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The Report Covers Battery Energy Storage System Market Size & Share and It is Segmented by Type (Lithium-Ion Batteries, Lead-Acid Batteries, Nickel Metal Hydride, and Other Types (sodium-Sulfur Batteries and Flow Batteries)), Application (residential, Commercial, and Industrial (C& I), Utility-Scale), and Geography (North America, Asia-Pacific ...

Our analysis suggests that material and manufacturing emissions could fall 90 percent per kWh battery on the cell level by 2030. Further pack level emissions will mostly depend on achievements in decarbonizing aluminum, steel, and plastic production.

These developments are propelling the market for battery energy storage systems (BESS). Battery storage is an essential enabler of renewable-energy generation, helping alternatives make a steady contribution to the world"s energy needs despite the inherently intermittent character of the underlying sources.

This report updates those cost projections with data published in 2021, 2022, and early 2023. The projections in this work focus on utility-scale lithium-ion battery systems for use in capacity expansion models. These projections form the inputs for battery storage in the Annual Technology Baseline (NREL 2022).

Battery storage in the power sector was the fastest growing energy technology in 2023 that was commercially available, with deployment more than doubling year-on-year. Strong growth occurred for utility-scale battery projects, behind-the-meter batteries, mini-grids and solar home systems for electricity access, adding a total of 42 GW of ...

This article is a collaborative effort by McKinsey's Battery Accelerator Team in cooperation with the Global Battery Alliance and its members. The authors include Jakob Fleischmann, Mikael Hanicke, Evan Horetsky, Dina Ibrahim, S?ren Jautelat, Martin Linder, Patrick Schaufuss, Lukas Torscht, and Alexandre van de Rijt.

Although battery growth will confer multiple environmental and social benefits, many challenges lie ahead. To avoid shortages, battery manufacturers must secure a steady supply of both raw material and equipment. They must also channel their investment to the right areas and execute large-scale industrialization efficiently. And rather than just greenwashing--making half-hearted efforts to appear environmentally friendly--companies must commit to extensive decarbonization and true sustainability.

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; an unsurprising trend seeing that mobility is growing rapidly. This is largely driven by three major drivers:

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. Nevertheless, growth is expected to be highest globally in the EU and the United States, driven by recent regulatory changes, as well as a general trend toward localization of supply chains. In total, at least 120 to 150 new battery factories will need to be built between now and 2030 globally.

In line with the surging demand for Li-ion batteries across industries, we project that revenues along the entire value chain will increase 5-fold, from about $85 billion in 2022 to over $400 billion in 2030 (Exhibit 2). Active materials and cell manufacturing may have the largest revenue pools. Mining is not the only option for sourcing battery materials, since recycling is also an option. Although the recycling segment is expected to be relatively small in 2030, it is projected to grow more than three-fold in the following decade, when more batteries reach their end-of-life.

Companies in the EU and US are among those that have announced plans for new mining, refining, and cell production projects to help meet demand, such as the creation or expansion of battery factories. Many European and US companies are also exploring new business models for the recycling segment. Together, these activities could help localize battery supply chains.

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