Battery Innovation System of China

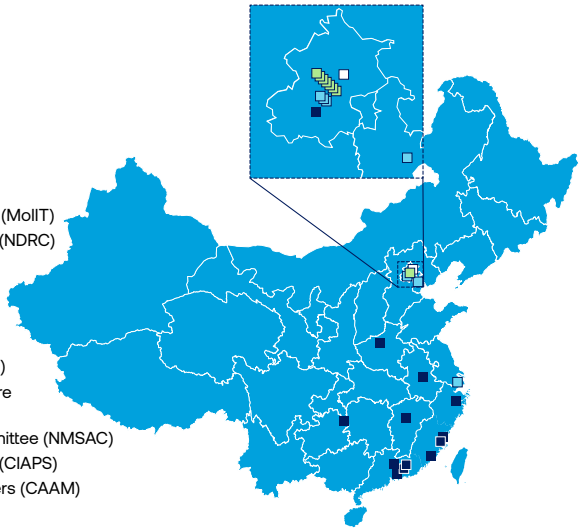
Main Players

POLITICAL ORGANISATIONS

- Central Committee
- State Council
- Ministry of Science and Technology (MoST)
- Ministry of Finance (MoF)
- Ministry of Industry and Information Technology (MoIIT)
- National Development and Reform Commission (NDRC)
- National Manufacturing Strategy Advisory Committee (NMSAC)

INTERMEDIARY ORGANISATIONS

- China Electric Vehicle Association (China EV 100)
- China Automotive Technology & Research Centre (CATARC)
- National Manufacturing Strategy Advisory Committee (NMSAC)
- Chinese Industry Association of Power Sources (CIAPS)
- Chinese Association of Automobile Manufacturers (CAAM)



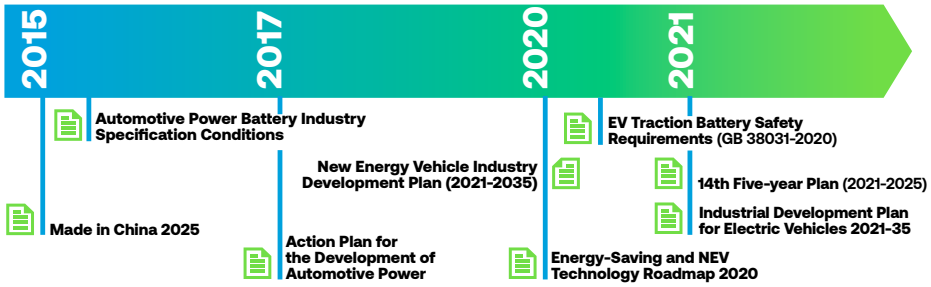
RESEARCH ORGANISATIONS

- 15 State Key Laboratories
- China Society of Automotive Engineers (China SAE)

COMPANIES

- BTR New MATERIAL (Materials)
- BYD (Batteries)
- CALB (Batteries)
- CATL (Batteries, Recycling, Raw Materials)
- CNGR (Materials)
- Easpring (Materials)
- EVE (Batteries)
- Gangfeng Lithium (Raw Materials, Batteries, Recycling)
- GEM (Recycling)
- Gotion High Tech (Batteries)
- Huayou Cobalt (Raw Materials)
- Ronbay (Batteries)
- Xiamen Tungstan (Materials)

Strategic Documents



Country Specific Information

Since 2015, China has been rapidly innovating its domestic battery technology to catch up with the leading countries. After maturing the entire value chain from raw materials to component manufacturing, cell and pack production and EV application with the help of a comprehensive government subsidy programme, China gained the largest market share in the battery industry and started to adopt a more technology-open approach. It accounts for around 75% of global battery cell production capacity, 70% of cathode capacity and 85% of anode capacity. To strengthen its global market position, China now needs to focus not only on performance targets such as energy density, but also on qualitative parameters such as safety, management of emissions in the manufacturing process or recycling. Although most KPIs are still set by ministries, China is now seeing an increasing influence of intermediary organisations and key entrepreneurs on policy making.

Research Priorities

+ Liquid-lithium + solid-state + alternative batteries + lithium-manganese-cobalt-oxide (NMC) batteries + hydrogen energy and fuel cell technologies + new materials e.g. CO-free cathode, nano-Si/C anodes, different kinds of both inorganic and polymer electrolytes, solid separators and super binders + sodium-ion batteries + energy storage for industrial plants and households + fast stacking, smart sensors, multi simulation and digital factories of critical raw materials needed + reduction of GHG during the production process + recycling technology + digital twins + cell design + life cycle assessment + large cylindrical battery + large energy storage cell

Policy Goals

2025

- **Raw materials:** Improve supply of lithium, nickel and cobalt by strengthening domestic resource exploration and recycling, as well as optimise overseas supply
- **Energy density:** Achieve a breakthrough of a new power battery system, e.g., lithium-sulfur batteries, metal-air batteries and solid-state batteries with energy density on cell level reaching 500 Wh/kg
- **Recycling:** Reach international advanced levels in actual recycling - recovery rate for nickel, cobalt, manganese ≥ 98%, for lithium ≥ 85%, for rare earths and valuable metals ≥ 97%
- **Costs:** Halve the cost of fuel cell systems to CNY 4.000/kW (this target was set in 2019, but experts predict it will reach CNY 1.000/kW in 2025)

2030

- **CO_2 emissions:** Reduce the emissions by 65% per unit of GDP compared to 2005 levels
- **Fuel cell vehicles:** One million fuel FCEV on the road

2035

- **Electric vehicles:** Achieve more than 50% NEV sales for total vehicle sales and more than 95% of NEV pure electric
- One million FCV on the road between 2030 and 2035

2060

- **Carbon neutrality**

Funding Instruments

TIME	FUND	FOCUS	BUDGET
2021–2026	National Key R&D Program "New Energy Vehicles"	▪ Efficiency and performance of electric vehicles ▪ All-solid-state lithium-metal battery technologies	CNY 860 million (ca. CNY 47.8 million for battery projects)
2021–2025	National Key R&D Programme: "High-end Functional Material"	▪ High energy density lithium metal-based secondary batteries	CNY 659 million (ca. CNY 18.8 million for battery projects)
2021–2025	National Key R&D Programme: "Technology of Energy Storage and Smart Grid"	▪ High safety, long cycle life, low-cost LIB, solid-state LIB as well as ▪ Metal-sulphur based batteries for energy storage and smart grid	CNY 667 million (ca. CNY 100 million for battery projects)
2024	Solid-State Battery Initiative	▪ Financial support to six selected companies' R&D activities related to all-solid-state batteries	CNY 6 billion
2017–2022	Direct subsidies to BYD	▪ Government subsidies of appx. USD 4.2 billion for new energy vehicles purchases and USD 920 million in direct subsidies.	USD 4.2 billion

April 2, 2025; 1 CNY = 0,13 EUR

Batteries Europe

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