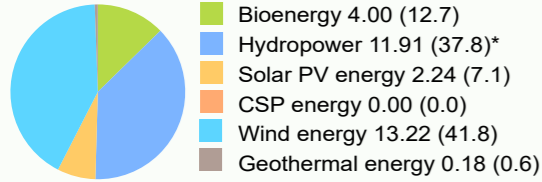


Portugal • Renewable energy

Gross electricity generation from renewable sources by 2021, TWh (%):



Total: 31.54 (100)

Source: Renewable Energy Statistics 2023 © IRENA
* excluding pumped storage

Key wind farms over 110 MW, MW:

- 1 Ventominho, 263.0
- 2 Alto Douro, 253.2
- 3 Alto Minho, 240.0
- 4 Âncora Wind Park, 171.6
- 5 Alto da Coutada, 165.6
- 6 Pinhal Interior, 144.0
- 7 Penamacor, 143.8
- 8 Arada-Montemuro, 133.0
- 9 Raia, 128.8
- 10 Candeeiros, 121.0
- 11 Gardunha, 114.0
- 12 Pampilhosa da Serra, 114.0

Key solar PV power plants over 10 MW, MW:

- 1 Amareleja (Moura), 45.8
- 2 Seixal 1/2/3, 18.0
- 3 Coruche 1A/1B/1C/2/3, 16.0
- 4 Avalades, 15.8
- 5 Cabrela, 13.2
- 6 Ferreira do Alentejo, Generg, 12.0
- 7 Hercules (Serpa), 11.0
- 8 Sol Cativante 5/7, 10.8
- 9 Ferreira do Alentejo, Ventos da Serra, 10.0
- 10 Malhada Velha, 10.0

Binary type geothermal power plants over 1 MWe, MWe:

- 1 Ribeira Grande, 15.8
- 2 Pico Vermelho, 13.0
- 3 Pico Alto (Terceira), 4.5

Key wood pellet plants over 50 000 t/y:

- 1 Pedrogão Grande, Enerpellets
- 2 Arganil, Pinewells (Visabeira)
- 3 Alcobaca, Enerpellets
- 4 Alcacer do Sal, Gesfinu
- 5 Mortagua, Gesfinu
- 6 Póvoa de Varzim, Tec Pellets
- 7 Lousada, Gesfinu
- 8 Pegões, Enermontijo (Enerpar)
- 9 Oleiros, Jose Alfonso & Filhos
- 10 Outeiro Seco (Chaves), Stellep

Waste-to-energy plants:

- 1 São João da Talha, Valorsul
- 2 Moreira (Maia), Lipor
- 3 Meia Serra (Madeira)
- 4 Ilha Terceira (Azores)

Compressed Hydrogen Plants:

- 1 Estarreja, Air Liquide

Key biomass power plants over 20.0 MW:

- 1 Viana do Castelo (Europa&C Energia Viana), 103.7
- 2 Figueira da Foz (Lavos), 95.0
- 3 Celbi 1-2, 62.4
- 4 Setubal, 53.9
- 5 Cacia (Aveiro), 35.1

Key landfill gas-to-energy plants over 2.5 MW:

- 1 Sermonde
- 2 Abrunheira (Ecoparque)
- 3 Aveiro (CITVRSU)
- 4 Coimbra (CITVRSU)
- 5 Planalto Beirão
- 6 Oeste (Lisboa)
- 7 Ermesinde
- 8 Leiria

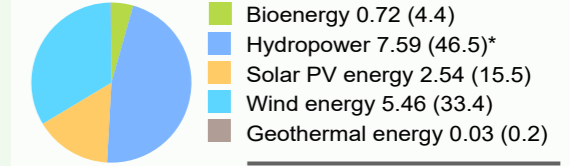
Key biodiesel plants:

- 1 Alhandra, Iberol
- 2 Porto, Biovegetal
- 3 Riachos, Torrejana
- 4 Aveiro, Prio
- 5 Palença do Baixo, Sovena
- 6 Torres Vedra, Valourodiesel
- 7 Baltar, Biopordiesel
- 8 Sines, Enerfuel-Galp

Solar CPV power plants over 1.0 MW, MW:

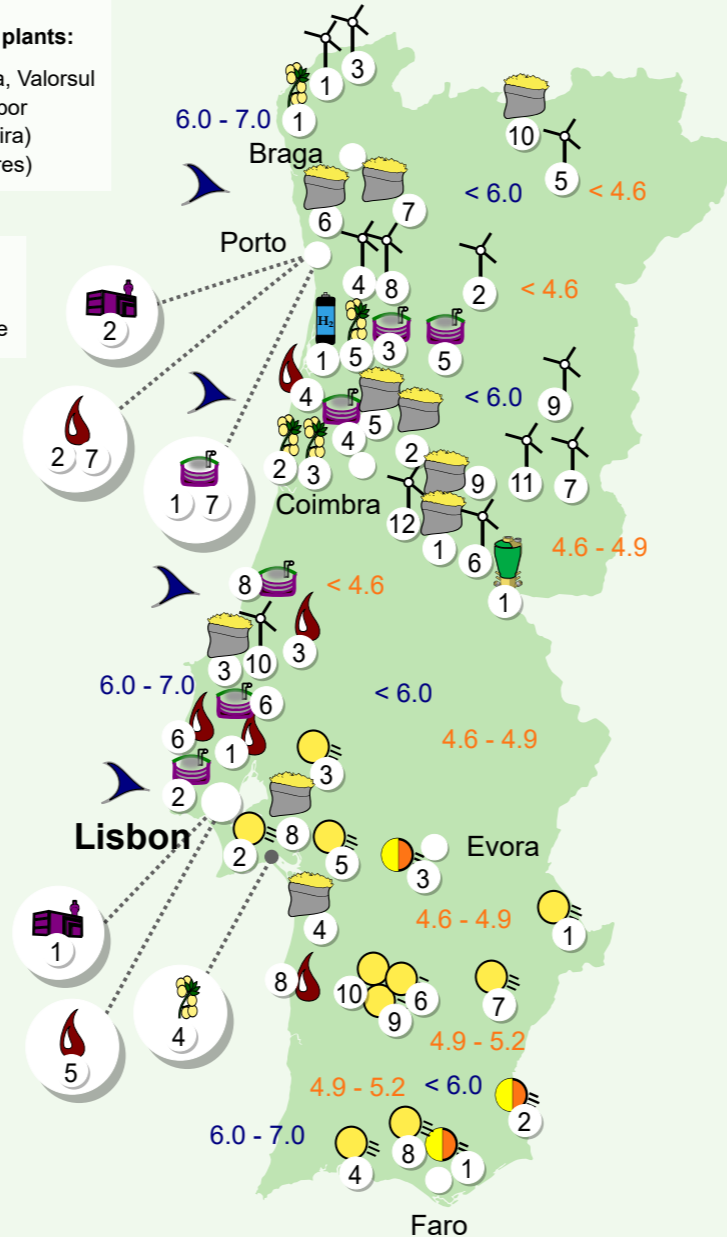
- 1 Estoi, 3.0
- 2 Alcoutim, 1.3
- 3 Evora Landfill Solar Project, 1.3

Total installed renewable energy power capacity by 2022, GW (%)



Total: 16.33 (100)

Source: Renewable Energy Statistics 2023 © IRENA
* excluding pumped storage



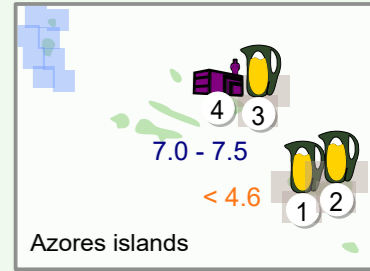
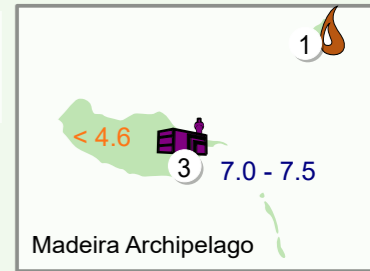
Major 2G biodiesel (algae) plants:

- 1 Porto Santo (Madeira)

Major biomass gasification plants from biowaste, MWth:

- 1 Rodao Mill, Portucel, 15.0

0.0 kWh/m²/d Global Horizontal Irradiation (GHI)
0.0 m/s Wind speed



High activity areas:

The most common solar GHI intensity is 4.9-5.2 kWh/m² per day, distributed in the south part of Portugal, districts of Faro and Beja.

The most common wind speed is over 7.5 m/s at 50 m are distributed in the Azores islands.

Avg wave power potential is 40-60 kW/m per year.

Sources: Energydata.info; Wikipedia.