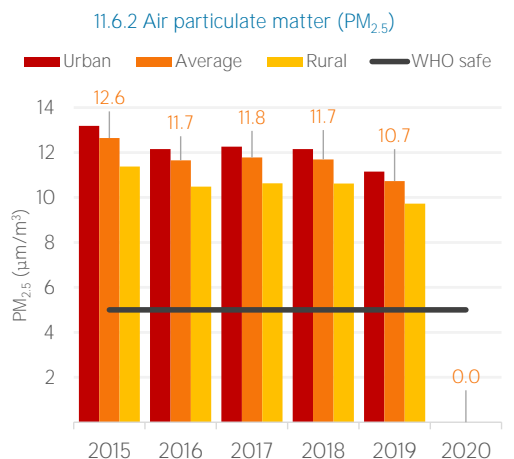
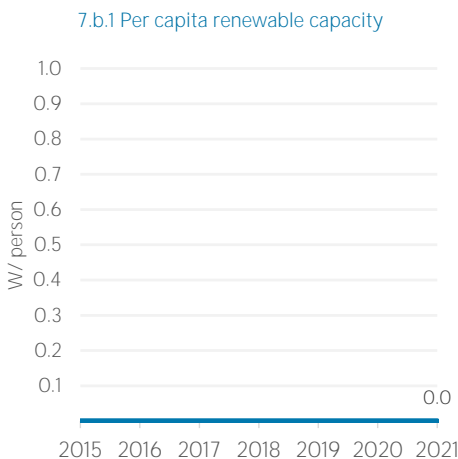
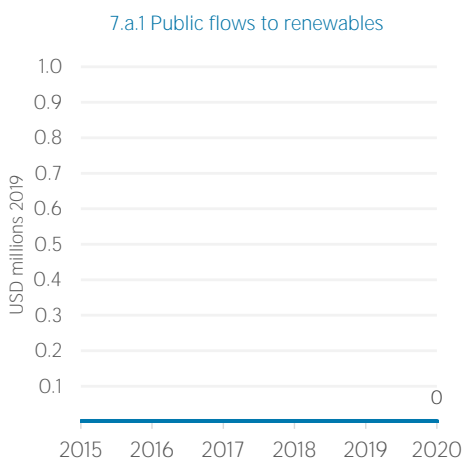
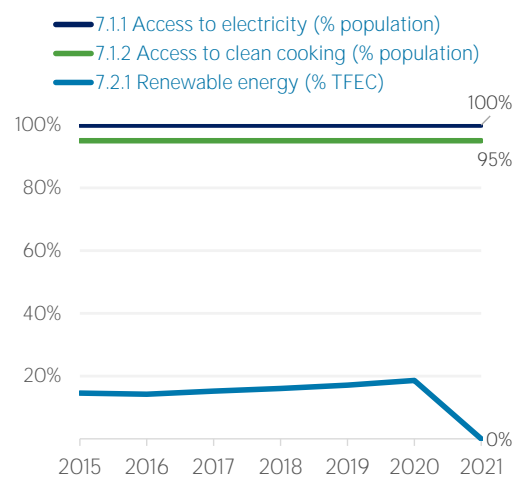
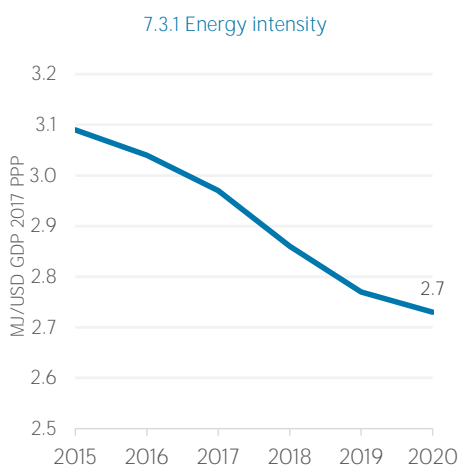
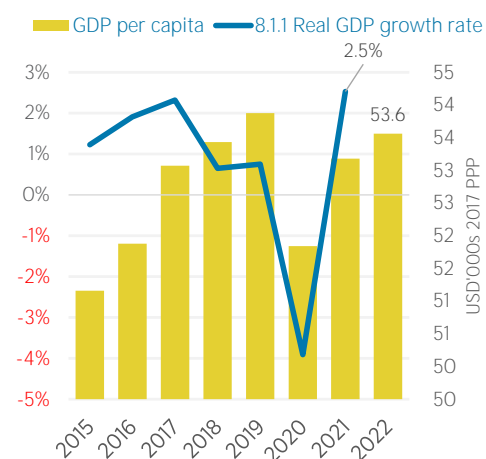


COUNTRY INDICATORS AND SDGS



TOTAL ENERGY SUPPLY (TES)

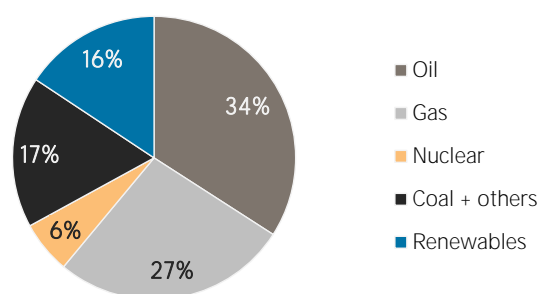
Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	11 349 654	9 773 310
Renewable (TJ)	1 584 241	1 818 511
Total (TJ)	12 933 895	11 591 821
Renewable share (%)	12	16

Growth in TES	2015-20	2019-20
Non-renewable (%)	-13.9	-7.0
Renewable (%)	+14.8	-0.9
Total (%)	-10.4	-6.1

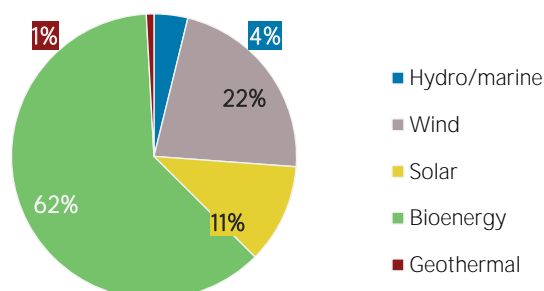
Primary energy trade	2015	2020
Imports (TJ)	10 885 968	8 993 716
Exports (TJ)	2 539 704	1 360 448
Net trade (TJ)	-8 346 264	-7 633 268

Imports (% of supply)	84	78
Exports (% of production)	51	34
Energy self-sufficiency (%)	39	34

Total energy supply in 2020

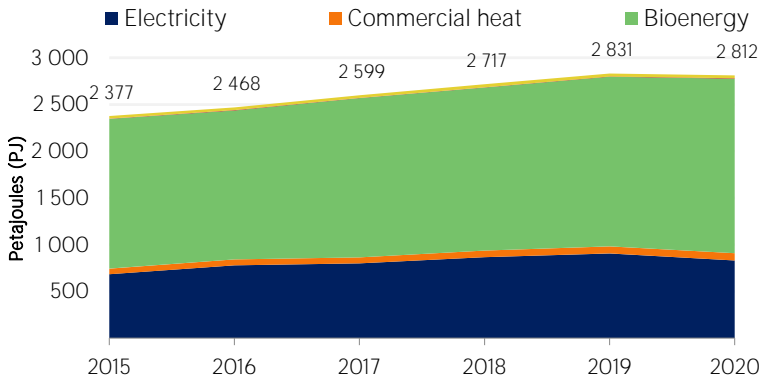


Renewable energy supply in 2020



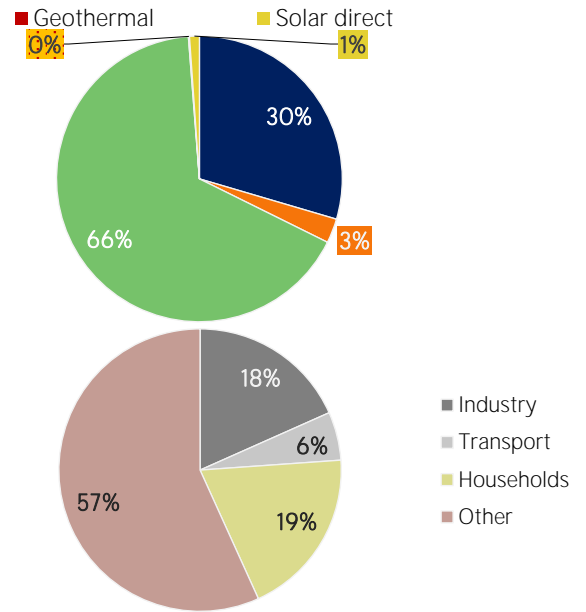
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend



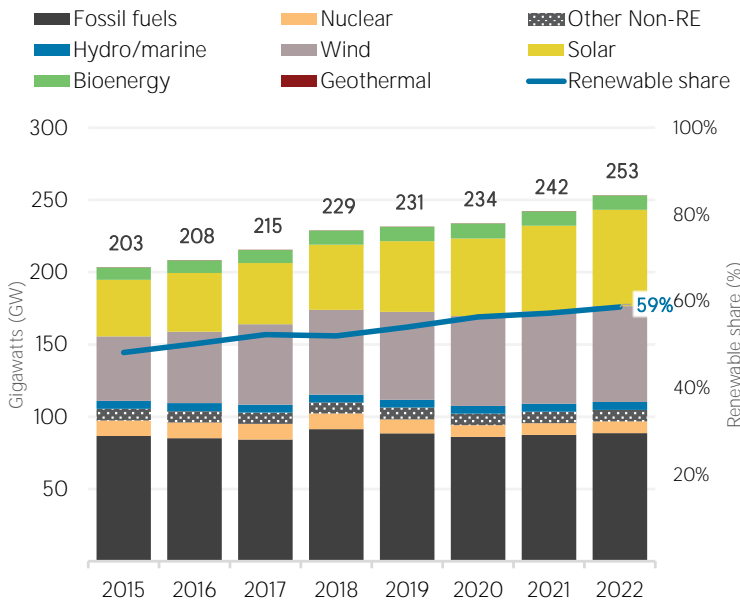
Consumption by sector	2015	2020
Industry (TJ)	437 630	515 722
Transport (TJ)	121 041	155 603
Households (TJ)	488 324	543 997
Other (TJ)	1 329 529	1 596 335

Renewable energy consumption in 2020

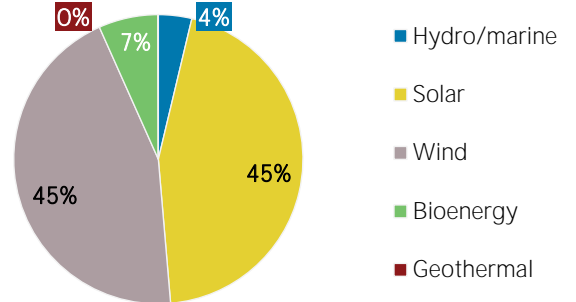


ELECTRICITY CAPACITY

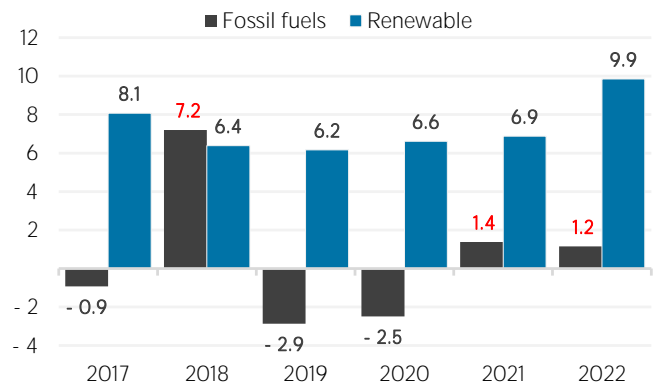
Installed capacity trend



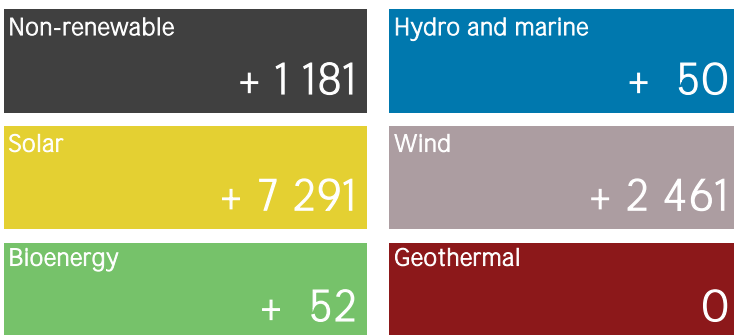
Renewable capacity in 2022



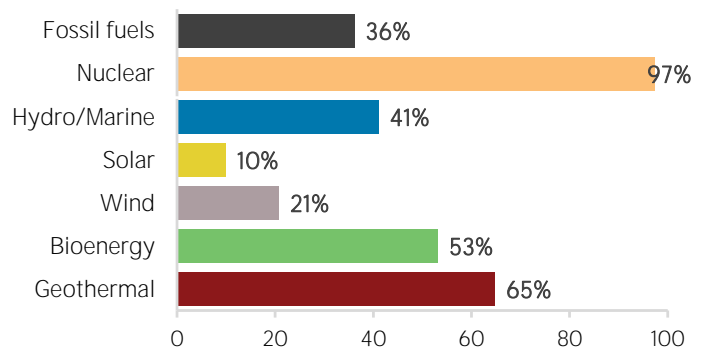
Net capacity change (GW)



Net capacity change in 2022 (MW)



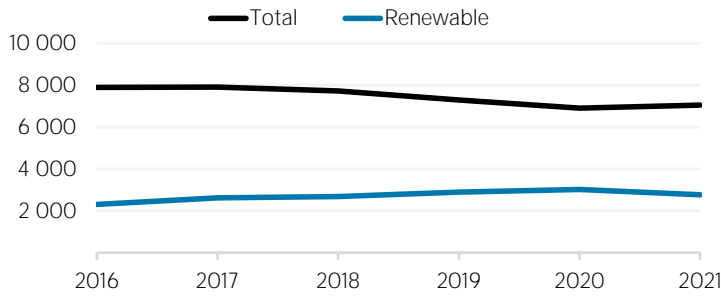
Capacity utilisation in 2021 (%)



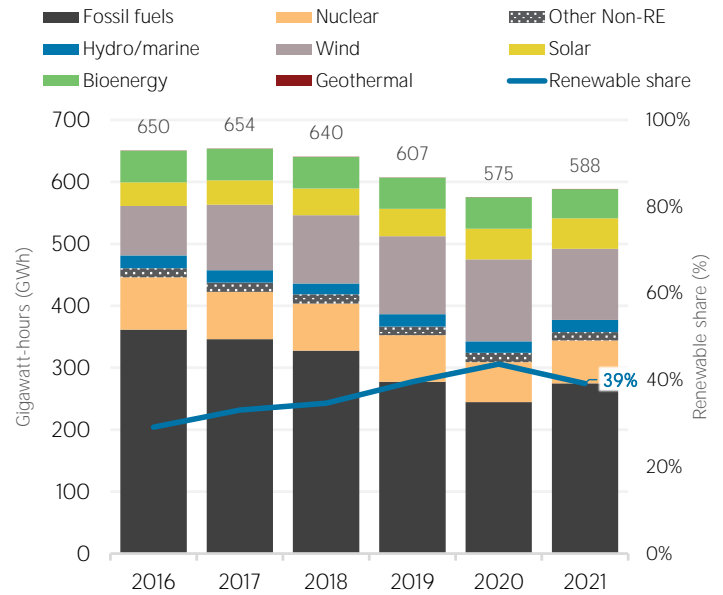
ELECTRICITY GENERATION

Generation in 2021	GWh	%
Non-renewable	357 543	61
Renewable	230 800	39
Hydro and marine	19 658	3
Solar	49 340	8
Wind	114 647	19
Bioenergy	46 911	8
Geothermal	244	0
Total	588 343	100

Per capita electricity generation (kWh)



Electricity generation trend

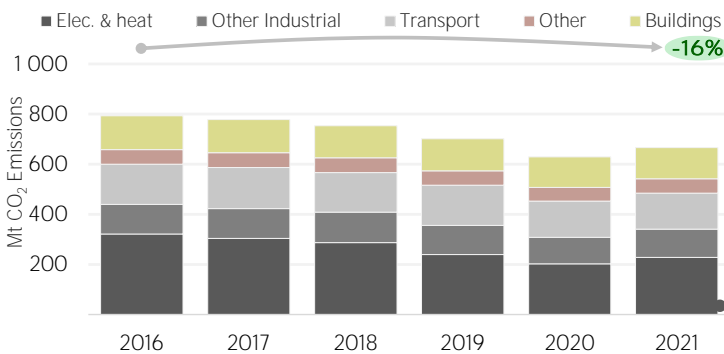


LATEST POLICIES, PROGRAMMES AND LEGISLATION

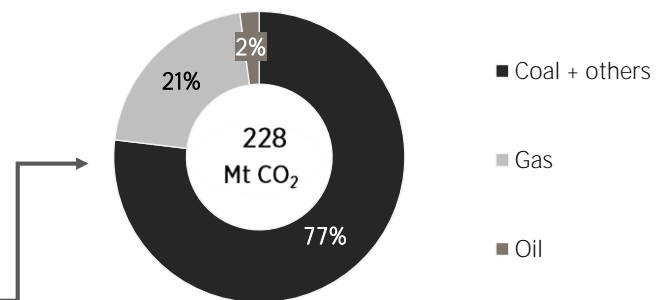
- 1 Electricity, gas and heating price brakes 2023
- 2 Support scheme to rail transport operators 2023
- 3 3rd Relief Package 2022
- 4 Capital injection and nationalisation of Uniper SE 2022
- 5 JenErgieReal regulatory sandbox 2022

ENERGY AND EMISSIONS

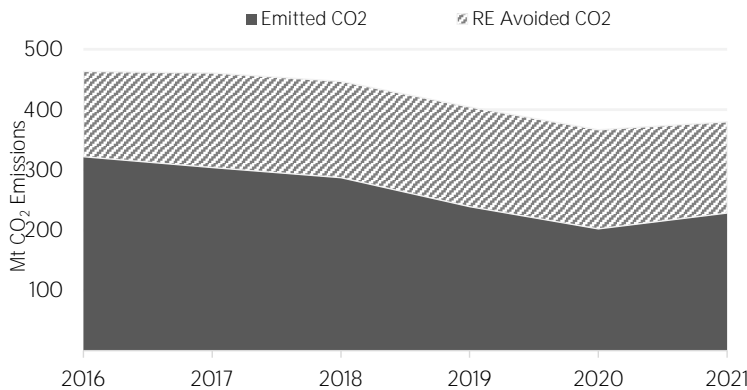
Energy-related CO₂ emissions by sector



Elec. & heat generation CO₂ emissions in

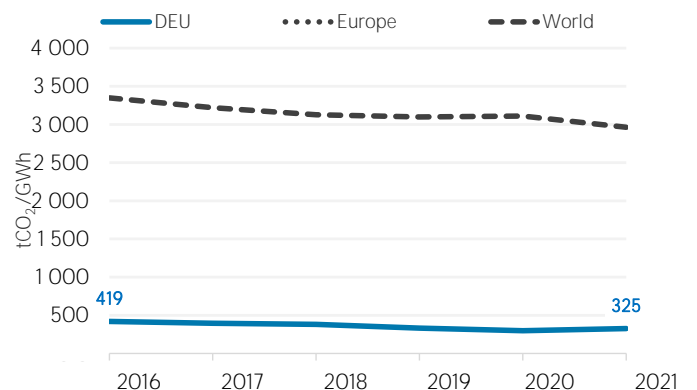


Avoided emissions from renewable elec. & heat



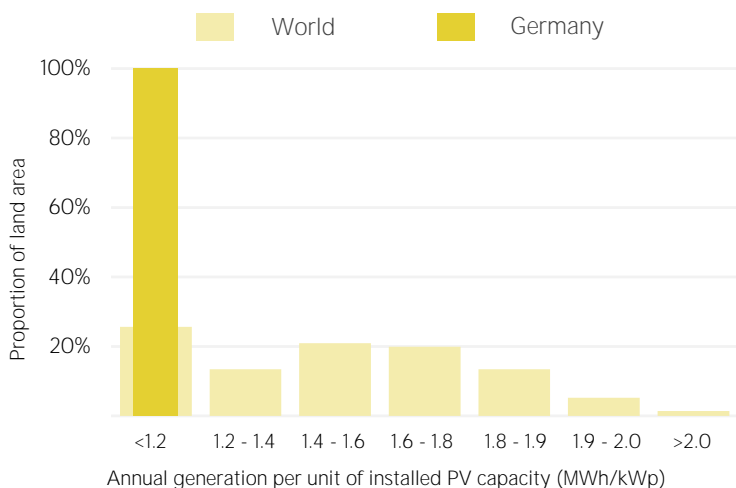
Avoided emissions based on fossil fuel mix used for power

CO₂ emission factor for elec. & heat generation

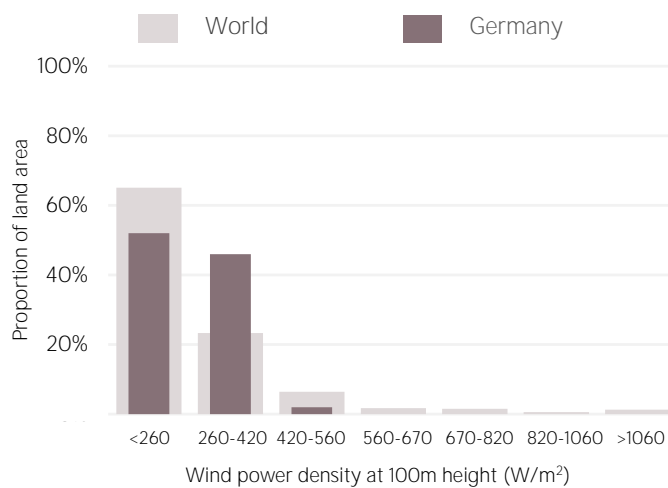


Calculated by dividing power sector emissions by elec. + heat gen.

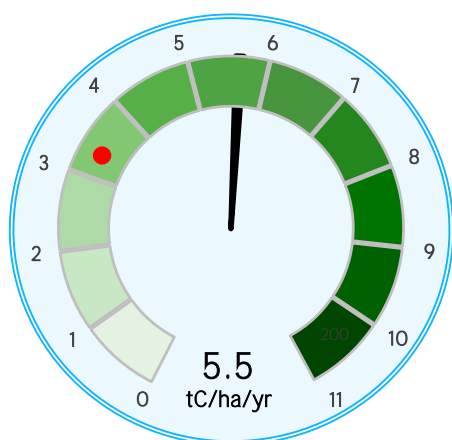
Distribution of solar potential



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

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.

Last updated on: 8th August, 2023