

Denmark

Sustainable Development Goal 7.2: Energy Indicators (2016)

Renewable energy (% of TFEC)	33.1	Access to electricity (% of population)	100.0
Energy efficiency (MJ per \$1 of GDP)	2.6	Access to clean cooking (% of population)	>95

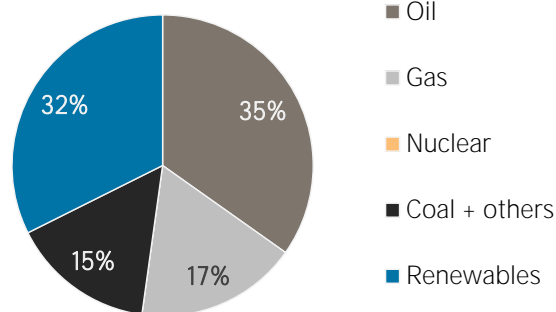
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2011	2016
Non-renewable (TJ)	581 660	468 355
Renewable (TJ)	169 191	224 200
Total (TJ)	750 851	692 556
Renewable share (%)	23	32

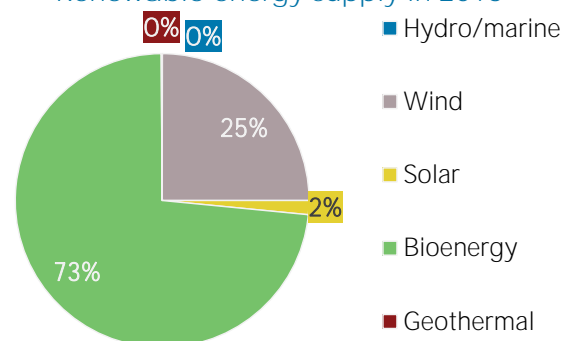
Growth in TPES	2011-16	2015-16
Non-renewable (%)	-19.5	+2.5
Renewable (%)	+32.5	+8.9
Total (%)	-7.8	+4.5

Primary energy trade	2011	2016
Imports (TJ)	664 319	763 797
Exports (TJ)	712 707	658 149
Net trade (TJ)	48 388	- 105 648
Imports (% of supply)	88	110
Exports (% of production)	83	104
Energy self-sufficiency (%)	114	91
Net trade (USD million)	+ 1 882	- 597
Net trade (% of GDP)	+0.5	-0.2

Total primary energy supply in 2016



Renewable energy supply in 2016



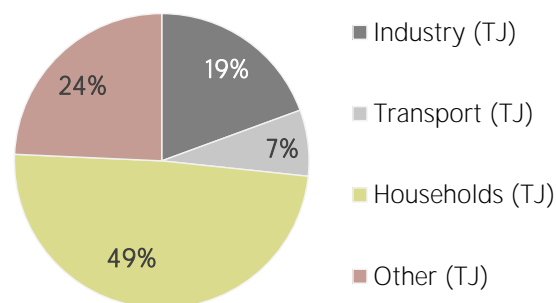
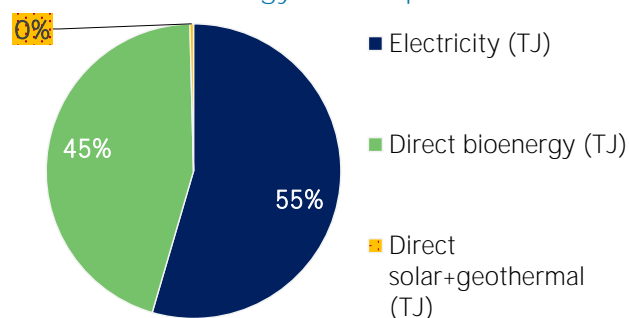
RENEWABLE ENERGY CONSUMPTION

Consumption by source	2011	2016
Electricity (TJ)	48 052	80 940
Direct bioenergy (TJ)	52 944	66 907
Direct solar+geothermal (TJ)	518	589
Total (TJ)	101 514	148 436
Electricity share (%)	47	55

Consumption growth	2011-16	2015-16
Renewable electricity (%)	+68.4	+12.6
Other renewables (%)	+26.3	+11.8
Total (%)	+46.2	+12.3

Consumption by sector	2011	2016
Industry (TJ)	20 970	28 821
Transport (TJ)	6 008	10 765
Households (TJ)	51 654	72 798
Other (TJ)	22 882	36 052
Renewable share of TFEC	23.9	33.1

Renewable energy consumption in 2016

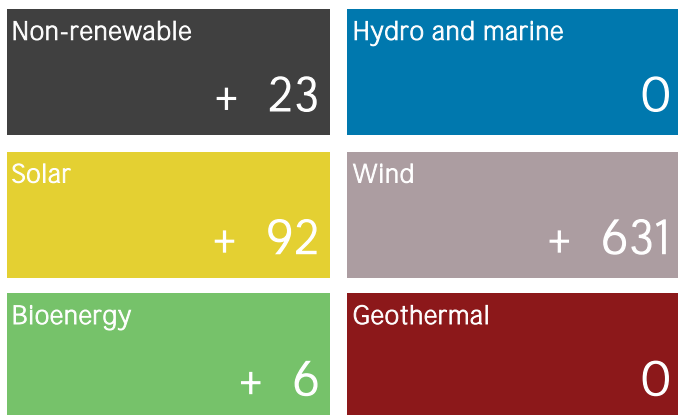


ELECTRICITY CAPACITY AND GENERATION

Capacity in 2018	MW	%
Non-renewable	6 148	41
Renewable	8 925	59
Hydro/marine	9	0
Solar	998	7
Wind	6 121	41
Bioenergy	1 797	12
Geothermal	0	0
Total	15 073	100

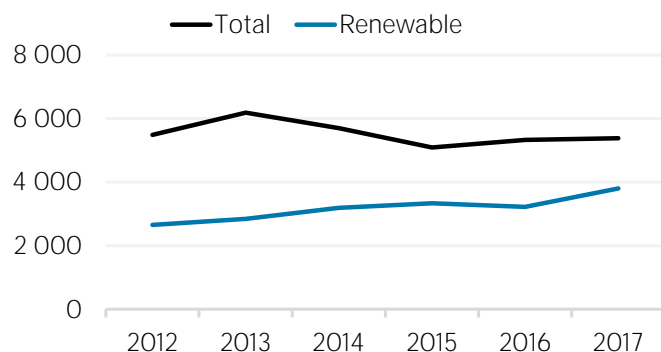
Capacity change (%)	2013-18	2017-18
Non-renewable	- 15	+ 0.4
Renewable	+ 36	+ 8.9
Hydro/marine	+ 6	0.0
Solar	+ 75	+ 10.1
Wind	+ 27	+ 11.5
Bioenergy	+ 52	+ 0.3
Geothermal	0	0.0
Total	+ 9	+ 5.2

Net capacity change in 2018 (MW)

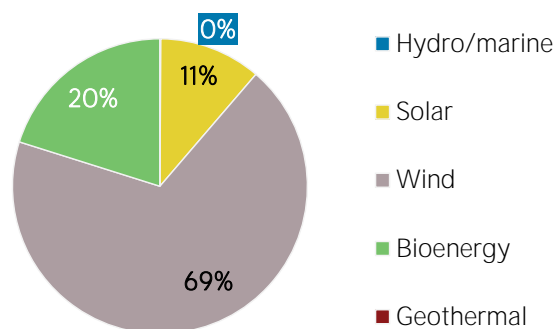


Generation in 2017	GWh	%
Non-renewable	9 123	29
Renewable	21 916	71
Hydro and marine	18	0
Solar	751	2
Wind	14 780	48
Bioenergy	6 367	21
Geothermal	0	0
Total	31 039	100

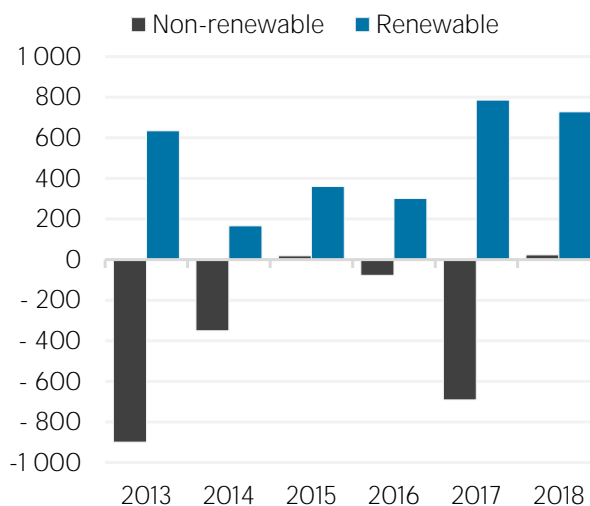
Per capita electricity generation (kWh)



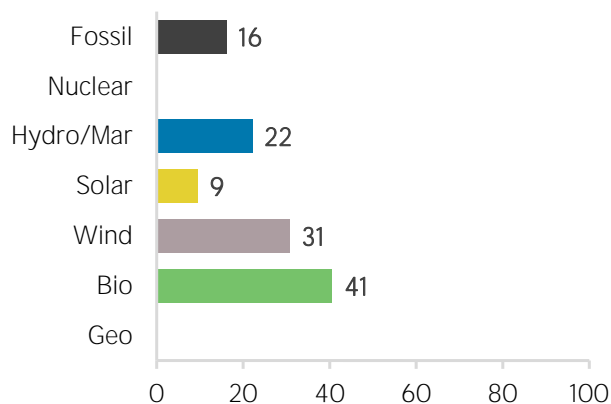
Renewable capacity in 2018



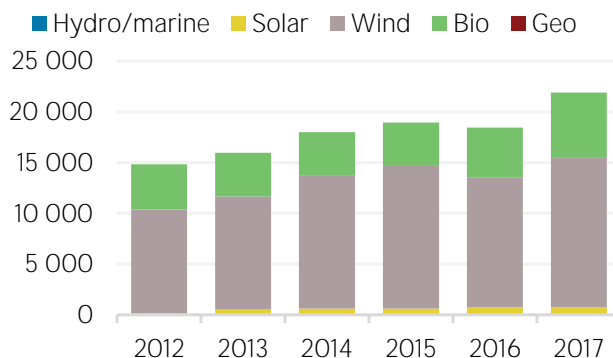
Net capacity change (MW)



Capacity utilisation in 2017 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target	unit
Renewable energy:	2020	30	%
Renewable electricity:	2020	52	%
Renewable capacity:			
Renewable transport:	2020	10	%
Liquid Biofuel blending mandate:			
Other transport targets:			
Renewable heating/cooling:	2020	40	%
Renewable Hydropower			
Off-grid renewable technologies:			
Energy efficiency (Energy):			
Energy efficiency (Electricity):			

Latest policies, programmes and legislation

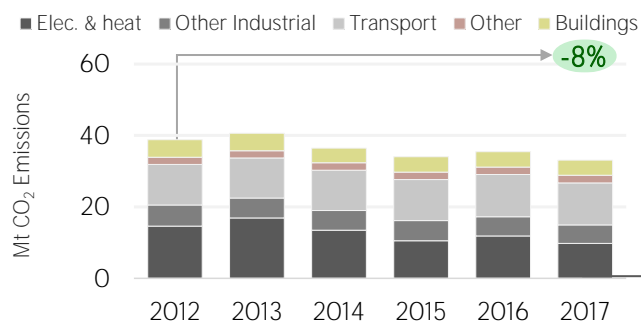
1 Danish Energy Agreement for 2012-2020	2012
2 Regulation on Net-metering for the Producers of Electricity for Own Needs	2012
3 Energy Strategy 2050	2011
4 National Renewable Energy Action Plan (NREAP)	2010
5 Feed-in premium tariffs for renewable power (Promotion of Renewable Energy Act)	2009

References to sustainable energy in Nationally Determined Contribution (NDC)

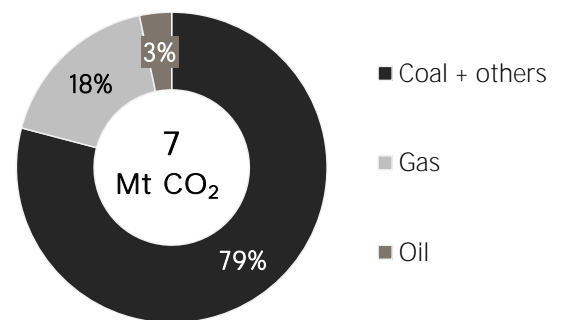
- | | Conditional | Unconditional | unit |
|---------------------------|-------------|---------------|------|
| - Renewable energy | | | |
| - electricity | | | |
| - transport | | | |
| - heating/cooling | | | |
| - Energy efficiency | | | |

ENERGY AND EMISSIONS

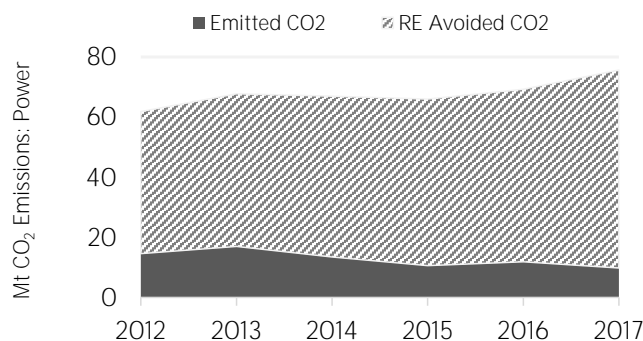
Energy-related CO₂ emissions by sector



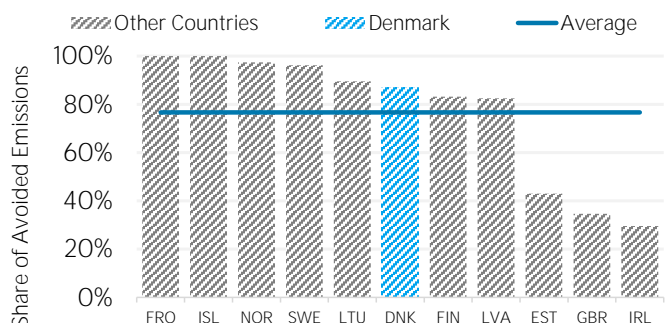
Elec. & heat generation CO₂ emissions in 2017



Avoided emissions from renewable power



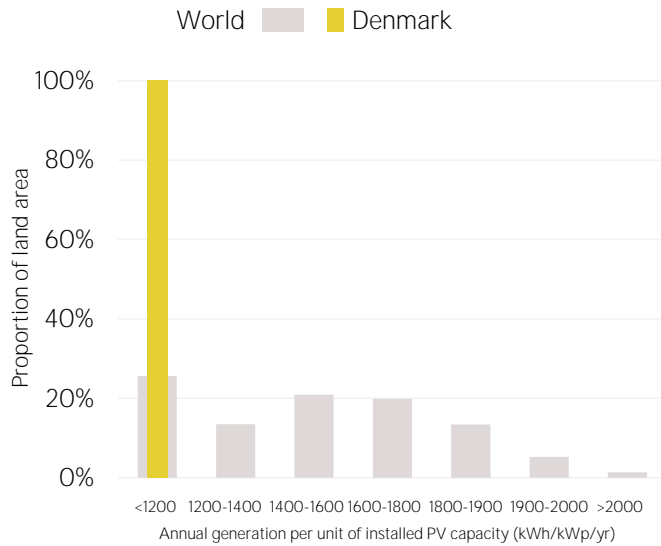
Reduction in power emissions due to RE in 2017



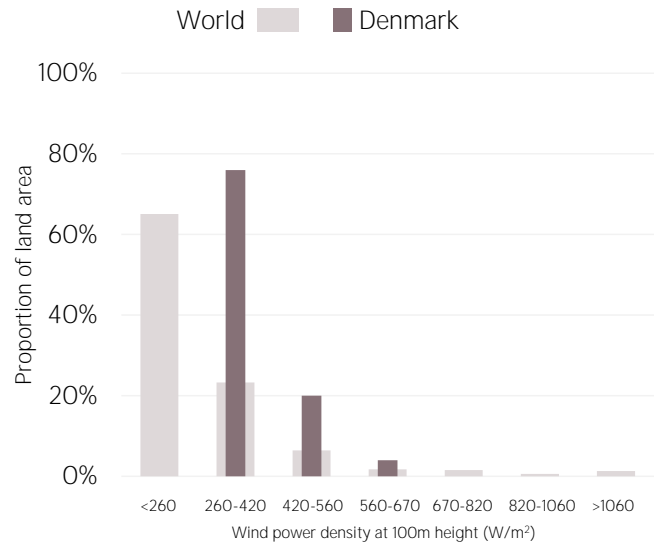
Avoided emissions based on fossil fuel mix used for power

Reduction is RE Avoided divided by sum of avoided and emitted

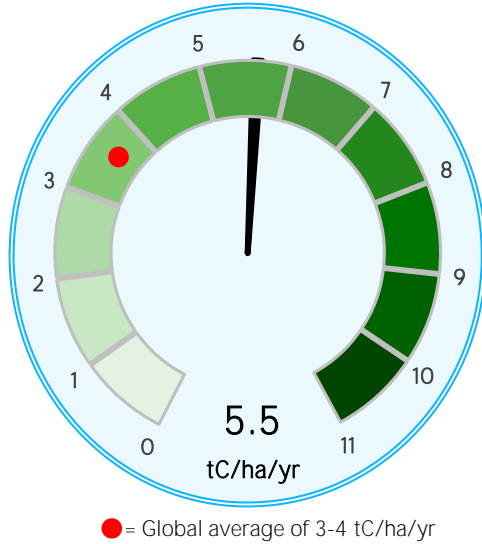
Distribution of solar potential



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/m^2) 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.

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