

## European Solar Energy Storage

# Power battery energy storage battery trend forecast

### GRADE A BATTERY

LiFePO<sub>4</sub> battery will not burn when overcharged/over discharged, overcurrent or short circuit and can withstand high temperatures without decomposition.



## Overview

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Global demand for Li-ion batteries is expected to soar over the next decade, with the number of GWh required increasing from about 700 GWh in 2022 to around 4.7 TWh by 2030 (Exhibit 1). Batteries for mobility applications, such as electric vehicles (EVs), will account for the vast bulk of demand in 2030—about 4,300 GWh;

The global battery value chain, like others within industrial manufacturing, faces significant environmental, social, and governance (ESG).

Some recent advances in battery technologies include increased cell energy density, new active material chemistries such as solid-state batteries, and cell and packaging production.

Battery manufacturers may find new opportunities in recycling as the market matures. Companies could create a closed-loop, domestic supply chain that involves the collection.

The 2030 outlook for the battery value chain depends on three interdependent elements (Exhibit 12): 1. Supply-chain resilience. A resilient battery value chain is one that is regionalized and diversified. We envision that each region will cover over 90 percent of local.

Global installed energy storage is on a steep upward trajectory. From just under 0.5 terawatts (TW) in 2024, total capacity is expected to rise ninefold to over 4 TW by 2040, driven by battery energy storage systems (BESS).

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In an earlier publication, a joint 2019 report by McKinsey and the Global Battery Alliance (GBA), and Systemiq, A vision for a sustainable battery value chain in 2030, we projected a market size of 2.6 TWh and yearly growth of 25 percent by 2030. But a 2022 analysis by the McKinsey Battery Insights.

This battery storage update includes summary data and visualizations on the capacity of large-scale battery storage systems by region and ownership type,

battery storage co-located systems, applications served by battery storage, battery storage installation costs, and small-scale battery storage.

Energy storage is being driven by intermittent renewable energy, the growing demand for electrification in transport and industry, and the surge in hyperscalers and artificial intelligence. Energy storage is a lucrative and growing sector. The rise of intermittent renewable energy, the growing.

Their commitments aim to transition away from fossil fuels and by 2030 to triple global renewable energy capacity and double the pace of energy efficiency improvements. To facilitate the rapid deployment of new solar PV and wind power that is necessary to triple renewables, global energy storage.

Lithium ion (Li-ion) is the most critical potential bottleneck in battery production. Manufacturers of Li-ion cells need to invest hundreds of billions of dollars to increase production capacity to keep pace with global demand. What opportunities do battery energy storage systems offer the grid?

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The global power mix has reached a critical point, and Rystad Energy expects a peak in fossil fuels in the power sector to be imminent, with a structural shift ahead of the industry. While power demand is expected to continue to see strong growth in 2025 and beyond, the growth rate of low-carbon. What are the key market trends for battery storage?

It covers key market trends, with a particular focus on the shift toward utility-scale storage, the continuing growth of residential and commercial installations, and the evolving role of battery storage in supporting Europe's clean energy goals.

What will China's battery energy storage system look like in 2030?

Battery energy storage systems (BESS) will have a CAGR of 30 percent, and the GWh required to power these applications in 2030 will be comparable to the GWh needed for all applications today. China could account for 45 percent of total Li-ion demand in 2025 and 40 percent in 2030—most battery-chain segments are already mature in that country.

Why is the battery market growing so fast?

The battery market is a critical piece of our global energy future, and it's growing at an unprecedented rate. The electrification of the transportation

industry, the use of battery systems to provide energy storage and demand management for the grid, and the batterification of many devices continues to spur this industry's growth.

What is the future of battery energy storage?

Demand for energy storage continues to escalate, the global battery energy storage (BESS) landscape is poised for significant installation growth and technological advancements.

Do battery demand forecasts underestimate the market size?

Just as analysts tend to underestimate the amount of energy generated from renewable sources, battery demand forecasts typically underestimate the market size and are regularly corrected upwards.

How can stationary storage battery consumers hedge against unanticipated price shocks?

Understanding the trends and dynamics of other battery markets, ranging from power tools to e-scooters to automobiles, will allow stationary storage battery consumers like utilities and independent power producers to hedge against unanticipated pricing and supply shocks in the future.

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### Battery Energy Storage Systems: Key to Renewable Power ...

Battery energy storage system (BESS) can address these supply-demand gaps by providing flexibility to balance supply and demand in real-time. When renewable power production exceeds demand, batteries store excess electricity for later use, therefore allowing power grids to accommodate higher shares of renewable energy and supply electricity regardless the time ...

### EIA

This data is collected from EIA survey respondents and does not attempt to provide rigorous economic or scenario analysis of the reasons for, or impacts of, the growth in large-scale battery storage.



### 5-Year Forecast: Battery Innovations, Markets Drive ...

As the U.S. and global markets continue to scale up storage capacity, the increased reliance on renewables, EVs, and advanced battery chemistries will stabilize the grid and foster a cleaner, more resilient energy ...



## European Market Outlook for Battery Storage 2025-2029

The report explores trends and forecasts across residential, commercial & industrial (C& I), and utility-scale battery segments, offering deep insights into Europe's energy storage landscape.



## Battery market forecast to 2030: Pricing, capacity, and ...

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## Outlook for battery demand and supply - Batteries and Secure Energy

Innovation reduces total capital costs of battery storage by up to 40% in the power sector by 2030 in the Stated Policies Scenario. This renders battery storage paired with solar PV one of the most competitive new sources of electricity, including compared with coal and natural gas.



## Key Trends Shaping Battery Energy Storage in 2025

A report by global research and consultancy firm WoodMackenzie, published in January, identified five major trends that are expected to define this sector in 2025, creating new opportunities across the energy landscape.



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## Energy Storage Outlook

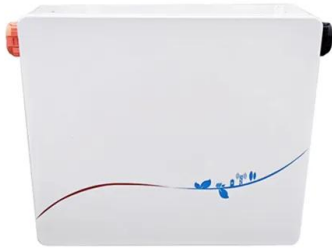
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## Lithium-ion battery demand forecast for 2030 , McKinsey

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