

# Turning the Chasm into Opportunities: Li-ion Battery Materials Business Strategy

**Kim, Jun Hyung**

Chief Battery Materials Business Officer  
POSCO Holdings

# The EV market has entered a chasm due to a slowdown in uptake

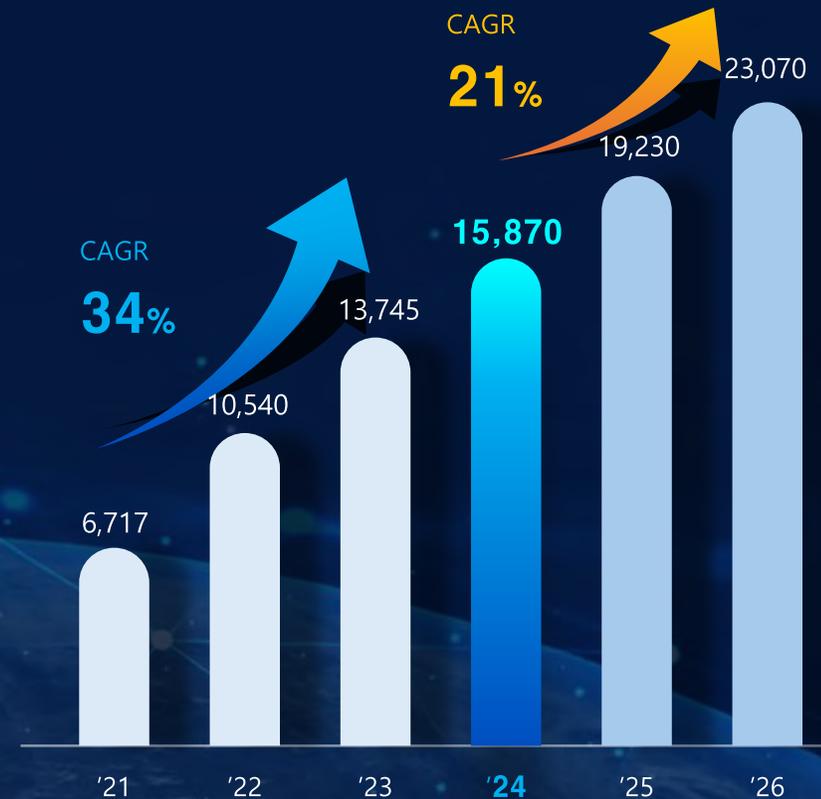
## Market situation in key countries

 **EV sales in 1H '24 fell short of forecast**  
 EV sales : 400K, Q4 '23 → 340K, Q1 '24 → 400K, Q2 '24

 **'24 EV sales decline due to sunseting of subsidies**  
 Countries that have terminated subsidies:  
 Sweden ('22-end) / UK (early '23) / Germany ('23-end)

 **Slowing rate of growth due to economic slump and declining subsidies ('23~)**

## Global EV sales (Unit : 1K)



\* Source : SNE Research(March '24)

# While uncertainties persist, global policy likely to keep China in check



## November US presidential election

A Trump win will impact the market with shifting EV promotion policies

## Tariff hikes on Chinese EVs



25%



100%



## Far-right advances in EU election

Election results could complicate climate policies, including the Green Deal



10%



MAX. 46%

**Growing need to fortify Korea–Australia cooperation to build IRA–compliant battery materials supply chain**

# POSCO Group's strategy to address the market chasm

Strategy 1



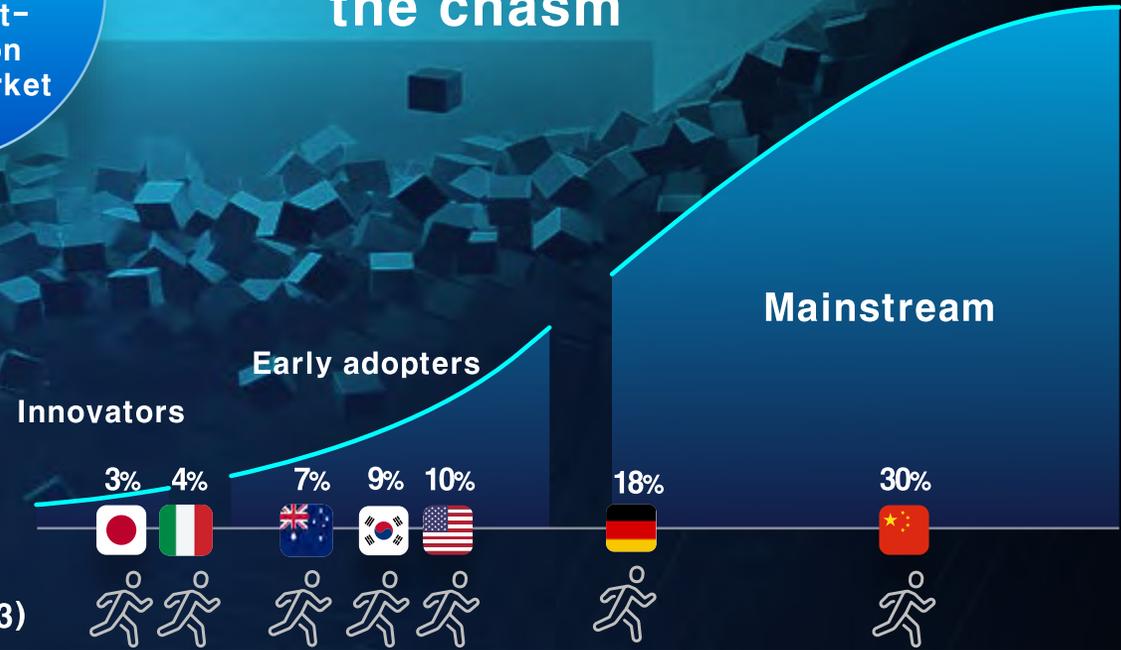
Strategy 2



Strategy 3



Break through the chasm



# From raw to active materials, most projects come on line in '24

## Global #1 steelmaker knowhow is shared across the group to enhance efficiency

POSCO Group's battery materials value chain



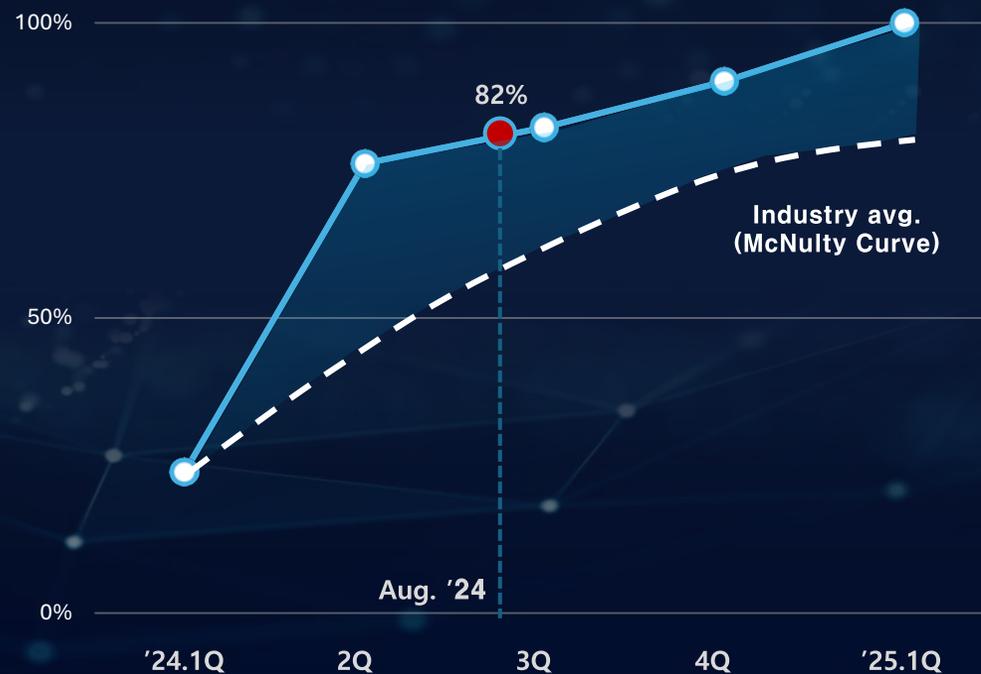
# [Hard Rock] Using Australian spodumene, commercial production and product certifications have commenced

P-PLS (hard rock lithium)



POSCO-type plant operation rate (%)

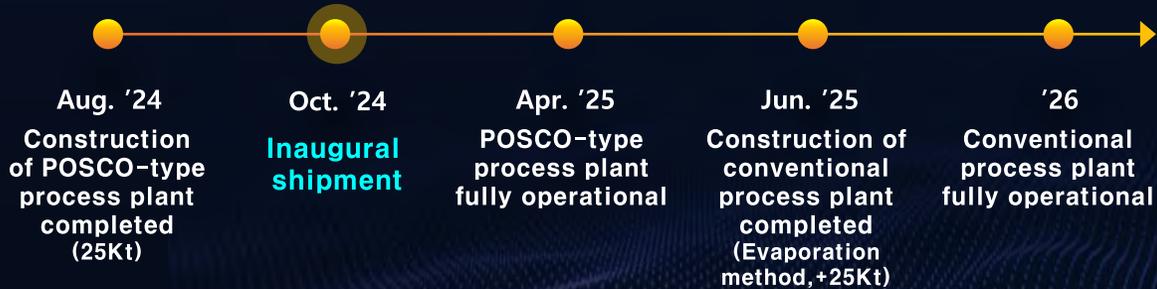
(tallied at quarter-end)



※ Product certification has commenced:  
P-Future M (May '24~), Major Korean cell makers (Jun. '24~)

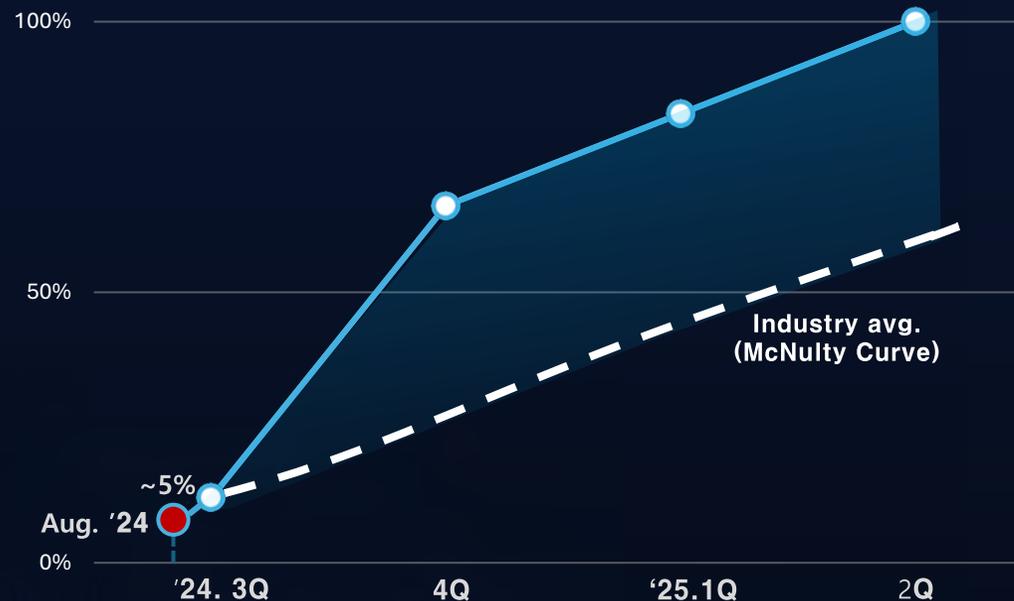
# [Brine] Applying P-PLS operational experience to enhance ramp-up efficiency

P-Argentina (brine lithium)



POSCO-type plant operation rate (%)

(tallied at quarter-end)



※ Product certification has commenced:  
P-Future M (Sep. '24~), global cathode producers (Nov. '24~)

# Use the chasm to our advantage by acquiring prominent assets and expanding business



## Hard Rock

Australia: Increase capacity in partnership with miners, e.g. Pilbara Minerals  
Explore new mines in Canada, Brazil and across Africa



## Brine

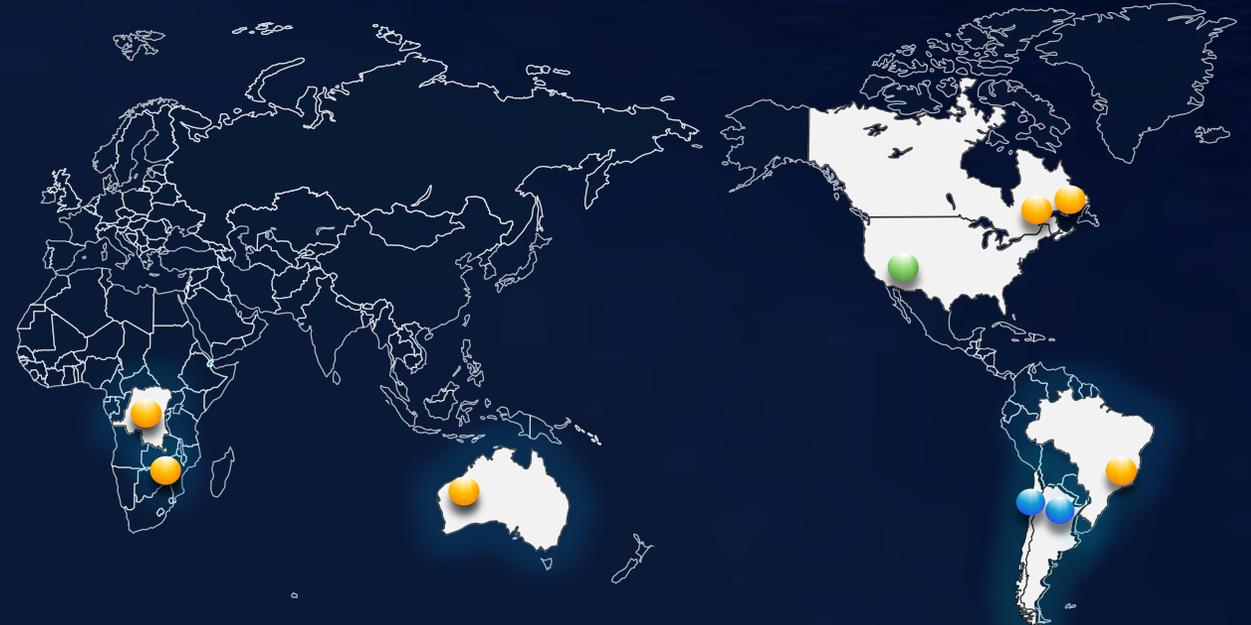
Phase 3 brine project expansion in Argentina  
Acquire additional JV brine assets in Chile



## Geothermal Brine

Acquire new lithium resources in North America

## Diversify raw materials sourcing



# Differentiated technology and diverse lithium resources to stimulate business expansion



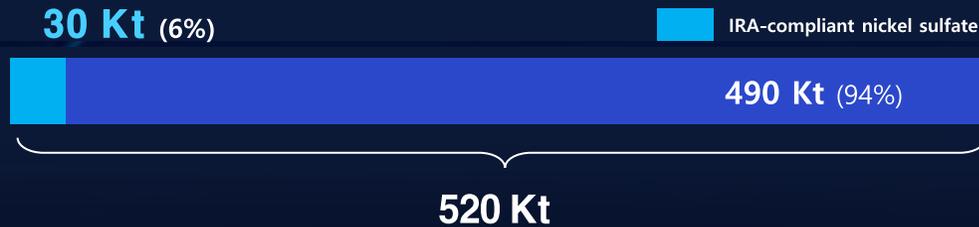
	Mechanism	Advantages	Operations
<b>POSCO-type Process (BPED*)</b>	Electrochemical reaction	<b>Sustainable and proprietary</b> Waste generation and freshwater use cut by 50% and 40%, respectively	P-PLS (Plant 1) P-Argentina (Phase 1)
<b>Conventional Process</b> (Causticization, evaporation method)	Chemical reaction	<b>Commercially proven technology</b>	P-PLS (Plant 2) P-Argentina (Phase 2)
<b>DLE</b> (Direct Lithium Extraction)	Adsorption	<b>Suitable for low-grade Li resources</b>	For new acquisition salt lakes Geothermal brine under consideration

\* Bi-polar Electro-Dialysis

# Building IRA-compliant nickel production system and developing technologies that mitigate carbon and cost profiles

## IRA-compliant nickel production

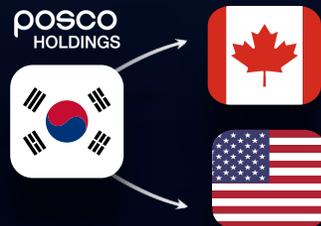
- In '23, a mere 6% of the global nickel supply was IRA-compliant
- Australian ore meets IRA standards



- In-house supply of +20K tons of IRA compliant nickel

**Smelter** SNNC, Matte  
 Jan. '24 : construction completed

**Refinery** POSCO, Nickel Sulfate  
 Q3 '24: Initial batch production



## Low-carbon / cost cutting technologies

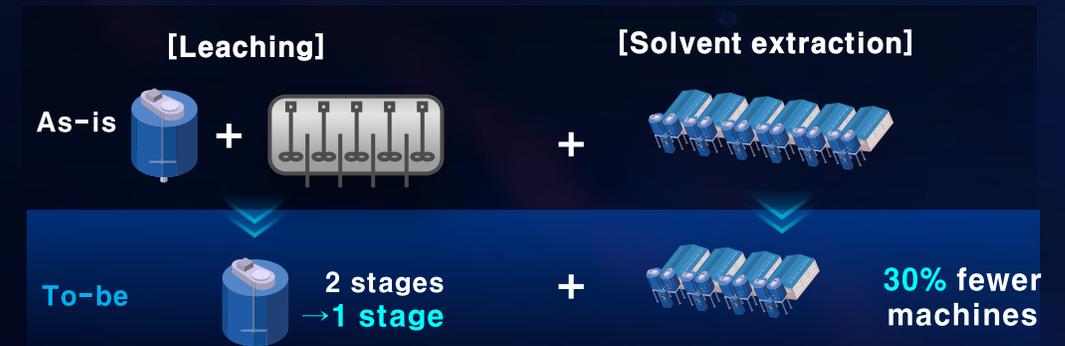
### Leaching

- AAL\* allows easier tailings treatment and lower CO<sub>2</sub> emissions
- \* AAL: Atmospheric Acid Leaching



### Refining

- Process configuration is optimized and streamlined to reduce cost

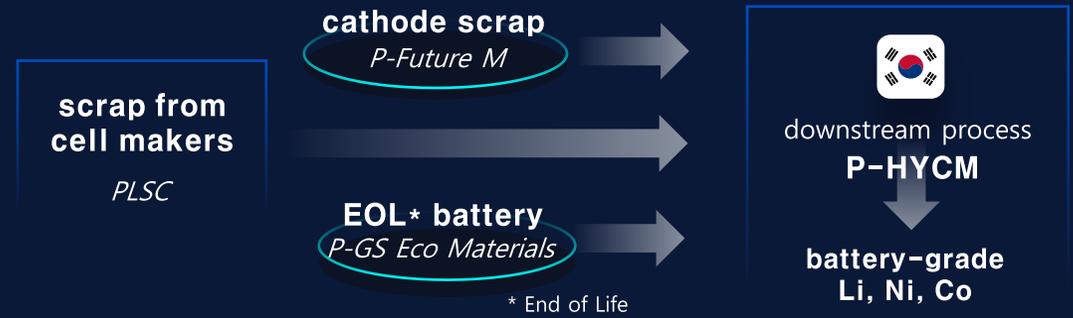


# Leverage recycling operation to diversify sourcing and to enter European / North American markets

## P-HYCM



## Diverse sources of raw materials



## Build regional spoke and hub network



- May '23  
P-HYCM  
initial batch  
production  
(6kt)
- '23.E  
Ramp-Up
- Feb. '24  
100%  
acceptance  
rate achieved
- Jul. '24  
96%  
operation  
rate reached
- '25.E  
Expand sales to  
electrolyte / cathode  
producers

# Diversify cathode customer base and product portfolio

## Cooperate with global OEMs and cell makers

- Establish stable customer base



## Build a broad product portfolio

- Serve all car segments from entry to premium level



**Be first to market cost-competitive mid-Ni products**

**Two-track LFP strategy : 1) Exclusive technology; 2) JV with global partners**

# Full anode line-up to offer IRA-compliant products



## Natural Graphite

- Offtake for Australian and African flake graphite
- Construction of spherical graphite / acid treatment facilities in Korea completed ('26)



## Artificial Graphite

- Achieve maximum productivity ('24)
- Enter countries with low electricity costs ('26)



## Silicon

- Develop low-cost SiOX
- [P-Silicon Solution] SiOx capacity of 550 tpa  
[P-Future M] Si-C production by '26

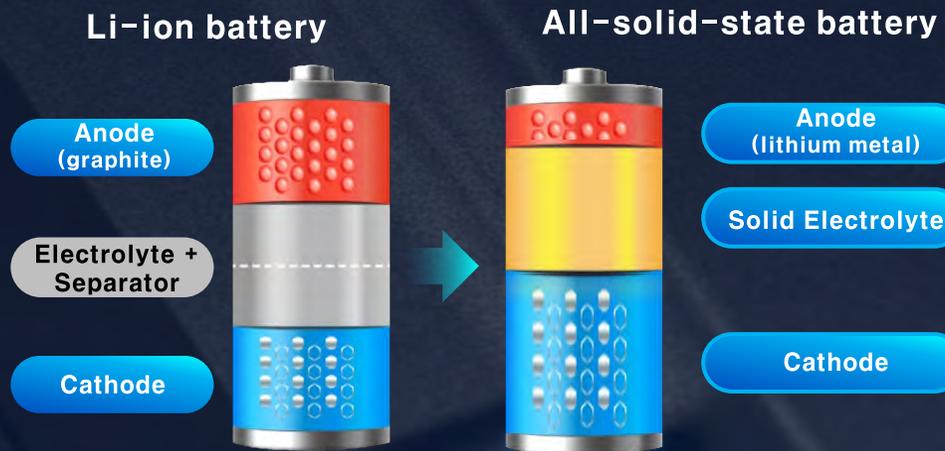
※ Equity ownership : P-Silicon Solution (100% owned by POSCO Holdings)

The world's unique  
source of non-FEOC,  
IRA-compliant  
anodes

# All-solid-state battery market likely to take off from '27

## Market Outlook

- Commercialization of all-solid-state batteries in '27
  - Market share in '32 expected to range between 1.8~3.6%



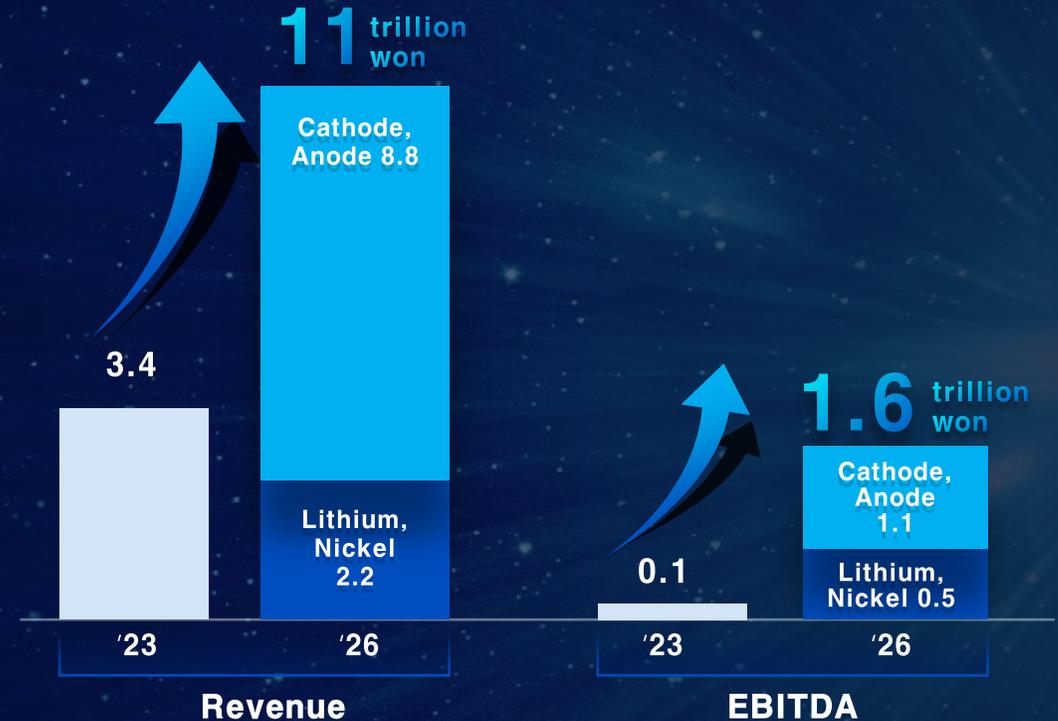
## Group-wide Product Development

- POSCO Holdings (demo plant)
  - **Wide-width\* manufacturing technology** modeled on steel electroplating \*width:100→600mm
- P-JK Solid Solution (in operation)
  - Produces **cost competitive sulfide-based materials** (scale-up by '26)
- POSCO Holdings (demo plant)
  - **Homogeneous protective coating** prevents interfacial side reactions

Offer full range of key materials for all-solid-state battery to gain global leverage

# POSCO Group's strategy to stay competitive

- 01. Build competencies across the full value chain
- 02. Acquire quality assets (salt lakes, mines)
- 03. Get a head start in the next-generation battery market



※ Based on simple summation, before offsetting inter-affiliate transactions  
 ※ Recycling revenues and EBITDA are included in figures pertaining to lithium & nickel  
 ※ For '26 projections, U\$ 16,100/ton lithium price, U\$ 17,375/ton nickel price and exchange rate of USD/KRW=1,192 were applied.  
 - Price estimates were made by POSRI using data from WoodMac and Fastmarkets, among other indices.

## I. Strengthen **collaboration with Pilbara Minerals**

- Review collaboration to expand P-PLS and Pilbara Minerals' production capacity

## II. New equity investments in **Australian lithium mines**

- Take advantage of the market chasm to invest in quality lithium assets

## III. Establish **IRA-compliant graphite supply chain**

- Explore options to invest in natural graphite in collaboration with Australian miners

## IV. Produce battery-grade **nickel sulfate using Australian ore**

- Establish in-house nickel processing facility that uses IRA-compliant Australian nickel sulfide

An aerial view of a modern city skyline, likely Sydney, Australia, featuring a waterfront with a marina and several prominent skyscrapers. The text is overlaid on the image.

Australia and POSCO Group are  
**ideal partners**  
to address the market chasm and  
to collaborate as **global leaders**  
in the battery materials supply chain.

Thank you for your attention.