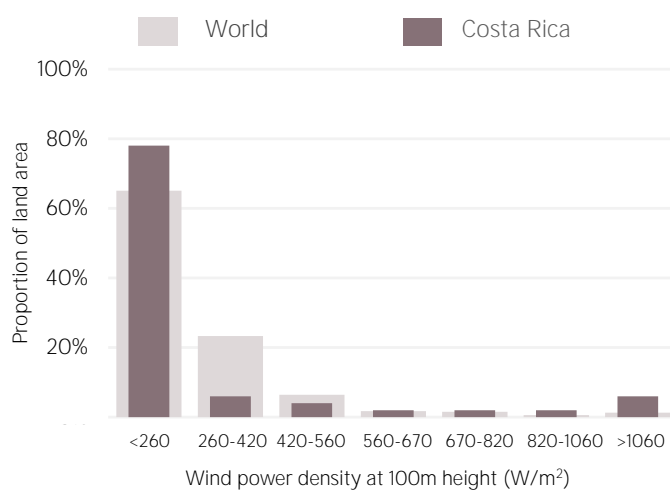## CO_2 emission factor for elec. & heat generation

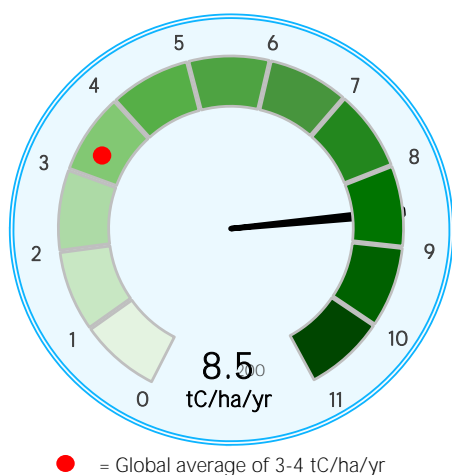*Calculated by dividing power sector emissions by elec. + heat gen.*

Distribution of solar potential

World Costa Rica

Proportion of land area

100%
80%
60%
40%
20%

<1.2   1.2 - 1.4   1.4 - 1.6   1.6 - 1.8   1.8 - 1.9   1.9 - 2.0   >2.0

Annual generation per unit of installed PV capacity (MWh/kWp)

Distribution of wind potential

World Costa Rica

Proportion of land area

100%
80%
60%
40%
20%

<260   260-420   420-560   560-670   670-820   820-1060   >1060

Wind power density at 100m height (W/m^2)

Biomass potential: net primary production

8.5
tC/ha/yr

● = Global average of 3-4 tC/ha/yr

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/m^2) 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

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