

Red Eléctrica's Opportunity To Close Spain's Grid Investment Gap

Increasing Grid Spending Can Align With Spain's 2030 Renewables
Targets and Enable an Efficient Energy System

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Key Findings

As Spain's electricity grid operator, Red Eléctrica de España (REE) is critical to the nation's energy transition and a key part of Europe's power modernisation plans.

REE's 2026-2030 strategic plan will be crucial in bridging the grid investment gap to ensure Spain meets its energy transition targets and enhances energy affordability and security for the nation and its neighbours.

Scaling up capital spending on energy storage, interconnections and digitalisation is essential to close this gap. Failure to do so risks more grid congestion and financial and reputational damage to REE itself.

Parent company Redeia's goal of 100% sustainable financing by 2030 is attainable. Further improving transparency and accountability would broaden its access to funding.



Spain's Salto de Chira pumped storage power plant: a unique case of a hydropower storage asset owned and operated by a TSO in Europe.

Source: Red Eléctrica.

Executive Summary

Spain has set a clear goal of generating 81% of its electricity from renewable sources by 2030. This requires a robust, modernised and future-proof transmission network. Enhancing interconnection capacities will also be essential as Spain contributes to EU energy affordability and security. At the centre of this transformation is Red Eléctrica de España (REE), Spain's electricity transmission system operator. REE is a subsidiary of Redeia Corporación S.A., a listed company in which the Spanish government has a 20% stake. Spain offers a critical case study of how a transmission system operator should align business strategy, asset split, investment planning and financial management with broader climate and energy goals.

REE's transmission assets are strategically distributed to manage Spain's diverse generation and consumption patterns. However, grid congestion remains a key barrier to the rapid deployment of renewable energy, as generation growth often outpaces the availability of transmission capacity in many regions. This underscores the urgency for REE to accelerate investments in grid strengthening and to lead on enabling green hydrogen development and digitalisation.

Redeia has taken a positive step by sharpening its strategic focus on grid infrastructure, notably through the sale of its satellite business for €725 million. Still, REE's investment will need to rise significantly during the upcoming 2026-2030 strategic plan to meet future system needs and address any shortfalls from the current 2021-2026 national planning period. In the next planning period, Spain has proposed to increase grid investment to €13.6 billion between 2025 and 2030.

Redeia has a diversified funding base and receives support from public sources, which is essential for its accelerating investment programme. The Spanish National Commission for Markets and Competition's regulatory framework has underpinned REE's earnings visibility, but upfront capital expenditure will continue to drive negative free cash flow and rising debt. To ensure continued access to funding, it is vital for the company to maintain sound environmental, social and governance practices, and commit to its investment-grade credit ratings. While the National Commission for Markets and Competition's proposed remuneration rate increase to 6.58% from 5.58% is lower than industry demands, relatively modest country costs of borrowing could offer some buffer for Redeia. Over the long term, REE's earnings are likely to grow through expansion of its regulated asset base and disciplined financial and cost management, which could support gradual deleveraging.

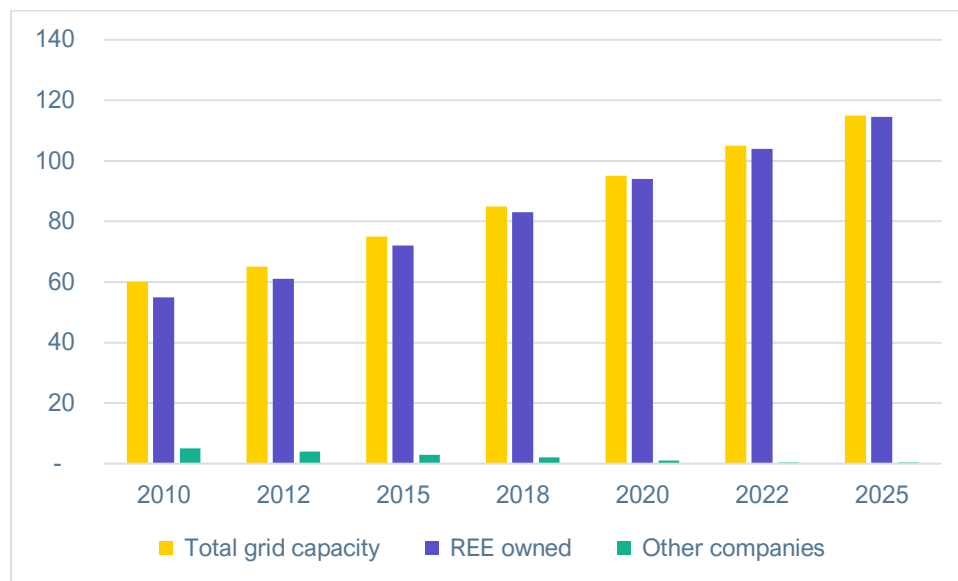
To further strengthen its access to funding, Redeia should improve transparency and accountability in its sustainable finance programme. For example, adopting the European Green Bond Standard, as peers in Italy, Germany, and Belgium have done, would boost credibility. Redeia could also consider integrating sustainability-linked features into its green financing instruments. Embedding performance-linked metrics — such as kilometres of power lines upgraded, renewable integration levels or system resilience improvements — into its debt structure would align financing closely with Spain's National Integrated Energy and Climate Plan. Such instruments could also help investors manage risks of underinvestment, delays or underperformance, while potentially lowering Redeia's cost of borrowing.

Introduction

As one of Europe's frontrunners in renewable energy deployment, Spain offers a critical case study of the tensions between Paris-aligned climate targets and infrastructure readiness. With some of the most advanced renewables capacity goals in the EU, a high potential for solar generation and significant project bottlenecks due to limited grid access and upgrades, Spain exemplifies the imminent need for transmission system investment and financing.

Spain's power grid capacity has expanded significantly over the past 15 years (+92%), but still insufficiently to meet the country's exponential renewables growth. The renewables growth momentum will continue. In September 2024, Spain updated its National Integrated Energy and Climate Plan (NECP) for 2023-2030, aiming to accelerate its transition to renewable energy and enhance energy security.¹ The revised plan sets ambitious targets, including 81% of electricity from renewable sources by 2030, up from the previous goal of 74%. Key 2030 capacity targets are: 76 gigawatts (GW) of solar photovoltaic capacity, 62GW of wind power and 22.5GW of energy storage.

Figure 1: Spain's Grid Capacity and Ownership (GW)



Sources: REE and CNMC.

Achieving these targets requires a robust, modernised and future-proof transmission network — one that can support the growing share of variable renewable energy and integrate new demand from electrified sectors. However, the April 2025 blackout in Spain and Portugal shows how a lack of grid investment can threaten the electricity supply and demand balance. It highlights the importance of

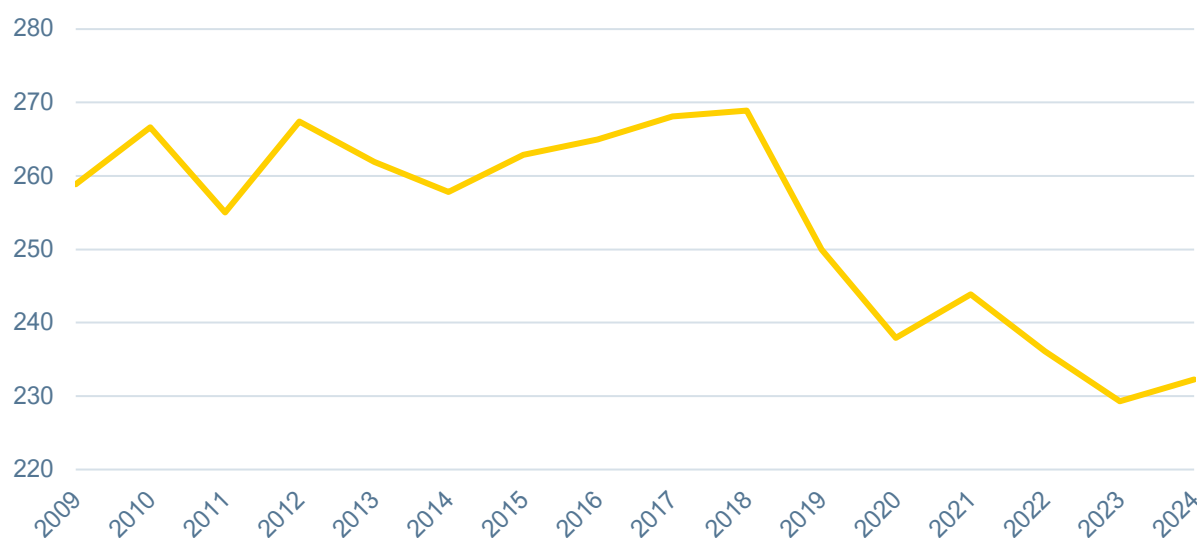
¹ European Commission. [Spain - Final updated NECP 2021-2030 \(submitted 2024\)](#). 26 September 2024. Pages 19 and 25.

the right investments to avoid wasting clean energy and clear the significant queues of renewables projects waiting for grid connections.²

In addition to investments in domestic grid strengthening, enhancing interconnection capacities is vital not only for the development of renewable power in Spain but also for Europe's energy security. The European Commission estimates that €584 billion in grid investments is required by 2030 to meet energy transition goals.³ A May 2025 analysis co-authored by Beyond Fossil Fuels, Ember, E3G and IEEFA identified that 1,700GW of renewable energy and hybrid projects are waiting for grid connections across 16 European countries.⁴ This bottleneck in grid access is a major hindrance to renewables growth in the EU.

Recognising that connection delays will increase without investment in grid expansion, modernisation, digitalisation and flexibility, the European Commission plans to publish its European Grids Package by the end of 2025. The package will aim to help upgrade and expand EU grids to support rapid electrification and speed up permitting.

Figure 2: Spain's Electricity Consumption, 2009 to 2024 (Terawatt Hours)



Source: ENTSO-E.

Spain faces a distinct set of challenges and opportunities in the context of the broader EU energy transition. Spanish power demand was rather stable, about 260 terawatt hours (TWh) a year, until 2019. It has not recovered to previous levels, stagnating at about 230TWh. COVID-19 was a major trigger to this load cut, but the main drivers were energy efficiency gains and the role played by demand-side management.

² IEEFA. [Grid investment can mark a turning point for Europe's power system stability and energy security](#). 29 September 2025.

³ European Commission. [Commission collects views in preparation of the European Grids Package](#). 13 May 2025.

⁴ Beyond Fossil Fuels, Ember, E3G, IEEFA. [How Europe's grid operators are preparing for the energy transition](#). 13 May 2025.

This report focuses on Red Eléctrica de España (REE), a subsidiary of the Redeia Corporation S.A. (Redeia, formerly Red Eléctrica Corporación), the backbone of Spain's electricity system. As Spain's sole TSO, REE is responsible for the transmission of electricity across the national grid and the operation of the electricity system, including the integration of renewable energy sources. In recent decades, REE has grown beyond its core business in Spain, developing a diversified infrastructure portfolio including international electricity networks, fibre-optic telecommunications and satellite communications.

In a rapidly evolving energy landscape characterised by decarbonisation, digitalisation, decentralisation and electrification, REE plays a crucial role in ensuring the stability, efficiency and sustainability of the power system. In this report, IEEFA examines Redeia's strategy and investment plan, which are closely related to Spain's energy transition objectives and the broader goals of the European Green Deal. It reviews Redeia's physical assets, both inside and outside Spain, classified by technology and geography, and analyses its credit profile, a key factor in determining its access to capital and its propensity to expand and execute its investment programme.

Company Profile

Redeia includes several strategic subsidiaries and lines of business:

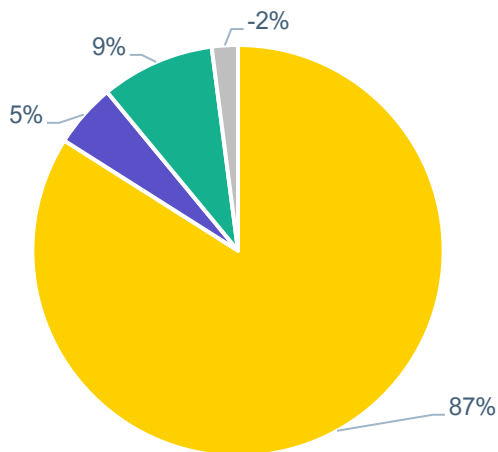
- **Red Eléctrica de España (REE):** Manages electricity transmission and system operations within Spain. REE accounts for a large majority of Redeia's operations and investments.
- **Red Eléctrica Internacional:** Develops and operates international energy transmission assets.
- **Reintel:** Manages fibre-optic infrastructure, leveraging the transmission network.
- **Hispasat:** Provides satellite communication services in Europe and Latin America.
- **Elewit:** An innovation platform that supports digital transformation in energy and infrastructure.

Redeia is publicly listed. Spanish state-owned industrial holding company Sociedad Estatal de Participaciones Industriales holds 20% of its shares. The rest are traded on the Spanish stock exchange (BME).

REE also owns power grids in Peru and Chile.

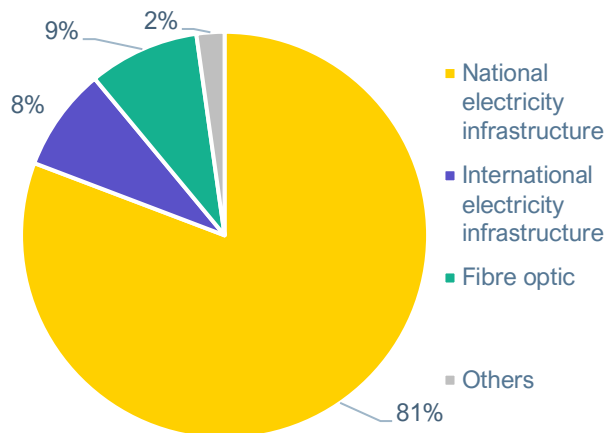
More detail on REE's assets can be found in the [Appendix](#).

Figure 3: Redeia's Revenue Split



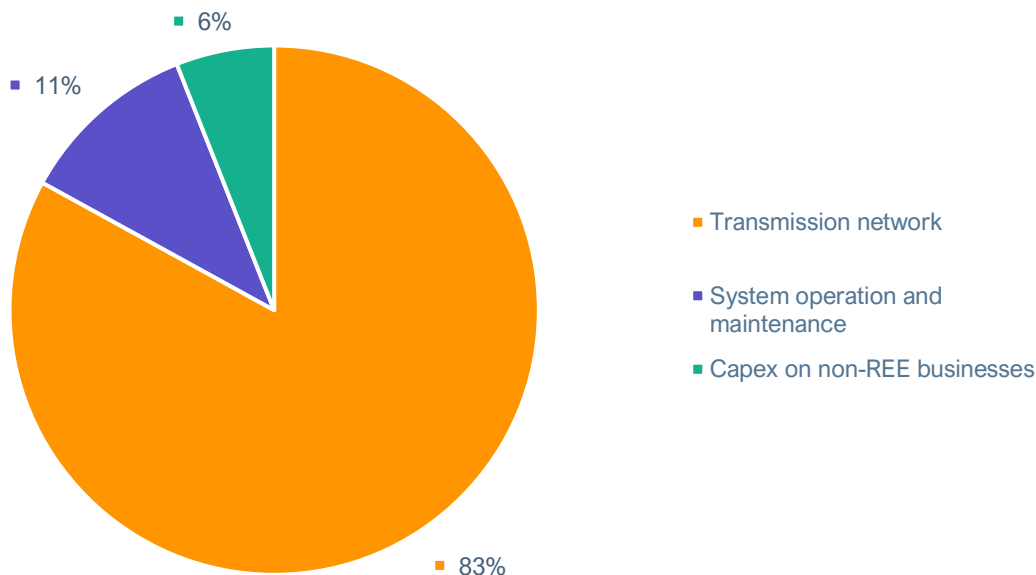
Source: Company report.
Note: As of 2024.

Figure 4: Redeia's EBITDA Split



Source: Company report.
Notes: As of 2024. EBITDA = earnings before interest, taxes, depreciation and amortisation.

Figure 5: Redeia's Capex Split



Source: Company report.
Note: As of 2024. Capex = capital expenditure.

Grid Strategy Sharpens but Investment Gap Remains

Redeia Agrees To Divest Its Satellite Business, Hispasat

On 31 January 2025, Redeia agreed to sell 89.7% of Hispasat for €725 million to Spanish defence corporation Indra, with the sale expected to be completed by the end of 2025.⁵ The transaction reflects a valuation notably below the €933 million Redeia paid to acquire the satellite operator in 2019.⁶ The company cited the reason for the divestment as capital rotation towards the TSO's regulated business. In IEEFA's view, this move represents a positive step in the company's strategy to focus on grid development. To fully realise the potential of the strategy repositioning, IEEFA recommends reinjecting the funds into power grid strengthening, especially in the amplification of frequency control reserves (Table 1). The Iberian power blackout in April 2025 highlighted the grid's weaknesses in emergency responsiveness.⁷

Current Situation and Context

Redeia is executing its 2021-2025 strategic plan, which includes an investment target of ~€4.8 billion (up from ~€4.4 billion) to support grid expansion, interconnections, storage and digitalisation in Spain.⁸ In its 2024 results, Redeia reported record investments of €1.1 billion in that year alone, a 34% increase on 2023.⁹ The company aims to align its financing with its green debt framework and to reach 100% sustainable financing by 2030.¹⁰

Post-2025 Investment Plan Imminent

Redeia is expected to announce its new strategic plan for 2026-2030 following the final approval of the network development plan 2025-2030 by the Spanish government, which is anticipated in late 2025 or early 2026.

REE's strategic plan forms the predominant part of Redeia's overall strategy.

⁵ Redeia. [Redeia strengthens its financial position to drive the energy transition after selling Hispasat](#). 31 January 2025.

⁶ Redeia. [Red Eléctrica successfully completes the acquisition of Hispasat](#). 26 November 2019.

⁷ IEEFA. [Iberian blackout highlights need for European grid investment](#). 28 May 2025.

⁸ Redeia. [Redeia increases its investment target to 4.8 billion euros so as to accelerate the green transition in Spain](#). 28 February 2023.

⁹ Redeia. [Redeia's investments to speed up the energy transition have risen by 34%](#). 28 February 2025.

¹⁰ Redeia. [Sustainable financing](#).

Table 1: How Redeia's 2026-2030 Strategic Plan Could Align Investments With System Needs

Feature	Likely/signalled direction
Scale of investment	Expect a substantial increase compared with 2021-2025. Given the momentum and urgency (especially after blackouts and grid stress), the 2026-2030 plan will likely push toward "record investment" levels. ¹¹
Interconnections and grid reinforcement	Strong emphasis on cross-border interconnections (Spain-France, Portugal) and internal grid strengthening to absorb more renewables. ¹²
Storage, demand management and flexibility	Given the shift to variable renewables, increased attention on energy storage (pumped hydro, batteries) and grid flexibility solutions. Redeia's current plan already includes storage elements. ¹³
Regulatory and remuneration environment	The financial remuneration rate proposal for 2026-2031 is a critical input: A higher remuneration rate would make more investments financially viable. ¹⁴
Financing and capital structure	Continued reliance on green/sustainable financing; debt levels will remain a focus (to avoid overleveraging). ¹⁵
Sustainability and ESG targets	The 2030 commitment includes goals such as 100% renewable integration, reducing emissions (Scopes 1, 2, 3), zero waste to landfill, and digital connectivity. ¹⁶
Alignment with government/regulatory plans	The Spanish government is planning to raise the cap on grid investment for 2025-2030 (including ~€13.6 billion on transmission) to accelerate modernisation. ^{17,18}

Sources: Spanish Ministry for Ecological Transition and Demographic Challenge, company reports, Reuters, IEEFA.

Spain has proposed that €13.6 billion be invested in the country's power grids between 2025 and 2030.¹⁹ The breakdown of those investments would be about 75% for grid strengthening

¹¹ Reuters. [Spain's power grid rejects blame for blackout, pledges record investment](#). 30 June 2025.

¹² Redeia. [Redeia's investments to speed up the energy transition have risen by 34%](#). 26 February 2025.

¹³ Redeia. [Redeia increases its investment target to 4.8 billion euros so as to accelerate the green transition in Spain](#). 28 February 2023.

¹⁴ Redeia. [Results H1 2025](#). 30 July 2025. Page 7.

¹⁵ Redeia. [Sustainable financing](#).

¹⁶ Redeia. [2030 Commitment and 23-25 Plan](#).

¹⁷ Reuters. [Spain proposes 62% hike of grid investment cap through 2030](#). 12 September 2025.

¹⁸ Spanish Ministry for Ecological Transition and Demographic Challenge. [Initial Proposal for the Development of the Electricity Transmission Network 2025-2030](#). Page 9.

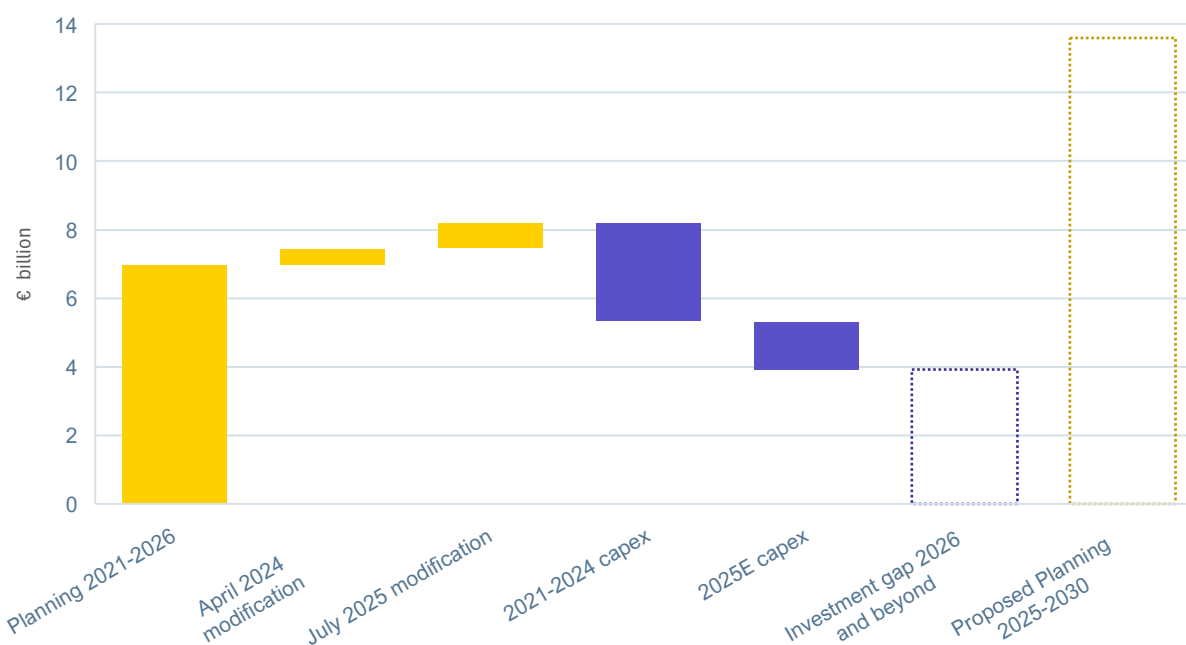
¹⁹ Ibid.

(electrification and renewable integration, improving interconnections between domestic grids, increasing international interconnections), while the remaining 25% would be to support the distribution system and digitalisation (including demand-side management).

If this 2030 target materialises, it would help close the investment gap between expectations outlined in the government-authorised 2021-2026 Electricity Transmission Grid Planning²⁰ and the actual investment levels through to 2025. REE reported total investment of €2.9 billion between 2021 and 2024, with capital expenditure (capex) for 2025 estimated at €1.4 billion. However, this figure falls short of the €6.96 billion target initially established under the 2021-2026 Grid Planning. Subsequent modifications to the Grid Planning have pushed the total expected investments up to €8.2 billion.

REE will need to accelerate investment during the upcoming planning cycle to meet increasing system needs.

Figure 6: Where REE Could Accelerate Investment in the Next Planning Cycle



Sources: Company reports, Spanish Ministry for Ecological Transition and Demographic Challenge, IEEFA.

²⁰ REE. [The Electricity Transmission Grid Planning with a 2026 horizon has been approved to drive a greener future for Spain](#). 22 March 2022.

REE's Strategic Challenges and Opportunities

Challenges

One of the main issues REE faces is approvals for land to build new transmission lines, with environmental regulations often delaying grid projects. Grid congestion is the key obstacle to the rapid deployment of renewable energy, whose growth often outpaces grid availability in many Spanish regions. Lack of investment is one of the root causes of this bottleneck and is a key issue for REE to address in its new strategic plan.

Besides the grid's sluggish growth and technological uncertainty around the integration of intermittent renewable energy sources, such as wind and solar, REE is expected to make significant progress in energy storage and hydrogen by 2030.

From a regulatory stability standpoint, in Spain and especially Latin America, frequent changes in government policy undermine investment certainty.

Opportunities

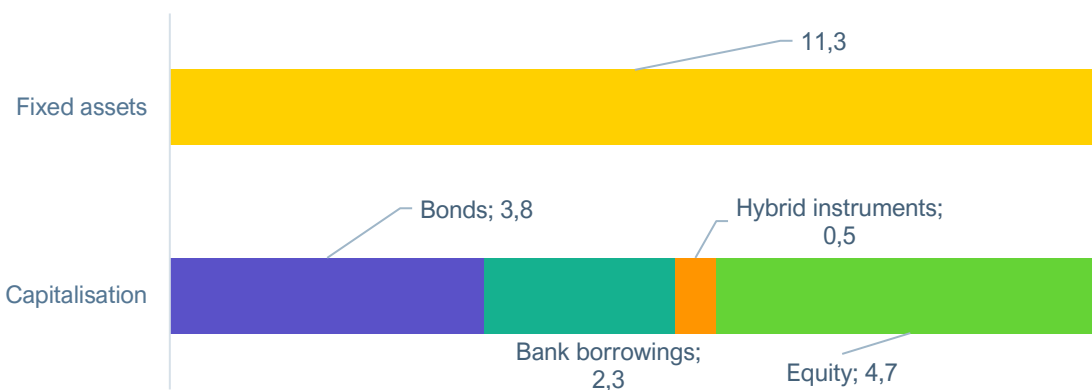
Grid strengthening can help make REE the frontrunner in implementing Spain's ambition for an 81% renewable electricity mix by 2030. REE can also support utilities and technology companies to develop the numerous proposed green hydrogen projects, especially in the Andalusia region.²¹ Additionally, Redeia expertise in telecommunications can help REE through digitalisation of infrastructures especially needed in rural, remote and insular zones.

From the EU angle, the recovery funding for strategic alignment with the EU taxonomy opens up financial support.

Solid Investment-Grade Credit Profile Backs Capex

REE benefits from a diversified funding structure through its listed parent company, Redeia, with access to equity markets, public bond issuance and loans from public financial institutions. Given REE's systemic and strategic importance to Spain's energy system, the government's 20% ownership stake also implies a degree of financial support if needed.

²¹ Moeve. [Andalusian Green Hydrogen Valley](#). 2025.

Figure 7: Redeia's Capital Structure is Well-Balanced (€ Billion)

Sources: Company report, IEEFA.

Note: As of 30 June 2025.

Maintaining reliable access to these funding channels is essential in light of the substantial investment requirements in current and proposed national grid development planning. These investments are fundamental to preserving REE's business resilience and supporting steady, long-term earnings growth.

As Redeia is a regulated utility with monopoly control over electricity transmission assets, its environmental, social and governance (ESG) framework remains material in credit considerations. This seems to have been exacerbated following the Iberian blackout: S&P Global has put Redeia's ratings under watch for possible downgrade, citing the incident as "an overall failure of the wider governance of the Spanish electricity system".²² Similarly, Moody's changed the rating outlook to negative, citing "increased social risks".²³ While ratings from Fitch remain unaffected, it warned the blackout was an "indication of system vulnerability".²⁴ These credit ratings remain solid investment-grade.

Table 2: Redeia/REE's Credit Ratings, Post-Iberian Blackout

	S&P Global	Moody's	Fitch
Rating	A-	Baa1	A-
Outlook	CreditWatch down	Negative	Stable
Rating review date	8 September 2025	29 September 2025	12 September 2025

Sources: Company report, S&P Global, Moody's, Fitch.

²² S&P Global Ratings. [Spain-Based Redeia On Watch Negative On Credit Implications From The Recent Blackout](#). 26 June 2025.

²³ Moody's Ratings. [Moody's Ratings changes Red Elctrica de Espana's outlook to negative; affirms ratings](#). 21 May 2025.

²⁴ Fitch Ratings. [No Immediate Rating Impact from Iberian Peninsula Blackout; Causes Remain Uncertain](#). 6 May 2025.

Spain's abundance of renewable power will lower its climate-related risk and bring long-term societal benefits through more affordable and secure energy supply. This underscores REE's responsibility to maintain a clear governance structure and a disciplined, transparent financial policy. In turn, this will ensure infrastructure is delivered aligned with planning expectations — ultimately supporting long-term credit quality. By contrast, weak environmental and governance performance could heighten societal and regulatory scrutiny, potentially raising costs of capital. An example among regulated utilities is the financial distress facing Thames Water. Prolonged operating underperformance, underinvestment and governance concerns at the UK water monopoly have contributed to its mounting debt challenges and drastic credit rating downgrades.²⁵ Redeia has so far retained a solid investment-grade credit profile and should be committed to preserving it.

A Modest Increase in Allowed Rate of Return

For creditors, Redeia's credit profile is supported by long-term visibility of cash-flow generation backed by a steady regulatory framework by Spain's National Commission for Markets and Competition (CNMC). IEEFA considers that Redeia will increasingly focus on REE's regulated transmission business in Spain, which will predominantly drive the group's credit quality. REE's revenue generation is predominately determined by the parameters set out by CNMC, including operation and maintenance cost allowances, regulated asset depreciation and financial remuneration rates.

In IEEFA's view, the CNMC's process of setting allowed revenues, returns and investment recovery follows a broadly transparent and consistent methodology that is publicly accessible. REE generally exhibits above-average transparency among TSOs in Europe.²⁶

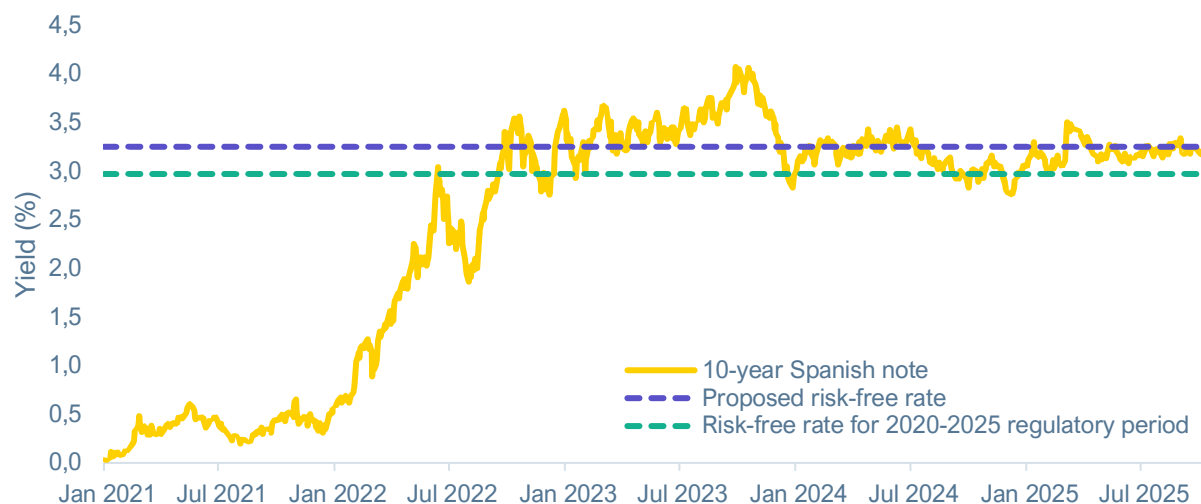
In October 2025, CNMC proposed a pre-tax remuneration rate of 6.58% for the 2026-2031 regulatory period.²⁷ This is a slight increase from the proposal of 6.46% in July 2025 and a one-percentage-point rise from 5.58% set for the current period, though it remains below industry lobby group aspirations.²⁸ The proposed risk-free rate of 3.25% is close to Spain's 10-year bond yields — averaging 3.2% over 2025 — and offers some buffer for investment returns relative to Redeia's cost of debt (Figure 8).

²⁵ IEEFA. [Green bonds down the drain: What Thames Water's debt crisis could mean for UK sustainable finance](#). 11 October 2024.

²⁶ Beyond Fossil Fuels, E3G, Ember, IEEFA. [How Europe's grid operators are preparing for the energy transition](#). May 2025. Page 42.

²⁷ CNMC. [Modificación de la circular 2/2019 de 12 de noviembre por la que se establece la metodología de cálculo de la tasa de retribución financiera de las actividades de transporte y distribución de energía eléctrica y regasificación transporte y distribución](#). 29 October 2025.

²⁸ Reuters. [Spain's energy lobby calls for higher proposed return on grid investment](#). 18 July 2025.

Figure 8: Spanish Government Bond Yields

Sources: S&P Capital IQ, CNMC.

CNMC proposes to include remuneration for long, singular, ongoing projects such as high-voltage direct current (HVDC) subsea links. This marks a positive step to improve cash-flow timing and a more disciplined cost structure, which underpins efficient capital deployment.

However, CNMC's framework doesn't clearly differentiate the long-term asset valuation between electricity and gas transmission infrastructure. Methodologies for regulated electric assets should account for and anticipate the need for grid modernisation and expansion, while gas infrastructure should reflect declining asset values over time as the role of gas diminishes.²⁹

²⁹ IEEFA, [EU Gas Flows Tracker](#), September 2025.

Table 3: Spain's Regulated Transmission Remuneration Model

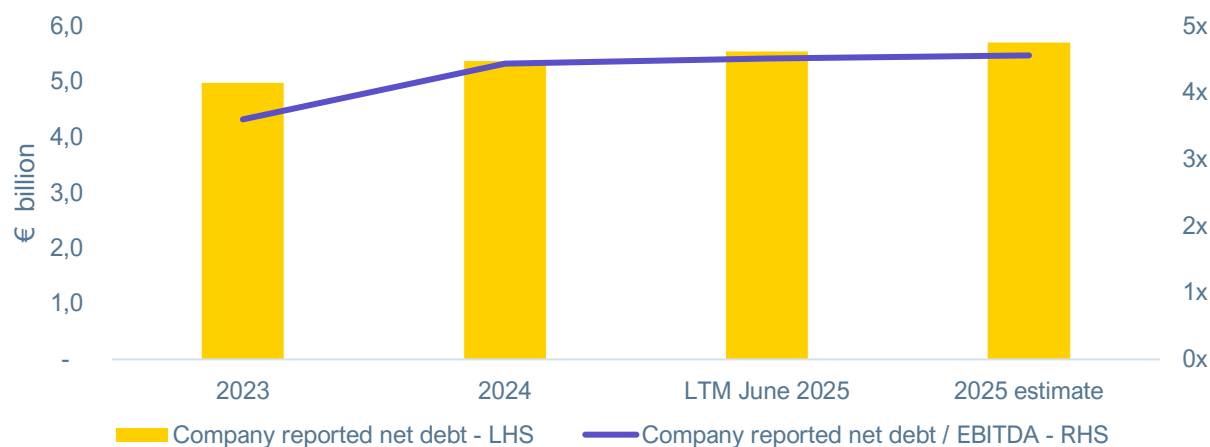
	2020-2025	2026-2031 (proposed) ³⁰
Risk-free rate	2.97%	3.25%
Beta	0.72	0.75
Market risk premium	4.75%	4.98%
Cost of debt	2.63%	3.35%
Leverage	50%	46%
Financial remuneration rate	5.58%	6.58%

Source: CNMC.

Capex Drives Rising Debt, Initially Outpacing Earnings Growth

Redeia's net debt increased by €100 million to €5.5 billion in the six months to 30 June 2025. The €725 million proceeds from Hispasat's divestment — expected to be received in the second half of 2025 — will support Redeia's financial position over the fiscal year 2025-2026. Government funding will also be important as Redeia's net debt will likely increase through 2030, with elevated investments not entirely covered by internal cash-flow generation (Figure 9).

³⁰ CNMC. [Modificación de la circular 2/2019 de 12 de noviembre por la que se establece la metodología de cálculo de la tasa de retribución financiera de las actividades de transporte y distribución de energía eléctrica y regasificación transporte y distribución.](#) 29 October 2025.

Figure 9: Redeia's Increasing Debt Leverage

Sources: Company reports, IEEFA estimates.

Notes: Year 2024 restated according to the reclassification of Hispasat as discontinued operations. Company reported net debt excludes hybrid instruments. LTM = last 12 months.

Over time, capex will support continued growth in the regulated asset base as project completions accelerate, underpinning steady growth in earnings. This will help Redeia maintain a solid debt leverage level by generating increasing cash flows. Most of REE's regulated assets have very long useful lives of 40 years. The company's debt will be gradually repaid over time, supporting its long-term credit quality that might not be fully captured within the three-to-five-year timeframes that credit rating agencies typically consider.³¹

In February 2023, Redeia issued green-labelled subordinated perpetual notes of €500 million at 4.625%. With 50% treated as equity and 50% as credit, the issuance supports the company's credit metrics as adjusted for hybrid adjustments. Redeia could consider further utilising this tool to support the capex investments and maintain a solid capital structure. This would align well with the long-term nature of its regulated assets. IEEFA estimates that for every €1 billion of 50-50 hybrid instruments issued instead of debt, the company can improve its adjusted funds from operations to net debt ratio by around 1.5%, even after accounting for the higher interest costs associated with hybrids.

³¹ IEEFA, [European oil: Navigating credit risk towards net zero](#), 13 March 2025.

Figure 10: Redeia's Negative Free Cash Flow

Sources: Company reports, IEEFA estimates.

Notes: Free cash flow = cash flow from operations minus capex and dividends. FFO, or funds from operations, refers to cash flow from operations before changes in working capital. LTM = last 12 months.

Public Support Should Provide Some Financial Flexibility

Redeia has a track record of receiving public financial support in the form of loans and grants. Such support is becoming increasingly important for maintaining a solid credit profile and sustaining access to private funding to finance its accelerating investments.

As of 30 June 2025, approximately 14% of Redeia's gross debt of €6.1 billion was sourced from the European Investment Bank (EIB), highlighting the company's strong access to EU-backed financing.

In 2024, Redeia received government grants of €209 million, primarily related to the electricity interconnection between Spain and France through the Bay of Biscay. This project, which is being jointly delivered with Réseau Transport d'Électricité, has been designated by the EU as a Project of Common Interest and is co-funded by a Connecting Europe Facility grant of €578 million.³²

The Spanish government has approved a direct award of €931 million in grants to Redeia, funded through the EU-backed Recovery, Transformation and Resilience Plan.³³ Of the total, €510 million will be allocated in 2025 and €421 million in 2026.

³² Redeia. [EIB supports with €1.6 bn the strategic Bay of Biscay electricity interconnection between Spain and France](#). 16 June 2025.

³³ Spanish Ministry for Ecological Transition and Demographic Challenge. [Royal Decree 534/2025, of 24 June, regulating the direct granting of subsidies from the Recovery, Transformation and Resilience Plan for investments in the electricity transmission grid for strategic decarbonisation projects](#). 4 July 2025.

Innovative Sustainable Finance Will Broaden Funding

Sustainable finance plays a critical role in meeting Redeia's funding needs for accelerated growth in regulated assets. Redeia has a well-established sustainable finance strategy, receiving the highest score possible for its green finance framework by S&P Global Ratings, a third-party reviewer.³⁴

Following its green bonds debut in 2020, Redeia had outstanding bonds, including perpetuals, of €2.8 billion at the end of 2024. This, combined with green-labelled EIB loans, brought its total green debt funding to €3.5 billion at that time, representing about half of the company's interest-bearing debt, including perpetuals. It demonstrates Redeia's potential to continue replacing conventional debt — primarily €500 million due April 2026 and €600 million due March 2027 — with green-labelled debt. This aligns with the company's commitment to reaching 100% sustainable financing by 2030. Redeia shows continued progress and strong access to funding with its €500 million green bonds issuance in September 2025, which was 2.5 times oversubscribed.³⁵

Improve Impact Transparency

As the eligible green assets will grow at a rapid pace from 2025 to 2030, it is essential for Redeia to enhance transparency about the impacts of its investments in grid development and their contribution to Spain's electricity planning goals and its NECP. This will help the company expand its funding access, particularly from investors with a sustainability mandate.

The company's green debt is mapped to its total identified eligible green assets of €9.3 billion at the end of 2024, based on a portfolio approach. Of this, €9.2 billion goes to electricity network assets, comprising those that enable the connection of new renewable capacity to the grid and those that enhance the transmission capacity for renewable energy in the grid. Redeia reported these assets enable nearly 9TWh of renewable energy production each year, representing 3.6% of Spain's electricity consumption in 2024.

Redeia's green bond reporting does not detail the lookback period for eligible assets, nor does it specify how impacts are attributed to individual bond issues. Between 2021 and 2024, Redeia's investments in Spain's grid totalled €2.9 billion, covering about a quarter of the eligible green assets. For example, REE reported that it commissioned 487km of new transmission lines in 2024, but this was not clearly earmarked with individual green bond issues.

The launch of the European Green Bond Standard in December 2024 provides Redeia with a strong opportunity to expand its green bond programme with enhanced credibility and transparency.³⁶ Investments in electricity transmission and distribution are inherently in line with the EU taxonomy substantial contribution criteria. In 2024, 96% of Redeia's capex was EU taxonomy-aligned; this

³⁴ S&P Global Ratings. [Second Party Opinion: Redeia Green Finance Framework](#). 7 July 2025. Page 1.

³⁵ Redeia. [Redeia issues €500 million in green bonds amid accelerated investment in electricity grids](#). 22 September 2025.

³⁶ IEEFA. [Will Europe's new standard help or hinder green bond market growth?](#) 19 February 2024.

positions the company well to adopt the standard. Momentum is building behind the standard: A landmark transaction by the EIB has set a market benchmark.³⁷ In particular, the standard has already gained strong traction in electricity transmission and distribution activities, with aligned transactions totalling €2.9 billion — including those by Italy's Terna, Germany's Eurogrid, Belgium's Elia and Finland's distribution operator Elenia.³⁸ Denmark's sovereign European Green Bonds also demonstrate how the standard is supporting grid development by backing its TSO, Energinet.

Enhance Accountability

Redeia's future investments will be critical to Spain's energy systems, underpinning the need for better accountability through sustainable finance practices. Debt financing could be structured to help targets and commitments translate into measurable outcomes and impacts. Redeia can go beyond use-of-proceeds bonds and embed performance-linked features into debt financing. A combined sustainability-linked green bond structure could align well with the company's strategic and financing needs, also potentially lowering its cost of debt; this would represent an innovative step in the sustainable debt market.

Spain's 2021-2026 network development plan aims to deliver 8,000km of grid improvements, plus 2,700km of new power lines and 700km of submarine cables. Existing financing mechanisms do not explicitly consider the risks of underinvestment, under-execution or underperformance in delivering the wider goals set out in the NECP.

The draft government planning proposal for 2025-2030 might scale up grid investments to €13.6 billion, which elevates the importance of accountability in capital spending and project execution. The plan anticipates the connection of 27.7GW of new electricity capacity to the transmission grid, a substantial rise from the 2GW foreseen under the 2021-2026 plan. The new plan includes 9,500km of power line improvements, representing 21% of the transmission network. Redeia should take the opportunity to embed performance-linked features in its financing approach to outline the expected contributions to the national plan. Sustainability-linked debt targets can be designed to assess the proceeds' contributions based on the investment outputs, outcomes and impacts, enhancements to grid performance and future system readiness (Table 4).

³⁷ IEEFA. [European Investment Bank sets example with EU Green Bond issuance](#). 14 April 2025.

³⁸ According to [Environmental Finance Data](#), accessed on 20 October 2025.

Table 4: Proposed Sustainability-Linked Financing Target Catalogue for Redeia

Category	Key performance indicator	Rationale
Grid investment delivery	Completion of grid improvements (km)	Track the execution of the green debt-funded investments in line with the network development plan.
	Overhead lines/submarine cables completed (km)	
Energy systems outcomes and impacts	Renewables capacity enabled (GW)	Track the system-level outcomes of grid investments, ultimately in line with Redeia's 2030 goals of securely integrating 100% of available renewable energy into the electricity system and achieving 74% of renewable energy in power generation. ³⁹
	Renewable energy enabled (gigawatt-hours per year)	
	Share of renewable energy in power generation (%)	
	Avoided carbon dioxide emissions (thousand tonnes per year)	
Grid performance	Energy not supplied (megawatt-hours per year)	Track the improvements of operational efficiency and reliability from the investments, showing how well the grid is performing in minimising curtailment, ensuring security of supply, improving energy efficiency and enabling demand response and flexible loads.
	Reduction of system losses (% or gigawatt-hours per year)	
System readiness	Flexibility capacity enabled (GW)	Track how well the grid is evolving to manage variable renewables, enable demand response and integrate storage or flexible loads.
	Grid digitalisation	

Sources: Redeia, IEEFA.

Conclusion

REE stands at the centre of Spain's energy transition, balancing the urgent need for accelerated grid investment with the imperative to preserve financial stability and governance discipline. The company's role as the sole TSO gives it a unique responsibility to ensure Spain's renewable energy targets are achieved without compromising system reliability or affordability. This analysis demonstrates that despite REE's solid investment-grade profile and strategic execution under the 2021-2025 plan, a material investment gap remains. The forthcoming 2026-2030 strategic plan must therefore deliver a structural scale-up in capex, especially in interconnections, digitalisation and

³⁹ Redeia. [2030 Commitment and 23-25 Plan](#). Accessed on 7 November 2025.

energy storage. Failure to close this gap risks perpetuating grid congestion, curtailing renewable capacity and weakening the credibility of Spain's decarbonisation pathway — ultimately increasing financial and reputational risks for REE.

Sustainable finance will be a decisive enabler of this transformation. Given Redeia's commitment to 100% sustainable financing by 2030, adopting the European Green Bond Standard combined with performance-linked instruments would broaden funding access and reinforce accountability. Transparent impact reporting and measurable system outcomes — such as renewable capacity enabled, emissions avoided and flexibility gained — will be key to maintaining investor confidence.

Ultimately, REE's success will depend on robust financial management and operational excellence, backed by regulatory stability in line with the wider European grid modernisation agenda. By executing its investment plans effectively and transparently, REE can safeguard Spain's energy affordability and security. It can emerge as a benchmark for how electricity TSOs can drive the energy transition through disciplined, sustainable and forward-looking infrastructure investment.

Appendix: REE Assets by Geography and Technology

Geographically, Spain accounts for 98% of REE's assets by value. REE's assets are strategically distributed across Spain to manage the country's diverse generation and consumption patterns.

Peninsular System

The Spanish peninsular system represents the backbone of REE's infrastructure. REE owns the vast majority of Spain's high-voltage lines (400 kilovolt [kV] and 220kV) and substations that connect major generation centres (such as nuclear power plants, large wind farms and hydroelectric plants) to consumption hubs (major cities and industrial areas).

High-voltage lines: Thousands of kilometres of overhead and some underground lines crisscross peninsula Spain. The 400kV network forms the primary grid, ensuring bulk power transmission over long distances and interconnections. The 220kV network provides regional transmission and connects to distribution networks.

Substations: Hundreds of substations are critical nodes in the grid, transforming voltage levels and enabling the interconnection of different parts of the network. These range from large, complex facilities near power plants to smaller, distribution-level substations.

Control centres: REE operates sophisticated control centres, such as the CECOEL (Electrical Control Centre), which monitors and manages the real-time operation of the entire peninsular grid.

Balearic Islands System

The Balearic Islands (Mallorca, Menorca, Ibiza and Formentera) have a distinct electricity system, characterised by a mix of local generation (primarily fossil fuels, with increasing renewables) and submarine cable interconnections to the peninsular system. Submarine cables are key assets, including the numerous submarine interconnections to the peninsula (such as the Rómulo link to Mallorca and the new links to Ibiza). These significantly enhance security of supply and allow for the integration of peninsular renewable energy. Each island has its own high-voltage grid (primarily 132kV and 66kV) and substations to distribute power from local plants and submarine cables.

Canary Islands Systems

The Canary Islands present unique challenges due to their volcanic geology and isolation. Each major island (Tenerife, Gran Canaria, Fuerteventura, Lanzarote, La Palma, La Gomera, El Hierro) operates as an independent electrical system, with some inter-island connections. The grids, operating in an isolated system, are typically 220kV, 132kV and 66kV, with local power plants (fossil fuels, wind, solar) and storage solutions. REE is actively developing inter-island connections (such as between Tenerife and La Gomera) to improve efficiency and integrate more renewables. Given the rugged terrain, some infrastructure involves specialised engineering, such as lines built to withstand

volcanic activity or harsh coastal conditions. The Salto de Chira pumped storage hydropower plant (see below) is REE's most significant new development in terms of capex and technology.

International Interconnections

REE plays a crucial role in Europe's energy integration through its international interconnections with France, Portugal, Andorra and Morocco. These links are vital for energy exchanges, enhancing supply security and facilitating the integration of renewable energy across borders.

- **France:** Several high-capacity lines and substations connect the Spanish and French grids, including the HVDC link through the Pyrenees.
- **Portugal:** Extensive alternating current interconnections with Portugal.
- **Morocco:** Submarine HVDC cables connect the Spanish and Moroccan electricity systems, enabling power exchange between Europe and North Africa.

REE's assets leverage a range of technologies, constantly evolving to improve efficiency and reliability. While transmission lines represent the bulk of the company's assets, energy storage capacities form an increasing part of its asset fleet.

Transmission Lines

Overhead lines: The vast majority of REE's transmission lines are overhead, consisting of steel towers supporting aluminium conductors. These are efficient for long-distance transmission but require significant land corridors.

Underground cables: These are used in specific situations, such as urban areas, environmentally sensitive zones or for short distances, where overhead lines are impractical.

Submarine cables: These are an essential asset for island interconnections and international links. They are specialised, highly robust cables designed to operate underwater, often using HVDC technology for long distances to minimise losses.

Substations

Air-insulated substations: The traditional type, where busbar conductors and switchgear are insulated by air. They require large footprints.

Gas-insulated substations: More compact, using sulphur hexafluoride gas for insulation. These are ideal for urban areas or locations with limited space.

Digital substations: An emerging technology incorporating digital communication and intelligent electronic devices to enhance monitoring, control and automation. This improves operational efficiency and allows for predictive maintenance.

Control and Communication Systems

SCADA (supervisory control and data acquisition) systems: The heart of REE's operational control, allowing real-time monitoring and control of all grid elements.

Communication networks: Extensive fibre-optic and radio communication networks are essential for transmitting data between substations, power plants and control centres.

WAMS (wide area monitoring systems): Utilised for monitoring grid stability over wide geographical areas, often using phasor measurement units.

Cybersecurity systems: Critical for protecting the grid from cyber threats, ensuring the integrity and security of operational data and control systems.

Storage Systems

While energy storage systems are not traditionally owned by TSOs, REE is involved in integrating them (especially batteries and pumped hydro) into the grid. These are becoming increasingly important for grid stability, renewable integration and ancillary services.

Battery energy storage systems: Piloted and integrated to provide fast-response ancillary services and absorb excess renewable generation.

Pumped-hydro storage power plant (PSPP): Large-scale energy storage, although REE's role is typically in facilitating their connection to the grid rather than direct ownership. The Salto de Chira PSPP will be the first hydro storage facility owned and operated by a TSO in Europe (they are usually managed by utilities).⁴⁰ The EU's Clean Energy Package prohibits TSOs from owning or operating generation assets, including storage, to avoid market distortion. However, Salto de Chira was granted an exemption, justified by the isolation of the Canary Islands' grid and the plant's system-stability role, rather than participation in energy markets.

⁴⁰ Redeia. [Storage: Salto de Chira Pumped-Storage Hydroelectric Power Plant.](#)

Appendix: Key Developments in the Spanish Electricity Sector

	Responsible entity	Current period	Next period	Status of next period
National network development plan	Spanish Ministry for Ecological Transition and Demographic Challenge	2021-2026	2025-2030	Under consultation between 10 October 2025 and 16 December 2025 ⁴¹
Company strategic plan	Redeia	2021-2025	2026-2030 expected	Not yet announced
Regulatory period	CNMC	2020-2025	2026-2031	Second proposal announced on 29 October 2025 ⁴²

Sources: Spanish Ministry for Ecological Transition and Demographic Challenge, Redeia, CNMC.

⁴¹ Spanish Ministry for Ecological Transition and Demographic Challenge. [Trámite de audiencia, consulta a las Administraciones Públicas afectadas y a las personas interesadas e información pública, a los efectos tanto del trámite sustantivo como del trámite ambiental de la propuesta de planificación de la red de transporte de energía eléctrica para el horizonte 2030 y su estudio ambiental estratégico.](#)

⁴² CNMC. [Modificación de la circular 2/2019 de 12 de noviembre por la que se establece la metodología de cálculo de la tasa de retribución financiera de las actividades de transporte y distribución de energía eléctrica y regasificación transporte y distribución.](#) 29 October 2025.

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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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