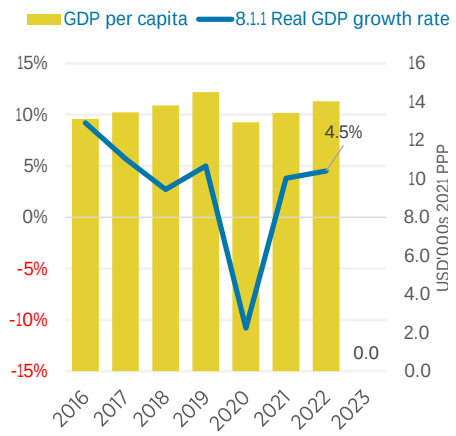
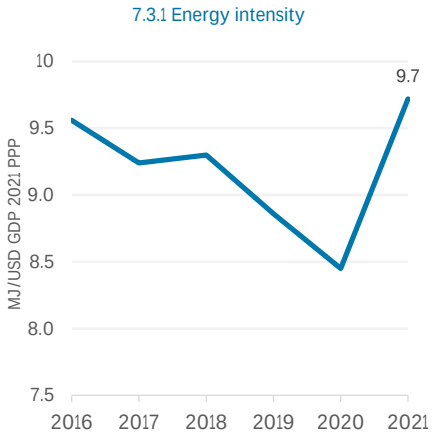
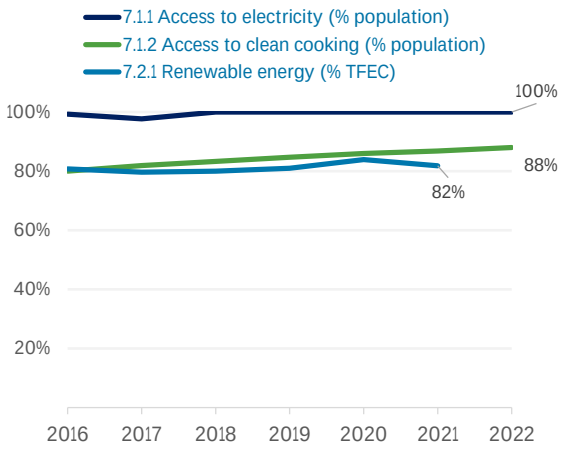
ENERGY PROFILE

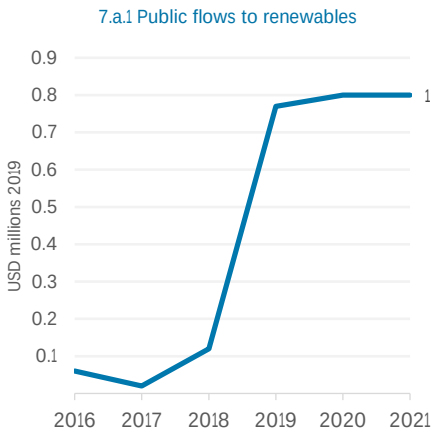
Bhutan

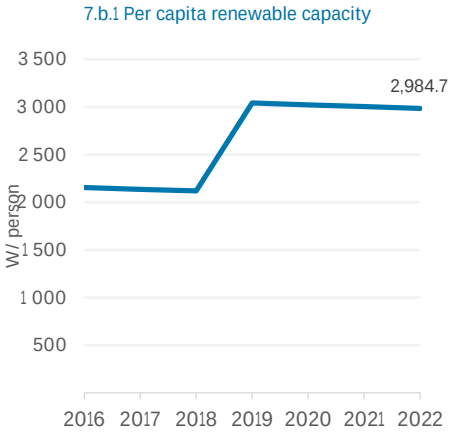
COUNTRY INDICATORS AND SDGS

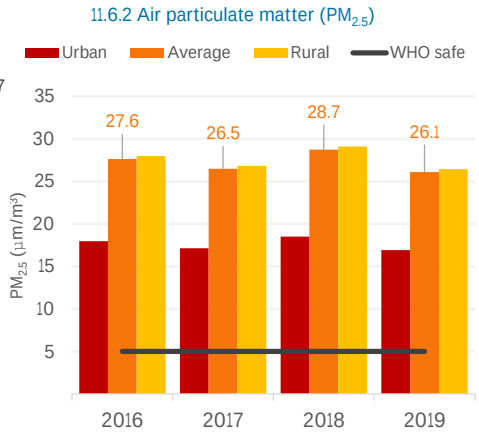












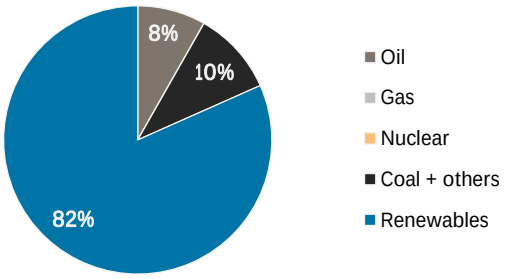
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2016	2021
Non-renewable (TJ)	10 402	14 086
Renewable (TJ)	54 666	62 665
Total (TJ)	65 068	76 751
Renewable share (%)	84	82

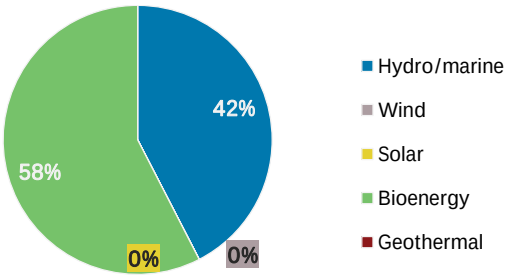
Growth in TES	2016-21	2020-21
Non-renewable (%)	+35.4	+68.2
Renewable (%)	+14.6	+9.7
Total (%)	+18.0	+17.1

Primary energy trade	2016	2021
Imports (TJ)	8 007	15 583
Exports (TJ)	20 750	29 420
Net trade (TJ)	12 743	13 837
Imports (% of supply)	12	20
Exports (% of production)	27	32
Energy self-sufficiency (%)	120	118

Total energy supply in 2021

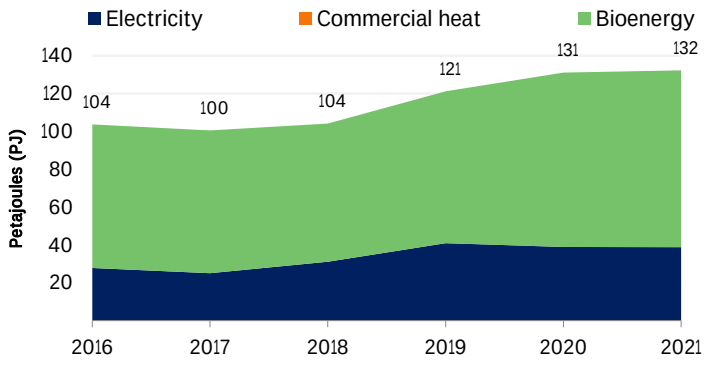


Renewable energy supply in 2021



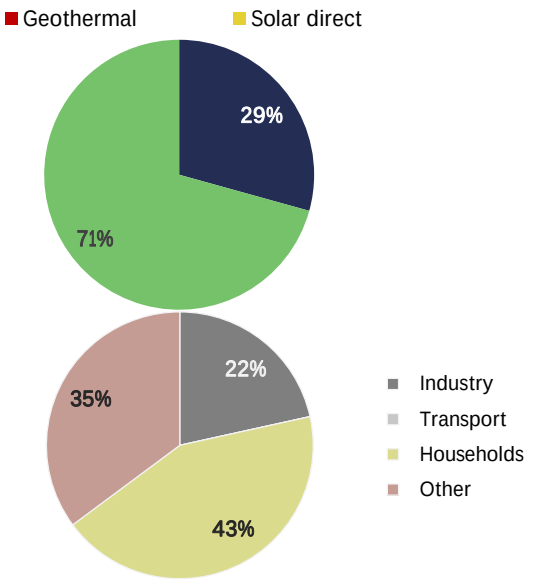
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend



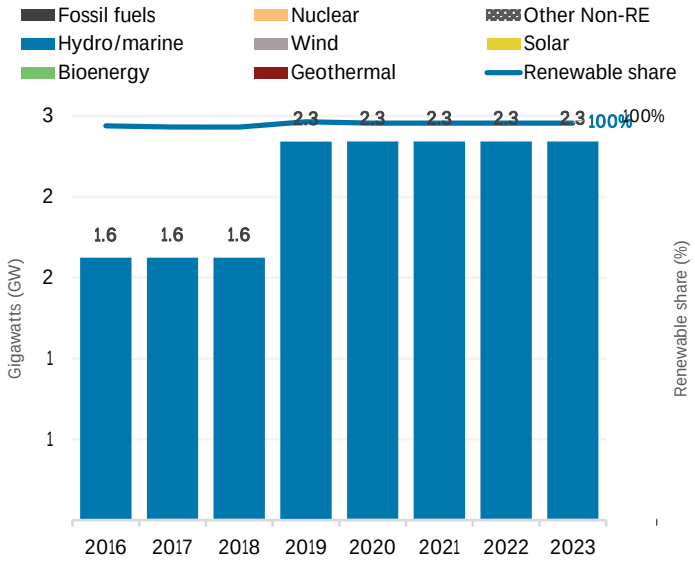
Consumption by sector	2016	2021
Industry (TJ)	21 428	28 511
Transport (TJ)	0	0
Households (TJ)	50 328	57 275
Other (TJ)	31 990	46 533

Renewable energy consumption in 2021

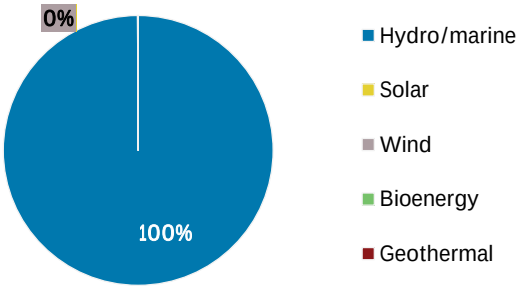


ELECTRICITY CAPACITY

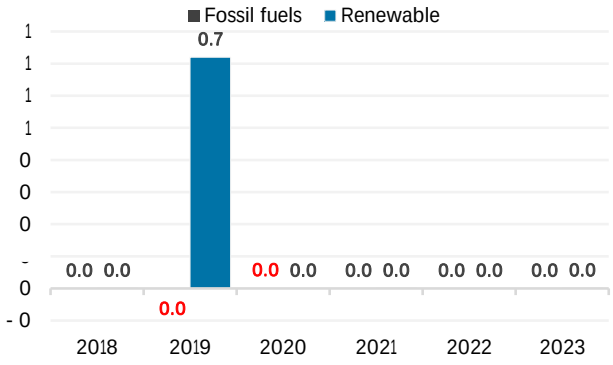
Installed capacity trend



Renewable capacity in 2023



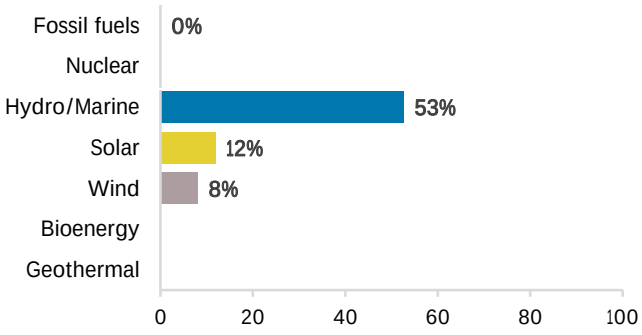
Net capacity change (GW)



Net capacity change in 2023 (MW)

Non-renewable: 0	Hydro and marine: 0
Solar: + 1	Wind: 0
Bioenergy: 0	Geothermal: 0

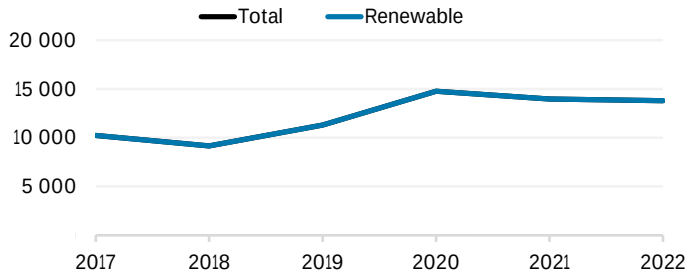
Capacity utilisation in 2022 (%)



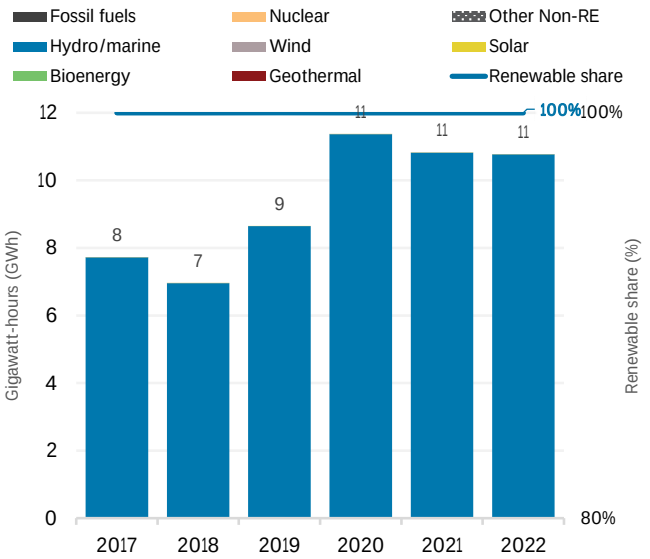
ELECTRICITY GENERATION

Generation in 2022	GWh	%
Non-renewable	**0**	**0**
Renewable	**10 772**	**100**
Hydro and marine	10 771	100
Solar	0	0
Wind	0	0
Bioenergy	0	0
Geothermal	0	0
Total	**10 772**	**100**

Per capita electricity generation (kWh)



Electricity generation trend



LATEST POLICIES, PROGRAMMES AND LEGISLATION

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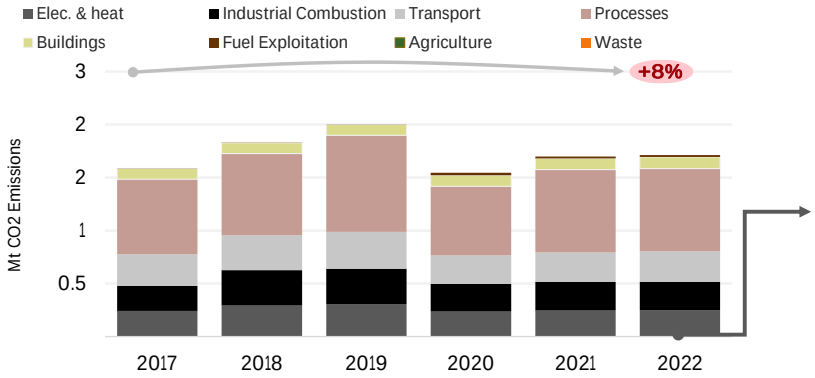
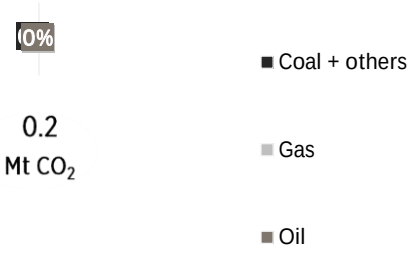
ENERGY AND EMISSIONS

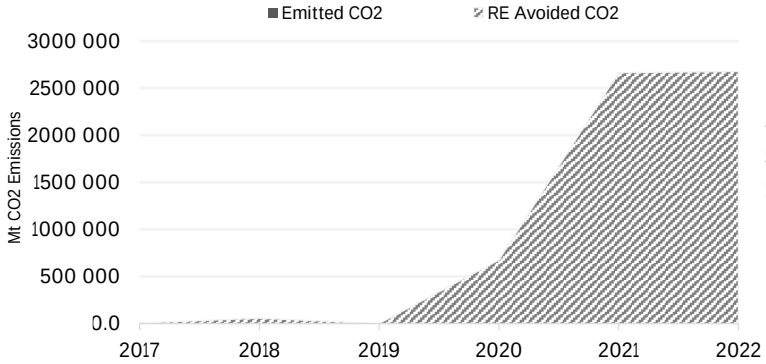
CO_2 emissions by sector



Elec. & heat generation CO_2 emissions in

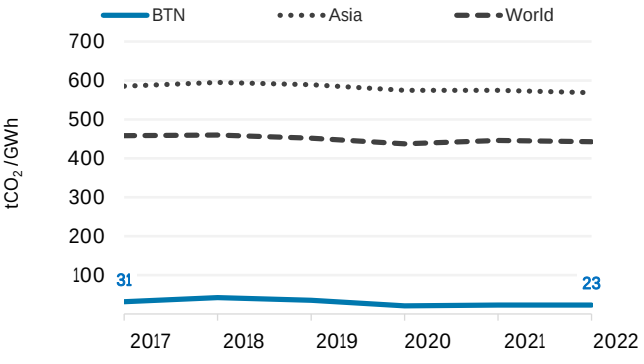


Avoided emissions from renewable elec. & heat



Avoided emissions based on fossil fuel mix used for power

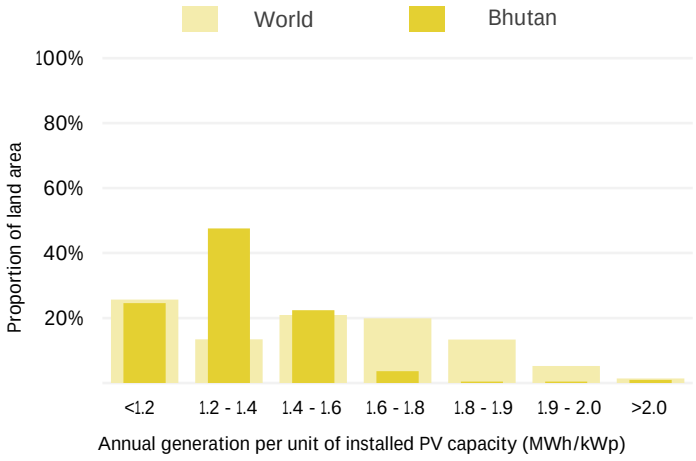
CO_2 emission factor for elec. & heat generation



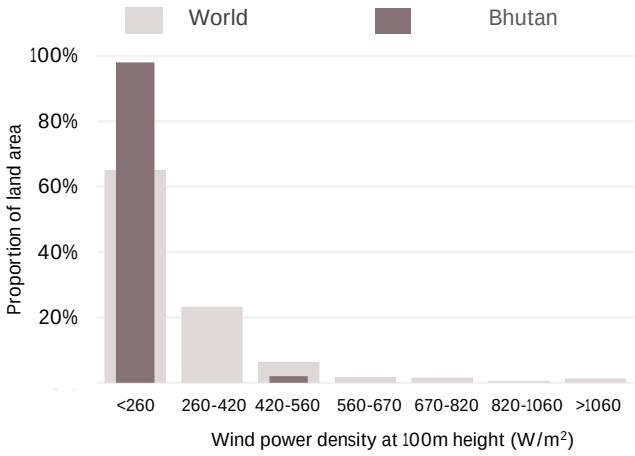
Calculated by dividing power sector emissions by elec. + heat gen.

RENEWABLE RESOURCE POTENTIAL

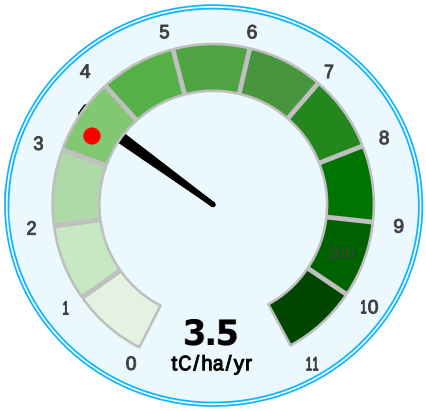
Distribution of solar potential



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

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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IRENA
International Renewable Energy Agency

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