

European Solar Energy Storage

Analysis of energy storage sites in Spain



Overview

This report has been produced as part of the project “Facilitating energy storage to allow high penetration of intermittent renewable energy”, stoRE. The logos of the partners cooperating in this project are shown below and more information about them and the project is available on.

This report has been produced as part of the project “Facilitating energy storage to allow high penetration of intermittent renewable energy”, stoRE. The logos of the partners cooperating in this project are shown below and more information about them and the project is available on.

The objective of this study is to contribute to the development of a national strategy for storage systems in Spain up to 2050. To do that, it is necessary to study the different storage technologies and make a comparison between them, to analyse which storage systems are more useful for.

This report is part of a series that analyses the battery storage market in select European countries. Spain’s battery storage market is dominated by customer-sited systems. Utility-scale storage remains nascent. Currently, Spain’s storage market is mainly composed of small-scale batteries.

The 2023 NECP proposes a 173% increase (or 85 GW) in renewable capacity by 2030 from current capacities¹; storage² is expected to increase by 487%, or 15 GW from installed capacity. Long Duration Energy Storage (LDES) can ensure renewable energy is utilised in the system while decreasing reliance.

Global energy storage capacity was estimated to have reached 36,735MW by the end of 2022 and is forecasted to grow to 353,880MW by 2030. Spain had 88MW of capacity in 2022 and this is expected to rise to 2,500MW by 2030. Listed below are the five largest energy storage projects by capacity in.

Energy storage systems in Spain are a key element in the fight against climate change, as they help us to address the challenge of the energy transition. These systems make renewable energy production more flexible; and therefore help us to guarantee its integration into the Spanish electricity.

Spain had more than 1,100 hours of zero- or negatively-priced electricity in 2024: more than 45 days. Despite this, battery energy storage systems (BESS) remain rare, with grid operator Red Eléctrica España (REE) recording just 3.36 GW of grid-connected energy storage, 3.3 GW of which was pumped. Why do we need energy storage systems in Spain?

Energy storage systems in Spain are a key element in the fight against climate change, as they help us to address the challenge of the energy transition. These systems make renewable energy production more flexible; and therefore help us to guarantee its integration into the Spanish electricity system.

Which country has the most energy storage systems in Europe?

With more than 20,000 megawatts, Spain is the country with the largest number of energy storage systems in Europe measured by power, and has the second largest number of projects: 128 in total; second only to Germany's 169.

What is Spain's battery storage market?

Spain's battery storage market is dominated by customer-sited systems. Utility-scale storage remains nascent. Currently, Spain's storage market is mainly composed of small-scale batteries co-located with solar PV. Spain's household electricity prices now stand at over EUR 0.30/kWh on average.

How many GW of hydro capacity does Spain have?

Spain operates 17 GW of hydro capacity plus 3.3 GW of pumped storage. These assets have historically provided: Seasonal energy storage in reservoirs. Asset owners optimise based on the water value, considering power prices months into the future. Pumped Hydro responds to wholesale market price signals.

Is combining solar and storage a good idea in Spain?

This variability, combined with Spain's excellent solar resources, make the economics of combining solar with storage increasingly favorable. The market for utility-scale batteries has been almost non-existent until recently as the market has lacked a clear policy and regulatory framework.

How does Spain's pumped hydro energy storage compete with Bess?

Spain's pumped hydro energy storage competes directly against BESS, limiting the battery storage opportunity in wholesale markets. 3. Missing ancillary markets Unlike Great Britain or Texas, Spain never created ancillary service markets that net-zero systems need:

Analysis of energy storage sites in Spain



Energy storage to soar in Spain and Italy but questions remain

The firm assembles its BESS from a site in Roche la Moliere, France. Energy storage is already booming in Italy but Spain is the next big market for storage in Southern ...

Spain preps grants for energy storage and grid ...

A consultation exercise has been opened into a plan to distribute European Regional Development Fund (ERDF) cash into large-scale energy storage and grid flexibility sites and into, customer-side ...



Spain: 60MWh battery system proposed for Enel solar PV plant

A site layout of the solar PV and battery storage projects. Image: Ingenostrum. A 60MWh battery energy storage project co-located with an existing solar PV plant has been ...

D5.2

This report aims to provide a clear overview of the energy storage infrastructure needs in order to achieve high penetration of renewable energy

in the electricity system of Spain.

12.8V 200Ah



Spain launching grants for 600MW of energy storage

Spain is launching EUR160 million (US\$170 million) in grants for energy storage projects, aiming to fund 600MW of projects to go online in 2026.

Spain plans first capacity market auctions for summer 2025

Spain's MITECO has opened consultation about the form of a capacity mechanism or capacity market which would guarantee security of electricity supply. Capacity ...



Energy storage in Spain: Forecasting electricity excess and ...

The operating hours of renewable and nuclear energy sources are estimated through a deep analysis based on historical data of the last decade, current energy Spanish ...

EU approves Spain's EUR700m energy storage ...

The European Commission on Monday greenlit a new aid scheme to enable Spain to deploy large-scale energy storage with co-financing of up to 85%.



Deye Official Store

10 years warranty



Spain plans first capacity market auctions for ...

Spain's MITECO has opened consultation about the form of a capacity mechanism or capacity market which would guarantee security of electricity supply. Capacity mechanisms pay energy generation and ...

Spain awards contracts to 1.9GWh energy storage ...

The government of Spain, through the Institution for the diversification and energy savings (IDAE) has awarded 880MW/1809MWh in its first tender for energy storage to be co-located with renewables.



Iberdrola to deploy 300MWh of battery storage projects in Spain

Iberdrola will deploy battery storage (BESS) projects in Spain adding up to 150MW/300MWh, to be co-located with existing PV plants.



Spain preps grants for energy storage and grid demand ...

A consultation exercise has been opened into a plan to distribute European Regional Development Fund (ERDF) cash into large-scale energy storage and grid flexibility ...



Spain targets 20GW of energy storage by 2030 as part of new ...

Updated: Spain's government has approved an energy storage strategy that it says will put the country "at the forefront" of what is being done in Europe and help it move ...

Strategy for energy storage in Spain for 2050

The objective of this study is to contribute to the development of a national strategy for storage systems in Spain up to 2050. To do that, it is necessary to study the different storage ...





Pumped storage in Spain

Spain is facing many challenges trying to integrate a large amount of renewable energy (wind and solar) into real-time dispatch of its power generation to meet electricity demand. To meet sustainable criteria ...

Energy technologies for hybrid renewable energy systems: a

...

The integration of renewable energy sources is essential for sustainable electricity generation, but the variability of solar, wind, and other renewable sources can ...



Unlocking opportunity: Analysing Spain's battery storage ...

Download the analysis report by LCP Delta and Santander on the investment opportunity in Battery Energy Storage Systems (BESS) in Spain.

Spain second country in world for stand-alone battery-based

...

With a significant deployment of renewable energy capacity, Spain stands out in this report for two factors that go beyond traditional solar energy and wind sources in the ...

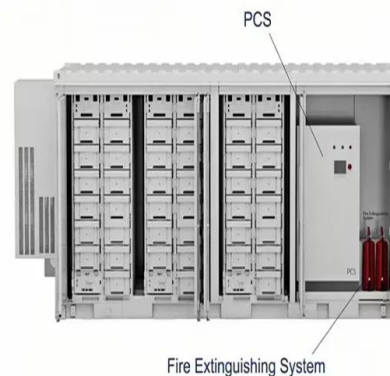


Spain launches two energy storage programmes ...

The government of Spain is launching two programmes with EUR280 million in grants for standalone energy storage projects, thermal and PHES.

Iberia: Why are there no batteries in Spain?

Spain's battery energy storage market is at a critical point. Despite being a leader in renewable energy deployment in Europe, the country has only 18 MW of standalone batteries installed, ...



Spain's MITECO has around 1 GW of battery storage projects ...

Spain's MITECO has a dozen energy storage projects going through its environmental permitting process, in addition to two sites the ministry has designated ...

Minister: Behind-the-meter storage eligible for ...

There was only one policy announcement of note, in the face of numerous industry demands, at Spain's third Green Hydrogen and Storage Summit, organized by the Spanish Solar Photovoltaic Association ...



Unlimited energy storage in Europe - pv magazine ...

Most studies of European 100% renewable energy overlook pumped-hydro energy storage (PHES), for the following, incorrect, reasons: there are few PHES sites; more dams on rivers are required; large

Enel Green Power Spain plans 38MWh battery storage at PV plant

The renewables arm of Italy-based power firm Enel is seeking approval to add a 38MWh battery storage unit to a solar PV plant in Spain.



Iberdrola to install 150MW battery storage systems in Spain

Iberdrola is set to enhance Spain's energy storage capabilities by installing six BESS installations with a total capacity of 150MW. The projects will be located across Castilla ...



BESS in Spain: the situation of the energy storage ...

The market energy storage in Spain, particularly in relation to the BESS systems (Battery Energy Storage Systems), is undergoing a dynamic and accelerated evolution. This transformation is driven by the ...



Spain increases energy storage target in NECP to 22.5GW by 2030

Spain has increased its energy storage target by 2030 to 22.5GW in the latest update of its National Energy and Climate Plan (NECP). The Spanish government, through the ...

Green light for 740 MWh Spanish battery projects

Spain's Ministry for Ecological Transition and Demographic Challenge (MITECO) has issued favorable environmental impact statements (EIS) for three projects: 200 MWh of storage on a ...



Contact Us

For catalog requests, pricing, or partnerships, please visit:
<https://bialydom.kolobrzeg.pl>