Namibia

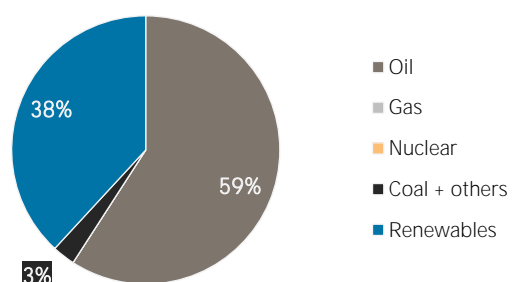**International Renewable Energy Agency** — IRENA

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)	2016	2021
Non-renewable (TJ)	55 634	49 241
Renewable (TJ)	27 179	30 354
Total (TJ)	82 813	79 594
Renewable share (%)	33	38

Growth in TES	2016-21	2020-21
Non-renewable (%)	-11.5	+5.3
Renewable (%)	+11.7	+7.7
Total (%)	-3.9	+6.2

Primary energy trade	2016	2021
Imports (TJ)	67 491	60 064
Exports (TJ)	3 408	7 711
Net trade (TJ)	- 64 083	- 52 353
Imports (% of supply)	81	75
Exports (% of production)	17	27
Energy self-sufficiency (%)	25	36

Total energy supply in 2021

Oil 59% · Renewables 38% · Coal + others 3% · Gas · Nuclear

Renewable energy supply in 2021

Bioenergy 75% · Hydro/marine 17% · Solar 8% · Wind 0% · Geothermal
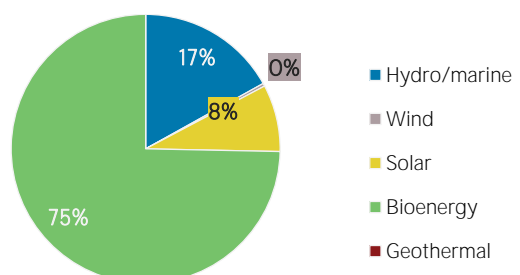
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend

Legend: Electricity, Commercial heat, Bioenergy
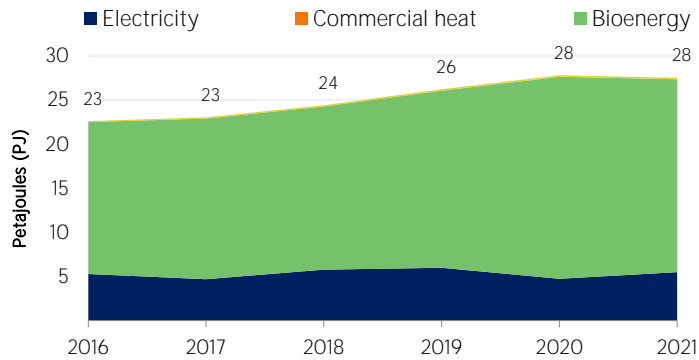
Consumption by sector	2016	2021
Industry (TJ)	2 083	1 426
Transport (TJ)	0	0
Households (TJ)	5 904	8 620
Other (TJ)	14 628	17 470

Renewable energy consumption in 2021

Legend: Geothermal, Solar direct

- 20%
- 79%
- 1%

Legend: Industry, Transport, Households, Other

- 5%
- 31%
- 63%
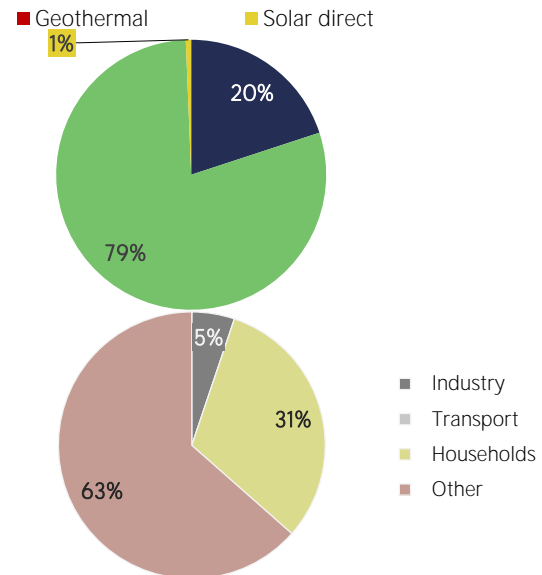
ELECTRICITY CAPACITY

Installed capacity trend

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

0.6 0.6 0.6 0.7 0.7 0.7 0.7 0.7
74%
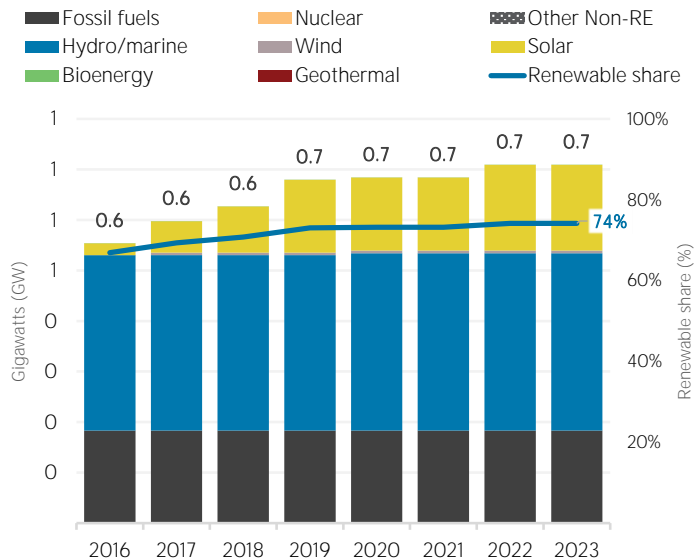
Net capacity change in 2023 (MW)

Non-renewable	0	Hydro and marine	0
Solar	0	Wind	0
Bioenergy	0	Geothermal	0
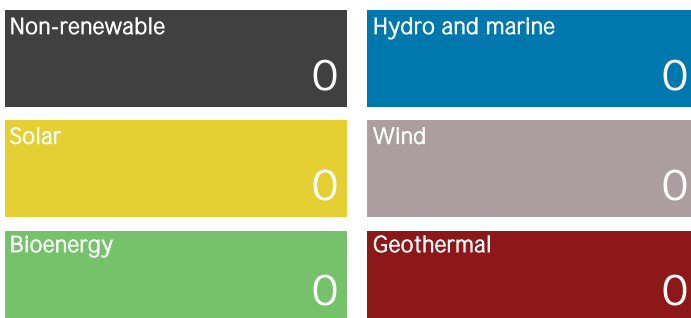
Renewable capacity in 2023

- 0% 1%
- 32%
- 67%

Legend: Hydro/marine, Solar, Wind, Bioenergy, Geothermal

Net capacity change (GW)

Legend: Fossil fuels, Renewable

2018: 0.0, 0.0
2019: 0.1, 0.0
2020: 0.0, 0.0
2021: 0.0, 0.0
2022: 0.0, 0.0
2023: 0.0, 0.0
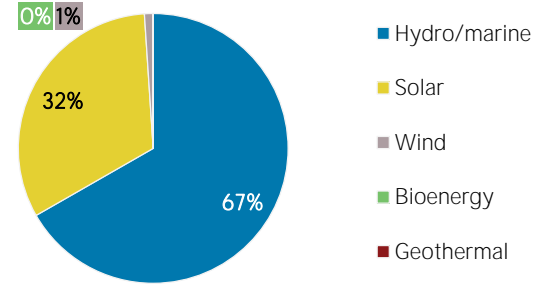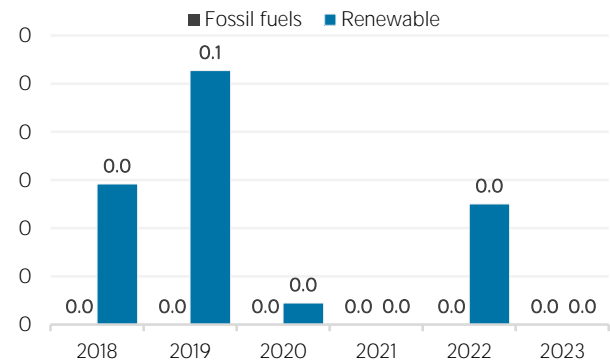
Capacity utilisation in 2022 (%)

Fossil fuels	8%
Nuclear	
Hydro/Marine	34%
Solar	33%
Wind	47%
Bioenergy	10%
Geothermal	
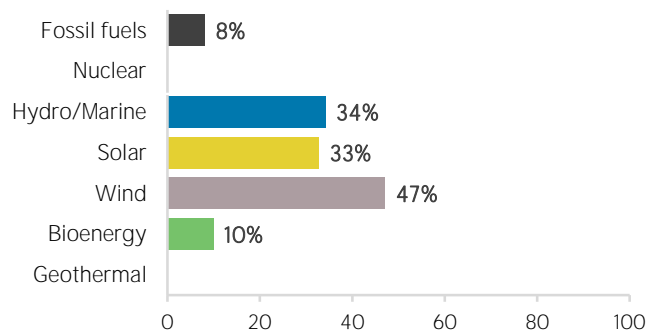
ELECTRICITY GENERATION

Generation in 2022	GWh	%
Non-renewable	131	8
Renewable	1 525	92
Hydro and marine	1 052	64
Solar	452	27
Wind	22	1
Bioenergy	0	0
Geothermal	0	0
Total	1 656	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
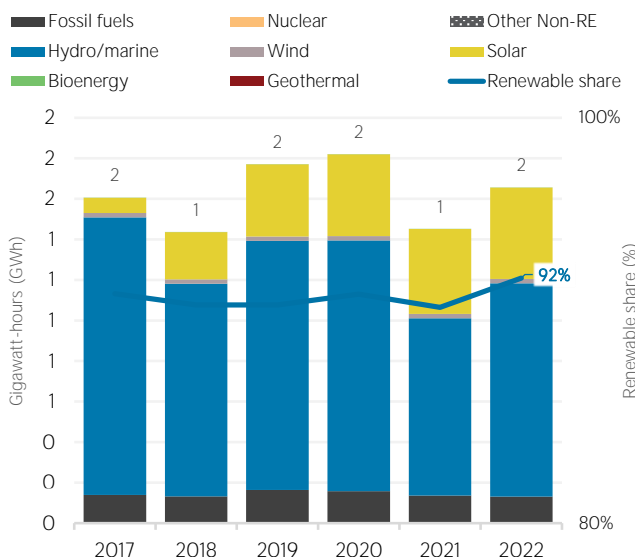
LATEST POLICIES, PROGRAMMES AND LEGISLATION

1 Namibia-EU Strategic Partnership on Raw Materials — **2022**

2 Belgium-Namibia MoU on green hydrogen — **2021**

3 Namibia Net-Metering Rules 2015 — **2017**

4 Namibia Feed-in Tariff — **2015**

5 Concentrated Solar Power Technology Transfer for Power Generation in Namibia — **2014**
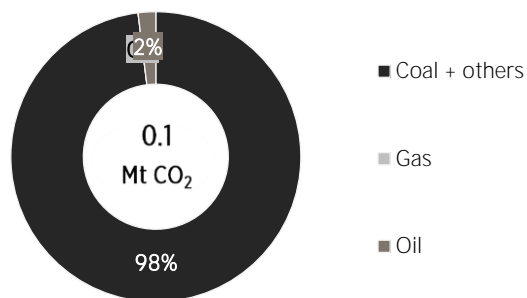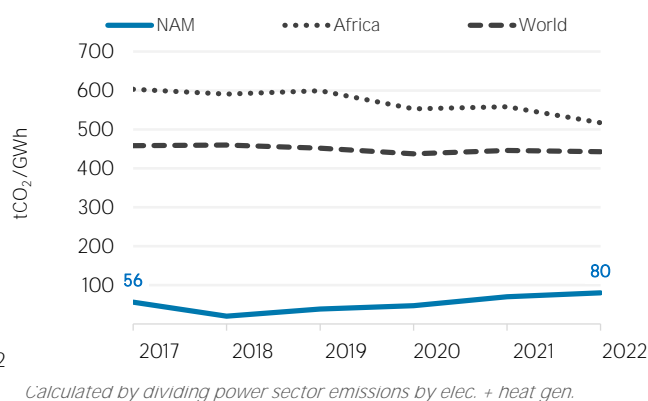
ENERGY AND EMISSIONS

CO_2 emissions by sector

Legend: Elec. & heat, Industrial Combustion, Transport, Processes, Buildings, Fuel Exploitation, Agriculture, Waste

+2%

Elec. & heat generation CO_2 emissions in

0.1 Mt CO_2

Coal + others — 98%
Gas — (2%)
Oil
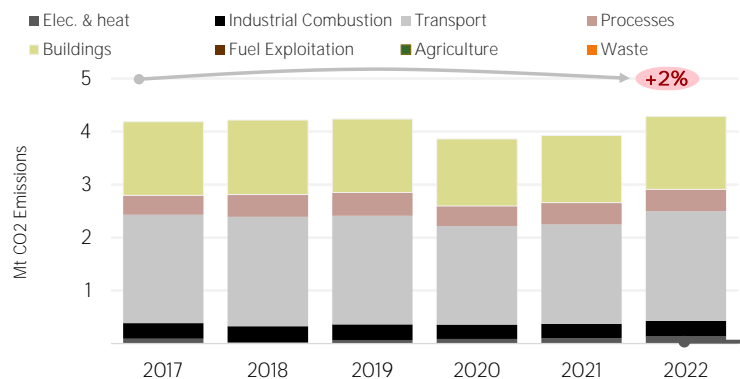
Avoided emissions from renewable elec. & heat

Emitted CO2 — RE Avoided CO2

Avoided emissions based on fossil fuel mix used for power

CO_2 emission factor for elec. & heat generation

NAM ···· Africa --- World

56 ... 80

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

Distribution of solar potential

World   Namibia

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)
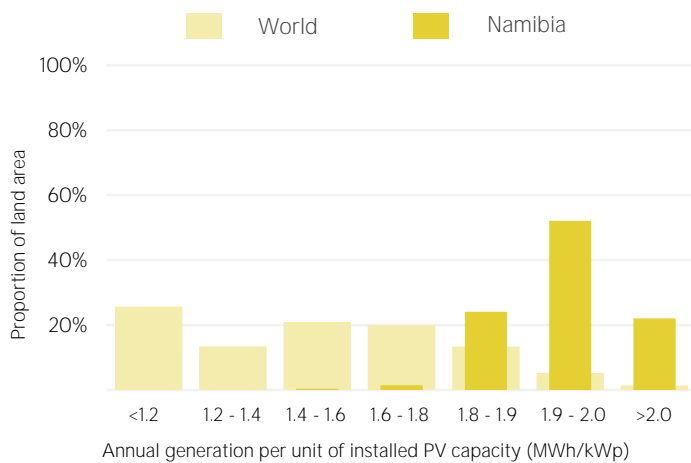
Distribution of wind potential

World   Namibia

Proportion of land area

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

(x-axis categories: <260, 260-420, 420-560, 560-670, 670-820, 820-1060, >1060)
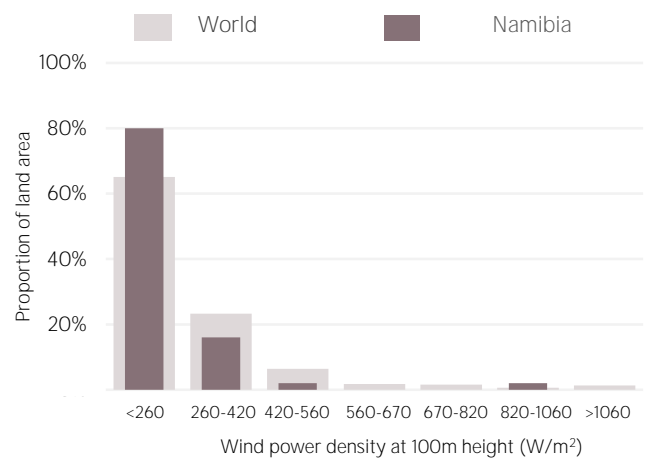
Biomass potential: net primary production

1.5
tC/ha/yr

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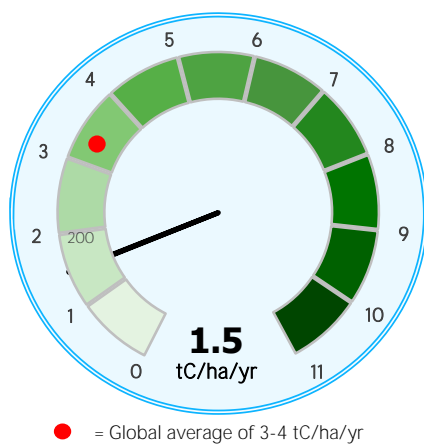
Indicators of renewable resource potential

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