

SUSTAINABLE DEVELOPMENT GOAL 7: ENERGY INDICATORS (2017)

Renewable energy (% of TFEC)	16.4	Access to electricity (% of population)	100.0
Energy efficiency (MJ per \$1 of GDP)	3.0	Access to clean cooking (% of population)	>95
Public flows renewables (2017 USD M)	n.a.	Per capita renewable capacity (W/person)	n.a.

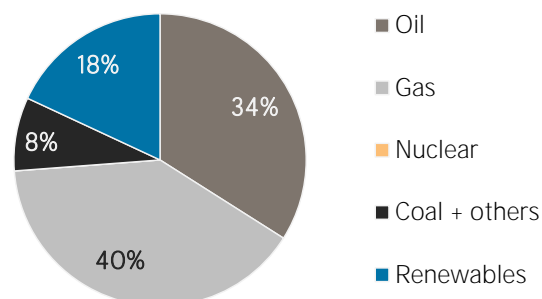
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2012	2017
Non-renewable (TJ)	5 764 311	5 303 170
Renewable (TJ)	1 096 449	1 169 443
Total (TJ)	6 860 759	6 472 614
Renewable share (%)	16	18

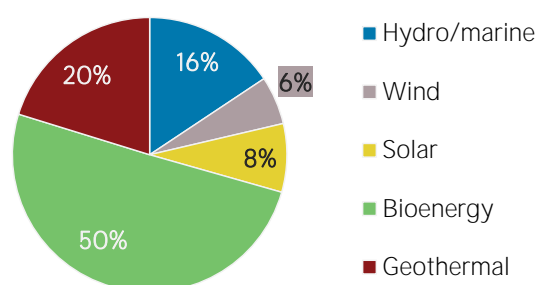
Growth in TPES	2012-17	2016-17
Non-renewable (%)	-8.0	+1.9
Renewable (%)	+6.7	+5.2
Total (%)	-5.7	+2.5

Primary energy trade	2012	2017
Imports (TJ)	6 887 640	6 643 974
Exports (TJ)	1 307 279	1 407 948
Net trade (TJ)	-5 580 361	-5 236 026
Imports (% of supply)	100	103
Exports (% of production)	86	97
Energy self-sufficiency (%)	22	22
Net trade (USD million)	- 81 181	- 37 960
Net trade (% of GDP)	-3.9	-1.9

Total primary energy supply in 2017



Renewable energy supply in 2017



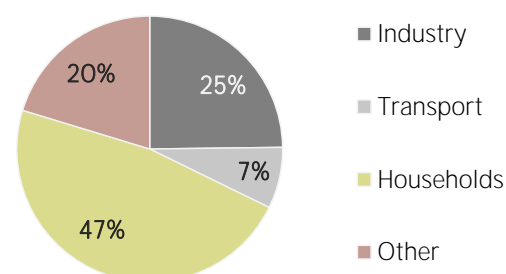
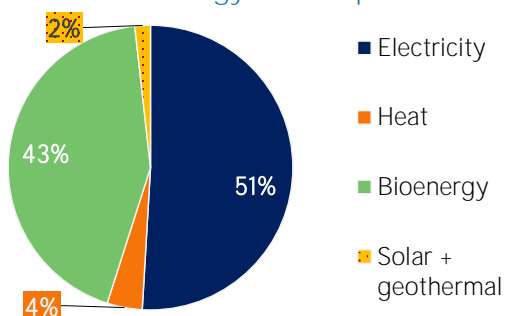
RENEWABLE ENERGY CONSUMPTION

Consumption by source	2012	2017
Electricity (TJ)	402 511	409 005
Heat (TJ)	18 591	32 095
Bioenergy (TJ)	346 619	347 773
Solar + geothermal (TJ)	11 453	14 218
Total (TJ)	779 174	803 091
Electricity share (%)	52	51

Consumption growth	2012-17	2016-17
Renewable electricity (%)	+1.6	+10.1
Other renewables (%)	+4.6	+7.3
Total (%)	+3.1	+8.7

Consumption by sector	2012	2017
Industry (TJ)	187 551	199 186
Transport (TJ)	70 479	59 801
Households (TJ)	376 906	381 095
Other (TJ)	144 238	163 008
Renewable share of TFEC		16.4

Renewable energy consumption in 2017

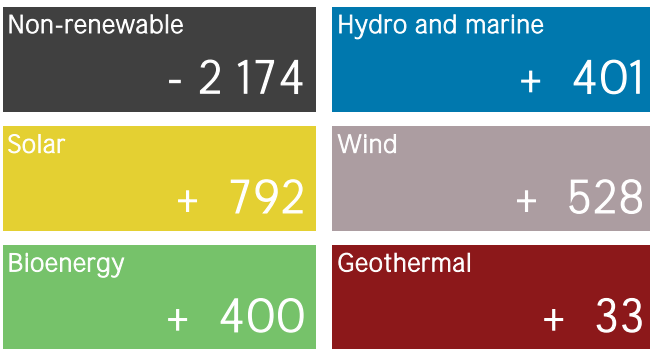


ELECTRICITY CAPACITY AND GENERATION

Capacity in 2019	MW	%
Non-renewable	59 892	52
Renewable	55 315	48
Hydro/marine	18 960	16
Solar	20 906	18
Wind	10 758	9
Bioenergy	3 891	3
Geothermal	800	1
Total	115 207	100

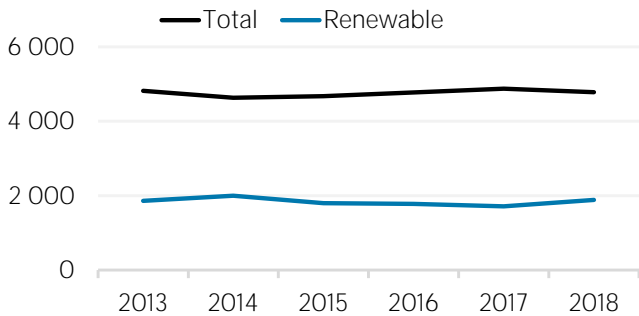
Capacity change (%)	2014-19	2018-19
Non-renewable	- 17	- 3.5
Renewable	+ 12	+ 4.1
Hydro/marine	+ 5	+ 2.2
Solar	+ 12	+ 3.9
Wind	+ 24	+ 5.2
Bioenergy	+ 16	+ 11.5
Geothermal	+ 4	+ 4.3
Total	- 5	- 0.0

Net capacity change in 2019 (MW)

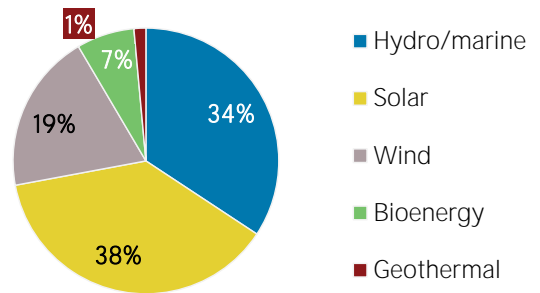


Generation in 2018	GWh	%
Non-renewable	175 294	61
Renewable	114 427	39
Hydro and marine	48 787	17
Solar	22 666	8
Wind	17 716	6
Bioenergy	19 153	7
Geothermal	6 105	2
Total	289 721	100

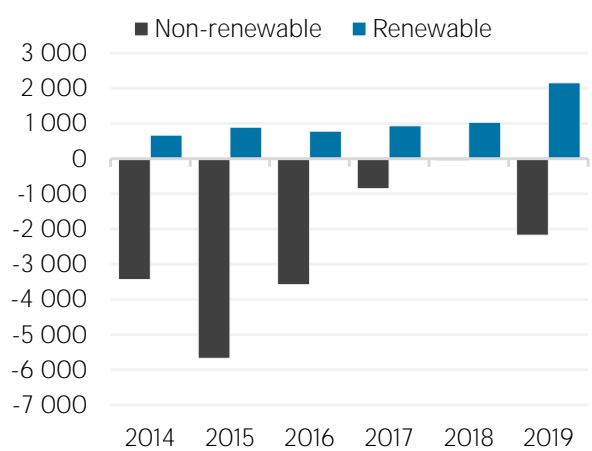
Per capita electricity generation (kWh)



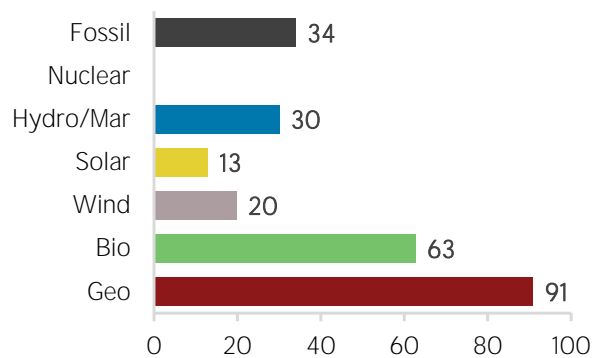
Renewable capacity in 2019



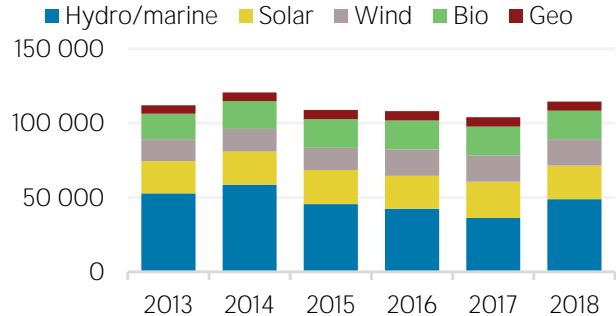
Net capacity change (MW)



Capacity utilisation in 2018 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target	unit
Renewable energy:	2020	17	%
Renewable electricity:	2020	26	%
Renewable capacity:			
Renewable transport:	2020	10	%
Liquid Biofuel blending mandate:			
Other transport targets:			
Renewable heating/cooling:	2020	17	%
Renewable Hydropower			
Off-grid renewable technologies:			
Energy efficiency (Energy):			
Energy efficiency (Electricity):			

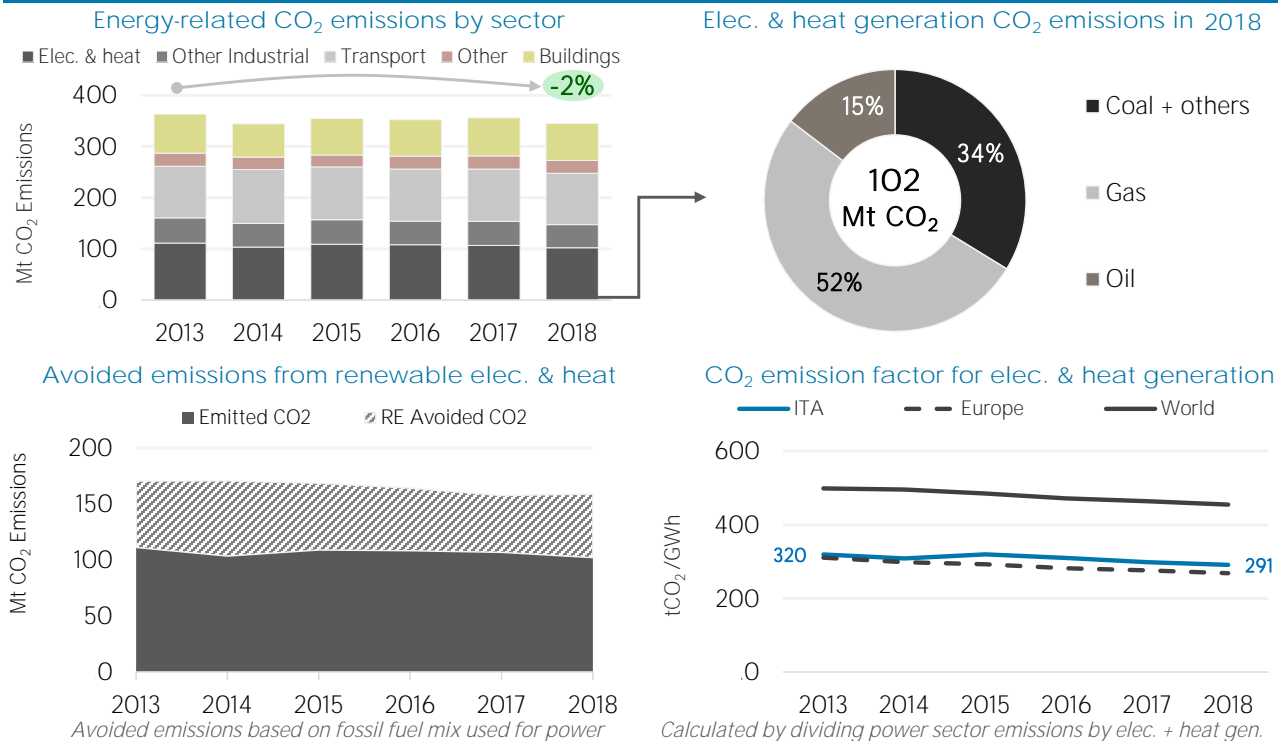
Latest policies, programmes and legislation

1	Climate decree	2019
2	Fund to sustain local energy efficiency interventions	2019
3	Integrated national plan for energy and climate 2030	2019
4	Italy bonus-malus	2019
5	Subsidies for biking to work - pilot project	2019

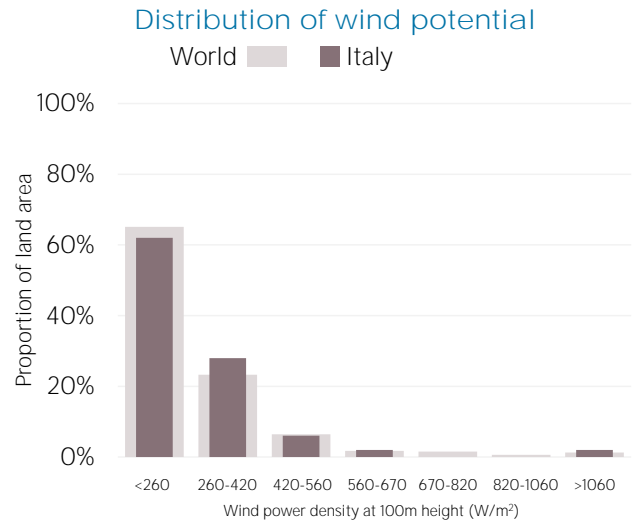
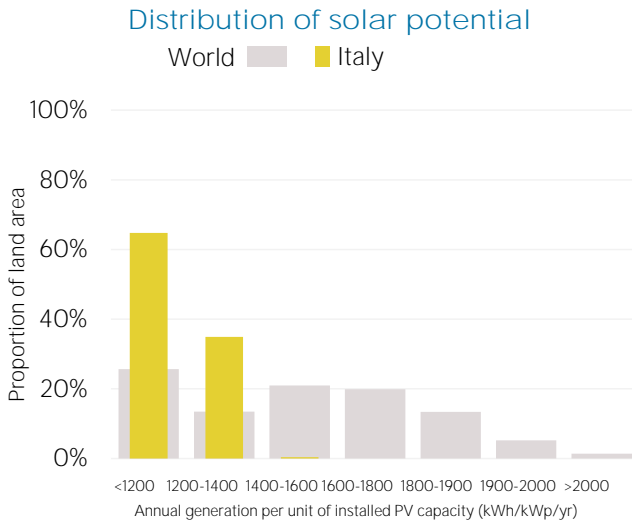
References to sustainable energy in Nationally Determined Contribution (NDC)

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

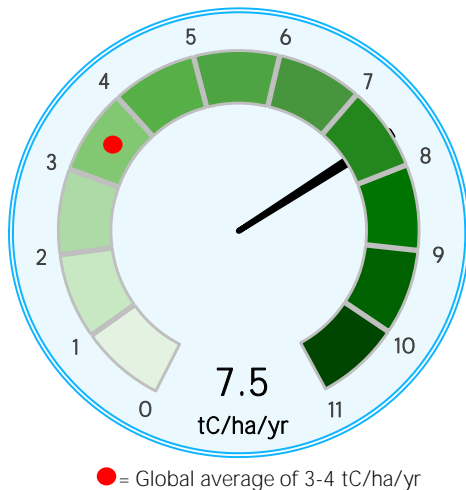
ENERGY AND EMISSIONS



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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