

SUSTAINABLE DEVELOPMENT GOAL 7: ENERGY INDICATORS (2017)

Renewable energy (% of TFEC)	22.8	Access to electricity (% of population)	100.0
Energy efficiency (MJ per \$1 of GDP)	2.1	Access to clean cooking (% of population)	88
Public flows renewables (2017 USD M)	24.0	Per capita renewable capacity (W/person)	542.2

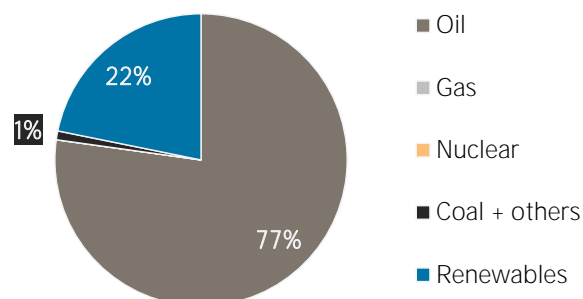
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2012	2017
Non-renewable (TJ)	119 053	155 880
Renewable (TJ)	30 436	43 496
Total (TJ)	149 489	199 376
Renewable share (%)	20	22

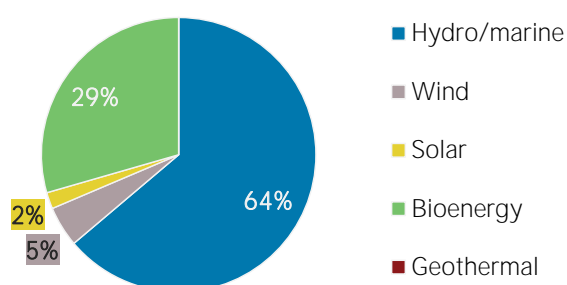
Growth in TPES	2012-17	2016-17
Non-renewable (%)	+30.9	+19.2
Renewable (%)	+42.9	+6.1
Total (%)	+33.4	+16.1

Primary energy trade	2012	2017
Imports (TJ)	269 522	339 288
Exports (TJ)	262	1 162
Net trade (TJ)	- 269 260	- 338 126
Imports (% of supply)	180	170
Exports (% of production)	1	3
Energy self-sufficiency (%)	20	22
Net trade (USD million)	+ 0	n.a.
Net trade (% of GDP)	+0.0	n.a.

Total primary energy supply in 2017



Renewable energy supply in 2017



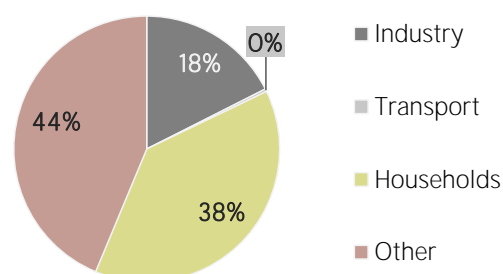
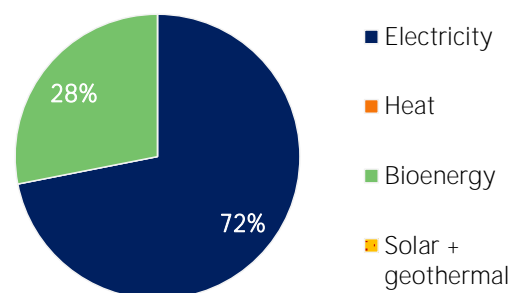
RENEWABLE ENERGY CONSUMPTION

Consumption by source	2012	2017
Electricity (TJ)	15 554	26 126
Heat (TJ)	0	0
Bioenergy (TJ)	9 460	10 203
Solar + geothermal (TJ)	0	0
Total (TJ)	25 014	36 329
Electricity share (%)	62	72

Consumption growth	2012-17	2016-17
Renewable electricity (%)	+68.0	+11.4
Other renewables (%)	+7.9	+8.4
Total (%)	+45.2	+10.6

Consumption by sector	2012	2017
Industry (TJ)	5 151	6 374
Transport (TJ)	0	118
Households (TJ)	10 592	13 956
Other (TJ)	9 271	15 882
Renewable share of TFEC		22.8

Renewable energy consumption in 2017

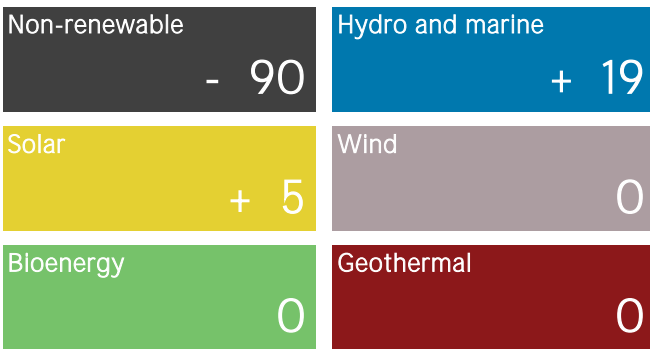


ELECTRICITY CAPACITY AND GENERATION

Capacity in 2019	MW	%
Non-renewable	1 819	44
Renewable	2 296	56
Hydro/marine	1 796	44
Solar	198	5
Wind	270	7
Bioenergy	33	1
Geothermal	0	0
Total	4 115	100

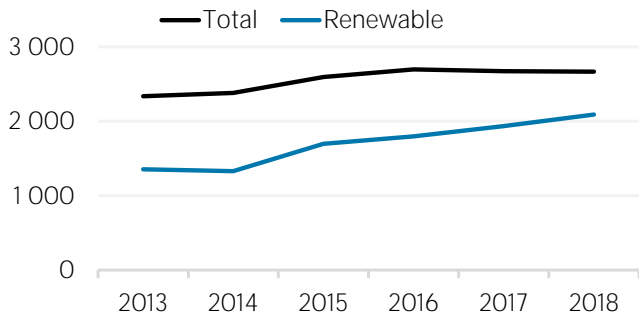
Capacity change (%)	2014-19	2018-19
Non-renewable	+ 58	- 4.7
Renewable	+ 34	+ 1.1
Hydro/marine	+ 11	+ 1.1
Solar	+ 3 139	+ 2.8
Wind	+ 391	0.0
Bioenergy	+ 8	0.0
Geothermal	0	0.0
Total	+ 44	- 1.6

Net capacity change in 2019 (MW)

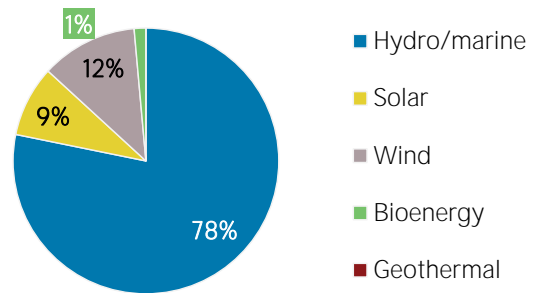


Generation in 2018	GWh	%
Non-renewable	2 412	22
Renewable	8 731	78
Hydro and marine	7 855	70
Solar	238	2
Wind	588	5
Bioenergy	50	0
Geothermal	0	0
Total	11 142	100

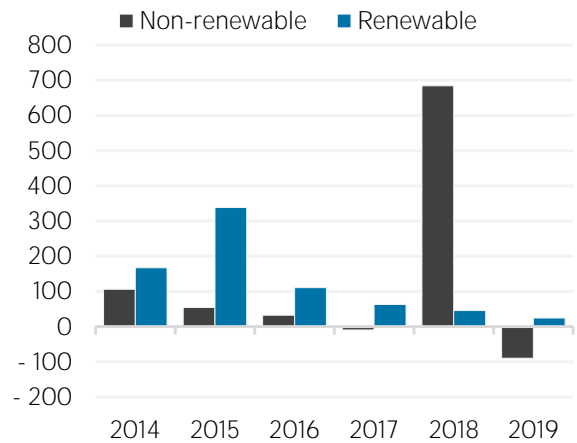
Per capita electricity generation (kWh)



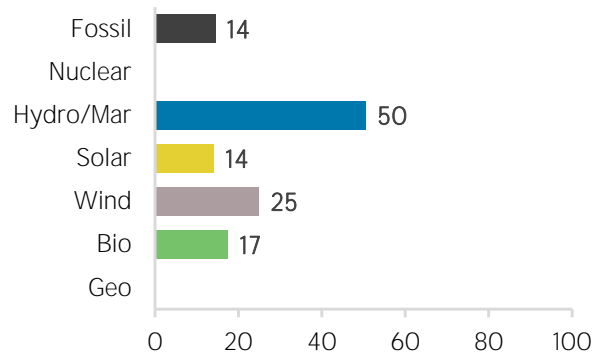
Renewable capacity in 2019



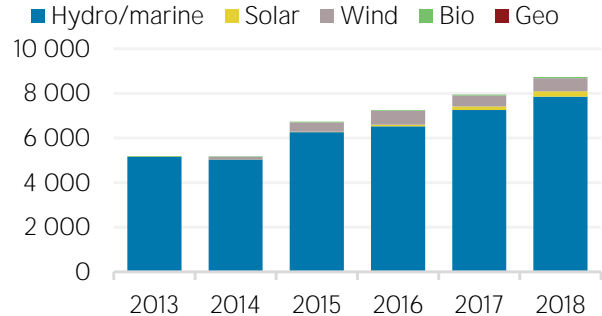
Net capacity change (MW)



Capacity utilisation in 2018 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target	unit
Renewable energy:			
Renewable electricity:	2030	15	%
Renewable capacity:			
Renewable transport:			
Liquid Biofuel blending mandate:			
Other transport targets:			
Renewable heating/cooling:			
Renewable Hydropower			
Off-grid renewable technologies:			
Energy efficiency (Energy):			
Energy efficiency (Electricity):			

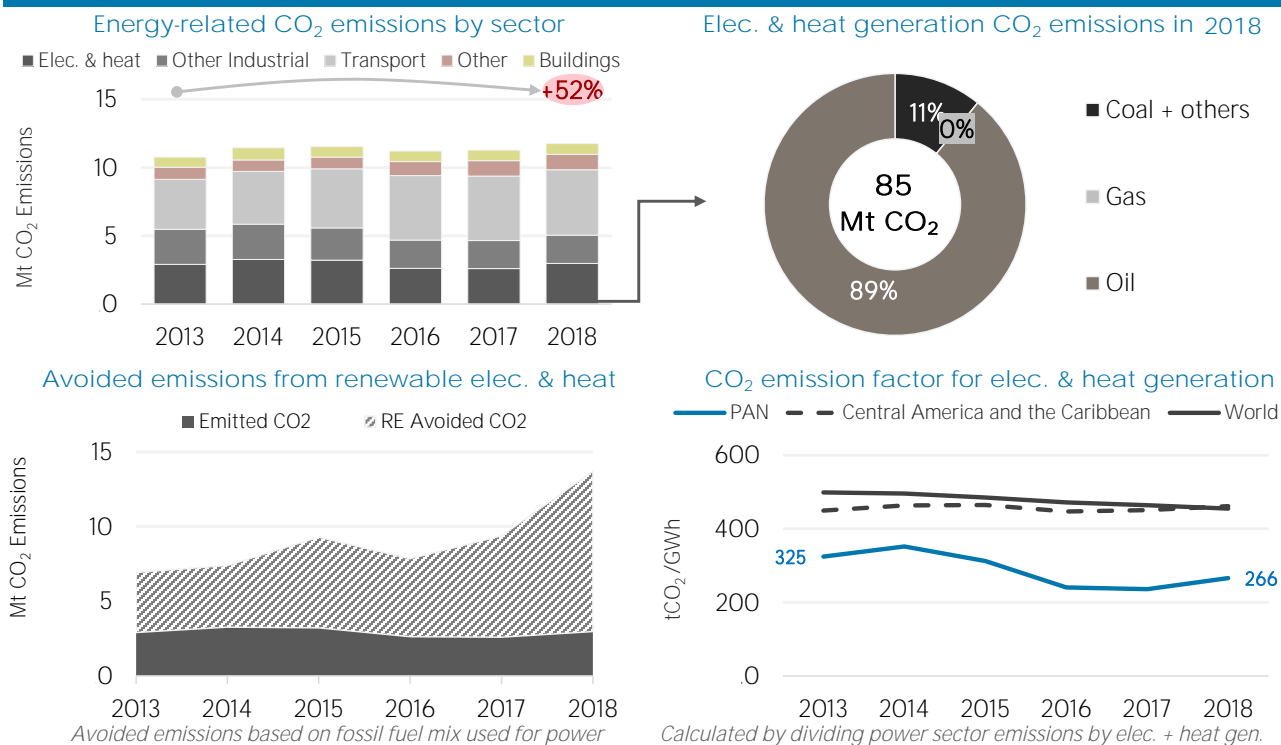
Latest policies, programmes and legislation

1	Resolution N° 114/2017 approved Technical Regulation DGNTI-COPANIT 104:2017	2017
2	Resolution n° 115/2017 adopting Technical Regulation DGNTI-COPANIT 103:2017	2017
3	Resolution N° 116/2017 adopting Technical Regulation DGNTI-COPANIT 102:2017	2017
4	Resolution No 116/2017 approving Technical Regulation	2017
5	Panama National Energy Plan 2015-2050	2015

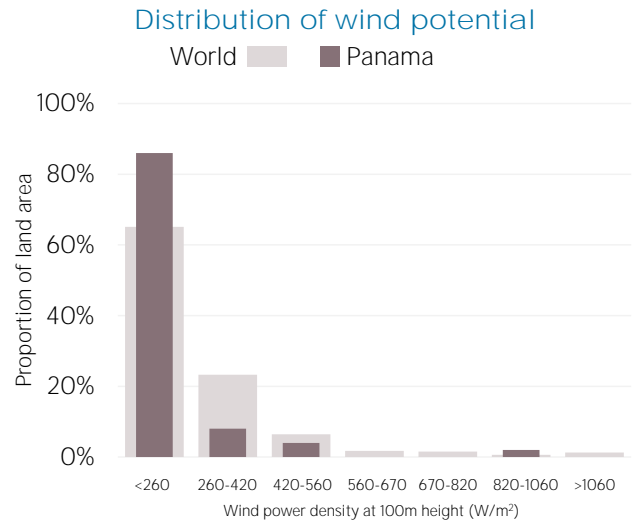
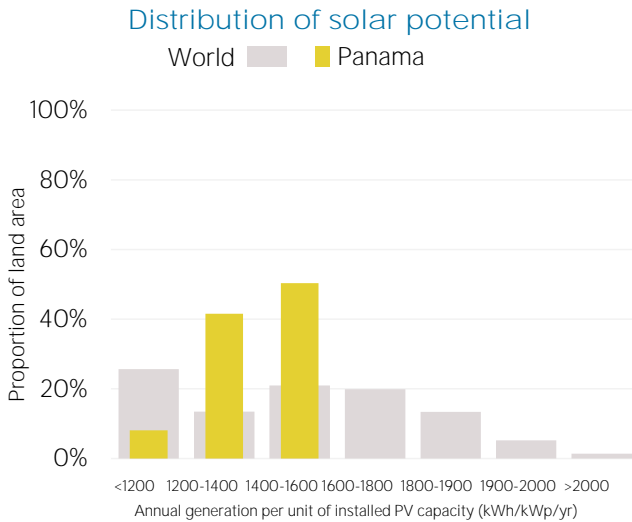
References to sustainable energy in Nationally Determined Contribution (NDC)

	Conditional	Unconditional	unit
- Renewable energy			
- electricity		15	%
- transport			
- heating/cooling			
- Energy efficiency			

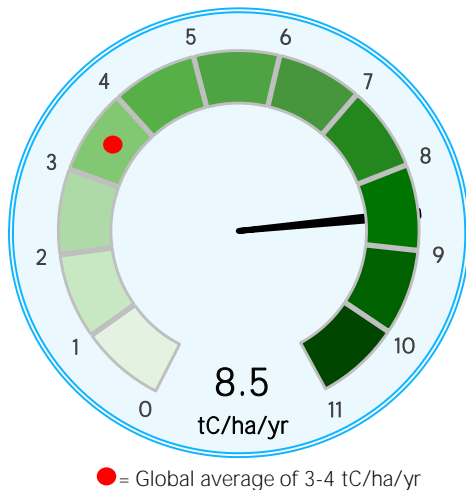
ENERGY AND EMISSIONS



RENEWABLE RESOURCE 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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