

Ukraine

Sustainable Development Goal 7.2: Energy Indicators (2016)

| | | | |
|---------------------------------------|------|---|-------|
| Renewable energy (% of TFEC) | 5.5 | Access to electricity (% of population) | 100.0 |
| Energy efficiency (MJ per \$1 of GDP) | 12.1 | Access to clean cooking (% of population) | >95 |

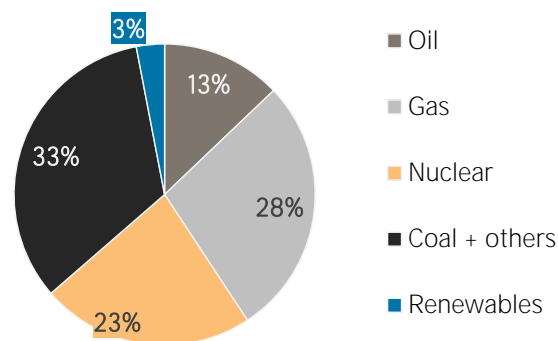
TOTAL PRIMARY ENERGY SUPPLY (TPES)

| TPES | 2011 | 2016 |
|---------------------|-----------|-----------|
| Non-renewable (TJ) | 5 136 487 | 3 732 287 |
| Renewable (TJ) | 90 373 | 116 341 |
| Total (TJ) | 5 226 861 | 3 848 628 |
| Renewable share (%) | 2 | 3 |

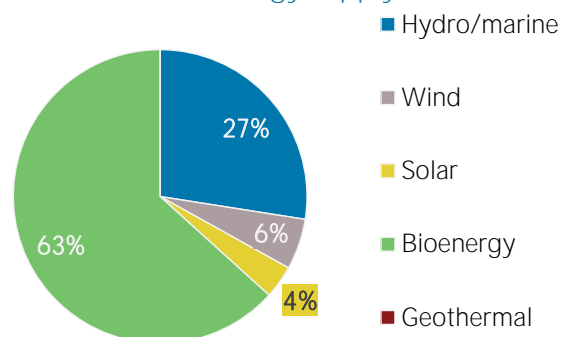
| Growth in TPES | 2011-16 | 2015-16 |
|-------------------|---------|---------|
| Non-renewable (%) | -27.3 | +2.0 |
| Renewable (%) | +28.7 | +42.7 |
| Total (%) | -26.4 | +2.9 |

| Primary energy trade | 2011 | 2016 |
|-----------------------------|------------|------------|
| Imports (TJ) | 2 414 050 | 1 245 566 |
| Exports (TJ) | 426 569 | 53 869 |
| Net trade (TJ) | -1 987 481 | -1 191 697 |
| Imports (% of supply) | 46 | 32 |
| Exports (% of production) | 12 | 2 |
| Energy self-sufficiency (%) | 67 | 69 |
| Net trade (USD million) | - 22 914 | - 7 405 |
| Net trade (% of GDP) | -14.0 | -7.9 |

Total primary energy supply in 2016



Renewable energy supply in 2016



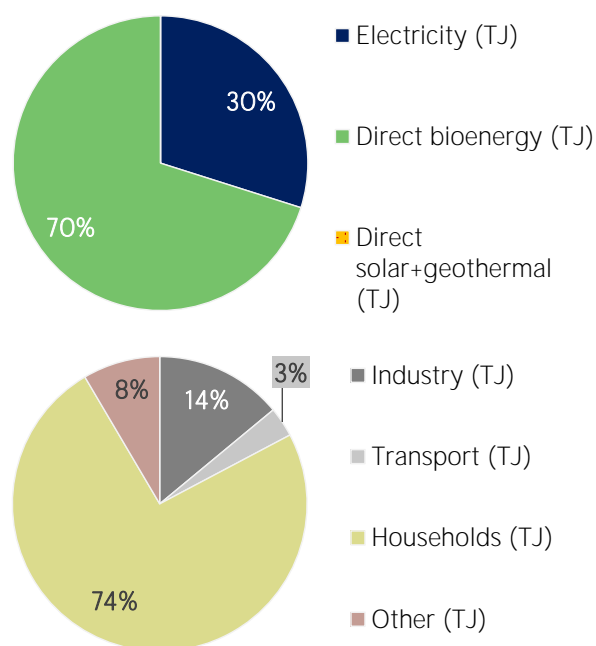
RENEWABLE ENERGY CONSUMPTION

| Consumption by source | 2011 | 2016 |
|------------------------------|---------------|----------------|
| Electricity (TJ) | 29 108 | 33 411 |
| Direct bioenergy (TJ) | 50 568 | 78 372 |
| Direct solar+geothermal (TJ) | 0 | 0 |
| Total (TJ) | 79 676 | 111 783 |
| Electricity share (%) | 37 | 30 |

| Consumption growth | 2011-16 | 2015-16 |
|---------------------------|--------------|--------------|
| Renewable electricity (%) | +14.8 | +23.3 |
| Other renewables (%) | +55.0 | +36.1 |
| Total (%) | +40.3 | +32.0 |

| Consumption by sector | 2011 | 2016 |
|-------------------------|--------|--------|
| Industry (TJ) | 13 660 | 15 642 |
| Transport (TJ) | 2 096 | 3 652 |
| Households (TJ) | 55 096 | 83 007 |
| Other (TJ) | 8 824 | 9 481 |
| Renewable share of TFEC | 2.7 | 5.5 |

Renewable energy consumption in 2016

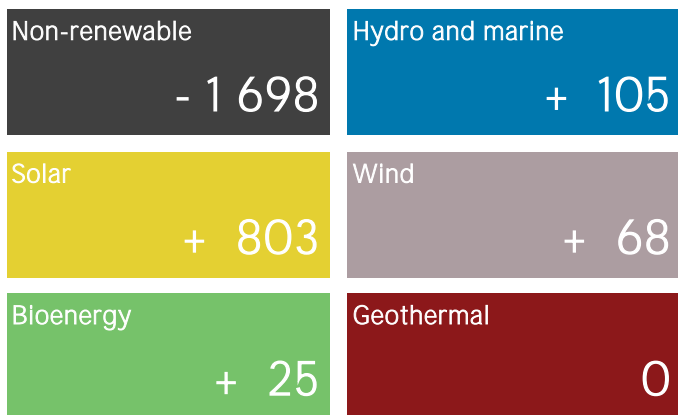


ELECTRICITY CAPACITY AND GENERATION

| Capacity in 2018 | MW | % |
|----------------------|---------------|------------|
| Non-renewable | 44 721 | 86 |
| Renewable | 7 530 | 14 |
| Hydro/marine | 4 809 | 9 |
| Solar | 2 003 | 4 |
| Wind | 621 | 1 |
| Bioenergy | 98 | 0 |
| Geothermal | 0 | 0 |
| Total | 52 251 | 100 |

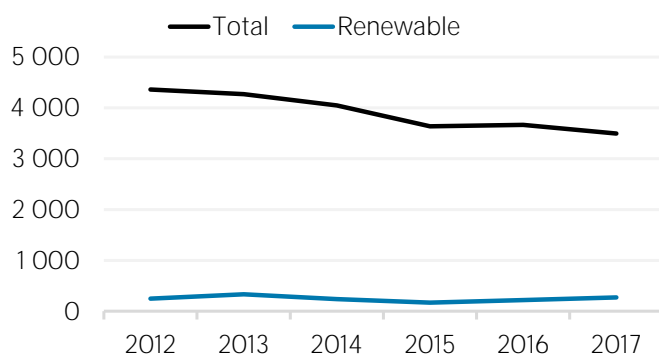
| Capacity change (%) | 2013-18 | 2017-18 |
|----------------------|-------------|---------------|
| Non-renewable | - 11 | - 3.7 |
| Renewable | + 31 | + 15.3 |
| Hydro/marine | + 4 | + 2.2 |
| Solar | + 168 | + 66.9 |
| Wind | + 71 | + 12.3 |
| Bioenergy | + 213 | + 33.7 |
| Geothermal | 0 | 0.0 |
| Total | - 7 | - 1.3 |

Net capacity change in 2018 (MW)

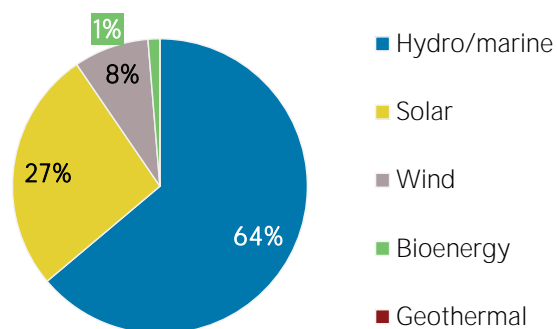


| Generation in 2017 | GWh | % |
|----------------------|----------------|------------|
| Non-renewable | 144 567 | 92 |
| Renewable | 12 156 | 8 |
| Hydro and marine | 8 946 | 6 |
| Solar | 1 183 | 1 |
| Wind | 1 819 | 1 |
| Bioenergy | 208 | 0 |
| Geothermal | 0 | 0 |
| Total | 156 722 | 100 |

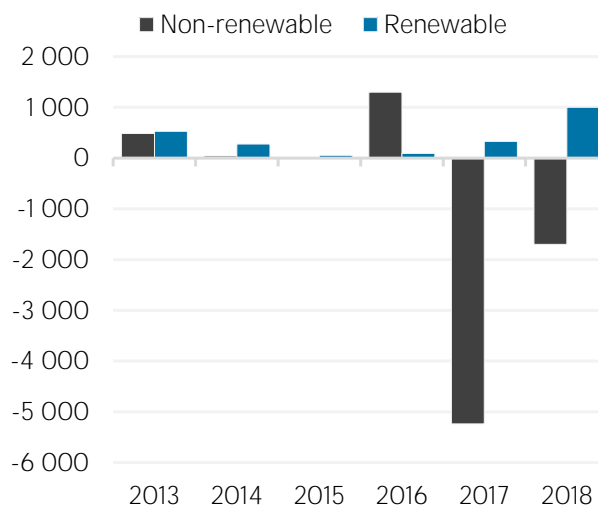
Per capita electricity generation (kWh)



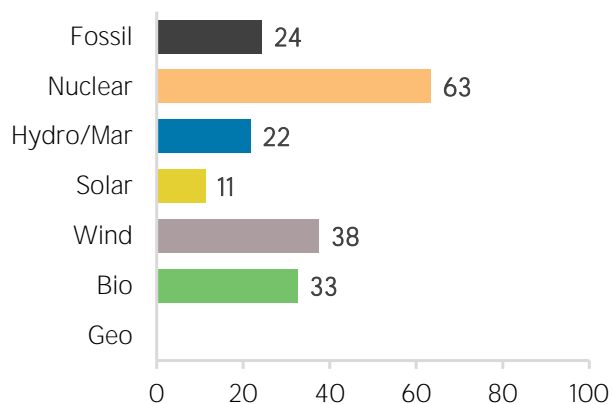
Renewable capacity in 2018



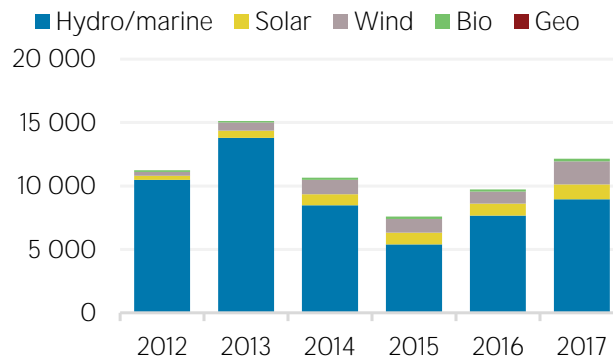
Net capacity change (MW)



Capacity utilisation in 2017 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

| | year | target | unit |
|----------------------------------|------|--------|------|
| Renewable energy: | 2020 | 15 | % |
| Renewable electricity: | 2020 | 31 | % |
| Renewable capacity: | | | |
| Renewable transport: | 2020 | 10 | % |
| Liquid Biofuel blending mandate: | | | |
| Other transport targets: | | | |
| Renewable heating/cooling: | 2020 | 10 | % |
| Renewable Hydropower | | | |
| Off-grid renewable technologies: | | | |

Energy efficiency (Energy):

Energy efficiency (Electricity):

Latest policies, programmes and legislation

| | | |
|---|--|------|
| 1 | Ukraine's Electricity Market Law (Law no 4493) | 2017 |
| 2 | National Renewable Energy Action Plan (NREAP) | 2014 |
| 3 | Corporate income tax exemptions in Ukraine available for renewable energy sector | 2011 |
| 4 | Green Tariff (Feed-in Tariff) | 2009 |
| 5 | Law on Promotion of Biological Fuels Production and Use (No. 1391-VI) | 2009 |

References to sustainable energy in Nationally Determined Contribution (NDC)

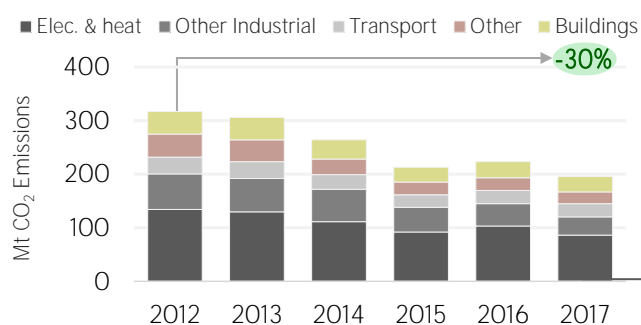
- Renewable energy

- electricity
- transport
- heating/cooling
- Energy efficiency

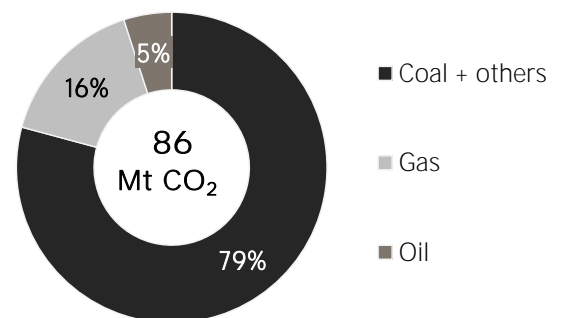
Conditional Unconditional unit

ENERGY AND EMISSIONS

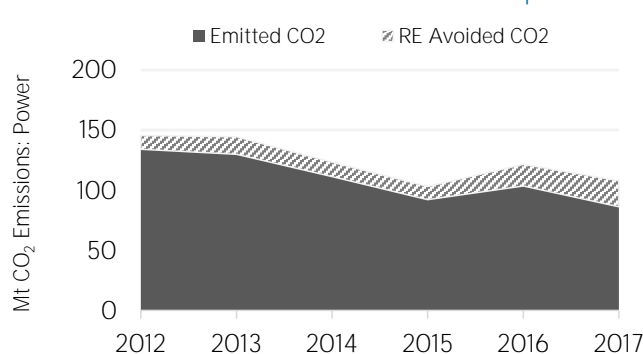
Energy-related CO₂ emissions by sector



Elec. & heat generation CO₂ emissions in 2017

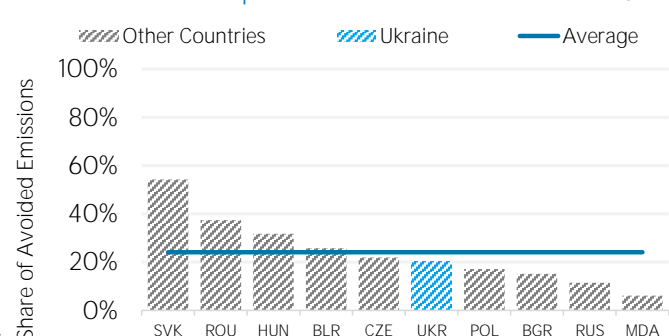


Avoided emissions from renewable power



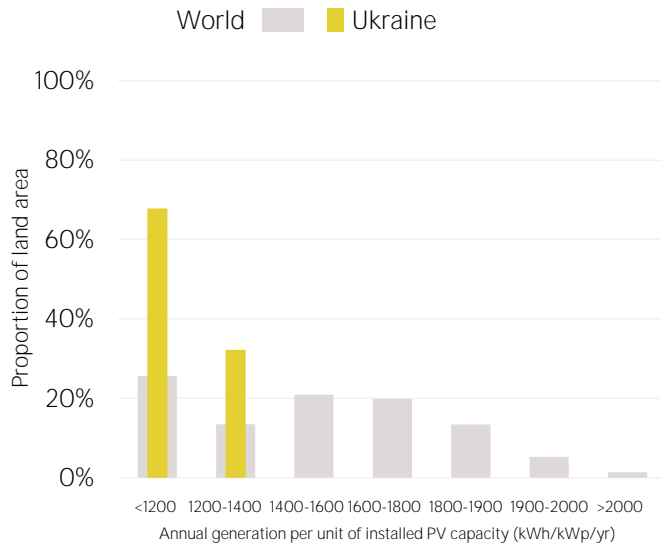
Avoided emissions based on fossil fuel mix used for power

Reduction in power emissions due to RE in 2017

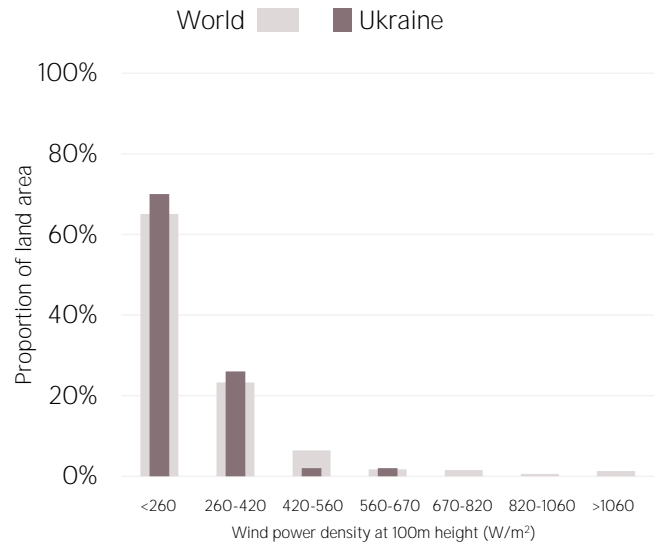


Reduction is RE Avoided divided by sum of avoided and emitted

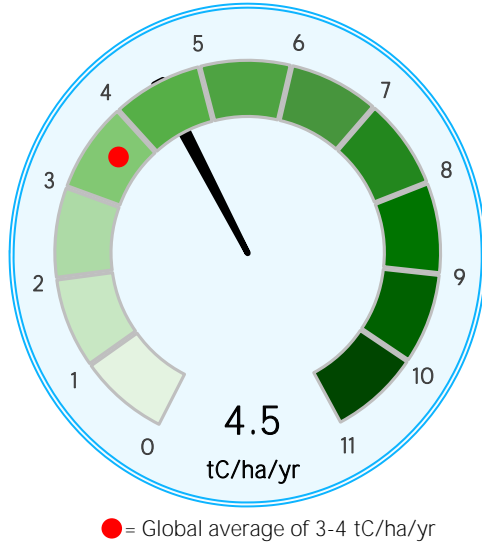
Distribution of solar potential



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/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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