ENERGY PROFILE

Iran (Islamic Republic of)

SUSTAINABLE DEVELOPMENT GOAL 7: ENERGY INDICATORS (2018)

Renewable energy (% of TFEC)	1.0	Access to electricity (% of population)	100.0
Energy efficiency (MJ per $1 of GDP)	9.1	Access to clean cooking (% of population)	>95
Public flows renewables (2018 USD M)	0.1	Per capita renewable capacity (W/person)	154.999

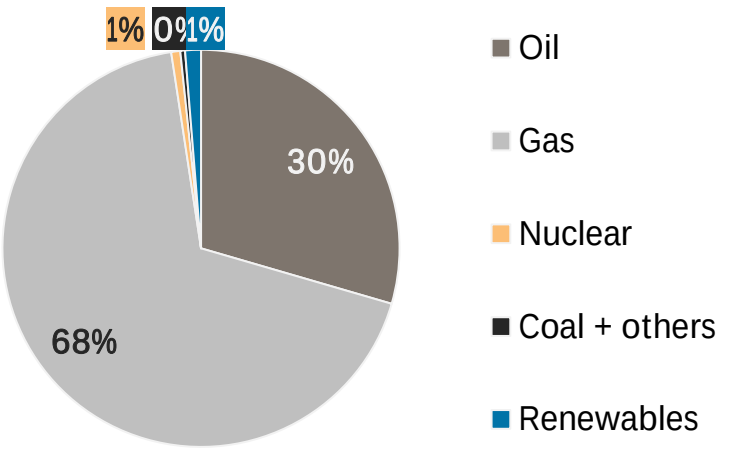
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2013	2018
Non-renewable (TJ)	9 066 307	10 851 258
Renewable (TJ)	131 823	141 404
Total (TJ)	9 198 130	10 992 661
Renewable share (%)	1	1

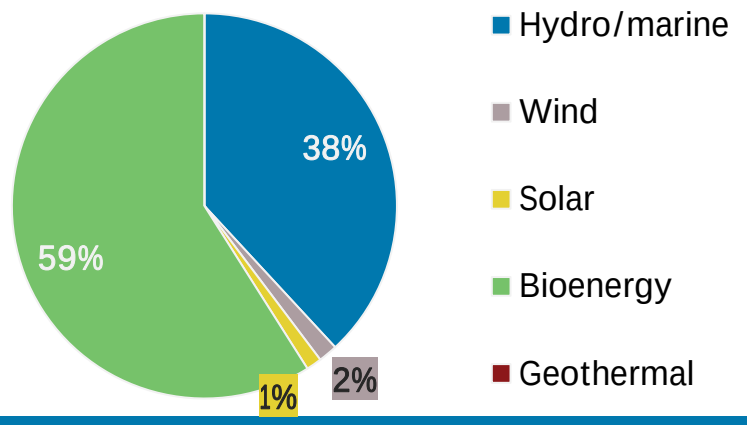
Growth in TPES	2013-18	2017-18
Non-renewable (%)	+19.7	+0.0
Renewable (%)	+7.3	-1.2
Total (%)	+19.5	+0.0

Primary energy trade	2013	2018
Imports (TJ)	315 465	341 866
Exports (TJ)	3 506 039	6 275 770
Net trade (TJ)	3 190 574	5 933 904
Imports (% of supply)	3	3
Exports (% of production)	28	37
Energy self-sufficiency (%)	136	155
Net trade (USD million)	+ 65 411	+ 65 968
Net trade (% of GDP)	+14.2	+22.4

Total primary energy supply in 2018



Renewable energy supply in 2018



RENEWABLE ENERGY CONSUMPTION

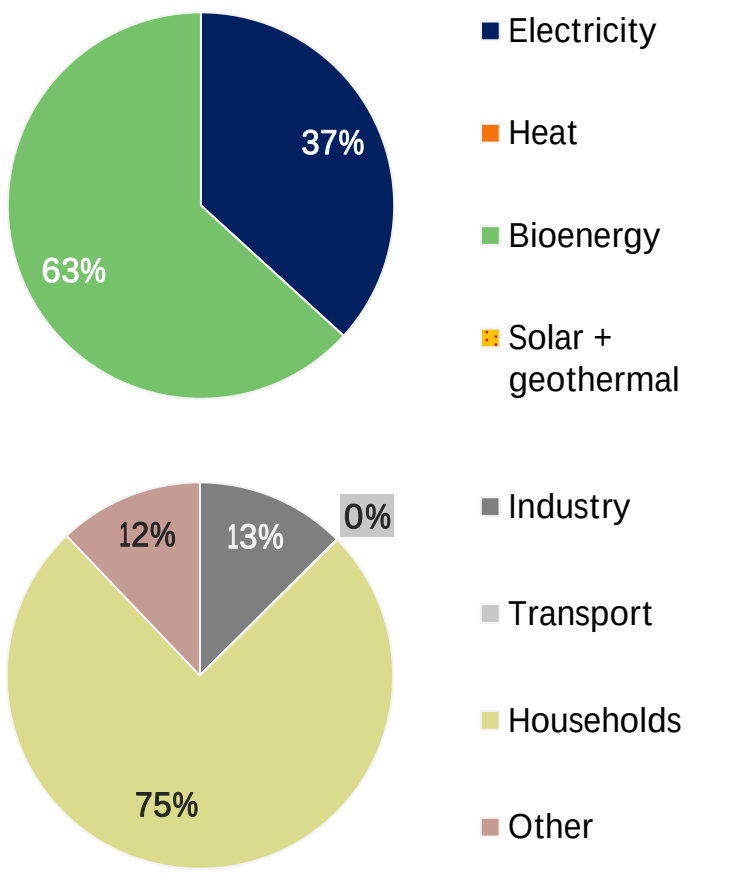
Consumption by source	2013	2018
Electricity (TJ)	39 569	48 606
Heat (TJ)	0	0
Bioenergy (TJ)	82 704	83 542
Solar + geothermal (TJ)	0	0
Total (TJ)	**122 273**	**132 148**
Electricity share (%)	32	37

Consumption growth	2013-18	2017-18
Renewable electricity (%)	+22.8	-2.7
Other renewables (%)	+1.0	-0.4
Total (%)	**+8.1**	**-1.3**

Consumption by sector	2013	2018
Industry (TJ)	14 021	16 568
Transport (TJ)	55	89
Households (TJ)	95 095	99 466
Other (TJ)	13 102	16 025

Renewable share of TFEC	1.0	1.0

Renewable energy consumption in 2018



ELECTRICITY CAPACITY AND GENERATION

Capacity in 2020	MW	%
Non-renewable	**72 863**	**85**
Renewable	**12 941**	**15**
Hydro/marine	12 193	14
Solar	430	1
Wind	308	0
Bioenergy	11	0
Geothermal	0	0
Total	**85 804**	**100**

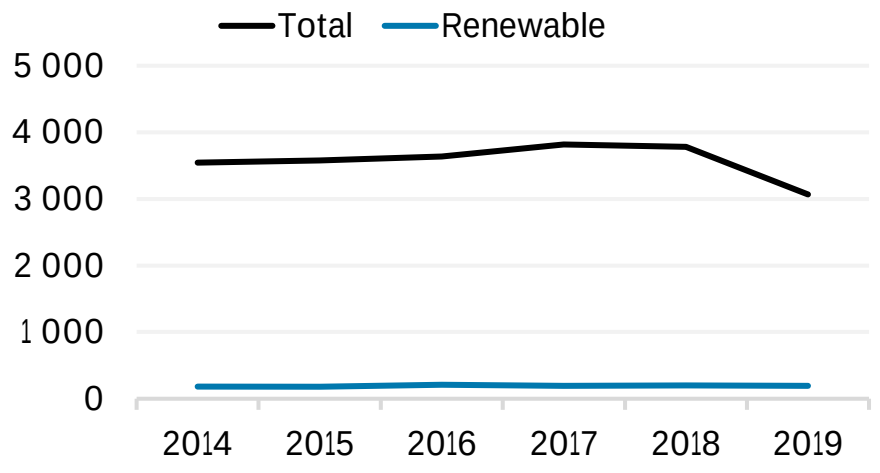
Capacity change (%)	2015-20	2019-20
Non-renewable	**+ 14**	**+ 3.1**
Renewable	**+ 13**	**+ 0.8**
Hydro/marine	+ 8	+ 0.1
Solar	+ 4 483	+ 24.3
Wind	+ 101	+ 1.0
Bioenergy	0	0.0
Geothermal	0	0.0
Total	**+ 14**	**+ 2.7**

Net capacity change in 2020 (MW)

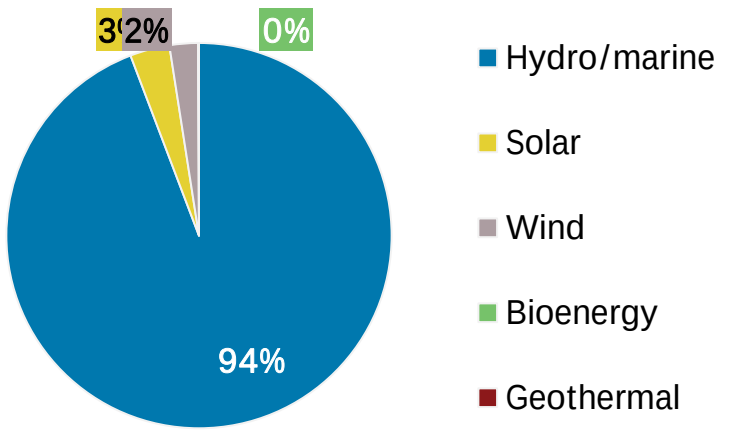
Non-renewable	Hydro and marine
+ 2 183	+ 11
Solar	**Wind**
+ 84	+ 3
Bioenergy	**Geothermal**
0	0

Generation in 2019	GWh	%
Non-renewable	**238 116**	**94**
Renewable	**16 202**	**6**
Hydro and marine	15 047	6
Solar	510	0
Wind	634	0
Bioenergy	11	0
Geothermal	0	0
Total	**254 318**	**100**

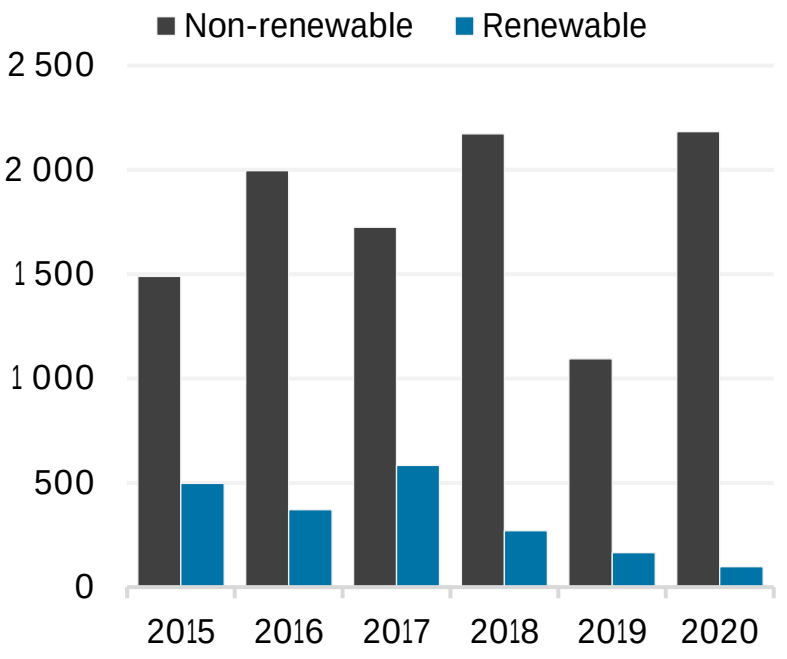
Per capita electricity generation (kWh)



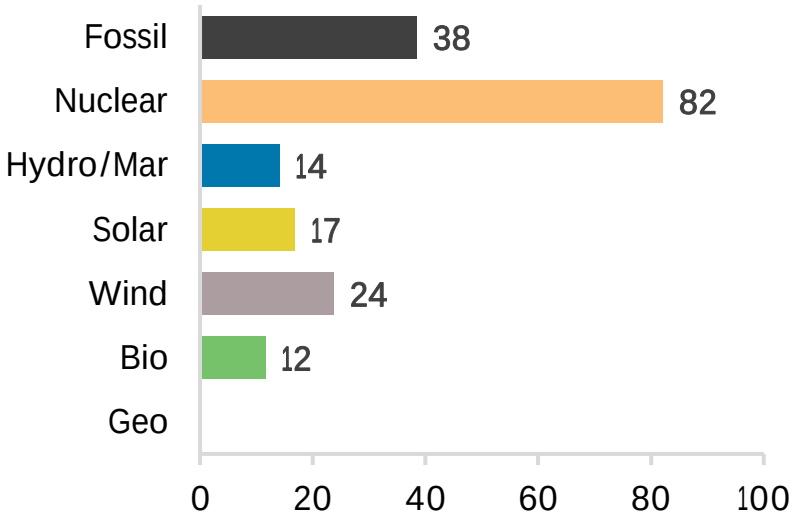
Renewable capacity in 2020



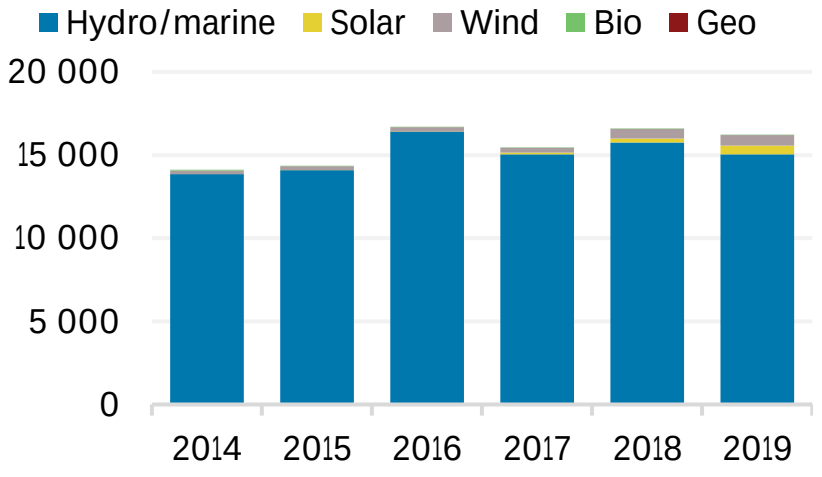
Net capacity change (MW)



Capacity utilisation in 2019 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target
Renewable energy:	**2015**	**5 GW**
Renewable electricity:	2021	5 %
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

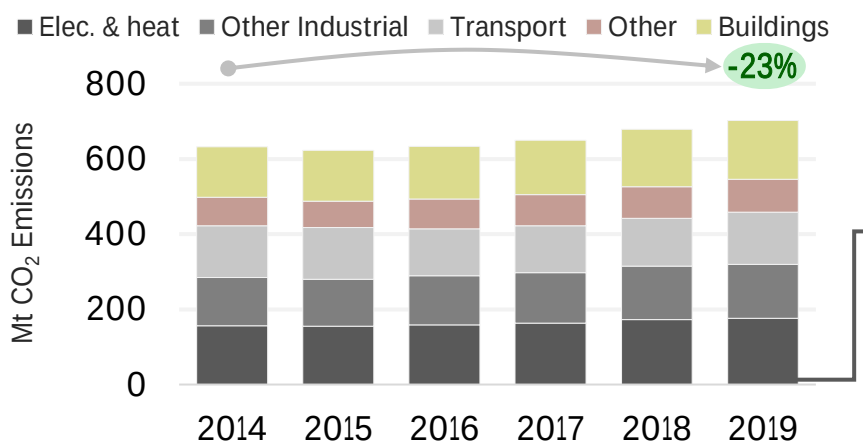
1	Renewable portfolio standards: Law on the Sixth Five-Year Economic, Cultural, and Social Development Plan for 1396-1400 (2016-2021)	2016
2	Supplying 20% of electricity consumed by ministries, institutes, governmental sectors and public non-governmental entities from renewable sources in Iran	2016
3	Payment of benefit of conserving fossil fuels	2015
4	Renewable Electricity Compliance	2015
5	Liquid Fuel Exchange Purchase	2013

References to sustainable energy in Nationally Determined Contribution (NDC)

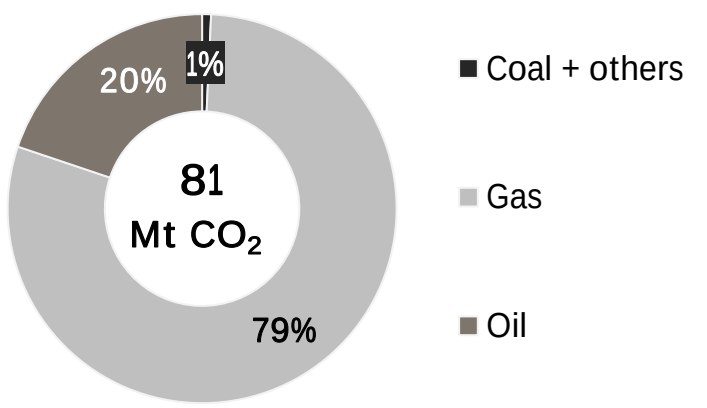
	Conditional	Unconditional	unit
- **Renewable energy**			
- electricity			
- transport			
- heating/cooling			
- Energy efficiency			

ENERGY AND EMISSIONS

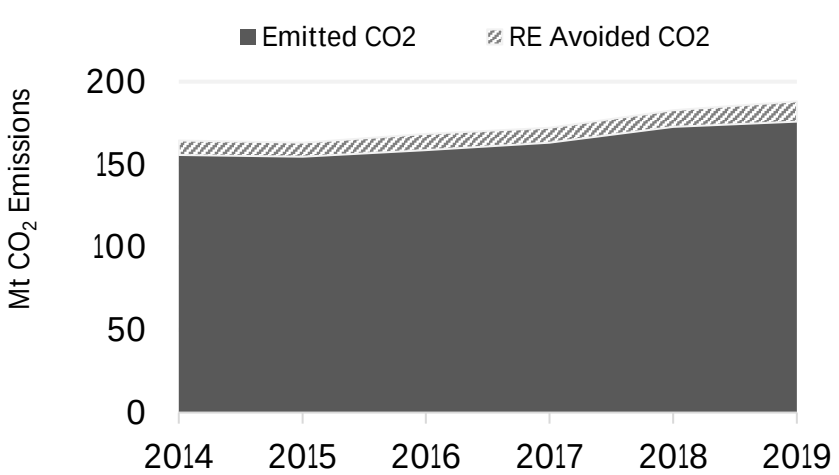
Energy-related CO_2 emissions by sector



Elec. & heat generation CO_2 emissions in 2019

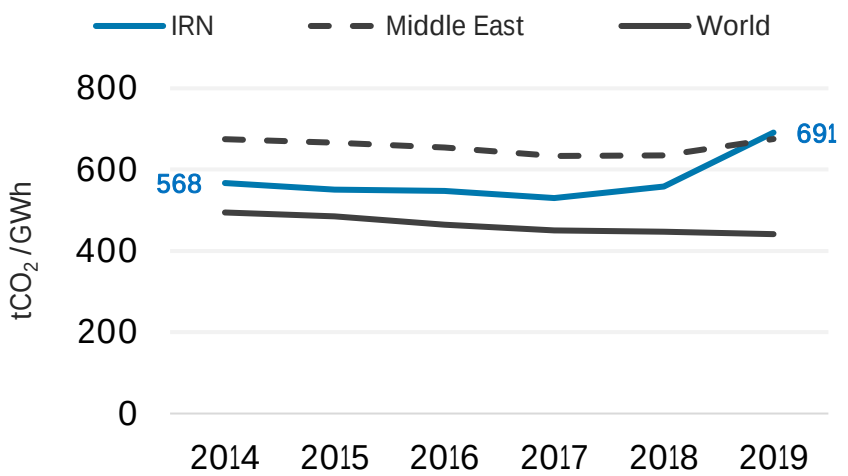


Avoided emissions from renewable elec. & heat



Avoided emissions based on fossil fuel mix used for power

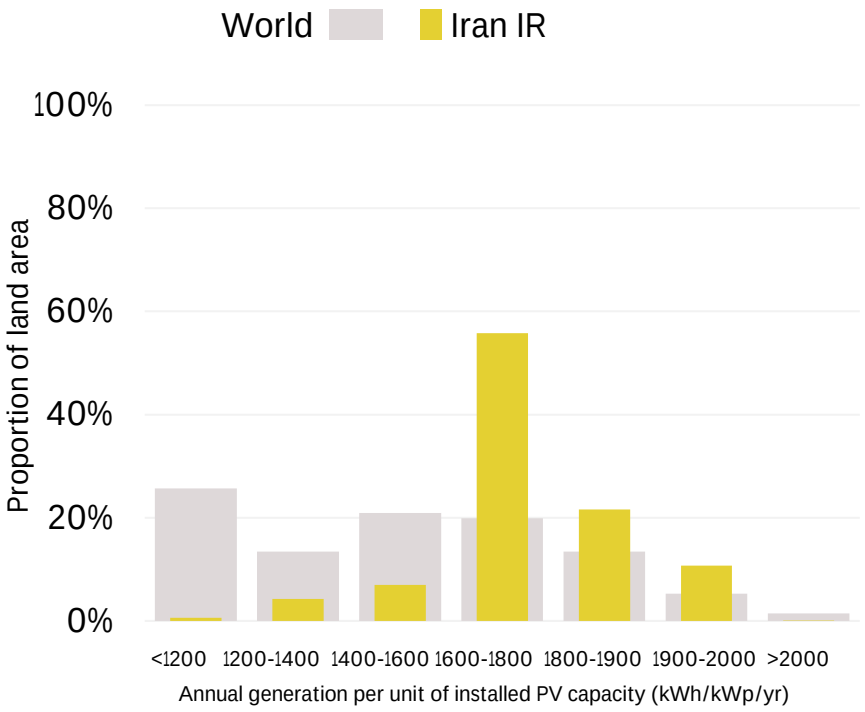
CO_2 emission factor for elec. & heat generation



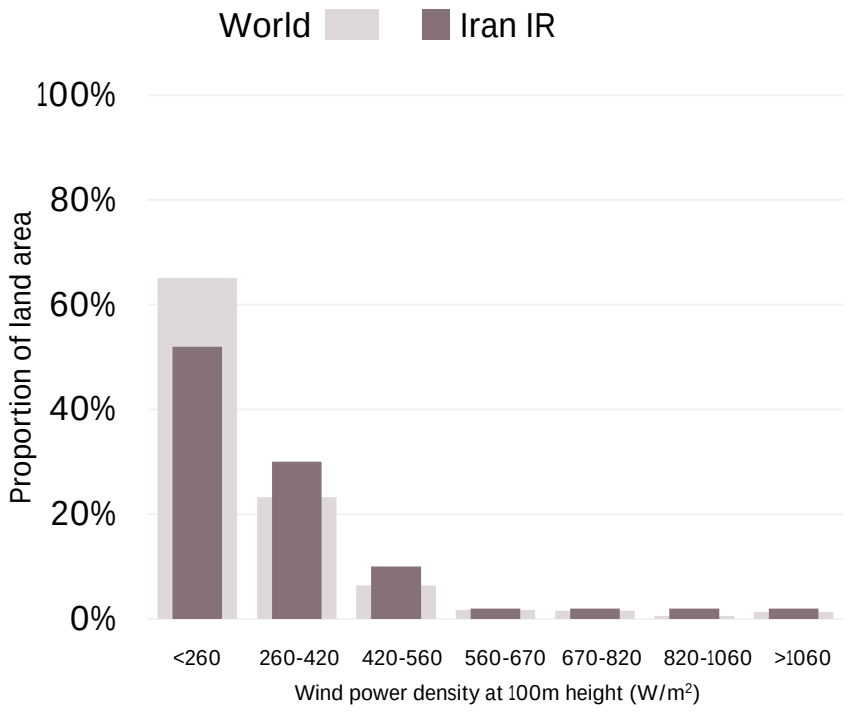
Calculated by dividing power sector emissions by elec. + heat gen.

RENEWABLE RESOURCE POTENTIAL

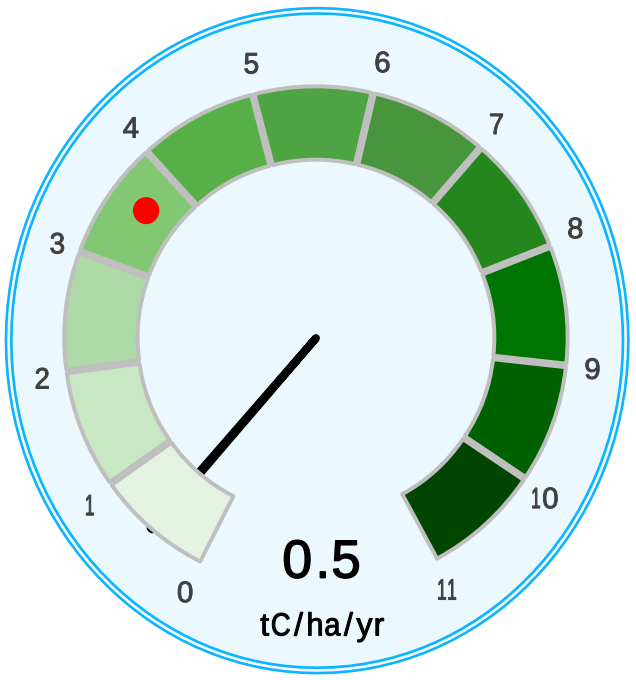
Distribution of solar potential



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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