Estonia

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
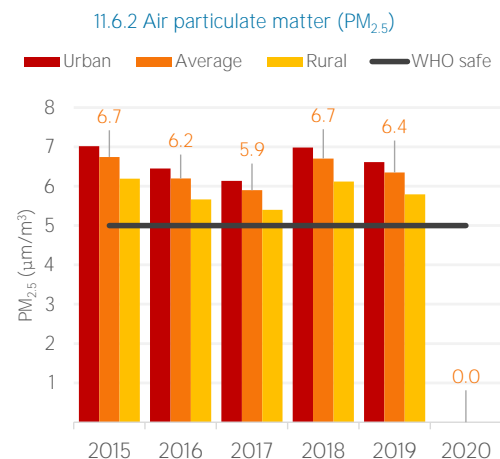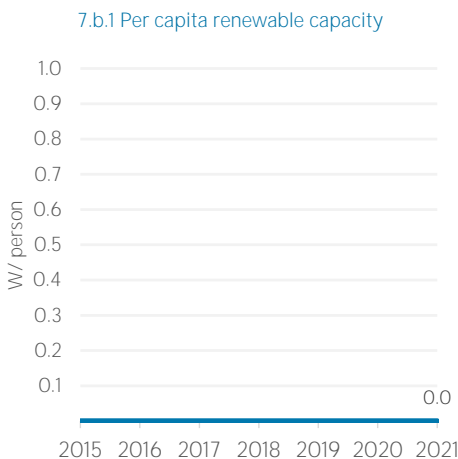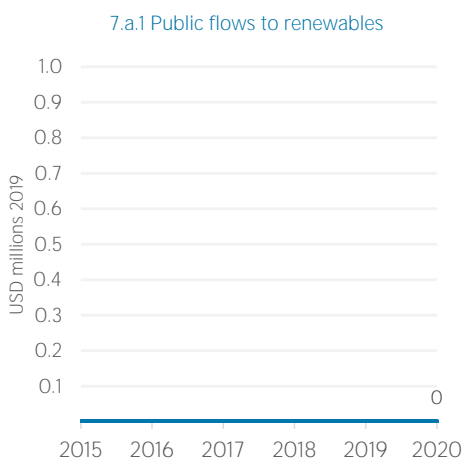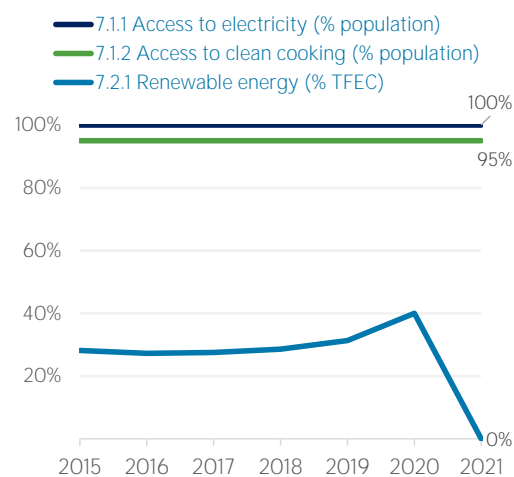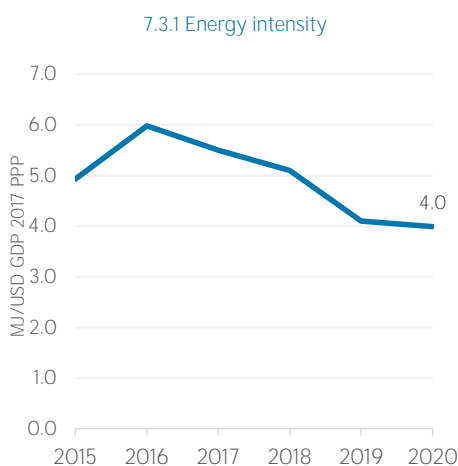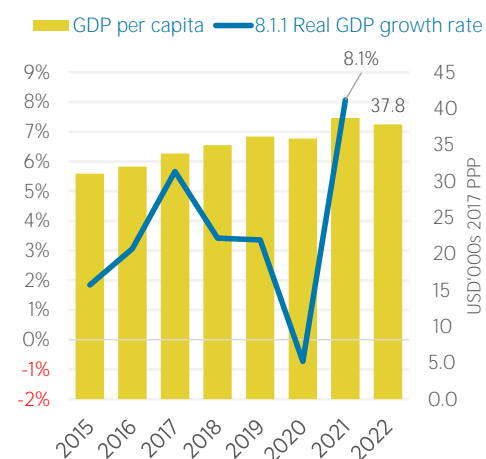
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	191 009	126 791
Renewable (TJ)	38 483	61 556
Total (TJ)	229 492	188 347
Renewable share (%)	17	33

Growth in TES	2015-20	2019-20
Non-renewable (%)	-33.6	-24.8
Renewable (%)	+60.0	+16.8
Total (%)	-17.9	-14.9

Primary energy trade	2015	2020
Imports (TJ)	109 483	139 581
Exports (TJ)	84 154	117 234
Net trade (TJ)	- 25 329	- 22 347
Imports (% of supply)	48	74
Exports (% of production)	36	64
Energy self-sufficiency (%)	102	98

Total energy supply in 2020

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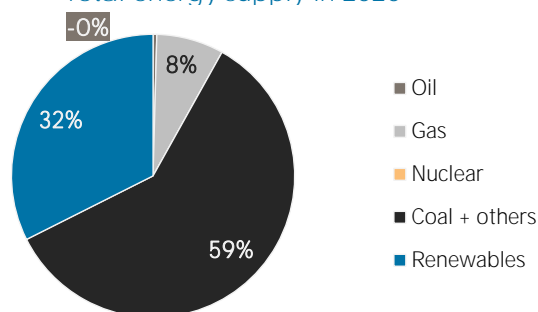
Renewable energy supply in 2020

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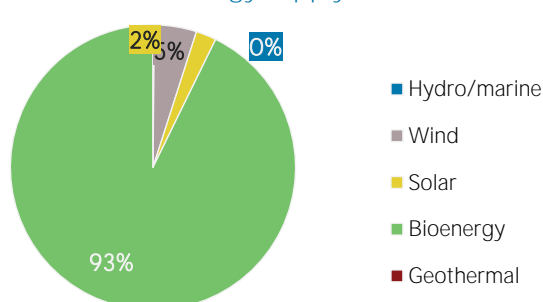
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend

Legend: ■ Electricity ■ Commercial heat ■ Bioenergy ■ Geothermal ■ Solar direct

Petajoules (PJ): values shown 53, 60, 63, 67, 71, 79 for years 2015–2020
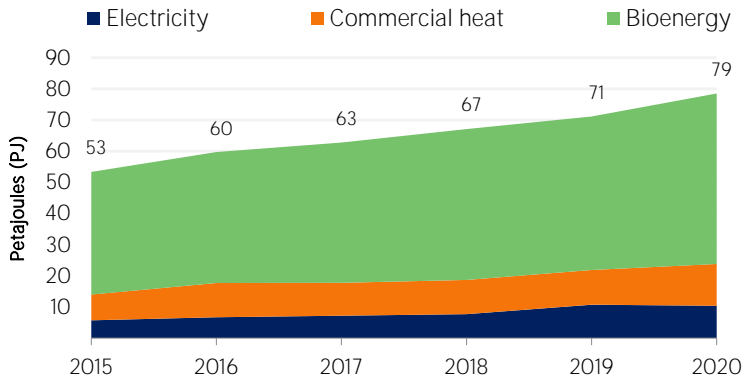
Consumption by sector	2015	2020
Industry (TJ)	7 024	5 666
Transport (TJ)	293	1 960
Households (TJ)	22 002	28 599
Other (TJ)	24 009	42 312

Renewable energy consumption in 2020

Top pie: 13%, 17%, 70%

Bottom pie: Industry 7%, Transport 2%, Households 36%, Other 54%

n.a.
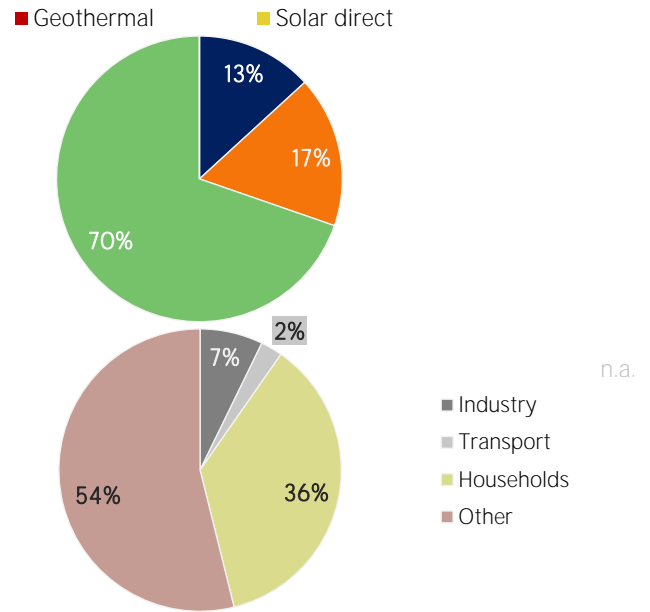
ELECTRICITY CAPACITY

Installed capacity trend

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

Gigawatts (GW): 2.9, 2.6, 2.5, 2.8, 2.7, 2.7, 2.4, 2.6 for years 2015–2022; Renewable share 45%
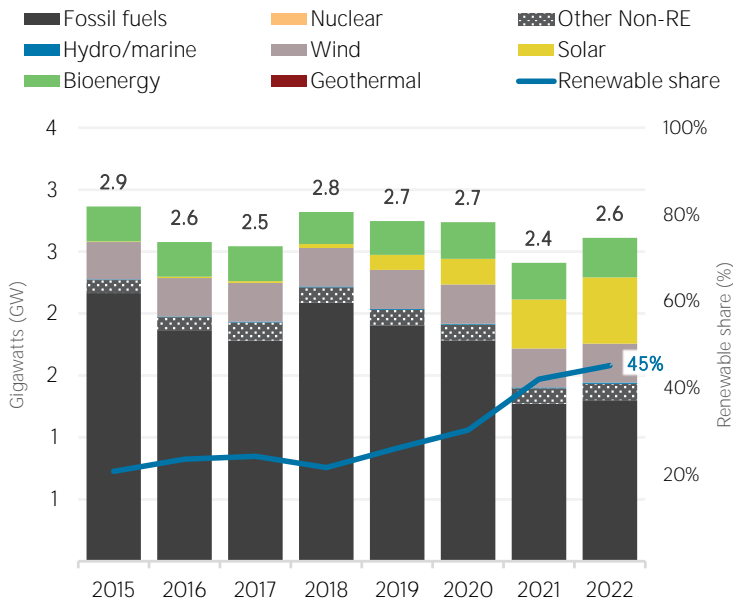
Renewable capacity in 2022

Pie: Hydro/marine 1%, Solar 45%, Wind 27%, Bioenergy 27%, Geothermal
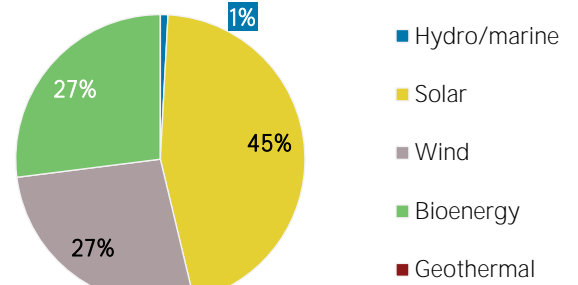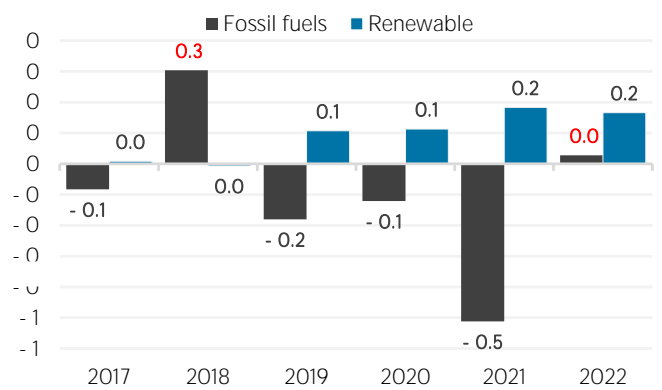
Net capacity change in 2022 (MW)

Non-renewable	+ 35
Hydro and marine	+ 4
Solar	+ 140
Wind	0
Bioenergy	+ 22
Geothermal	0

Net capacity change (GW)

Legend: ■ Fossil fuels ■ Renewable

2017: - 0.1, 0.0; 2018: 0.3, 0.0; 2019: - 0.2, 0.1; 2020: - 0.1, 0.1; 2021: - 0.5, 0.2; 2022: 0.0, 0.2
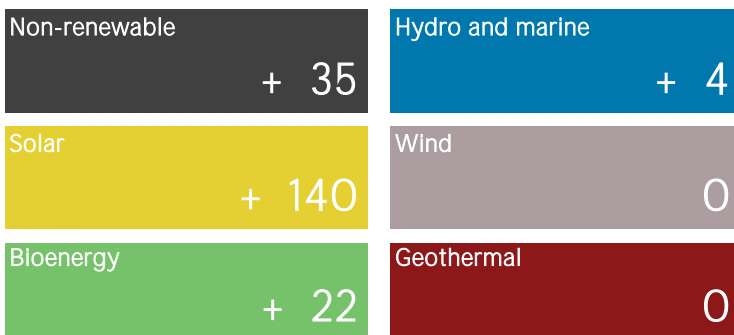
Capacity utilisation in 2021 (%)

Fossil fuels	32%
Nuclear	
Hydro/Marine	38%
Solar	13%
Wind	26%
Bioenergy	68%
Geothermal	
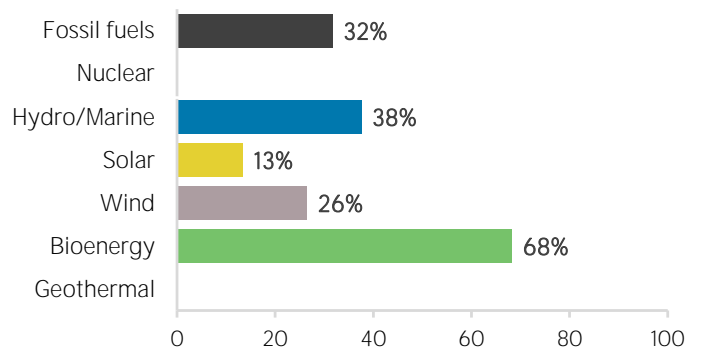
ELECTRICITY GENERATION

Generation in 2021	GWh	%
Non-renewable	4 326	60
Renewable	2 879	40
Hydro and marine	23	0
Solar	354	5
Wind	733	10
Bioenergy	1 769	25
Geothermal	0	0
Total	7 204	100

Electricity generation trend

Per capita electricity generation (kWh)
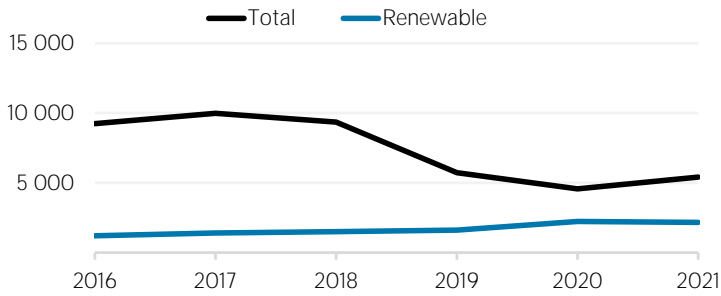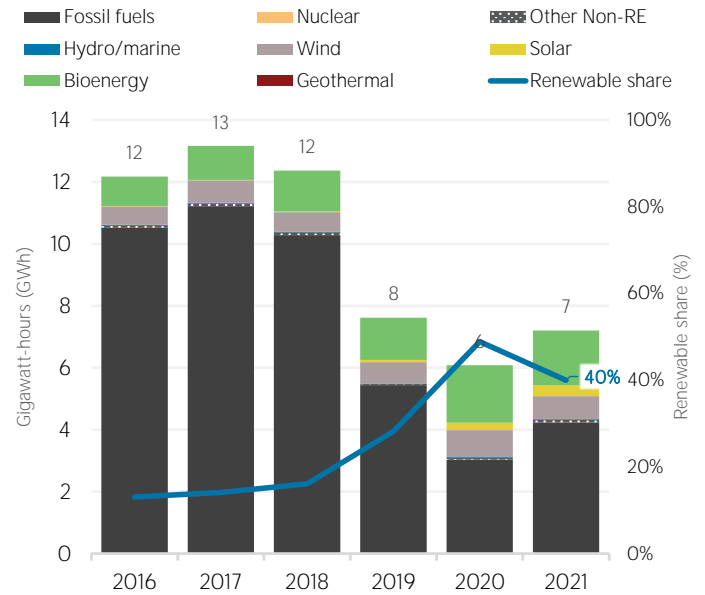

LATEST POLICIES, PROGRAMMES AND LEGISLATION

1 650 GWh renewable energy auction with strike price guarantee — 2023

2 EUR 8.5 million for purchase of zero emissions vehicles and e-bikes — 2023

3 EUR 80 million for apartment buildings retrofits — 2023

4 Support for green hydrogen in transport and chemical industry — 2023

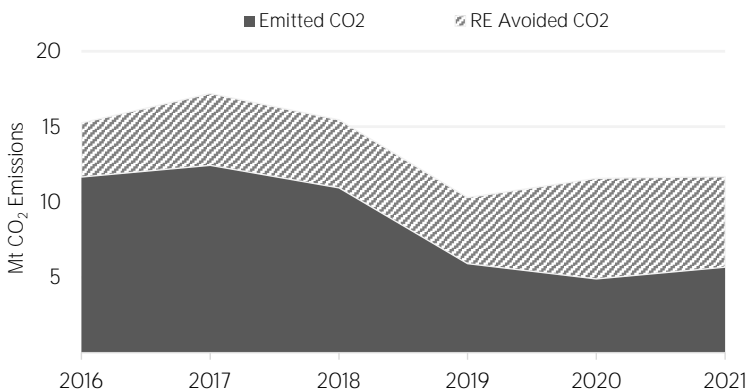5 Energy price compensation for households — 2022

ENERGY AND EMISSIONS

Energy-related CO_2 emissions by sector
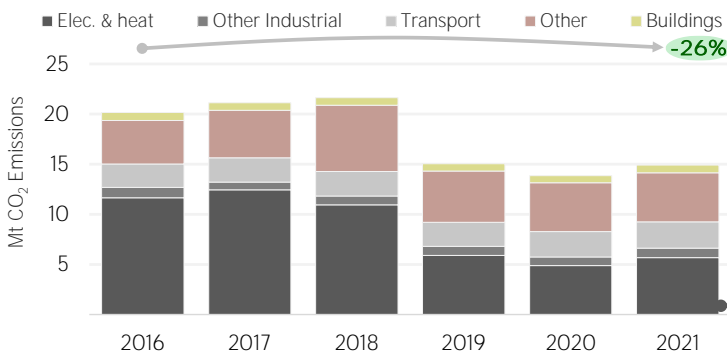
Elec. & heat generation CO_2 emissions in

6 Mt CO_2

- Coal + others
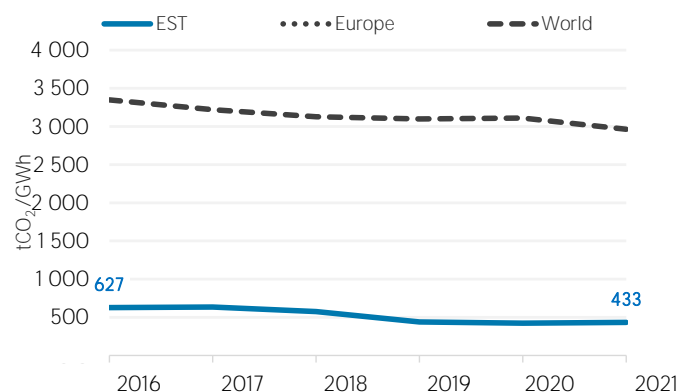- Gas
- Oil

5% 1%
95%
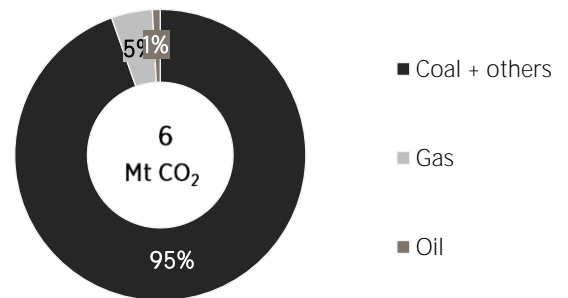
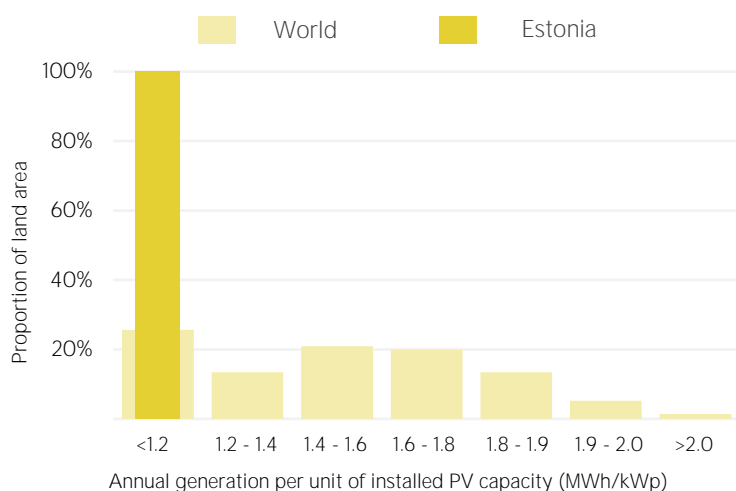### Avoided emissions from renewable elec. & heat

Avoided emissions based on fossil fuel mix used for power

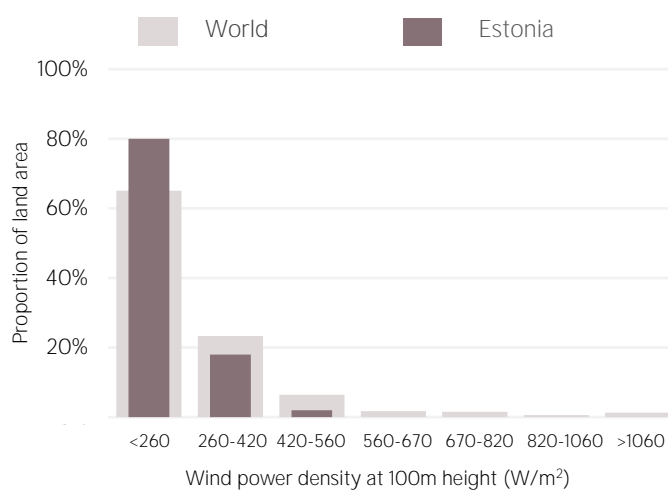### CO_2 emission factor for elec. & heat generation

627 ... 433
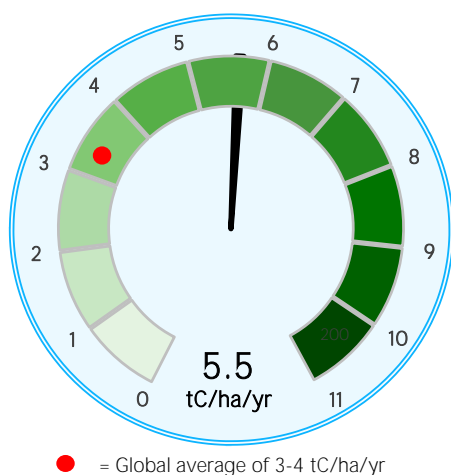
Calculated by dividing power sector emissions by elec. + heat gen.

Distribution of solar potential

World   Estonia

Proportion of land area

100%
80%
60%
40%
20%

<1.2   1.2 - 1.4   1.4 - 1.6   1.6 - 1.8   1.8 - 1.9   1.9 - 2.0   >2.0

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

Distribution of wind potential

World   Estonia

Proportion of land area

100%
80%
60%
40%
20%

<260   260-420   420-560   560-670   670-820   820-1060   >1060

Wind power density at 100m height (W/m^2)

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/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