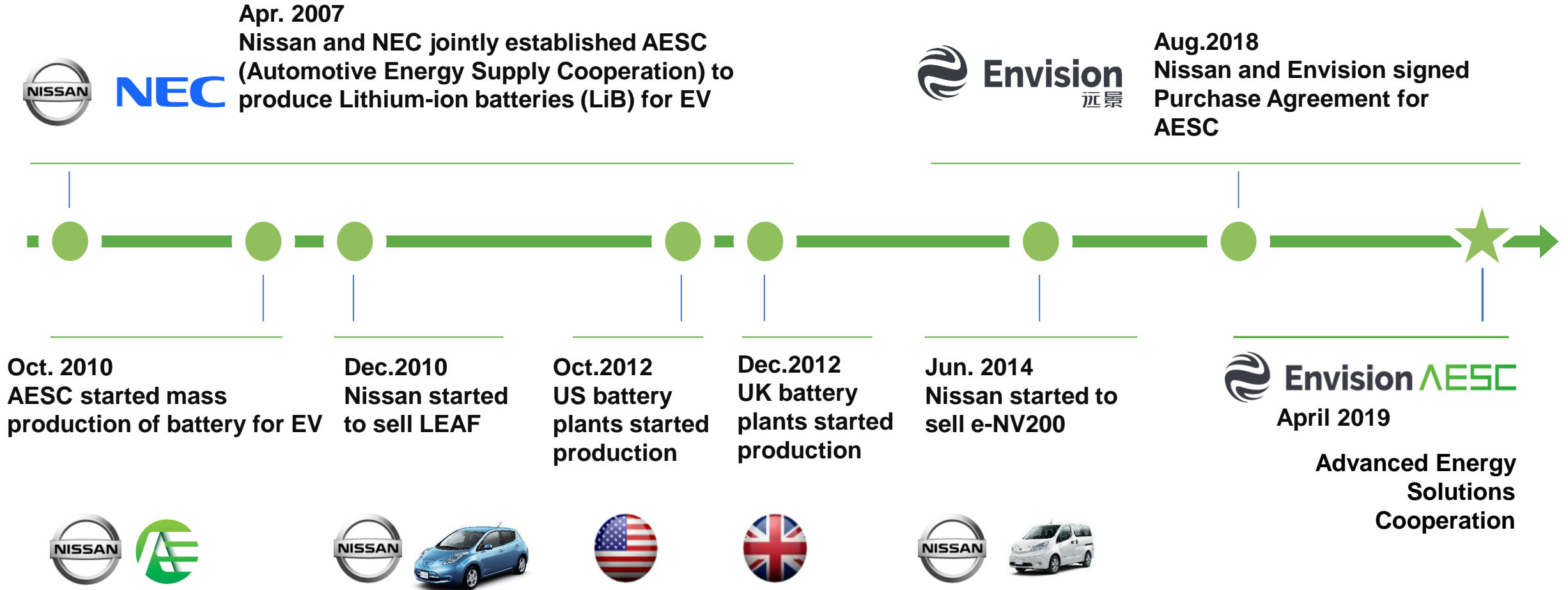




Challenges of Envision AESC towards carbon neutrality

June 24th, 2021

Envision AESC's History



Management goal

Global leading AIoT (AI+IoT) battery company



Global EV: 550,000 (Dec 2020)

AESC Battery - 'Zero Critical Incident' in 10 yrs History of Competitive Battery production in the World

Envision AESC Profile



US Plant

- Tennessee, US
- Capacity: 3.0 GWh/yr



UK Plant

- Sunderland, UK
- Capacity: 1.9 GWh/yr



China R&D Centre

- Shanghai, China

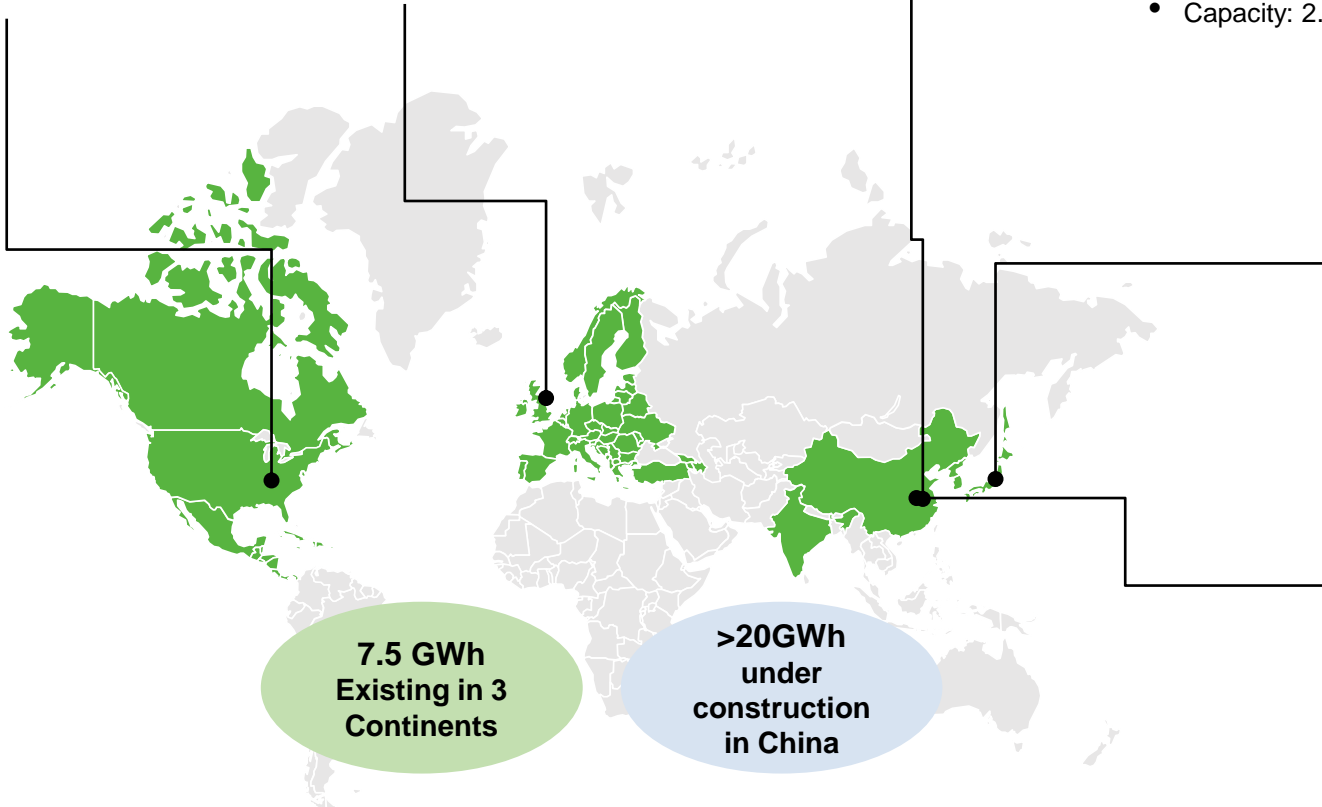


Japan Global HQ, R&D Centre, and Plant

- Kanagawa, Japan
- Capacity: 2.6 GWh/yr



**Under consideration
of new plants in
Japan, Europe, US**



China Plant & Engineering Centre

- Wuxi, China
- Capacity >20 GWh in phases
- #1A 3GWh (2021 Spring)

**7.5 GWh
Existing in 3
Continents**

**>20GWh
under
construction
in China**

Global number of Employee 2,300

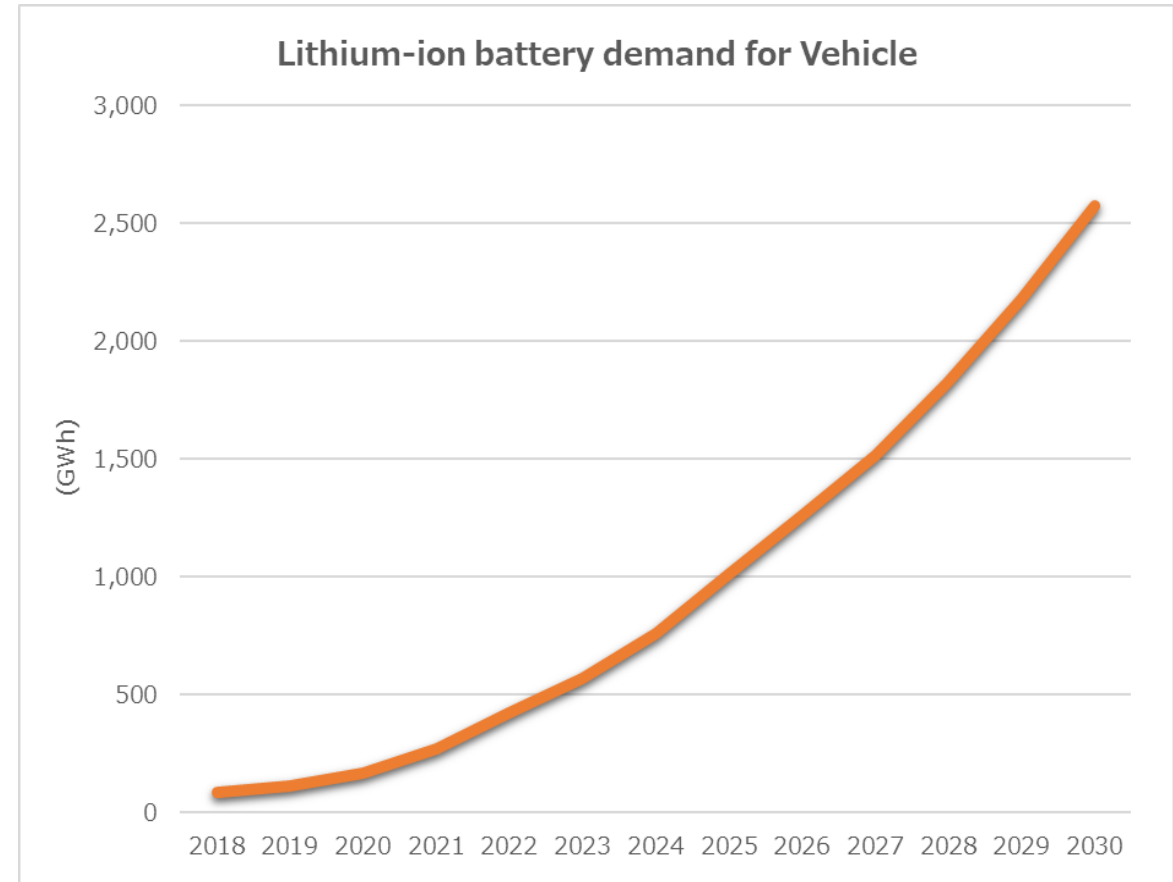
Battery maker challenge

Contribute to de-carbonization through electrification of mobility by providing leading-edge batteries sustainably.

Lithium-ion battery demand for vehicle will increase more than 10 times to 2,500GWh by 2030.

Our challenge

- Expand our production capability
- Leading-edge battery technologies
 - ✓ Higher energy density, Lower Cobalt
 - ✓ ASSB (All Solid State Battery)
- Sustainable supply chain
 - ✓ Sustainable supply chain creation (re-use, recycling)
- Carbon neutral production



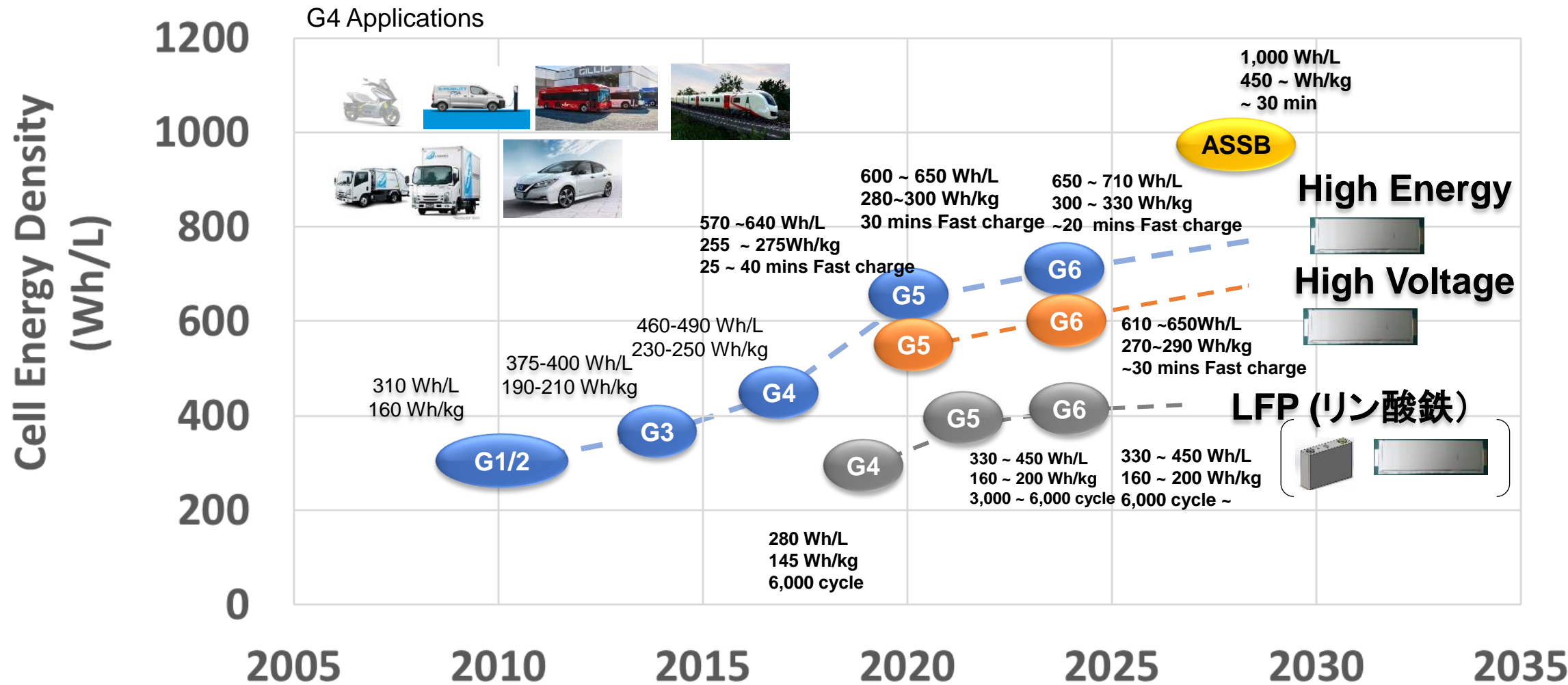
Source: Bloomberg

An aerial, high-angle photograph of a dense urban landscape, likely a major financial district. The image shows a tightly packed collection of skyscrapers and commercial buildings, with varying heights and architectural styles. The color palette is dominated by blues, greys, and muted greens, giving it a somewhat desaturated, futuristic feel. The perspective is looking down from a high altitude, showing the intricate grid and organic patterns of the city's development.

Leading-edge battery technologies

Envision AESC Technology Roadmap

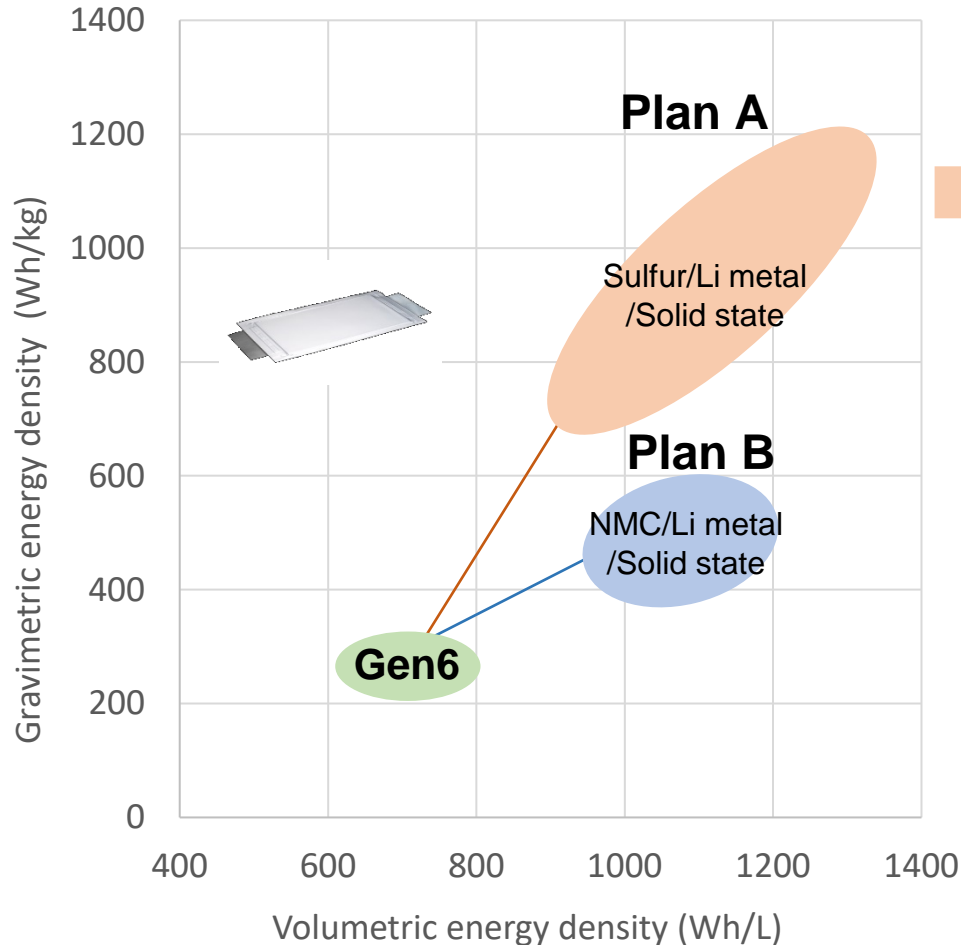
Multiple Technology Line-up will Support All Electrifications Demands Flexibly



Post Lithium-ion battery: Solid State Battery

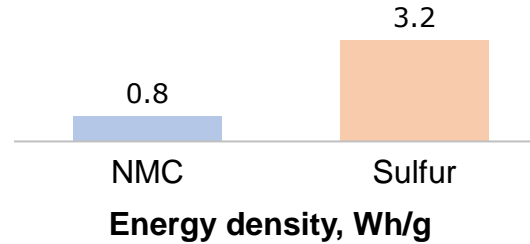
Envision AESC is aiming to achieve 1,000 [Wh/L]

Energy Density Target



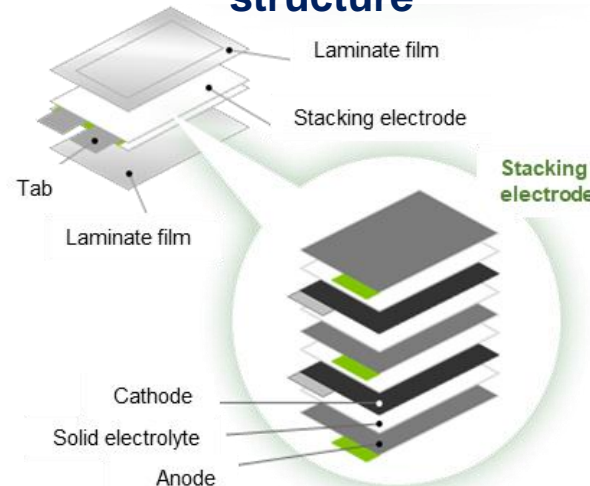
Advantage of New Technology

Advantage of Sulfur



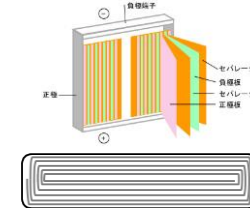
- Cathode energy density per kg is **200%** higher than NMC

Advantage of stacking structure



- Stacking is the best structure for solid electrolyte which prefers no bending
- Envision AESC has over 10 years experience of stacking technology

< Prismatic cell >



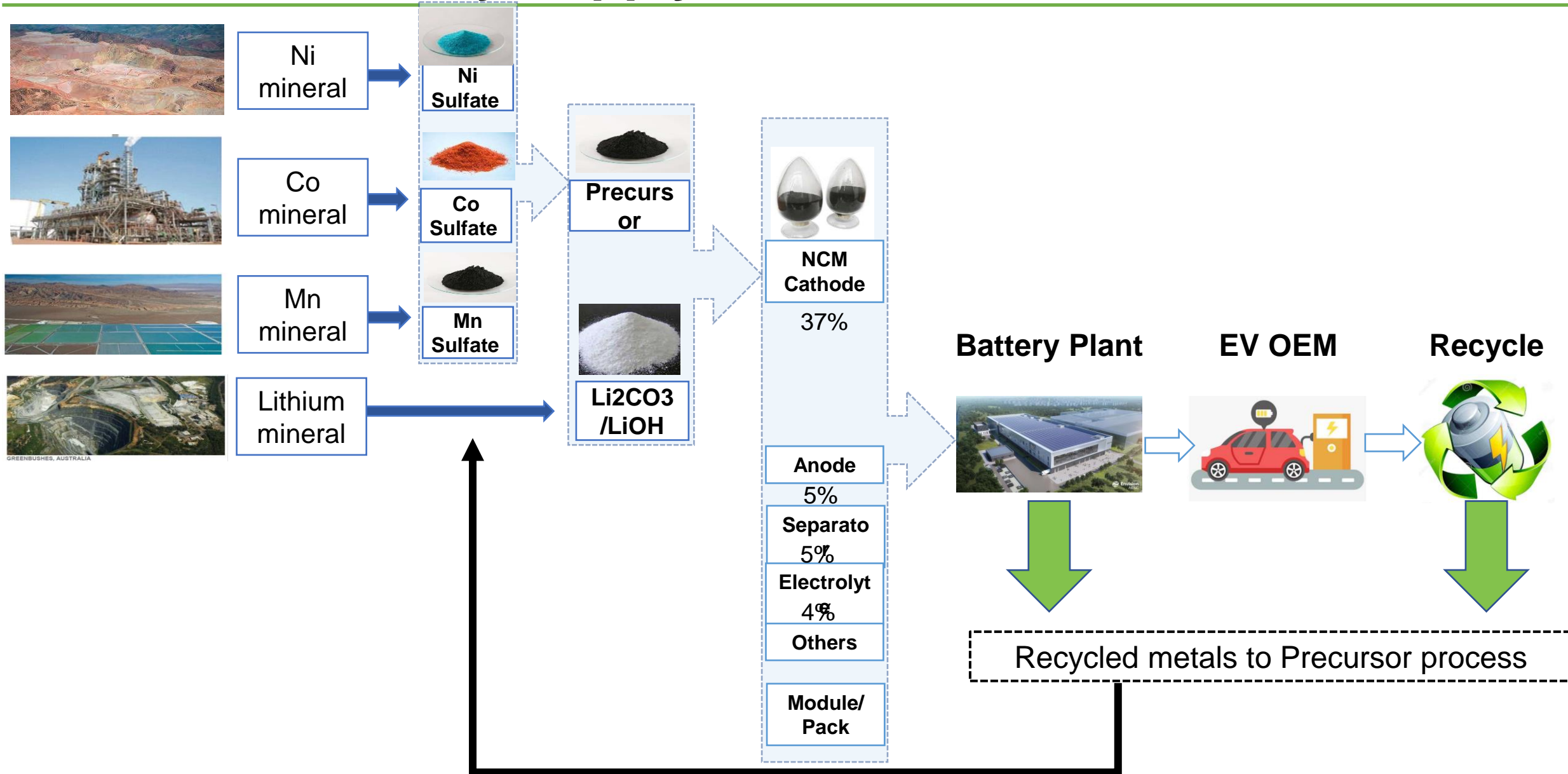
< Cylindrical cell >



An aerial, high-angle photograph of a dense urban landscape, likely a major city center. The image shows a vast number of skyscrapers and high-rise buildings packed closely together, creating a complex, textured pattern of grey and blue. Some buildings have distinctive architectural features, like curved facades or unique rooflines. The lighting is soft, suggesting an overcast day or early morning/late afternoon. The overall tone is somewhat muted, with a focus on the geometric forms and density of the city.

Sustainable supply chain

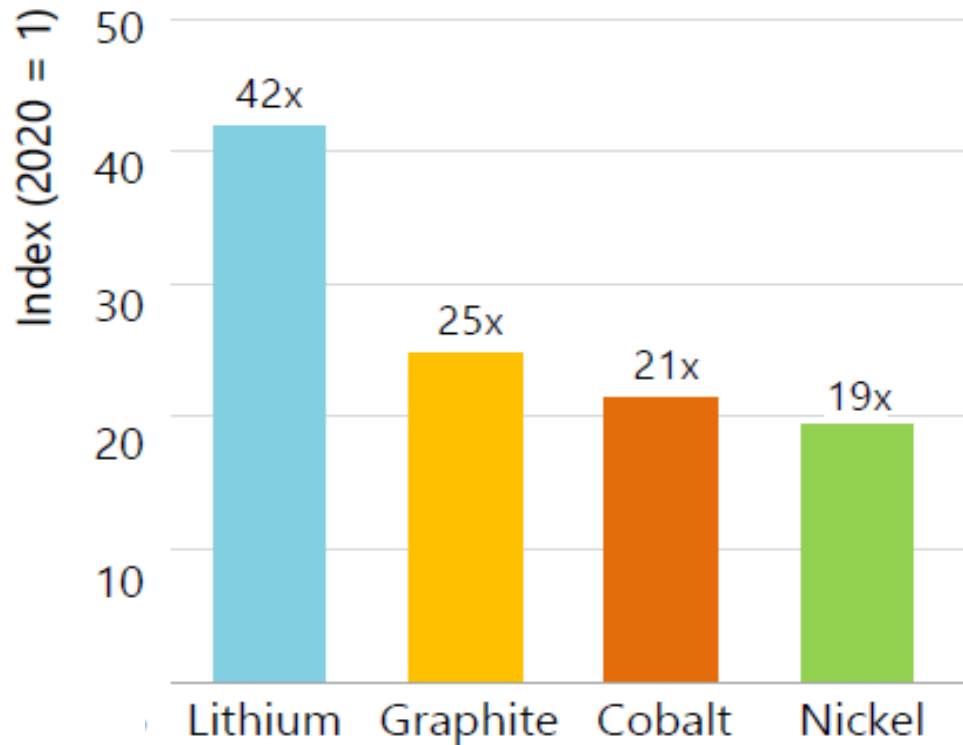
Lithium-ion Battery Supply Chain



Necessity of battery recycling

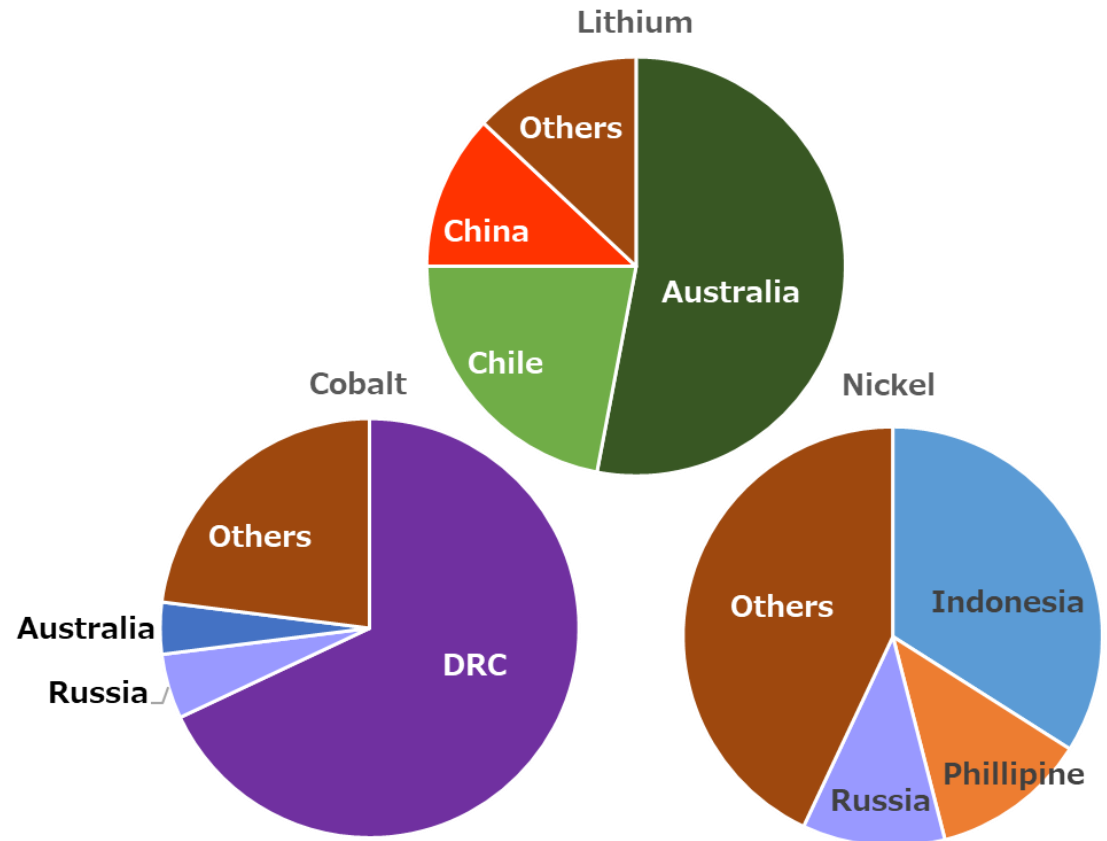
- Demand of battery materials will extremely increase and their producing countries are very limited.
- One of the key approaches to solve the issue is battery recycling.

Material demand in 2040 relative to 2020



* Based on IEA's sustainable development scenario (Net zero by 2070)

Share of top3 producing countries in 2019

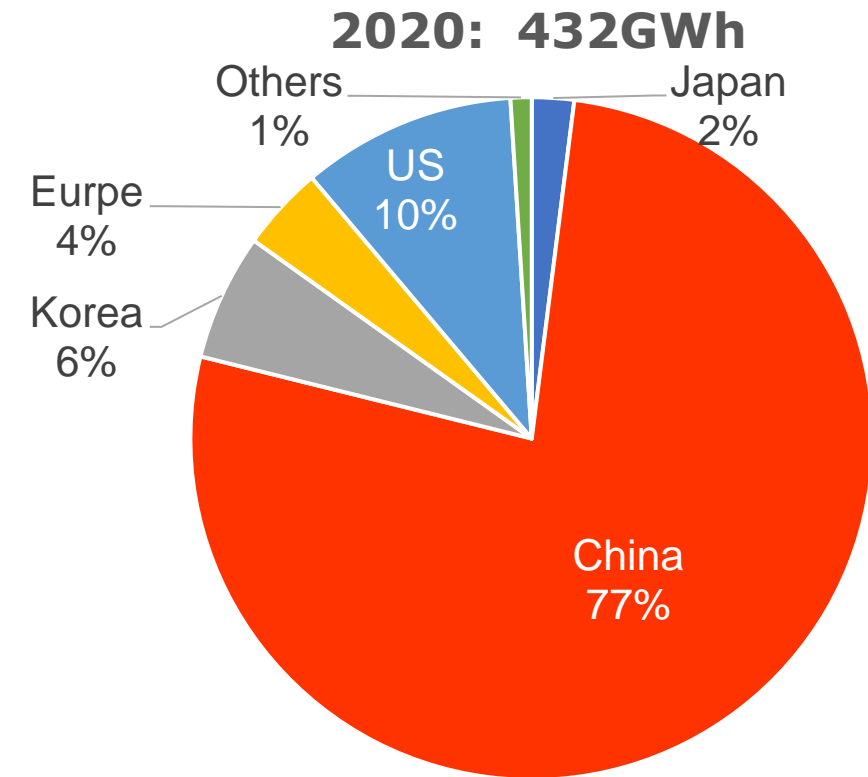


Source: IEA

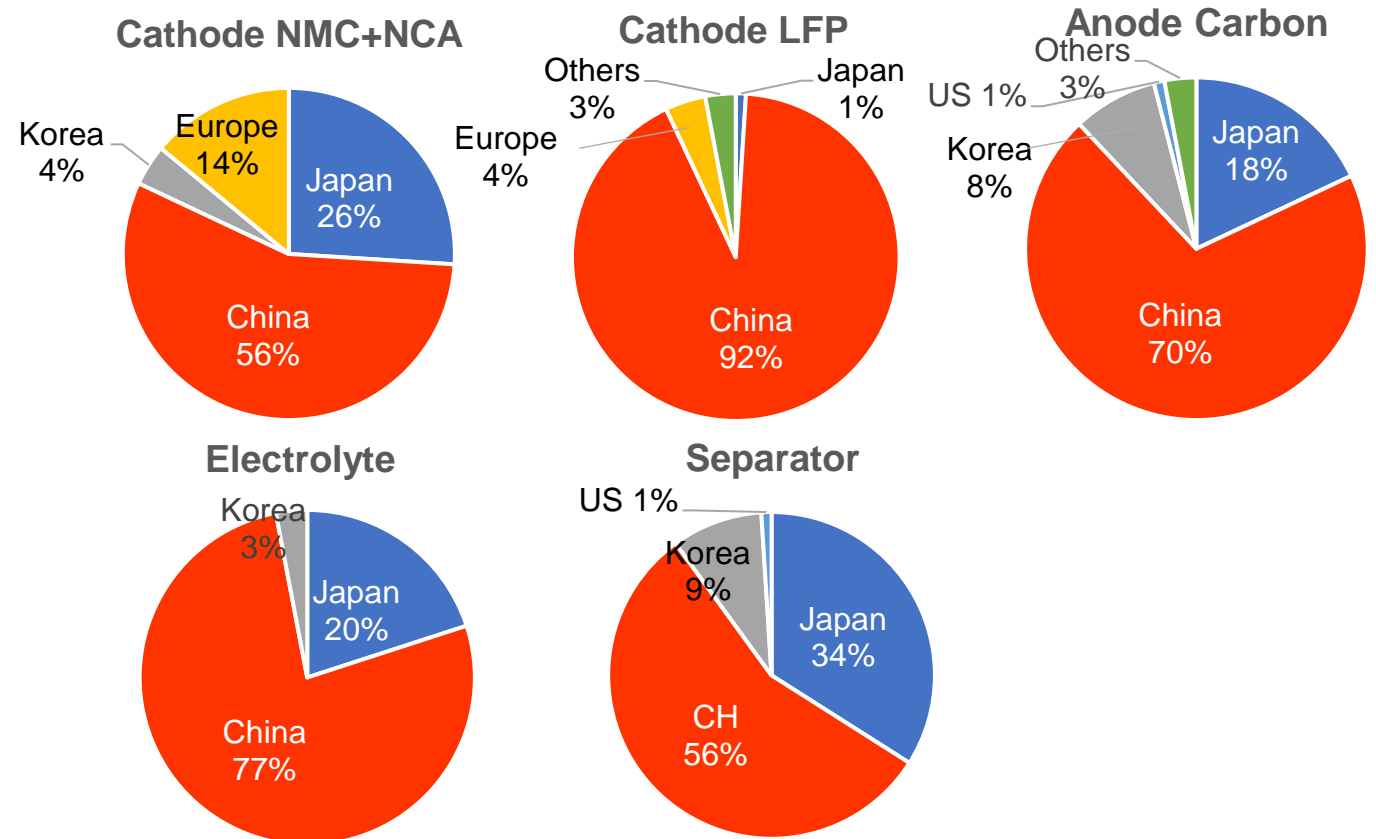
Status of lithium-ion battery supply chain

Necessary to expand production in Japan, Europe and US.

Lithium-ion battery production share by region

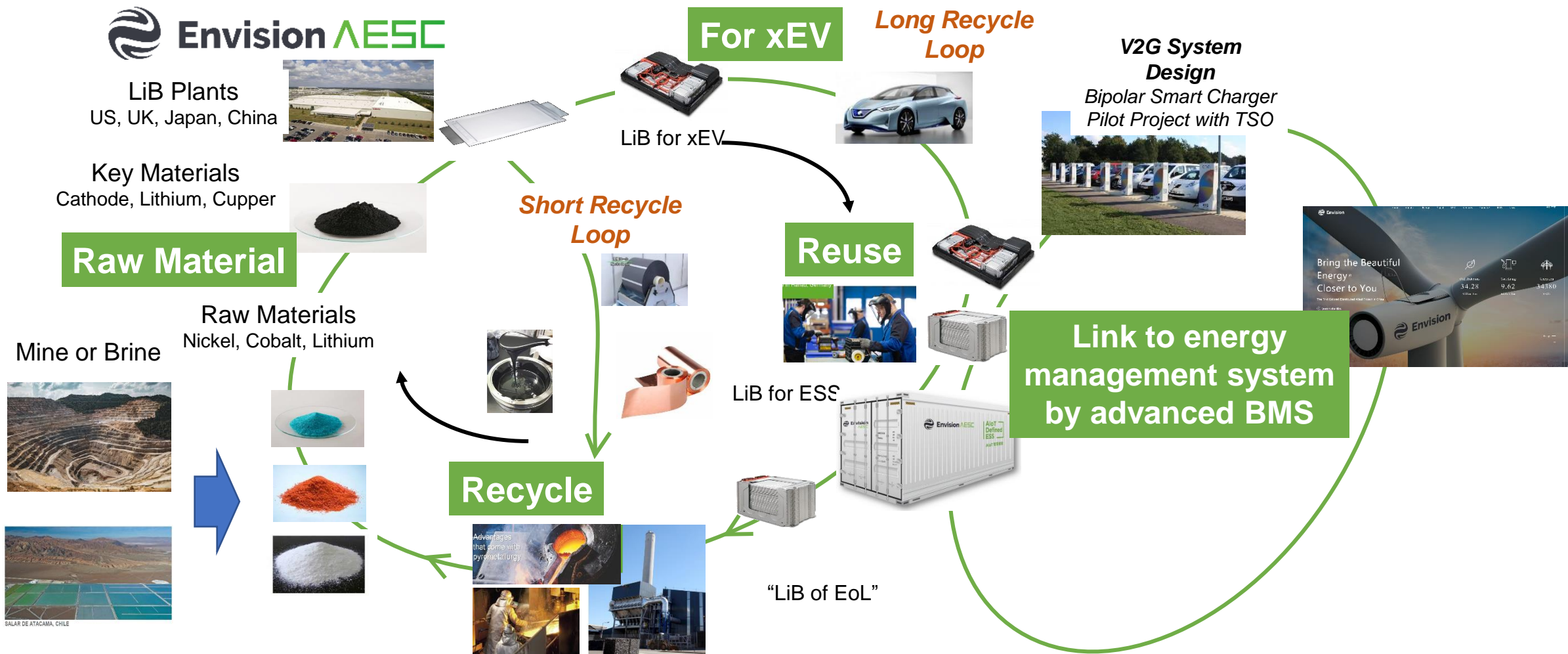


Battery materials production share by region



Contribution to circular economy

Promote battery life cycle management and contribute to circular economy.



BASC (Battery Association for Supply Chain)

Envision AESC is the regular member of the BASC in Japan.

会員 (55社 4/14時点)

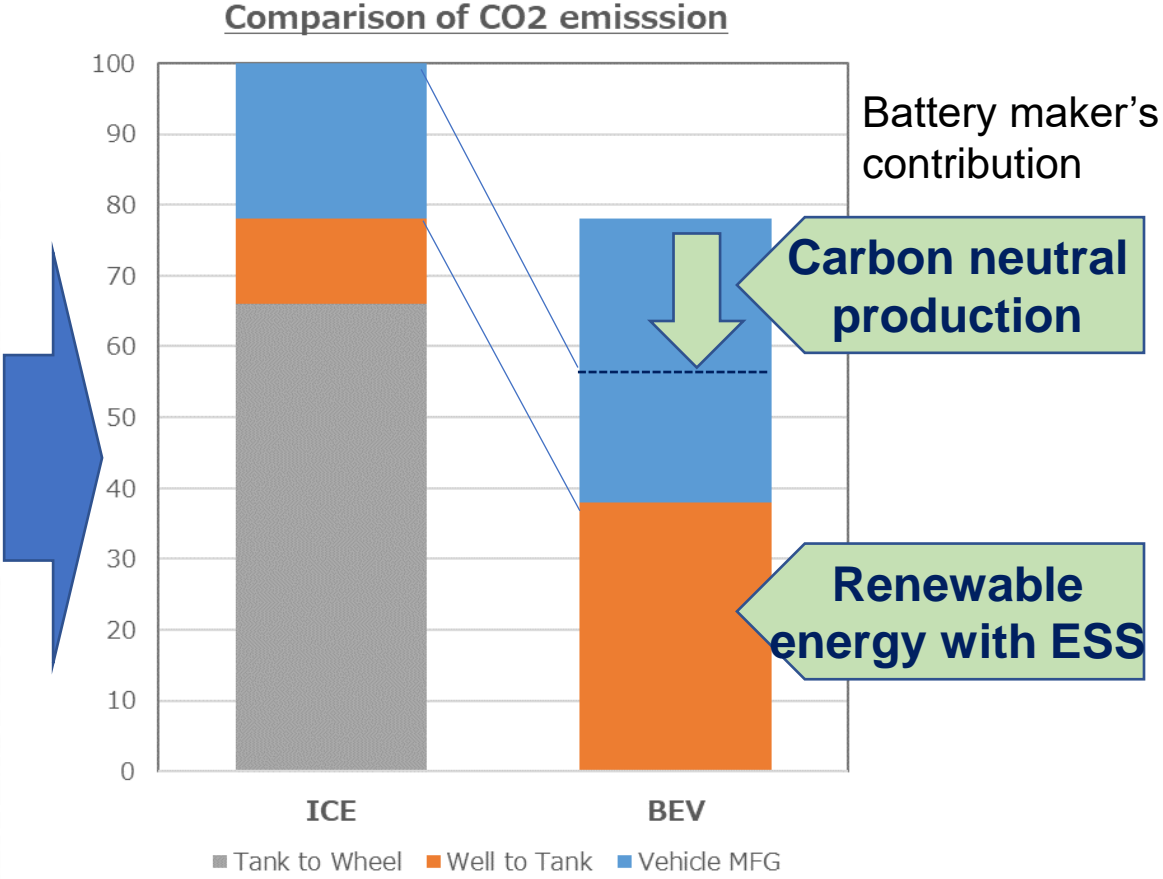
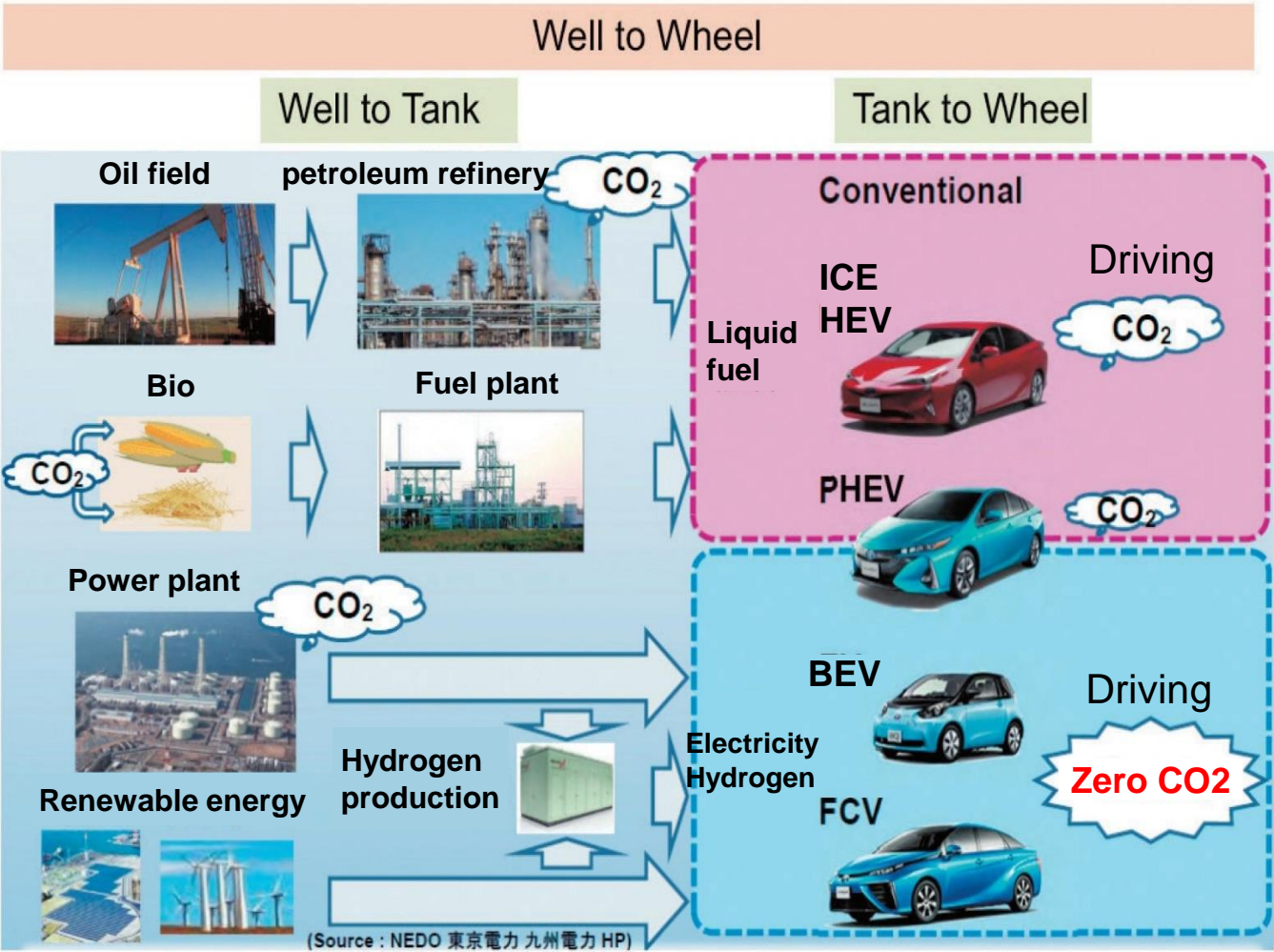


An aerial, high-angle photograph of a dense urban landscape, likely a major financial hub like Hong Kong. The image shows a vast number of skyscrapers and high-rise buildings packed closely together, creating a complex, textured pattern of grey and blue. The perspective is from directly above, looking down on the city. The lighting is somewhat diffused, giving the scene a slightly muted, almost monochromatic feel with various shades of blue, grey, and white.

Carbon neutral production

Contribution to carbon neutral

Battery production is one of the key process to realize carbon neutral.
Battery can also contribute to promote renewable energy through ESS.



In case of CO₂ emission of ICE is 100. Calculation of electricity is based on in Japan@2030. Renewable ratio is 22~24% . Nuclear is 20%

Source: Goldman saks report

Expectations for international cooperation

Envision AESC expect for international cooperation in following categories.

➤ **Technology**

Raw material recycling technology development.

➤ **Supply chain management**

Battery material supply chain scheme establishment in Europe.

Cathode / Anode material, Aluminum / Copper foil, Separator, Laminate film etc.

➤ **Regulation / Policy of battery business**

Work with governments to establish regulations and policies for carbon neutrality

EV promotion, Infrastructure(Battery charger etc.) , Life cycle management.

Envision AESC



To Solve the Challenges for a Sustainable Future.



Leading the De-Carbonization Revolution through AIoT Defined Battery Solutions.