Global BESS Market Outlook

Regulation, grid reform, and market maturity

June 2026

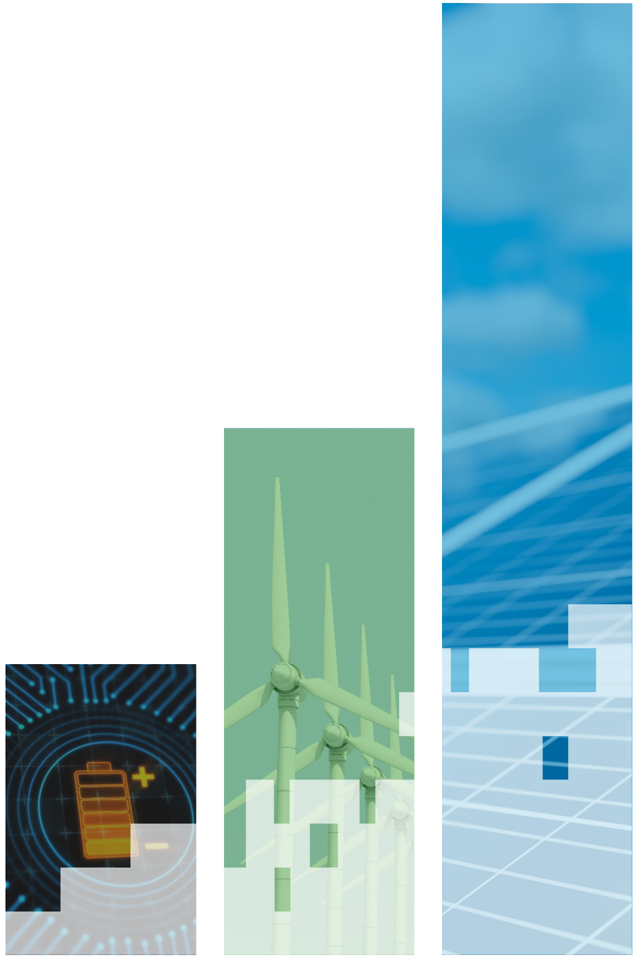
Our observations

The global energy sector in 2026 is characterized by a transition from baseload-centric power systems to flexibility-centric networks. Battery Energy Storage Systems (BESS) have moved from peripheral applications to a central role in critical infrastructure. For European firms, particularly in the Dutch market, the 2025 to 2026 period presents growth alongside structural risks. Global energy storage capacity additions were projected to reach approximately 247 Gigawatt-hours (GWh).

This surge in deployment is underpinned by a shift in capital toward the low-carbon transition, which reached an investment total of $2.3 trillion in 2025. The maturation of storage technology has enabled its graduation from experimental pilots to a fundamental requirement for grid stability. As solar and wind capacity expand, BESS assets are becoming one of the primary tools for managing variable generation, ensuring that renewable energy is not lost to curtailment but rather preserved for peak demand periods.

Simultaneously, the European supply chain faces challenges. Recent setbacks in European cell manufacturing have highlighted the fragility of domestic production and the ongoing reliance on East Asian suppliers for battery cells, control electronics and firmware. For firms operating in the European Union, navigating this dependency while complying with emerging sustainability regulations like the Battery Passport is now a strategic priority for ensuring long-term project bankability.

In the Netherlands, severe grid congestion, where 14,000 companies are on waiting lists, is driving a shift in how energy assets are connected and monetized. Traditional connection models are proving insufficient for the current demand, leading to the introduction of time-based transport rights and other regulatory innovations. This report analyzes the supply chain concentration in Asia, the shift toward revenue-stacking financial models, and the evolving regulatory environment required to stabilize modern grids across the continent.



BESS Industry overview

BESS Industry Overview

Global Investment and Market Scale

The global energy transition has become a significant macroeconomic driver, with low-carbon investment reaching $2.3 trillion in 2025. Much of this capital is concentrated in the “new three” clean-technology sectors: solar, electric vehicles and batteries. In China, the clean energy sector contributed 11.4% to GDP in 2025, representing over one-third of the nation’s total economic growth. This manufacturing scale has reduced hardware costs globally and created a powerful feedback loop for domestic deployment.

Deployment speed is highest in China, which installed 65 GWh of BESS in December 2025 alone, a figure exceeding the annual total of the United States. This rapid expansion is fueled by state-level policies that mandate storage for renewable projects, ensuring that generation and consumption are balanced at the source. The resulting economies of scale allow Chinese manufacturers to export high-quality hardware at price points that stimulate demand in emerging markets and high-value regions like Europe.

Capacity Forecasts and Valuation

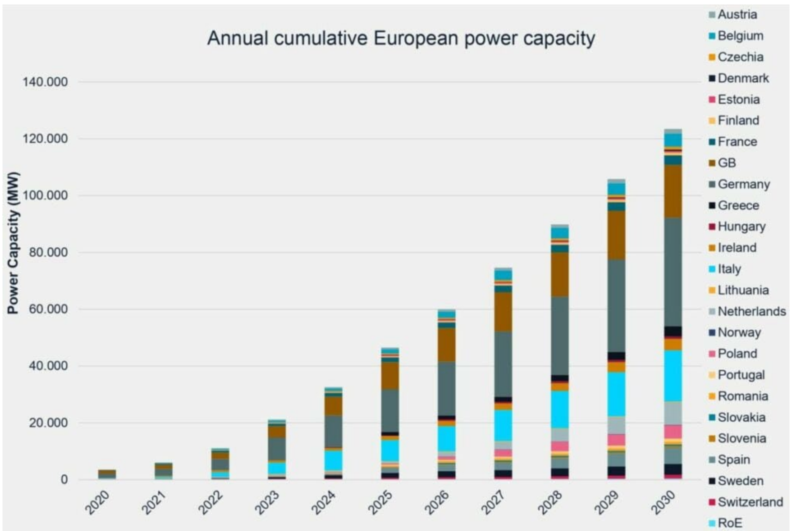
Global energy storage additions were expected to grow 23% year-over-year to 247 GWh in 2025. Forecasts indicate deployments will reach 360 GWh in 2026, while the cumulative global fleet is projected to reach nearly 2 Terawatts (TW) by 2035. This represents an eightfold increase in total capacity over the next decade. Market valuation estimates for 2030 range from $106 billion to $172 billion, potentially reaching $486 billion by 2035.

In the EU, utility-scale batteries became the main growth engine in 2025, delivering 55% of new capacity. This indicates a shift toward infrastructure-scale assets over residential applications as the primary method for balancing grid loads. As the market matures, investors are increasingly focused not only on installed capacity, but also on operational reliability, software performance, grid-integration capabilities and the ability of storage assets to capture multiple revenue streams.

Annual BESS deployment in GWH per region

Region	2024 (GWh)	2025E (GWh)	2026E (GWh)
China	~155	~175	~210
United States	~35	~40	~50
Europe	~22	~32	~45
Rest of World	~28	~35	~55
Total	**~240**	**~247**	**~360**

*Source BNEF Global Forecast & SolarPower Europe



Source: Europe installed 10GW of energy storage in 2023

BESS Industry Overview

Regional Market Analysis

China remains the dominant market, accounting for over 50% of annual gigawatt builds in 2025. This is supported by state mandates for co-located storage and a consolidated manufacturing base that benefits from massive economies of scale. The United States captures approximately 14% of the market, driven by the Inflation Reduction Act's investment tax credits for standalone storage. However, trade barriers and local content requirements maintain a higher-cost environment than other regions, forcing American developers to focus on high-efficiency projects.

The European market is growing due to power price volatility and energy security needs following the shift away from imported fossil fuels. Installed capacity in Europe is expected to grow 45% year-over-year to 16 GW in 2025, supported by the Net-Zero Industry Act which aims to secure domestic production and reduce strategic dependencies. While the UK and Germany lead in total capacity, Southern European markets are gaining momentum as they seek to integrate vast amounts of solar generation into aging grid networks.

Primary Drivers: VRE Integration and Grid Stability

The integration of Variable Renewable Energy (VRE) remains the primary driver for BESS. With solar additions reaching up to 602 GW in 2024, BESS is required to manage midday excess and prevent curtailment. By storing surplus energy during peak production hours, storage assets allow for a more efficient use of renewable resources and provide a lucrative opportunity for wholesale price arbitrage.

Additionally, the expansion of AI and data centers is creating additional demand for on-site storage, as large electricity users seek to manage peak loads, improve resilience and reduce exposure to grid-interconnection delays. Furthermore, as thermal plants retire, BESS assets with grid-forming inverters are increasingly providing synthetic inertia and frequency response. These advanced systems maintain grid stability during millisecond-level fluctuations, effectively replacing the mechanical inertia once provided by spinning turbines in traditional coal and gas power plants.

BESS integrator market share ranking 2025

Region	Rank	Company
Global	1	Tesla
	2	Sungrow
	3	CRRC
	4	Envision/ Huawei
	5	HyperStrong
North America	1	Tesla
	2	Sungrow
	3	Powin
Asia Pacific	1	CRRC
	2	Sungrow
	3	Envision
Europe	1	Sungrow
	2	Nidec
	3	Tesla
Middle East	1	Sungrow
	2	BYD
	3	Huawei

Chinese firms increase BESS market share, not in North America

Technology, supply chain, and market dynamics

Technology, supply chain, and market dynamics

The Shift to LFP Chemistry

Lithium Iron Phosphate (LFP) has become the dominant chemistry for stationary storage, supported by its safety profile, long cycle life and cost advantages. Compared with Nickel Manganese Cobalt (NMC), LFP generally offers a higher thermal runaway threshold, longer cycle life and lower material cost, making it particularly suited to high-cycle grid-balancing applications. Battery pack prices are also expected to continue declining, with some forecasts pointing toward approximately USD 80/kWh by 2026.

This longevity results in a lower Levelized Cost of Storage (LCOS) over a 20-year project life, making it the most bankable choice for long-duration storage. Sodium-ion technology has seen a slowdown in adoption as falling lithium prices have reduced its relative cost advantage. While sodium-ion remains a promising alternative for the future, the current market is almost entirely defined by the refinement and mass production of LFP cells which have set the industry standard for performance and safety.

Supply Chain Concentration

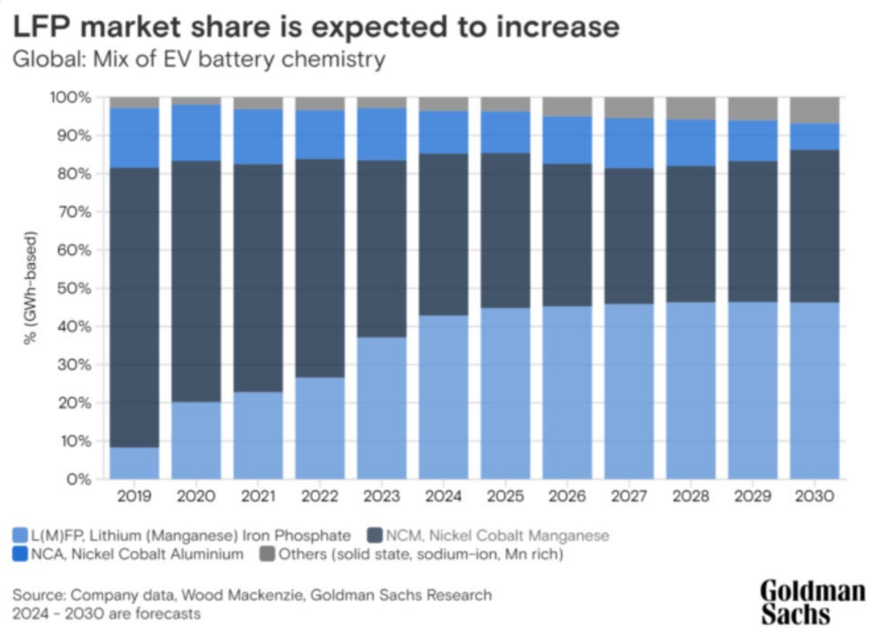
The BESS supply chain remains heavily concentrated in East Asia, with China playing a dominant role in battery cell manufacturing and related components. In 2024, global battery demand surpassed 1 TWh, while global manufacturing capacity reached around 3 TWh, creating significant overcapacity and price pressure. China produced more than three-quarters of batteries sold globally, giving its manufacturers substantial scale advantages and influence over global pricing and availability.

This scale has accelerated BESS deployment by reducing hardware costs, but it also creates strategic dependency risks for European firms. Following setbacks in European battery manufacturing, including Northvolt's bankruptcy, developers remain reliant on Asian suppliers for cells, control electronics and firmware. European policymakers are therefore increasingly focused on diversifying battery supply chains and strengthening domestic capacity. For developers, procurement due diligence should cover not only price and warranty terms, but also supplier ownership, country-of-origin exposure, mineral traceability, cybersecurity and Battery Passport data readiness.

LFP vs NMC Comparison Table

Parameter	LFP	NMC
Safety	Higher thermal runaway threshold	Lower threshold; requires active cooling
Cycle life	6,000–10,000 cycles	2,000–3,000 cycles
Cost (2026E)	$80/kWh	$100–120/kWh
Energy density	Lower (less relevant for stationary)	Higher (advantage in mobile)
Best use case	Grid-scale stationary storage	EVs, space-constrained applications

*Source Bloomberg NEF & Goldman Sachs



Technology, supply chain, and market dynamics

Integrator Landscape and Software

Market value is shifting toward system integration and software. The industry is divided between cell manufacturers and system integrators. CATL remains the leading player in energy-storage battery shipments, with a reported 30.4% global market share in 2025, followed by BYD. Innovation in the sector is exemplified by CATL's Tener system, which claims zero degradation over the first five years of operation. This technical milestone reduces the need for "oversizing" battery arrays at the start of a project, significantly improving initial capital efficiency.

In the integrator segment, Tesla maintains a leading position by bundling its Megapack hardware with Autobidder software to facilitate revenue stacking. Sungrow holds 14% of the global market, while other major players include Fluence and CRRC. The competition is no longer just about hardware durability but about the sophistication of the algorithms that manage the battery. These software layers are essential for participating in complex energy markets, where millisecond responses can dictate the difference between profit and loss. As software becomes central to revenue optimisation, it also creates dependency risks around remote access, firmware updates, data hosting, cybersecurity controls and vendor lock-in.

LFP vs NMC Comparison Table

Company	Primary Role	Key Strategic Differentiator
Tesla	Integrator	**Software Ecosystem:** The "Megapack" is sold as a hardware-software bundle with "Autobidder" AI, creating a high-margin walled garden.
Sungrow	Integrator	**Cost Leadership:** Leverages dominance in power electronics (inverters) to offer AC-coupled systems that are significantly cheaper than peers.
CATL	Cell Mfr.	**The Engine Room:** Controls the raw chemistry. Their "Tener" zero-degradation system sets the technical benchmark for the industry.
CRRC	Integrator	**Domestic Scale:** Dominates the massive Chinese domestic grid market; leverages state-backed rail expertise for heavy industrial storage.
Fluence	Integrator	**Digital Intelligence:** A pure-play integrator with a deep data heritage (Siemens/AES), focusing on "Mosaic" bidding software for complex markets.
BYD	Vertically Integrated	**Vertical Fortress:** Owns the entire chain from lithium mines to chips, allowing them to survive price wars that bankrupt smaller players.

The Titans of BESS – 2025 Market Leaders

Impact on European firms

Impact on European companies

Regulatory Compliance and Supplier Data Requirements

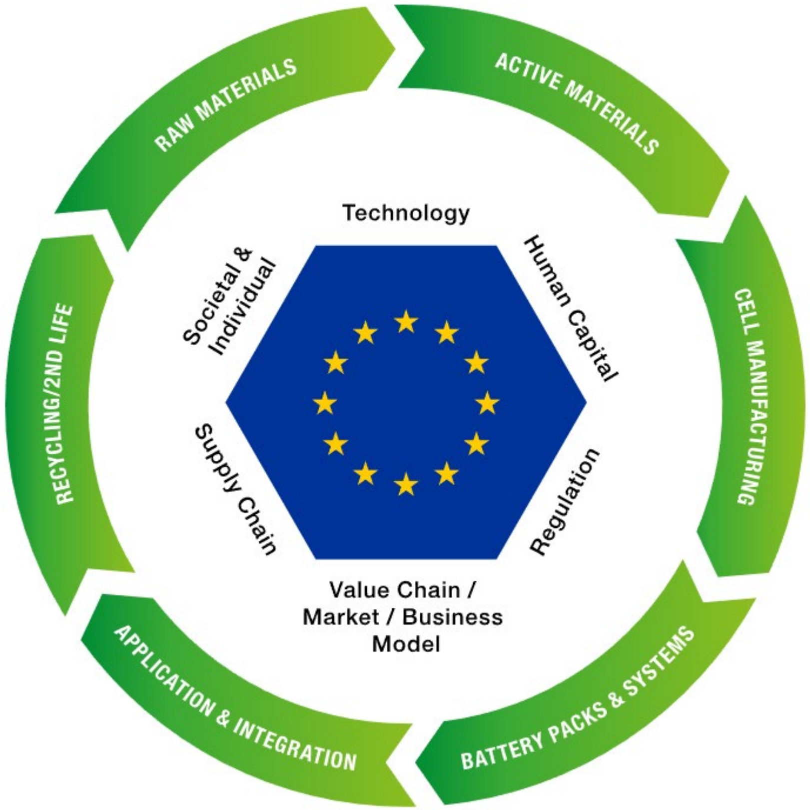
Several EU regulatory and industrial-policy instruments are currently shaping the BESS market. The EU Battery Regulation is the most direct product-level compliance driver: from 2027, industrial batteries above 2 kWh will require a digital Battery Passport, including data on carbon footprint, recycled content and lifecycle information. For BESS developers and asset owners, this increases the need for reliable supplier data on battery origin, composition and environmental performance. In addition to passport data, battery supply-chain due diligence will increase scrutiny of raw material sourcing, human-rights risks and environmental impacts across the upstream value chain.

Regulatory Shift Toward Strategic Autonomy and Public-Support Eligibility

At the same time, the Critical Raw Materials Act and Net Zero Industry Act reflect the EU's broader push for strategic autonomy in clean-tech value chains. The CRMA aims to reduce dependence on concentrated third-country sources of strategic raw materials, including battery-relevant materials. The NZIA supports domestic clean-tech manufacturing and introduces non-price criteria in certain public procurement and auction contexts. Together, these frameworks push BESS procurement beyond lowest hardware cost, toward traceability, supply security, environmental performance and EU industrial resilience.

The proposed EU Industrial Accelerator Act, introduced more recently, would make this industrial-policy direction more concrete. Rather than creating a general market-access barrier for BESS products, it focuses on the conditions under which strategic projects, suppliers or investments can benefit from public demand, public support or faster procedures. For BESS, the additional relevance is threefold: projects linked to batteries and grid-related technologies may become more attractive if they qualify for accelerated permitting or support schemes; procurement and subsidy decisions may place greater weight on demonstrated EU value creation; and large non-EU investments in emerging strategic sectors may face additional conditions where a third country, such as China in certain clean-tech value chains, holds a dominant global production position. In practice, this means BESS developers and investors may need to evidence not only technical performance and price, but also local production substance, EU-based R&D, employment, IP arrangements, EU sourcing strategy and supply-chain resilience.

EU Battery Regulation



Impact on European companies

The Dutch Market and Grid Constraints

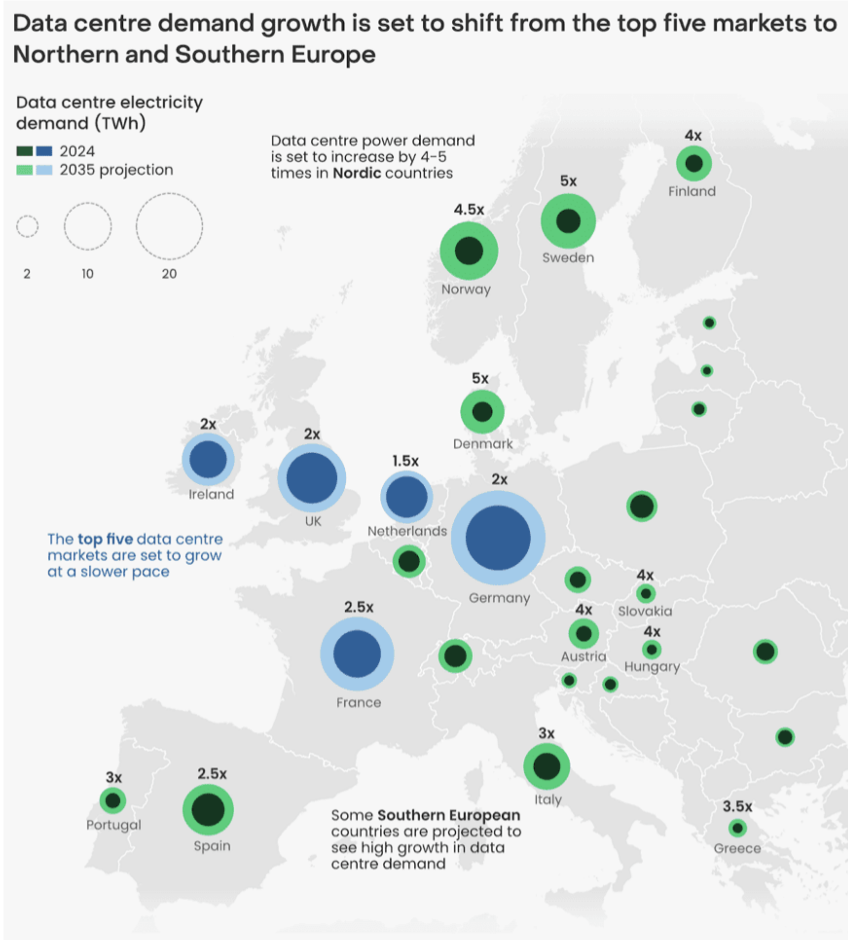
In 2024, Europe installed 21.9 GWh of capacity, with Germany, Italy, and the UK accounting for 70% of new builds. The Netherlands faces a unique challenge with 14,000 companies on connection waiting lists. This physical bottleneck has made traditional "first-come, first-served" grid access unworkable, forcing the government and grid operators to rethink how flexibility can be incentivized to free up capacity.

A significant development for 2025 to 2026 is the Time-Based Transport Rights (TDTR) mechanism, also known as ATR85. Beginning in 2025, BESS developers can access non-firm connection agreements, offering up to a 65% discount on grid fees in exchange for accepting curtailment during the 15% of the year with peak congestion. This model can turn grid congestion into a commercial opportunity for storage assets, as reduced grid fees may materially improve project economics.

Industrial and Sector-Specific Applications

BESS adoption is accelerating in industrial sectors as companies seek to secure power reliability and manage energy costs. The Port of Rotterdam is using storage to buffer offshore wind and electrify industrial heat processes, serving as a blueprint for other global industrial hubs. These large-scale deployments demonstrate that storage is no longer just for utility grids but is a critical component of industrial decarbonization strategies.

Data centers are utilizing on-site storage to manage peak loads and bypass lengthy grid delays, ensuring that the AI boom does not stall due to infrastructure limits. In the agricultural sector, Dutch greenhouses are using BESS to decouple heat production from electricity sales. This allows them to optimize revenue from gas engines while spot prices are highest, transforming the greenhouse from a simple producer into a flexible energy hub. These diverse applications show that the BESS market is fragmenting into specialized niches, each with its own specific value drivers.



https://www.hardwarewartung.com/en/report-data-center-demand-in-europe-will-grow-especially-in-the-northern-and-southern-countries/

Outlook and recommendations

Outlook and recommendations

Revenue Stacking Models

Profits are shifting from Frequency Containment Reserve (FCR) to Revenue Stacking. This involves combining wholesale arbitrage, grid fee avoidance via TDTR, and congestion management. As primary frequency response markets become saturated, the ability to pivot between different revenue streams is becoming the hallmark of a successful asset manager. Trading strategies must now be dynamic, adjusting in real-time to shifting market signals.

Commercial models are maturing to include structures like Tolling Agreements, where infrastructure owners lease assets to traders for fixed monthly fees, providing bond-like returns for investors. Hybrid PPAs are also gaining traction, combining renewables with BESS to provide a flat baseload profile that is more valuable to corporate users. Finally, BESS-as-a-Service provides on-site storage to industrial clients with no upfront CAPEX, sharing the savings generated from peak shaving to lower the barrier for corporate entry into the storage market.

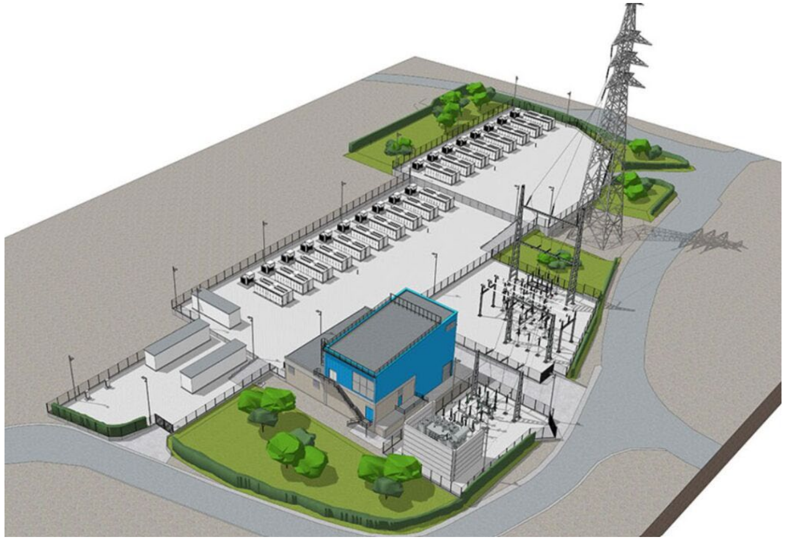
Recommendations for Investors

Investors should conduct technical due diligence beyond manufacturer degradation curves, as one industry report found that operational issues in BESS hardware components directly impacted revenue in 19% of cases assessed. It is vital to evaluate the software capabilities of the integrator as much as the chemistry of the cell. Real-world performance data often deviates from laboratory projections, meaning that conservative modeling and contingency planning are essential for maintaining bankability in a merchant-heavy market. Investors should also assess end-of-life planning, including decommissioning costs, take-back arrangements, recycling routes and residual value assumptions.

Revenue Stream	Description	2026 Trend	Risk Profile
Wholesale Arbitrage	Buying low (midday solar), selling high (evening).	High Growth: Structural volatility due to PV.	High (Merchant)
Grid Fee Avoidance	Using TDTR (ATR85) to lower OpEx.	Game Changer: ~65% discount on transport fees.	Low (Regulatory)
Congestion Management	Paid by TenneT/DSOs to absorb/inject power.	Critical: Primary revenue source in congested zones.	Low (Counterparty)

Outlook and recommendations

In the Netherlands, prioritizing projects with ATR85 contracts is essential, as the 65% grid fee discount is the single largest lever for project profitability in 2026. Investors should also target projects co-located with data centers to mitigate grid queue risks and capitalize on the growing demand for AI-driven infrastructure. By focusing on projects that solve a specific physical grid constraint, investors can secure more stable returns and reduce exposure to wholesale price volatility.



Recommendations for Developers and users

Developers should prioritize hybrid models that co-locate BESS with solar PV to share connection costs and reduce merchant risk. Co-location not only improves the efficiency of the grid connection but also allows for the capture of energy that would otherwise be lost during periods of high generation. Procurement must be diversified to meet Battery Passport requirements and avoid future market exclusion, requiring a move toward suppliers that can provide high levels of environmental transparency.

Corporate users with existing grid connections should evaluate BESS for peak shaving to reduce capacity charges or consider leasing their connection to third-party developers under a profit-sharing arrangement. This approach allows industrial firms to monetize their "grid real estate" without becoming energy traders themselves. Furthermore, adopting storage can help firms meet their sustainability targets by ensuring that the green energy they purchase is available when they need it.

To conclude

Success requires navigating European regulatory requirements, addressing grid congestion through new contract models such as TDTR, and managing supply-chain and software dependencies. Overall, BESS is no longer just a storage technology. It is becoming a regulated, software-driven and supply-chain-sensitive infrastructure asset, where long-term value depends on grid access, revenue optimisation, supplier resilience, lifecycle transparency and eligibility for EU industrial-policy support.

Glossary and sources

Acronym glossary

Acronym	Definition
BESS	Battery Energy Storage System
LFP	Lithium Iron Phosphate
NMC	Nickel Manganese Cobalt
LCOS	Levelised Cost of Storage
VRE	Variable Renewable Energy
FCR	Frequency Containment Reserve
TDTR / ATR85	Time-Based Transport Rights
DSO	Distribution System Operator

Acronym	Definition
TSO	Transmission System Operator
CAPEX	Capital Expenditure
OPEX	Operational Expenditure
PPA	Power Purchase Agreement
IRR	Internal Rate of Return
GWh / TWh	Gigawatt-hour / Terawatt-hour
NZIA	Net Zero Industry Act
CRM Act	Critical Raw Materials Act

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