Republic of Korea

IRENA
International Renewable Energy Agency

COUNTRY INDICATORS AND SDGS

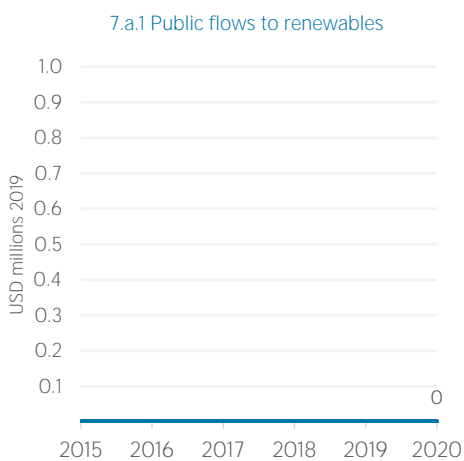GDP per capita — 8.1.1 Real GDP growth rate

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
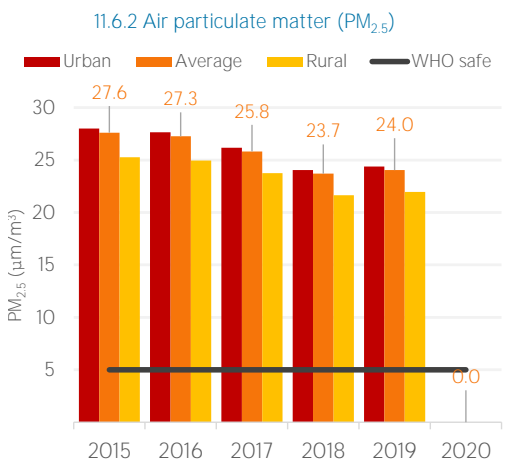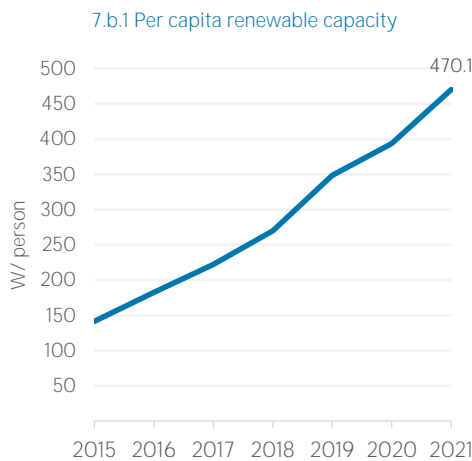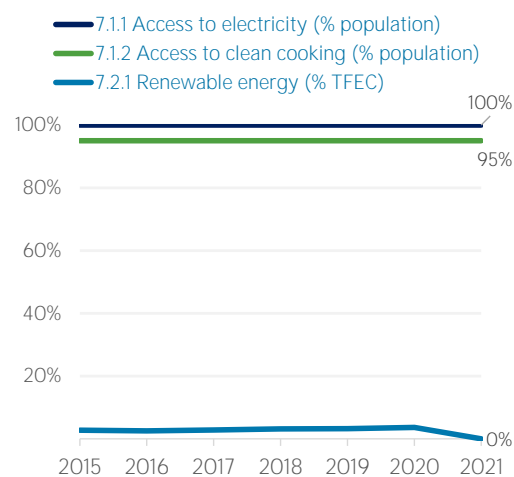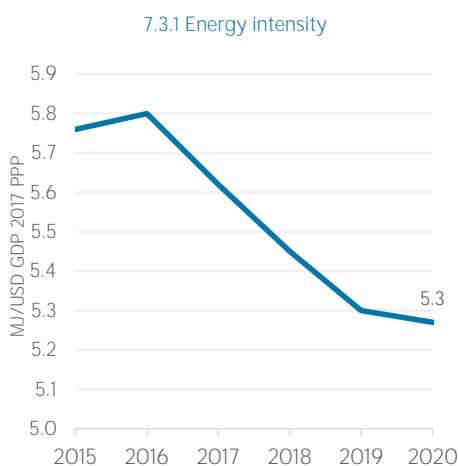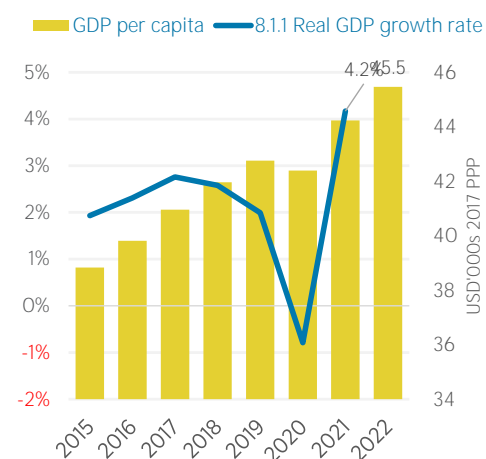
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	11 261 208	11 306 869
Renewable (TJ)	172 331	257 067
Total (TJ)	11 433 539	11 563 936
Renewable share (%)	2	2

Growth in TES	2015-20	2019-20
Non-renewable (%)	+0.4	-1.8
Renewable (%)	+49.2	+2.5
Total (%)	+1.1	-1.7

Primary energy trade	2015	2020
Imports (TJ)	12 564 537	12 412 236
Exports (TJ)	2 632 616	2 588 947
Net trade (TJ)	-9 931 921	-9 823 289
Imports (% of supply)	110	107
Exports (% of production)	124	119
Energy self-sufficiency (%)	19	19

Total energy supply in 2020
- Oil 37%
- Gas 18%
- Nuclear 15%
- Coal + others 28%
- Renewables 2%
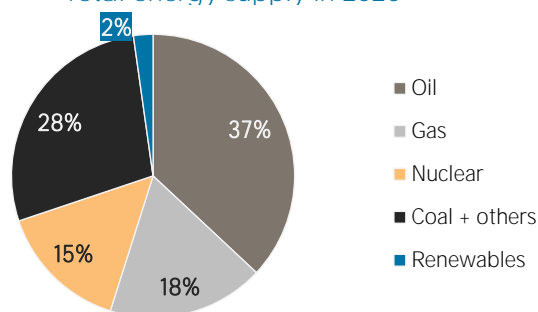
Renewable energy supply in 2020
- Hydro/marine 5%
- Wind 4%
- Solar 33%
- Bioenergy 53%
- Geothermal 4%
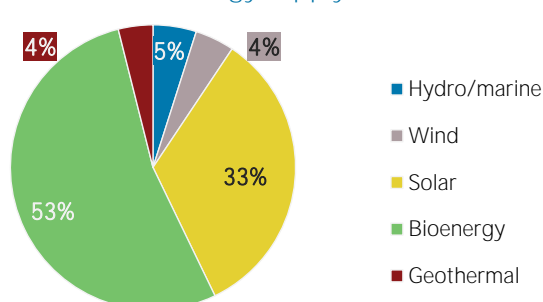
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend

Legend: ■ Electricity ■ Commercial heat ■ Bioenergy

Y-axis: Petajoules (PJ) — 50, 100, 150, 200, 250, 300, 350, 400, 450

Data labels: 233 (2015), 252 (2016), 287 (2017), 334 (2018), 360 (2019), 387 (2020)

X-axis: 2015, 2016, 2017, 2018, 2019, 2020
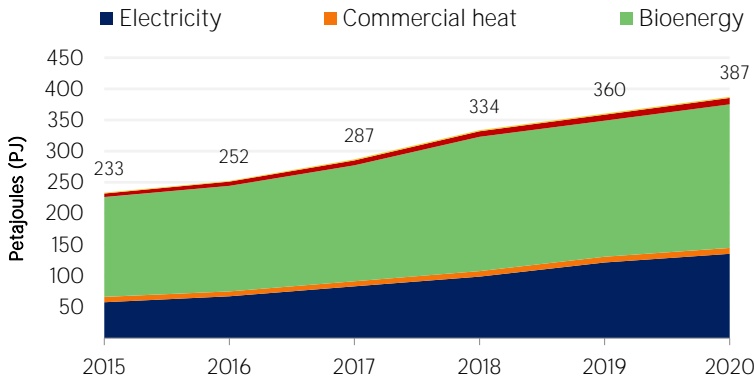
Consumption by sector	2015	2020
Industry (TJ)	62 462	91 945
Transport (TJ)	15 456	24 748
Households (TJ)	16 316	29 638
Other (TJ)	139 076	240 936

Renewable energy consumption in 2020

Legend: ■ Geothermal ■ Solar direct

Pie chart 1: 35% (Electricity, dark blue), 2% (Commercial heat, orange), 60% (Bioenergy, green), 3% (Geothermal), 0% (Solar direct)

Pie chart 2: 24% Industry, 6% Transport, 8% Households, 62% Other

Legend: ■ Industry ■ Transport ■ Households ■ Other
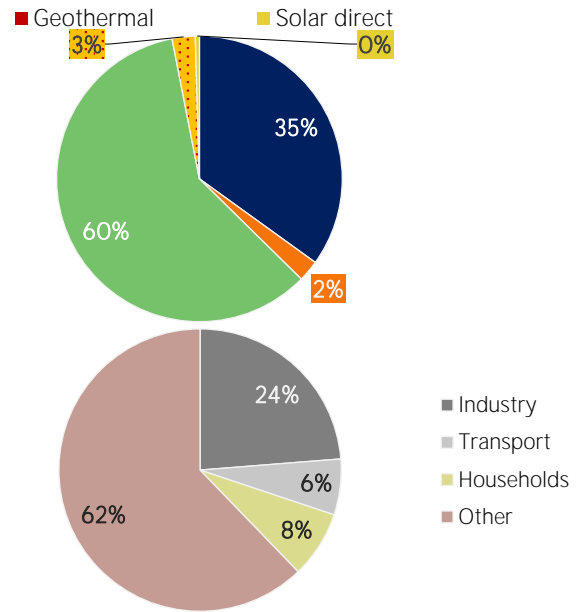
ELECTRICITY CAPACITY

Installed capacity trend

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

Y-axis left: Gigawatts (GW) — 20, 40, 60, 80, 100, 120, 140, 160
Y-axis right: Renewable share (%) — 20%, 40%, 60%, 80%, 100%

Data labels: 104 (2015), 113 (2016), 125 (2017), 130 (2018), 136 (2019), 142 (2020), 146 (2021), 150 (2022)

Renewable share: 21% (20%) in 2022

X-axis: 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022
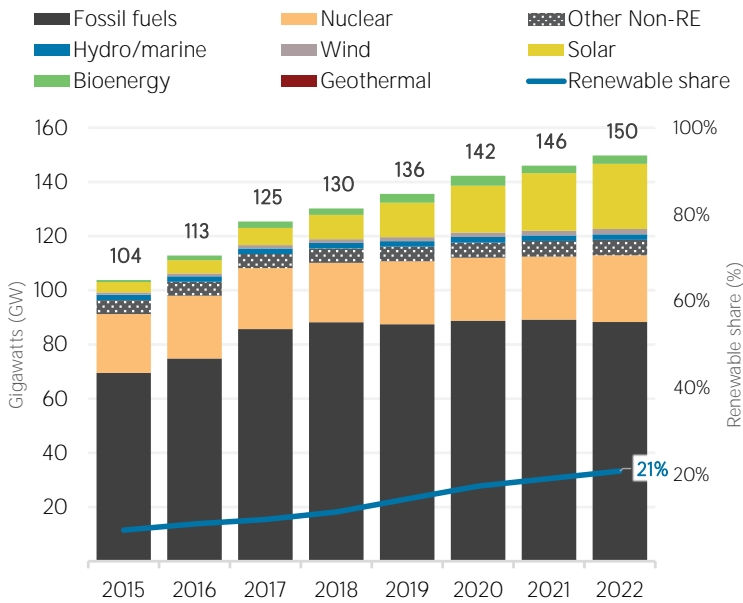
Renewable capacity in 2022

Pie chart: 7% Hydro/marine, 77% Solar, 6% Wind, 10% Bioenergy

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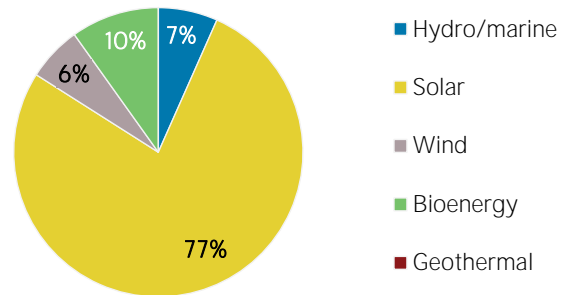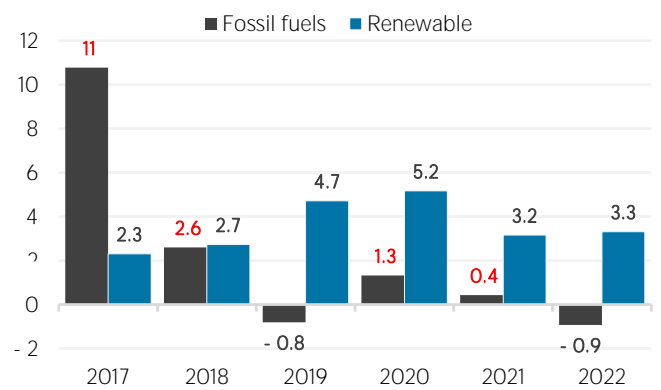
Net capacity change in 2022 (MW)

Non-renewable + 425	**Hydro and marine** − 29
Solar + 2 814	**Wind** + 184
Bioenergy + 341	**Geothermal** 0

Net capacity change (GW)

Legend: ■ Fossil fuels ■ Renewable

Year	Fossil fuels	Renewable
2017	11	2.3
2018	2.6	2.7
2019	− 0.8	4.7
2020	1.3	5.2
2021	0.4	3.2
2022	− 0.9	3.3
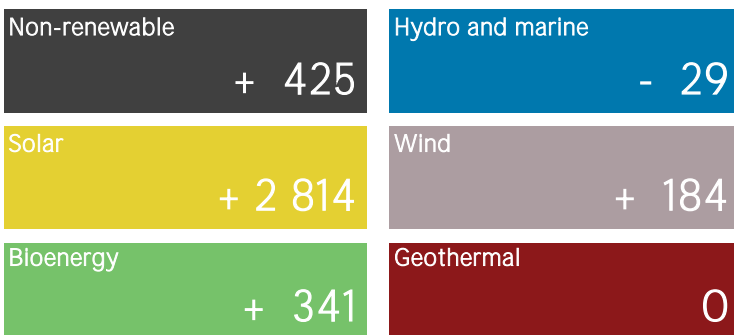
Capacity utilisation in 2021 (%)

Fossil fuels	52%
Nuclear	78%
Hydro/Marine	19%
Solar	14%
Wind	22%
Bioenergy	27%
Geothermal	

X-axis: 0, 20, 40, 60, 80, 100
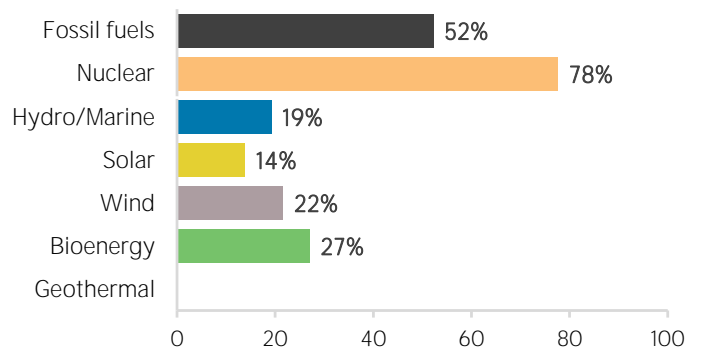
ELECTRICITY GENERATION

Generation in 2021	GWh	%
Non-renewable	574 165	94
Renewable	37 592	6
Hydro and marine	3 509	1
Solar	23 394	4
Wind	3 183	1
Bioenergy	7 506	1
Geothermal	0	0
Total	611 757	100

Per capita electricity generation (kWh)
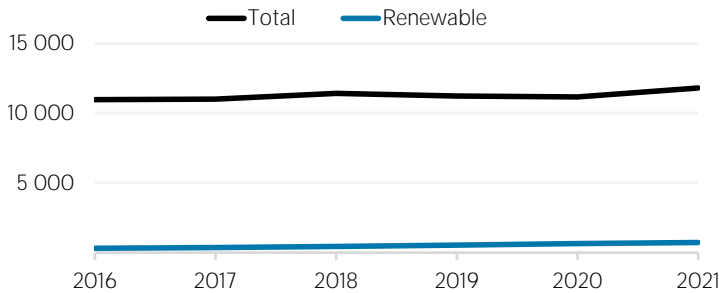
Electricity generation trend
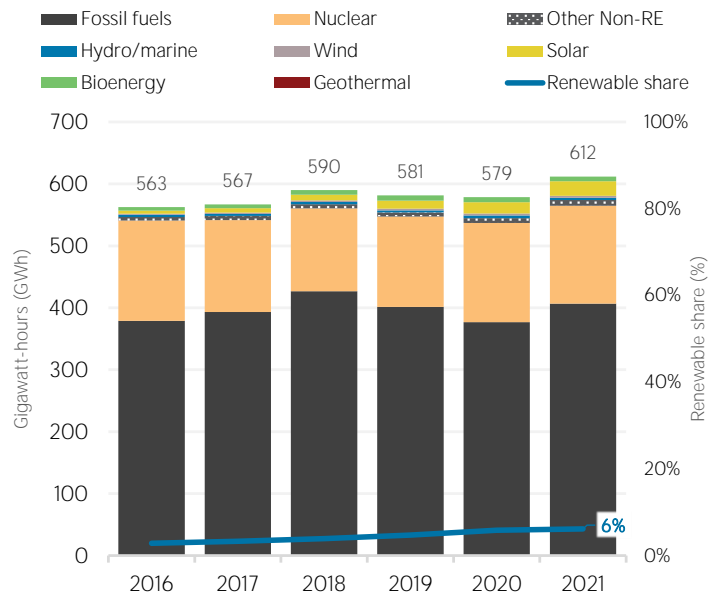
# LATEST POLICIES, PROGRAMMES AND LEGISLATION

1	2022 Energy-crisis support to vulnerable households and sectors	2022
2	Critical Minerals Supply Chain Cooperation MOUs	2022
3	Korea Electric Power Corporation electricity rate freeze	2022
4	2018 - 2030 Methane Reduction Plan	2021
5	Amendments to the "Enforcement Decree of the Environment-friendly Vehicles Act"	2021

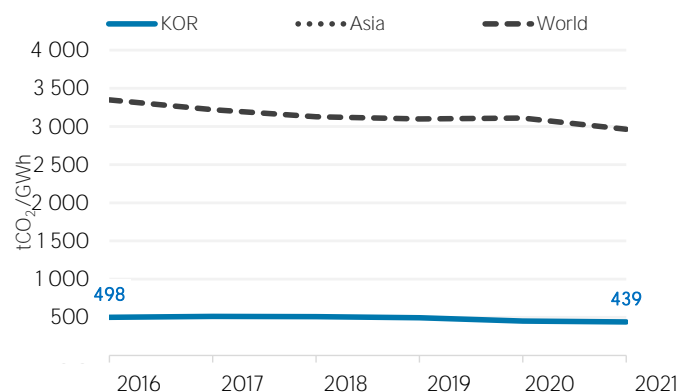# ENERGY AND EMISSIONS

Energy-related CO_2 emissions by sector
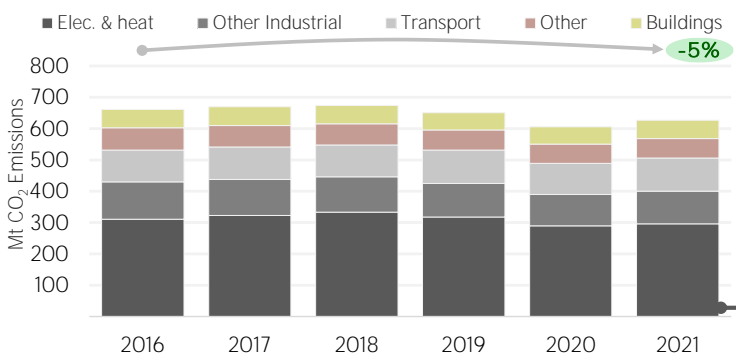
Elec. & heat generation CO_2 emissions in
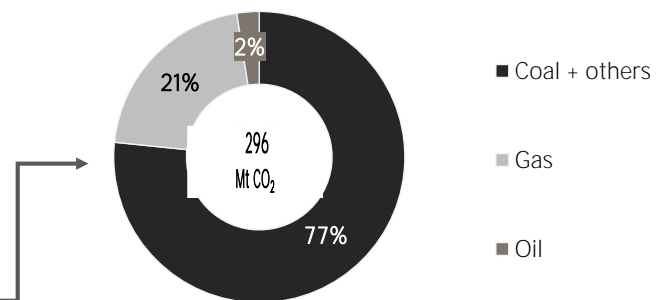
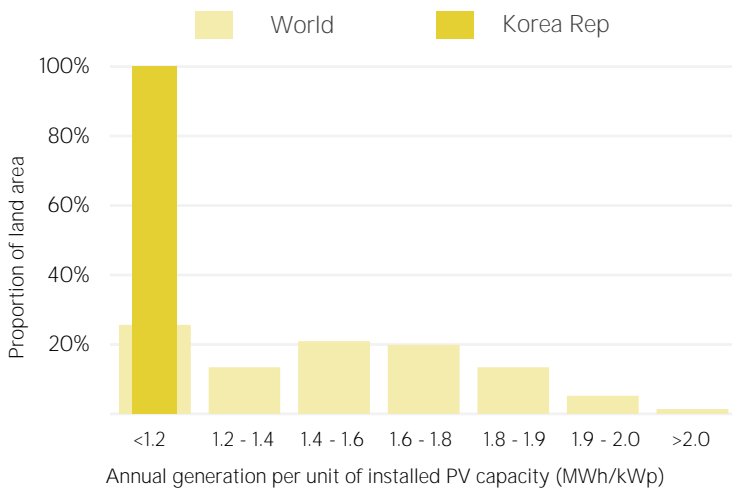## Avoided emissions from renewable elec. & heat

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.

Distribution of solar potential

World   Korea Rep

Proportion of land area

Annual generation per unit of installed PV capacity (MWh/kWp)

Distribution of wind potential

World   Korea Rep

Proportion of land area

Wind power density at 100m height (W/m²)
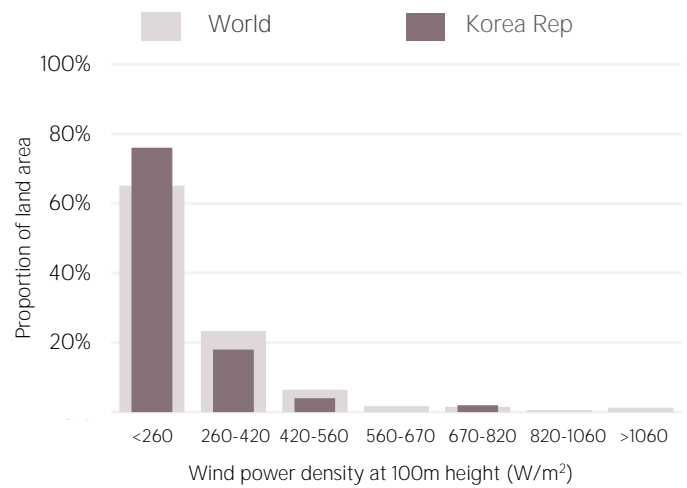
Biomass potential: net primary production

6.5
tC/ha/yr

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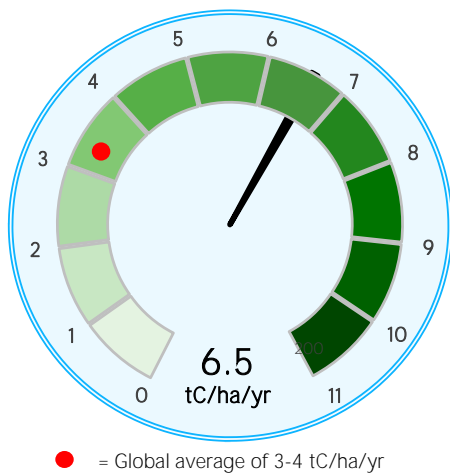
Indicators of renewable resource potential

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