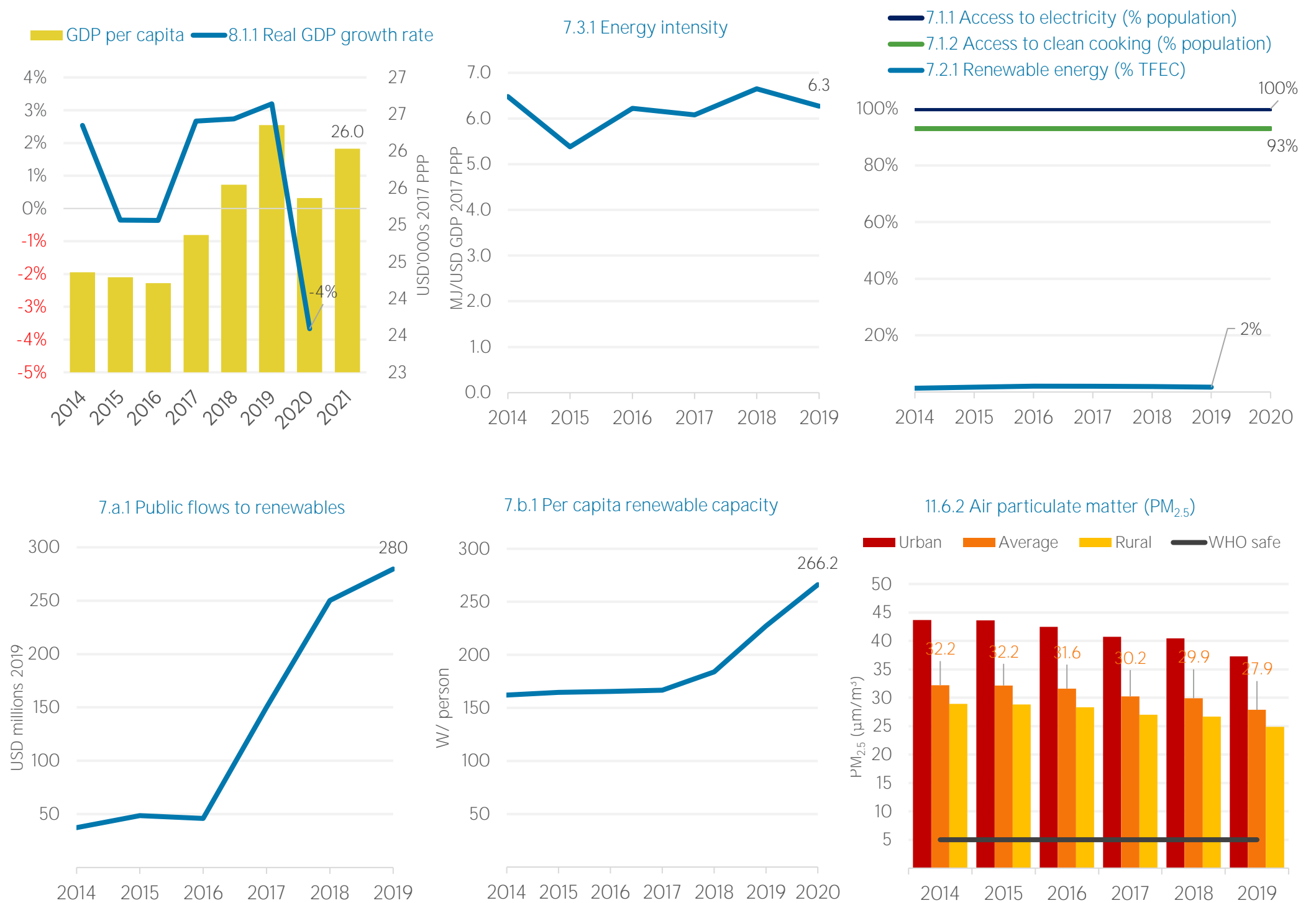


COUNTRY INDICATORS AND SDGS



TOTAL ENERGY SUPPLY (TES)

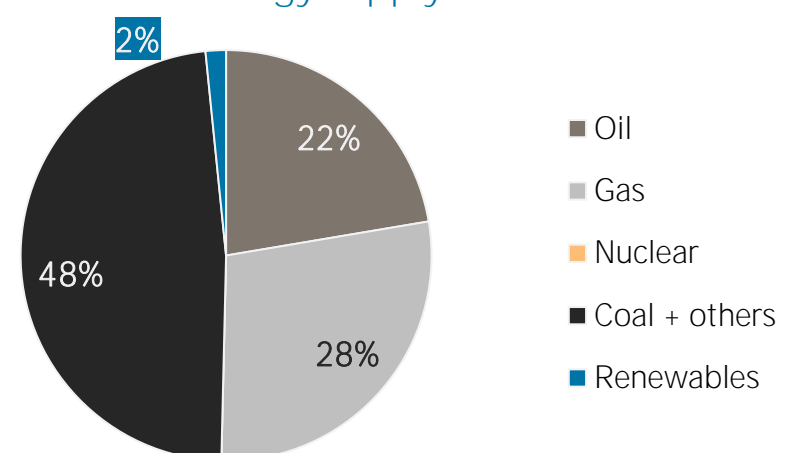
Total Energy Supply (TES)	2014	2019
Non-renewable (TJ)	2 966 841	2 958 214
Renewable (TJ)	36 282	48 168
Total (TJ)	3 003 123	3 006 382
Renewable share (%)	1	2

Growth in TES	2014-19	2018-19
Non-renewable (%)	-0.3	-1.3
Renewable (%)	+32.8	+9.5
Total (%)	+0.1	-1.2

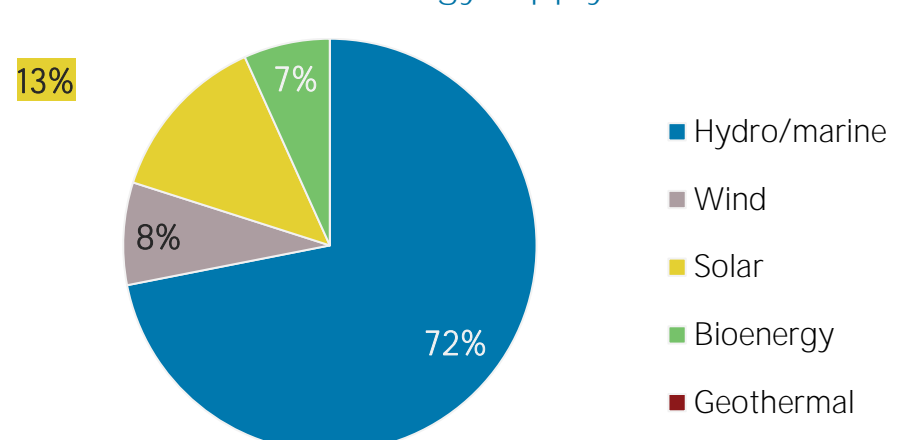
Primary energy trade	2014	2019
Imports (TJ)	308 393	652 802
Exports (TJ)	4 020 453	4 609 018
Net trade (TJ)	3 712 060	3 956 216

Imports (% of supply)	10	22
Exports (% of production)	59	66
Energy self-sufficiency (%)	225	232

Total energy supply in 2019

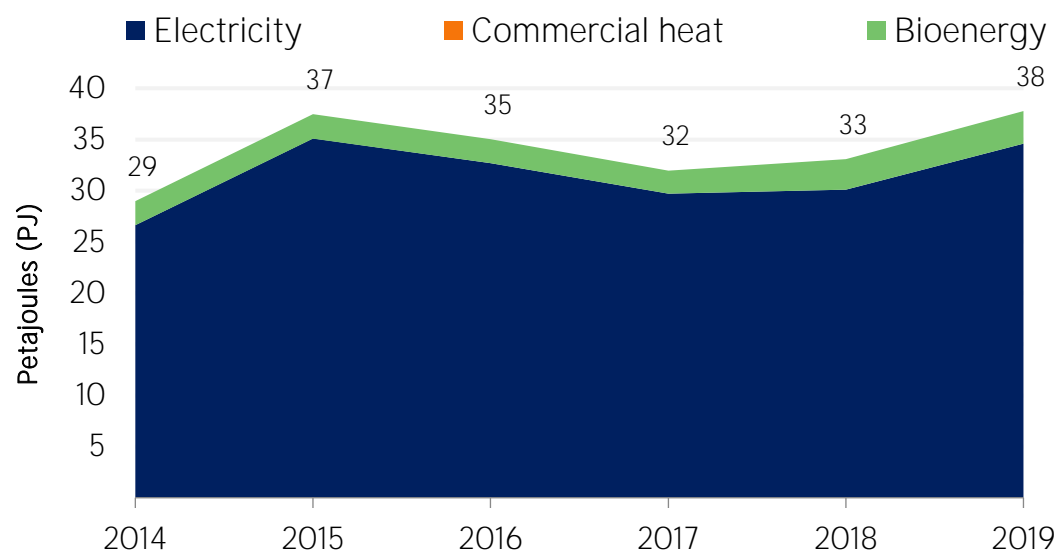


Renewable energy supply in 2019

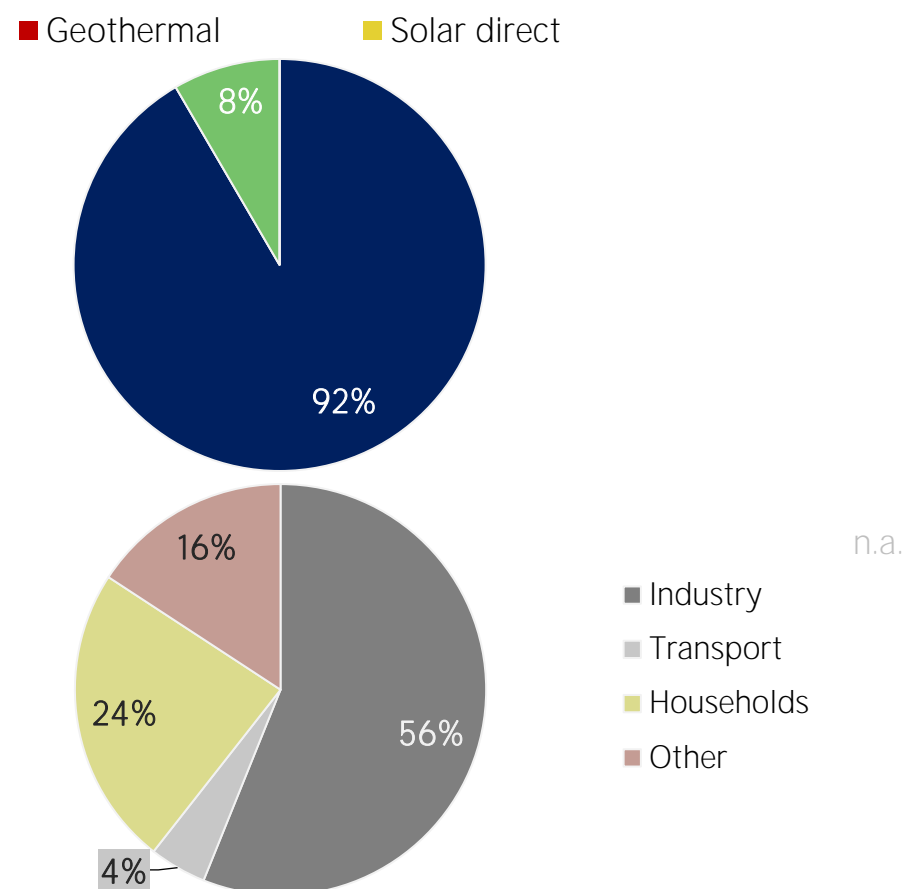


RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend



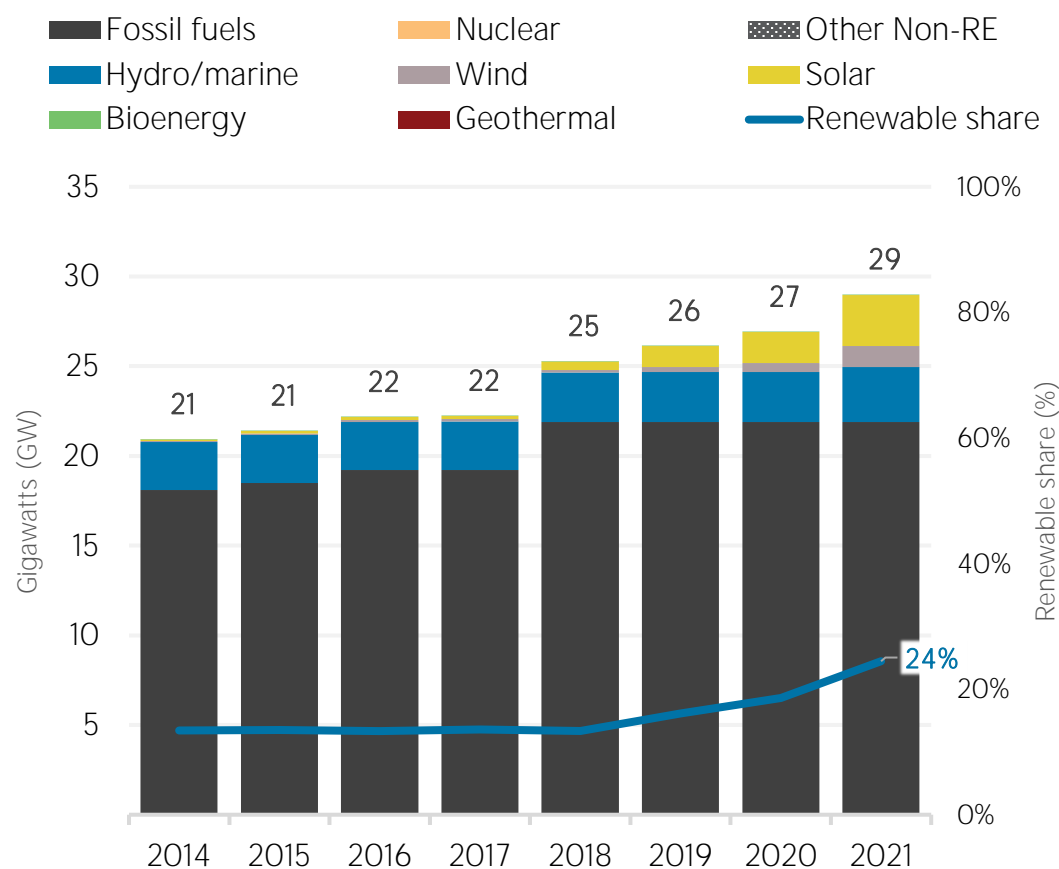
Renewable energy consumption in 2019



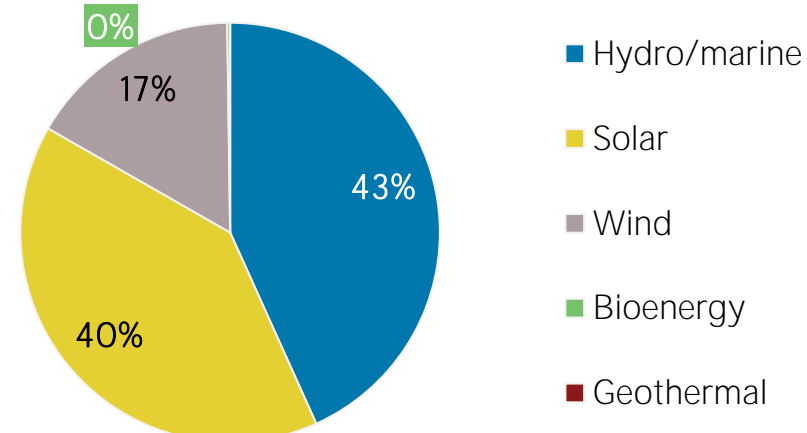
Consumption by sector	2014	2019
Industry (TJ)	17 591	21 193
Transport (TJ)	970	1 695
Households (TJ)	5 519	8 925
Other (TJ)	4 893	5 961

ELECTRICITY CAPACITY

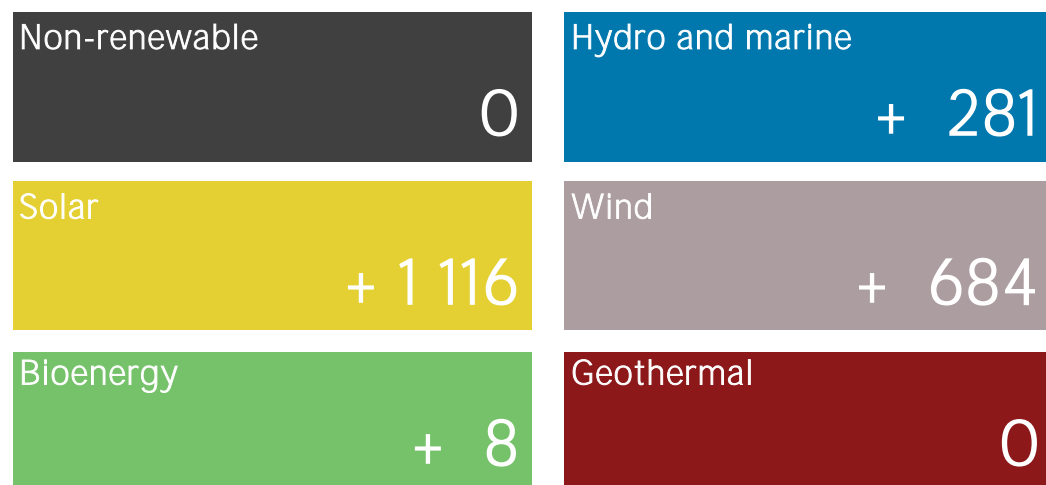
Installed capacity trend



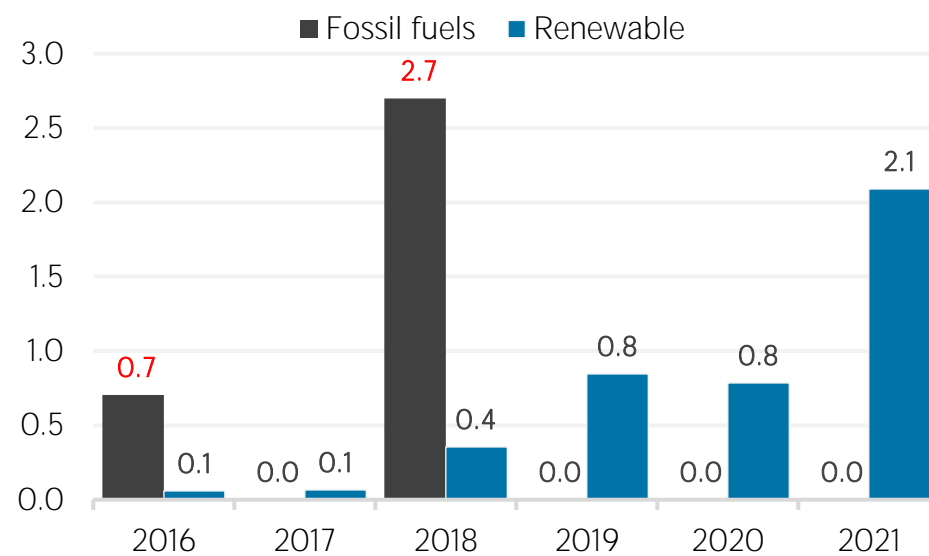
Renewable capacity in 2021



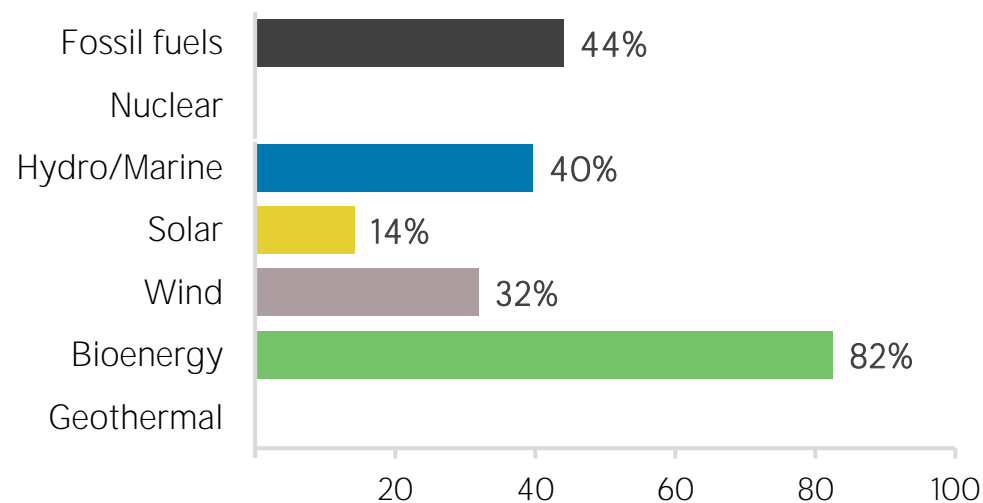
Net capacity change in 2021 (MW)



Net capacity change (GW)



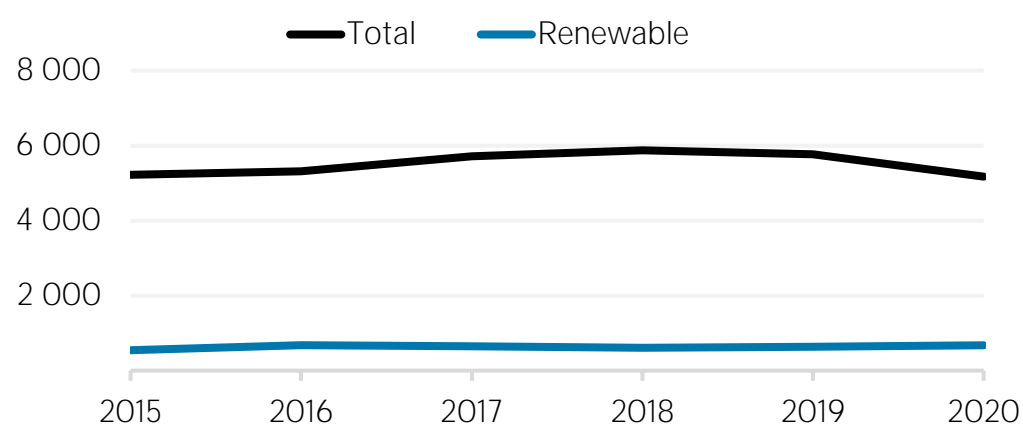
Capacity utilisation in 2020 (%)



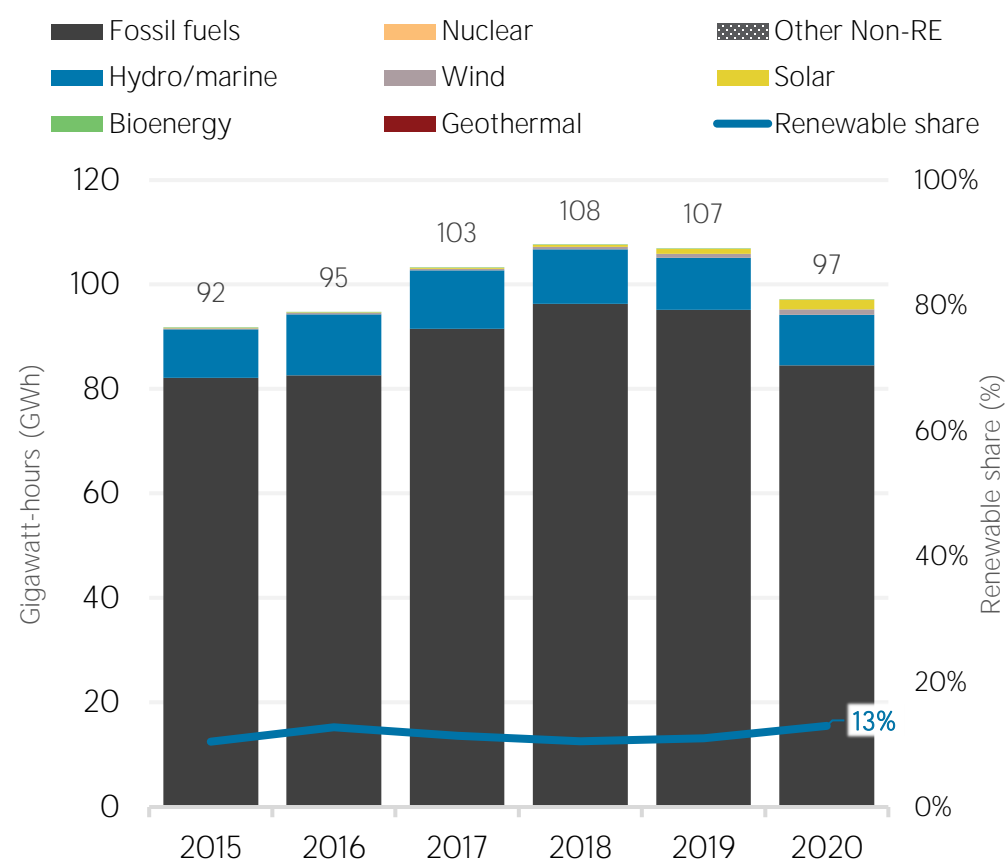
ELECTRICITY GENERATION

Generation in 2020	GWh	%
Non-renewable	84 553	87
Renewable	12 563	13
Hydro and marine	9 660	10
Solar	1 789	2
Wind	1 077	1
Bioenergy	37	0
Geothermal	0	0
Total	97 117	100

Per capita electricity generation (kWh)



Electricity generation trend

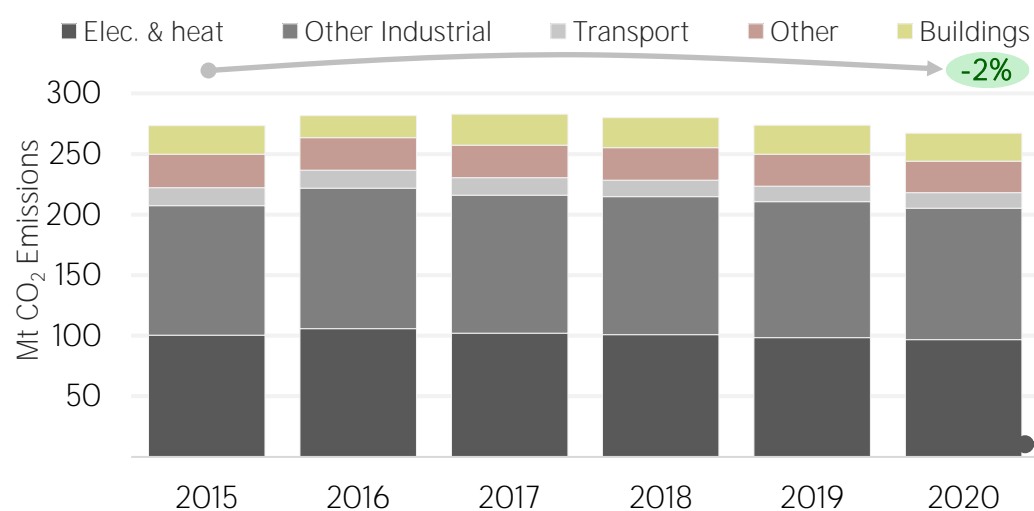


LATEST POLICIES, PROGRAMMES AND LEGISLATION

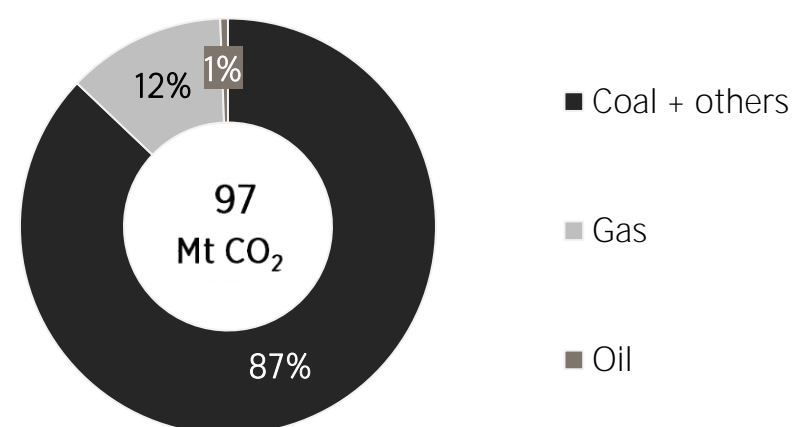
- Ban on export of petroleum products by road 2021
- Environmental Code of the Republic of Kazakhstan, №400-VI (as amended) 2021
- Auction mechanism for the construction of maneuverable capacities 2020
- Code "On subsoil and subsoil use" No. 125-VI (as amended) 2018
- Code "On taxes and other obligatory payments to the budget" (Tax Code) dated December 25, 2017 № 120-VI. 2018

ENERGY AND EMISSIONS

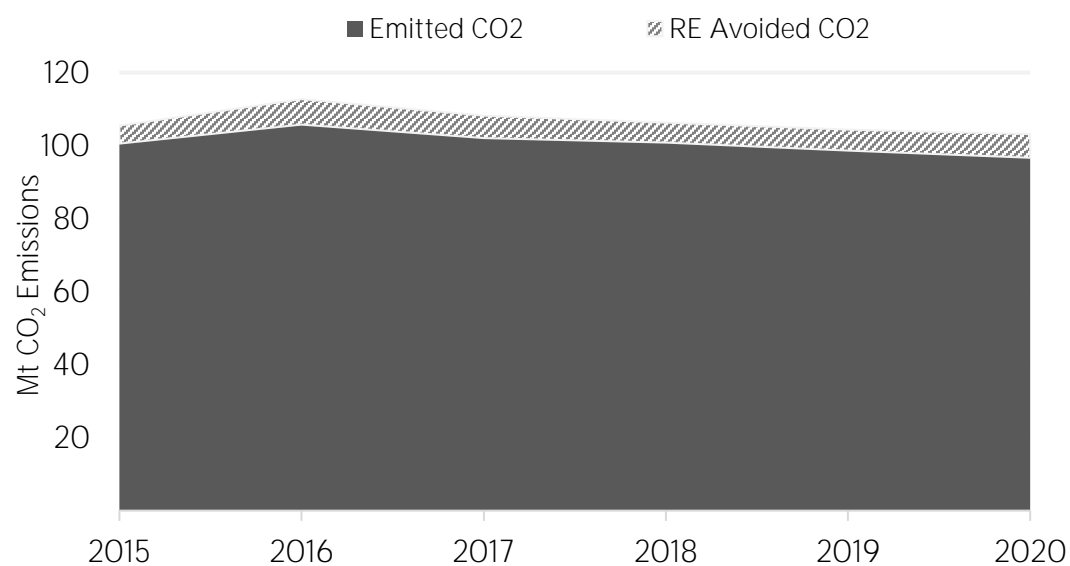
Energy-related CO₂ emissions by sector



Elec. & heat generation CO₂ emissions in

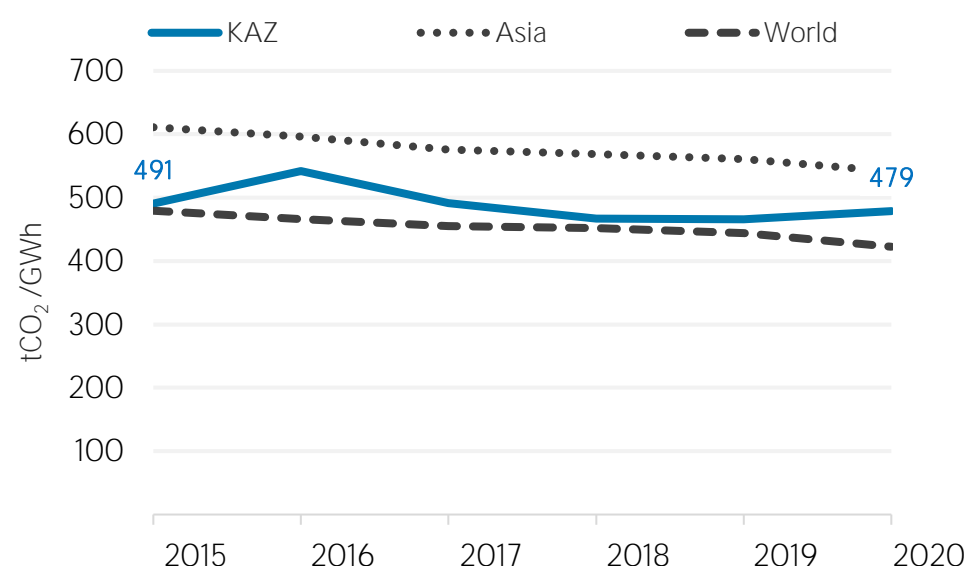


Avoided emissions from renewable elec. & heat



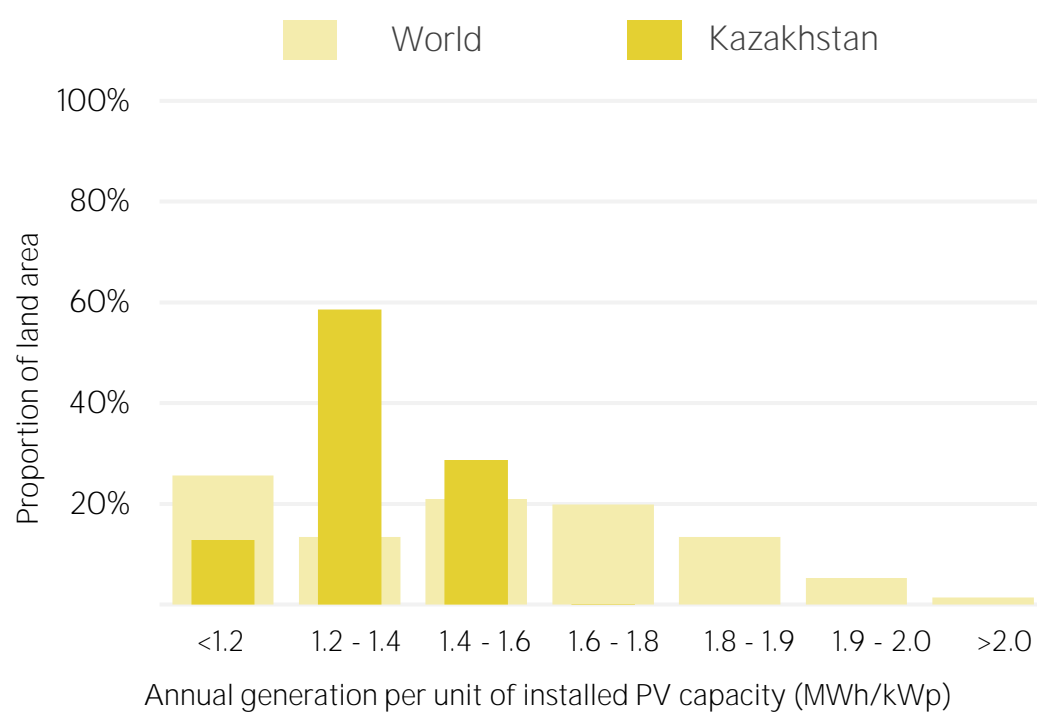
Avoided emissions based on fossil fuel mix used for power

CO₂ emission factor for elec. & heat generation

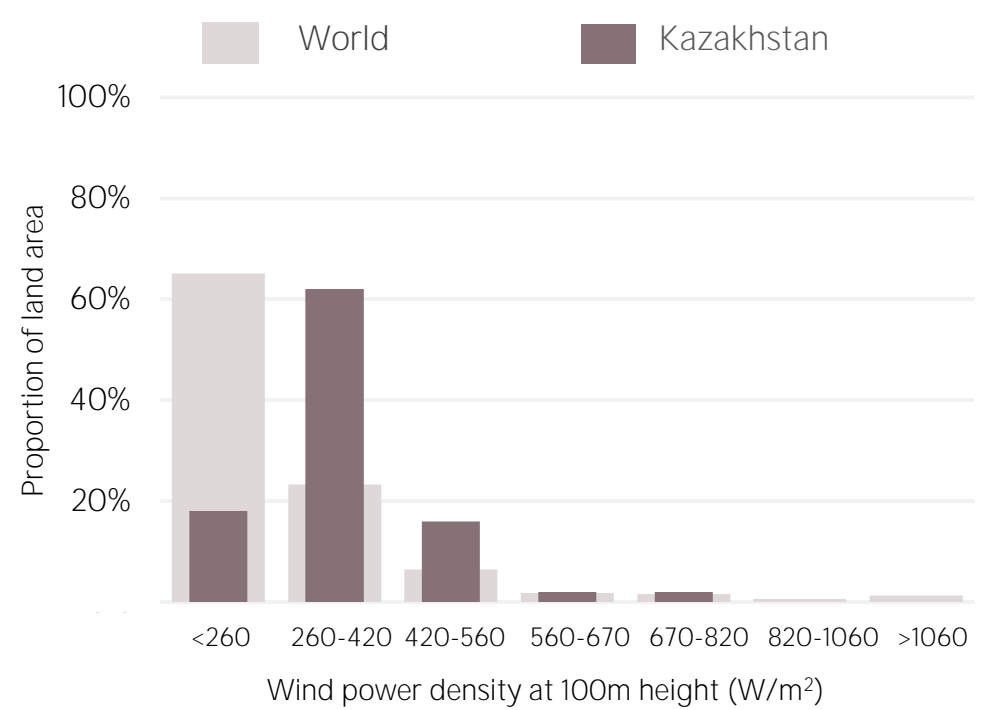


Calculated by dividing power sector emissions by elec. + heat gen.

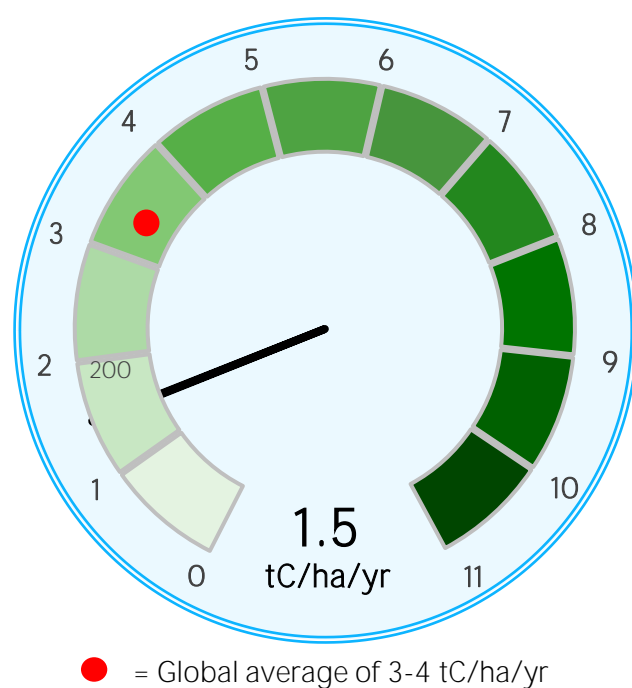
Distribution of solar potential



Distribution of wind potential



Biomass potential: net primary production



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/m²) 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: 24th August, 2022