ENERGY PROFILE

Thailand

SUSTAINABLE DEVELOPMENT GOAL 7: ENERGY INDICATORS (2018)

Renewable energy (% of TFEC)	23.7	Access to electricity (% of population)	100.0
Energy efficiency (MJ per $1 of GDP)	4.5	Access to clean cooking (% of population)	79
Public flows renewables (2018 USD M)	301.8	Per capita renewable capacity (W/person)	163.822

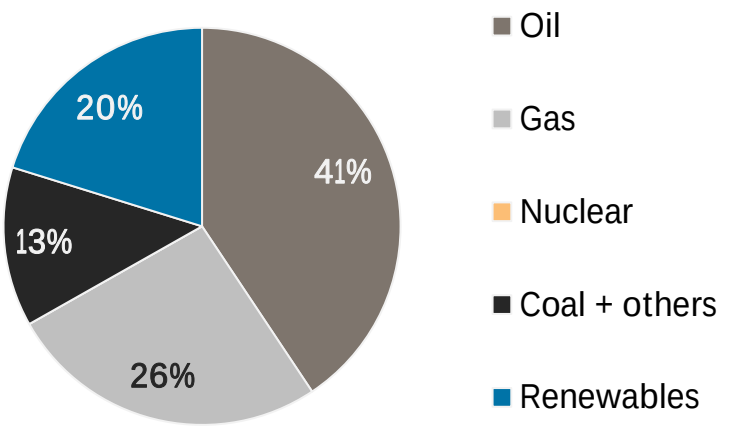
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2013	2018
Non-renewable (TJ)	4 583 640	4 534 908
Renewable (TJ)	1 074 317	1 147 931
Total (TJ)	5 657 957	5 682 839
Renewable share (%)	19	20

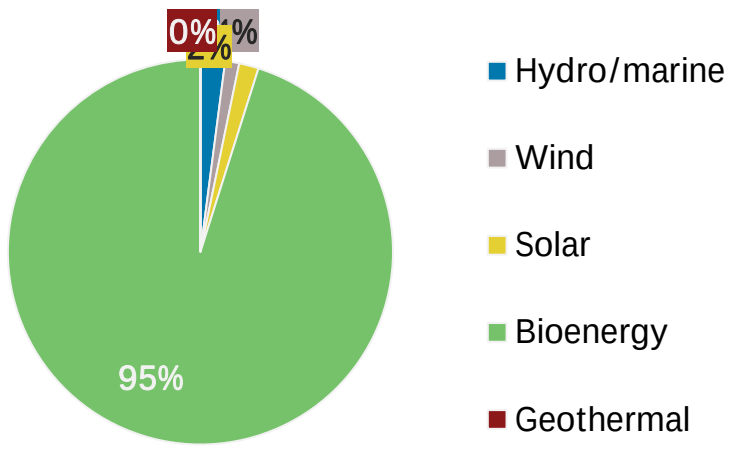
Growth in TPES	2013-18	2017-18
Non-renewable (%)	-1.1	-1.6
Renewable (%)	+6.9	-1.5
Total (%)	+0.4	-1.6

Primary energy trade	2013	2018
Imports (TJ)	3 050 348	3 674 997
Exports (TJ)	601 405	629 785
Net trade (TJ)	-2 448 943	-3 045 212
Imports (% of supply)	54	65
Exports (% of production)	18	21
Energy self-sufficiency (%)	58	54
Net trade (USD million)	- 37 868	- 31 384
Net trade (% of GDP)	-9.0	-6.2

Total primary energy supply in 2018



Renewable energy supply in 2018



RENEWABLE ENERGY CONSUMPTION

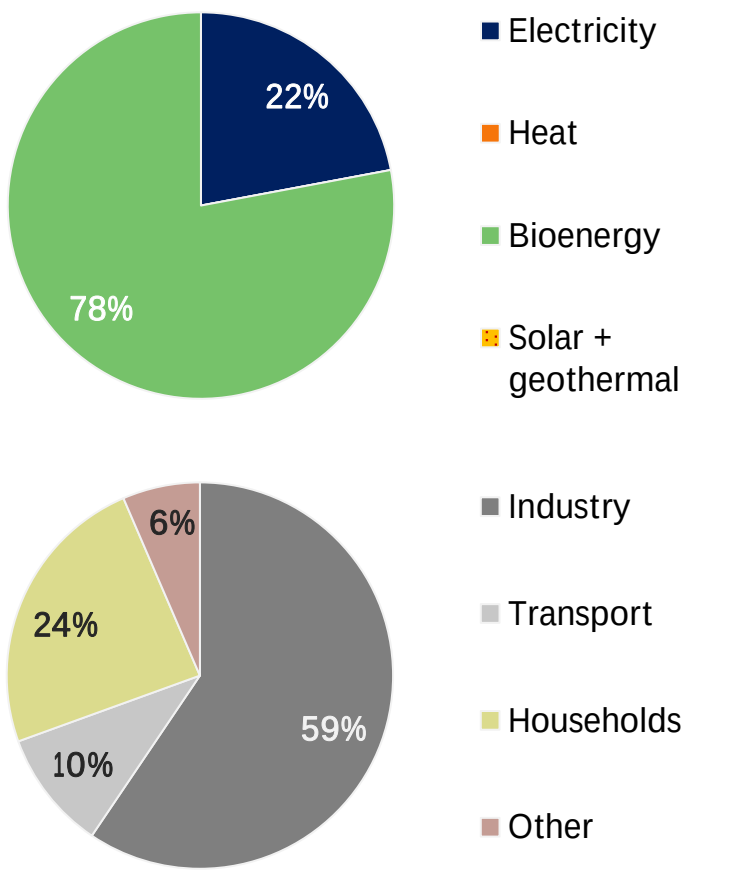
Consumption by source	2013	2018
Electricity (TJ)	72 646	179 522
Heat (TJ)	0	0
Bioenergy (TJ)	456 328	634 557
Solar + geothermal (TJ)	0	0
Total (TJ)	**528 974**	**814 079**
Electricity share (%)	14	22

Consumption growth	2013-18	2017-18
Renewable electricity (%)	+147.1	+11.6
Other renewables (%)	+39.1	+2.1
Total (%)	**+53.9**	**+4.1**

Consumption by sector	2013	2018
Industry (TJ)	169 674	483 976
Transport (TJ)	50 330	81 574
Households (TJ)	283 432	195 792
Other (TJ)	25 537	52 737

Renewable share of TFEC	23.0	23.7

Renewable energy consumption in 2018



ELECTRICITY CAPACITY AND GENERATION

Capacity in 2020	MW	%
Non-renewable	**41 541**	**78**
Renewable	**11 991**	**22**
Hydro/marine	3 107	6
Solar	2 988	6
Wind	1 507	3
Bioenergy	4 389	8
Geothermal	0	0
Total	**53 532**	**100**

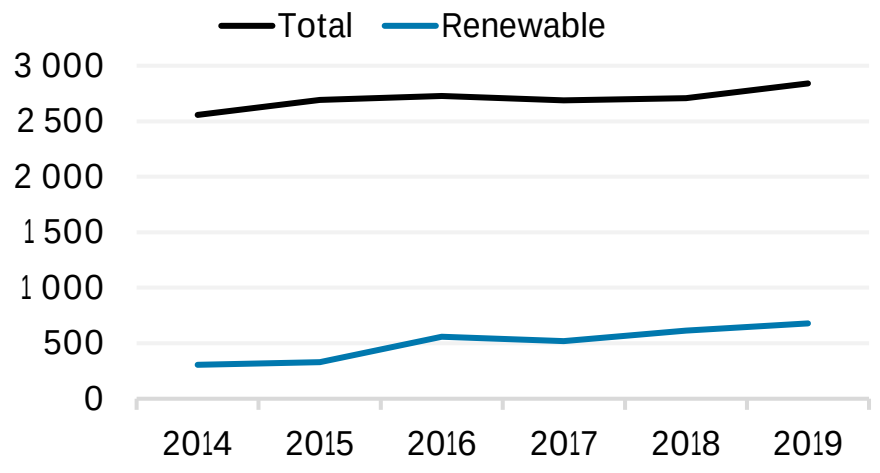
Capacity change (%)	2015-20	2019-20
Non-renewable	**+ 42**	**+ 2.2**
Renewable	**+ 50**	**+ 1.1**
Hydro/marine	+ 1	0.0
Solar	+ 110	0.0
Wind	+ 544	0.0
Bioenergy	+ 36	+ 3.2
Geothermal	0	0.0
Total	**+ 43**	**+ 2.0**

Net capacity change in 2020 (MW)

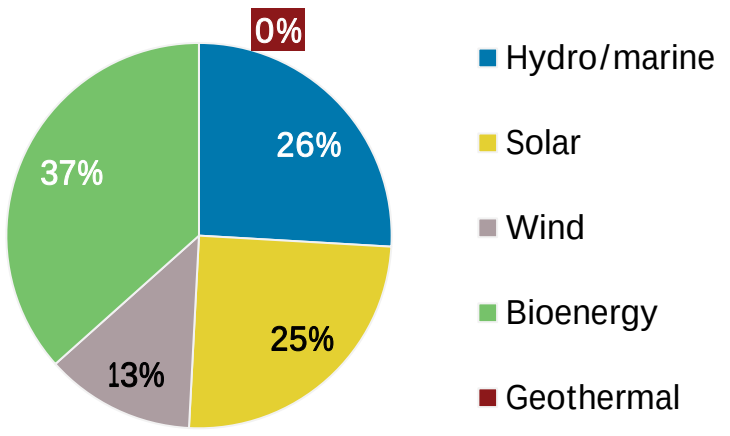
Non-renewable	Hydro and marine
+ 900	0
Solar	**Wind**
0	0
Bioenergy	**Geothermal**
+ 134	0

Generation in 2019	GWh	%
Non-renewable	**150 501**	**76**
Renewable	**47 243**	**24**
Hydro and marine	6 446	3
Solar	5 146	3
Wind	3 670	2
Bioenergy	31 980	16
Geothermal	1	0
Total	**197 744**	**100**

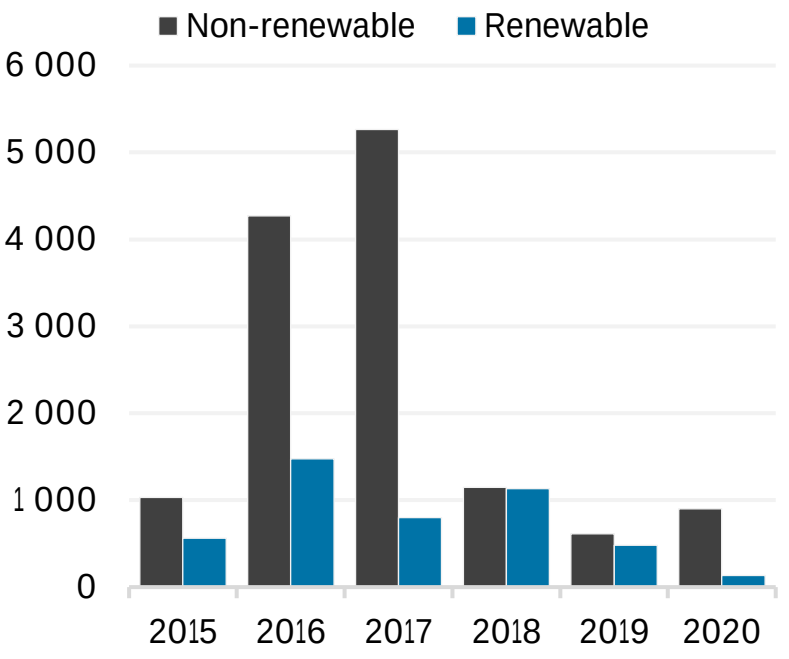
Per capita electricity generation (kWh)



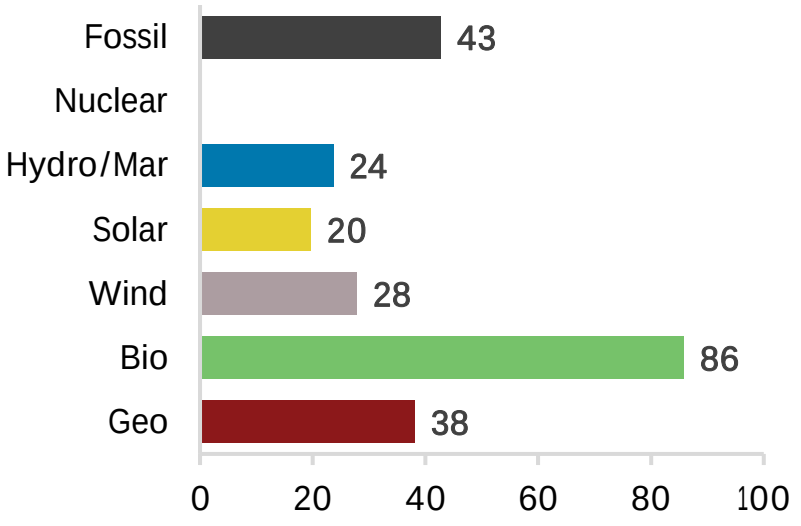
Renewable capacity in 2020



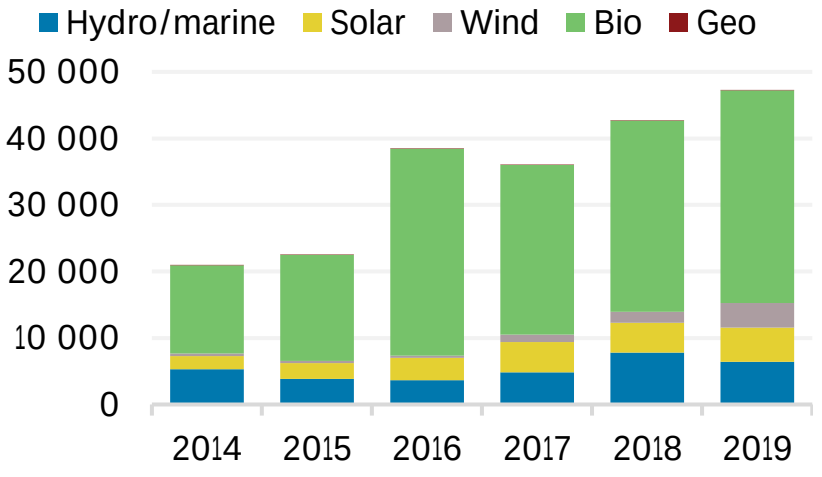
Net capacity change (MW)



Capacity utilisation in 2019 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target
Renewable energy:	**2036**	**30 %**
Renewable electricity:	2036	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

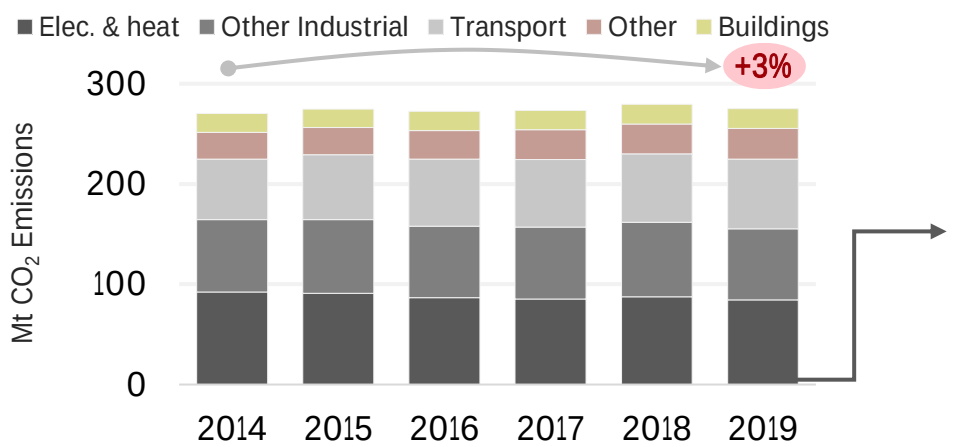
1	Eco-Car programme-Excise tax	2016
2	Thailand Alternative Energy Development Plan (AEDP 2015-2036)	2015
3	Feed-in Tariff for Very Small Power Producers (VSPP) (excluding solar PV)	2014
4	Feed-in tariff for distributed solar systems	2013
5	Biodiesel blending mandate	2012

References to sustainable energy in Nationally Determined Contribution (NDC)

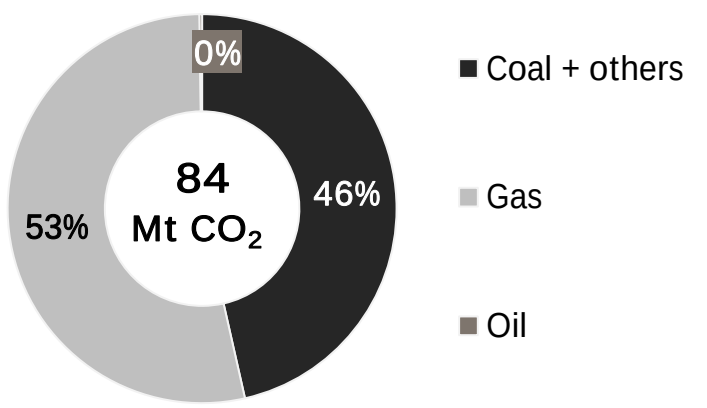
	Conditional	Unconditional	unit
- Renewable energy			
- electricity			
- transport			
- heating/cooling			
- Energy efficiency			

ENERGY AND EMISSIONS

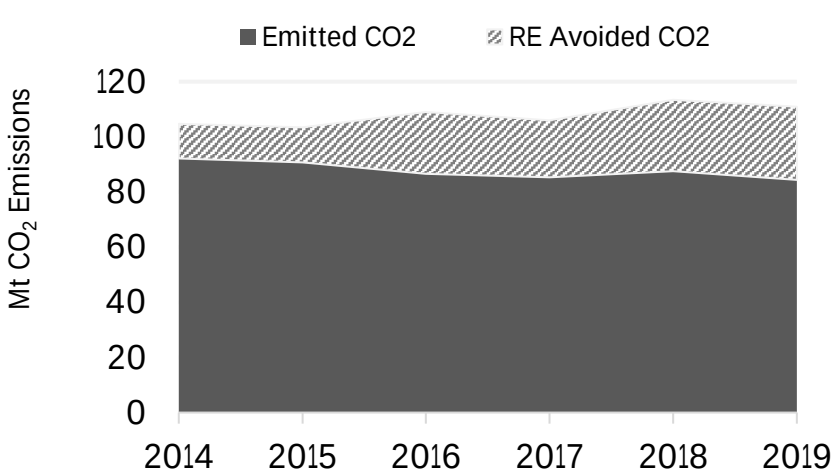
Energy-related CO_2 emissions by sector



Elec. & heat generation CO_2 emissions in 2019

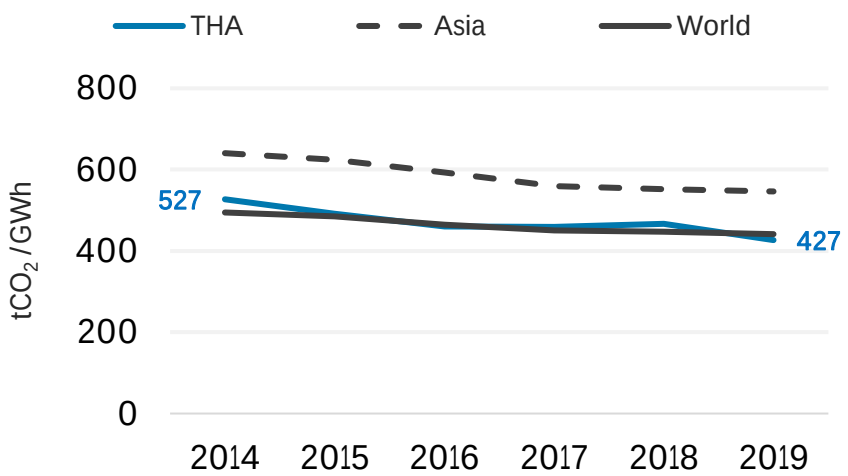


Avoided emissions from renewable elec. & heat



Avoided emissions based on fossil fuel mix used for power

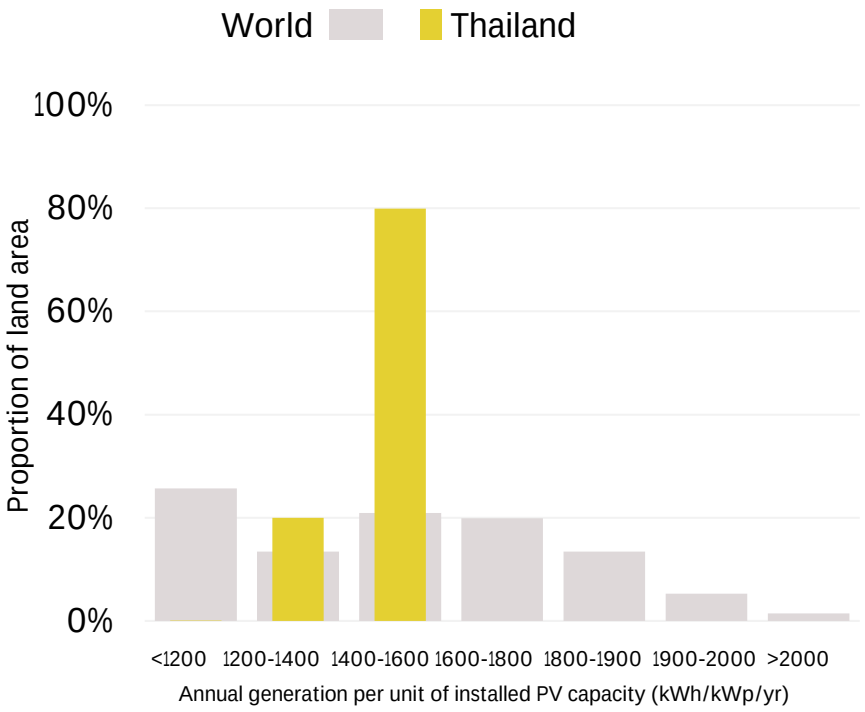
CO_2 emission factor for elec. & heat generation



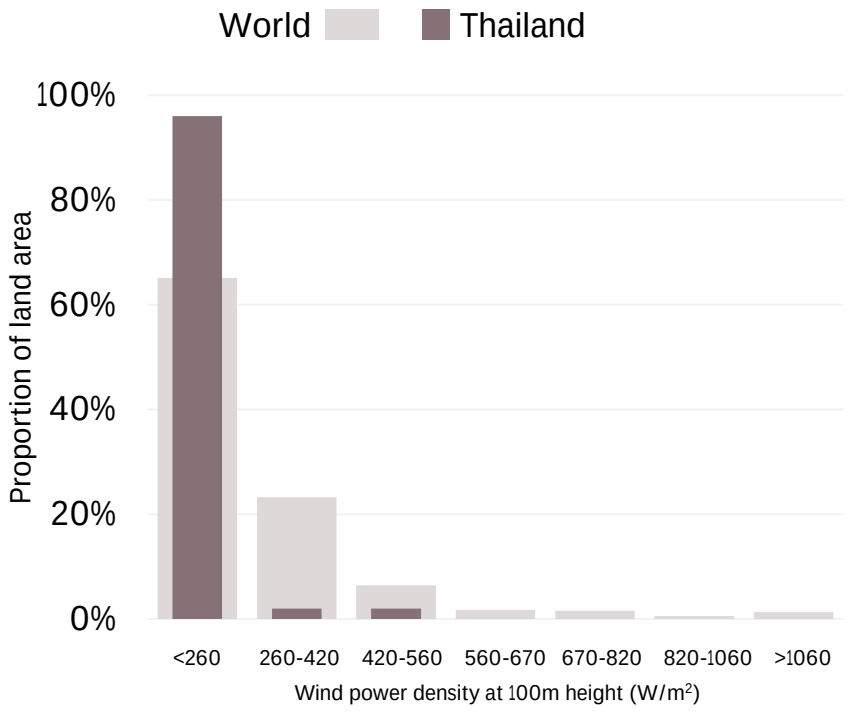
Calculated by dividing power sector emissions by elec. + heat gen.

RENEWABLE RESOURCE POTENTIAL

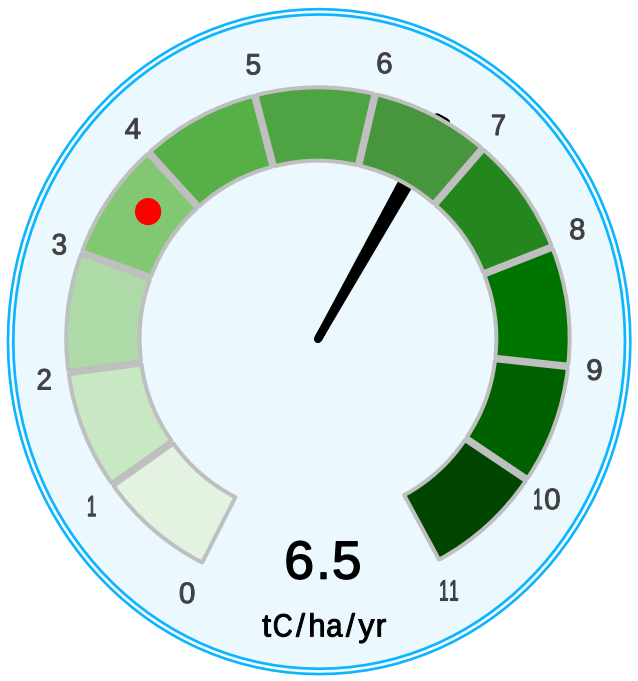
Distribution of solar potential



Distribution of wind potential



Biomass potential: net primary production



●= 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/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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