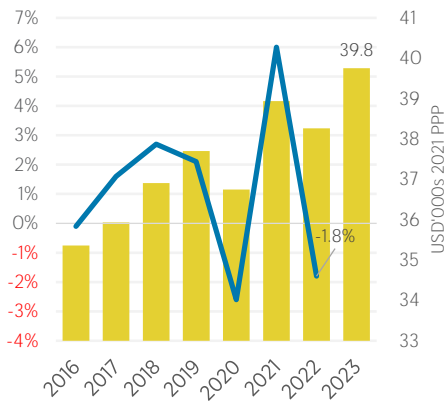
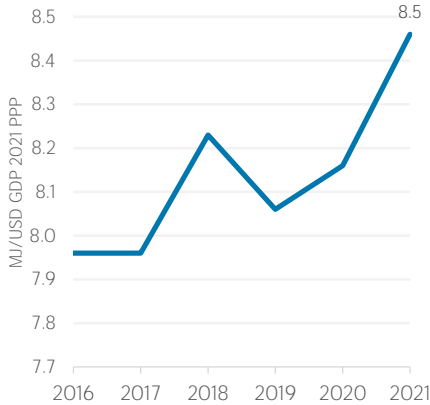


COUNTRY INDICATORS AND SDGS

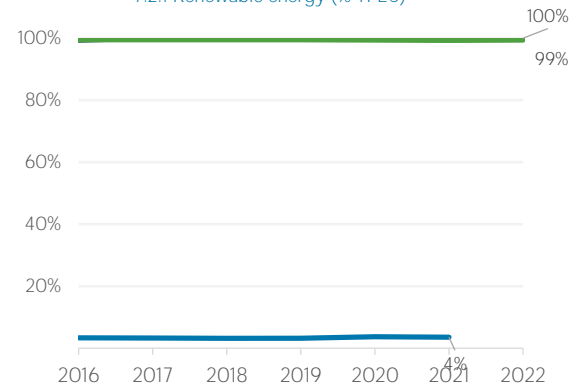
GDP per capita — 8.1.1 Real GDP growth rate



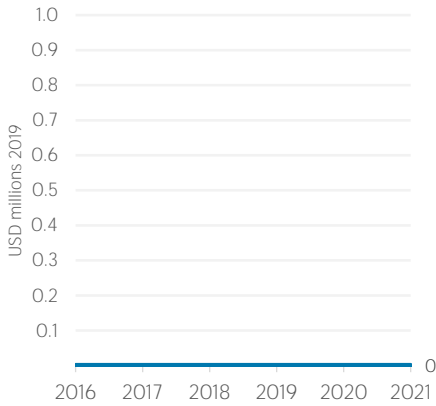
7.3.1 Energy intensity



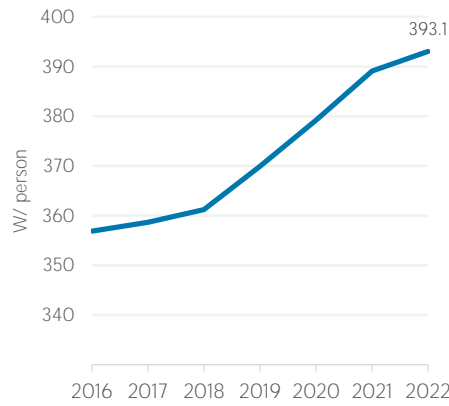
7.1.1 Access to electricity (% population)
7.1.2 Access to clean cooking (% population)
7.2.1 Renewable energy (% TFEC)



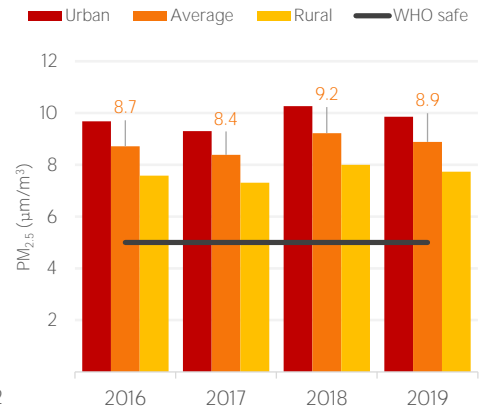
7.a.1 Public flows to renewables



7.b.1 Per capita renewable capacity



11.6.2 Air particulate matter (PM_{2.5})



TOTAL ENERGY SUPPLY (TES)

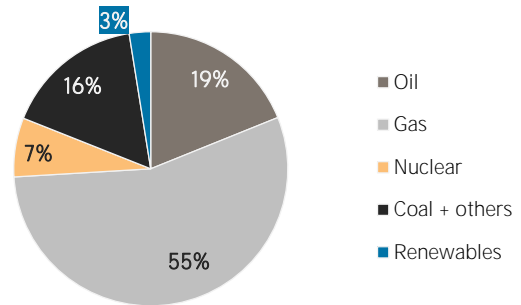
Total Energy Supply (TES)	2016	2021
Non-renewable (TJ)	28 799 063	33 840 164
Renewable (TJ)	801 515	876 465
Total (TJ)	29 600 579	34 716 628
Renewable share (%)	3	3

Growth in TES	2016-21	2020-21
Non-renewable (%)	+17.5	+10.8
Renewable (%)	+9.4	-5.0
Total (%)	+17.3	+10.3

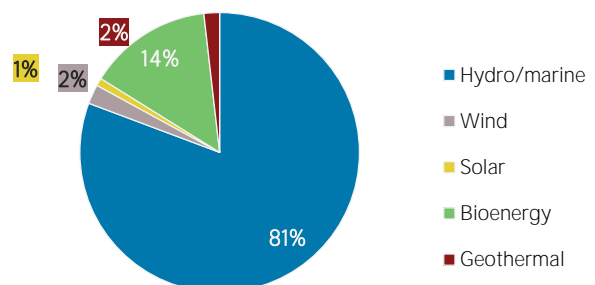
Primary energy trade	2016	2021
Imports (TJ)	994 596	930 442
Exports (TJ)	28 123 949	29 201 113
Net trade (TJ)	27 129 353	28 270 671

Imports (% of supply)	3	3
Exports (% of production)	49	46
Energy self-sufficiency (%)	195	183

Total energy supply in 2021

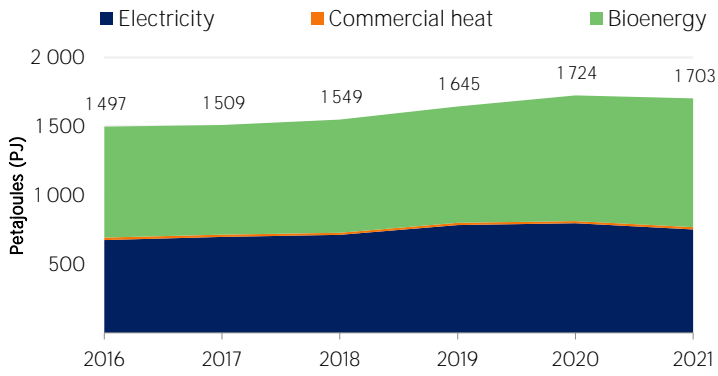


Renewable energy supply in 2021



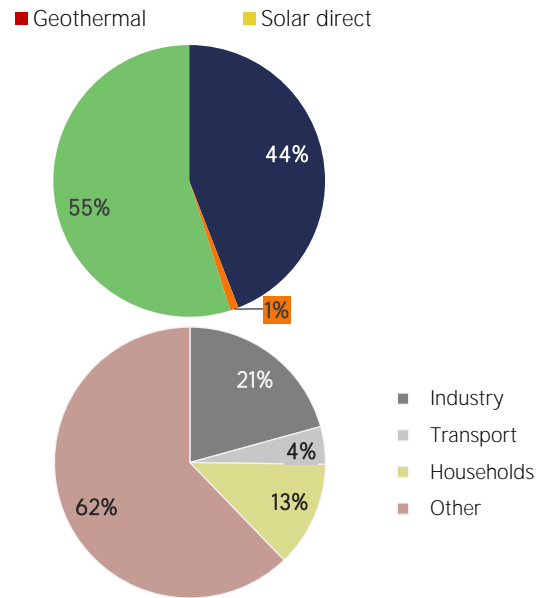
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend



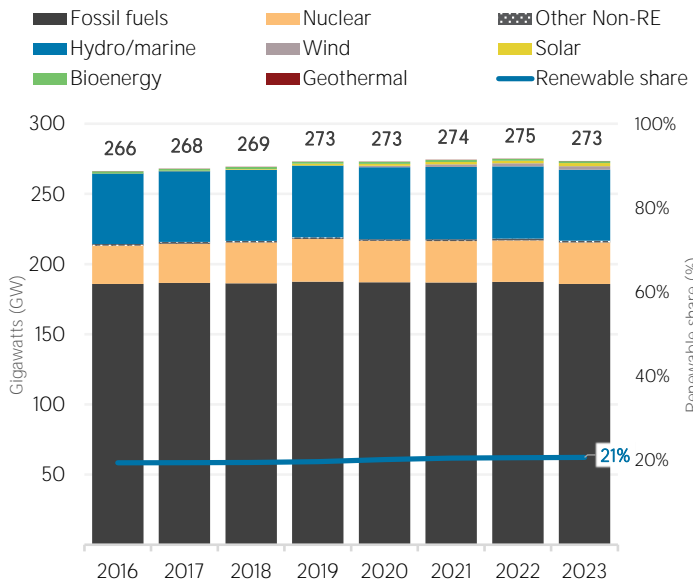
Consumption by sector	2016	2021
Industry (TJ)	304 783	352 826
Transport (TJ)	74 756	76 305
Households (TJ)	199 067	214 142
Other (TJ)	918 718	1 059 301

Renewable energy consumption in 2021

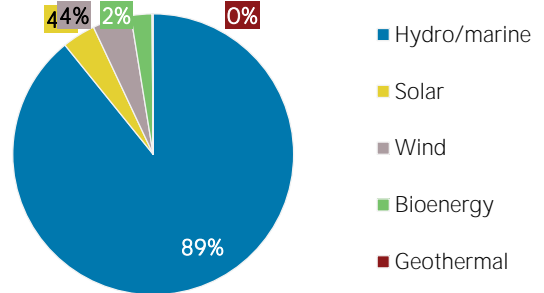


ELECTRICITY CAPACITY

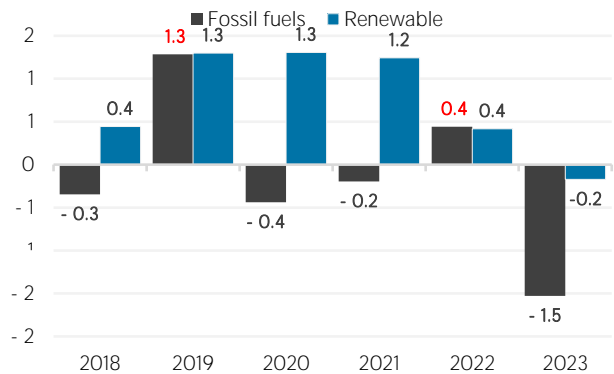
Installed capacity trend



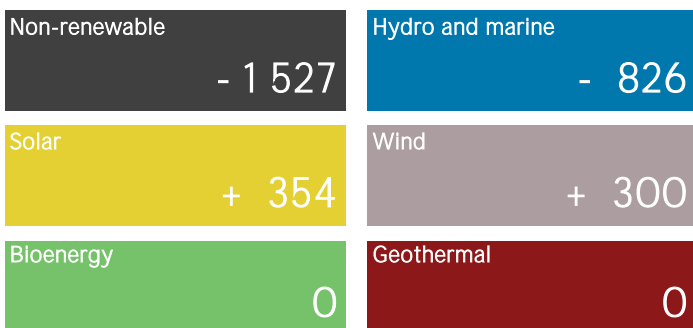
Renewable capacity in 2023



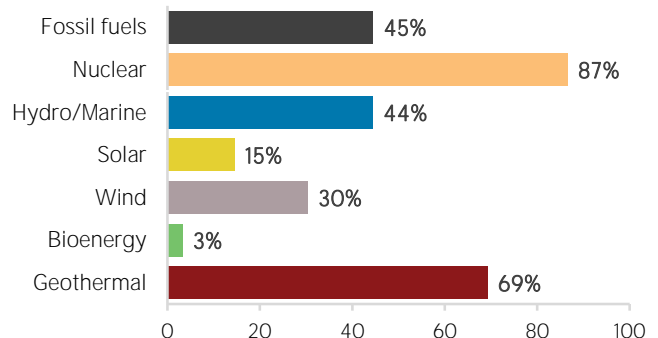
Net capacity change (GW)



Net capacity change in 2023 (MW)



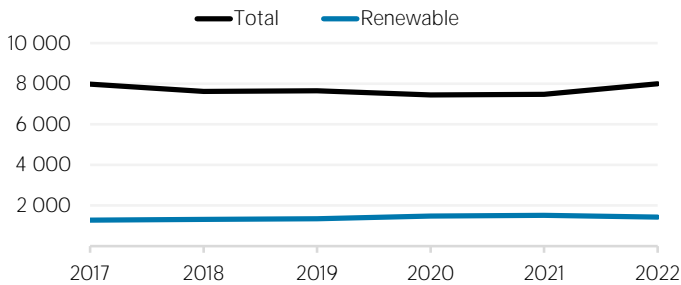
Capacity utilisation in 2022 (%)



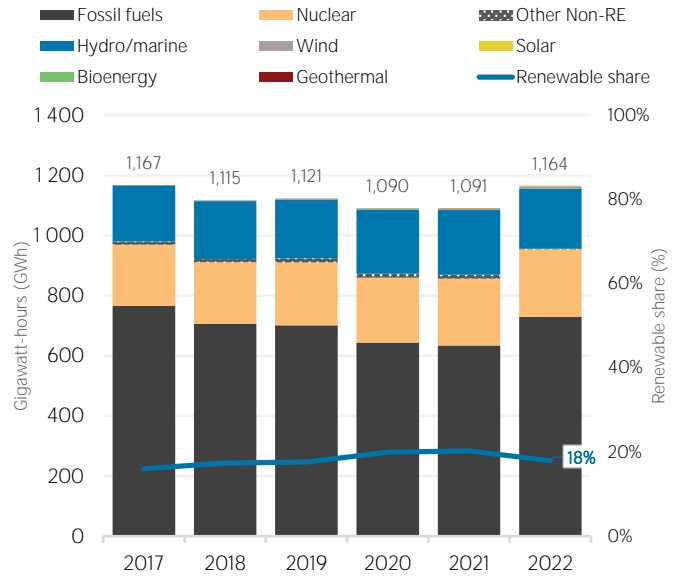
ELECTRICITY GENERATION

Generation in 2022	GWh	%
Non-renewable	955 477	82
Renewable	208 607	18
Hydro and marine	200 000	17
Solar	2 217	0
Wind	5 548	0
Bioenergy	393	0
Geothermal	449	0
Total	1 164 084	100

Per capita electricity generation (kWh)



Electricity generation trend

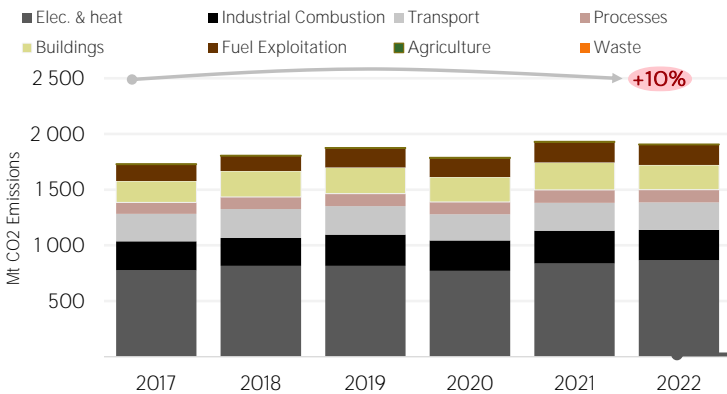


LATEST POLICIES, PROGRAMMES AND LEGISLATION

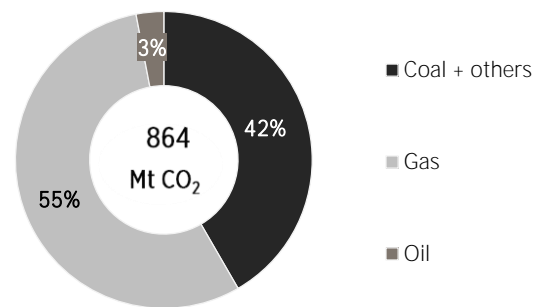
- 1 National Low-Carbon Strategy 2021
- 2 Technical Regulations of the Eurasian Economic Union on the requirements for main pipelines for the transportation of liquid and gaseous hydrocarbons 2021
- 3 UAE and Russia agreement to collaborate on hydrogen development 2021
- 4 Energy Strategy of the Russian Federation for the period up to 2035 2020
- 5 Decree no. 255 of 2017 on the Procedure for Calculating and Collecting Fees for Negative Environmental Impact (as amended on 9 December 2019) 2017

ENERGY AND EMISSIONS

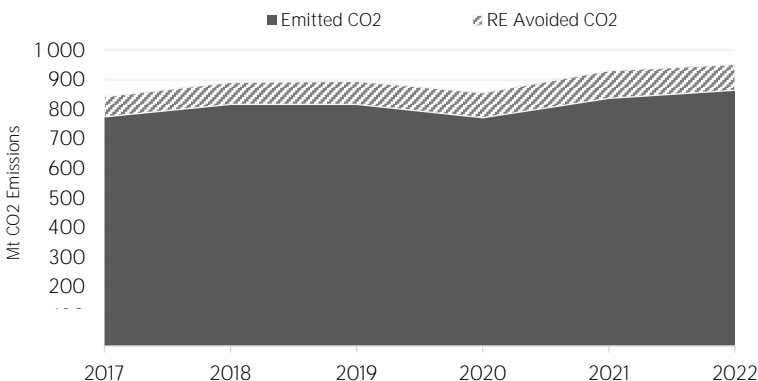
CO₂ emissions by sector



Elec. & heat generation CO₂ emissions in

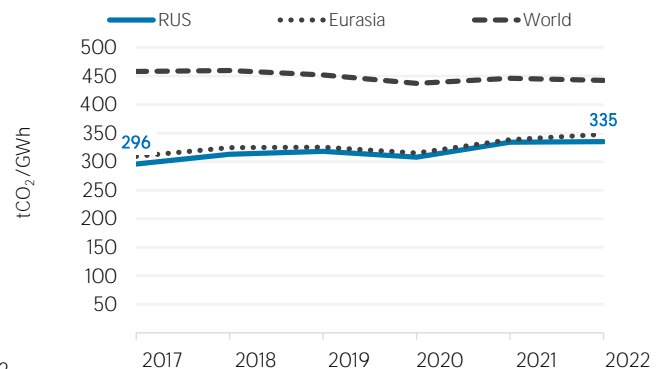


Avoided emissions from renewable elec. & heat



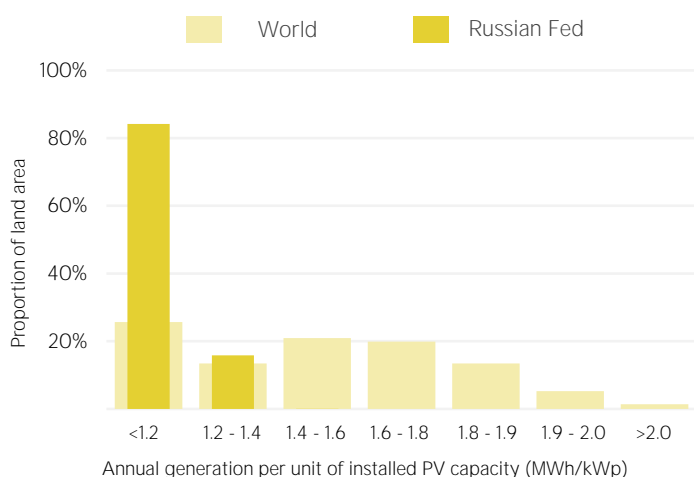
Avoided emissions based on fossil fuel mix used for power

CO₂ emission factor for elec. & heat generation

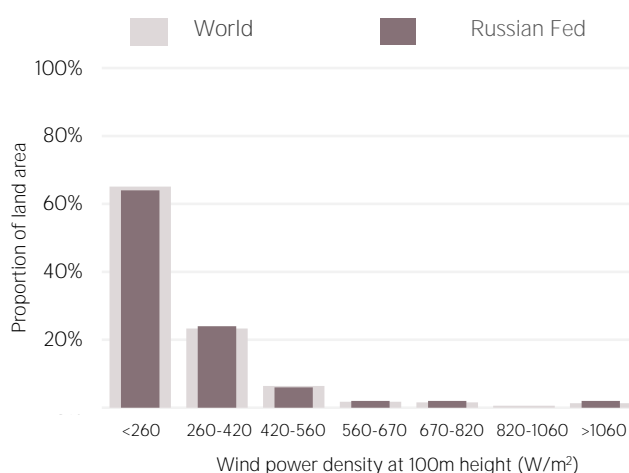


Calculated by dividing power sector emissions by elec. + heat gen.

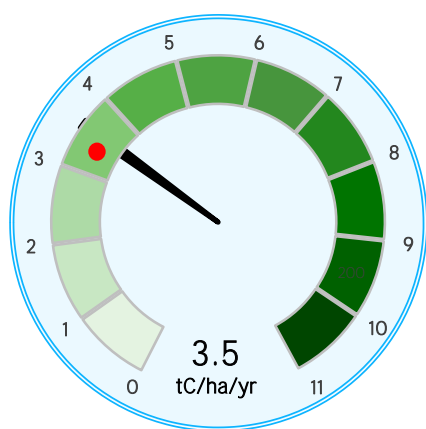
Distribution of solar potential



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/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 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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