Vortrag

Donnerstag, 05. Oktober 2023, 11:30 Uhr

Overview Red Eléctrica Special Projects

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Lecture

Thursday, 05th October 2023, 11:30 am

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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.

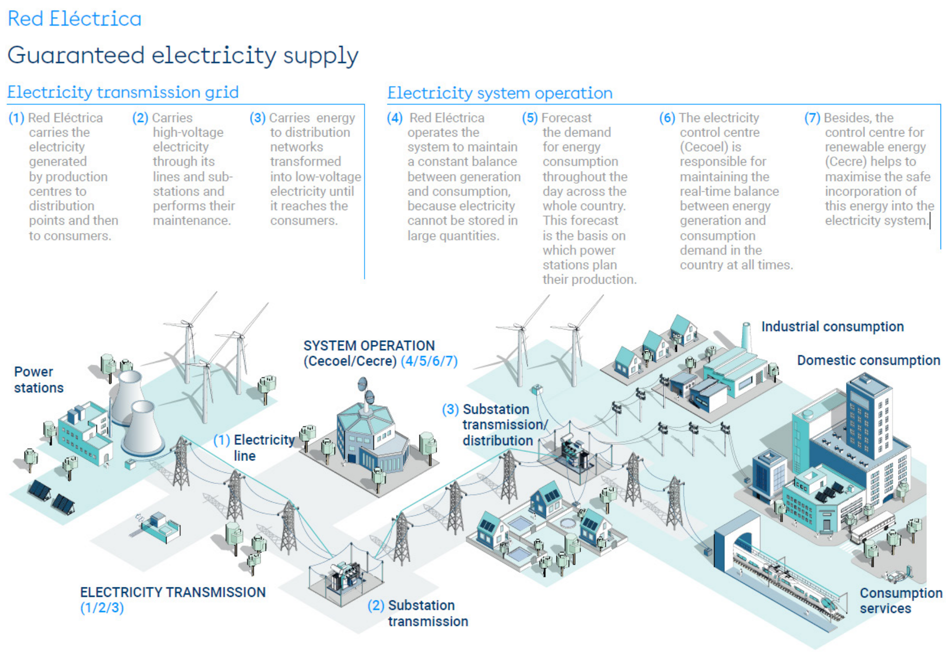
Redeia is a global manager of essential infrastructures for society, in electricity transmission and in communications. We are the largest provider of dark fiber in Spain, and we also provide leading satellite communication services in South America.

Red Eléctrica, is the Transmission System Operator (TSO) in Spain since 1985 (world`s first TSO). In other words, Red Electrica is the backbone of energy transition, by providing a secure and high-quality essential service (98% availability of the domestic grid) and world reference in renewable energy integration, by reducing our dependence on fossil fuels, accelerating the clean energy transition.

The transmission grid is a meshed network of lines and sub-stations, like the internet web, that connects electricity generation (power plants) to the consumers (distribution points). As well as linking the Spanish electricity system with our neighbor countries (Portugal, Andorra, France and Morrocco).

The Spanish TSO owns more than 45 km of high voltage transmission lines (over 220kV in mainland and over 66 kV in islands) and more than 6000 bays to interconnect the power lines.

Red Eléctrica is responsible for the development and maintenance of the electrical system, and the real time operation, keeping a constant balance between the generation and the energy consumption, maximizing the safe integration of renewable energies into the system.



Red Eléctrica as Spanish TSO develops the grid accordingly to the European and national laws, committed with the effort to fight against the climate change, by the de-carbonization of the economy, to get net-zero carbon emissions, before 2050.

Red Eléctrica' s scope of work, as developer of the transmission grid, is binded to the Transmission Grid Development Plan (TDP), defined by the Ministry of Energy Transition and Demographic Challenge (MITERD) and updated every 6 years. The TDP is approved by the Council of Ministers with due parliamentary procedure.

The current TDP (2021-2026 period) foresees the infrastructure required to ensure electricity supply in the long-term under the general principles of transparency and minimum cost for the system, aligned with the National Energy and Climate Plan goals (PNIEC_ 2021-2030 period).

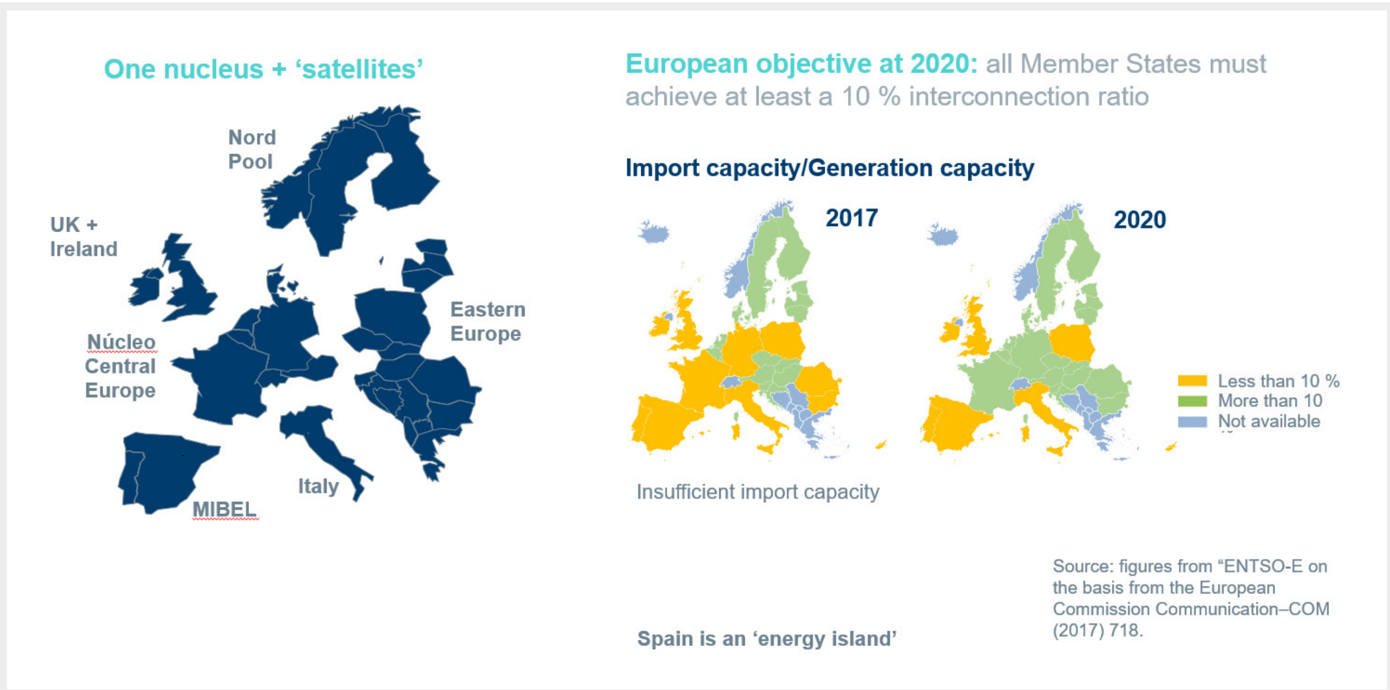
The current TDP includes an investment of 6.964 billion € (more than 20% aimed at developing interconnections links between isolated systems or/and connect these isolated subsystems with the Spanish mainland).

The Spanish TDP foresees more grid infrastructures to accelerate the clean energy transition: More than 2.700 km of new transmission lines (overhead and underground lines) and more than 2000 km of submarine interconnections.

Additionally, the TDP includes 1.500 billon € (not included in the investment plan previously mentioned) destinated to the essential international power link between France and Spain through the Gulf of Biscay. The development of international interconnections is the key for improving the security of supply in Spain.

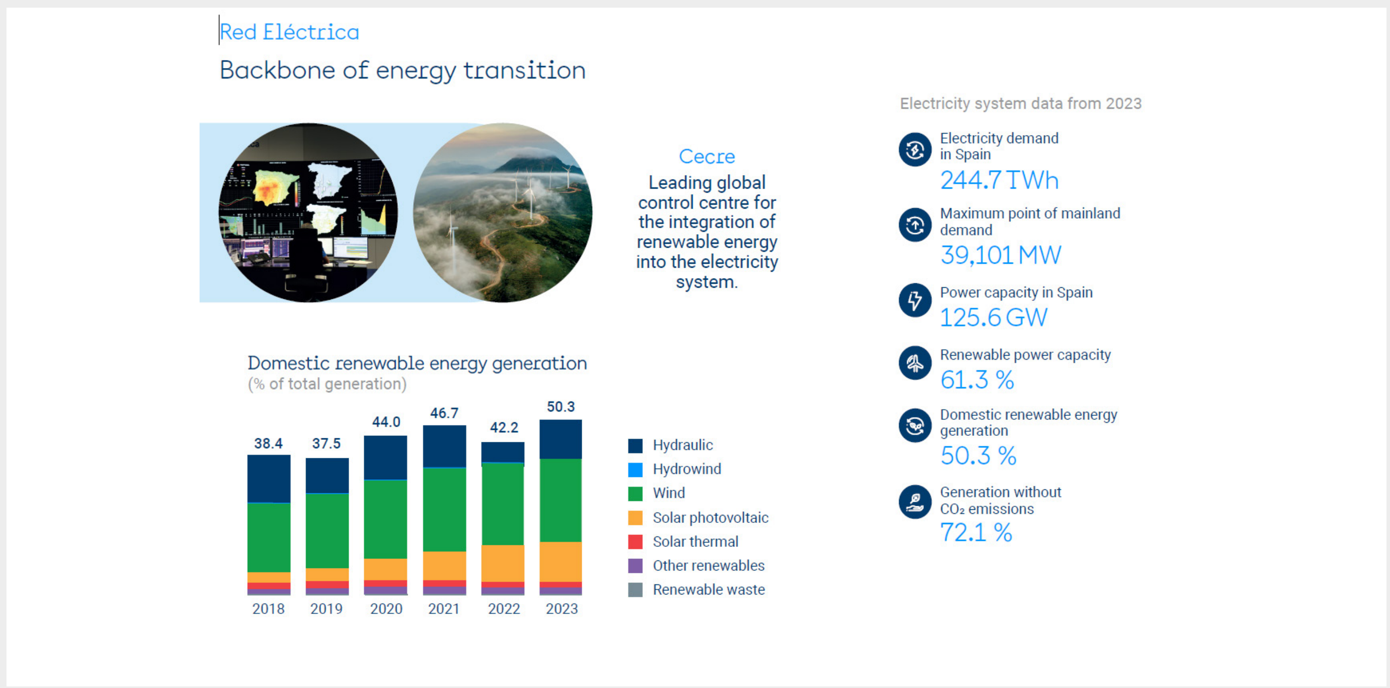
The Iberian system is an energy island as it has less than 10% interconnection ratio with central Europe. The interconnections link between the European countries contribute to the security of interconnected electricity systems, facilitating support operations between them, making the European system more efficient:

- Facilitate commercial electricity exchanges to take advantage of energy price differences between interconnected electricity systems.
- Foster competition in the national market due to an increase in the number of agents from external systems.
- Improve European sub-systems' ability to complement each other.
- In the case of Spain, it enhances the weight of renewable energy, particularly wind and solar energy, for covering demand.



By 2026, despite the insufficient interconnection level with central Europe, green energies are expected to reach a 67% share in the national generation mix, reducing CO2 emissions by 66% base 2019. The plan will also boost economic development, generating over 78,000 jobs and increasing GDP by more than 4.6 billion €. Additionally, the new infrastructures will generate savings of more than 1,600 billion € for the system.

Some figures about the impact of the current Energy Plan until 2023:



An updated Energy Plan (2025-2030 period) is also expected throughout the year 2025.
Main projects under construction:

- Cross-border interconnection, 2 monopoles, ± 400 kV, between Spain and France, across the Bay of Biscay.
- “Salto de Chira”: Pumped storage, hydroelectric power station on Gran Canaria (Canary Islands).
- Submarine double circuit link, 132 kV, between Spanish Mainland and Ceuta across the Strait of Gibraltar (north of Africa).
- Submarine double circuit link, 66 kV, between Tenerife Island and La Gomera island (Canary Islands).
- Submarine bipole, ± 250 kV, between Spanish Mainland and Mallorca (Balearic Islands).
- Future projects under study:
- Third submarine interconnection link between Spain and Morrocco (400 kV) across the Strait of Gibraltar.
- Two underground interconnections between Spain and France across the Pyrenees.
- Third submarine link, 132 kV, between Mallorca Island and Menorca Island (Balearic Islands)
- Submarine double circuit interconnection, 132 kV, between Gran Canaria and Fuerteventura (Canary Islands).

Red Eléctrica faces several challenges, including complex permitting procedures that need to speed up, public rejection to new facilities and environmental challenges. To solve this, Red Electrica is working proactively on sharing value with all stakeholders, reaching agreements with public administrations, maintaining a policy of respect for the society and environment, raising awareness about our role through information dissemination programs.

Red Eléctrica’ s environmental policy is focus on sustainable development, by promoting the conservation of biological diversity, enhancing the use of new and more respectful technologies:

This is the case of trenchless solutions as HDD (Horizontal Directional Drillings) or HHB (Horizontal Hammer Boring). This kind of solutions can be the key point to do a project feasible or not. Trenchless solutions reduce the social impact of the project (in areas nearby the sea, beaches, etc) and increases the technical compatibility of the project with other existing infrastructures (railways, motorways, harbours, etc) and solve the conservation of biological diversity on the seabed in sea-land transitions.

Both, asset owners and constructors, must work together to implement the best practices in the market during the execution phase, to avoid damages as those caused by the spilt of bentonite on the seabed. Bentonite compound is made up mainly of clays compatible with seaworks. But, when the bentonite encounters salty water and lays on the seabed, it creates an anoxic barrier that avoids an easy marine forest restoration.

That’s why is mandatory to work in making the drilling process more efficient in terms of reducing the bentonite spills, designing the process considering both variables: the technical feasibility of the drilling, but also to minimize the environmental impact.

We all should ensure that the method statement of the drillings includes mitigation measures to reduce the potential areas affected by the spills and corrective methods to remove the bentonite, if required.