## COUNTRY INDICATORS AND SDGS

### GDP per capita / 8.1.1 Real GDP growth rate



### 7.3.1 Energy intensity


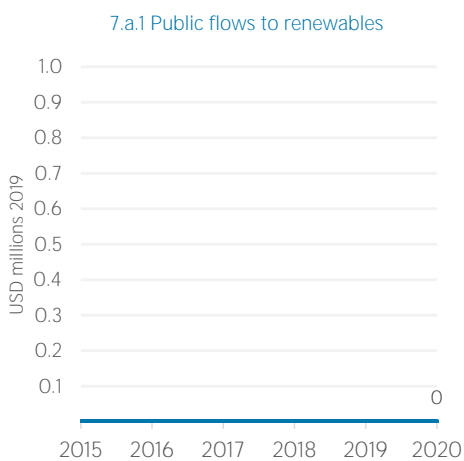
### 7.1.1 Access to electricity (% population) / 7.1.2 Access to clean cooking (% population) / 7.2.1 Renewable energy (% TFEC)



### 7.a.1 Public flows to renewables



### 7.b.1 Per capita renewable capacity



### 11.6.2 Air particulate matter (PM$_{2.5}$)
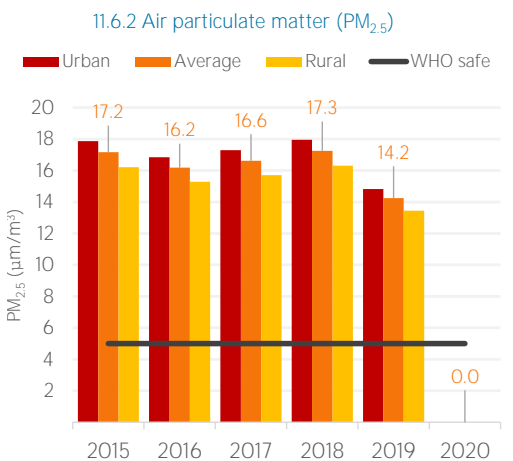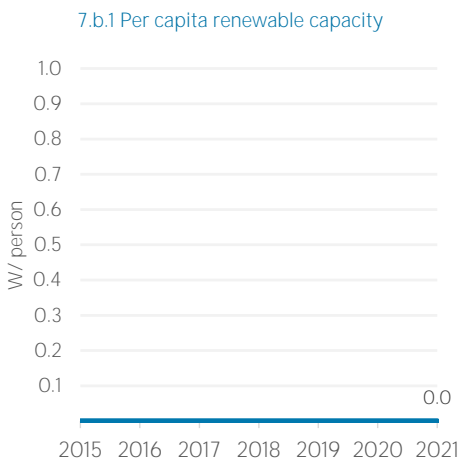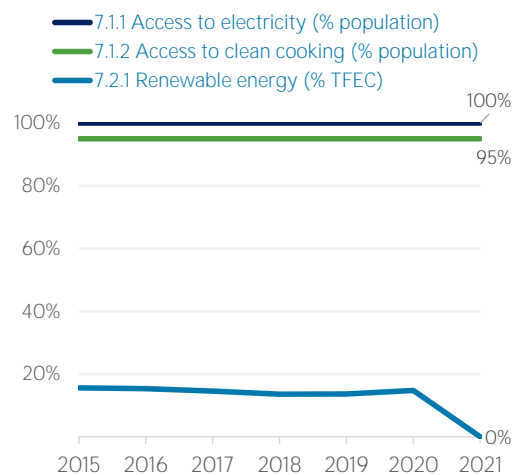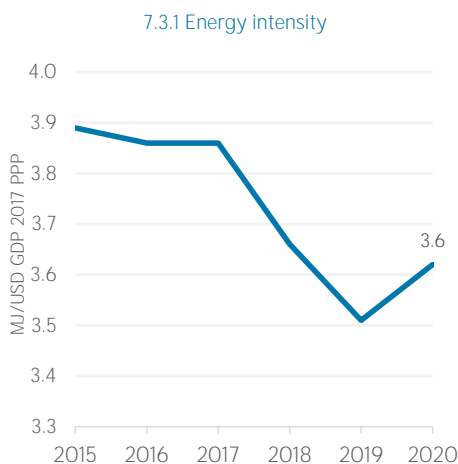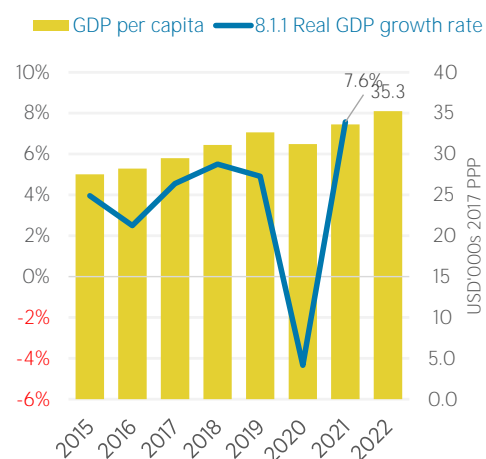


## TOTAL ENERGY SUPPLY (TES)

| Total Energy Supply (TES) | 2015 | 2020 |
|---|---|---|
| Non-renewable (TJ) | 920 889 | 966 417 |
| Renewable (TJ) | 132 855 | 136 781 |
| Total (TJ) | 1 053 744 | 1 103 198 |
| Renewable share (%) | 13 | 12 |

| Growth in TES | 2015-20 | 2019-20 |
|---|---|---|
| Non-renewable (%) | +4.9 | -2.2 |
| Renewable (%) | +3.0 | +5.4 |
| Total (%) | +4.7 | -1.3 |

| Primary energy trade | 2015 | 2020 |
|---|---|---|
| Imports (TJ) | 759 162 | 949 271 |
| Exports (TJ) | 190 227 | 327 196 |
| Net trade (TJ) | - 568 935 | - 622 075 |
| | | |
| Imports (% of supply) | 72 | 86 |
| Exports (% of production) | 40 | 72 |
| Energy self-sufficiency (%) | 45 | 41 |

### Total energy supply in 2020



- Oil — 28%
- Gas — 33%
- Nuclear — 16%
- Coal + others — 10%
- Renewables — 12%
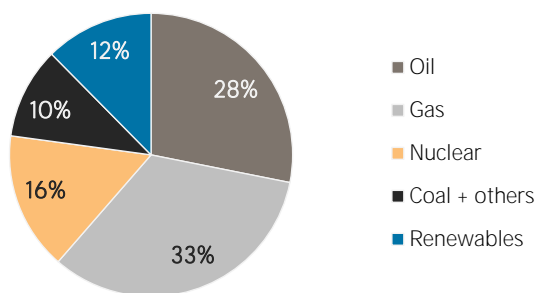
### Renewable energy supply in 2020



- Hydro/marine — 1%
- Wind — 11%
- Solar — 11%
- Bioenergy — 80%
- Geothermal — 7%
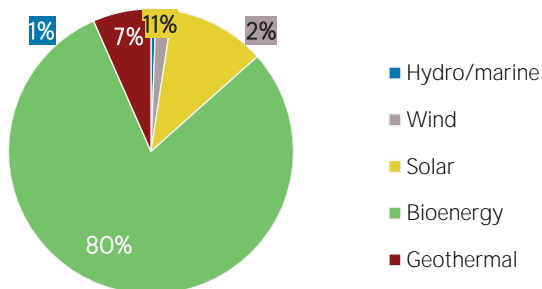
# RENEWABLE ENERGY CONSUMPTION (TFEC)

## Renewable TFEC trend



- Electricity
- Commercial heat
- Bioenergy

Petajoules (PJ): 145, 148, 147, 142, 147, 157 (2015–2020)
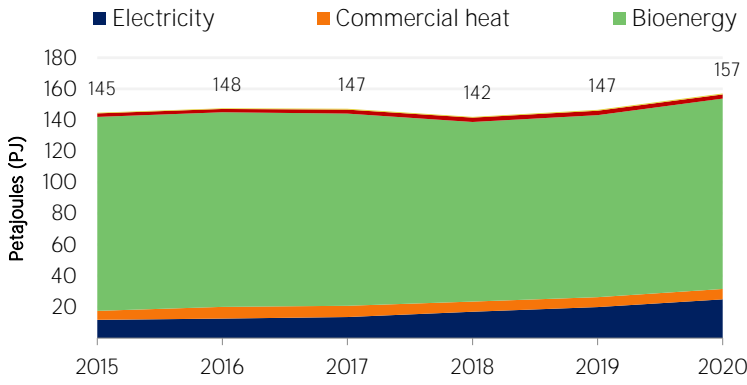
| Consumption by sector | 2015 | 2020 |
|---|---|---|
| Industry (TJ) | 12 466 | 23 597 |
| Transport (TJ) | 7 620 | 12 317 |
| Households (TJ) | 80 459 | 64 209 |
| Other (TJ) | 44 137 | 56 946 |

## Renewable energy consumption in 2020

- Geothermal
- Solar direct



Geothermal 2%, Solar direct 0%, Electricity 16%, Commercial heat 4%, Bioenergy 78%

Industry 15%, Transport 8%, Households 41%, Other 36%

- Industry
- Transport
- Households
- Other
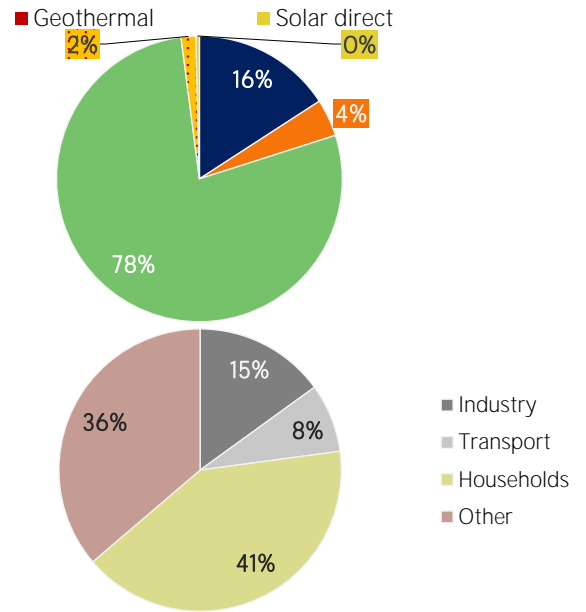
# ELECTRICITY CAPACITY

## Installed capacity trend

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



Gigawatts (GW): 8.6, 8.8, 8.9, 9.3, 10.0, 11, 12, 12 (2015–2022)
Renewable share: 34%

## Net capacity change in 2022 (MW)

| Non-renewable | + 61 |
|---|---|
| Hydro and marine | 0 |
| Solar | + 20 |
| Wind | 0 |
| Bioenergy | 0 |
| Geothermal | 0 |
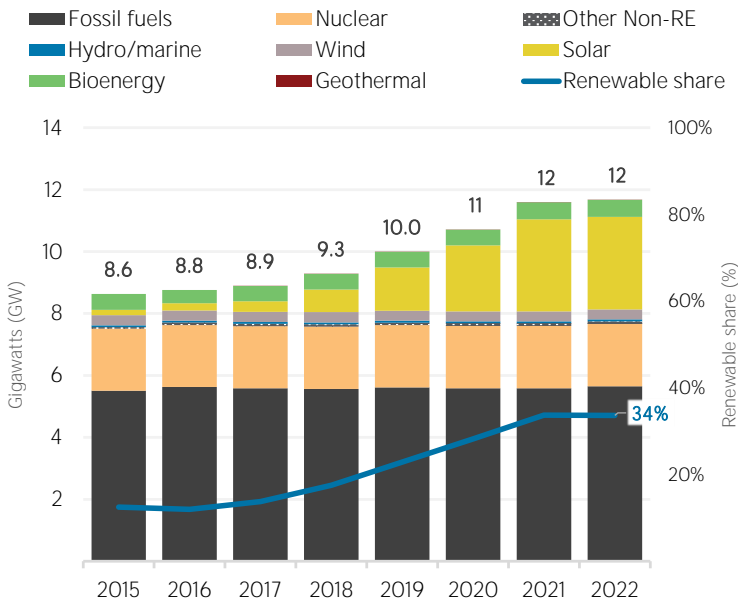
## Renewable capacity in 2022



Hydro/marine 2%, Geothermal 0%, Bioenergy 14%, Wind 8%, Solar 76%

- Hydro/marine
- Solar
- Wind
- Bioenergy
- Geothermal

## Net capacity change (GW)

- Fossil fuels
- Renewable



| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| Renewable | 0.2 | 0.4 | 0.7 | 0.7 | 0.9 | 0.0 |
| Fossil fuels | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
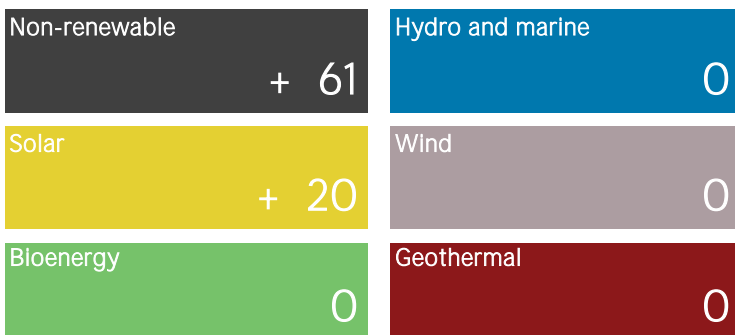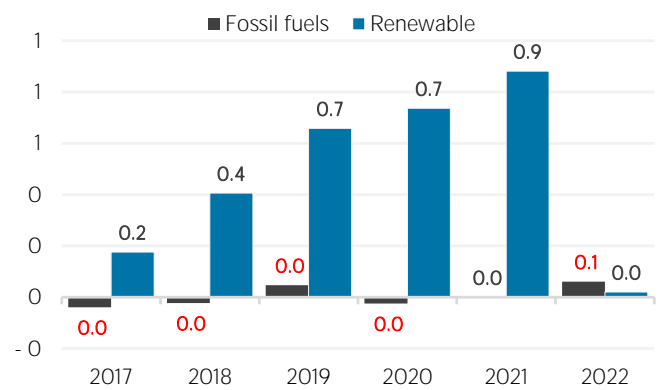
## Capacity utilisation in 2021 (%)



| | % |
|---|---|
| Fossil fuels | 26% |
| Nuclear | 91% |
| Hydro/Marine | 41% |
| Solar | 17% |
| Wind | 23% |
| Bioenergy | 48% |
| Geothermal | 46% |
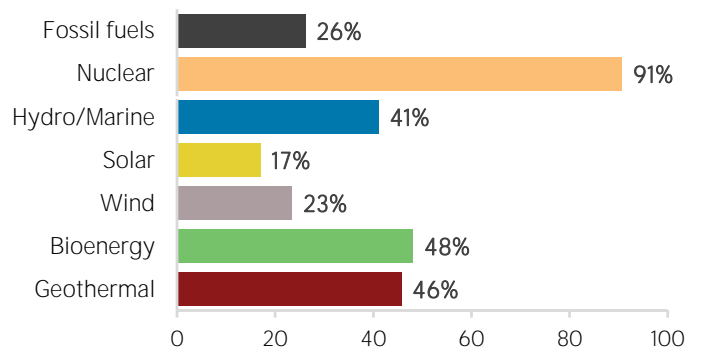
# ELECTRICITY GENERATION

| Generation in 2021 | GWh | % |
|---|---|---|
| Non-renewable | 29 205 | 81 |
| Renewable | 6 915 | 19 |
| Hydro and marine | 212 | 1 |
| Solar | 3 796 | 11 |
| Wind | 664 | 2 |
| Bioenergy | 2 231 | 6 |
| Geothermal | 12 | 0 |
| Total | 36 120 | 100 |

## Per capita electricity generation (kWh)
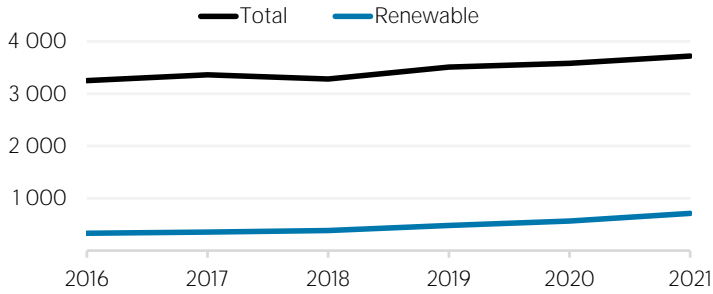


## Electricity generation trend
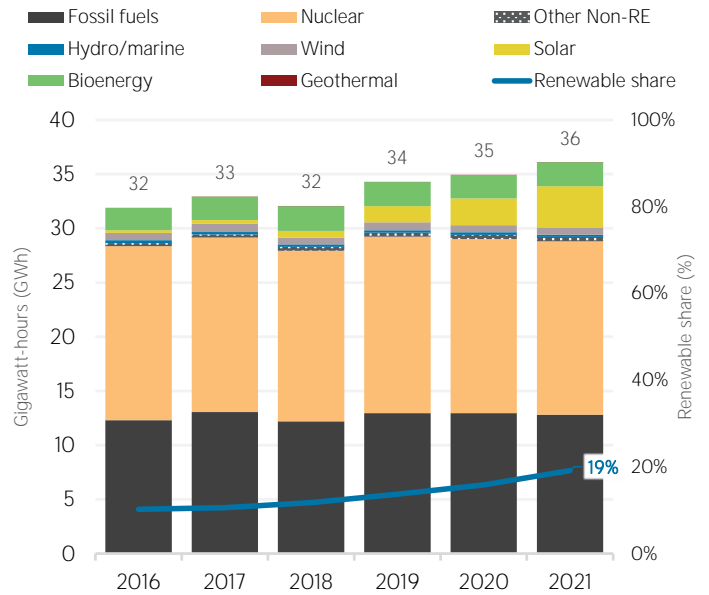


# LATEST POLICIES, PROGRAMMES AND LEGISLATION

1 EUR 109.6 million to pay municipal energy bills — 2023

2 Fixed price of natural gas and electricity for public sector — 2023

3 HUF 100 billion investment loan program for renewables and energy efficiency — 2023

4 HUF 5 billion in fuel subsidies for municipal residents — 2023

5 Support for energy intensive SMEs extended to 2023 — 2023
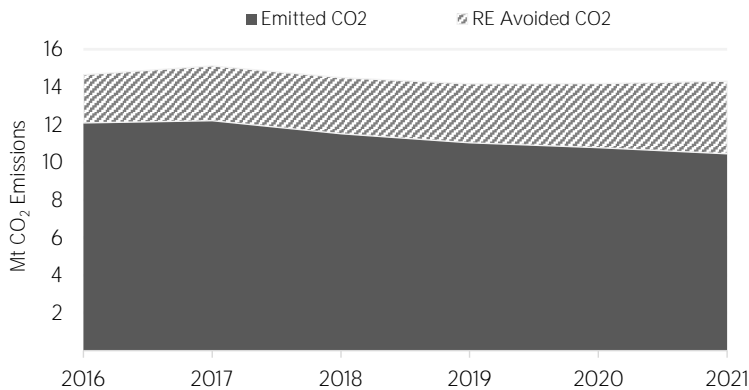
# ENERGY AND EMISSIONS

## Energy-related $CO_2$ emissions by sector
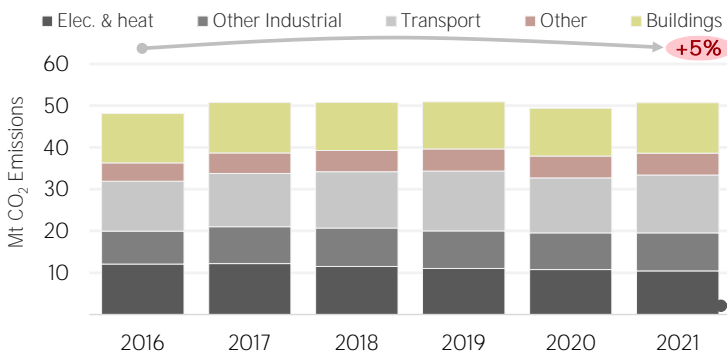


## Elec. & heat generation $CO_2$ emissions in



10 Mt $CO_2$

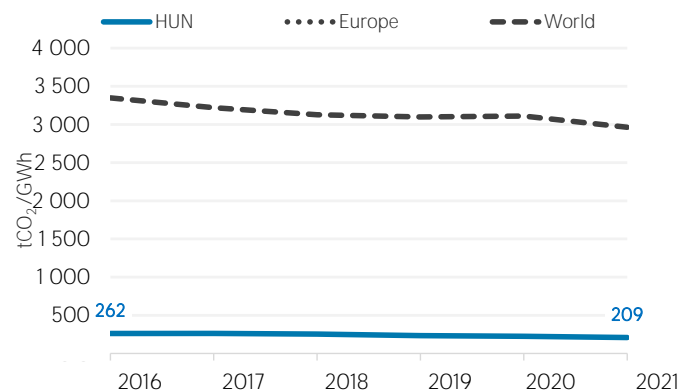- Coal + others 51%
- Gas 49%
- Oil 0%
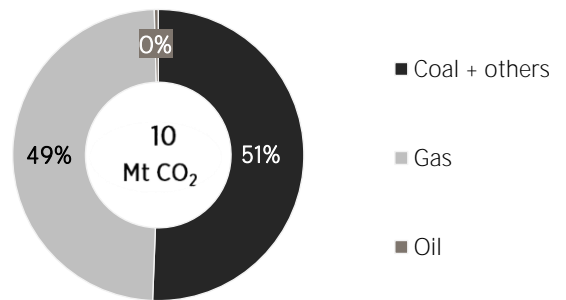
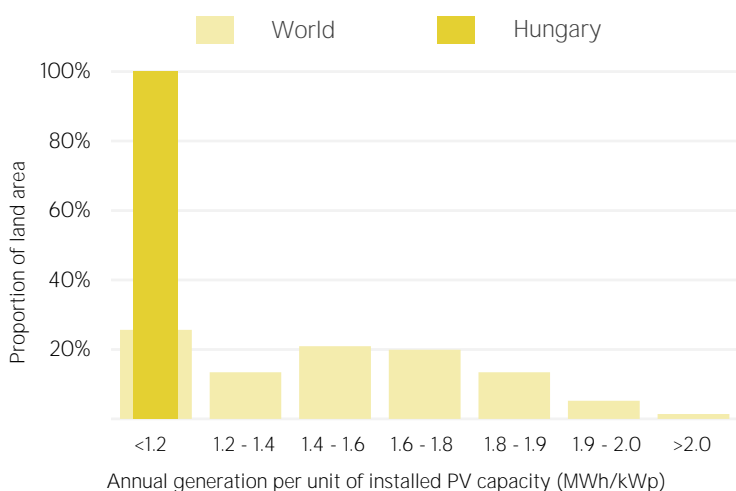## Avoided emissions from renewable elec. & heat



*Avoided emissions based on fossil fuel mix used for power*

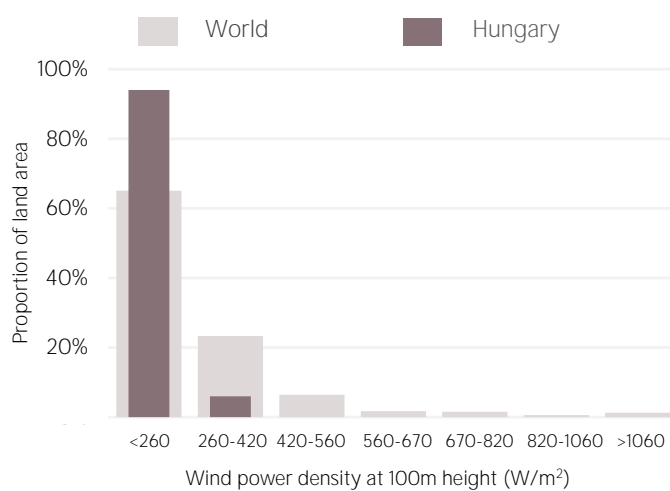## $CO_2$ emission factor for elec. & heat generation



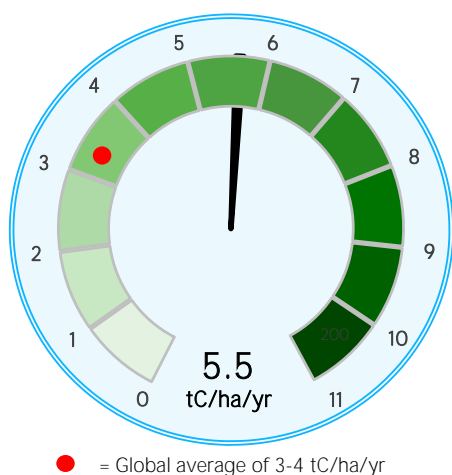*Calculated by dividing power sector emissions by elec. + heat gen.*

## Distribution of solar potential

World     Hungary



Proportion of land area

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

(x-axis categories: <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

World     Hungary



Proportion of land area

Wind power density at 100m height (W/m²)

(x-axis categories: <260, 260-420, 420-560, 560-670, 670-820, 820-1060, >1060)

## Biomass potential: net primary production



5.5
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