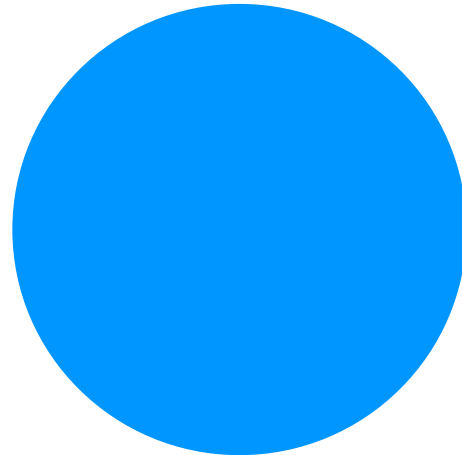


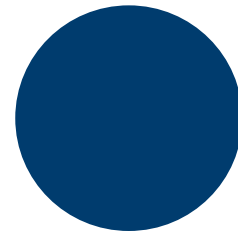


red eléctrica
A Redeia company



An internationally renowned TSO

We are the sole transmission system operator (TSO) for the Spanish electricity system. It is the backbone of energy transition and guarantees a secure, high-quality and increasingly renewable electricity supply.



Electricity
system
operation



Transmission
grid management

Integration of
renewable energy



redeia

Redeia is the global manager of essential infrastructures.

A driver of the energy transition and universal connectivity.

Operates the Spanish electricity system and manages electricity and telecommunications networks (fibre optics and satellites), with a focus on innovation and sustainability.



Redeia's international presence

- ✘ Apart from Spain, Peru, Chile, Brazil and Colombia, Redeia is present in: Mexico, Germany, Ecuador, Great Britain, Greece, Argentina, South Africa, Luxembourg, Senegal, Belgium and United States.
- Satellite coverage area.

red eléctrica

Backbone of the energy transition and guarantee of a secure, quality and increasingly renewable electricity supply.

reintel

Largest provider of dark fibre in Spain, essential for offering widespread connectivity.

hispasat

Leading player in the digital transformation and the reduction of the digital divide in Spain and Latin America.

redinter

Driving force behind the de-carbonisation of the energy model and sustainable development in Latin America.

elewit

Technology innovation platform fostering the energy transition and connectivity.

Red Eléctrica

TSO of international reference



Red Eléctrica

Transmission system operator (TSO) for the Spanish electricity system

Functions

- Real-time operation of the electricity system, ensuring continuity and guaranteed supply.
- Maximum secure integration of renewable energy in the electricity system.
- Design, construction and maintenance of the transmission grid for domestic electricity.



EU taxonomy

Red Eléctrica's activities are 100 % environmentally sustainable and form part of efforts to reduce and adapt to climate change.



Cecoe1

Electricity control centre that guarantees the correct operation of the Spanish electricity system, ensuring real-time balancing between electricity consumption and generation.



Cecre

A world-leading control centre for renewable energy that enables the largest possible amount of renewable energy to be safely integrated into the electricity system.



Red de transporte

System of lines and sub-stations that connects electricity generation to the distribution points for consumers, as well as linking the Spanish electricity system with those of neighbouring countries.

Red Eléctrica

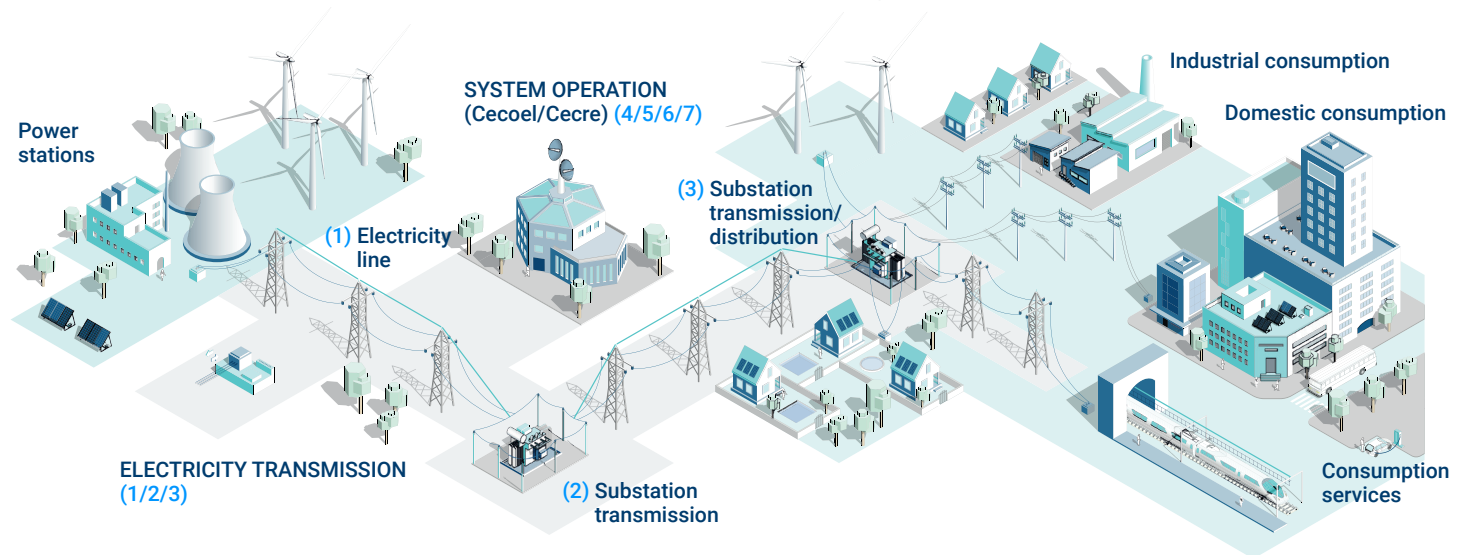
Guaranteed electricity supply

Electricity transmission grid

- (1) Red Eléctrica carries the electricity generated by production centres to distribution points and then to consumers.
- (2) Carries high-voltage electricity through its lines and sub-stations and performs their maintenance.
- (3) Carries energy to distribution networks transformed into low-voltage electricity until it reaches the consumers.

Electricity system operation

- (4) Red Eléctrica operates the system to maintain a constant balance between generation and consumption, because electricity cannot be stored in large quantities.
- (5) Forecast the demand for energy consumption throughout the day across the whole country. This forecast is the basis on which power stations plan their production.
- (6) The electricity control centre (CecoeI) is responsible for maintaining the real-time balance between energy generation and consumption demand in the country at all times.
- (7) Besides, the control centre for renewable energy (Cecre) helps to maximise the safe incorporation of this energy into the electricity system.



Red Eléctrica

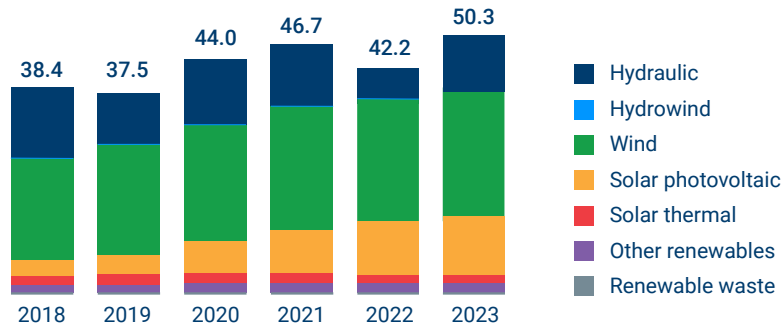
Backbone of energy transition









Cecre

Leading global control centre for the integration of renewable energy into the electricity system.

Domestic renewable energy generation
(% of total generation)



Electricity system data from 2023

-  Electricity demand in Spain
244.7 TWh
-  Maximum point of mainland demand
39,101 MW
-  Power capacity in Spain
125.6 GW
-  Renewable power capacity
61.3 %
-  Domestic renewable energy generation
50.3 %
-  Generation without CO₂ emissions
72.1 %

Red Eléctrica

Meshed, interconnected and sustainable electricity transmission grid

2023 figures

Lines

- 400 and 220 kV essentially.
- Interconnections between electrical systems.

Circuits: 45,141 km

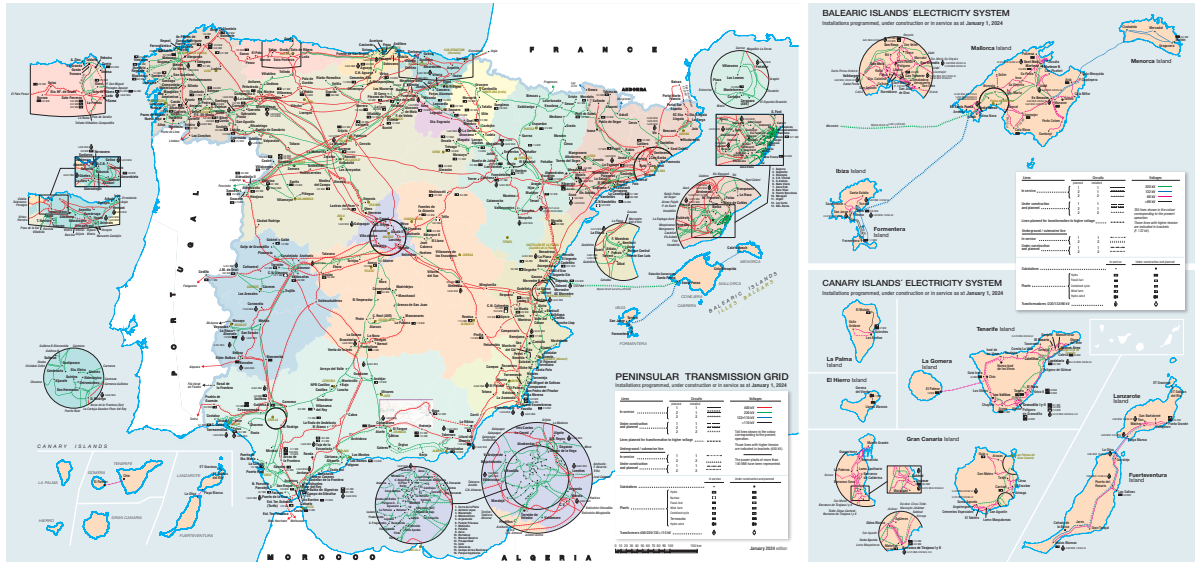
- 43,027 km aerial.
- 945 km underwater.
- 1,169 km underground.

Substations

- 6,357 bays.
- 94,981 MVA transformation capacity

Service Quality

- 97.63 % index of availability of the domestic grid.



Electricity transmission grid installations



Lines

The transmission grid lines create a meshed network that connects the power stations to sub-stations, consumption hubs (frontier with distribution companies) and high-voltage consumption. They may be aerial, underground or underwater.



Substations

The basic function of a sub-station is to connect various elements of the grid to enable the energy generated in power stations to reach the consumers.



Bays

The set of elements and equipment for controlling and connecting the sub-station busbars to each line into and out of the station, to the transformer or sub-station machinery.

Transformers

Electrical devices that uses electromagnetism to raise or lower the voltage in an alternating current electrical circuit while maintaining its power.



Transmission grid service quality

Red Eléctrica ensures that transmission grid facilities are in optimal conditions of availability and reliability by applying maintenance policies that are sustainable, efficient and secure.

Our service quality indicators once again highlight the high level of safety and quality of supply provided by Red Eléctrica's facilities, well beyond the reference levels set under current legislation.

Service Quality Indicators

2023

Peninsular transmission grid

Grid availability (%) 97.61

Energy Not Supplied (ENS) MWh 128

Average Interruption Time (AIT) minutes 0.29

Balearic Islands transmission grid

Grid availability (%) 97.84

Energy Not Supplied (ENS) MWh 5

Average Interruption Time (AIT) minutes 0.44

Canary Islands transmission grid

Grid availability (%) 98.93

Energy Not Supplied (ENS) MWh 24

Average Interruption Time (AIT) minutes 1.44



Red Eléctrica

Transmission grid development plan 2021-2026 period

The driving force behind the energy transition.

- Specially designed for the deployment of new renewable generation facilities in areas that have the best resources and the lowest environmental impact.
- Maximum penetration of renewable energy.
- New developments for connecting island and inter-island systems, and the strengthening of cross-border interconnections.
- Intensive use of the existing grid, updating assets and increasing grid capacity, and incorporating new technologies, a pioneering approach for the latest transmission grid planning.



6,964 M€

Total investment

67 %

of renewable generation in the national electricity mix by 2026.

66 %

reduction in CO₂ emissions in the electricity sector.

1,600 M€

annual savings in system costs.



Transmission grid planning is key to meeting the commitments of the NECP (National Energy and Climate Plan): decarbonisation, energy efficiency and strengthening interconnections.

Red Eléctrica

Main projects

More grid infrastructure to accelerate the energy transition

8,000 km

Improvements to the existing grid

2,700 km

New line circuit

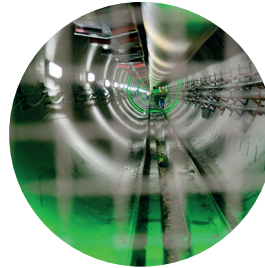
700 km

Submarine cables



Links that interconnect with the Spanish mainland and connections between islands

- Mainland-Ceuta
- Mainland-Balearic Islands
- Ibiza-Formentera
Commissioning 2023
- Lanzarote-Fuerteventura
Commissioning 2022
- Tenerife-La Gomera



Cross-border interconnections

- Spain-France (across the Bay of Biscay)
- Aragón-Atlantic Pyrenees
- Navarra-Landas (France)
- Galicia-Northern Portugal
- Spain-Morocco (third cable)



Energy storage

- Salto de Chira pumped storage hydroelectric power station on Gran Canaria



redeia

Valuing the essentials

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