

# Energy Storage Industry White Paper 2021 (Summary Version)

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## Foreward

长风破浪会有时 直挂云帆济沧海

*"When you hoist the sails to cross the sea, you'll ride the wind and cleave the waves"*

*-Li Bai, Tang dynasty poet*

The road has been hard. No one would have thought that the year 2020 would be so long, and so difficult that when the new year came, everyone would be so happy and hopeful. They no longer look back on the darkest moments at the beginning of the year, and seem to forget the courage of the people who faced the difficulties head on and the strength of the victims. 2020 is destined to be engraved in the history books - the end of an era, and the beginning of a new era.

In 2020, in addition to China, Japan, and South Korea, the United States, Australia, Germany, and the United Kingdom set off another high tide of development. The US Dept. of Energy (DOE) issued the *Energy Storage Grand Challenge Roadmap* and the European Commission issued the *BATTERY 2030+ innovation roadmap*, both of which systemically advance strategic objectives for the future development of energy storage.

By the end of 2020, China's energy storage industry finally broke through the 1500 RMB/kWh milestone - the oft-mentioned key inflection point of the past 7 years. The scale of new electrochemical energy storage projects has shown explosive growth, reaching 1.56 GW, breaking the GW line for the first time. This boom did not come out of nowhere - it was expression of the 10+ years of power built up of over this history of the energy storage industry.

From the start of the second half of 2020, large-scale 100 MW energy storage projects started popping up all over the world. In 2020, 4.74GW of new electrochemical energy storage projects were put into operation worldwide, with over 36GW planned or under construction - most of which are paired with wind and solar power plants.

2020 was a key year for "wind/solar + energy storage" parity, laying a solid foundation for the comprehensive replacement of fossil energy in the future. The main path for energy structure adjustment over the next 30 years has been determined, and the prospects of the energy storage industry are now beyond doubt.

Over the past decade, countless pioneers have blazed trails for the energy storage industry. Some are still engaged today, and some have left the field. It's a hard path, many enter, leave, and return. Wherever they go, these pioneers have earned their place in history.

Technological progress is the root of all change. In 2020, technological iteration accelerated significantly. Due to the breakthrough of the cost inflection point of lithium iron phosphate batteries, battery technology advanced, covering anodes, cathodes, electrolytes, and separator materials. This not only lead to breakthroughs in many domestic energy storage projects, but also drove Chinese enterprises to expand overseas due to their superior safety.

In addition, the development of non-lithium technologies have also begun to accelerate. Compressed air energy storage, liquid flow batteries, zinc air technology, sodium ion batteries, etc., have achieved breakthroughs in installed capacity, and are also likely to enter the fast lane of cost reduction. CAES, with a clear speed reduction, is hoped to compete with pumped hydro in large-scale energy storage projects. Thirdly, hydrogen energy storage technologies are also developing rapidly.

In the electricity system, all kinds of “energy storage +” support have begun to emerge. Frequency regulation, peak shaving, and native reserve capacity storage are gradually growing into new and different usage models. Combining different technology paths in different settings and scenarios will have their own development prospects.

In 2021, with Biden in the White House and the return of the US to the Paris Agreement, carbon neutrality has now become our most pressing topic. The carbon neutrality goals of each government will become important forces in promoting the growth of the energy storage industry.

It is a hard road, but there are many paths. The prospects are bright, but concerns remain. Most participants in the domestic energy storage industry are small and medium-sized enterprises with little strength. As of now, proper market mechanisms and business models for their development have not been explored. The mechanisms of the electricity market are few and lagging behind, and technology manufactures rely upfront payment, and system integrators take the risks and losses.

The vast majority of new wind and solar projects are strongly paired with storage, but lack business models and pricing mechanisms. Wind/solar + storage advances the rapid growth in scale of the energy storage industry, but lack of strong energy storage cost dispersal and allocation mechanisms that reflect costs will lead to disorderly price-cutting competition.

“Incestuous marriages” have become the norm, and it is difficult for third-party industrial capital to directly address energy storage. This rapid growth has not been conducive to the healthy development of the energy storage industry. Bad money drives out good money, and technology iteration could very likely go astray. From a commercial point of view, the existing income models of energy storage projects are still challenged by market rules and surplus inefficient power assets.

There still is no fundamental solution to the safety issue. With the rapid expansion of the scale lithium-ion battery projects, this risk continues to linger.

In 2020, a major trend for power stations came through the two integration policies of the NEA, i.e. the integration of wind, solar, hydro, and thermal storage; the integration of source, grid, load, and storage; have had major impacts on the development of the energy storage industry. A large base of complementary energies was a power plant trend as well.

On this basis, the energy storage sharing platform will be demonstrated in Qinghai as early as 2020, and the energy storage aggregation platform will start in Jiangsu as early as possible. Aggregation and sharing have become the general trend of the energy storage sector. Electricity market reform is still firmly moving forward.

The healthy development of the energy storage industry needs the strong guarantee and support of policy mechanisms, the design of top-level mechanisms, and to adapt market mechanisms and business models. With the progressing marketization of the electricity system, the energy storage needs to find its core value as soon as possible, form standards and norms, and avoid the disorderly conditions of viscous winner-take-all competition.

The time has come where heaven and earth work together. 2021, in any case, the winds will still rise in energy storage industry's sails. This wind comes from wind/solar + storage, from power reform, from changes in the global energy structure, and from changes in the global political structure. No matter where the winds come from, as an energy storage practitioner in the mouth of the gust, we should take advantage of the "solar storage wind" break the "electricity reform" wave, and swell forward.

China Energy Storage Alliance will strive forward with industry colleagues towards a better tomorrow for the energy storage industry.

**Johnson Yu**

**Executive Vice Chairman, China Energy Storage Alliance**

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## I. Global Energy Storage Market Scale

According to statistics from the CNESA Global Energy Storage Projects Database, by the end of 2020, global operational energy storage project capacity totaled 191.1GW, an increase of 3.4% compared to the previous year. Pumped hydro energy storage comprised the largest portion of global capacity at 172.5GW, an increase of 0.9%. Electrochemical energy storage followed with a total capacity of 14.1GW. Among the variety of electrochemical energy storage technologies, lithium-ion batteries accounted for 13.1 GW, helping battery storage break 10 GW for the first time.

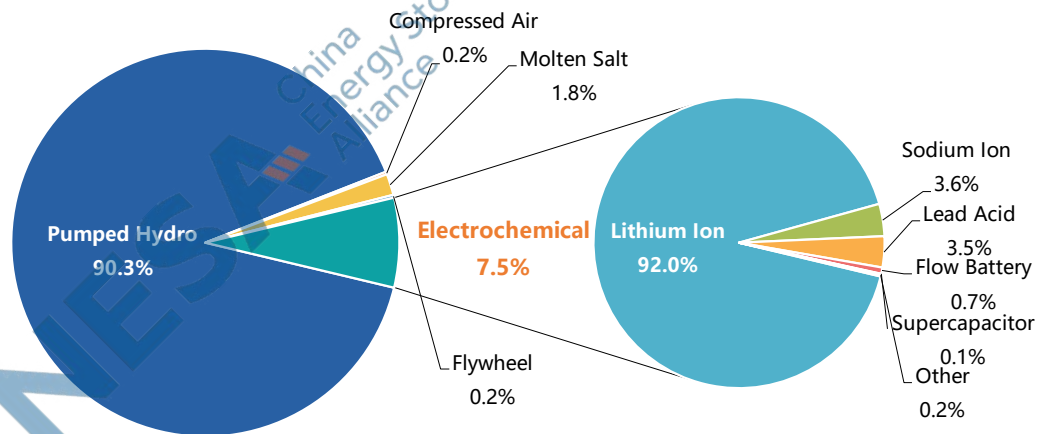


Figure 1: Global Energy Storage Market by Total Installed Capacity (2000-2020)

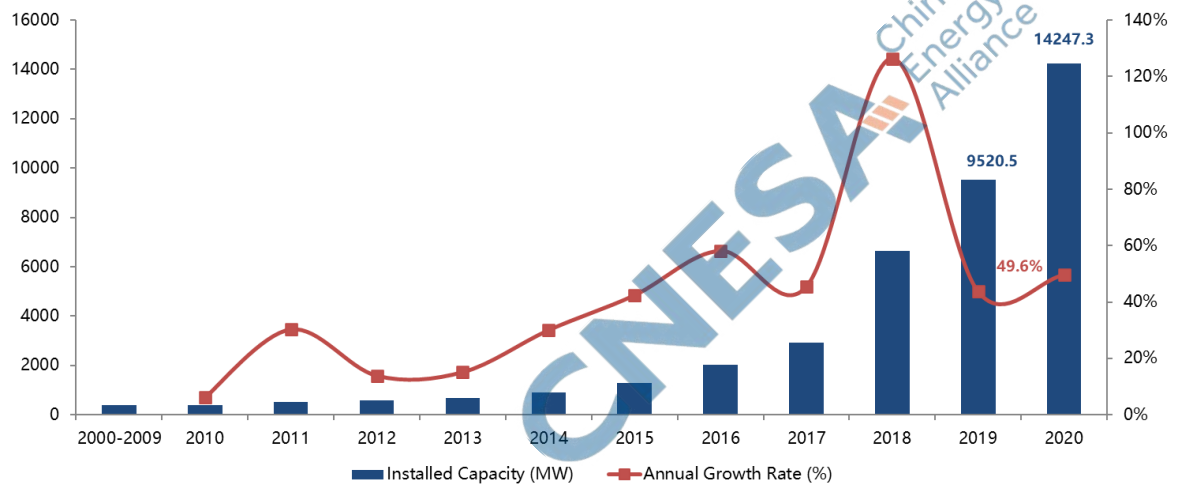


Figure 2: Global Electrochemical Energy Storage Market Size by Cumulative installed Capacity (2000-2020)

## II. Summary of Major Global Energy Storage Markets in 2020

In 2020, COVID-19 swept the world, and the energy storage industry was also seriously affected. However, after the first half of the downturn, the market gradually recovered. New increases in operational energy storage projects, especially from battery projects, again setting new records of 4.7 GW, 1.6 times 2019’s new operational capacity.

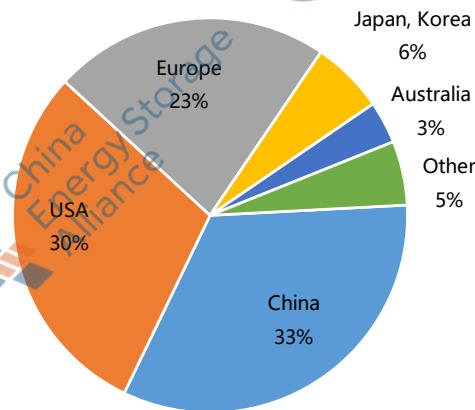


Figure 3: Regional distribution by new installed electrochemical energy storage project capacity in 2020 (MW%)

China, the US, and Europe were the leaders of the 2020 energy storage market, with these three accounting for 86% of new operational capacity, with each cracking the GW level of new operational capacity.

**China:** new energy generation side installations were the largest, exceeding 580 MW, an increase of 438%. This rapid growth was spurred by various provincial policies encouraging or requiring storage allocation in this fields. In addition, the establishment of “carbon peak” and “carbon neutrality” goals will boost the leapfrog development of renewable energy + storage.

**United States:** 2020 saw breakthroughs in front-of-meter deployment, with new operating capacity doubling that of 2019. New installations were mainly in California, with LS Power and Vistra Energy adding 250MW/250MWh and 300MW/1200MWh projects, with the latter being the largest BES project in the US and the world. Texas, New York, Florida, and other states saw accelerated deployment of large scale 100MW BES projects.

**United Kingdom:** despite a 21.1% decrease in new operational capacity compared to 2018, the UK still ranked as having the largest capacity of new operational energy storage in the European market in 2019, accounting for 44.6% of the continent’s total. Following a surge in the market which began two years ago, battery energy storage has been in a slump as the frequency regulation market has become saturated and the capacity market de-rating factor has dropped sharply. Yet at the same time, new market opportunities have emerged. The balancing market has opened to distributed generation resources. Energy storage revenue streams are increasing, stimulating developer interest in energy storage investment and



promoting steady growth in market size.

**Europe:** the implementation of the Clean Energy for All Europeans plan sent a very positive signal for its energy storage market. This was shown in the strong performance of UK's front-of-meter ES market and Germany's home-use ES market. The UK canceled project capacity limits, allowing projects over 50MW and 350MW in England and Wales, officially launching the construction of large scale ES projects in the UK. Germany installed over 300,000 home battery systems, with COVID-19 further stimulating consumers' demand for energy flexibility, safety, and independence.

### III. China Energy Storage Market Scale

According to statistics from the CNESA Global Energy Storage Project Database, by the end of 2020, operational energy storage project capacity in China totaled 35.6 GW, accounting for 18.6% of total global capacity, a growth of 9.8% compared to 2019. Pumped hydro projects accounted for the largest portion of installed capacity, at 31.79GW, an increase of 4.9% compared with 2019. Electrochemical energy storage capacity ranked second, at 3269.2MW, a growth of 91.2% compared to 2019. Among the variety of electrochemical energy storage technologies, lithium-ion batteries comprised the largest portion of installed capacity at 2902.4MW.

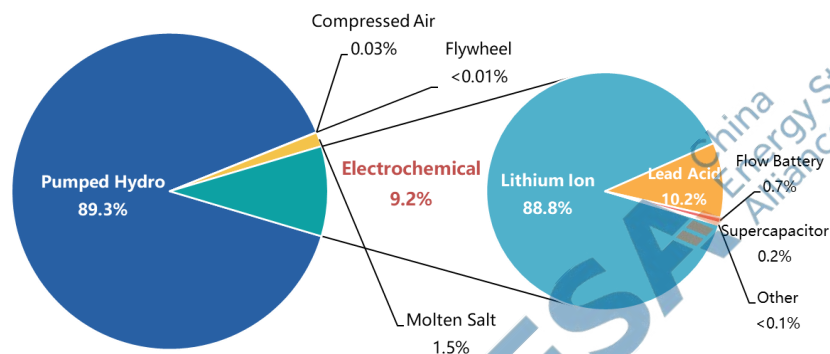


Figure 4: China Energy Storage Market by Total Installed Capacity (2000-2020)

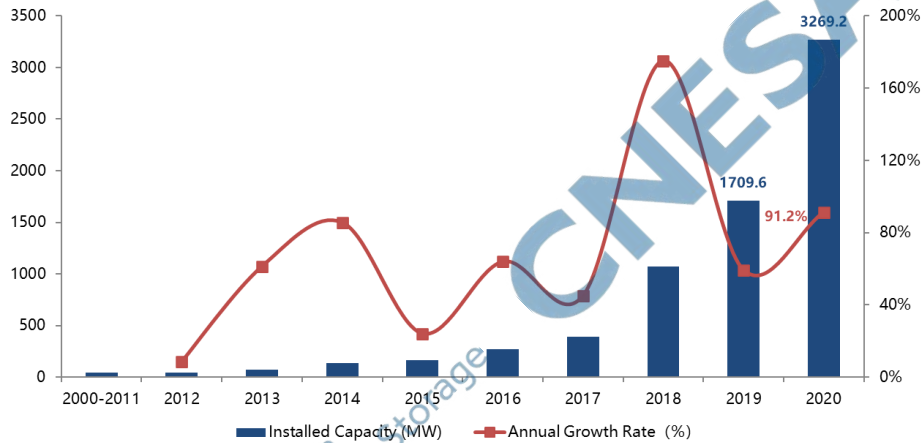


Figure 5: China Electrochemical Energy Storage Market Size by Cumulative installed Capacity (2000-2020)

#### IV. 2020 China Energy Storage Vendor Rankings

Based on the CNESA Global Energy Storage Project Database, publicly available project information, and project data collected voluntarily from energy storage companies, the CNESA research department ranked energy storage technology providers, energy storage inverter providers, and energy storage system integrators according to new operational project capacity in the Chinese market in 2020.

##### A. Energy Storage Technology Provider Rankings

In 2020, among new operational electrochemical energy storage projects in China, the top 10 providers in terms of installed capacity were CATL, Lishen, Hige Energy, EVE Energy, Shanghai Electric Gotion New Energy, Narada, Ganfeng Battery, BYD, CALB and Gotion High-Tech.

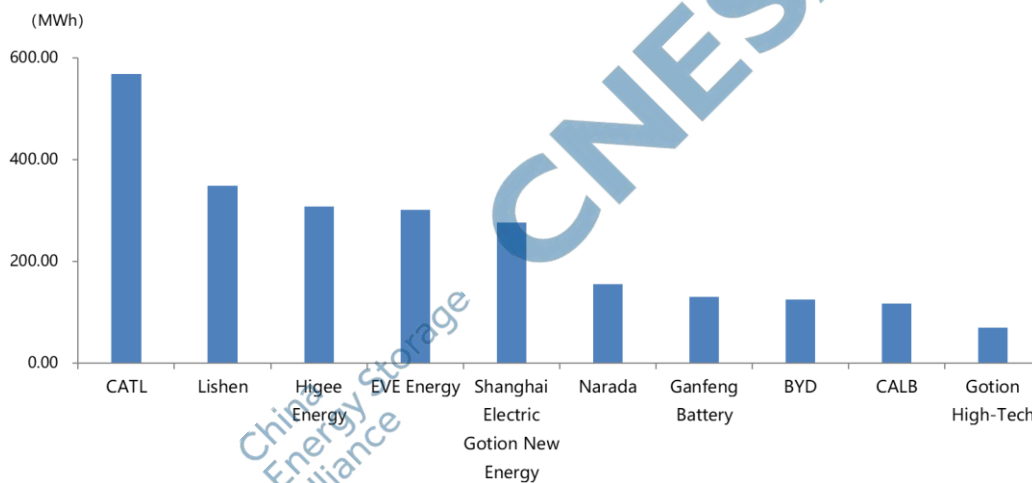


Figure 6: Ranking of energy storage technology providers in China, 2020

In 2020, the top five Chinese energy storage technology providers by shipments of electrochemical energy storage (excluding home-use ES) to foreign markets were: BYD, Narada, Hige Energy, Sacred Sun and Lishen.

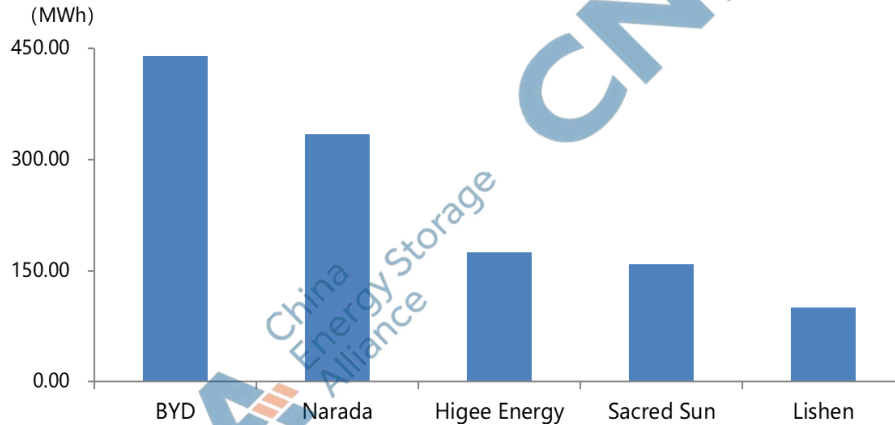


Figure 7: Ranking of Chinese energy storage technology providers, 2020(Overseas Market)

### B. Energy Storage Inverter Provider Rankings

In 2020, among new operational electrochemical energy storage projects in China, the top 10 energy storage inverter providers in terms of installed capacity were Sungrow, KEHUA, Soaring, Sineng, NR Electric, Sinexcel, Clou, XJ Group, IN-Power Electric and Zhiguang Energy Storage.

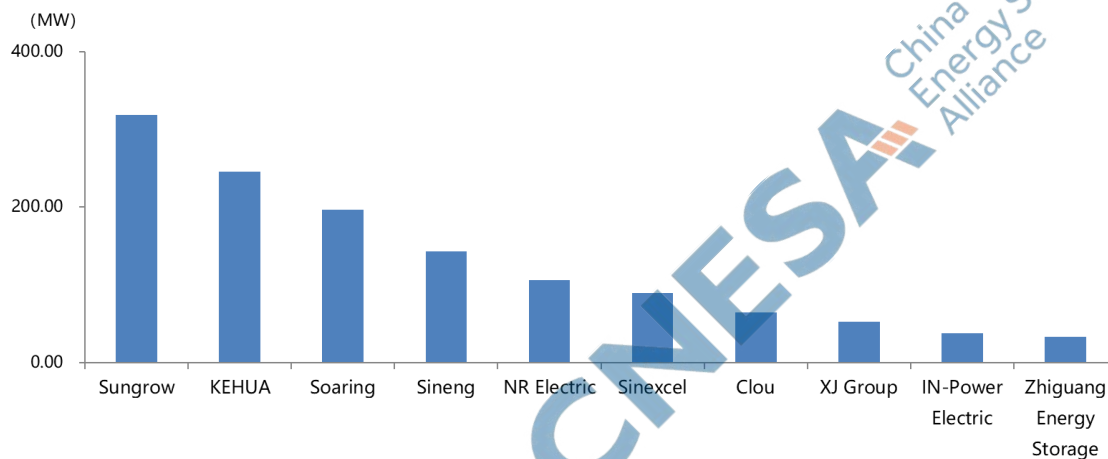


Figure 8: Ranking of energy storage inverter providers in China, 2020

In 2020, the top five Chinese energy storage inverter providers in the overseas electrochemical ES market (excluding home-use ES), were: Sungrow, BYD, KEHUA, KLNE and Sinexcel.

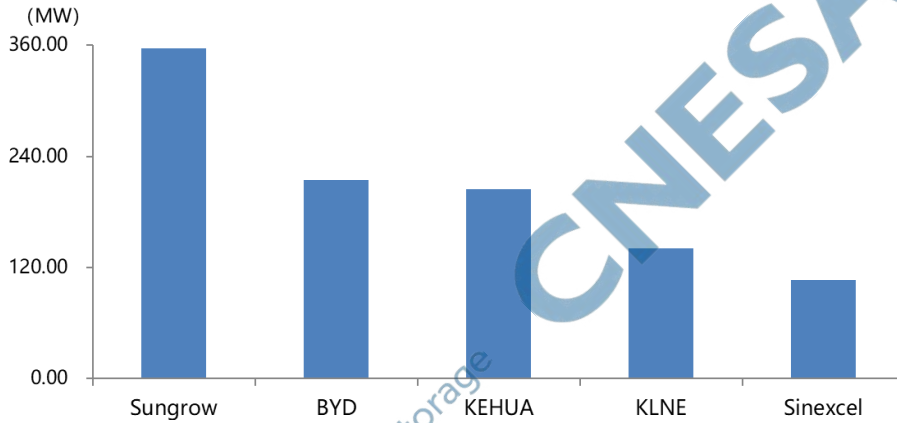


Figure 9: Ranking of Chinese energy storage Inverter Manufacturer, 2020(Overseas Market)

### C. Energy Storage System Integrator Rankings

In 2020, among new operational electrochemical energy storage projects in China, the top 10 energy storage system integrators in terms of installed capacity(MW) were Sungrow, Hyper Strong, Pinggao, Shanghai Electric Gotion New Energy, Dynavolt Tech, KEHUA, Narada, Clou, NR Electric and Cubenergy.

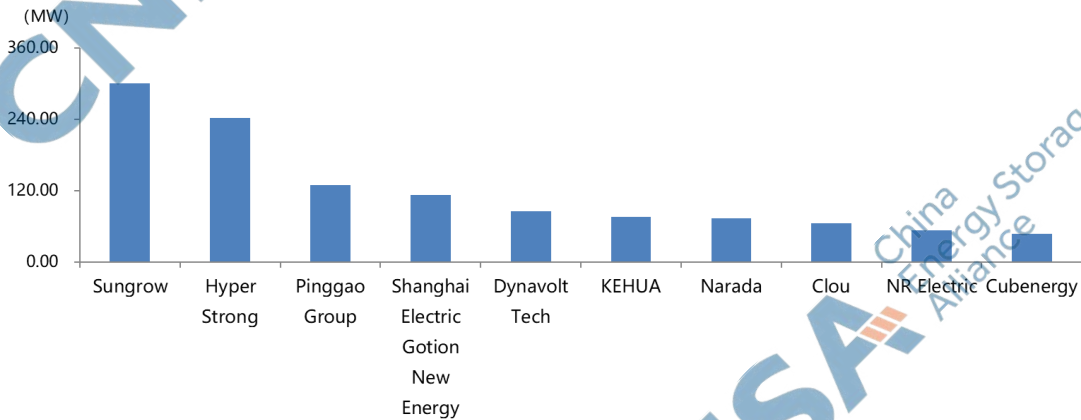


Figure 10: Ranking of energy storage system integrators in China, 2020

In 2020, the top five Chinese energy storage system integrators in the overseas battery energy storage market (not including home ES) by power (MW) were Sungrow, BYD, Narada, AlphaESS and Sacred Sun.

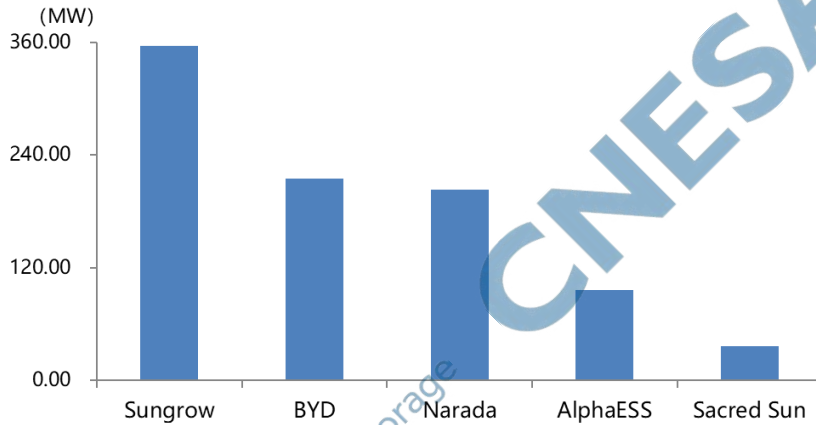


Figure 11: Ranking of Chinese energy storage Integrator, 2020(Overseas Market, by MW)

In 2020, among new operational electrochemical energy storage projects in China, the top 10 energy storage system integrators in terms of installed capacity (MWh) were Hyper Strong, Sungrow, Shanghai Electric Gotion New Energy, Dynavolt Tech, Pinggao, Narada, Cubenergy, Clou and NR Electric.

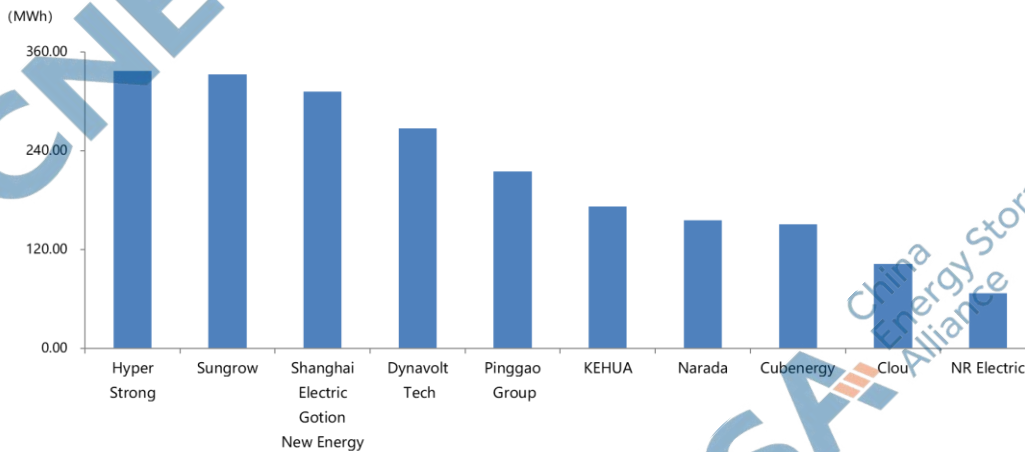


Figure 12: Ranking of energy storage system integrators in China, 2020

In 2020, the top five Chinese energy storage system integrators in the overseas battery energy storage market (not including home ES) by power (MWh) were BYD, Sungrow, Narada, AlphaESS and Sacred Sun.

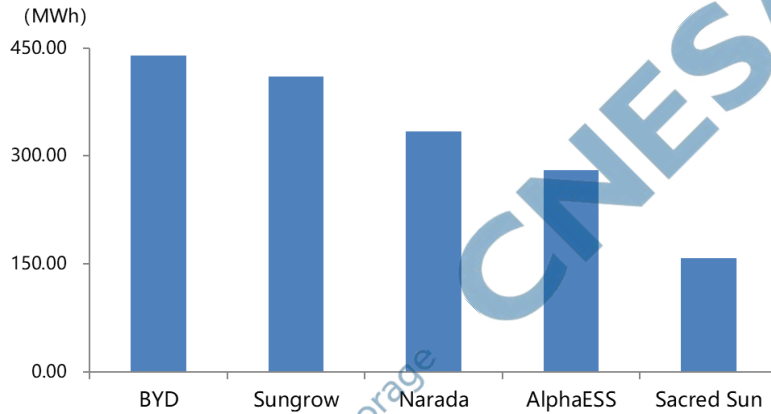


Figure 13: Ranking of Chinese energy storage Integrator, 2020(Overseas Market, by MWh)

## V. 2020 China Energy Storage Finance and Investment Updates

With the energy storage industry attracting more and more capital, the energy storage industry's synergies with capital have been unceasingly innovated, standardizing and succeeding together. According to (the non-exhaustive statistics of) CNESA's investment and finance database, in 2020, energy storage related investment in China reached around 7.4 billion RMB (1.16 billion USD). This investment comes mostly from venture capital, generation companies, grid companies, solar companies, and local governments. Another major channel is going onto the market through an IPO, raising funds from the public. Although IPOs provide even wider space for company financing, they also give rise to even higher requirements on company operations and management. From a financing angle, major factors include:

- ◆ Companies with different energy storage technology pathways obtain financing after reaching milestones, winning the next expansion opportunities
- ◆ Energy storage companies, in going public either for the first time or as a spin-off business, finance through issuing stock to the public
- ◆ Subsidiary energy storage companies get additional capital from their parent companies
- ◆ EV battery companies with energy storage services use financing to expand production capabilities
- ◆ Under current electricity market conditions, companies are financing to search for new business models
- ◆ Generation companies are launching special funds for investing in energy storage related industries

## VI. 2020 CNESA Standards Updates

On March 30, 2018, the Standardization Administration of China officially authorized CNESA to carry out an association standards pilot program. Since then, CNESA has released nine association standards:

1. T/CNESA 1000—2019 Evaluation specification for electrochemical energy storage systems
2. T/CNESA 1001—2019 General specification for DC power connector of electrical energy storage
3. T/CNESA 1002—2019 Technical specification for battery management system of electrochemical energy storage system
4. T/CNESA 1003—2020 Battery cable for electrical energy storage systems
5. T/CNESA 1004—2021 General test methods for lithium ion battery fire hazards
6. T/CNESA 1201—2018 Design specification of gas-gathering pipeline for compressed air energy storage system
7. T/CNESA 1202—2020 General technical requirements for flywheel energy storage systems
8. T/CNESA 1203—2021 Performance test specification for compressed air energy storage systems
9. T/CNESA 1301—2020 Testing regulations of performance attenuation on phase-change thermal energy storage units

CNESA is currently developing standards in the categories of EES, CAES, FES, and TES, etc. Standards in progress include:

Chart 1: List of CNESA standards currently in development

Number	Name	Leading Institution
1	Technical requirements for fire monitoring and warning system for electrochemical energy storage system	Chungway New Energy Technology Co. Ltd.
2	Technical specification for coordinated controller of electrochemical energy storage stations	XJ Group Corporation (Limited)
3	Guide for planning and design of grid-side energy storage projects	State Grid Jiangsu Electric Co. Ltd. Economics and Technology Research Institute
4	Fire Suppression Device for Electrochemical Energy Storage Systems	Anhui Chinese Academy of Science - Zhonghuan Security Equipment Technology Co. Ltd.
5	Communication between battery management system and external equipment for electrical energy storage	Contemporary Amperex Technology Co. Ltd. (abbr. CATL)
6	General specification for Na-ion secondary batteries	Institute of Physics, Chinese Academy of Sciences
7	Guide for economic evaluation of electrical energy storage projects	State Grid Jiangsu Electric Co. Ltd. Economics and Technology Research Institute
8	Technical Specifications for Hydro-Thermal Storage Devices	Shanghai Zhongru Group Institute of Engineering Thermophysics, Chinese Academy of Sciences
9	Technical specification for user-side energy storage on-site monitoring system	XJ Group Corporation (Limited)

Source: CNESA

## VII. Characteristics of China's Energy Storage Market in 2020

In 2020, the development of China's domestic energy storage industry was suddenly hit by the effects of COVID-19, but with the industry's initiative, external policy and carbon neutrality and targets, and other favorable factors, energy storage installation quickly and greatly rose, entering the scaled rapid development fast lane. However, hidden concerns immediately appeared under this exuberance. Under the apparent market 'scaling' there were hidden pain points in the industry's development, which need to be addressed by policy and the market. At present, problems became clearer for the market regarding the energy storage industry and technology application levels, but the lack of responsibility mechanisms is serious,



and the foundation for industrialization development not solid. It is necessary to enhance the strategic position of the industry in the new stage of the 14th Five Year Plan and improvements in industry regulatory capacity must match the urgent demands of the industry's development. These are key to promoting the industry's healthy and sustainable development.

**Throughout the 2020-year, China's energy storage industry displayed six major characteristics:**

- National and local policies raised the pace of energy storage industrialization
- Energy storage integration trend emerged
- Long term market mechanisms are expected for commercialized application of energy storage
- Innovative business models made headway
- Energy storage technology made continued breakthroughs, costs continued to fall
- New forces are emerging and all parties are making forays into the energy storage industry

Overall, entering the 14<sup>th</sup> Five Year Plan development period, economic and social development provide new requirements for energy security, efficiency, and cleanliness. To realize the 'Peak Carbon in 2030, Carbon Neutrality in 2060' development targets, new energy scaling must be launched and leveraged. Energy storage is an important technological support pushing new energy's leapfrog development.

Similarly, under COVID-19, the global economy has changed. Contributing to economic growth has become a new goal of strategic emerging industries, of which energy storage is a major part. As such, key directions of energy storage development in the 14th Five Year Plan include: advancing the comprehensive commercial development of energy storage, establishing a leading position in the international energy storage market, and supporting energy reform and new energy development and utilization.

Given the new conditions of energy development in China, the trend of energy storage and new energy support is irreversible, and it is necessary to solve the technical and commercial application problems facing energy storage as soon as possible. Although energy storage does not yet play an irreplaceable role in the power system, its value in advancing the large-scale development of new energy in China cannot be ignored.

## **VIII. China Energy Storage Market Forecast**

Since 2014, the CNESA research department has been forecasting the scale of China's energy storage market growth with the support of industry experts and energy storage companies. Below, we provide a forecast for the scale and development trends of China's energy storage market from 2021-2025.

### **Physical energy storage: Accelerated Development under the 14th Five Year Plan**

The 2021 National Energy Conference made clear proposals to vigorously improve new energy consumption and storage capacity, as well as vigorously develop the pumped hydro storage and energy storage industries. As a major regulation tool for safe, stable, and economic power system operation, pumped hydro storage will see faster development in the 14<sup>th</sup> Five Year Plan. Some experts pointed out that during this period, there will be stronger demand for energy storage facilities, and the scaled storage advantages of pumped hydro stations will have greater room to play. Considering the progress of pumped hydro stations under construction, installed capacity reaching 65GW by 2025 is our preliminary estimate.

Large scale compressed air energy storage technology (CAES) is also developing rapidly. In June 2020, the Energy Storage Research and Development Center of the Institute of Engineering Thermophysics, Chinese Academy of Sciences, completed the processing, integration, and performance testing of a 100 MW expander. It qualified on all tests, and reached or exceeded design targets - a major milestone towards the breakthrough of large-scale, low-cost usage of compressed air energy storage in China.

The establishment of the national dual carbon targets have prompted the rapid development of renewable energy. There will be huge application space for compressed air energy storage technology in the future, as power generation companies and finance and investment institutions highly value CAES's advantages in high capacity, long life, and high safety.

Flywheel energy storage, after achieving megawatt level commercial application in 2019, will see more deployment in 2020, mainly in the oil well drilling industry, rail transit, UPS backup power supply, and other fields. In August 2020, the Ministry of Industry and Information Technology (MIIT) issued the 'Management Rules for New Energy Vehicle Manufacturers and Product Admittance'. This named high-efficiency energy storage as a major pathway towards new energy vehicles. As a high-efficiency energy storage technology, flywheel energy storage will also have great usage potential in the automotive field in the future.

### **Molten salt thermal storage: Demonstration Projects to be Stepped Up, New Applications to Rapidly Expand**

According to the CNESA Global Energy Storage Project Database, by the end of 2020, there was a total of 520 MW of solar thermal projects in operation in China. In 2020, only 100 MW of were added, coming from the Urad Middle Banner Demonstration Project in Inner Mongolia (Urad Middle Banner is a city). This project is also part of the first batch of the National Energy Administration's (NEA) solar thermal demonstration projects. 13 of these demonstration projects, totaling 899MW, have yet to be completed, according to public information tracked by CNESA. Two more of these projects are expected to be completed by the end of 2021: the Yumen New Energy Molten Salt Tower (50 MW), and the Gansu Aksai Molten Salt Solar Trough Power Plant (50MW).

With large-scale development of renewable energy accelerating, the trend of highly

coordinated development of multiple energy sources is becoming increasingly clear. Solar thermal's costs have declined and flexibility has increased, which may welcome to new development opportunities as part of a diversified comprehensive energy foundation.

**Electrochemical energy storage: Turnarounds, the Return of High-Speed Growth, and Emergence of Large-Scale Growth**

In 2020, China's electrochemical energy storage industry once again accelerated its growth trend. Even COVID-19 could not stop its large-scale growth macrotrend. In 2020, newly added installed capacity was 1559.6 MW, 2.5 times that of 2019, for year-on-year growth of 145% - breaking the GW mark for the first time.

This also confirmed the CNESA Research Team's prediction in last year's *Energy Storage Industry White Paper 2020* that said 'after the rational adjustment period in 2019, the domestic market will come together with much greater vigor', and this vigor broke out in 2020.

In this year's white paper, CNESA Research Department reapplied this methodology to forecast the size of the electrochemical energy storage market for the 2021-2025 period, for both conservative and ideal scenarios. Results include:

**Conservative scenario:** In 2021, the electrochemical energy storage market will continue to maintain rapid development, with cumulative installed capacity reaching 5790.8 MW. During the 14<sup>th</sup> Five Year Plan period, it will be important for energy storage to explore and realize the market's 'rigid demand' application and system productization, and receive stable commercial benefits. In this period, the cumulative scale of electrochemical storage will have a CAGR (compound annual growth rate) of 57.4%, with the market exhibiting steady rapid growth.

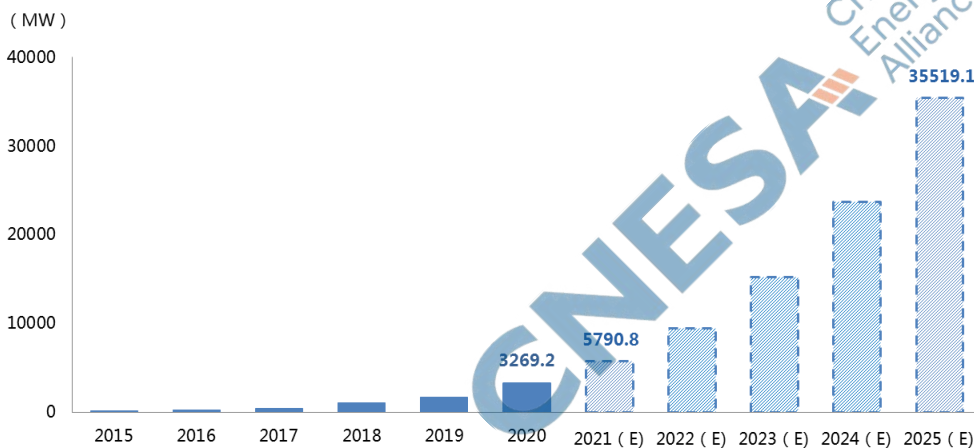


Figure 14: China's electrochemical energy storage cumulative installed capacity (conservative scenario, 2021-2025)

**Ideal scenario:** The goals of 'peak carbon' and 'carbon neutrality' are of great benefit to the renewable energy and energy storage industry. Under ideal market development, cumulative market size will reach 6614.8 MW in 2021. With a new power system being built with new energy as its primary component, large-scale usage of energy storage is imminent.

If there is a stable profit model in the next two years, another round of high growth will take shape towards the end of the period, around 2024-25, with total installed capacity reaching 32.7 GW and 55.9 GW, respectively, in step with the 2025 wind and solar installation targets.

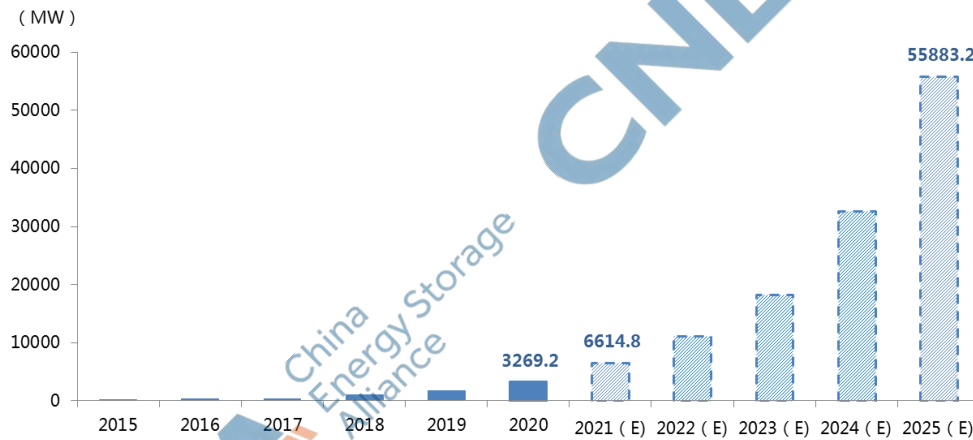


Figure 15: China's electrochemical energy storage cumulative installed capacity (ideal scenario, 2021-2025)

By the end of 2021, the total operational capacity of China's energy storage market will be 40.8 GW under conservative conditions, with electrochemical having the fastest growth rate and greatly increasing its market share as it enters the large-scale development stage. In the ideal scenario, this is increased to 41.66GW, with the increase coming largely from electrochemical energy storage.

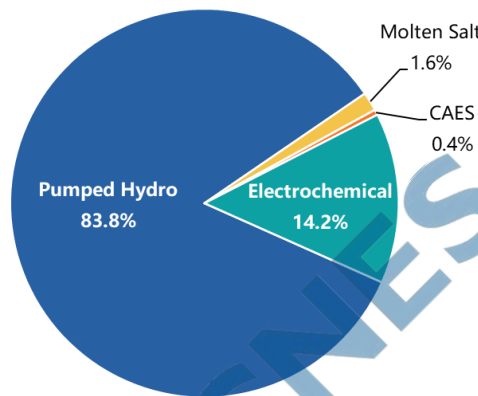


Figure 16: 2021 China energy storage total operating capacity forecast (conservative scenario)

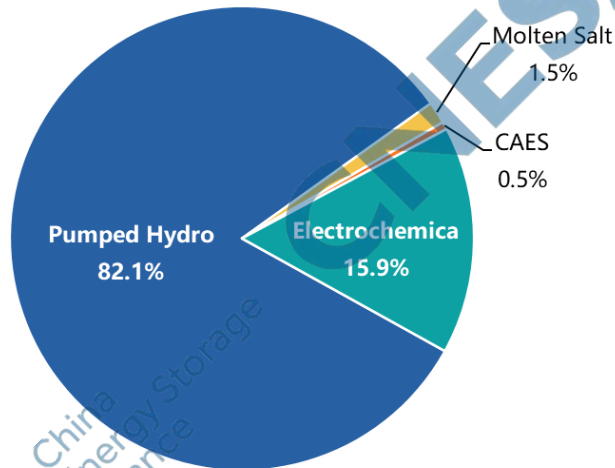


Figure 17: 2021 China energy storage total operating capacity forecast (ideal scenario)

Given these two scenarios, CNESA Research Department believes that China's electrochemical energy storage market will officially enter the large-scale development stage during the 14<sup>th</sup> Five Year Period. Since the end of 2019, the usage models of renewable energy + storage has gradually spread to many places, with over 20 provinces having issued documents encouraging or mandating energy storage allocations for new energy power plants. In 2020, the proposal of the dual carbon targets widened usage of renewable energy in China, boosting construction of new energy power plants, and laying the foundation for the large-scale market development of energy storage. In addition, with the deepening electricity reforms, market rules will gradually open to new market players, including energy storage, and allowing energy storage to participate in electricity market transactions as independent actor, while also getting reasonable value.

## About the China Energy Storage Alliance

The **China Energy Storage Alliance (CNESA)** is China's first non-profit member-based industry association promoting the use of energy storage in China's grid. We are proud to:

- (1) Produce quality research on the projects, players, and policies shaping the industry;
- (2) Promote business and government partnerships that strengthen the energy storage industry in China and abroad;
- (3) Manage demonstration projects to show policymakers how energy storage is the key to China's transitioning economy.

You can learn more about CNESA's work at our official English-language website: [en.cnesa.org](http://en.cnesa.org).

## About ES Research

The CNESA research department launched its "Energy Storage Research Platform" in January of 2018. The online platform includes four main services, including the **Global Energy Storage Database, Energy Storage Industry Tracking, Energy Storage Industry Reports, and Research Consultation Services.**



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