



Factsheets Series on China Energy Transition Updates

CHINA'S NEW TYPE ENERGY STORAGE PRESENT DIVERSIFIED PATTERN AND GROW FAST IN 2022

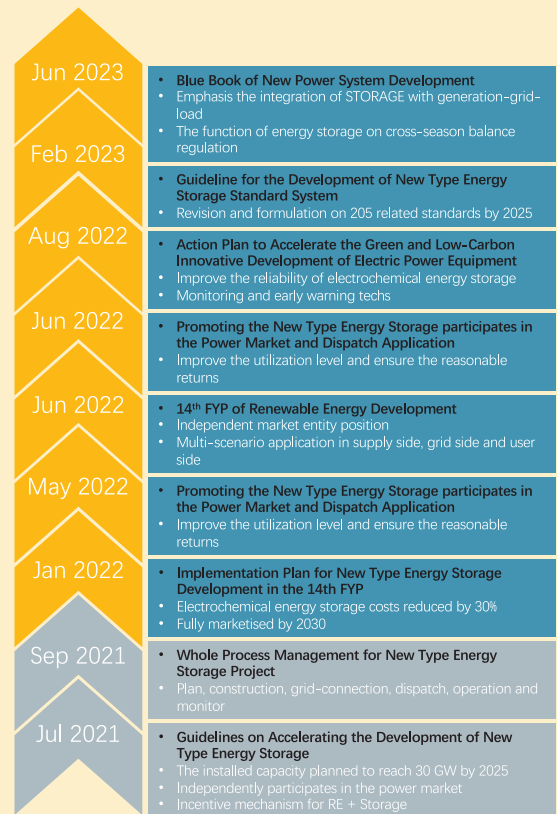
The so-called new type of energy storage technology refers to electrochemical energy storage, compressed air, flywheel, and thermal (cold) energy storage, but does not include pumped hydro storage measure.

In 2022, China released a number of policies to promote new type energy storage development.

The Implementation Plan for New Type Energy Storage Development in the 14th FYP proposes to develop the new type energy storage technologies entering from the early commercialisation stage to the large scale development stage by 2025, and to achieve full market-isation stage by 2030. This policy is a milestone for China's new type energy storage market in scaling development. The policy of Promoting the New Type Energy Storage Participates in the Power Market and Dispatch Application, focusing on cracking the bottlenecks of low utilization and high cost of new type energy storage, and supporting energy storage to develop in a more independent way. The newly released Blue Book of New Power System Development¹ proposes to promote compressed air energy storage, flywheel and gravity energy storage technologies, and improve power system's balancing through the integration of new type energy storage.



The rapid development of energy storage policies has greatly encouraged the outbreak of the industry



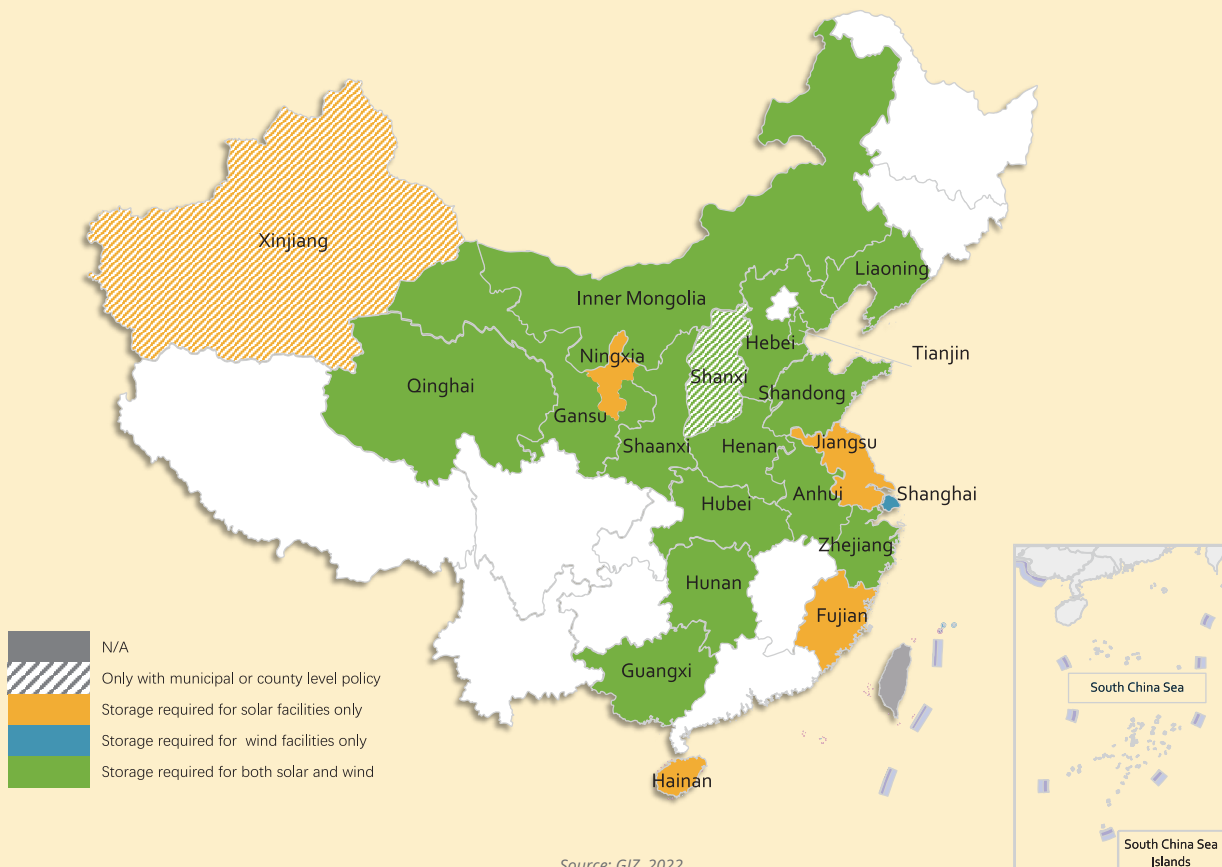
Source: GIZ, June 2023

China provides a capacity tariff mechanism for pumped storage, but this policy is not available for new type energy storage. Some provinces such as Shandong, Xinjiang, and Hunan tentatively issued corresponding policies to provide capacity compensation for new type energy storage projects participating in the electricity spot market, with costs shared among the power generation side, the grid side and the load side. Subsequently, China's central government issued the Basic Rules of the Electricity Spot Market (Draft for Comment)² in November 2022, which for the first time mentioned the promotion of energy storage, distributed generation, virtual power plants and microgrids to participate in electricity spot market transactions. These policy series have played a great incentive role in the development of new type energy storage.

The 14th FYP for Renewable Energy Development released in early 2022 encouraged to develop centralised and distributed renewable energy projects in parallel and to increase the direct consumption of power in the generation side. Following with this plan, some provinces released mandatory policies to request the distributed PV to be equipped with energy storage facilities, and provide energy storage subsidies. These included charging subsidies, discharge subsidies, installed capacity subsidies and one-time subsidies, the subsidies mainly paid by the local government. However, in fact the current utilization rate of combined RE-Storage is only 6.1%, and the problem of “building rather than using” is prominent.³



Provinces are adopting energy storage measures for renewable projects

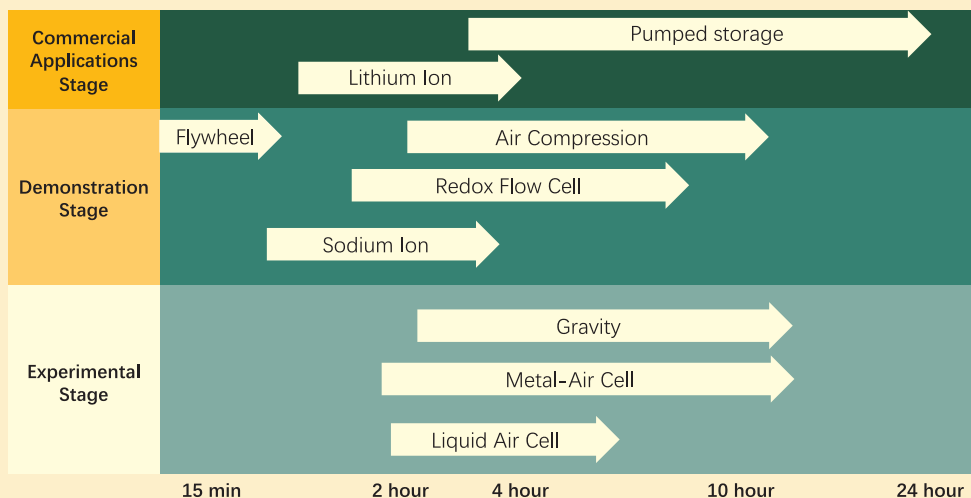


It is predicted that the amount of capacity compensation available for new type energy storage will increase in the coming years, and gradually move towards a revenue model with a spot market

superimposed of ancillary services and capacity compensation, so that the revenue model for new type energy storage can be more market-oriented and sustainable.⁴



The lithium batteries is becoming more commercial, while other storage measures are gradually being tested and demonstrated



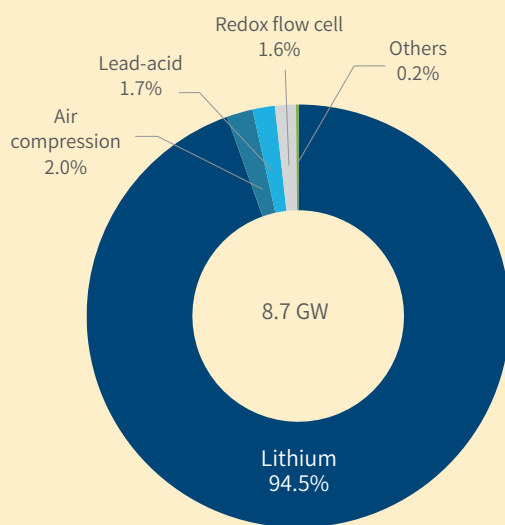
Source: Energy China, March 2023

In 2022, China's new type energy storage installed capacity exploding. The total installed capacity of new type energy storage reached 8.7 GW, with an average storage length of about 2.1 hours, an increase of 110% over the end of 2021.⁵ For the new installed capacity in 2022, the lithium-ion battery energy storage technology accounted for 94.2%, compressed air energy storage for 3.4% and redox flow cell battery energy storage technology for 2.3%. Compared with 2021, the growth rate is significantly higher. In addition, flywheel, gravity, sodium ion and other new type energy storage technologies have also entered the demonstration stage.

The scale of new type energy storage will rapidly exceed the plan. While 26 provinces (municipalities) in China submitted an installation target with a total scale of nearly 67 GW of new type energy storage in the 14th FYP period (2021-2025), the actual construction scale that started in 2022 is much larger than planned with 101.80 GW/259.2 GWh. As most of this new type energy storage will be completed and connected to the grid already within 1 to 2 years, the figure will most likely exceed the target



Lithium battery dominates energy storage



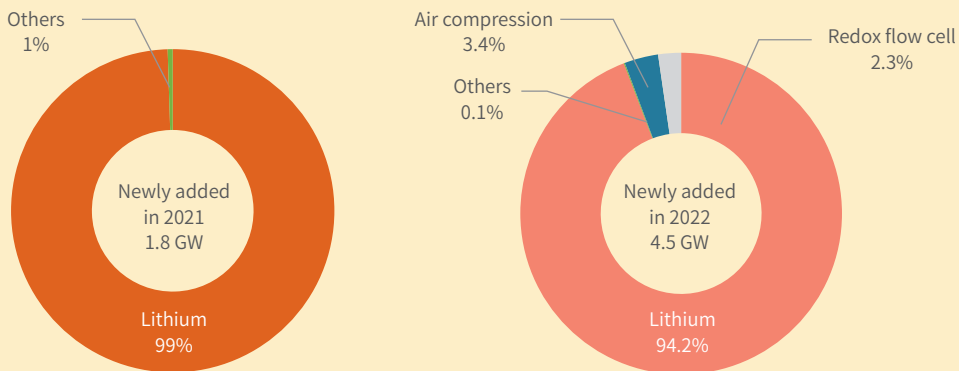
Source: Electric Power Planning and Engineering Institute, 2023

of 30 GW installed by 2025 set out in the Guidelines on Accelerating the Development of New Type Energy Storage re-leased in July 2021 by NDRC It is expected that the annual growth rate of new type energy

storage will maintain at 55% to 70% during the 14th FYP period,⁶ which means that the installed capacity would reach 150 GW by 2030 and exceed 1020 GW by 2050.⁷



Physical measures on energy storage appear in 2022, diversified energy storage pattern emerging



Source: Electric Power Planning and Engineering Institute, 2023

References

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About us

The Sino-German Energy Transition Project, as a component of the Sino-German Energy Partnership, commissioned by the German Federal Ministry of Economy and Climate Protection (BMWK) and supported by the National Energy Administration of China (NEA), focuses on sharing German experiences with the energy transition and providing advice to the Chinese government and associated energy policy think tanks. In addition, valuable input from the Chinese partners will refine German practices and offer a different perspective on current and future approaches. To carry out the project, The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the German Energy Agency (dena) and Agora Energiewende collaborate with the China Electric Power Planning and Engineering Institute (EPPEI), China Southern Power Grid (CSG), and the Institute for Applied Ecology at the Chinese Academy of Sciences (IAE).

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