



The European Battery Energy Storage System (BESS) economy



Energy, Natural Resources
and Sustainability



Introduction

Welcome to this report, created for all participants in the rapidly expanding European battery energy storage systems (BESS) sector. This report has been developed for investors, developers, operators, policymakers, and new market entrants. This analysis supports your decisions and ambitions within this dynamic industry.

Our aim is to provide clear, practical insight to guide choices on market entry, capital allocation, risk mitigation, and project structuring across 11 European jurisdictions. The report focuses primarily on the period from 2025 to 2030, while also offering forward-looking perspectives that extend to 2035 and beyond.

This publication has been prepared by specialists within Fieldfisher's international, multi-practice renewable energy group, based across all jurisdictions covered. Our team advises clients throughout the entire BESS project lifecycle – from first steps into a market to long-term operations and eventual exit.

The report is structured into four sections:

- 1 Europe-wide trends:** Shared regulatory, grid, market, and cybersecurity themes
- 2 Fieldfisher BESS Market Maturity Index:** A comparative snapshot of countries' key risk and bankability criteria
- 3 Country profiles:** Standardised assessments of 11 markets
- 4 Strategic recommendations:** A concise guide to finding competitive advantages



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Executive Summary

Europe's BESS landscape

- » Large scale battery storage capacity is set to increase more than sixfold by 2030, to more than 100 GW.
- » The Middle East conflict will accelerate demand for clean energy, boosting BESS capacity while straining supply chains and intensifying grid-connection and permitting pressures.
- » Grid congestion is the main barrier to project delivery in 9 out of 11 countries; Co-location and hybrid projects are increasingly important
- » Cybersecurity obligations are tightening under NIS2 and UK cyber bill because of the increasing Cyber threat
- » Capacity mechanisms are still evolving in some markets
- » Uncertainty caused by developing and changing regulatory environment present challenges for BESS projects

What this means for capital allocation

- » Move early in markets with temporary tariff exemptions (Germany, Belgium)
- » Prioritise markets with clear capacity contracts (Italy MACSE, Belgium CRM, Poland CM)
- » Secure non-firm grid access where possible (Netherlands TDTR, Germany pooling)
- » Increasing focus on cyber security and fire safety increases the importance of these in early-stage financial models
- » Increase scenario testing for saturation and regulatory volatility



Europe's growing BESS markets face heightened geopolitical and cybersecurity concerns



Battery Energy Storage System markets across Europe are experiencing unprecedented expansion, as the result of grid flexibility demands and EU renewable integration targets.

According to the EU's Joint Research Centre, total grid-scale, and commercial BESS capacity in the 11 markets Fieldfisher looked at is 66 GW today and projected to double to 132 GW by 2035.

Germany, Italy and Spain account for over half of that growth. Furthermore, at current costs, the additional battery storage would require €68 billion (£59 billion) of investment. However, project developers face persistent challenges in permitting, regulatory complexity, and legal risks that loom over the industry. Cybersecurity is also rapidly emerging as a critical concern, with significant investment implications.

While European markets are evolving at different speeds, co-locating battery storage with wind or solar farms can increase revenues by 8-25% compared to standalone renewables, according to some examples.

BESS projects enable renewables to reduce curtailment losses and balancing penalties, while increasing arbitrage income and improving peak shaving capability – all contributing to stacked revenues.

Whilst it is too early to fully interpret the impact of the Middle East crisis on the outlook for BESS it is highly likely to increase demand for BESS capacity as the demand for renewable energy increases to offset the impact of rising oil and gas costs. This will most likely result in an additional boost for the BESS market but will also cause supply-chain pressures and likely raise BESS costs. This geopolitical push for renewable, local energy production will also intensify the need to reduce grid-connection and permitting bottlenecks quickly.

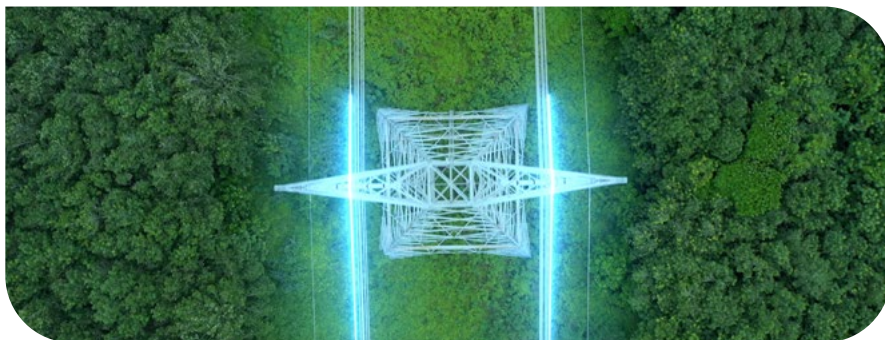


Grid saturation and connection delays

Grid congestion represents the most pervasive obstacle across every one of the markets this Fieldfisher report covers.

Belgium, Netherlands, Germany, Ireland, Poland and Spain report saturated connection queues and constrained transmission capacity.

Innovative – if not always perfect – solutions are emerging. Belgium’s proportional dispatch agreements, the Netherlands’ Time-Duration Transmission Rights (TDTR), and Germany’s cable pooling mechanisms provide flexible access, but introduce curtailment and revenue risks.



Permitting and regulation

Permitting timelines consistently exceed EU RED III benchmarks, particularly in Austria, Germany, and Ireland.

Many battery projects face region-specific planning requirements, environmental assessments, and specialised fire safety codes. Portugal’s digital licensing portal and co-location fast tracks represent notable exceptions.

Co-location and hybrid projects are becoming increasingly critical, not only to project bankability – as described above – but also in order to minimise planning risks. Battery storage has become essential for solar farms in Germany, for example in light of negative pricing hours and redispatch challenges. In many countries, the trend is towards co-location with data centres, while it’s with wind farms in other markets. Best practices are converging around early stakeholder engagement, proactive safety design, and robust community consultation.

The digital frontier

Cybersecurity has rapidly evolved from operational consideration to strategic imperative. According to the most recent Eurostat data, electricity and gas infrastructure is the leading sector experiencing cybersecurity incidents in the EU, with just under 29% of all enterprises affected.

The EU NIS 2 Directive mandates comprehensive risk management, incident reporting, and supply-chain security. Similar UK legislation is in the pipeline. Critical energy storage projects are now subject to direct regulatory scrutiny and require security controls in line with ISO/IEC 27001 (or equivalent) as well as supply chain flow-downs, affecting operational costs, project risk and permitting timelines



BESS cybersecurity planning begins at the project design stage. It can influence vendor selection, system architecture, and contractual frameworks.

Legal and financial risks

Regulatory and political volatility pose significant challenges in some of the European markets covered in this report.



“*The capital costs of BESS projects are largely upfront and relatively predictable; however, its revenues are not. Revenue streams differ across European countries, with many uncertainties related to potential market saturation, regulatory changes, and evolving electricity system and market dynamics over the 10-15-year lifespan of an asset.*”

Banking on Batteries report by the Institute for Sustainable Resources at University College London for the European Investment Bank

Political instability caused by minority governments (Portugal), evolving support schemes (France, Italy), and Poland’s recent capacity market reforms have added complexity to revenue forecasting. Fixed price capacity contracts and long-term capacity contracts or tolling agreements improve bankability but require stress-testing before competitive auctions.

Political instability (Austrian coalition shifts, French government transitions) is another risk that warrants close attention from project developers.

The BESS market is a relatively young sector depending on subsidies or relief from taxes or charges. Such government aids are under review in the light of the rapid growth in BESS capacity in certain countries, Germany for instance.

According to analysts Baringa, by 2035, wholesale arbitrage will become the dominant revenue driver in Europe. Ancillary service revenues are predicted to decline as markets become saturated.



Fieldfisher's BESS* market maturity index: A guide to the industry landscape in the EU and UK

Country	Regulation	2030 pipeline target (GW)	Grid connection	Investor interest	State/Local incentives	Cybersecurity
UK		23 - 27				
Austria		5.1				
Belgium		2 - 3				
France		4.7				
Germany		15				
Ireland		5				
Italy		11				
Netherlands		9				
Poland		6				
Portugal		1.5				
Spain		22.5				

*BESS projects with a capacity > 1 MW



The Fieldfisher BESS market maturity index highlights five essential criteria for investors and project developers:



**Supportive
regulation**



**Grid
connection**



**Investor
confidence**



**State/Local
incentives**



**Cybersecurity
legislation**



These largely determine commercial bankability and the degree of market entry risk.

Mature markets – Germany, Italy, Spain and the UK – demonstrate established regulatory landscapes and strong investor interest.

Developing markets – the Netherlands, Poland, and Austria – are building foundational infrastructure and policies.

Emerging markets – France, Portugal, Ireland and Belgium – face headwinds in one or more critical dimensions.

The transition from emerging to mature status depends critically on the speed at which governments address grid connection bottlenecks, establish coherent subsidy regimes, and implement robust cybersecurity standards.

Countries achieving green status across all or most criteria benefit from predictable timelines, transparent permitting pathways, and competitive bid processes. These allow developers to forecast cashflows with reasonable confidence.

The transition from emerging to mature status depends critically on the speed at which governments deal with three key issues. Grid connection bottlenecks need to be dealt with. Subsidy regimes need better coherence. The implementation of robust cybersecurity standards should be rigorous.

BESS operators pursuing opportunities in less mature markets should therefore prioritise early stakeholder engagement. They should stress-test for potential risks and seek flexible commercial structures that are resilient to regulatory change. In addition, long-term contracting arrangements can reduce dependence on subsidies or volatile merchant markets.

The index's strong green ratings for supportive regulation in Germany, Italy and Spain shows regulatory maturity alone does not ensure project success. It will be hampered if there are grid constraints and weak investment incentives.



Austria: Near-term risks may hamper long-term ambition

-  Installed capacity: **1 GW**
-  Pipeline: **Not quantified**
-  Target: **5.1 GW large scale by 2030**
-  Grid congestion rating: **Medium**

Austria is Europe's fourth-largest BESS market, with almost 1 GW of battery storage capacity. However, the country is currently at something of a regulatory standstill after the Green Party were voted out of power in elections last October.

The current three-party coalition government's approach to renewable energy investment is influenced by their predecessors' legacy. They added at least €10 billion of a €115 billion government debt increase through green subsidies and climate ministry spending.

The state owns or finances most renewables in the country, with a target for 100% of electricity to be powered by them by 2030 and climate neutrality by 2040. Projected BESS demand is 4 GW of large scale projects out of 9-10 GW total capacity.



“ *The energy transition can only succeed if all stakeholders are on the same page. This requires a broad political and social consensus...However, there is currently no Austrian strategy regarding storage facilities, and the present legal framework also prevents their development.*

TSO, Austrian Power Grid

Regulation and permitting

Permitting remains the primary bottleneck for project developers. Under the EU's RED III deadlines, approvals should take no more than 24 months. However, current averages exceed 18 months.

This has led to project backlogs, elevating connection queue risk. Regional variations between states, and the influence that state-owned companies have over market access also add to the picture. Consequently, the best practice battery storage operators can adopt involves extensive pre-application consultation with authorities to ensure approval before formal submission.

Additional solar generation planned by 2030 may bring constraints that improve storage project economics through grid stability services.

The final passage of the EIWG – The draft Electricity Market Act which introduced settlement points and dynamic pricing, improving revenue visibility for investors – should trigger market opportunities for hybrid projects and dynamic pricing participation.

Grid and connection

Austrian Power Grid plans €9 billion in transmission upgrades by 2034 – with €630 million allocated for 2025 alone – part of a €60 billion network modernisation. Regions with chronic congestion can offer price arbitrage for four-hour storage.

Nine state-owned county energy companies control regional markets, creating calculable counterparties for long-term contracts.



Revenue and financing

The EIB committed €1.6 billion Austrian financing in 2024, including €108 million for agrivoltaic farms with integrated battery storage. This establishes co-financing precedent for hybrid developments.

Green bonds, another important source of finance, accounted for €700 million of the €5.5 billion raised in 2024, supporting renewable and storage projects.

Meanwhile, price volatility underpins Austria’s expansion plans. Day-ahead spreads averaged €25-€35/MWh in 2024. Intraday peaks exceed €50/MWh during grid-stress episodes, according to industry analysis. This offers robust arbitrage opportunities for four-hour and longer-duration storage assets.

Storage projects can access diversified income through renewables market premium schemes, dynamic pricing arbitrage, grid stability and frequency regulation services and the carbon price advantage.

Long-term offtake agreements with state-owned utilities – which control up to 98% of distribution – can bolster project bankability.

Political shifts and permitting delays pose the greatest near-term risks. Projects with robust change-of-law clauses and diversified revenue streams are best placed to benefit from EIWG 2025 and EU tender windows.

⚡ Market driver	📋 Investor implication
EIWG 2025 settlement points, dynamic pricing	Could unlock hybrid revenues and arbitrage
Solar and wind renewables 2030 target	Creates battery storage demand
60% PV export cap	Incentivises co-location
€5.9 bn Verbund storage programme	Demonstrates utility-scale commitment
APG grid investment	Enables strategic project siting
68-98% state-owned market share of regional utilities	Potential for long-term offtake agreements
Change of law clause and risk matrix recommendations	Legal guidance supports bankability



Belgium: Developers navigate market, grid and connection challenges

Belgium is a competitive BESS market, with over 600 MW of capacity secured through recent Capacity Remuneration Mechanism (CRM) auctions. Favourable tariff exemptions add to revenue stacking upside and cost advantages.

The latest 2029-30 (Y-4) CRM auction added 226 MW, with 15-year contracts providing stable revenue streams that assist with de-risking merchant exposure. Large-scale projects are increasingly participating after initial reluctance due to administrative complexity and subsidy payback obligations. Developer attitudes differ between merchant-focused models and models providing more revenue certainty with the support of tolling and CRMs.



Grid and connection

Belgium's primary market challenge is grid saturation and constrained connection capacity (affecting both offtake and injection) through the country's TSO, Elia.

BESS operators face significant uncertainty due to limited pipeline transparency and access. Connection applications risk being delayed or outright rejected under network saturation rules.

Elia's response involves revising its Code of Conduct (Gedragscode) and developing flexible connection agreements. These allocate requested capacity proportionally and dynamically, either through time-shifting dispatch rights or capping instantaneous power output to manage network limits.

On 12 December 2025, the Flemish Parliament ratified a decree to introduce a regulatory framework for flexible connection agreements for new installations (and expansions) in congested areas in Flanders.

On 29 January 2026, CREG decided on an amendment of the Code of Conduct of 20 October 2022 concerning the conditions for connection to and access to the transmission network, including the connection procedures, to cope with the influx of applications and the increased pressure on network capacity: (i) binding deadlines for each step in the application process; (ii) filters for exploratory application; (iii) guarantees requested for actual availability of the sites; (iv) capacity reservations limited in time (with exceptions); (v) "use it or lose it" mechanism to be introduced; (vi) a recalculation of flexibility permitted; (vii) 'first come, first served' principle remains but applies per category of injection and withdrawal, as per the grid development plans.

Regulation and permitting

The federal competence threshold of 25 MW means most commercial battery storage developments fall under centralised permitting.

This avoids the complex three-region coordination that affects smaller installations. Stringent fire safety conditions also impact permitting timelines.

Revenue and financing

Project developers can stack multiple revenue streams including:

- » Revenue from CRM capacity contracts
- » FCR service market opportunities
- » Energy arbitrage by partnering with third party revenue optimisation service providers providing a variety of revenue sharing models versus (or combined with) tolling and offtake arrangements (European arbitrage analysis indicates Belgium has substantial revenue potential for optimised dispatch strategies)
- » Inertia revenue premiums may become available for reactive power and frequency support and congestion management.

Belgium maintains grid connection and injection tariff exemptions until 2027, representing material cash flow benefits. It remains to be seen whether this exemption would be extended after 2027. CREG is due to update its tariff methodology later this year.

However, revenue models require stress-testing against market saturation risks affecting the majority of revenues (including from intraday trading and ancillary service offerings).

The constrained grid particularly affects aFRR frequency reserve services, where most regulated revenues depend on full grid access.

Without complete connection rights, projects cannot capture the full value of balancing market participation. Flexible connection and access arrangements are therefore critical.

Investment risks

Market saturation poses the primary revenue and bankability risk and grid congestion without market-based congestion management creates operational constraints.

The uncertainty around grid cost exemptions post-2027 represents a material tariff risk.

Successful project development requires de-risked asset supply with comprehensive long-term performance guarantees.

Developers mitigate revenue risk with reliance on partial mid-to-long-term tolling arrangements. This transfers bidding and portfolio risk to off-takers. It also maintains some merchant market exposure for optimisation, topped up with CRM revenues where available.

⚡ Market driver	📊 Investor implication
CRM: 600 MW secured	Up to 15-year revenue certainty
Grid connection/injection tariff exemptions until 2027	Material cash flow benefits, but legal uncertainty beyond 2027
Revenue stacking opportunities (FCR, aFRR, arbitrage)	Returns maximised amid grid saturation, volume risk
Federal competence >25 MW	Centralised permitting for large scale
Flexible proportional dispatch and agreements	Mitigates curtailment; creates operational complexity
Potential for inertia reactive power services	Premium revenue opportunities, but competitive environment



Fieldfisher advised on several standalone BESS project

Since 2021, Fieldfisher's projects team has advised on the development and financing of several first-to-market and mid to large BESS installations.



These include:

- » the first pilot BESS project in Belgium of 10 MW/20 MWh developed by ESTOR-Lux in Bastogne in 2021,
- » the 75 MW / 300 MWh energy storage project developed by Energy Solutions Group in Harmignies, near Mons in December 2024 (at the time one of the largest facilities in development in Belgium), and
- » the 50 MW energy storage project developed by Gramme Storage 1 in Tihange and financed through a lease provided by ING Lease Belgium in February 2026.



In addition to pressure on BESS development costs, we continue to see significant variation in sponsor and lender risk appetite, contracting structures and revenue models (particularly for mid-size projects). We are also seeing alternative financing structures, such as leasing, in the battery storage market.

Dennis Lievens
Fieldfisher Belgium Partner



France: Revenue opportunities amid risks and reform



Installed capacity:
1.07 GW -> 1.7 GW



Pipeline: **8 GW**



Target: **4.7 GW**



Grid congestion rating: **Medium**

France's BESS market is entering a pivotal phase of growth, driven by regulatory reform, rising ancillary services revenues, and an ambitious project pipeline.

The country's electricity demand is set to climb by 14 percent by 2030. Its TSO RTE anticipates total battery storage capacity of between 12 GW and 15 GW by 2050.

However, this will stretch grid infrastructure and heighten renewable curtailment risks. Grid upgrade planning is therefore needed to unlock over 8 GW of reserved connection capacity that would prevent renewable curtailment.

BESS will be crucial for grid stability and renewable integration. While market incentives and the regulatory landscape are in flux, project developers will also be aware of heightened political risk.



The continued lack of government stability creates uncertainty that may slow project development. This particularly applies where any consequences play out at the regional level.

Despite this backdrop, major corporate players are advancing flagship projects, both for grid balancing and hybrid projects supporting solar farms. In the short to medium term, installed battery storage capacity is forecast to increase from 1.07 GW to a projected 1.7 GW.

“ *BESS installations support the rapidly evolving energy landscape. They will facilitate electrification, the integration of renewable energy, the security of our supply, and help control costs for both the network and the customer.* ”

French TSO RTE

Regulation and permitting

The previous government was considering a ministerial order on outdoor lithium-ion battery storage, introducing uniform fire safety distances, emergency response protocols, and third-party risk mitigation measures.

Until the national framework crystallises, discussions between industry stakeholders and safety authorities are ongoing. However, regional authorities in Nouvelle-Aquitaine and Haute-Corse have already imposed local safety rules, adding complexity for project developers to navigate.

They should seek early engagement with local authorities, adoption of advanced thermal management and explosion venting technologies. Adherence to EASE emergency response guidelines will be prerequisites for permitting success and community acceptance.

Revenue and financing

Strategic project structuring with a sophisticated legal approach is best focused upstream. This will maximise funding opportunities, including those involving state aid.

The planned 2026 capacity mechanism reform and potential introduction of multi-year remuneration schemes would also mitigate auction volatility and attract institutional capital.

The June 2024 reopening of France’s automatic frequency restoration reserve (aFRR) tender significantly improved project economics. This raised average prices to €66/MWh – almost 10 times the level in primary reserve markets.



High aFRR prices are likely to persist through 2028 and stabilise by 2030. This could yield a more than 2% uplift in IRR compared with previous tariff structures.

The 2025-2028 TURPE 7 network tariff has different rates for high consumption and production zones. It enables operators to increase their returns by aligning network charges with arbitrage opportunities.

Lenders insist on finely tuned revenue-stacking models to mitigate the inherent volatility of ancillary services auctions. Banks typically require three-year revenue forecasts stress-tested against at least a 30% drop in aFRR clearing prices. They will look for debt structures to match the shortest contracted revenue tranche.

Banks have also sharpened their focus on detailed supply chain due diligence and manufacturer creditworthiness.

Debt agreements require completion guarantees from cornerstone EPC contractors, accompanied by performance-testing protocols.

Multi-vendor supply strategies are one way to diversify counterparty risk in this regard.

Market outlook

Securing projects ahead of the capacity market reform, in high production zones with strong aFRR contracts will be a mark of success for developers and operators.

Two of the biggest obstacles in their way are regional fire safety requirements and grid connection constraints. As France gradually increases grid flexibility, BESS assets are positioned to deliver essential infrastructure services while generating attractive risk-adjusted returns.

 Market driver	 Investor implication
aFRR market offers €66/MWh	Revenue stacking: reserves; arbitrage, capacity markets
14% electricity demand growth by 2030	Early grid access for competitive positioning
Fire safety ministerial order	Safety expert partnerships add value
Large-scale project momentum	Signals bankability; consolidation opportunities
Bullish IRR outlook under TURPE 7 tariff	Tariff-optimised project siting supports returns
8+ GW of grid access rights in pipeline	Capacity mechanism stability needed
Planned 2026 capacity mechanism reform	Reduces revenue volatility, increases bankability
Ongoing political uncertainty	Regional regulatory risk due diligence essential



Germany has emerged as Europe's leading BESS market, with €8 billion in completed deals across 160 projects demonstrating substantial institutional commitment.

The market is also seeing regulatory changes and competitive dynamics mirror the UK's evolution toward market saturation. The grid hosts over 15 GW of residential and smaller battery installations, considerably outnumbering the 2.4 GW of utility scale systems.

Germany:
An €8 billion race
against time

-  Installed capacity: 2.4 GW
-  Pipeline: 15 GW by 2030
-  Target: No official target; Photovoltaic 215GW aim
-  Grid congestion rating: High



Grid and connection

Industry projections suggest Germany will reach 15 GW of grid scale projects by 2030, based on current deployment rates of about 1 GW every six months. In the first half of 2025 alone, TSOs received grid connection requests totalling 226 GW, underscoring the intensity of the development pipeline. However, only a fraction of that is expected to be built.



Our analysis of several recent planning refusals found the following reasons cited: site suitability, impact on rural landscape and distance from nearest substation.

The 2029 grid fee waiver expiration represents the sector's most significant catalyst and constraint. However, the Federal Grid Agency (Bundesnetzagentur) just published that the grid fee waiver is under review for new projects which created a lot of uncertainty in the market.

Current exemptions can deliver up to 3% of annual return, creating a four-year window before regulatory support phases out.

This timeline is driving current investment activity and differentiates Germany from other European markets lacking defined deadlines.

The current avoided-grid-fee exemption is being phased out progressively, prompting calls from industry to extend the relief to 2034.

As with many of its EU neighbours however, Germany's grid connection constraints compound timing pressures.

One TSO has declared capacity exhaustion until 2029. Others now cap new BESS connections due to network congestion, and per-project connection fees can exceed €1 million, heightening first-mover advantage.

A recent publication from all TSOs now also changed the system of grid reservations from first come first served to a degree of maturity process (Reifegradverfahren) which will apply as of April 2026 for BESS projects with a capacity over 100 MW.

This was supported by 457 hours of negative pricing last year, for which the EEG does not award subsidies, sustaining strong intraday arbitrage opportunities.

Debt financing through tolling agreements can enable increasing leverage ratios for contracted cash flows, fundamentally improving equity returns and scalability for battery storage operators but reducing flexibility in the capacity marketing.

Therefore, it is important to evaluate security and bankability of tolling against revenue opportunities from merchant marketing, especially in the next 5 years.



Revenue and financing

Market fundamentals demonstrate recovery from 2024's early volatility. Battery storage returns rebounded from below €100/kW annually in Q1 to above €150/kW by Q3.

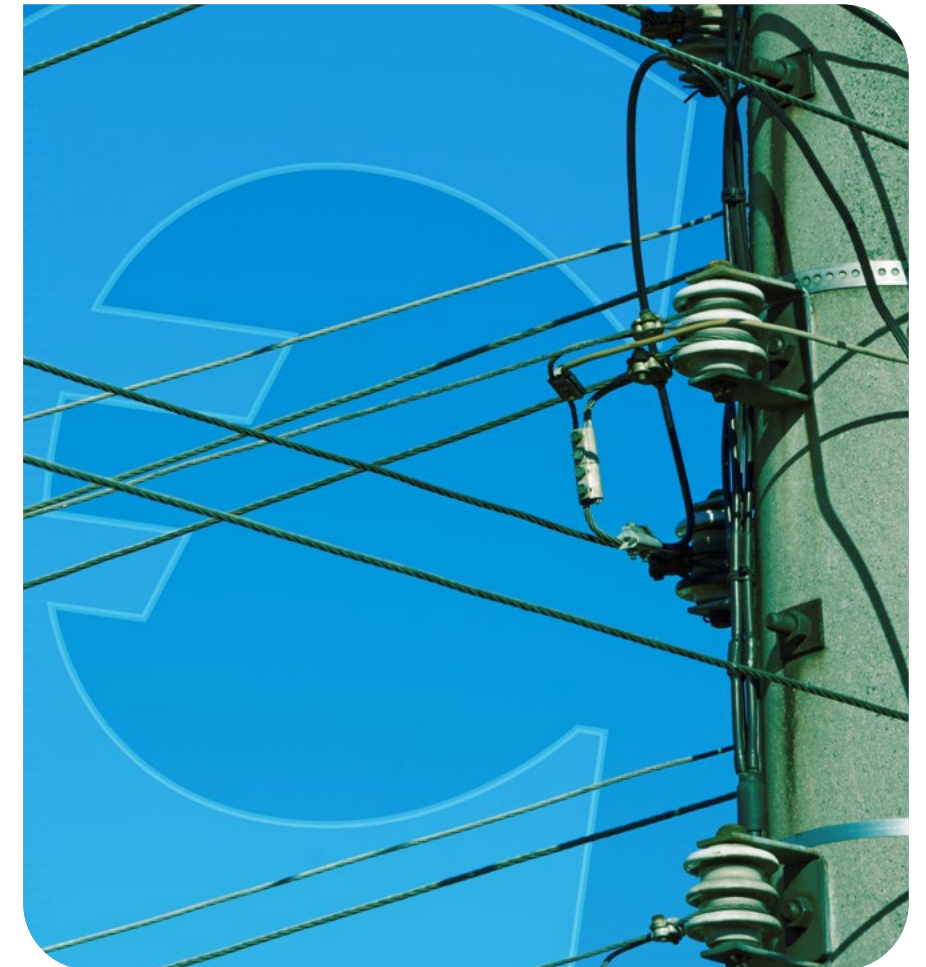
This was supported by 457 hours of negative pricing last year. Since the EEG excludes hours of negative pricing from the subsidy regime, strong intraday arbitrage opportunities are sustained.

Income streams that provide for the possibility of revenue stacking include frequency containment reserve (FCR) with 30-second response requirements, automatic and manual frequency restoration reserves (aFRR/mFRR).

Prequalified battery capacity for aFRR has quintupled to 360 MW. System costs for it spiked to €530 million in 2023, highlighting the technology's growing role in grid stability.

New inertia services planned to launch in 2026 will require grid-forming certification. They will offer four contract categories – positive and negative base, plus premium products – with 2 to 10 year fixed-price agreements commencing in January 2026.

Debt financing through tolling agreements can enable increasing leverage ratios for contracted cash flows. This fundamentally improves equity returns and scalability for battery storage operators, but reducing flexibility in capacity marketing. Therefore, it is important to evaluate the security and bankability of tolling against refinance opportunities from merchant marketing, especially until 2030.





“ *The upside that project developers have from peak shaving and intra-day trading won't be there in about five years, when the BESS market is saturated. They're in a race to get their storage delivering power to the market.*

Daniel Marhewka

Partner, Co-head of Energy, Natural Resources and Sustainability, Fieldfisher Germany

Construction cost contributions vary by location, potentially exceeding €1 million per project. New cable pooling mechanisms enable shared grid connections between renewable projects, though implementation requires complex multi-party coordination.

A January 2025 EEG amendment now permits cable pooling, allowing multiple renewables and storage co-located projects to share a single grid connection.

Innovation tenders continue through 2028, targeting 5.8 GWh of storage capacity, and offering structured competitive allocation for co-located projects.

In October 2025, 587 MW of solar-plus-storage capacity across 50 projects were awarded in an auction oversubscribed more than threefold, at an average strike price of €0.0709/kWh. The next auction will take place in May 2026.



Case study: Multidisciplinary Fieldfisher team supports 222.5 MW BESS acquisitions



A Fieldfisher team supported MEAG who sought to acquire battery storage projects in Germany with a total capacity of 222.5MW from SMA Altenso GmbH.

Our cross-disciplinary experience in the key aspects of such developments across the UK and Europe, was supported by construction expertise, ensuring the client received integrated counsel every step of the way.

In order to ensure a successful outcome, Fieldfisher's team carried out careful due diligence on the project. We then advised on drafting, negotiation and documentation, mindful of the critical interdependencies across its engineering, procurement, construction and operations and maintenance.

Cybersecurity

Germany’s cybersecurity framework creates complex compliance obligations for BESS operators.

The EU’s NIS2 Directive, implemented through the July 2025 NIS2UmsuCG Act, expands coverage to 29,000 entities. Battery storage operators meeting size thresholds must implement comprehensive risk management, incident reporting, and supply chain security measures.

There are also conditions around personal management liability and sanctions reaching €10 million or 2% of global turnover. These requirements significantly affect project costs and operational complexity.

Projects exceeding capacity thresholds face additional KRITIS obligations. Systems with 36 MW frequency containment reserve capacity or 104 MW nominal capacity qualify as critical infrastructure. KRITIS operators must comply with BNetzA’s IT Security Catalogue, requiring ISO/IEC 27001 frameworks, external audits, and specialised OT protection.

Cybersecurity requirements must be embedded from planning through operations, affecting permitting, system design, and vendor selection across the project lifecycle.

Market outlook

Currently, the review of the grid fee waiver by the Federal Grid Agency (Bundesnetzagentur) creates uncertainty in the market.

The still valid grid fee waivers expire after 2029, and competitive pressures are likely to significantly compress returns in Germany. Rumours of EEG changes also do not help with the market.

Co-location with solar installations has become commercially mandatory rather than optional. Negative pricing episodes render standalone solar projects commercially unviable, most of the time, and the German solar industry has called on the government to target 100 GW of BESS by 2030.

 Market driver	 Investor implication
€8bn completed deals across 160 projects	€100bn European investment through 2050
Innovation tenders through 2028, 5.8 GWh target	15 GW grid-scale BESS deployment by 2030
FCR, aFRR/mFRR, inertia services (2026+)	Revenue stacking enhances project commercials; Tolling allows project finance
Grid fee waiver expires August 2029 and is currently under review	Four-year optimal entry window
587 MW awarded October 2025 auction	Competitive strategy for contracted revenues



Ireland: Policy support amid grid and planning hurdles

-  Installed capacity: 1.2 **GW**
-  Pipeline: **10 GW**
-  Target: **5 GW by 2030**
-  Grid congestion rating: **High**

Just 1.2 GW of Ireland's 10 GW BESS pipeline is live today, exposing a significant bottleneck in grid readiness, revenue certainty and consenting.

Meanwhile, 83 MW is under construction, 2.2 GW consented, 4 GW in planning, and 4.5 GW in pre-planning stages. The figures illustrate the country's significant grid readiness and consenting constraints. The key challenges to the implementation of BESS Projects in Ireland today can be summarised as relating to grid connection delays and congestion caused mainly by constrained and 'non-firm' connection offers, revenue uncertainty particularly with the transition from DS3 to DASSA and challenges around obtaining routes to market.

An analysis of recent planning refusals reveals that flooding and fire safety risks have been key reasons for refusal, along with visual impact on the local landscape.



Whilst Ireland has a strong development pipeline of BESS projects, the implementation of these Projects continues to be constrained by issues relating to revenue certainty, route to market challenges and grid connection delays and congestion.

Elaine Traynor

Renewable Energy Partner

Fieldfisher Ireland



Grid and connection

Ireland's electricity network is under mounting pressure as renewable capacity expands towards its 2030 target. The government has secured €3.5 billion for 2026-2030 investment, €2.5 billion was dedicated to EirGrid's *Shaping Our Electricity Future* for the purpose of improving the Irish transmission infrastructure. EirGrid anticipates over 350 projects to be funded from the equity by 2030.

The TSO, EirGrid is accelerating grid upgrades under the 'Shaping Our Electricity Future' strategy to accommodate both storage and renewables, however, connection certainty will remain limited in the near future.

With that in mind, BESS operators should map prospective project sites against planned reinforcement corridors.



Regulatory and permitting

Ireland's development pipeline dwarfs active assets, and timelines between consent and commissioning can be lengthy. Grid readiness and complex connection agreements remain significant hurdles.

Among the causes are protracted grid upgrades, revenue uncertainty and the "missing money" problem (when wholesale electricity prices fail to rise high enough during periods of scarcity to enable power generators to recover their full capital costs and earn adequate returns on investment.)

With all of this in mind, project developers should stress-test financial models against probabilistic auction scenarios and project delays. In addition, by embedding robust change-of-law clauses, they can support revenue certainty.



From 30th April 2026, the former procurement model DS3 will be replaced with the DASSA system as part of the new FASS Programme. Service providers will submit bids for each 30-minute trading period across a 24-hour timeframe, a move from the six-monthly auction process under DS3.

To support the revenue flexibility envisioned by the FASS Programme, the Irish TSO EirGrid launched Initiative 2 of the Scheduling and Dispatch System and fully integrated battery units classed as ESPS into the real-time electricity market. Since November 2025, the development has helped smooth supply, demand and support financial viability.

EirGrid is also developing the 'Long Duration Energy Storage Procurement Mechanism' which is set to launch contract subsidies for LDES by 2027.



Commercial and legal dynamics

Operators will be in position to generate revenue streams from fast day ahead markets and ancillary markets. As part of the Long Duration Procurement mechanism, EirGrid will be launching the procurement round in Q1 2027 for tenders and successful contract execution is expected by Q4 2027.

More broadly, operators can tap revenue streams including capacity payments under FASS, day-ahead arbitrage, system services and ancillary markets.

The transition from DS3 fixed payments to the Day-Ahead System Services Auction (DASSA) will then offer potential revenue stacking opportunities and clearer price signals to project developers.

On the legal side, construction risks – including EPC contracting and battery thermal-runaway insurance – require clear contractual provisions on fire suppression and performance bonds.

Embedding policy update clauses ensures that Off-take Agreements and EPC contracts adapt seamlessly to new regulatory mechanisms, preserving bankability as market structures evolve.



Case study: Fieldfisher supports an ambitious co-located BESS portfolio in Ireland

Fieldfisher's team in Ireland supported an international energy provider in the development of a portfolio of co-located wind, solar and battery storage projects across the country. However, layered property agreements and competing stakeholder interests risked delays and cost overruns for our client.

Our team worked seamlessly with the client's in-house counsel and project staff, while also ensuring relationships with the landowner's counsel were well established and commercially grounded.

The Fieldfisher team co-ordinated parallel property agreements across the portfolio promptly and efficiently, ensuring consistency while respecting site-specific complexities.





Market outlook

BESS operators can benefit from maintaining continuous dialogue with the TSO, EirGrid and the regulator, the CRU.

When looking to site selection for potential advantages, they should balance proximity to reinforcement zones, land use constraints and connection queue status. Prioritising greenfield sites within PR6 upgrade footprints (70 substations, 1,000+ upgraded overhead lines, and 300km+ underground cables) will help project developers optimise IRRs.

They should also take into account Ireland's need to integrate more wind farms – largely offshore – onto its grid over the next decade, which may provide further site opportunities.

In that light, the next 18 months of DASSA rollout, long-duration auctions and PR6 upgrades will determine if battery storage moves from being a speculative pipeline to a backbone of the country's network.



Between the DASSA system and SDP-02 Initiative, the future of BESS projects and grid operation in Ireland is certainly transiting into a flexible, diverse and dynamic environment. The two policy introductions illustrate the TSO's commitment to providing greater grid readiness and flexibility for developers and operators, with both developments reflecting a move towards diversification of revenue stream and market dynamics. The maturity of Irish BESS legal framework and policy has evolved to mirror the flexibility characteristic of BESS systems and is expected to facilitate optimum utilisation of the technology within the broader renewable energy market.

At present, the most significant barrier for the bankability of BESS projects is the lack of uncertainty due to the transitioning period from the DS3 to DASSA system. This has been labelled as 'The Gap'. The DS3 system is set to expire next month on 30th April 2026, while FASS arrangements will go live May 2027.

EirGrid recommended in June 2025 that the DS3 Regulated Arrangements be extended for The Gap period. There is no conclusive statement that EirGrid's recommendations are accepted, and that there is still no conclusive answer on what operators are to do during this period.



Market driver

€3.5bn grid investment for 2026 - 30

PR6 grid reinforcement onshore/offshore wind

Transition from DS3 to DASSA

First 500 MW LDES procurement (late 2025)

EU directives compliance focus in judicial reviews



Investor implication

Accelerates connection in reinforced corridors

New connection capacity in priority zones

Revenue predictability; stress-test models

Long-term capacity contracts - early cashflows

Mitigate objection risk with robust EIAs and community consultation



Italy: Grid improvements and developer partnerships hold the key to growth

-  Installed capacity: **1 GW**
-  Pipeline: **1.75 GW**
-  Target: **11 GW by 2030**
-  Grid congestion rating: **Medium**

With approximately 7 GW of installed storage power (and almost 18 GW of capacity) as of September 2025, Italy is one of the most developed BESS market in Europe (together with UK and Germany).

The government's May 2021 authorisation framework introduced the country's first clearer/ streamlined authorisation framework for standalone and hybrid battery storage projects.

The December 2024 renewable energy code further streamlined approvals by offering "light, extended and simplified" single-licence procedures. These reforms have converted battery storage projects into bankable assets.



Among other measures, an update of the national framework is also underway, implementing EU directives and facilitating the adoption of flexible grid-connection agreements for energy storage systems, particularly in areas where traditional grid reinforcement is not the most efficient solution.

Projects that were once difficult to authorise can now secure financing through predictable regulatory support.

Supporting these aims, Italy has obtained EU State-aid clearance for a €17.7 billion support scheme to procure more than 9 GW / 71 GWh of electricity storage by 2030 across battery, pumped hydro and emerging technologies.

By 2030 solar power is forecast to grow from 36 GW to 80 GW and wind from 13 GW to 28 GW, creating demand for large scale storage to integrate an additional 60 GW of intermittent generation. 1.75 GW is currently under construction (non-official market estimates) in pursuit of a national target of 10 GW by 2030 (6 GW centralised + 4 GW distributed).

Grid and connection

However, like many of its European neighbours, Italy's grid is not keeping up with connection demands. Persistent north-south grid constraints and lengthy approval times have led some project developers to pursue modular, nodal-scale projects of 2-5 MW.

The Italian TSO Terna's planned grid reinforcement investments between 2025 and 2027 are expected to alleviate these bottlenecks and unlock larger scale deployments.

Foreign investors prepared to navigate these delays, especially Chinese technology firms keen to supply their equipment to the evolving market.

Meanwhile, amendments to the Testo Integrato Conessioni Attive (TICA)—expected to be finalized within 2026 aim to streamline connection procedures by introducing new technical and economic rules to address network saturation and accelerate grid access for renewables and storage projects.

However, Italy's 'Golden Power' regulations permit government vetoes to safeguard strategic assets and infrastructure. As a consequence, joint ventures with domestic partners have become the preferred investment structure among some investors from overseas.

“*Italy needs BESS projects to support the growth of renewables, but they encounter the same problems as them: it takes a long time for them to receive a grid connection. As in many other countries, more investment in the grid is seen as the solution, also in order to give concrete effect to the procedural simplifications of the permitting processes.*”

Fabio Giuffrè

Partner, Energy, Real Estate and Public Law, Fieldfisher Italy

Revenue and financing

Battery storage operators can earn capacity payments for maintaining rapid frequency response availability and from balancing market arbitrage in ancillary services auctions.

They can stack revenues from FCR services such as Terna’s Fast Reserve pilot, where five-year contracts for 2023-2027 at around €29,500/MW/yr were awarded.

National tax credits are also available for innovative energy saving technology, including power storage systems integrated with renewables.



These allow companies to claim credits of varying percentages of qualifying expenditures and to amortise unused credits over up to five years.

Meanwhile, Italy’s MACSE capacity mechanism compels Terna to procure storage via annual competitive tenders, offering multi-year indexed contracts of up to 15 years.

This fixed remuneration structure de-risks revenue streams and has already attracted significant institutional interest ahead of the first auction in H2 2025, which awarded 10 GWh of storage capacity.

⚡ Market driver	📈 Investor implication
DEC 2024 single licenses procedures	Revenues de-risked, attracting institutional capital
1.75 GW under construction; 15 GW 2030 target	60 GW solar and wind drives BESS demand
€17.7 bn EU-backed state aid for 9 GW of storage	Blended funding supports diverse storage technologies
Golden Power regulations favour joint ventures	Strategic partnerships mitigate veto risk
Grid bottlenecks, long connection times	TSO Terna’s reinforcements will unlock capacity
First MACSE auction awarded 10 GWh	Capacity contracts and stable cash flows
FCR, balancing market and TSO-contracted services revenue	Stacked revenues, tax credits enhance bankability



Netherlands:
Power price volatility
and renewables
flexibility drive demand

-  Installed capacity: 250 MW
-  Pipeline: 2 GW
-  Target: 9 GW by 2030
-  Grid congestion rating: High

The Netherlands BESS market remains small in the EU context, with just 250 MW of current installed capacity. There is just 2 GW in the development pipeline, as grid congestion and connection delays stifle growth.

Policy support is limited and investment in the sector has consequently declined, according to analysts Baringa.

However, demand is underpinned by power price volatility and the surging need for flexibility, as wind and solar continue to disrupt the generation mix.



Project developers in the Netherlands face three main categories of risk:

Volume risk: Curtailment risks can be reduced by focusing on off-peak operating FCR and FRR capacity, or by spreading risk across a portfolio.

Price risk: Revenues from arbitrage and ancillary services are volatile. BESS operators increasingly use revenue-floor or tolling contracts with utilities to stabilise cashflows while retaining upside.

Technology risk: Lenders expect warranties on battery degradation, clear augmentation plans, and strong quality assurance. Most failures come from system integration and commissioning, not from the battery cells themselves.

Grid and connection

Transformative grid access reforms have redefined project timelines. Since early 2024, grid operators have been allowed to offer so-called “fully variable” contracts.

These provide cheaper but flexible access, allowing injection or offtake mostly in off-peak hours and are especially suitable for BESS that can respond to curtailment.

At transmission level, the Dutch regulator ACM has also mandated TDTR with at least 85% guaranteed availability (ATR85). The Netherlands’ TSO TenneT had to implement these by 1st October 2025, or earlier if feasible. Compared to fully variable rights, TDTR provides more predictability, concentrating curtailment in peak hours.

These rules mean projects can be connected to the grid and start earning revenues much sooner, rather than waiting years for firm capacity.

“ *BESS developments in the Netherlands face significant challenges: high grid costs, connection issues due to congestion, and a regulatory framework that is not yet fully supportive.* ”

Geert de Nijs, Fieldfisher Netherlands Partner

Even though there may be some curtailment during peak hours, the earlier start can outweigh those losses. In practice, this shifts the business case toward products that are less dependent on peak-hour access, such as FCR and FRR, which remain deliverable under these new grid contracts.

Regulation and permitting

Regulatory bottlenecks persist, as permitting is often slowed by stringent fire safety conditions under PGS 37-1 and 37-2. These requirements typically cover separation distances, ventilation measures, fire water supply, and clear emergency access routes.

To try and mitigate consequent delays, developers increasingly design projects in line with PGS 37-1, and in consultation with local safety authorities.

Our analysis of recent planning decisions found that fire safety and groundwater risks were among the key concerns and reasons for refusal. Farmland use and the impact on the rural landscape were also cited.

Meanwhile, local initiatives show that regulatory hurdles can be partly offset. Amsterdam and Rotterdam, for example, are pioneering reduced grid fees for flexibility assets and streamlined spatial procedures. This demonstrates that municipal action can accelerate deployment even within a tight national regime.

Revenue and financing

Although standalone project capacity payments are not yet available, the flagship SDE++ scheme supports hybrid BESS and renewables developments, and the Flex-e grant offers targeted funding. The 2025 SDE++ round ran from 7 October to 6 November with a budget of €11.5 billion.

Running from April to October 2025, Flex-e covered 50% of feasibility-study costs (up to €125,000) and 35% of flexibility-measure implementation (up to €300,000). It operated on a first-come, first-served basis rather than an auction, so timely and well-prepared applications are decisive.

Projects could target 8-15% IRRs, 5-8-year paybacks and €60-100/MWh Levelised Cost of Storage, (based on €350/kWh capex and 85% round-trip efficiency) according to industry reports.

Battery storage installations leveraging non-firm “fully variable” grid connections and time-duration-based transport rights could monetise FCR services. Revenue-floor or tolling contracts can smooth arbitrage volatility.

📈 Market driver	📊 Investor implication
Slow growth market -> price volatility	Arbitrage and reserve revenues
8-15% IRR; 5-8 yr payback; €60-100/MWh LCOS	Robust blended returns: ancillary, arbitrage
ATR85 launches in October 2025	Early revenues; predictable curtailment
PGS 37-1/37-2 fire-safety guidelines	Permitting requires proactive compliance
Flex-e grants for flexibility assets	Funding accelerates local deployment
SDE++ supports hybrid storage	Improved bankability and de-risks financing
Municipal pilots: lower grid fees	Lower opex, improved project timelines



Poland: Accelerating towards integrated renewables

-  Installed capacity: **Approx 32 MW**
-  Pipeline: **Up to 15 GWh**
-  Target: **6 GW by 2030**
-  Grid congestion rating: **Medium**

Poland's BESS market is rapidly evolving from a very small base as the country transitions from coal dependence towards renewable energy integration.

The report from December 2025 by the Polish state investment bank (BGK) identified the flexibility gap, i.e. the lack of technical and regulatory capability to respond to variable renewables, as the core investment gap in the Polish energy system. With over 35 GW of variable renewables energised to date and an ambitious target of 5.9 GW for the offshore wind by 2030, energy storage has become critical for grid stability and maximising hybrid project revenue.

The market response stimulated by the capacity market and other financing mechanisms resulted in a project pipeline of over 6 GW. The state-owned utility PGE plans 10 GWh of new capacity by 2035. In addition, Poland's €1.2 billion storage aid scheme represents the most significant funding program for the sector in Central Eastern Europe.



It offered between 45% and 65% of eligible costs for minimum 4 MWh projects that can prove additionality. Some 630 applications were made to the scheme, and it was over seven times oversubscribed by value. The scheme shall support deployment of 172 projects of 14,5 GWh by 2028.

Together with two large scale BESS investments of PGE totalling to 425 MW, the expected capacity of BESS projects in development amounts to 16,5 GWh. With the currently ongoing reform of the grid connection proceedings aiming at cleaning the connection queue out of the projects with little or no change of execution, the project pipeline is expected to grow even further.

Grid and connection

This demonstrated the willingness of the market spectators to engage in BESS related investments.

Unlike other heavily congested EU markets such as Germany or the Netherlands, Polish TSO PSE currently welcomes the stabilisation benefits BESS projects offer.

Its ambitious €15.4 billion transmission development plan for 2025-2034 includes 4,700 km of new 400 kV lines and 28 new substations to accommodate new offshore wind and solar capacity.

This aligns with forecast battery storage growth. Such installations can provide additional flexibility to the system dominated by the variable renewables and supported by the upcoming deployment of the nuclear units.

“ *The future is in all sorts of hybrid solutions. Wind and solar are using battery storage to optimise revenues and mitigate losses caused by curtailment. The EU Energy Market Design Reform will increase demand for flexibility solutions in response to greater exposure of renewables and nuclear to market signals.*

Marek Dolatowski
Counsel, Fieldfisher Poland

Revenue and financing

Poland's June 2024 balancing market reforms opened up FCR, aFRR, mFRR and RR opportunities to operators and investors.

However the substantial arbitrage opportunities available will diminish as more storage connects to the grid.

As the market evolves, project developers will need to manage how they avail of a variety of key revenue streams. Among these are day-ahead markets, intraday trading, and ancillary services.

Hybrid / co-located projects will be best positioned to take advantage, in particular where cable-pulling arrangements facilitate their timely and efficient connection. The need to secure flexible response at the system level should result in further development of the storage capacity in upcoming years.

Market research shows that large-scale BESS installations in Poland incurred average total costs of around €550,000/MW in 2024, including civil works, plant, and grid connection expenses.

Independent revenue-stacking analysis indicates combined income from day-ahead arbitrage, intraday trading, and system balancing services of €160,000-€220,000/MW/yr in volatile regions as of Q3 2025.

Capturing otherwise curtailed solar generation yields an additional €10,000-€20,000/ MW/yr by storing excess output that would be shed.

Early market entrants could have achieved 8-12% IRRs and payback periods of as little as eight months from lucrative ancillary services revenue since the mid-2024 reforms, according to research from S&P Global.

Polish industrial users are increasingly turning to battery storage. Storing cheaper off-peak grid power for use at expensive peak times brings down their average cost per MWh.

This offers attractive returns while reducing exposure to wholesale market volatility and grid connection uncertainties.

Market outlook

Poland’s BESS market presents compelling opportunities for project developers navigating the dual funding landscape.

Developers and investors should expect the initially generous ancillary revenue rates to drop off over the coming years, in line with what happened in the UK and German BESS markets.

They should scenario plan for the revenue stack accordingly, with an eye to potential hybrid or industrial installation opportunities and the 2029 capacity market.

⚡ Market driver	📊 Investor implication
Hybrid co-location / cable-pulling / industrial BESS	Secures revenues and anticipates arbitrage decline
Dec 2024 auction: 2.5 GW, 61% derating	Capacity market contracts up to 15 years
June 2024 balancing reform	FCR & aFRR ancillary services revenue
PSE’s €15.4bn grid upgrade (2025-34) upcoming grid connection reform	Fewer grid connection bottlenecks
Revenue stacking: €160k-220k/MW/yr	Maximises yield
System flexibility gap and deployment of nuclear	Secures both revenues and demand for greater BESS capacity



Portugal: Iberian blackout spurs reforms and growth ambitions



Installed capacity: **13 MW**



Pipeline: **750 MW**



Target: **1.5 GW by 2030**



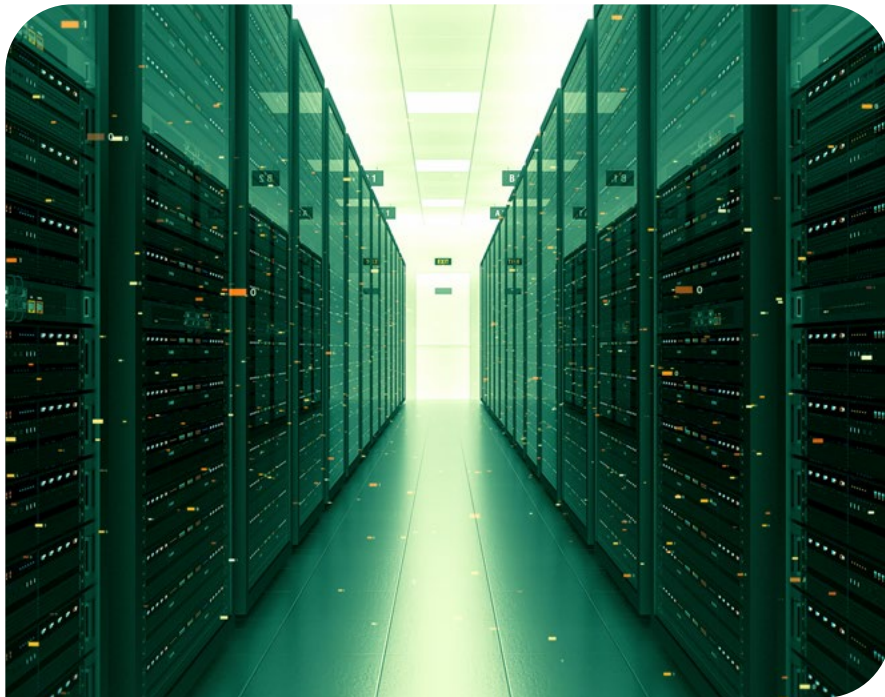
Grid congestion rating: **Medium**

The dramatic blackout on April 28, 2025, when 31 GW of generation cascaded offline, first in Spain, then across the Iberian Peninsula, highlighted the region's grid vulnerabilities.

The government reacted quickly by announcing a €400 million Electricity System Security Enhancement Plan, encompassing 31 specific measures to reinforce grid stability in response to the power failure.

The plan aimed to have at least 1.2 GW of battery storage connected by 2030.

Portugal only has 13 MW of BESS installed to date in the context of a near-term target of 750 MW for 2026. A renewables aim of 93% by 2030 will lead to curtailment that brings revenue opportunities for project developers.



“Data centres will drive a significant amount of battery storage deployment in Portugal. But we are also a place where lithium can be extracted and refined. Eventually it’s hoped we’ll be producing batteries here too.”

Rui Lanceiro

Senior Associate, Public and Regulatory Dept,
Fieldfisher Portugal

Regulation and permitting

Inspired by the EU’s Repower agenda, measures supporting the broader renewables industry also benefit the battery storage sector.

Decree Law 15/2022 formally integrates BESS into the National Electricity System (SEN). This provides a clear legal framework for both standalone and co-located projects.

Decree Law 99/2024 fast-tracked the co-location of up to 20% additional storage with existing solar or wind farms, cutting approval timelines by up to 40%. The government announced the introduction of a digital, one stop licensing portal under the Directorate General for Energy and Geology (DGEG), but that is still to be implemented.

By standardising capacity definitions and eliminating frequent re-permitting, Portugal has removed a major obstacle for hybrid battery storage projects.

The law requires compliance with environmental regulations and procedures, but the specific deadlines and requirements are integrated into the overall licensing timeline. This often involves separate EIA processes with their own schedules.

Key licence conditions include mandatory participation in grid-balancing mechanisms, real-time operational data reporting to Portugal’s TSO, REN, and compliance for frequency response.

Contractual best practice includes embedding “regulatory change” clauses that trigger renegotiation if DGEG modifies technical standards post-commissioning, alongside force majeure provisions covering grid /operator curtailment beyond 15% annually.

These legal safeguards prove essential given Portugal’s history of regulatory shifts and technical capacity constraints within DGEG.



Revenue and financing

In parallel, a €100 million Recovery and Resilience Plan grant competition funded 43 projects totalling 500 MW. Many battery storage operators have blended equity, RRP grants and environmental fund support from the recent €400 million grid plan to optimise their capital availability.

While the Strategic Investment Incentive System's extension beyond 2025 remains under review, BESS project teams have typically taken a “wait and see” approach, balancing short-term grant financing with other potential revenue.

Battery pack costs in Portugal fell to €320/kWh in mid-2025, down 20% year-on-year. This strengthens project IRRs by 2-3 percentage points in some cases.

Meanwhile, EIF-backed finance de-risked for lenders through up to 75% credit risk coverage is available at attractive terms to developers.

Portugal is developing a successor framework targeting energy transition investments through 2030. This aligns with the revision of the National Energy and Climate Plan (PNEC 2030) and the broader Portugal 2030 strategy, which includes ambitious targets for renewable energy, energy storage, and decarbonisation.

Industry consultations indicate the new regime will prioritise hybrid installations and projects demonstrating measurable grid stability contributions. Eligibility will likely be linked to participation in REN's ancillary services markets.



Grid and connection

Renewable generation accounted for 71% of Portugal’s electricity in 2024 and is set to rise to 93% by 2030.

High solar regions such as Alentejo and the Algarve are already experiencing curtailment. This created arbitrage and ancillary service opportunities for storage.

REN’s €137 million blackout response upgrades, doubling black start units and expanding Iberian interconnections, enhance the case for BESS as a system-stabilising asset.

Market outlook

A competitive auction for 750MW of BESS due by the end of January 2026 will provide a strong indicator of the industry’s future.

Early movers should secure sites in curtailment hotspots, leverage fast track retrofits under Decree Law 99/2024 and negotiate change of law and force majeure clauses to mitigate regulatory uncertainty.

Data centres, already contracting long-term energy management agreements, may underpin initial demand. Meanwhile, local lithium production and a newly approved Chinese battery factory in Sines aim to position Portugal as both a storage consumer and an emerging battery supplier.

⚡ Market driver	📊 Investor implication
€400m grid plan	Expedited permitting and grant access
€100m RRP grants to 43 projects	Subsidies lower capex and enhance IRRs
Faster permitting times, approvals, waived EIAs	Reduced time to commercial operation
Hybrid co-location models	Arbitrage and ancillary revenues
Accession, 2-stage auction design	Access to liquid arbitrage and reserve service markets
93% by 2030 renewables target	Curtailment brings revenue opportunities
EIF green loans; REN’s blackout response upgrades	Debt leverage and better ancillary premiums



Spain: A vulnerable grid demands a historic response

-  Installed capacity: **Approx 60 MW**
-  Pipeline: **16 GW to 2030; up to 3.5 GW near term**
-  Target: **22.5 GW by 2030**
-  Grid congestion rating: **High**

Spain's grid collapse, in a matter of seconds on April 28, 2025 – whose effects (as aforementioned) cascaded across Iberia – crystallised the urgent need for flexibility that has led to a dramatic policy response from the Madrid government. This has been done without halting the transition towards renewable energy according to the National Energy and Climate Plan (NEPC).

The April blackout, beginning at 12:33 CEST and lasting over 10 hours, exposed critical vulnerabilities as Spain's 59% renewable generation mix created unprecedented system stress.

With solar providing the majority of power at the time of collapse, the incident directly catalysed the most ambitious battery storage programme in European history.



After what was a watershed blackout that made headlines around the world, Madrid responded with Royal Decree Law 7/2025, This declared public utility and streamlining procedures to integrate 22.5 GW of battery storage by 2030.

However, Parliament's rejection of the decree on July 22 created regulatory uncertainty, prompting the government to pursue urgent alternative measures through a draft Royal Decree with lower regulatory rank. This regulation (Royal Decree 997/2025) of 5 November is complemented by the Resolution of the National Commission for Markets and Competition (CNMC) of 1 December 2025. However, the detailed regulation governing REE's technical rules, simplified authorisation procedures, tariff frameworks, and capacity-market arrangements remains pending.

The revised approach prioritises hybrid storage projects within existing generation sites, introduces specific technical provisions, and streamlines procedures for co-located installations.

The RD 88/2026, of 11 Feb, formally recognises energy storage installations, including BESS, as participants in the retail electricity framework, allowing them to contract directly or through independent aggregators and to access markets and system data under the new unified datahub.

These measures, combined with the €700 million ERDF support scheme, aim to accelerate deployment despite the parliamentary setback that has put over €2 billion in storage investments at risk.

The current battery storage base is small, at about 60 MW of large-scale installations. A near term target is to increase that to around 3.5 GW. According to recent industry reports, the current project pipeline up until 2030 is about 16 GW estimated.

As part of an ongoing CNMC initiative (launched in 23 Feb 2026), BESS units must obtain a flexible access permit and may be subject to operator instructions or remote disconnection, with mandatory local control and real-time measurement for facilities above 100 kW.

Revenue and financing

Project developers benefit from a double-tolling exemption, shielding battery systems from paying both transmission and distribution use-of-system charges on the same capacity.

This exemption remains in force as of 2020, but is subject to change, as the CNMC is reviewing the regulation to adapt it to the growing use of battery storage.

Connection use-of-system tariffs are capped at €0.5 /kW/yr for standalone projects, while hybrid installations enjoy pro-rata charging, according to summary analysis of the Decree.

Standard ancillary services contracts include clauses for frequency regulation, voltage control and black start, with 15 minute tender windows and pre-qualification guarantees of 2% of contract value.

The €700 million scheme, managed by state renewable energy agency IDAE, co-finances up to 85% of capex (retroactive to March 2023).



Applications opened in June with a July 15 deadline, attracting BESS operators seeking access to unprecedented subsidy levels. The scheme envisages 80 to 120 projects totalling 2.5–3.5 GW, with tranche deadlines in Q4 2025 and Q2 2026.

Less-developed regions qualify for 85% subsidies; Catalonia and Madrid receive 40%, steering investment to priority areas.

Grid and connection

Spain's capacity market proposal, launched for public consultation in December 2024, foresees three competitive pay-as-bid auctions – long-term main auctions (up to 15-year delivery), annual adjustment auctions, and transitional auctions. These are all open to existing and new generation, battery storage and demand-side resources under differentiated commitment periods.

Managed by TSO Red Eléctrica and overseen by regulator CNMC, the design includes a secondary market for capacity rights. First auctions are now expected in 2026, pending final approval,

State aid clearance and implementing rules, creating a clear revenue stream for BESS alongside gas-fired plants.

The mechanism awaits European Commission approval. Industry expectations suggest the first auction may slip to 2027, though some consider a 2026 launch still attainable. This combats merchant-price volatility exacerbated by the renewable surge: over 600 hours of zero or negative pricing recorded in H1 2025 alone, with negative prices averaging -€1.80/MWh versus -€0.12/MWh in 2024.

Daily spreads peaked at €28.4/MWh in April 2025, enabling arbitrage revenues of €160,000/MW/yr for optimally positioned projects.

Solar curtailment has reached 2.9% of output over the past two years, costing €107 million, with curtailment projected to rise to 5% by 2027–2028 as renewable penetration outpaces grid reinforcement.

Grid constraints remain a bottleneck: Red Eléctrica's ageing network and limited interconnections (3 GW cross-border) provoke congestion.

In response, project developers should focus on volatility hotspots – Madrid, Valencia and Andalucía – to monetise frequency regulation, synthetic inertia and black-start services.

Developers are also focused on hybrid projects (solar/wind), that use a single grid connection, reduce curtailment, lower permitting and infrastructure costs, and deliver more stable, diversified revenues.



“ *The most critical milestone is a grid connection. It's a significant problem, because we just don't have sufficient infrastructure here.* ”

Ramón Vázquez del Rey Villanueva
Partner, Regulatory and Energy
Resources, Fieldfisher Spain



Market outlook

Many battery storage operators are finding that geopolitics around supply chains are impacting their costs, with more focus on consequential contractual risks.

The April blackout has also brought more emphasis on force majeure risks. Cybersecurity awareness has also increased since April, meaning BESS operators should expect more scrutiny in that regard.

Where many projects encounter delays is in planning and permitting, with some availing of more time to get through environmental impact assessments and grid connection permitting processes.

Rural areas have been the most problematic, with energy developments prohibited in some places. Adequate staffing and staff competence can also be an issue in some regional and local authorities.



Market driver

April 28 blackout: urgent regulatory response

Royal Decree-Law grants public utility status

€700 million ERDF scheme (85% capex subsidy)

Over 600 hours negative/zero pricing in H1 2025

First capacity auctions expected in 2026

5% curtailment by 2027-2028



Investor implication

First-mover advantage in nascent market

Secure compulsory easements for large sites

Increased investor interest and competition

12-15% IRRs €160k/MW arbitrage revenues

Improved bankability

Co-located storage more viable



UK: Revenue concerns within an ambitious and maturing market

-  Installed capacity: **6.8 GW**
-  Pipeline: **Up to 160 GW**
-  Target: **23-27 GW by 2030**
-  Grid congestion rating: **Medium**

The UK currently has 3 GW of BESS capacity, and new installations are growing at under 1.5 GW a year, according to trade association RenewableUK.

The Government's Clean Power 2030 Action Plan set an ambitious target of 23-27 GW of battery storage by the end of the decade. This represented a significant increase from current levels and was backed by a number of key policy mechanisms.

Ofgem's cap-and-floor scheme for long-duration energy storage offers guaranteed minimum returns that fundamentally alter the investment calculus. Its first awards are expected in summer 2026, providing 25-year revenue visibility for successful bidders.

Against this backdrop, in the medium term the association describes the revenue environment for project developers as "complex". It adds that BESS revenues are becoming more fragmented and uncertain, according to concerned industry experts.



RenewableUK's EnergyPulse database shows Britain's ambitious pipeline of battery storage projects ramping up dramatically from 2027. Over the following decade, 160 GW of projects will be in development, planning, consented, or operational, it shows. How many of them actually become operational in that timeframe remains to be seen, however.

Regulation and permitting

The sector's regulatory architecture is solidifying around three key pillars.

National Grid ESO's connection queue reforms have shifted from "first-come, first-served" to "first-ready, first-connected". This creates immediate advantages for projects with secured land rights and planning permissions (including reserved matters sign-off and pre-application approvals) and confirmed financing. In some cases, ready projects can achieve connection dates up to 18-24 months earlier than speculative peers.

Secondly, the upcoming Cybersecurity and Resilience Bill 2025 will expand essential service obligations to BESS operators, requiring enhanced incident reporting and independent vulnerability audits. Battery projects will be classed as critical infrastructure under the legislation, which will give regulators enhanced powers to investigate vulnerabilities.

Thirdly, fire safety standards are tightening, with the BESS Fire Safety Bill making fire authorities statutory consultees for planning applications. Project developers should budget for additional capex for enhanced suppression systems and anticipate planning delays of at least several months.

Those with comprehensive risk management strategies and established supply chain relationships have the advantage.

Market dynamics

A recent notable trend has seen an increase in delivery-related disputes resulting in liquidated damages. This stemmed from new, inexperienced contractors relying on construction industry traditions, rather than

adhering to BESS-specific requirements in supply chain and delivery.

One consequence of this has been project developers opting for standard UK construction forms rather than bespoke energy project contracts, as well as using pre-approved suppliers. This has meant less favourable terms or higher costs at times but provides stronger legal certainty where transfer of risk is concerned.

Project sizes in the UK are trending towards larger scale, reflecting market maturity and the consequential economic advantages. Recent reforms reward earlier connection dates to those with secured land rights, planning permission and confirmed financing.

Analysing recent BESS projects that have been refused or were initially refused planning permission, those on the green belt and in rural areas have been most at risk. Environmental and fire safety concerns have been significant factors in planning refusals.

Planning is a major hurdle. It is crucial that developers build strong relationships with local groups. It helps reduce objections and builds community support for projects.

“ *Co-location and working with local stakeholders to help develop support for projects make sense.*

Jamie Key
Fieldfisher construction division partner

Revenue and financing

Two further significant trends are reshaping revenue profiles. More battery storage projects are co-locating with data centres, providing stable offtake agreements while minimising planning opposition. Projects near major load centres and substations are also more bankable.

There is also consolidation around proven lithium-ion technologies for shorter-duration applications. Novel battery technologies are becoming more popular in long duration (LDES) projects, supported by the cap-and-floor scheme.

In summary, the challenge for BESS operators lies in optimising revenues from frequency response (typically 40-50% of revenue) and balancing services (5-15%), capacity market contracts (25-35%) and arbitrage (15-25%) opportunities.

International investors recognise the UK’s combination of regulatory clarity, government revenue support, and established market structures. These may position it favourably in many lights when compared to its European neighbours. But it has its own aforementioned challenges that investors and developers have to navigate, particularly mindful of the medium-term concerns around revenues.

 Market driver	 Investor implication
23-27 GW target by 2030	Government backing; long-term revenue visibility
Cap-and-floor LDES support	Minimum return guarantees reduce risk
First ready, first connected reforms	Earlier connection; premium for readiness
Cybersecurity Bill 2025	Compliance costs rising; security differentiation
Fire Safety Bill requirements	Expertise needed; planning delays; higher capex
Data centre co-location	Stable revenues; easier planning
Supply chain constraints	Experience a premium, reduces risk

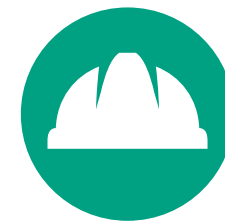


Strategic recommendations: A practical guide to help decision makers find competitive advantages



For investors and lenders

- » Prioritise markets with capacity contracts and flexible grid access (UK, Germany, Belgium)
- » Demand revenue floors or tolling agreements in volatile markets (Netherlands, Spain) or to allow project financing
- » Require cyber-by-design documentation at term sheet stage
- » Model curtailment impacts under non-firm access rules
- » Use multi-vendor supply strategies to reduce integration risk.



For developers

- » Secure land and permits early under 'first ready, first connected' regimes (UK)
- » Target reinforcement corridors (Ireland PR6, Italy Terna upgrades, Poland 400 kV build)
- » Co-locate with renewables or data centres wherever possible
- » Embed change-of-law clauses in all long-term PPAs and EPC contracts
- » Front-load fire safety and cyber design to prevent permitting delays



Leading European BESS markets demonstrate a number of distinct competitive advantages that decision makers should focus on.

The UK offers unmatched regulatory clarity through cap-and-floor mechanisms and planning reforms prioritising ready projects.

Germany's battery storage market has grown to 2.4 GW of utility scale capacity, yet faces intense grid connection bottlenecks and rigorous KRITIS cybersecurity requirements that need to be considered.

Meanwhile, Spain's blackout-induced regulatory overhaul has arguably created Europe's most ambitious storage programme.

In support of EU battery storage and renewables targets, innovative financing mechanisms are emerging across the continent. For example, blended equity/grant packages (Portugal), green bonds (Austria), European Investment Fund-backed loans, and structured tolling agreements (Germany).

Markets that align regulatory clarity, financing, grid development and access, and cybersecurity frameworks will be the most attractive to BESS investors and project developers. Those countries will also be the most likely to hit their battery storage targets.

Market strategies

Developers and lenders can benefit from adopting market-specific approaches.

In mature markets (UK, Germany, Belgium), they should prioritise ready project positioning and revenue stacking.

In developing markets (Netherlands, Poland, Austria), they should focus on hybrid structuring and long-term offtake agreements.

In emerging markets (France, Portugal, Ireland, Spain), they can capitalise on accelerated permitting windows while embedding robust change-of-law protections.

Temporary tariff exemptions (currently Germany until 2029, Belgium through 2027) and unprecedented subsidy regimes (Spain's €700 million ERDF, Portugal's €400 million grid plan) also create investment deadlines that decision makers need to keep in sight.

They can secure first-mover advantages through reinforcement corridors, co-located installations, and contractual safeguards. This will help them maximise value and returns under the aforementioned incentive schemes.



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