

# Battery Innovation System of South Korea



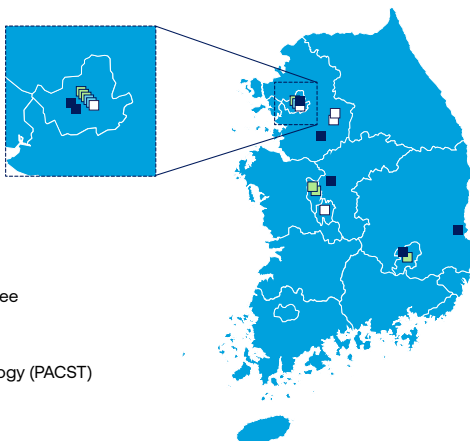
## Main Players

### POLITICAL ORGANISATIONS

- Ministry of Trade, Industry, and Energy (MOTIE)
  - Korea Energy Technology Evaluation and Planning (KETEP)
  - Korea Evaluation Institute of Industrial Technology (KEIT)
- Ministry of Science and ICT (MSIT)
- President's Office and Presidential Transition Committee

### INDUSTRY ASSOCIATIONS

- Presidential Advisory Council on Science and Technology (PACST)
- Korean Battery Industry Association (KBIA)
- Battery R&D Association of Korea (KORBA)



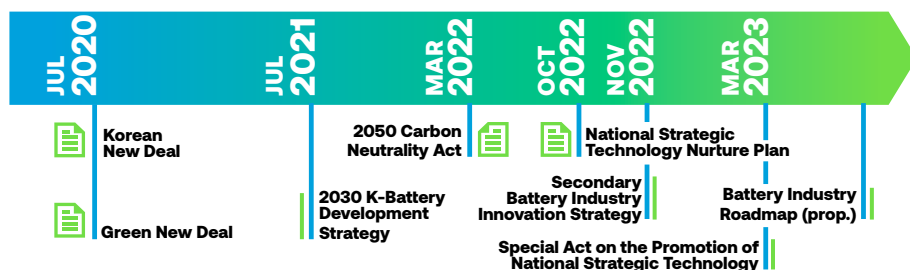
### RESEARCH ORGANISATIONS

- Korea Institute of Science and Technology (KIST)
- Samsung Advanced Institute of Technology (SAIT)
- Korea Electronics Technology Institute (KETI)
- Electronics and Telecommunications Research Institute (ETRI)

### COMPANIES

- These three entities invested in the K-battery-programme:
- EcoPro Materials (Materials)
  - LG Energy Solution (lithium-sulfur batteries, all-solid-state batteries)
  - LNF (Materials)
  - POSCO FutureM (Materials)
  - Samsung SDI (cobalt-free nickel-manganese batteries)
  - SK Innovation

## Strategic Documents



## Country Specific Information

South Korea is the centre of global secondary battery R&D and a leading manufacturing base, but it is still necessary to ensure a stable supply chain and core competencies. The next ten years will be crucial for the development of next-generation secondary batteries, such as all-solid batteries. Battery policy or programmes are set by the central government and the Korean President, who is the ultimate authority on research matters. However, industry is strongly involved in the decision-making process and investment measures. The level of battery manufacturing technology, such as energy density, is currently similar in China, South Korea and Japan, but Korea has a slight advantage in productivity (quality control level). On the other hand, South Korea has a weak domestic materials ecosystem and is highly dependent on imports. Therefore, it is

necessary to diversify the supply chain and expand the domestic production base in order to achieve the goal of global leadership. The K-Battery development strategy shows a clear R&D focus on commercialising three types of advanced batteries: solid-state, lithium-sulfur and lithium-metal batteries by 2027, 2025 and 2028 respectively.

## Research Priorities

- + All-solid-state, lithium-sulfur and lithium-metal batteries
- + next-generation element technology to increase ion conductivity, lifespan, safety, cell performance
- + lithium metal-air batteries
- + innovative technologies (e.g. organic matter)
- + high nickel cathode and silicon anode materials
- + single-walled carbon nanotube
- + intelligent batteries (self-detection, suppression and healing of risk)
- + streamlining of the drying process
- + cutting-edge technologies such as AI and digital twins
- + nanocoating for silicon anode materials

## Funding Instruments

TIME	FUND	FOCUS	BUDGET
2020–2025	Korean New Deal – the pillar Green New Deal – upgraded in 2021 (Green New Deal 2.0)	Strengthening climate action and realize a green economy. Focus on green infrastructures, renewable energy, and fostering green industry.	Total for Korean New Deal: KRW 220 trillion (KRW 73,4+ trillion for the pillar Green New Deal)
2020	Tax Exemption Restriction Act	Future waste resource base collection centre	KRW 17.1 billion
	Incentive Programmes of Export-Import Bank of Korea and Korea Development Bank	Key battery technology recognised as a national strategic technology → tax support up to 50% for R&D expenditures and up to 20% for facility investment (machines, infrastructure, laboratories, etc.)	
		High safety, long cycle life, low-cost LIB, solid state LIB as well as metal-sulfur based batteries for energy storage and smart grid	KRW 1.5 trillion
2023–2030	Public-private joint R&D innovation fund (MOTIE + Battery Industry + private investment sector)	Key industry sectors, including semiconductors, secondary batteries and nuclear power generation (40 R&D projects in 11 major industry fields); development and early commercialisation of advanced battery technologies, including solid-state batteries	KRW 13.5 trillion (KRW 6.2 trillion by 2027, KRW 7.3 trillion by 2030) industry: KRW 20.5 trill.