



Battery investment falls as Chinese li-ion market consolidates

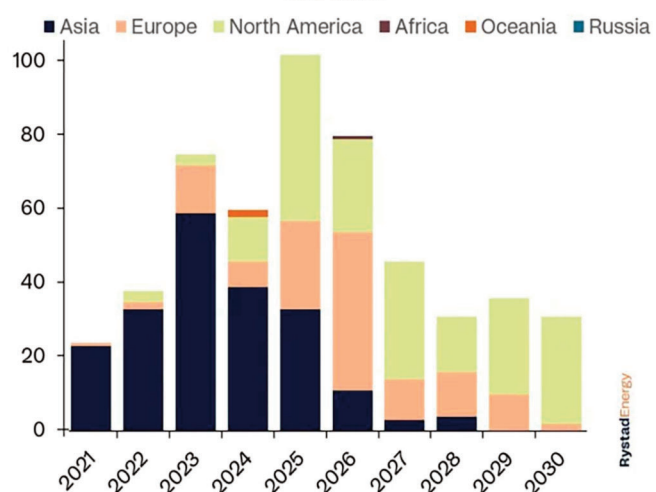
Consolidation in the Chinese lithium-ion battery market is set to cause a sizable decline in global investments. China's early adoption of industrial-scale projects pushed up production by more than 40% in 2021 and 2022, but growth slowed as the Asian market matured, while battery makers in Europe and the US struggle to source critical minerals.

To mitigate reliance on Chinese supply chains for critical minerals, both Europe and the US seek to implement policies to improve domestic energy security. Analysts reckon stronghold in global battery investment and lithium trade is "secure" due to the country's primary access to essential resources at a comparatively low cost.

"China's dominance in battery investment and lithium trade seems unshakeable for the foreseeable future, given their control over key resources. However, building a battery factory from scratch takes years and navigating local regulations adds even more time. This means the market two years from now remains unpredictable," Rystad's vice president Battery Market Research, Duo Fu said, noting: "Collaboration across the entire supply chain is crucial for the industry's health."

Quest to offer higher-quality batteries is spurring industry con-

Planned battery factory investments
USD billion



solidation in China and beyond: High investment fuelled a rapid expansion of lithium-ion battery making, but a slowdown in demand now leaves some companies from non-traditional sectors unable to compete on price. Some of them are expected to exit the market. Despite technology innovations, the lithium-ion sector faces challenges of insufficient high-quality production capacity. "As the sec-

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Up to 700 GW of battery storage could be online by 2035

Build-out of large-scale battery storage is gaining speed, with experts predicting up to 700 GWh of capacity could be available worldwide by 2035. More than half of the expansion takes place in China, where intermittent solar power capacity is close to reaching 50% of installed capacity.

China accounted for 47.5% of the global solar capacity in 2024, up from 43% in the previous year, and if current trends continue this share will surpass the 50% threshold in 2025, the International Renewable Energy Agency (IRENA) forecasts.

Mitigating volatility

Battery storage systems can react quickly – supplying or absorbing access energy in fractions of a second to mitigate volatile electricity supply from renewables. Batteries can hence provide emergency backup power at short notice, which is crucial for ensuring grid stability.

Rolls-Royce's mtu EnergyPack consists of mod-



ular units for capacity and output that can be flexibly configured. Such large-scale systems are currently being built in the Netherlands and in Turkey.

In the UK, fluctuations in solar and wind energy are compensated with not only batteries but also

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tor enters a period of adjustment, technological innovation emerges as the linchpin for its future development,” Mr Fu commented.

Shift to lithium-iron phosphate batteries

More cost-effective solutions such as lithium iron phosphate (LFP) batteries emerge: Tesla has partnered with CATL to ramp up mass production of LFP batteries through a

license royalty service, while Ford reportedly explores a similar strategy. Mercedes and Stellantis have paused their European electric vehicle battery factory projects and may shifting takt towards more affordable LFP cells. Meanwhile, three South Korean battery factories also outlined plans to step up their LFP cell production capacity.

New materials are also being tested – notably composite copper foil, silicon-based

anode materials, high-nickel cathode materials like lithium ferromanganese phosphate (LFMP) and lithium bis (fluorsulfonyl) amide (LIFSI). Use of these novel materials is aimed at lowering costs and enhancing efficiency. Structural improvements like larger-sized 4680-cylinder batteries and solid-state batteries, are also under way, potentially enhancing the batteries’ future size, scope and longevity. ■

Germany’s hydrogen push stalls amid price uncertainty

Plans for a German green hydrogen economy face serious delays due to unclear regulations, uncertain future pricing, and lagging infrastructure, a new report by consultancy EY and the German Association of Energy and Water Industries (BDEW) finds. Investment slowly forthcoming: the German government set a target of 10 gigawatts (GW) of electrolyser capacity by 2030, but only 1.6 GW has been secured so far.

“The hydrogen market is not scaling at the speed needed,” said Kerstin Andreae, chair of BDEW. “Investors and developers need clear rules, support for infrastructure, and reliable pricing signals to move forward.” In fact, green hydrogen, produced by electrolysis using renewable electricity, made up just 0.5% of total hydrogen output in Germany in 2023 – while the vast majority is still made from fossil fuels, primarily natural gas.



The ‘Energy Transition Progress Monitor 2025’ warns that slow progress on key hydrogen infrastructure and weak investment conditions are stalling the ramp-up of green hydrogen. The report, published on Monday, cites a “significant investment hurdle” caused by regulatory uncertainty, infrastructure gaps, and market risks.

Industrial demand declines

Fossil-based generation of both hydrogen and electricity is becoming a new phenomenon amid weakening industrial demand, particularly in key sectors such as refining, ammonia, methanol, and chlorine production. Despite these setbacks Germany is on track to meet its 2030 climate targets, though analysts stressed shortfalls remain in the transport and heating sectors.

The incoming federal government faces “tremendous pressure” to deliver results, BDEW under-

lined. Key policy priorities include speeding up permitting for renewable projects, aligning grid expansion with energy demand, and designing a new electricity market framework that rewards flexibility and low-carbon solutions.

Industry groups, meanwhile, want the government to reinvigorate hydrogen efforts. BDEW and more than a dozen other trade associations called for a “restart” in bilateral energy ties aimed at forming a European hydrogen alliance. The groups called for an overhaul of EU rules on green and low-carbon hydrogen, the rapid buildout of cross-border hydrogen infrastructure, and harmonized certification standards across the bloc.

A close partnership with France, they argued, could “inject decisive momentum” into Europe’s hydrogen strategy. Signatories to the joint statement included BDEW, the chemical industry association VCI, the automotive group VDA, the local utility association VKU, and the European hydrogen lobby Hydrogen Europe. ■

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with gas-fired power plant. The latter can be dispatched more economically thanks a modern capacity market which remunerates flexibility. The T-1 capacity auction for delivery in 2025/26 concluded on 5 March 2025, whereby 7,936.289 MW was procured at a strike price of around £24 per kilowatt (kW) per year.

Shift to a hydrogen economy

In the near future, these flexible gas power plants will be capable to generate electricity by co-firing hydrogen alongside with natural gas, which helps lower their carbon emissions. There are already more than 500 hydrogen-ready mtu gas gensets in use in the UK today and the trend towards retrofitting

turbine-driven power generators is also on the rise in Europe and beyond.

“This is not yet in demand, but as soon as green hydrogen is available in larger quantities, our customers will have the opportunity to generate energy with our engines completely CO₂-free,” Tobias Ostermaier, head of the Rolls-Royce PowerGen business explained.

Hydrogen could eventually serve as long-term storage – yet this requires massive investment to get the necessary infrastructure in place. Power plants fuelled by hydrogen, in combination with electrolyzers and a well-developed hydrogen infrastructure, could eventually become an important element of grid stability. ■

Statnett turns to Hitachi to expand power grid

Statnett, the Norwegian power system operator, has contracted Hitachi Energy to deliver eco-efficient grid connections in the greater Oslo area. The population of Oslo is forecast to rise 33% to 1.6 million by 2030, and Statnett's grid expansion is meant to transport 60% more electricity.

Hitachi Energy will install two 420-kilovolt grid connection solutions with a compact footprint based on sulfur hexafluoride (SF6)-free EconiQ gas-insulated switchgear. This efficient technology minimises total life cycle costs and CO2 footprint.

The project combines Hitachi's GIS technology and Statnett's grid integration capabilities to achieve net zero goals set out by the Norwegian government, said Niklas Persson, managing director of Hitachi Energy's Grid Integration unit.

Statnett has installed SF6-free GIS in Norway and likewise, Hitachi Energy is supporting the energy transition by making

power grids more sustainable, e. g. by deploying EcoSpace. This tool goes beyond traditional life cycle assessments by factoring in the environmental impact of material reduction and on-site activities in grid solutions.

"Norway has long been a driving force in renewable energy," Persson noted, "and now Statnett is setting even higher standards for sustainable energy infrastructure."

Hitachi and Statnett have been cooperating for long. Over the years, the Japanese



Metro Rail in Oslo City

manufacturer delivered various critical infrastructure to Statnett, including advanced power quality solutions that enhance grid stability. ■

Iberdrola affiliate rebuilds aging power grid in New York

Avangrid, part of Iberdrola Group, will spend \$41 million – on top of over \$500 million invested in New York's power and gas grids – to rebuild three substations and add 22 miles of transmission lines in Ithaca, NY. CEO Pedro Azagara called the investment "a crucial step" to strengthen the greater New York's aging energy infrastructure.

The project in Ithaca builds on Avangrid's ongoing efforts to strengthen critical infrastructure in its service areas in the Northeast. A total of 265 projects to modernise electricity and gas infrastructure in and around New York have been realised since the 2023 Reliable Energy Rate Plan. Going forward, Avangrid vowed it will follow up with an unprecedented \$20 billion investment through 2030.

Phase I of Ithaca's investment will focus on current reliability needs in the region and is on schedule to be completed by the end of 2027. These projects include:

- \$300,000 in upgrades to transformers at the Coddington substation and another
- \$28.4 million for purchase and installation of two new transformers at the

Fourth Street substation

- \$4.2 million for a capacity bank at the Trumansburg substation, \$3.3 million for a capacity bank at the Cayuga Heights substation and another \$4.9 million for a capacity bank at the West Hill substation.

Capacitors banks help improve the reliability for customers in the area by stabilizing and maintaining voltage levels. The function of transformers, meanwhile, is to step down the voltage to transmission, sub-transmission, and distribution voltages to ensure the safe and economic supply of electricity.

Since 2023, Avangrid's electric and gas utilities in New York – NYSEG and RGE – have invested \$582 million in 265 projects across New York State.

These projects have rebuilt critical gas

and electrical infrastructure across the companies' service territories that provide safe and reliable energy to 2.9 million customers in New York. Patricia Nilsen, president and CEO of NYSEG and Rochester Gas and Electric said "the \$41 million investment in Ithaca will enhance the reliability of electricity in the region and will also increase the

capacity of the grid in the area."

In March 2025, Avangrid announced its plan to invest \$20 billion in U.S. electrical grid infrastructure through the end of the decade. ■

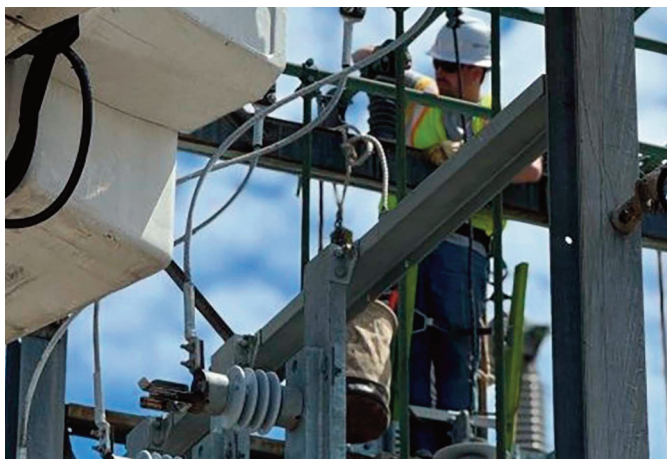
NEWS NUDGES

SF6-switchgear for China's SGCC

Hitachi Energy will deliver the world's first sulfur hexafluoride (SF6)-free 550 kV gas-insulated switchgear to the Central China Branch of the State Grid Corporation of China (SGCC). The move towards clean switchgear helps decarbonize the Chinese power grid and contributes towards the country's target of reaching carbon neutrality by 2060.

Wärtsilä to help decarbonise Curaçao

The Finish technology group has signed a services agreement with Aquallectra, the leading power generation on the Caribbean island of Curaçao. The 5-year accord will see Wärtsilä optimise energy generation on the island as Curaçao targets to move from its current 30% renewable capacity to 50% in 2025 and 70% by at least 2027.





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Solar, wind could power 30% of data centers in ASEAN by 2030

Six major economies in ASEAN – Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam – are emerging as global data centre hotspots, with 2.9 GW of new capacity currently in the pipeline. Energy think tank Ember finds that wind and solar power could potentially cover 30% of the regions' electricity demand – without relying on battery storage.

The slow pace of decarbonisation in Southeast Asia's power sector is, however, threatening progress of powering the in-

formation, communication and technology industry with green energy sources, analysts warn.

Malaysia is projected to see the fastest growth in data centre electricity use, with demand expected to rise from 9 Terrawatt-hours (TWh) in 2024 to 68 TWh in 2030. This would account for 30% of national power consumption, and resulting emissions could increase sevenfold, reaching 40 million tons of CO₂e by 2030, the highest in the region. The Philippines, mean-

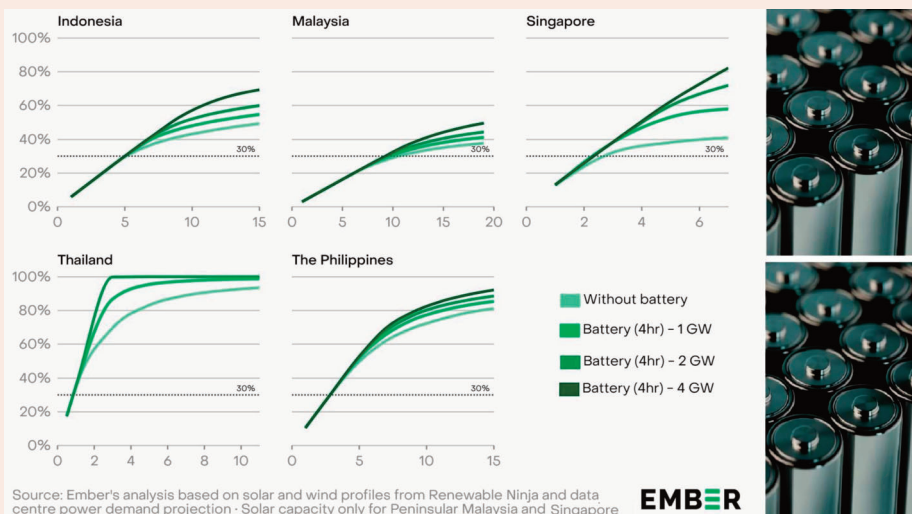
while, is projected to see a rise of up to 14 times in emissions, while Indonesia's could quadruple.

Batteries no precondition for green energy transition

Electricity demand from data centers is rampant, but analysts at Ember are convinced that around a third of data centre electricity demand in 2030 could be met with solar and wind, without the need for battery storage.

"Prioritising solar and wind power, as well as energy efficiency, supported by strong policies, a national framework for data centres and collaboration, would help ensure data centres drive sustainable digital growth rather than deepen reliance on fossil fuels," Shabrina Nadhila, energy analyst at Ember commented.

Large tech companies rely on Power Purchase Agreements (PPAs) to secure clean electricity, while smaller operators need better access to flexible options like virtual PPAs and green tariffs. The latter can also support storage, Nadhila conceded, suggesting this would "help manage the variability of renewables."



'Power plant on wheels' to mitigate blackout risk at the Bahamas

GE Vernova's 'Power Plant on Wheels' will help meet peak power demand at the Bahamas this summer. Tourism has a massive impact on electricity use on the island, hence Bahama Turbines Ltd ordered two TM2500 aeroderivative gas turbines to temporarily expand its Clifton Piers power plant

Surpassing all previous records, more than 9.6 million tourists visited the island in 2023, with a relevant impact on power demand since the country has only about 400,000 inhabitants.

Despite its renewable potential, the Caribbean has a long history of fossil-fuel dependency and utilizes heavy fuel oil (HFO) and diesel for most of their power generation. Solar energy is a viable alternative, but to make it reliable, the grid on the island would need to be more stable and wider-

reaching.

"As more renewables come online and introduce intermittency into the grid, the deployment of GE Vernova's trailer mounted aeroderivative gas turbine package expected to deliver up to 30 MW of electricity can support the improvement of frequency control of the grid," said Dexter Adderley, President & CEO of FOCOL Holdings. Two additional units will help reduce power outages and can eventually facilitate the connection of more wind and solar power sources.



TM2500 gas turbine package

Wärtsilä to supply equipment for power

Elektron Energy, a Nigerian independent power producer (IPP), has contracted Wärtsilä to supply power generation for a new 30 MW power plant being set up on Victoria Island in Lagos. The gas-fuelled plant will be embedded within the Eko Electricity Distribution Company (EKEDC) with the aim of making electricity supply more reliable.

The flexible plant will comprise three Wärtsilä 34SG gas engine-generator sets and is configured to accommodate an extension with one additional engine-genset at a later stage. The project – a first-of-its-kind for Nigeria – is hoped to lead to the development of similar, optimally sized and locally financed power projects in the country.

This project relies on reciprocating internal combustion engines (RICE) and the 34SG engines are manufactured by Wärtsilä in Vaasa, Finland. In parallel, clearing and preparation activities at the NEPA Close Site are progressing and are due for completion within Q2 2025, after which construction can start.

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