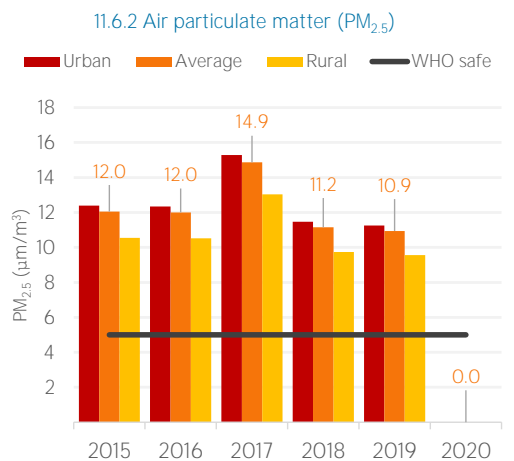
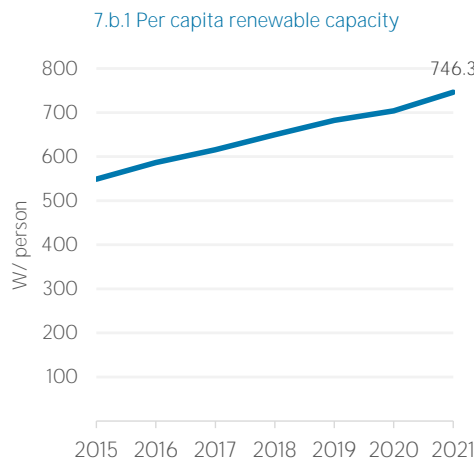
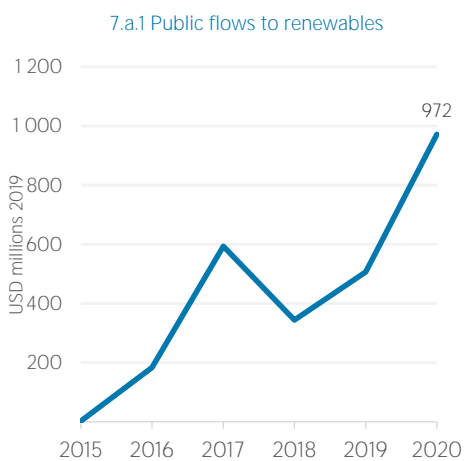
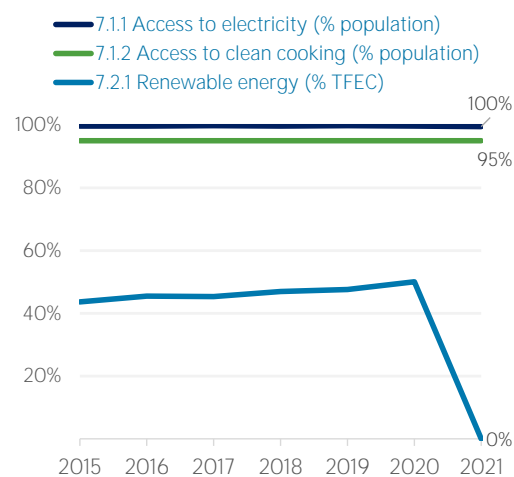
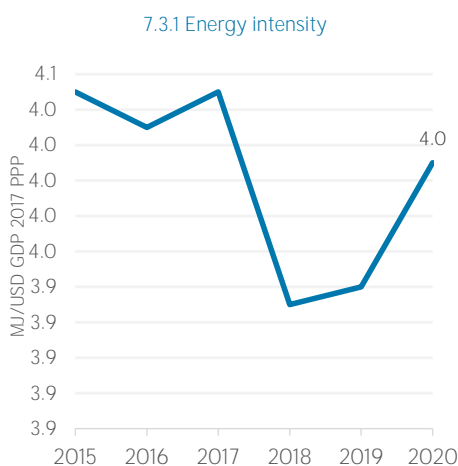
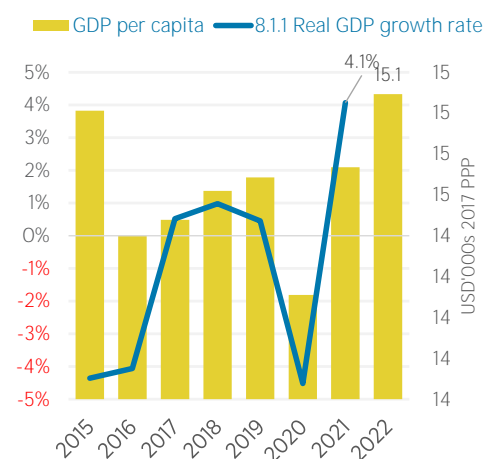


COUNTRY INDICATORS AND SDGS



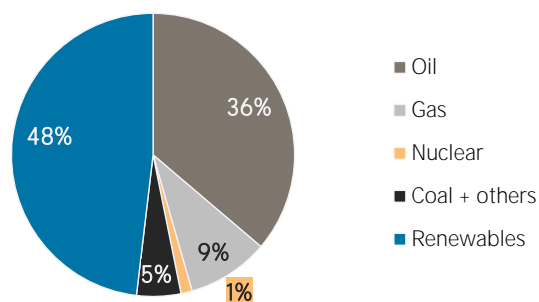
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2015	2020
Non-renewable (TJ)	7 243 382	6 164 546
Renewable (TJ)	5 268 851	5 718 583
Total (TJ)	12 512 233	11 883 129
Renewable share (%)	42	48

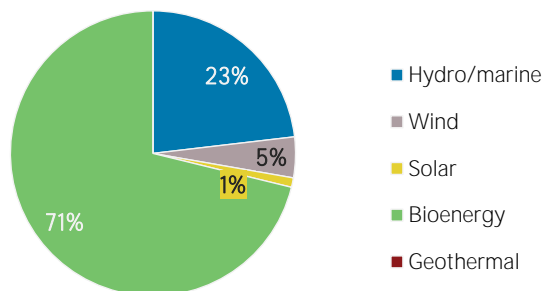
Growth in TES	2015-20	2019-20
Non-renewable (%)	-14.9	-6.1
Renewable (%)	+8.5	+1.5
Total (%)	-5.0	-2.6

Primary energy trade	2015	2020
Imports (TJ)	2 964 445	2 272 799
Exports (TJ)	1 880 495	3 573 814
Net trade (TJ)	-1 083 950	1 301 015
Imports (% of supply)	24	19
Exports (% of production)	16	27
Energy self-sufficiency (%)	93	112

Total energy supply in 2020

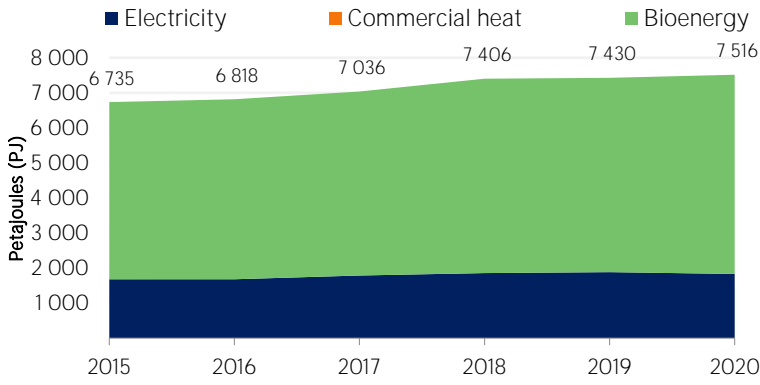


Renewable energy supply in 2020



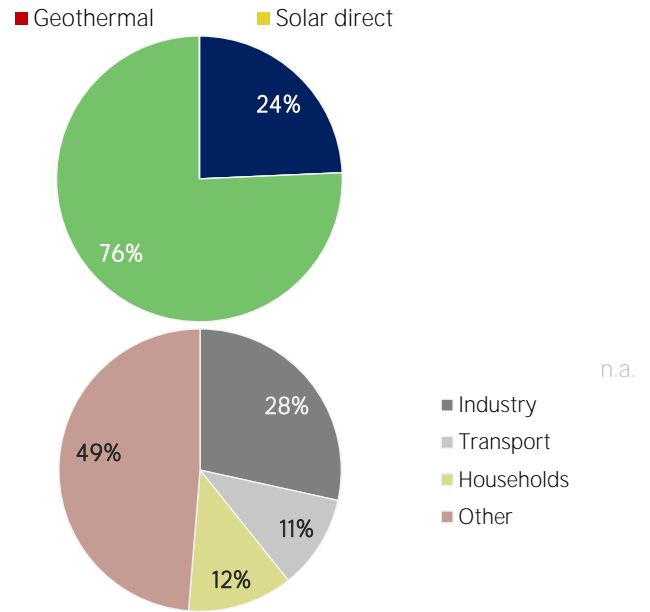
# RENEWABLE ENERGY CONSUMPTION (TFEC)

### Renewable TFEC trend



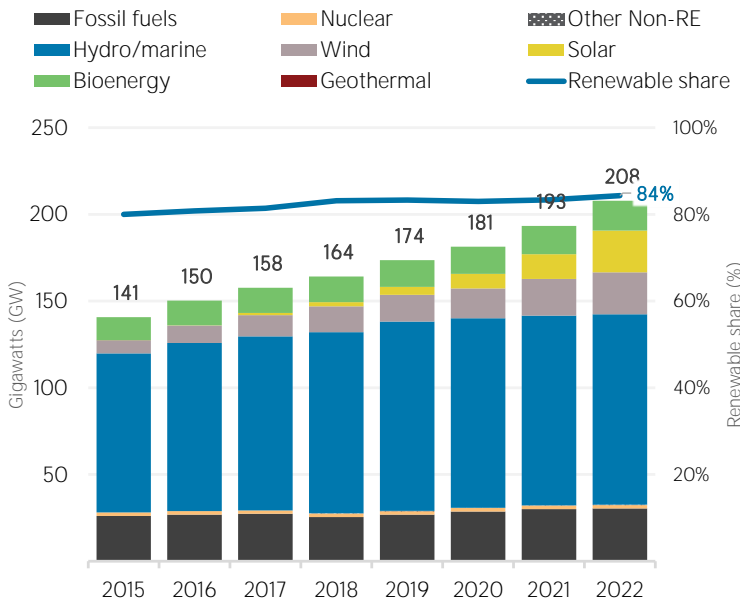
Consumption by sector	2015	2020
Industry (TJ)	1 960 490	2 138 437
Transport (TJ)	750 559	812 954
Households (TJ)	776 821	905 319
Other (TJ)	3 247 002	3 659 611

### Renewable energy consumption in 2020

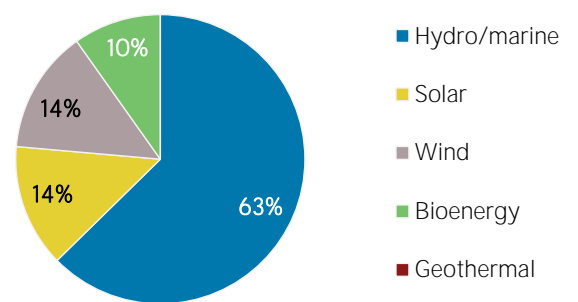


# ELECTRICITY CAPACITY

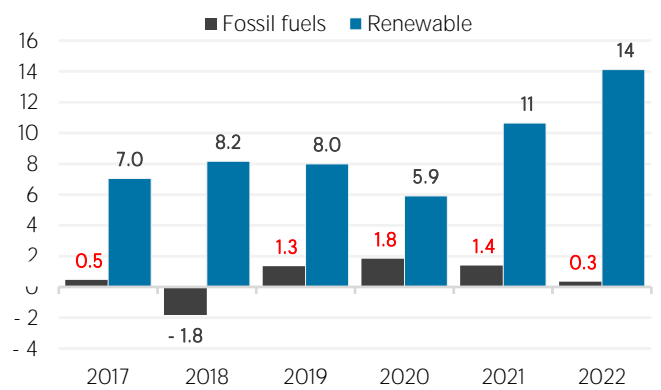
### Installed capacity trend



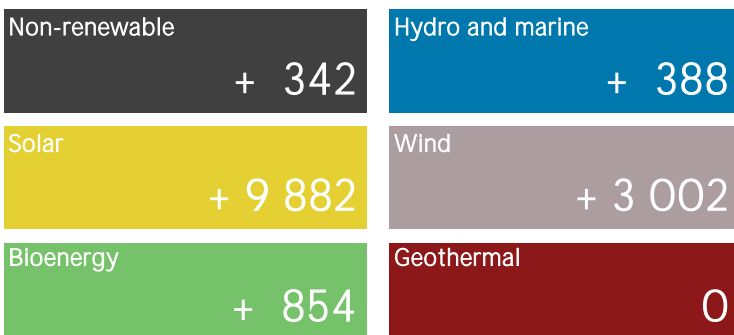
### Renewable capacity in 2022



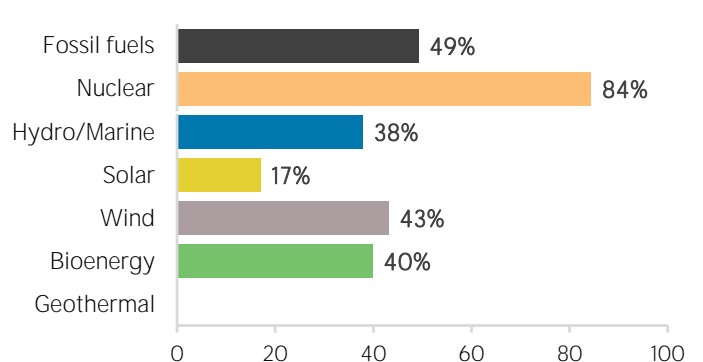
### Net capacity change (GW)



### Net capacity change in 2022 (MW)



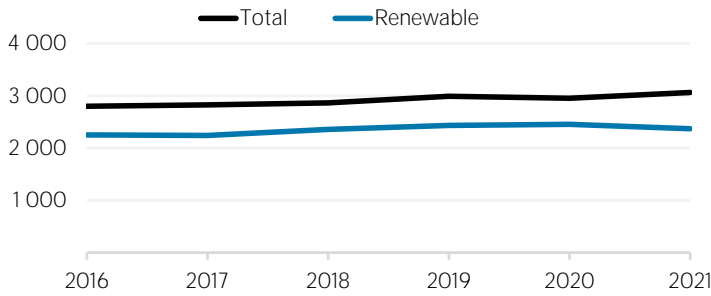
### Capacity utilisation in 2021 (%)



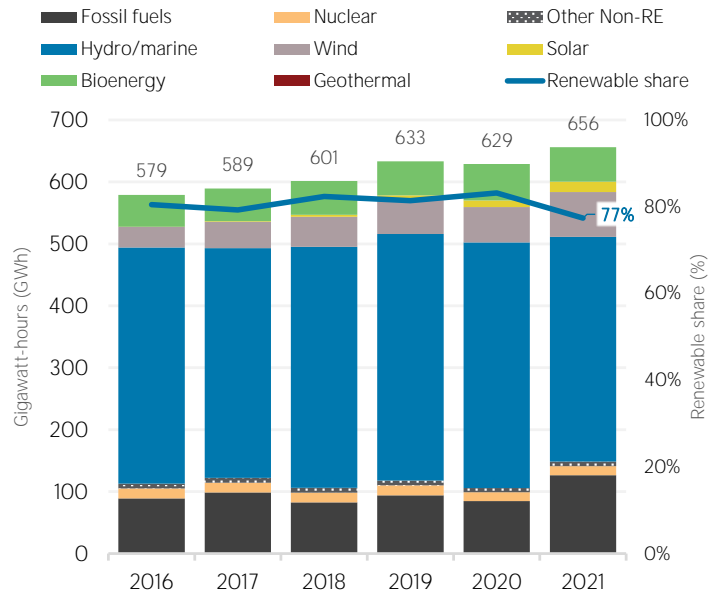
## ELECTRICITY GENERATION

Generation in 2021	GWh	%
<b>Non-renewable</b>	<b>148 529</b>	<b>23</b>
<b>Renewable</b>	<b>507 667</b>	<b>77</b>
Hydro and marine	362 818	55
Solar	16 761	3
Wind	72 286	11
Bioenergy	55 801	9
Geothermal	0	0
<b>Total</b>	<b>656 196</b>	<b>100</b>

Per capita electricity generation (kWh)



Electricity generation trend

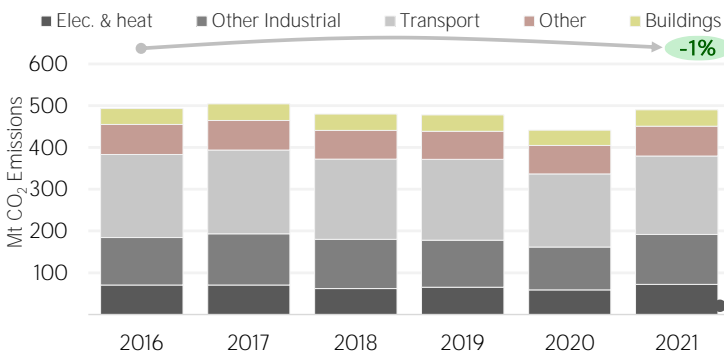


## LATEST POLICIES, PROGRAMMES AND LEGISLATION

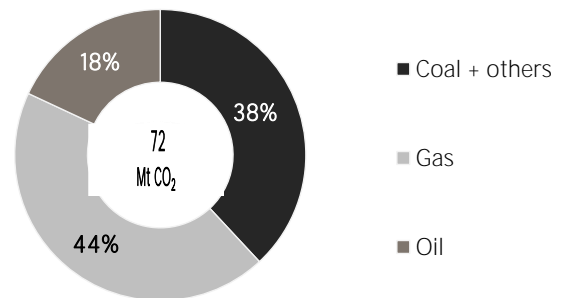
- 1 BNDES financing to new wind farms 2023 2023
- 2 National Bank for Economic and Social Development (BNDES) 2023 solar support 2023
- 3 National Bank for Economic and Social Development (BNDES) wind and solar projects support 2023
- 4 Support for biogas production in Goiás 2023
- 5 Decree No. 11.108. Establishes the Brazilian Mineral Policy and the Mineral Policy National Council 2022

## ENERGY AND EMISSIONS

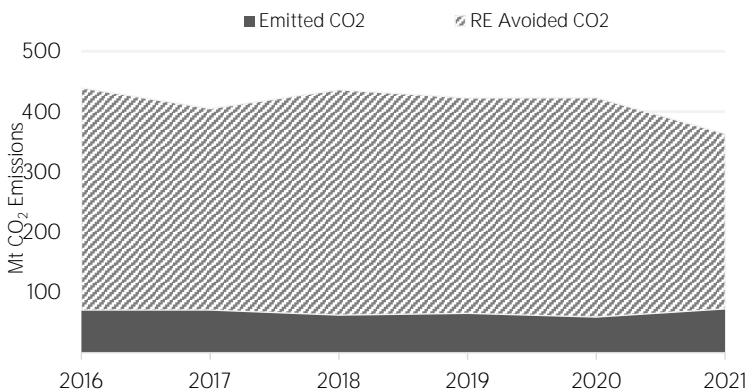
Energy-related CO<sub>2</sub> emissions by sector



Elec. & heat generation CO<sub>2</sub> emissions in

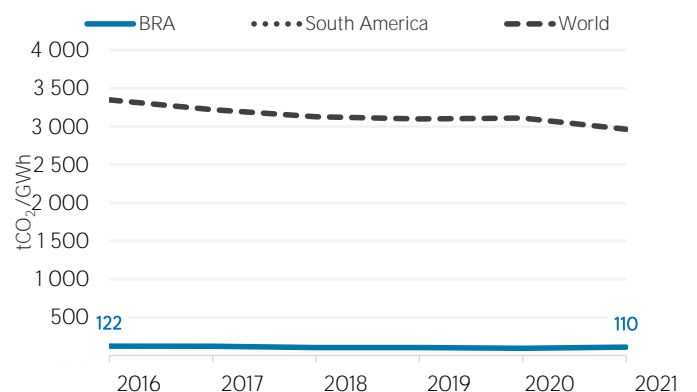


Avoided emissions from renewable elec. & heat



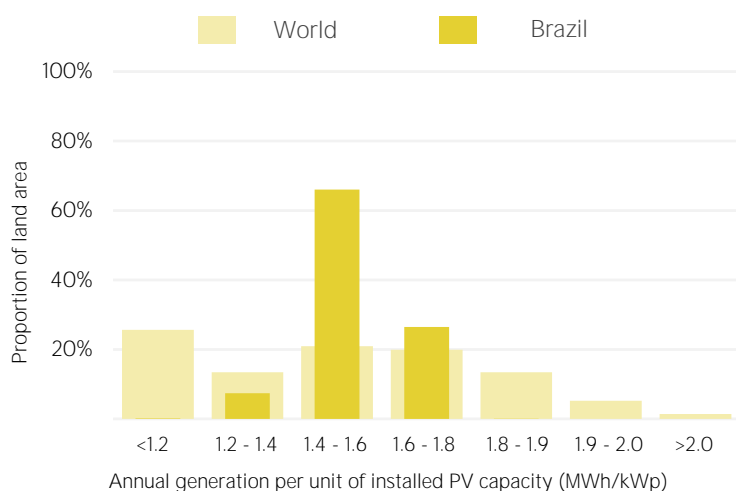
Avoided emissions based on fossil fuel mix used for power

CO<sub>2</sub> emission factor for elec. & heat generation

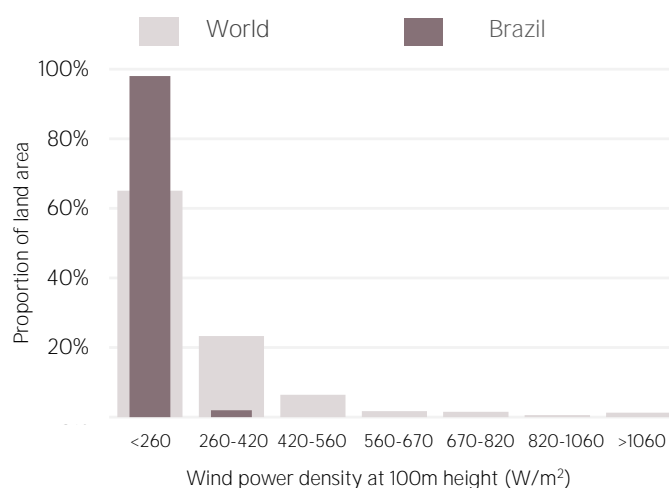


Calculated by dividing power sector emissions by elec. + heat gen.

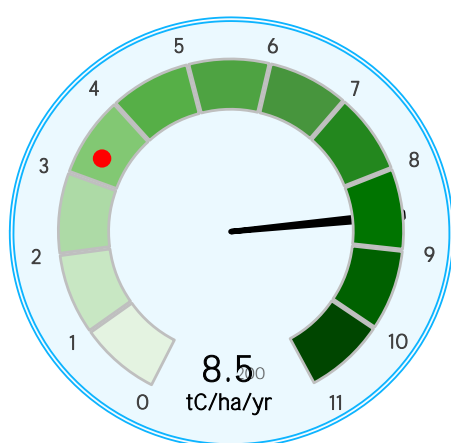
Distribution of solar potential



Distribution of wind potential



Biomass potential: net primary production



● = 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

**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](mailto:statistics@irena.org).

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