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Outlook for Battery Energy Storage

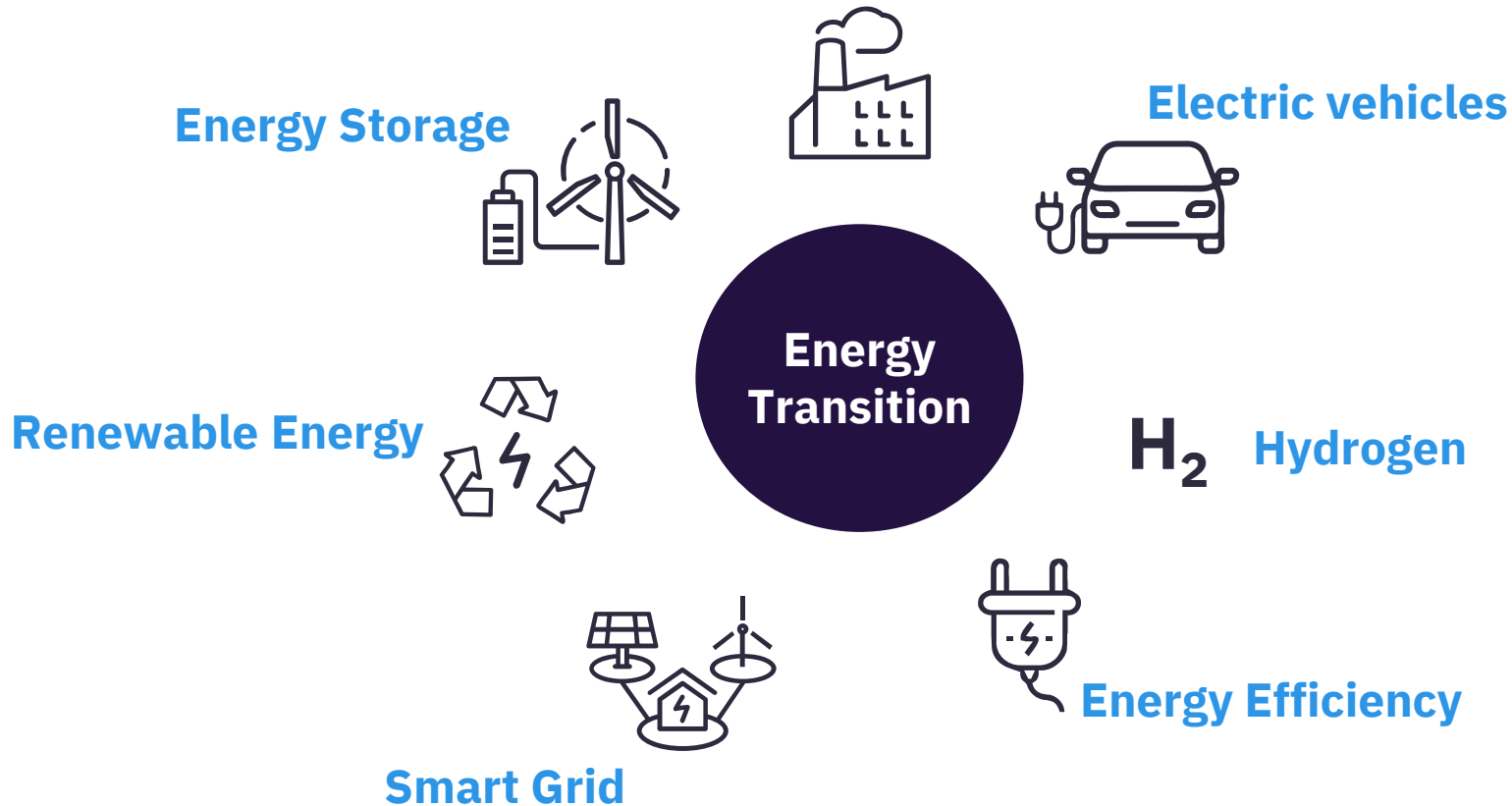
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Energy Transition



Carbon emissions

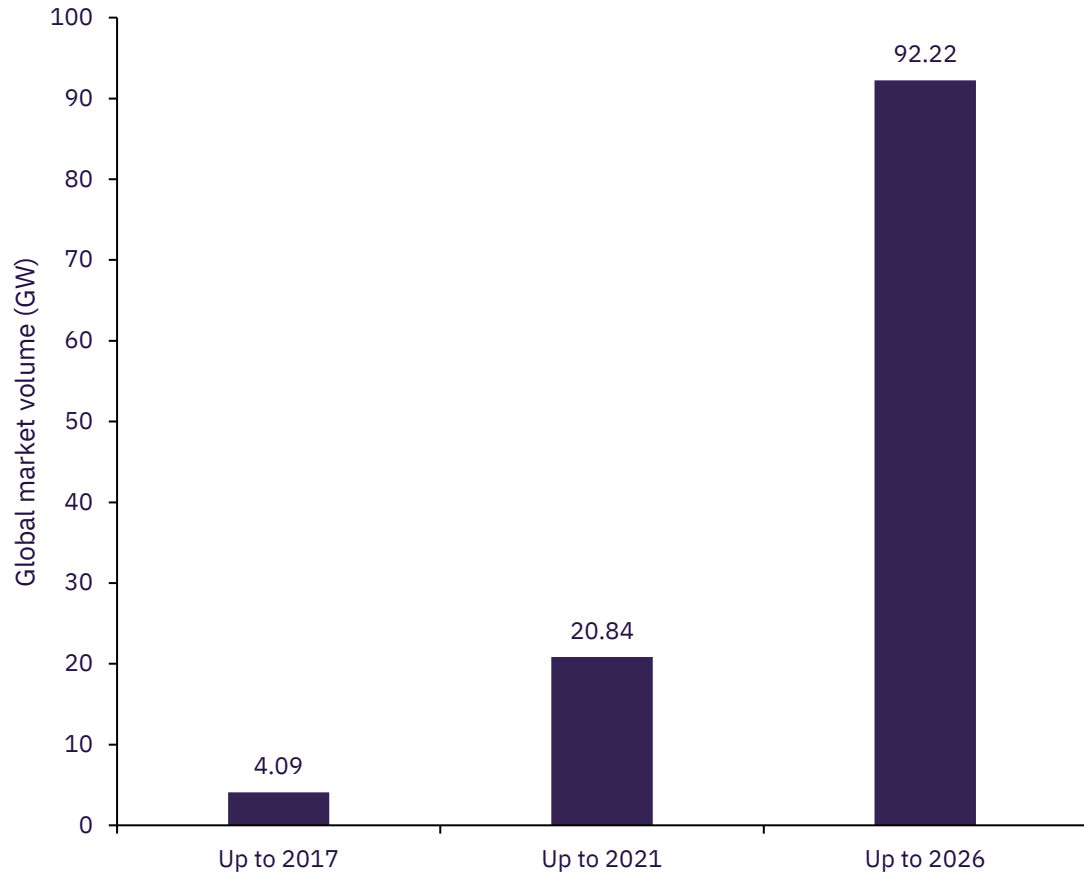


- The COVID shock has come at a time when the energy sector is already faced with major disruption.
- The looming climate crisis is leading the world to look for ways to reduce carbon emissions and reduce our reliance on fossil fuels through the energy transition.
- The way in which energy is produced, distributed and used is being disrupted through major themes such as renewable energy, Energy Storage, LNG and electric vehicles.
- Far from distracting the industry from long-term challenges, COVID-19 appears to have brought new focus as society and governments push for a green recovery and companies look for future growth in new energy sectors.

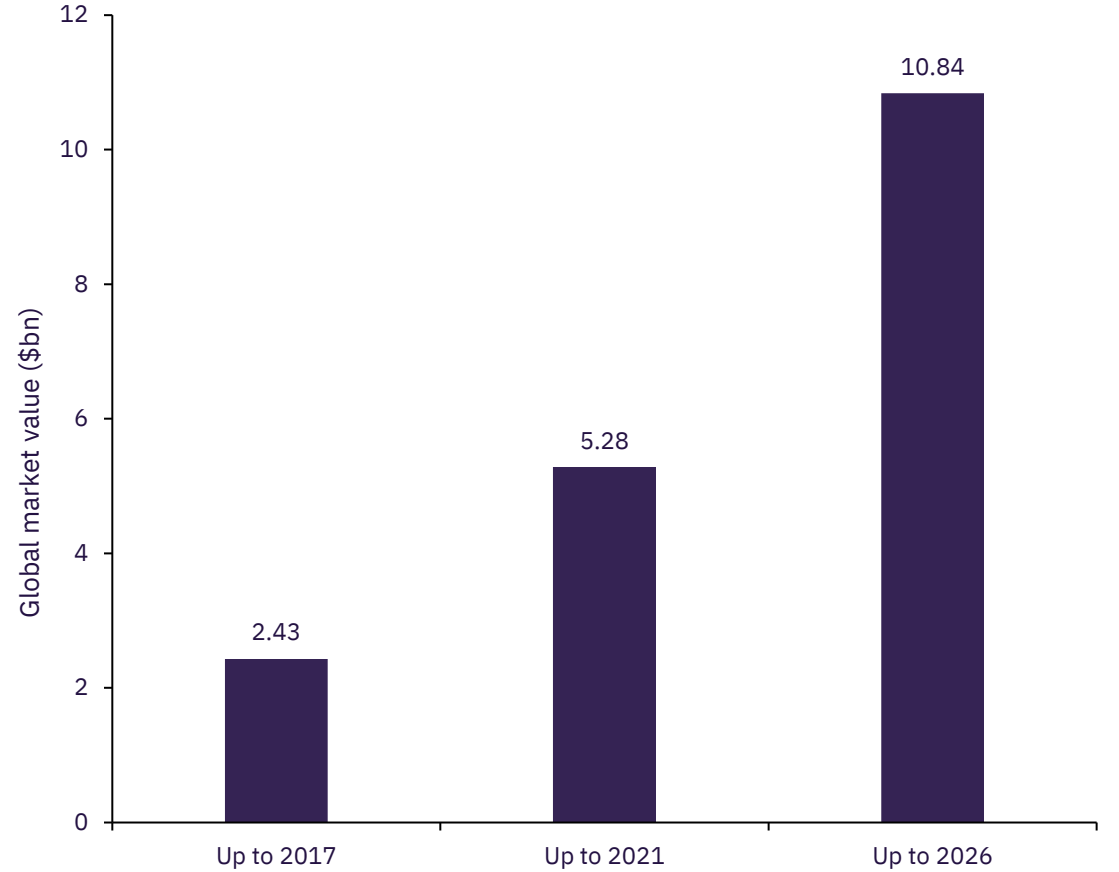
Battery Energy Storage Market Size



Global, Market Volume (MW), 2017, 2021, 2026



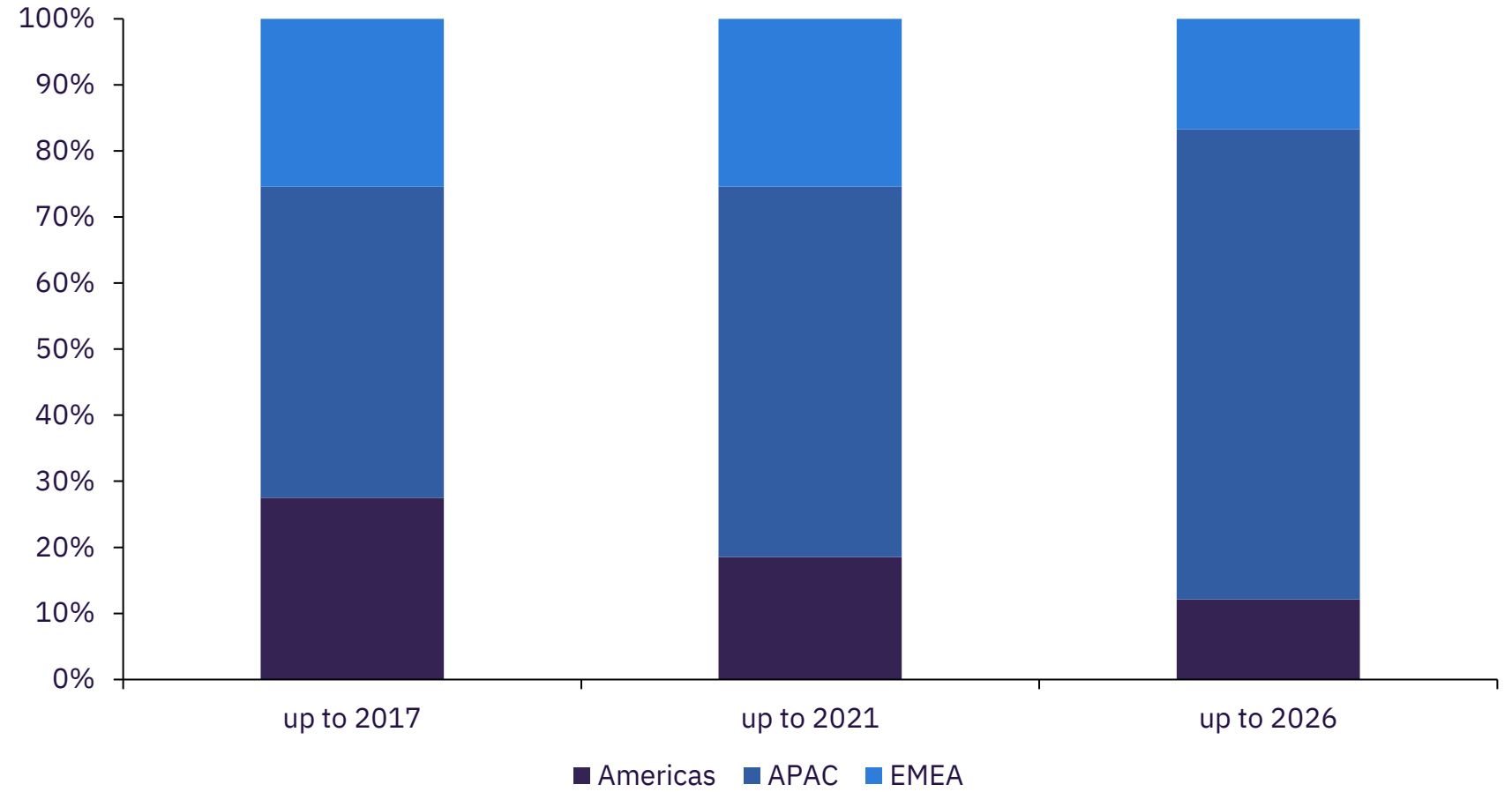
Global, Market Value (\$bn), 2017, 2021, 2026





Battery Energy Storage Market by Region

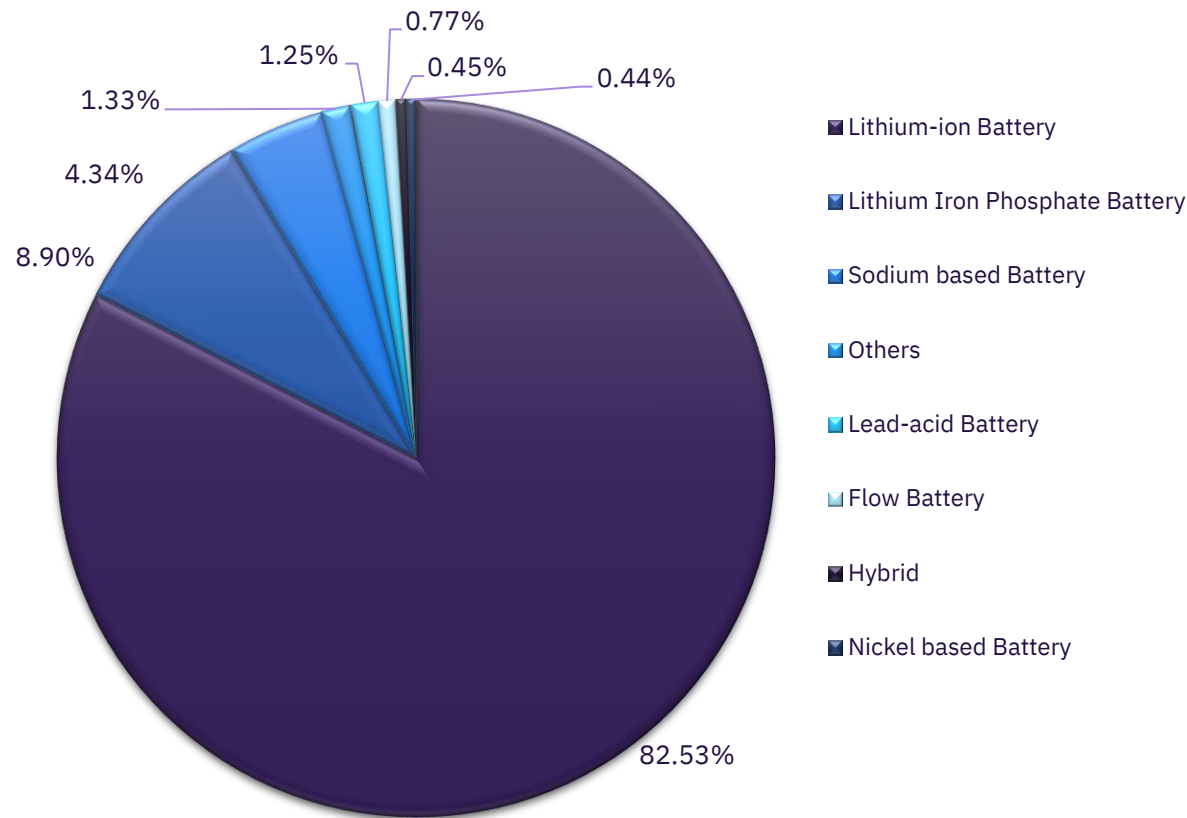
Global, Regional Market Share (%), 2017, 2021, 2026



- Asia-Pacific is the largest market for battery energy storage with a cumulative installed capacity share of 56.11% in 2021.
- In the region, China, South Korea, Australia, and India together installed over 10.56 GW of BESS systems up to 2021.
- The EMEA region was the second-largest market, accounting for 25.35% of the global cumulative installed capacity by 2021.
- The Americas region accounted for 18.54% of the global cumulative installed capacity by 2021.
- The US had a cumulative installed capacity of 3.6 GW in 2021.

Battery Energy Storage Market by Technology

Global, Technology Market Share, 2021



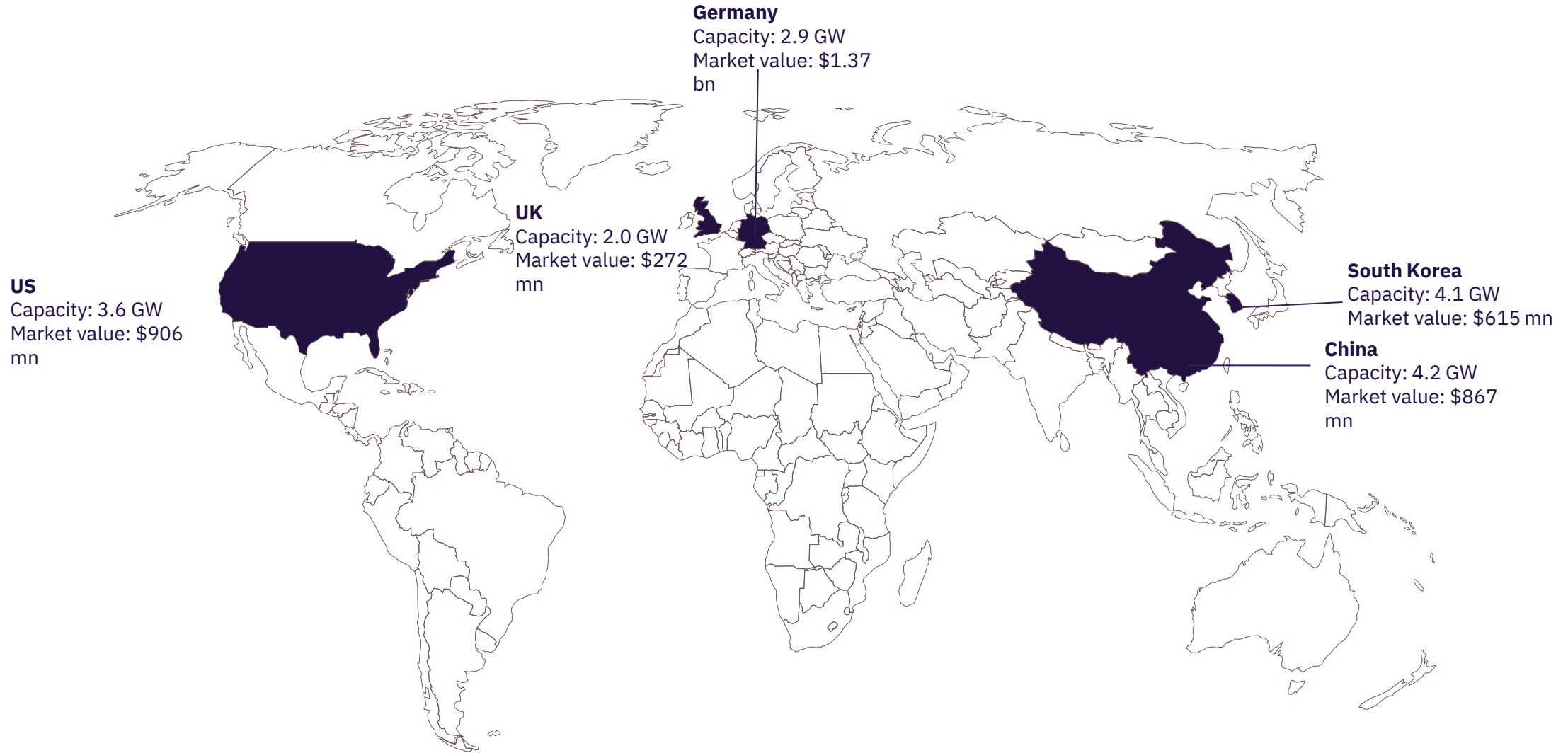
- Lithium-ion has eclipsed lead-acid as the primary technology for battery storage deployment.
- Lithium-ion's cost and performance advantages, deep discharge cycle life, energy and power density, and other attributes proved more suitable for storage than those of other types of batteries.
- Although flow batteries constitute a small portion of the market, they form a promising longer-term battery storage solution (4 hrs or more).
- This is due to the technology's ability to handle large energy capacity and offer better cycle durability.
- Over the forecast period, lithium-ion is expected to be the mainstay of the BESS market.

Market Drivers and Restraints



Market drivers	1–2 yr	3–5 yr
Adoption of renewables would require flexible technologies to maintain grid reliability	High	High
Increasing retail tariffs and decline in incentives will complement self-sufficiency measures	High	Medium
Falling storage prices to help distributed energy technologies achieve grid parity	Low	High
Widespread electrification objectives to drive battery market	Medium	Medium
Challenges associated with central grid operations to benefit battery storage	Medium	High
Evolving grid models will support the deployment of storage technologies	Medium	High
Market restraints	1–2 yr	3–5 yr
Cost perception in price-sensitive markets and increase in battery prices could impede growth	High	High
Lack of robust regulatory framework and market standardization	High	High
Volatility in raw material supply chain and prices could impede growth	High	Medium
Absence of incentive support could deter energy storage deployment	Medium	Medium

Battery Energy Storage Market – Key Countries



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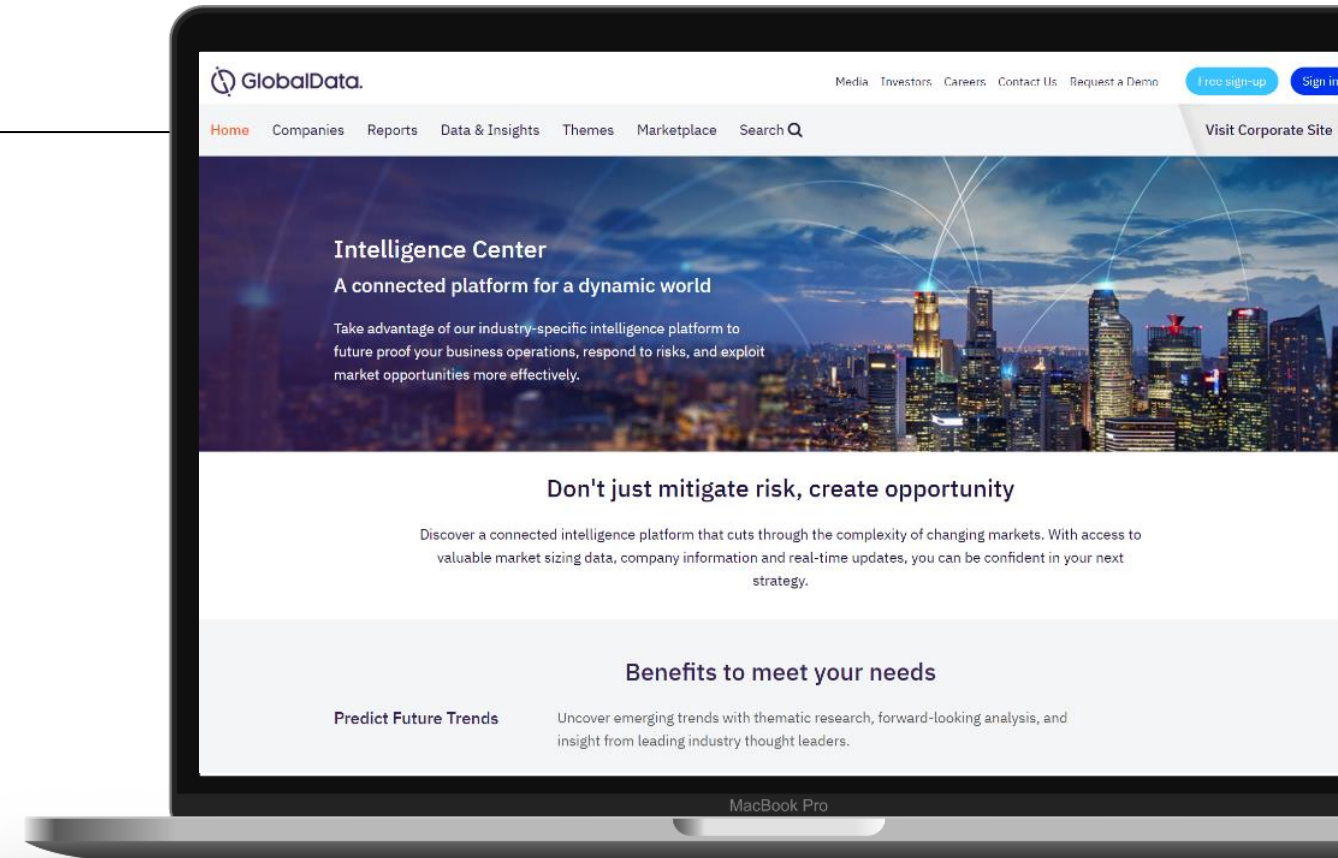
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please contact us at:**

marketing@globaldata.com

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