

South Africa

Sustainable Development Goal 7.2: Energy Indicators (2016)

Renewable energy (% of TFEC)	14.4	Access to electricity (% of population)	84.2
Energy efficiency (MJ per \$1 of GDP)	8.5	Access to clean cooking (% of population)	84

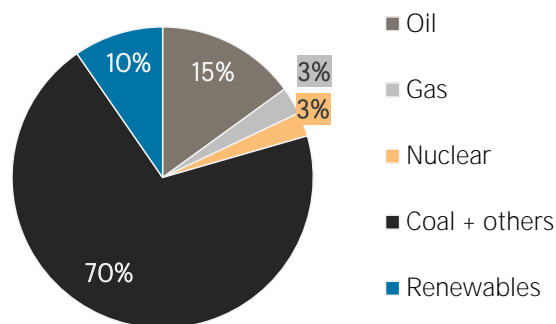
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2011	2016
Non-renewable (TJ)	5 711 985	5 680 791
Renewable (TJ)	570 324	605 350
Total (TJ)	6 282 309	6 286 141
Renewable share (%)	9	10

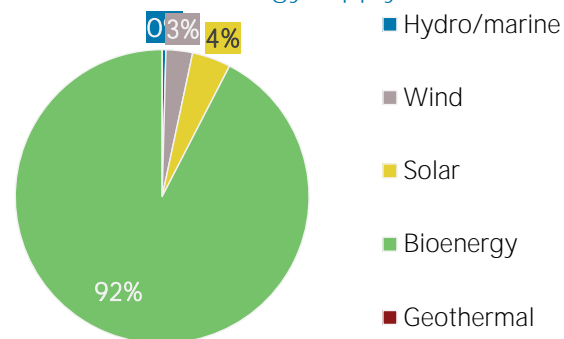
Growth in TPES	2011-16	2015-16
Non-renewable (%)	-0.5	+2.9
Renewable (%)	+6.1	+1.6
Total (%)	+0.1	+2.7

Primary energy trade	2011	2016
Imports (TJ)	1 453 247	1 495 115
Exports (TJ)	1 765 831	1 897 680
Net trade (TJ)	312 584	402 565
Imports (% of supply)	23	24
Exports (% of production)	26	28
Energy self-sufficiency (%)	108	109
Net trade (USD million)	- 9 892	- 2 947
Net trade (% of GDP)	-2.4	-1.0

Total primary energy supply in 2016



Renewable energy supply in 2016



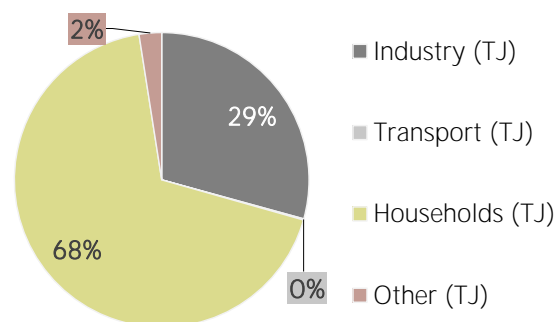
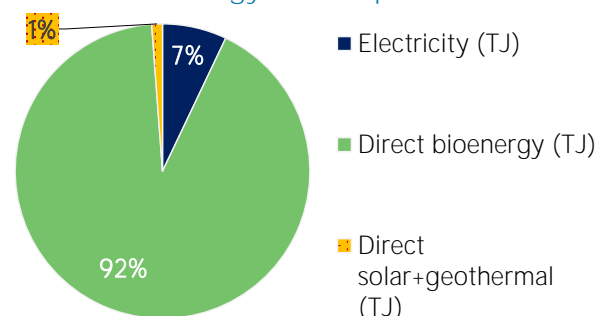
RENEWABLE ENERGY CONSUMPTION

Consumption by source	2011	2016
Electricity (TJ)	4 850	29 374
Direct bioenergy (TJ)	389 248	381 676
Direct solar+geothermal (TJ)	3 005	4 907
Total (TJ)	397 103	415 957
Electricity share (%)	1	7

Consumption growth	2011-16	2015-16
Renewable electricity (%)	+505.7	+26.5
Other renewables (%)	-1.4	-0.1
Total (%)	+4.7	+1.4

Consumption by sector	2011	2016
Industry (TJ)	112 843	121 741
Transport (TJ)	90	527
Households (TJ)	280 278	283 414
Other (TJ)	3 893	10 276
Renewable share of TFEC	14.4	14.4

Renewable energy consumption in 2016

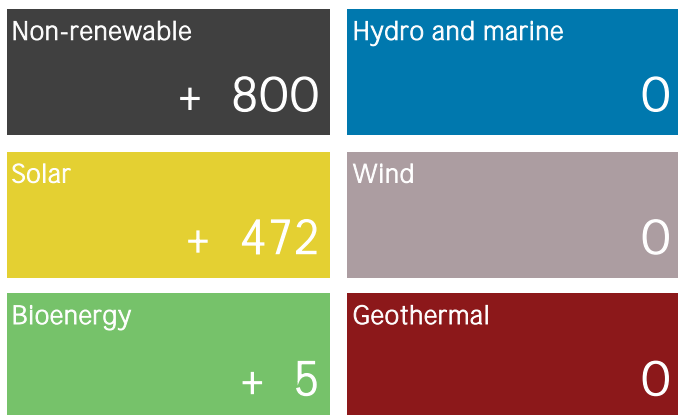


ELECTRICITY CAPACITY AND GENERATION

Capacity in 2018	MW	%
Non-renewable	48 894	89
Renewable	6 065	11
Hydro/marine	747	1
Solar	2 959	5
Wind	2 094	4
Bioenergy	265	0
Geothermal	0	0
Total	54 959	100

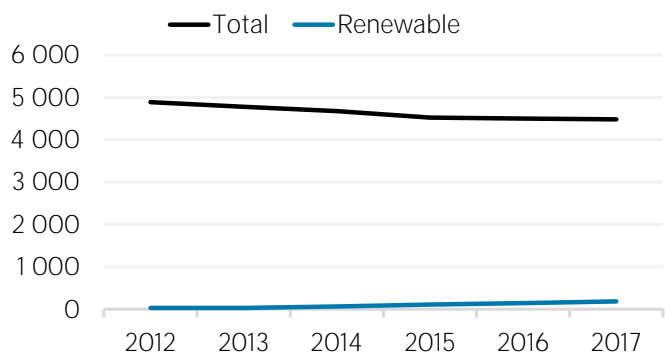
Capacity change (%)	2013-18	2017-18
Non-renewable	+ 9	+ 1.7
Renewable	+ 304	+ 8.5
Hydro/marine	+ 2	0.0
Solar	+ 1 031	+ 19.0
Wind	+ 715	0.0
Bioenergy	+ 8	+ 1.9
Geothermal	0	0.0
Total	+ 19	+ 2.4

Net capacity change in 2018 (MW)

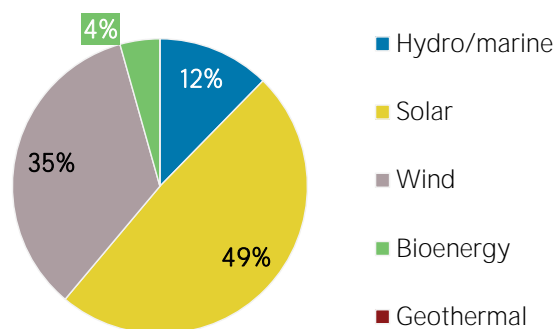


Generation in 2017	GWh	%
Non-renewable	245 053	96
Renewable	10 453	4
Hydro and marine	696	0
Solar	4 412	2
Wind	4 924	2
Bioenergy	421	0
Geothermal	0	0
Total	255 506	100

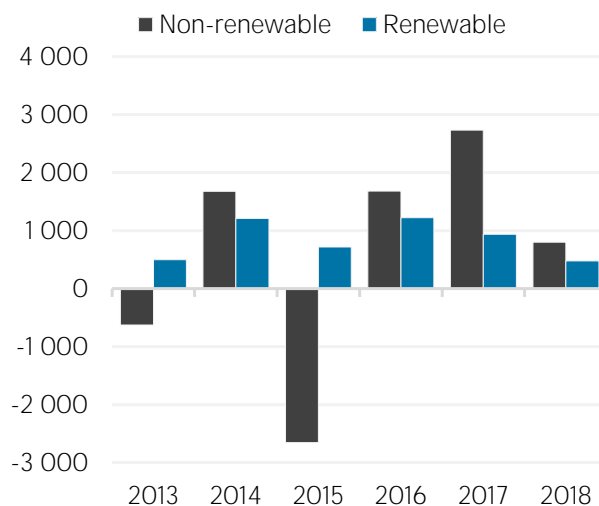
Per capita electricity generation (kWh)



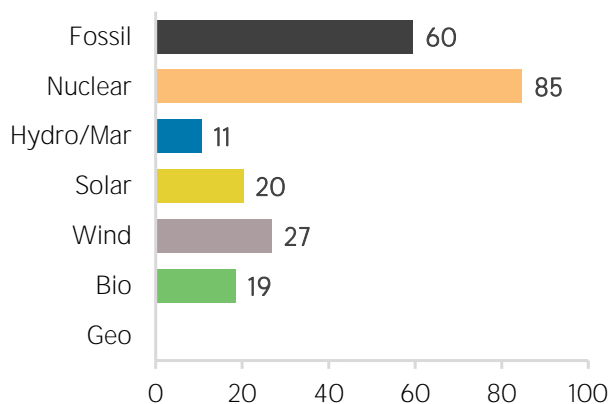
Renewable capacity in 2018



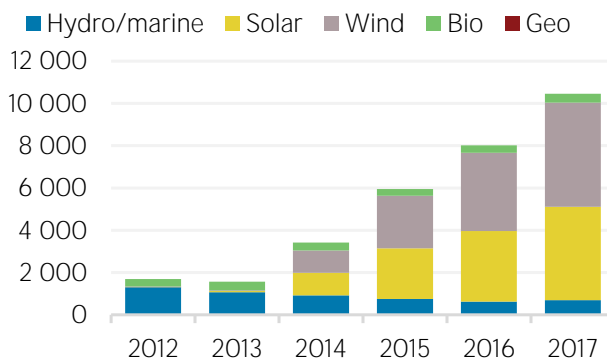
Net capacity change (MW)



Capacity utilisation in 2017 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target	unit
Renewable energy:			
Renewable electricity:	2030	8	%
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

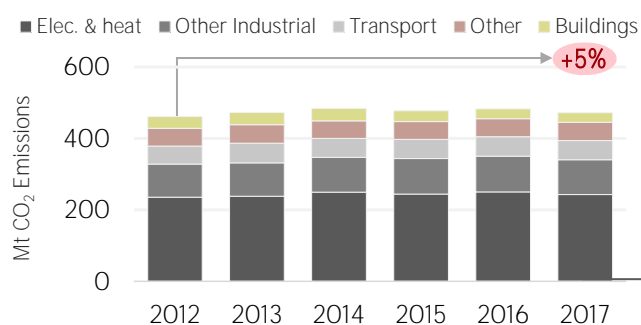
1	Regulations Regarding the Mandatory Blending of Bio-fuels with Petrol and Diesel	2012
2	Integrated Resource Electricity Plan 2010 – 2030	2011
3	Renewable Energy Independent Power Producer Programme (REIPPP)	2011
4	Integrated Resource Plan for Electricity (IRP)	2009
5	Eskom Solar Water Heating Rebate Programme	2008

References to sustainable energy in Nationally Determined Contribution (NDC)

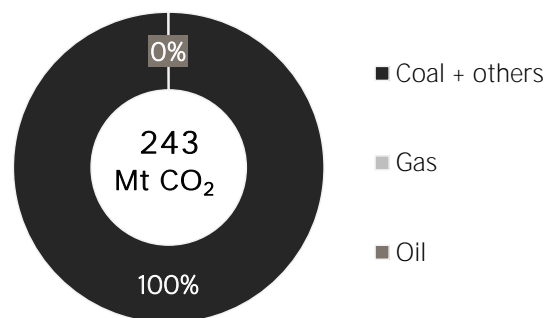
	Conditional	Unconditional	unit
- Renewable energy		5 243	MW (additional)
- electricity			
- transport			
- heating/cooling			
- Energy efficiency			

ENERGY AND EMISSIONS

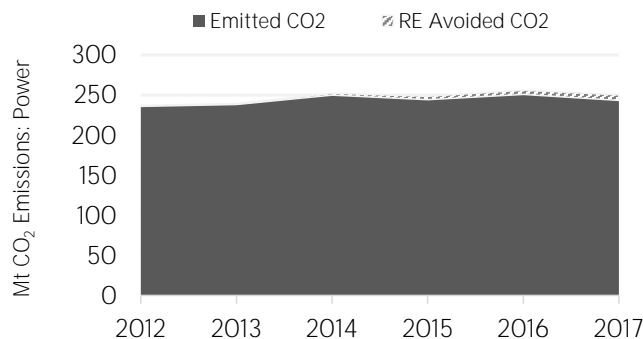
Energy-related CO₂ emissions by sector



Elec. & heat generation CO₂ emissions in 2017

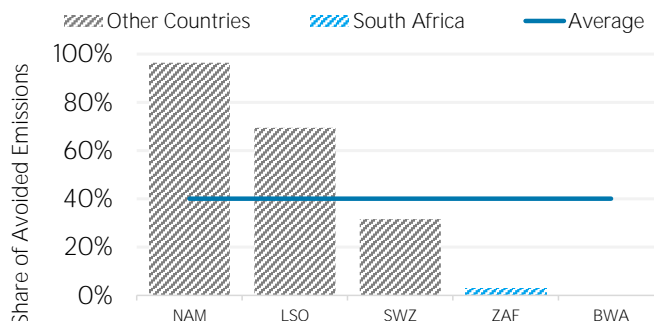


Avoided emissions from renewable power



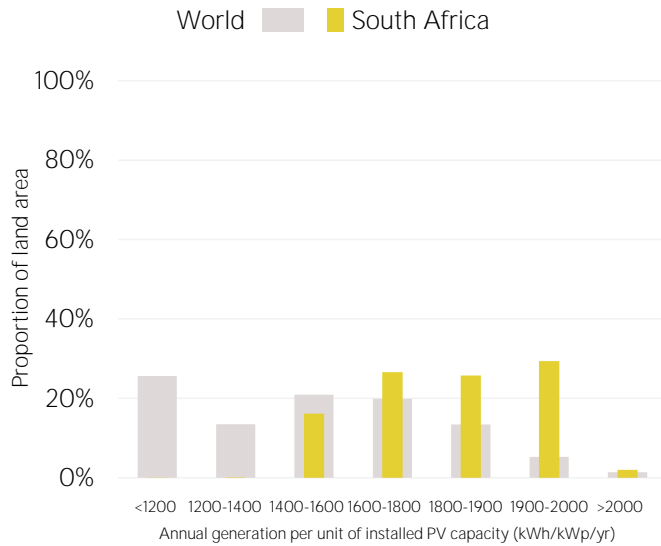
Avoided emissions based on fossil fuel mix used for power

Reduction in power emissions due to RE in 2017

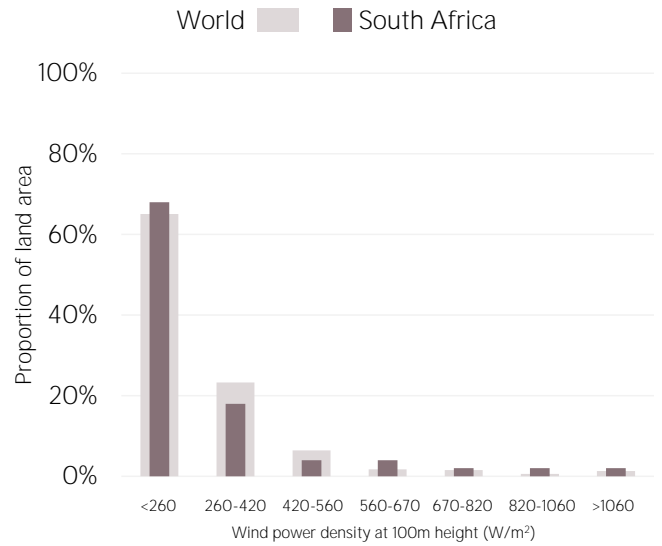


Reduction is RE Avoided divided by sum of avoided and emitted

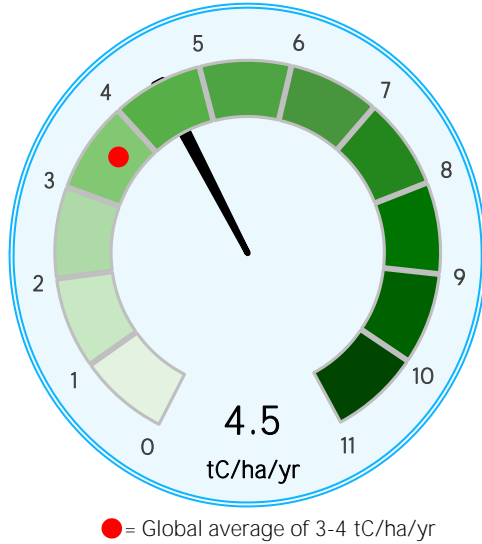
Distribution of solar potential



Distribution of wind 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 Indicators Database (original sources: WHO; World Bank; IEA; IRENA; and UNSD); 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: Energy self-sufficiency has been defined as total primary energy production divided by total primary energy supply. The value of energy trade has been defined as including all commodities in Chapter 27 of the Harmonised System (HS). Capacity utilisation has been calculated as annual generation divided by capacity x 8,760. Avoided emissions from renewable power have been 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.

This note has been produced to provide policy makers with a brief overview of developments in renewable energy in a country. The IRENA statistics team would welcome comments and feedback on its structure and content, which can be sent to statistics@irena.org.

Last updated on: 26th May, 2020



IRENA Headquarters
 Masdar City
 P.O. Box 236, Abu Dhabi
 United Arab Emirates
www.irena.org