Egypt

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$_{2.5}$)

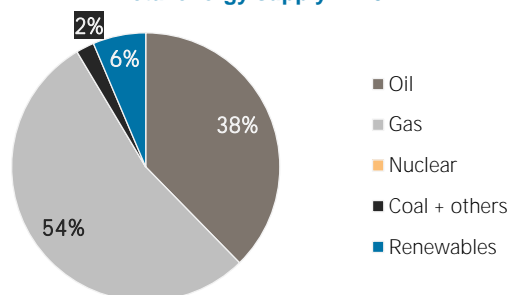Urban ⬛ Average ⬛ Rural ⬛ WHO safe ━
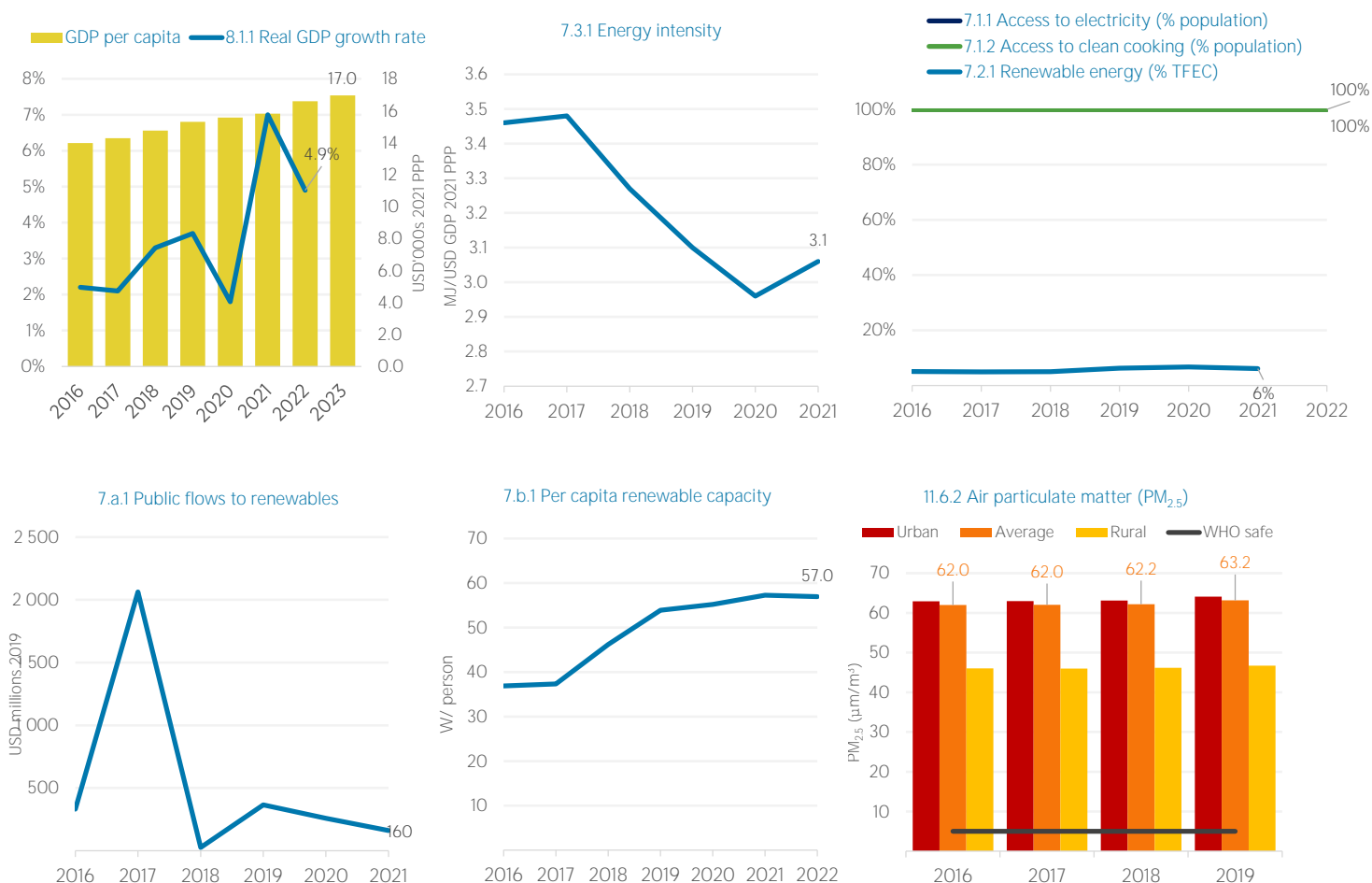
TOTAL ENERGY SUPPLY (TES)

Total Energy Supply (TES)	2016	2021
Non-renewable (TJ)	3 477 101	3 916 717
Renewable (TJ)	283 023	266 877
Total (TJ)	3 760 124	4 183 593
Renewable share (%)	8	6

Growth in TES	2016-21	2020-21
Non-renewable (%)	+12.6	+13.9
Renewable (%)	-5.7	-0.1
Total (%)	+11.3	+12.9

Primary energy trade	2016	2021
Imports (TJ)	1 273 504	1 066 747
Exports (TJ)	603 229	871 586
Net trade (TJ)	- 670 275	- 195 161
Imports (% of supply)	34	25
Exports (% of production)	19	22
Energy self-sufficiency (%)	83	96

Total energy supply in 2021

- Oil — 38%
- Gas — 54%
- Nuclear
- Coal + others — 2%
- Renewables — 6%

Renewable energy supply in 2021

- Hydro/marine — 21%
- Wind — 8%
- Solar — 8%
- Bioenergy — 64%
- Geothermal
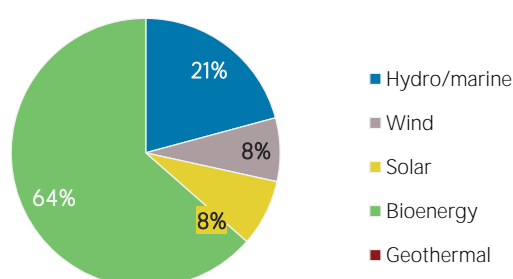
RENEWABLE ENERGY CONSUMPTION (TFEC)

Renewable TFEC trend

Legend: Electricity, Commercial heat, Bioenergy

Values: 337 (2016), 338 (2017), 348 (2018), 358 (2019), 354 (2020), 359 (2021)
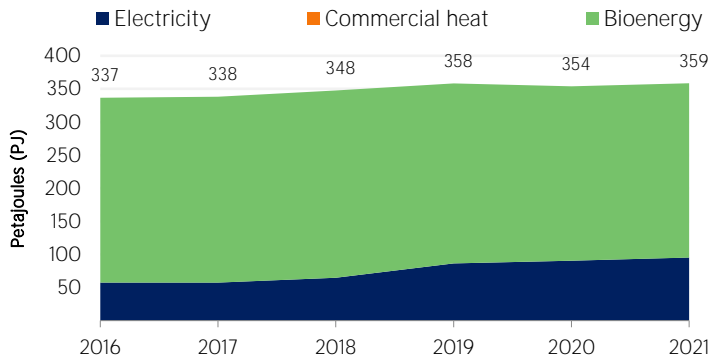
Consumption by sector	2016	2021
Industry (TJ)	71 128	47 106
Transport (TJ)	206	475
Households (TJ)	26 525	103 773
Other (TJ)	238 776	207 204

Renewable energy consumption in 2021

Legend: Geothermal, Solar direct

Top pie: 27%, 73%

Bottom pie: Industry 13%, Transport 0%, Households 29%, Other 58%
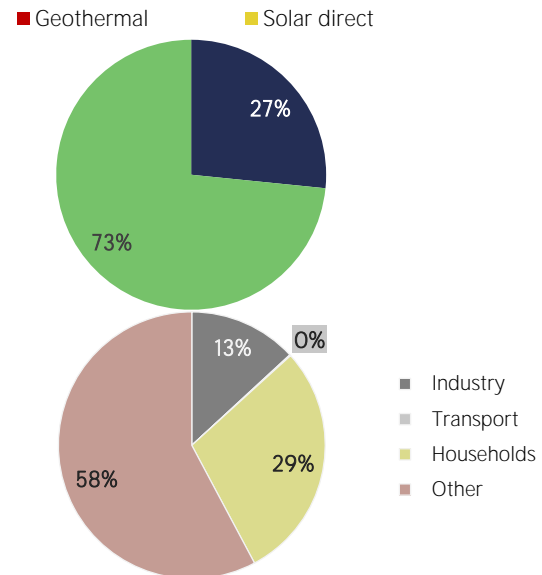
ELECTRICITY CAPACITY

Installed capacity trend

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

Values: 39 (2016), 45 (2017), 56 (2018), 58 (2019), 59 (2020), 60 (2021), 60 (2022), 60 (2023), 11%

Net capacity change in 2023 (MW)

Non-renewable: 0	Hydro and marine: 0
Solar: + 132	Wind: + 248
Bioenergy: + 8	Geothermal: 0
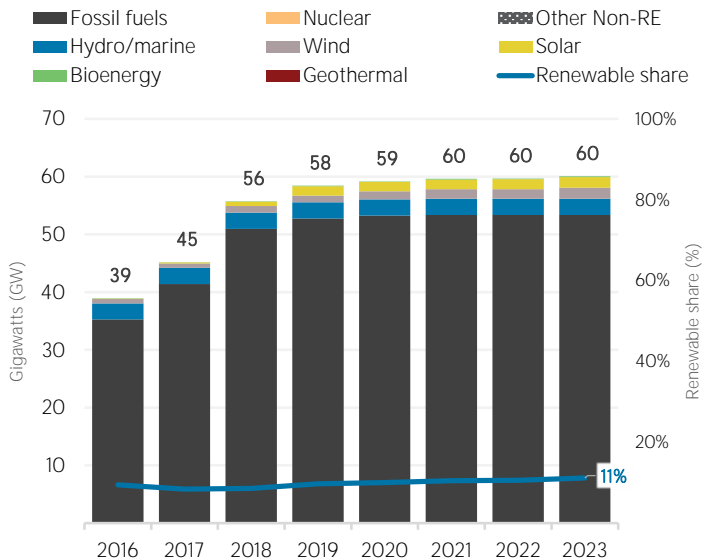
Renewable capacity in 2023

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

Values: Hydro/marine 42%, Solar 28%, Wind 28%, Bioenergy 2%

Net capacity change (GW)

Legend: Fossil fuels, Renewable

Year	Fossil fuels	Renewable
2018	9.5	1.0
2019	1.8	0.9
2020	0.5	0.2
2021	0.1	0.3
2022	0.0	0.1
2023	0.0	0.4
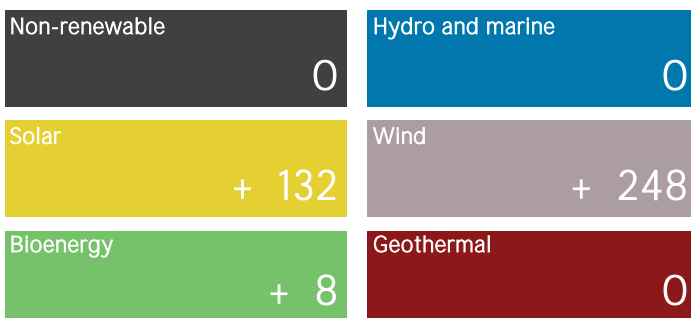
Capacity utilisation in 2022 (%)

Fossil fuels	41%
Nuclear	
Hydro/Marine	62%
Solar	34%
Wind	39%
Bioenergy	32%
Geothermal	
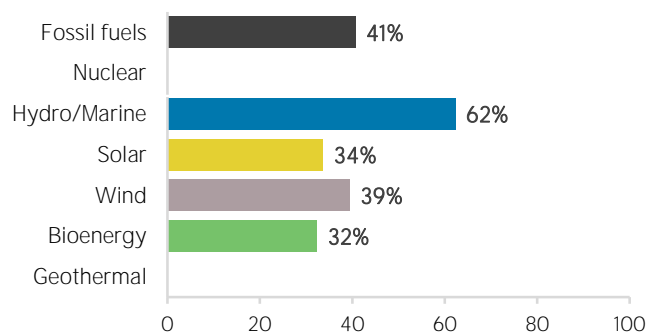
Generation in 2022	GWh	%
Non-renewable	190 115	88
Renewable	26 488	12
Hydro and marine	15 458	7
Solar	5 003	2
Wind	5 677	3
Bioenergy	350	0
Geothermal	0	0
Total	216 603	100

Electricity generation trend

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

Values: 2017: 190, 2018: 197, 2019: 200, 2020: 198, 2021: 205, 2022: 217. Renewable share 2022: 12%

Per capita electricity generation (kWh)

Legend: Total, Renewable
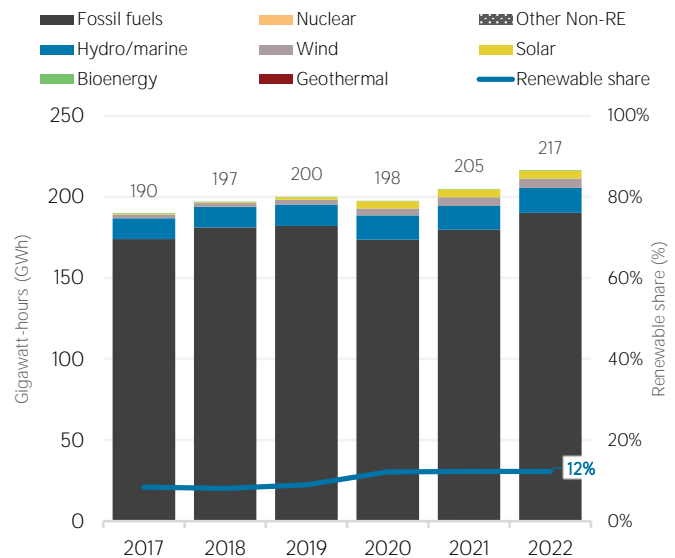
| #	Policy	Year
1	Red Sea Wind Energy - Green Egypt	2023
2	The Egyptian Natural Gaz Holding Company Sustainability Policy	2020
3	Non- ducted air conditioners and heat pumps- Testing and rating for performance (standard 4814 / 2018)	2019
4	Prime Minister Decree No. 1129 of 2019	2019
5	Decree No. 239 for the year 2018 issuing the executive regulations of the law for Gas Market activities regulation Act No. (196) of the year 2017	2018

CO_2 emissions by sector

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

-1%

Elec. & heat generation CO_2 emissions in

79 Mt CO_2

Coal + others: 0%
Gas: 81%
Oil: 19%
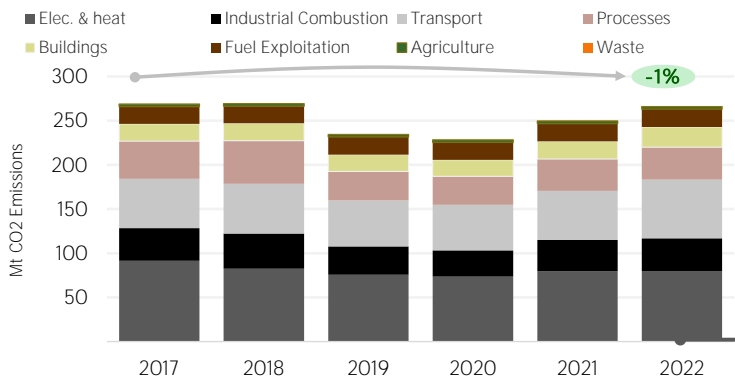
Avoided emissions from renewable elec. & heat

Legend: Emitted CO2, RE Avoided CO2
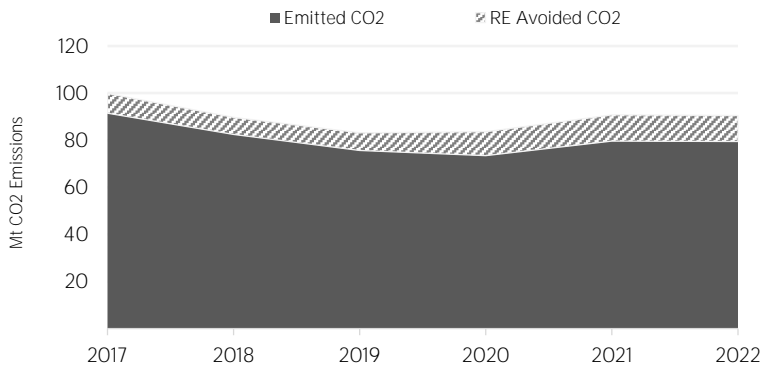
Avoided emissions based on fossil fuel mix used for power
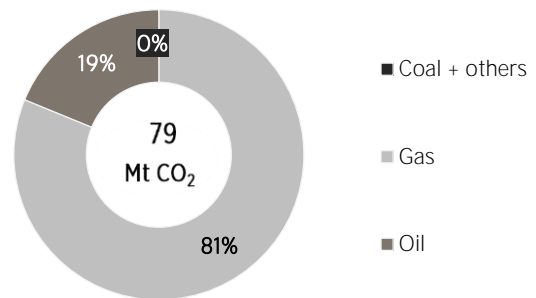
CO_2 emission factor for elec. & heat generation

Legend: EGY, Africa, World

EGY: 481 (2017), 367 (2022)
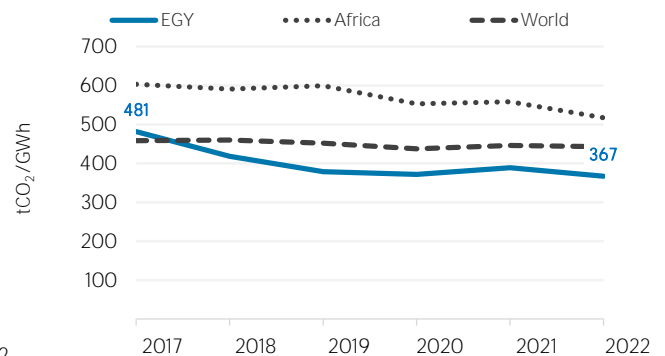
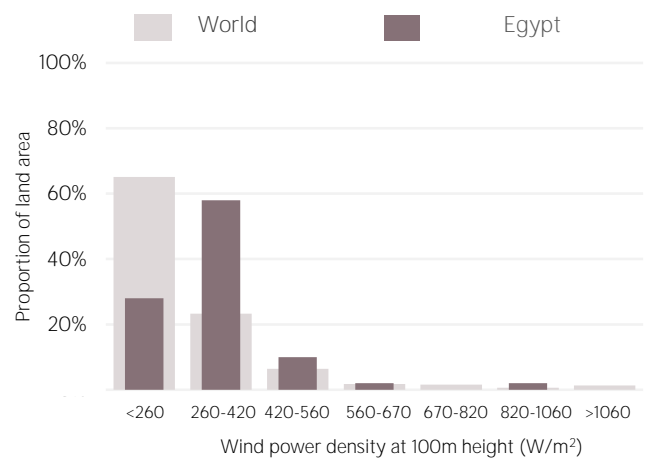*Calculated by dividing power sector emissions by elec. + heat gen.*

RENEWABLE RESOURCE POTENTIAL

Distribution of solar potential

Legend: World — Egypt

Proportion of land area (y-axis): 0% to 100%

Annual generation per unit of installed PV capacity (MWh/kWp) (x-axis): <1.2, 1.2 - 1.4, 1.4 - 1.6, 1.6 - 1.8, 1.8 - 1.9, 1.9 - 2.0, >2.0
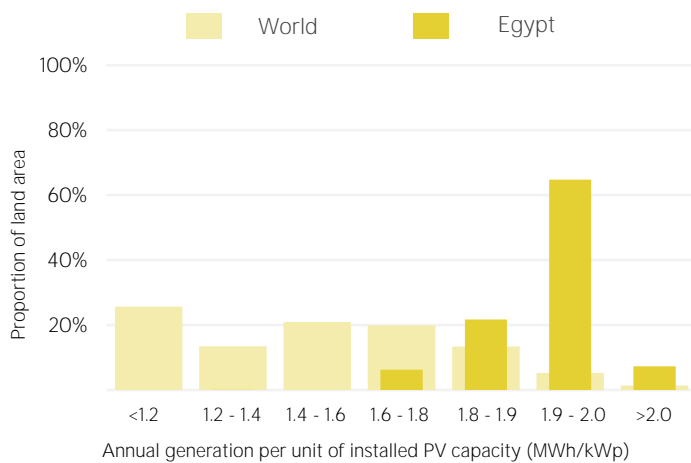
Distribution of wind potential

Legend: World — Egypt

Proportion of land area (y-axis): 0% to 100%

Wind power density at 100m height (W/m^2) (x-axis): <260, 260-420, 420-560, 560-670, 670-820, 820-1060, >1060

Biomass potential: net primary production

0.5 tC/ha/yr

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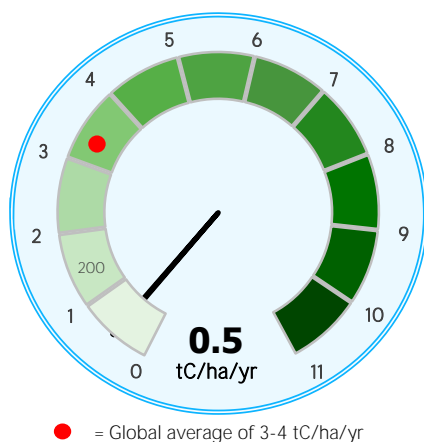
Indicators of renewable resource potential

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