Montenegro

IRENA
International Renewable Energy Agency

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$_{2.5}$)

Urban | Average | Rural | WHO safe
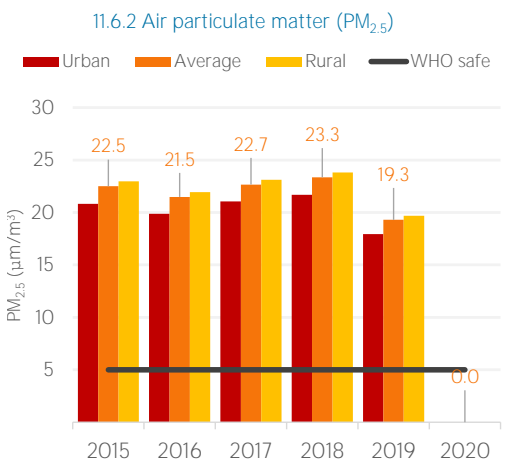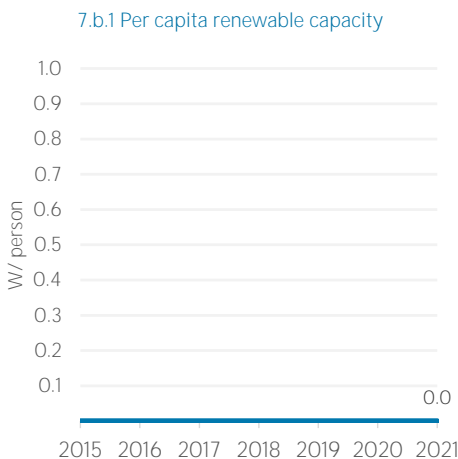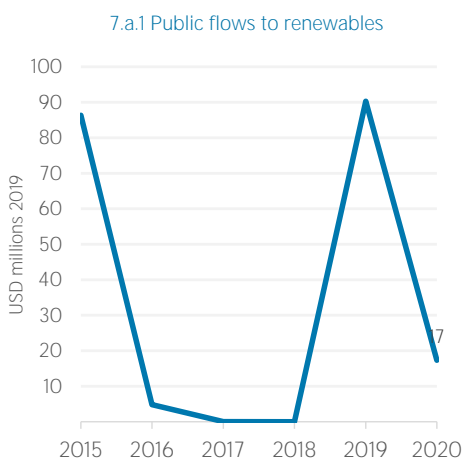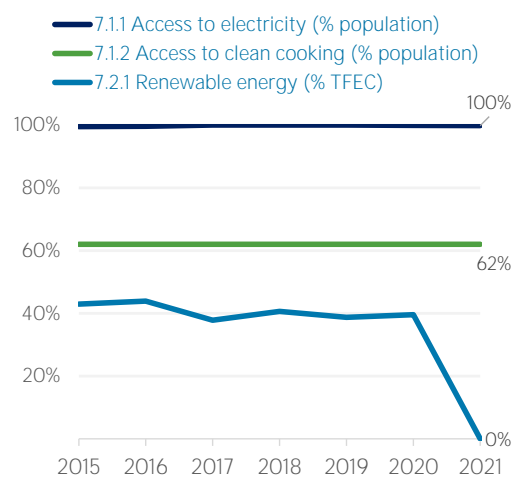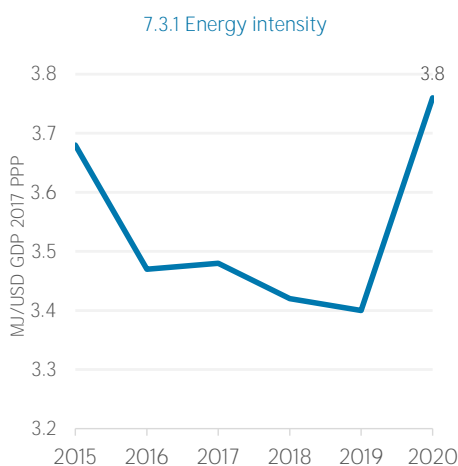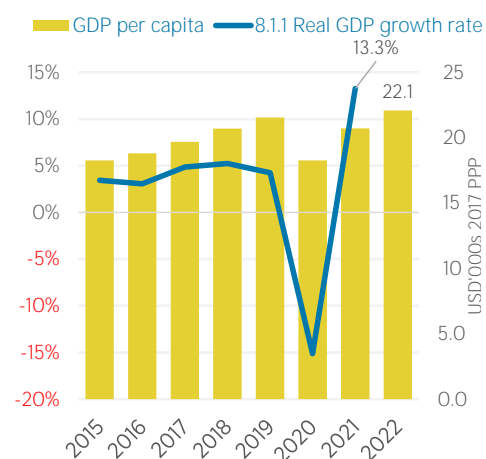
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	28 531	30 070
Renewable (TJ)	14 967	15 855
Total (TJ)	43 498	45 925
Renewable share (%)	34	35

Growth in TES	2015-20	2019-20
Non-renewable (%)	+5.4	-6.5
Renewable (%)	+5.9	+11.4
Total (%)	+5.6	-1.0

Primary energy trade	2015	2020
Imports (TJ)	16 787	35 346
Exports (TJ)	4 061	23 320
Net trade (TJ)	- 12 726	- 12 026
Imports (% of supply)	39	77
Exports (% of production)	13	70
Energy self-sufficiency (%)	72	73

Total energy supply in 2020

- Oil
- Gas
- Nuclear
- Coal + others
- Renewables
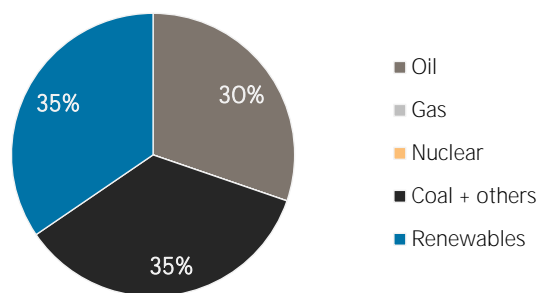
Renewable energy supply in 2020

- Hydro/marine
- Wind
- Solar
- Bioenergy
- Geothermal
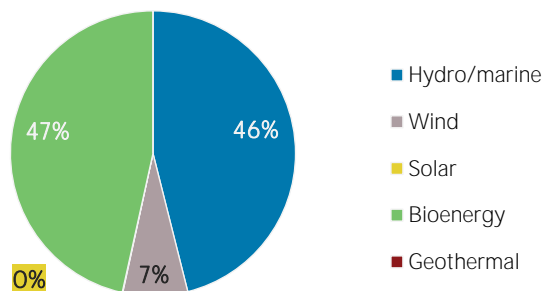
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend

Legend: ■ Electricity ■ Commercial heat ■ Bioenergy
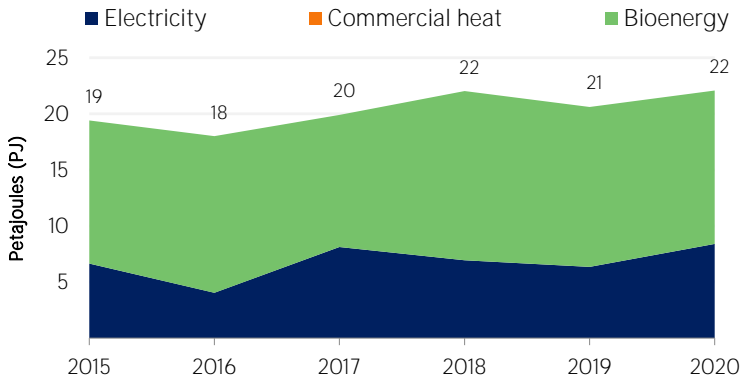
Renewable energy consumption in 2020

Legend: ■ Geothermal ■ Solar direct

n.a.

Legend: ■ Industry ■ Transport ■ Households ■ Other
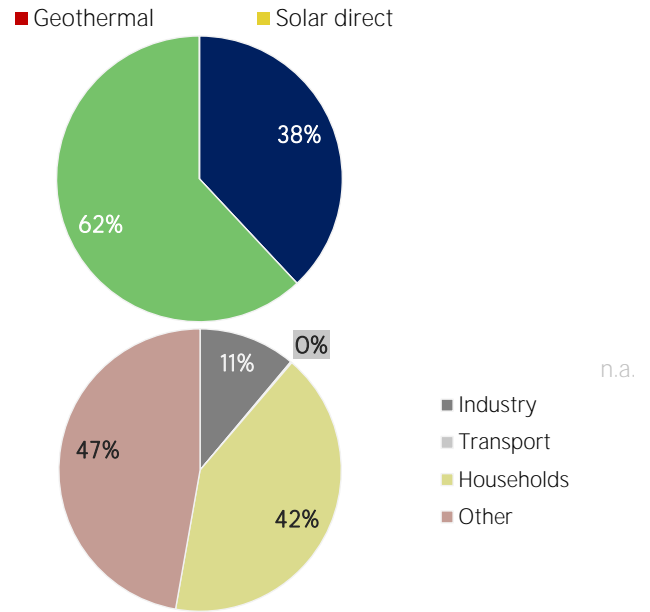
Consumption by sector	2015	2020
Industry (TJ)	2 302	2 449
Transport (TJ)	50	36
Households (TJ)	9 580	9 168
Other (TJ)	7 469	10 425

ELECTRICITY CAPACITY

Installed capacity trend

Legend: ■ Fossil fuels ■ Nuclear ■ Other Non-RE ■ Hydro/marine ■ Wind ■ Solar ■ Bioenergy ■ Geothermal — Renewable share
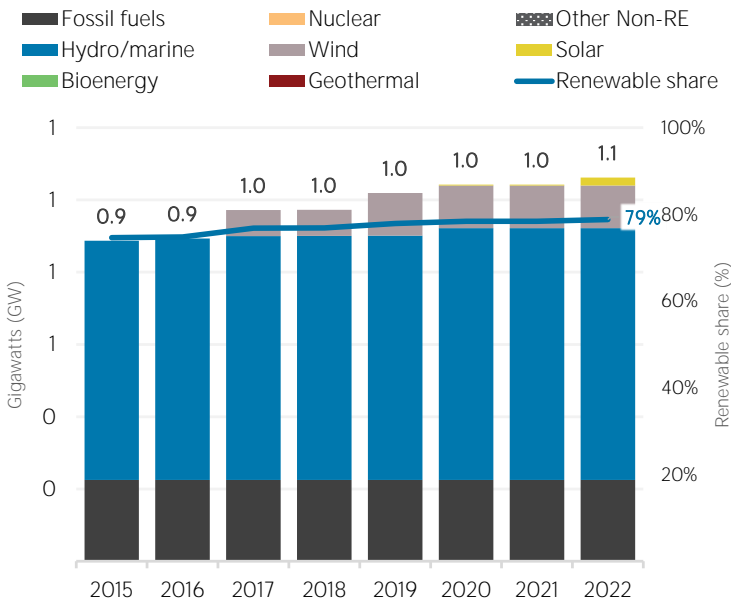
Renewable capacity in 2022

Legend: ■ Hydro/marine ■ Solar ■ Wind ■ Bioenergy ■ Geothermal
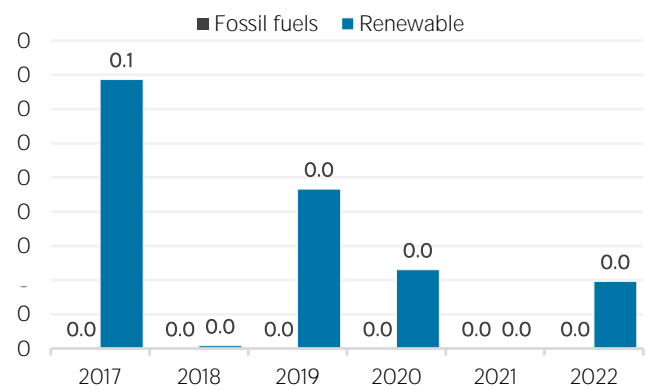
Net capacity change in 2022 (MW)

Non-renewable	Hydro and marine
0	0
Solar	**Wind**
+ 20	0
Bioenergy	**Geothermal**
0	0

Net capacity change (GW)

Legend: ■ Fossil fuels ■ Renewable
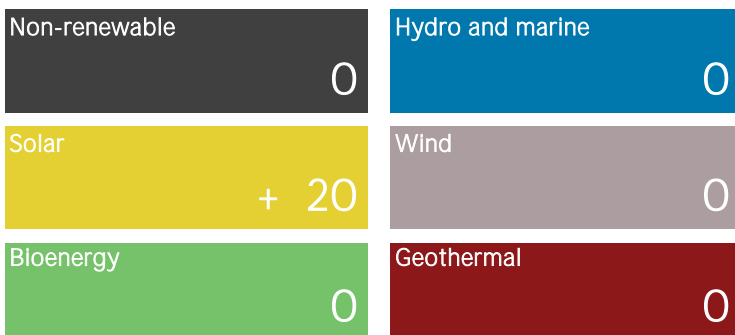
Capacity utilisation in 2021 (%)

Fossil fuels 73%
Nuclear
Hydro/Marine 33%
Solar 11%
Wind 31%
Bioenergy
Geothermal
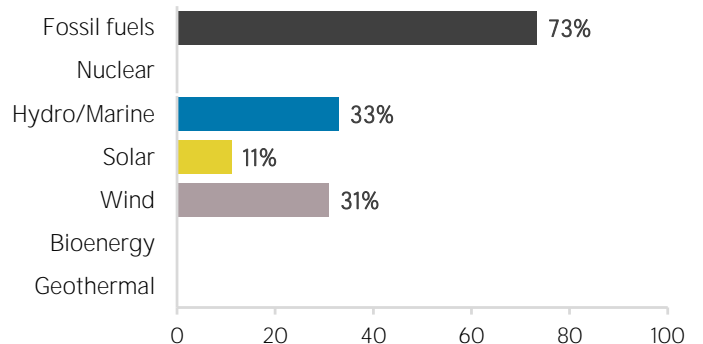
Generation in 2021	GWh	%
Non-renewable	1 444	38
Renewable	2 333	62
Hydro and marine	2 010	53
Solar	3	0
Wind	320	8
Bioenergy	0	0
Geothermal	0	0
Total	3 777	100

Electricity generation trend

Legend: Fossil fuels, Nuclear, Other Non-RE, Hydro/marine, Wind, Solar, Bioenergy, Geothermal, Renewable share

Per capita electricity generation (kWh)

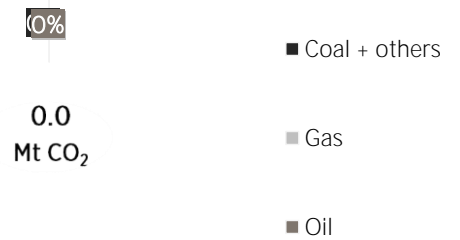Total — Renewable
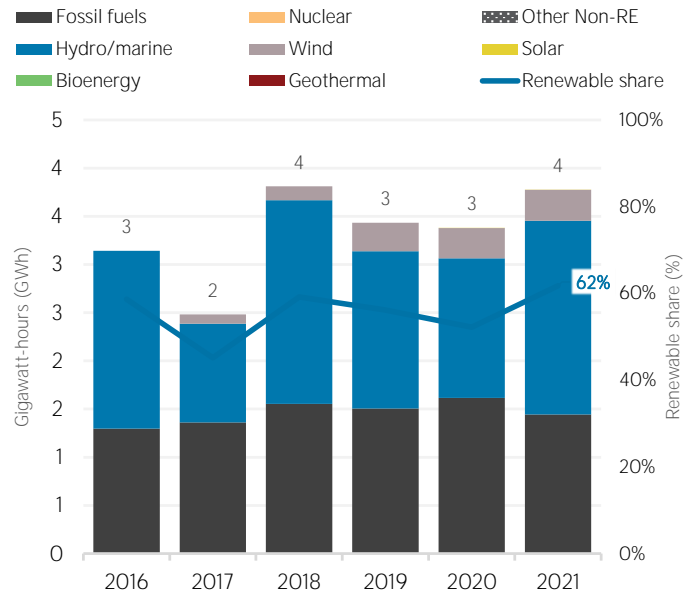
1	Decree on Tariff Incentives for Renewable Energy and Efficient Cogeneration	2011
2	Regulatory framework for renewables	2010
3	Energy Law	2003
4		
5		

Energy-related CO_2 emissions by sector

Legend: Elec. & heat, Other Industrial, Transport, Other, Buildings
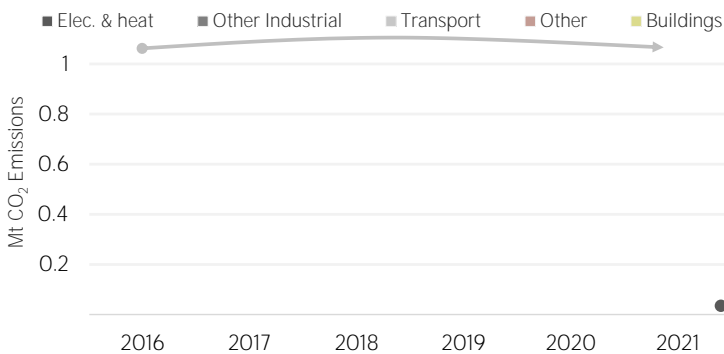
Mt CO_2 Emissions

Elec. & heat generation CO_2 emissions in

0%

0.0
Mt CO_2

Legend: Coal + others, Gas, Oil

Avoided emissions from renewable elec. & heat

Emitted CO2 — RE Avoided CO2
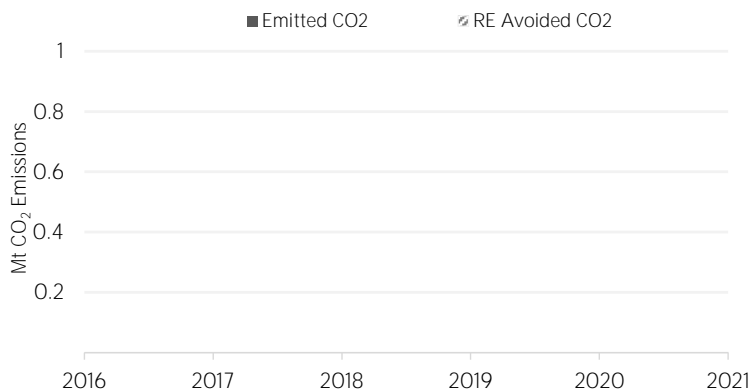
Mt CO_2 Emissions

Avoided emissions based on fossil fuel mix used for power

CO_2 emission factor for elec. & heat generation

MNE ····· Europe ‑ ‑ World

tCO_2/GWh
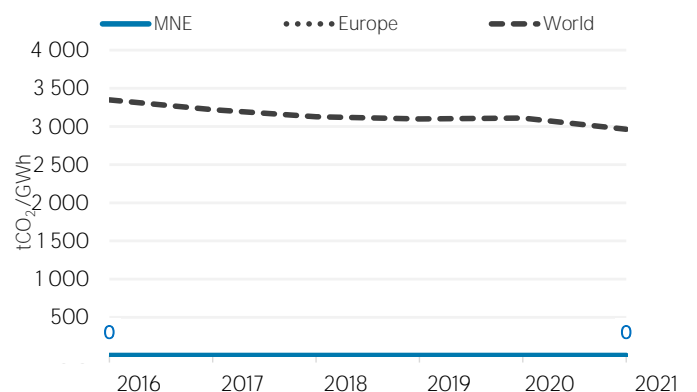
Calculated by dividing power sector emissions by elec. + heat gen.

Distribution of solar potential

Legend: World | Montenegro

Proportion of land area (y-axis: 100%, 80%, 60%, 40%, 20%)

Annual generation per unit of installed PV capacity (MWh/kWp)
(x-axis: <1.2, 1.2 - 1.4, 1.4 - 1.6, 1.6 - 1.8, 1.8 - 1.9, 1.9 - 2.0, >2.0)
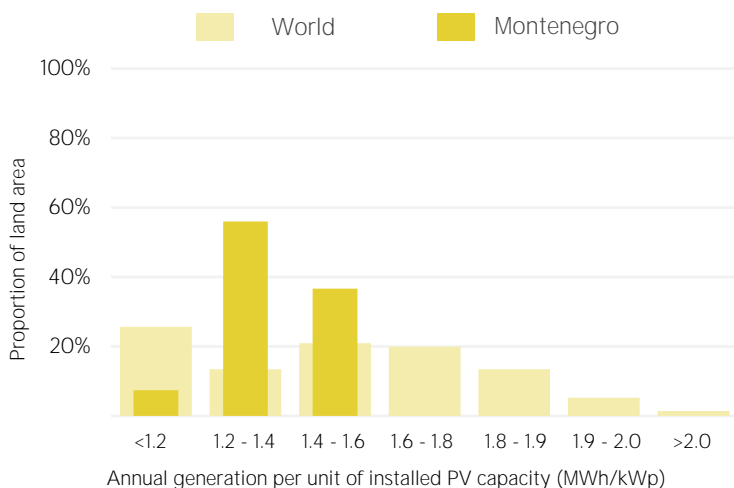
Distribution of wind potential

Legend: World | Montenegro

Proportion of land area (y-axis: 100%, 80%, 60%, 40%, 20%)

Wind power density at 100m height (W/m²)
(x-axis: <260, 260-420, 420-560, 560-670, 670-820, 820-1060, >1060)
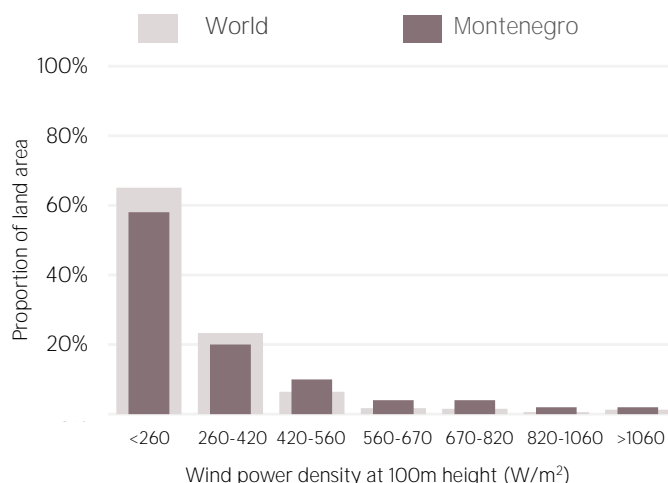
Biomass potential: net primary production

5.5
tC/ha/yr

(gauge dial: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11; 200)

● = Global average of 3-4 tC/ha/yr
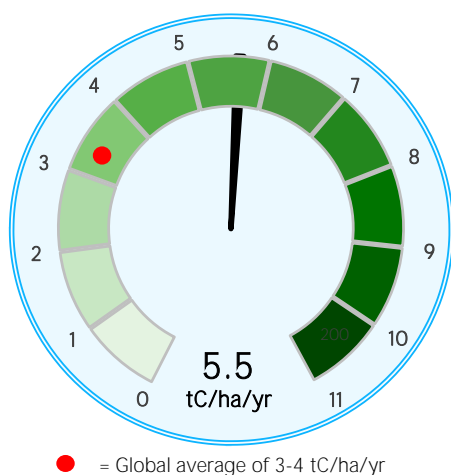
Indicators of renewable resource potential

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/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