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27 February 2023

## **PRESENTATION FOR LIVE WEBINAR**

Further to the Company's announcement of 23 February 2023, please see attached Webinar presentation. Details of the webinar are set out below.

**TOPIC:** Update on cobalt market developments and the outlook for NCM battery cathodes amid rising market share of LFP cathodes.

**Date:** Tuesday 28 February 2023  
**Time:** 5:00 PM AEDT  
**Format:** Presentation update followed by Q&A  
**Duration:** 45 minutes

Please register in advance for this free webinar:

[https://us06web.zoom.us/webinar/register/WN\\_QFpOrEx3Rw2dgDhE\\_A5n7A](https://us06web.zoom.us/webinar/register/WN_QFpOrEx3Rw2dgDhE_A5n7A)

After registering, you will receive a confirmation email containing information about joining the webinar.

For enquiries, please email [allysia.robinson@cobaltblueholdings.com](mailto:allysia.robinson@cobaltblueholdings.com)

Questions may be submitted ahead of time at registration or during the event using the webinar software.

This announcement has been authorised for release by the Company's Board of Directors.

Danny Morgan  
Chief Financial Officer  
(02) 8287 0660

28 February 2023

# Investor Webinar

ASX: COB

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# Webinar Agenda

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1. COB update
2. The cobalt market
3. Developments in NCM and LFP Market Share
4. Influence of the Inflation Reduction Act/ Green Deal Industrial Plan response





# Recent Key Milestones

1. **Capital raise:** Placement and shareholder entitlement raised A\$22m.
2. **Feasibility Study (FS) progressing:** Contracted engineering firms engaged, EIS fieldwork continues.
3. **Demonstration Plant:** Underground mining and concentrate processing complete. First large scale MHP expected shortly.
4. **Project Partner discussions ongoing:** Targeting OEMs, manufacturers and traders across the battery supply chain.
5. **Critical Minerals Accelerator Grant:** (A\$15m) funds contributing towards FS delivery.





# BHCP: Demonstration Plant

**Underground Portal**



**Concentrator Circuit**





# BHCP: Demonstration Plant

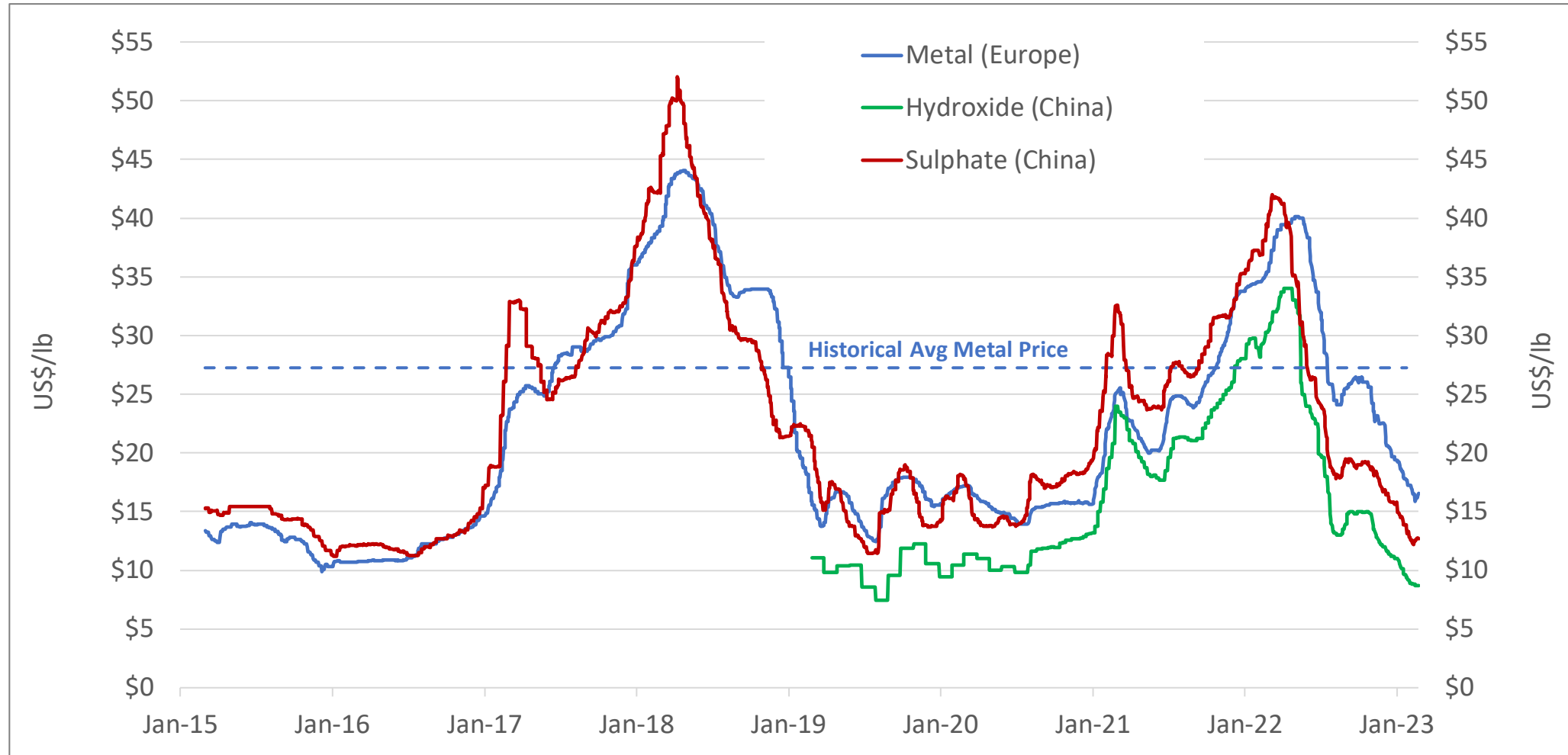
Horizontal vacuum filter belt & Pressure oxidation leach circuit



MHP (30% Co, 7% Ni) & Cobalt Sulphate (20% Co)



# Cobalt Prices: Supply outpacing demand

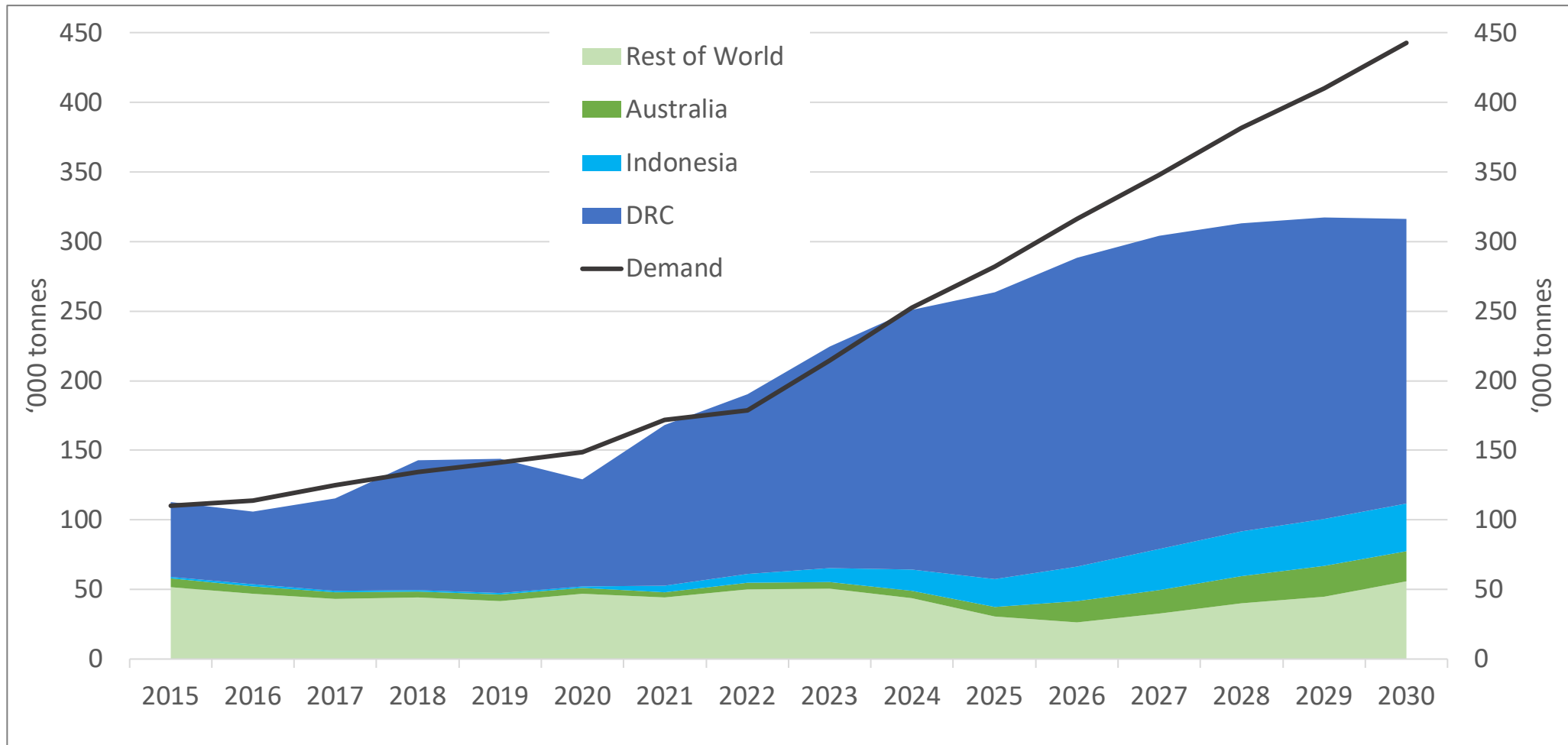


ASX: COB

Source: S&P Global Commodity Insights, Cobalt Blue Holdings Limited



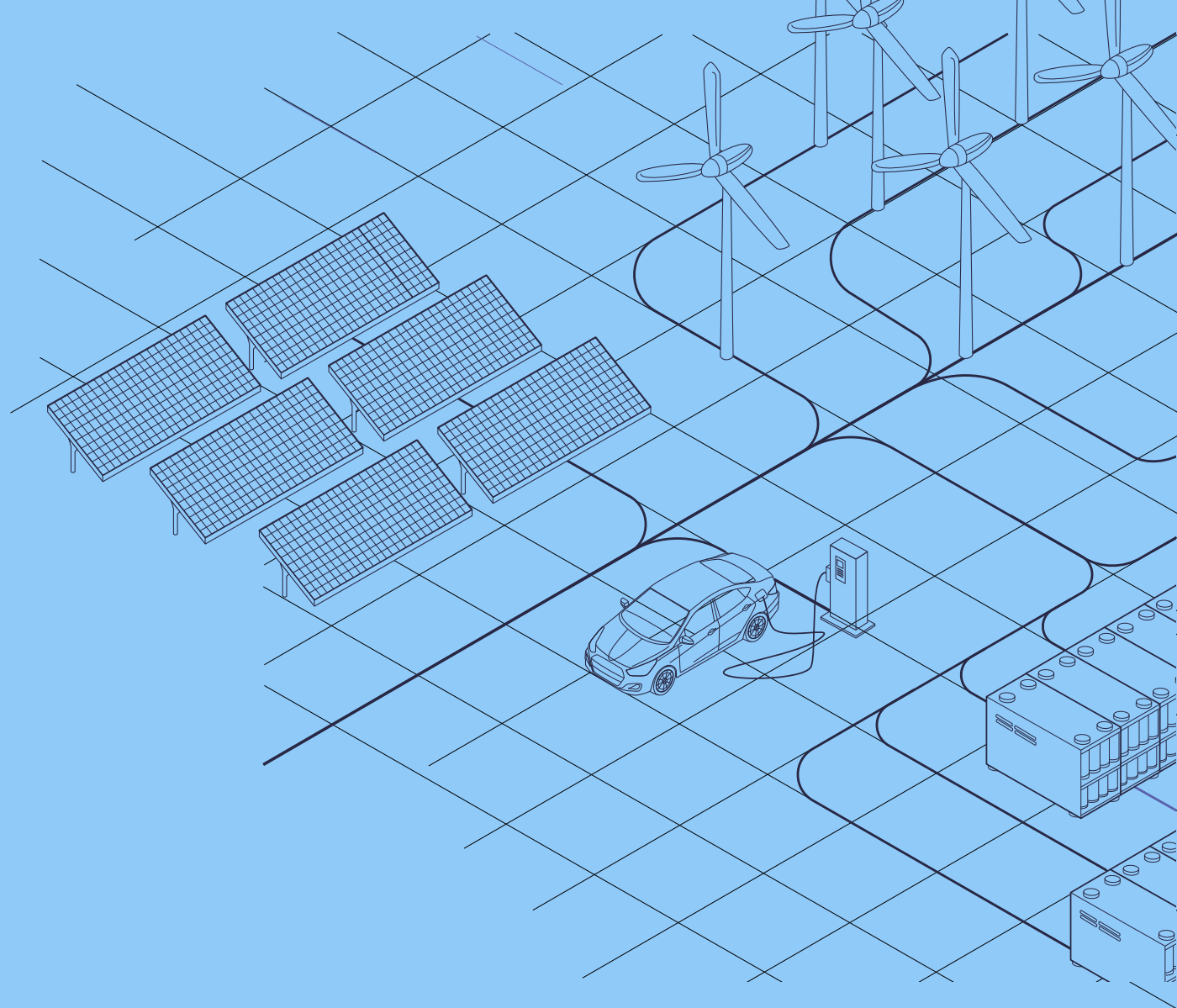
# Cobalt Prices: Supply outpacing demand





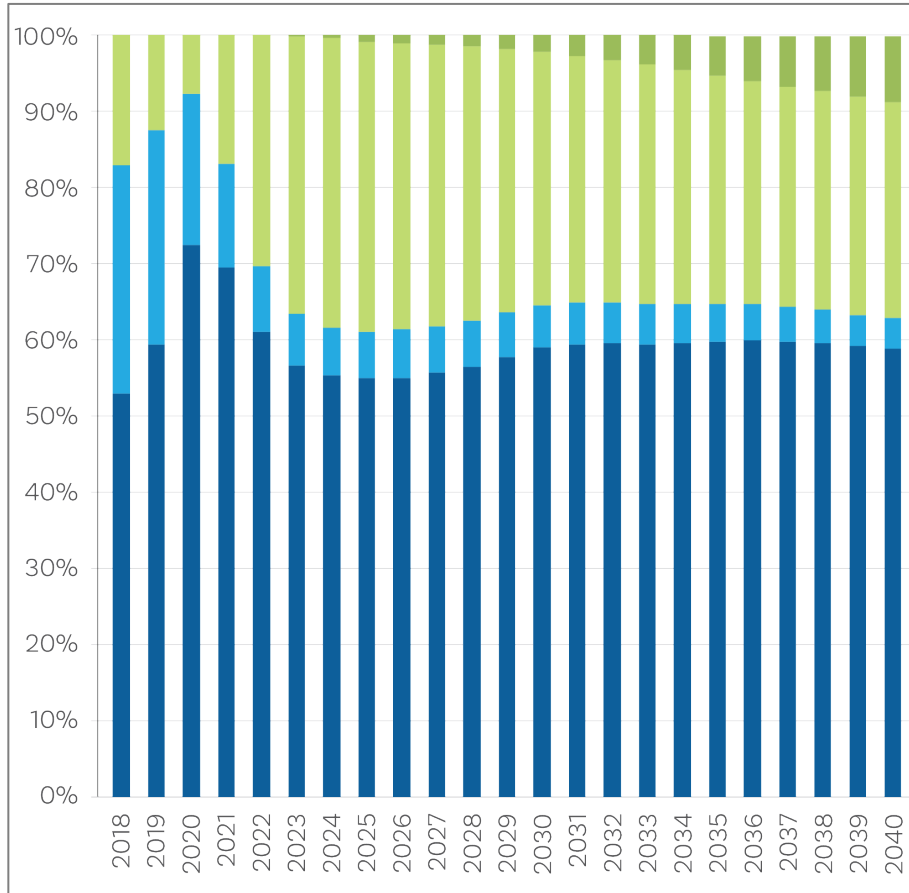
# LFP and its future beyond China

Will Roberts  
28<sup>th</sup> February 2023

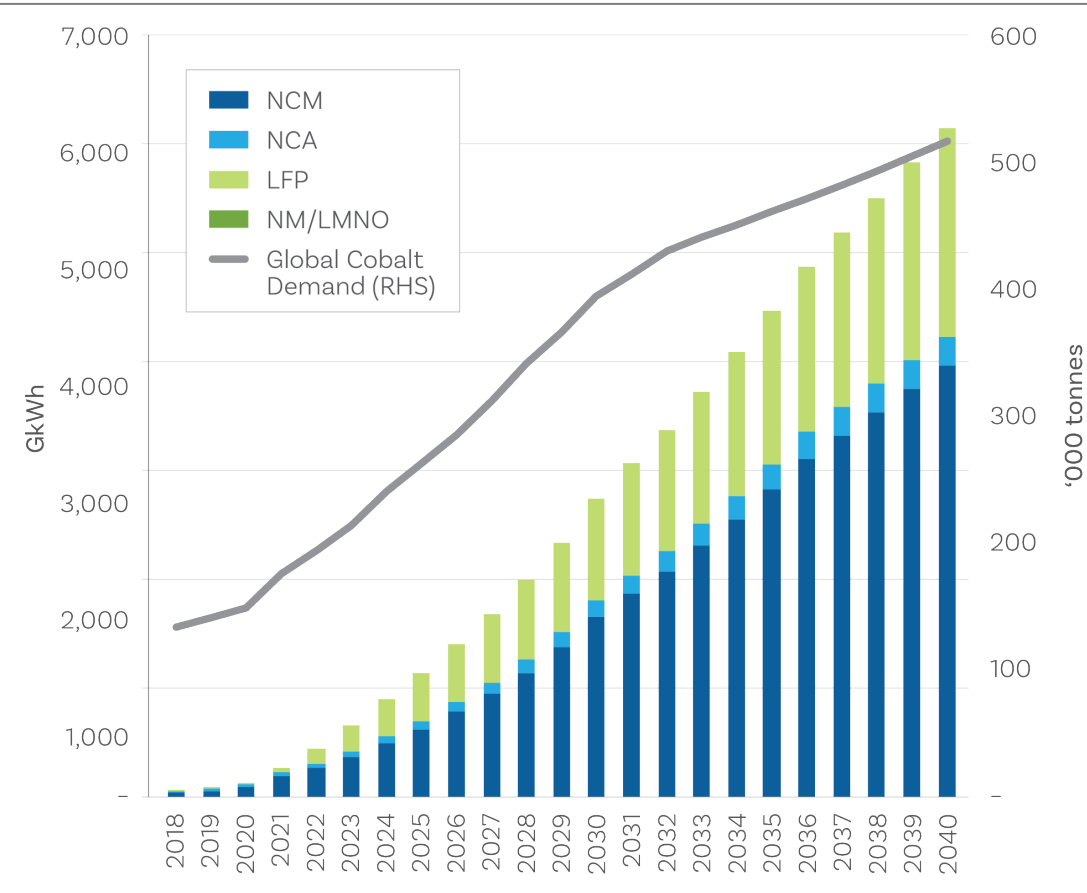


# LFP share rising, so is cobalt demand

Li-ion battery cell chemistry market share



Li-ion battery cell chemistry growth vs cobalt demand



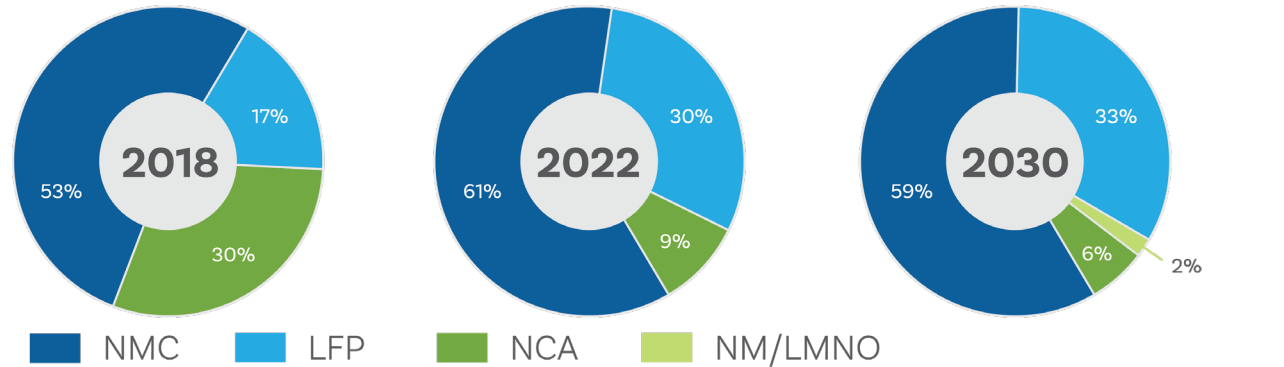


# NCM vs LFP

Most EV batteries today use one of two types of cathodes:

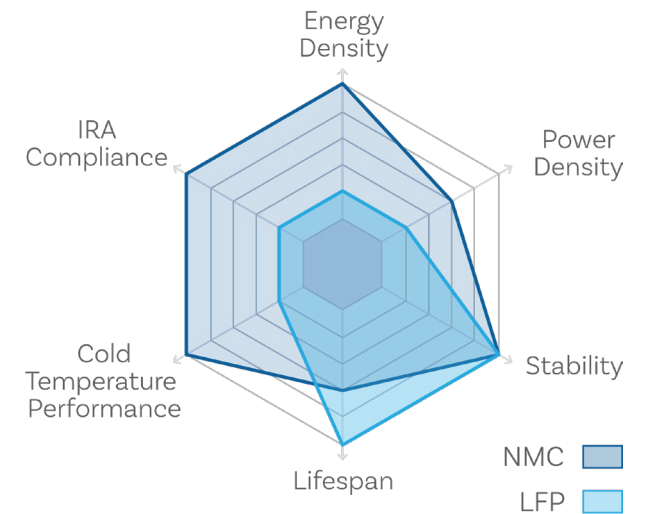
- Nickel Cobalt Manganese (**NCM**) cathodes:
  - Capable of storing more energy
  - Superior life spans
  - Superior thermal stability, thus safer
  - Use costly materials (nickel, cobalt).
- Lithium Iron Phosphate (**LFP**).  
LFP cathodes:
  - Less energy efficient (due to weight)
  - Slower cold-weather charging
  - Little capacity ex-China
  - Safer in higher temperatures or demanding conditions
  - Use less costly materials (iron, phosphate)

## Li-ion EV battery cell chemistry market share



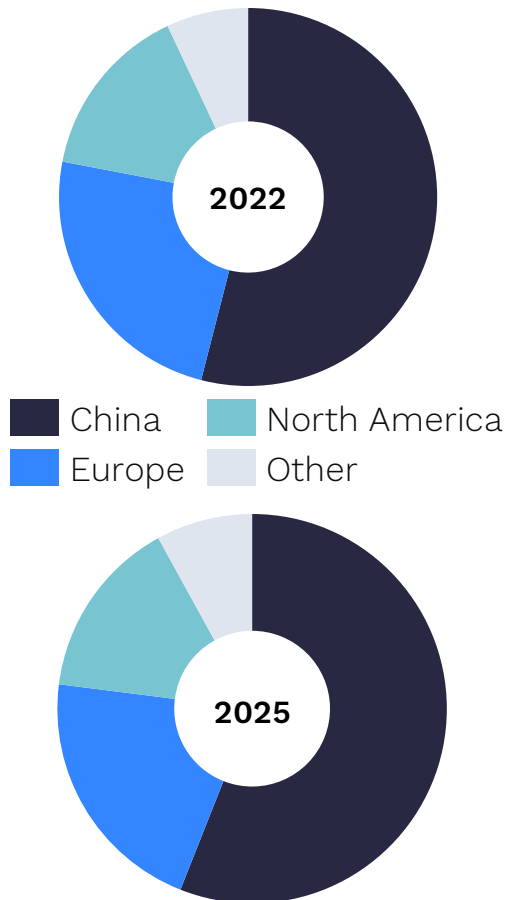
	LFP	NCM
Energy Density	●	● ● ●
Power Density	●	● ●
Stability	● ● ●	● ● ●
Lifespan	● ● ●	● ●
Cold Temperature Performance	●	● ● ●
IRA Compliance	●	● ● ●

● ● ● Excellent ● ● Good ● Poor



# Chemistry deployment varies significantly between regions

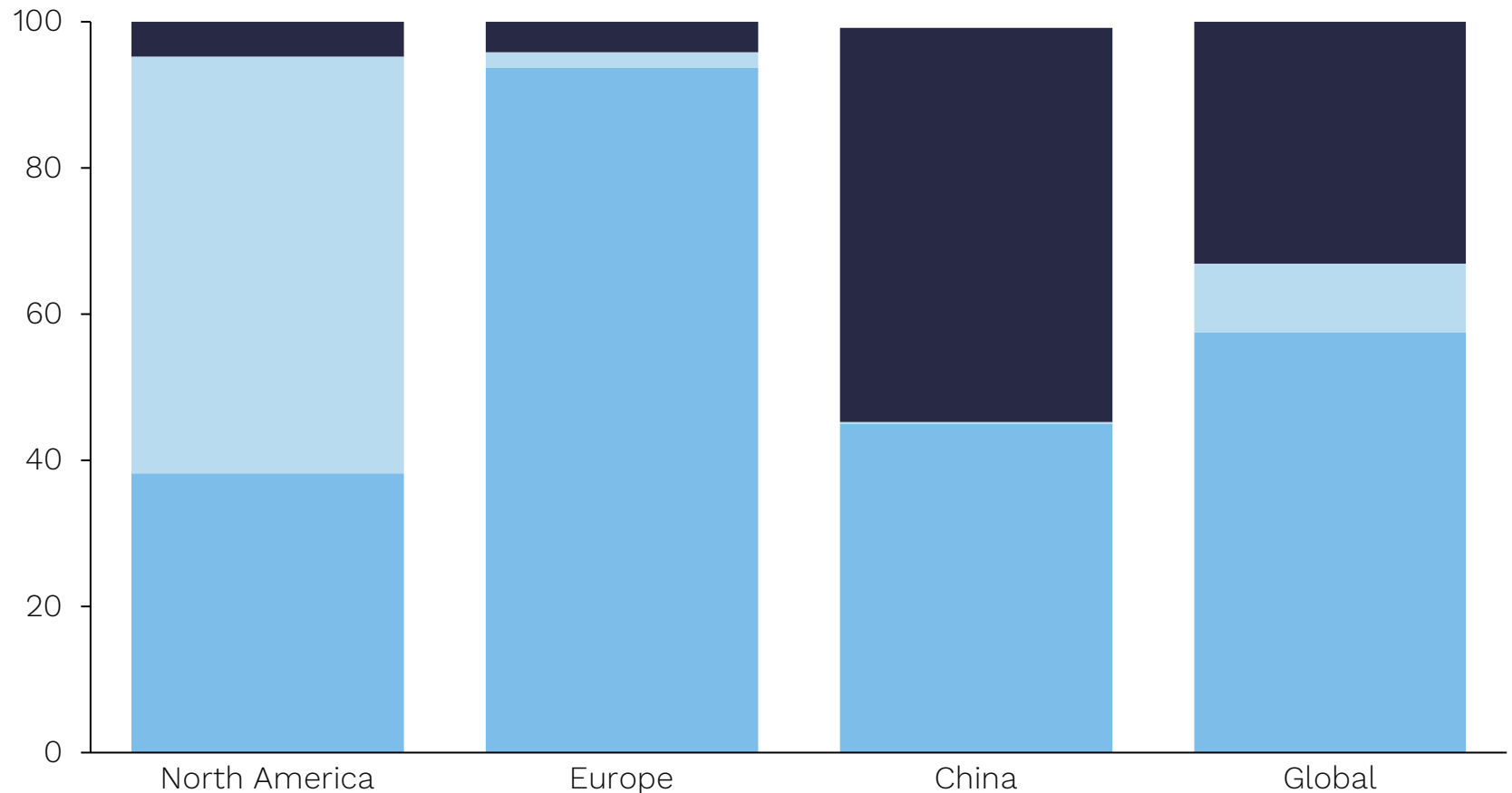
Battery demand by region



% of EV sales

Battery demand chemistry split, 2022

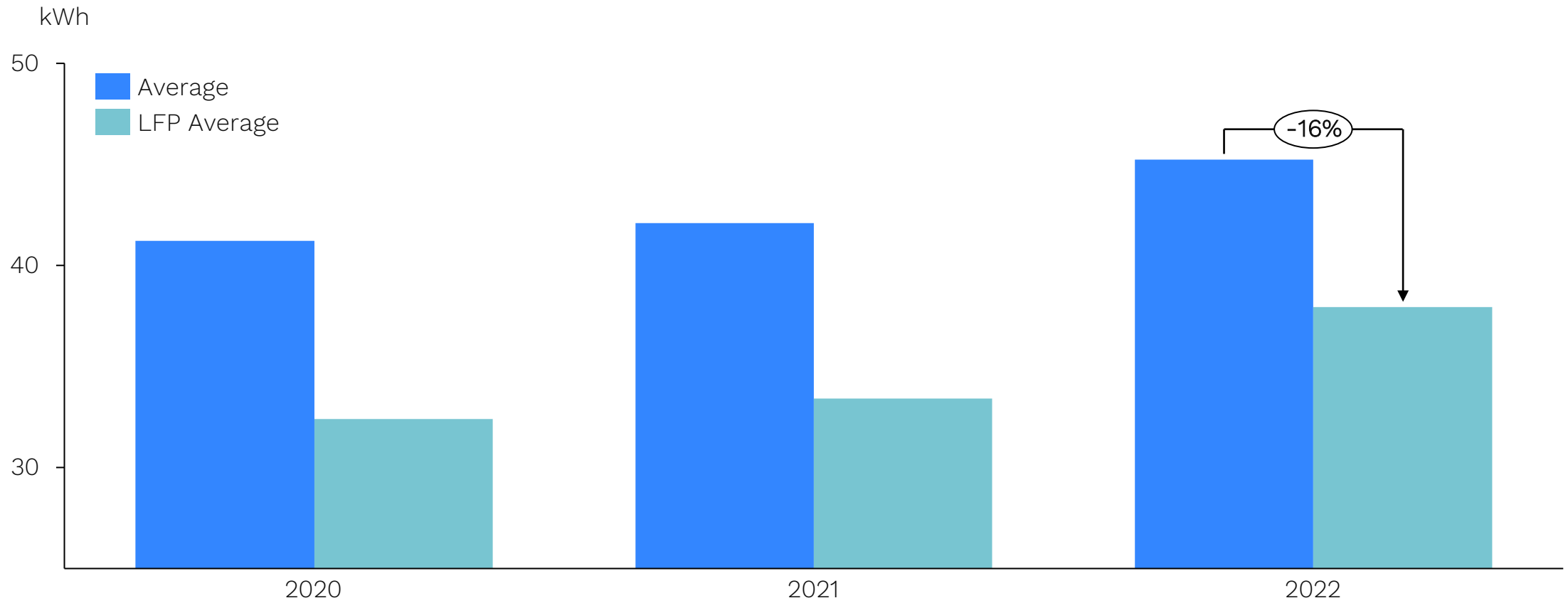
LFP NCA NCM



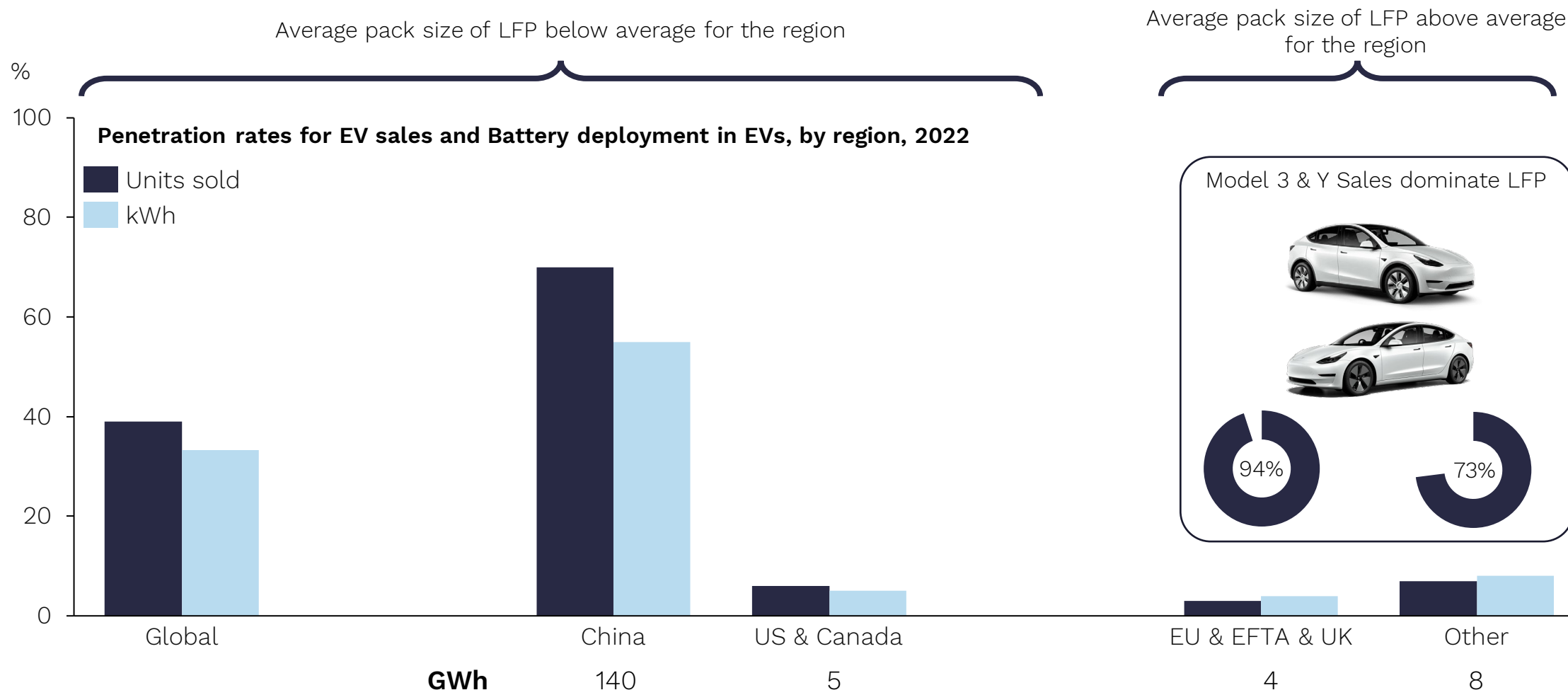


# Average pack sizes are smaller for LFP for nearly every vehicle segment in which it appears

Average pack size comparison: LFP vs all Chemistries

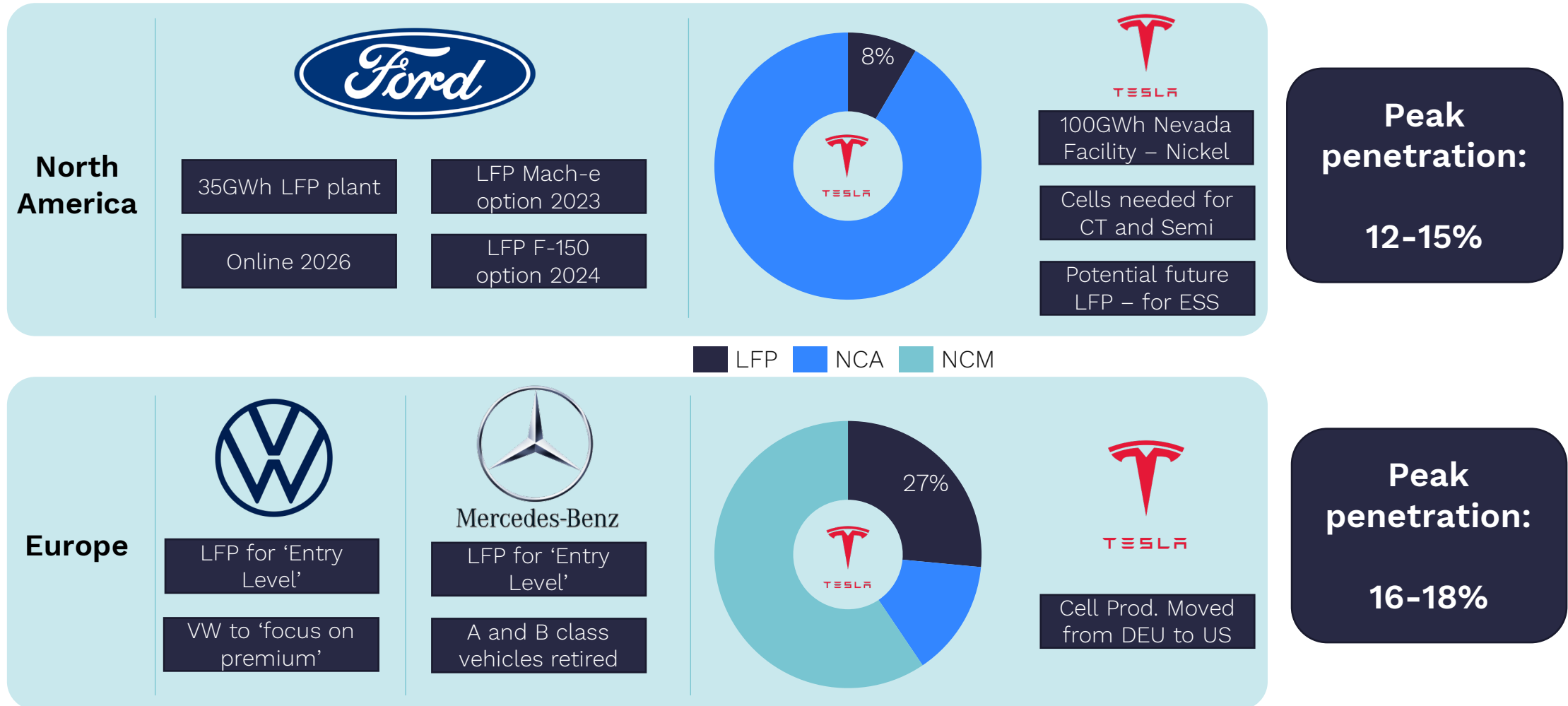


# LFP penetration in vehicle sales is higher than in battery deployment, heavily weighted by China



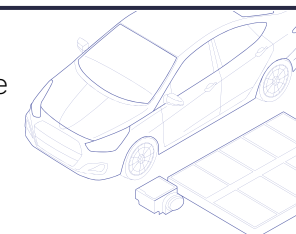


# LFP adoption in Europe and North America



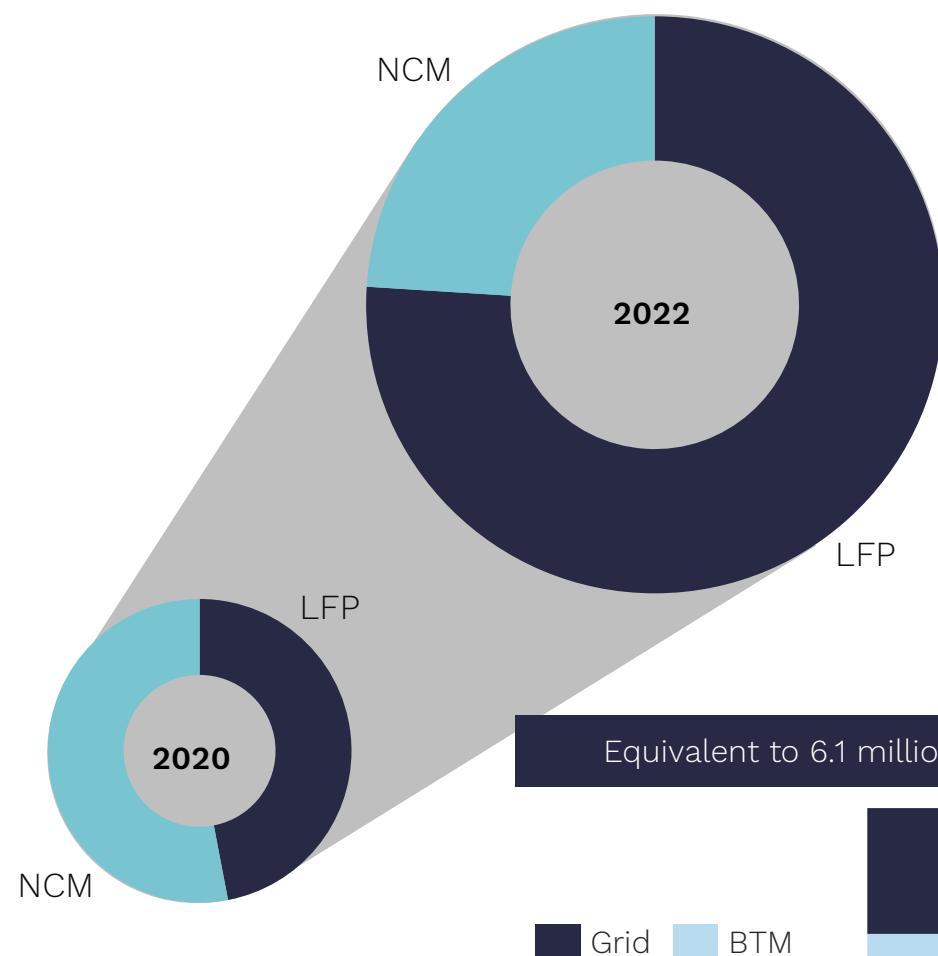
# ESS Battery demand is ~10-15% relative to the EV market and is quickly moving to LFP

\*Calculations based on  
39kWh average pack size

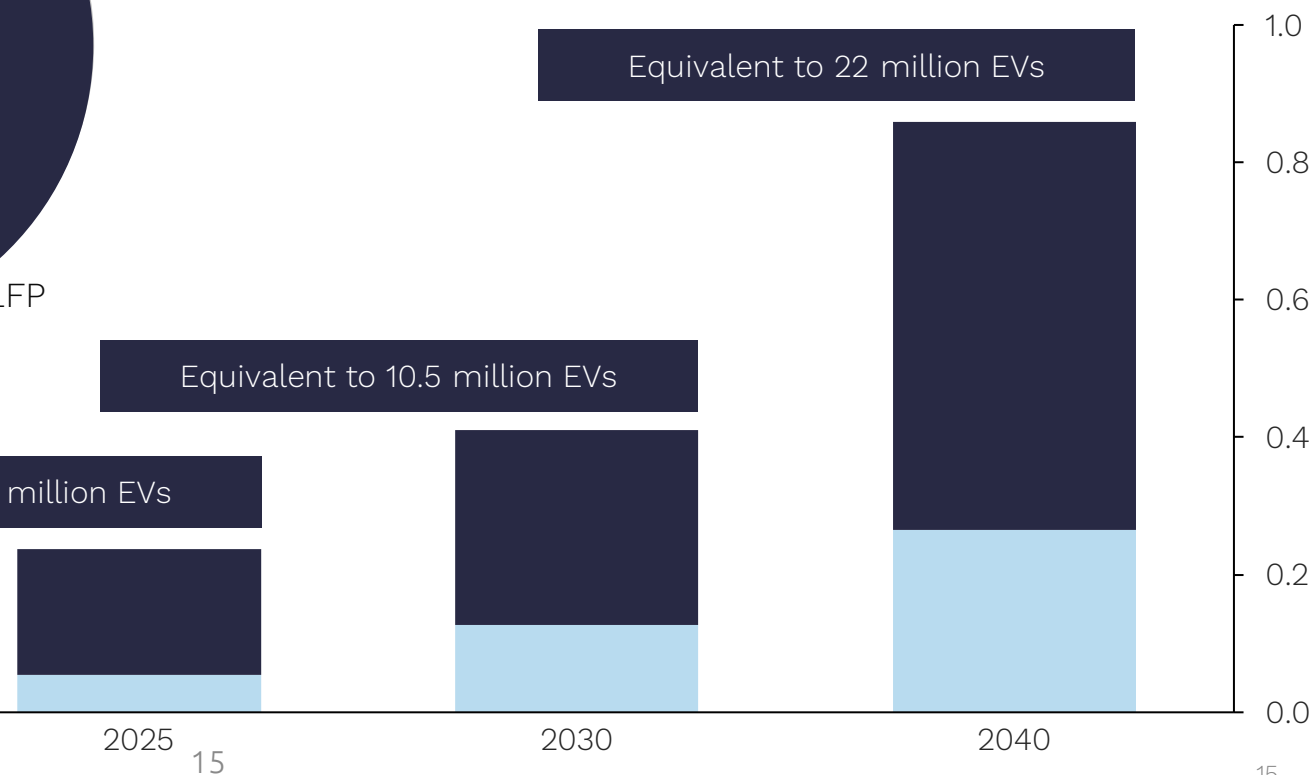


## BESS Grid & BTM annual installations

TWh



Grid BTM

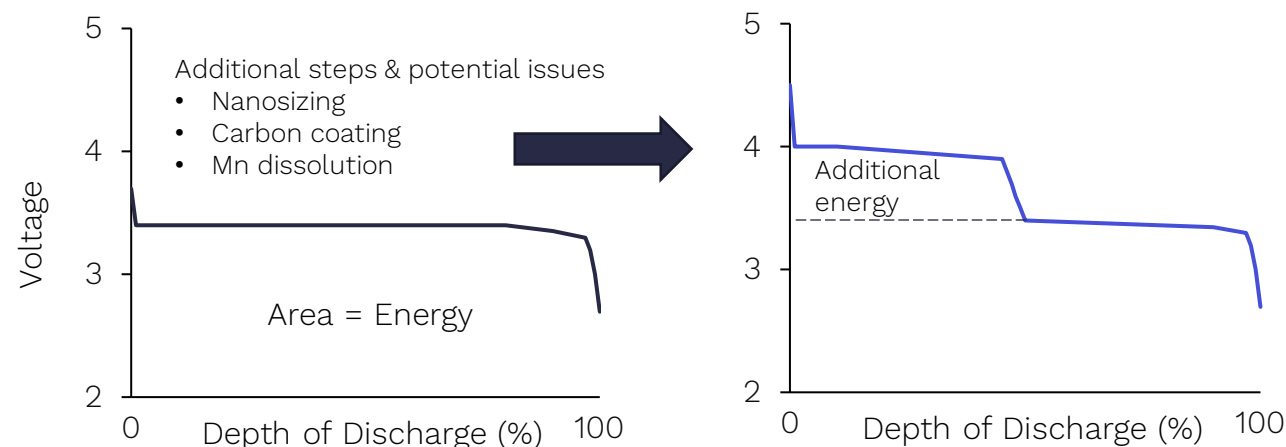


# LMFP technology spotlight

## Next Generation LFP

- This quarter we have split out LMFP in the cathode chemistry forecast on the back of increased interest and announcements from cell manufacturers and OEMs.
- LFP is favoured by Chinese cell manufacturers, with its benefits in safety, cost and cycle life. Whilst there has been advancements optimising cell-to-pack, like with the BYD Han blade module-less design (~140Wh/kg, 210Wh/L) there are still fundamental material limitations.
- The next opportunity is represented by  $\text{LiM}_x\text{Fe}_{1-x}\text{PO}_4$  (LMFP), where iron (Fe) is partially substituted by other metals such as Mn, Zn and Al. CATL has claimed that M3P is ready for mass-production in 2023 and aims to supply the ~700km range BEVs with M3P cells in CTP 3.0 (Qilin) battery packs.
- In preparation for the future demand, CAM suppliers, such as Easpring and Dynanonic, have started to invest in LMFP cathode material projects.

## Energy improvements – LFP (left) vs. LMFP (right)



## Next Generation LFP cells – Short term, roadmaps



Planned 2023, 60-80% Mn,  
Targeting ~ 400-500Wh/L.



M3P, more complex than  
LMFP, doped with 2 metals  
(including Mn, Zn, Al).  
Aiming for 210-230Wh/kg.

SUNWODA



EVE

Others working on  
development of  
LMFP cells, some  
pilot production,



# US Bipartisan Infrastructure Law and Inflation Reduction Act

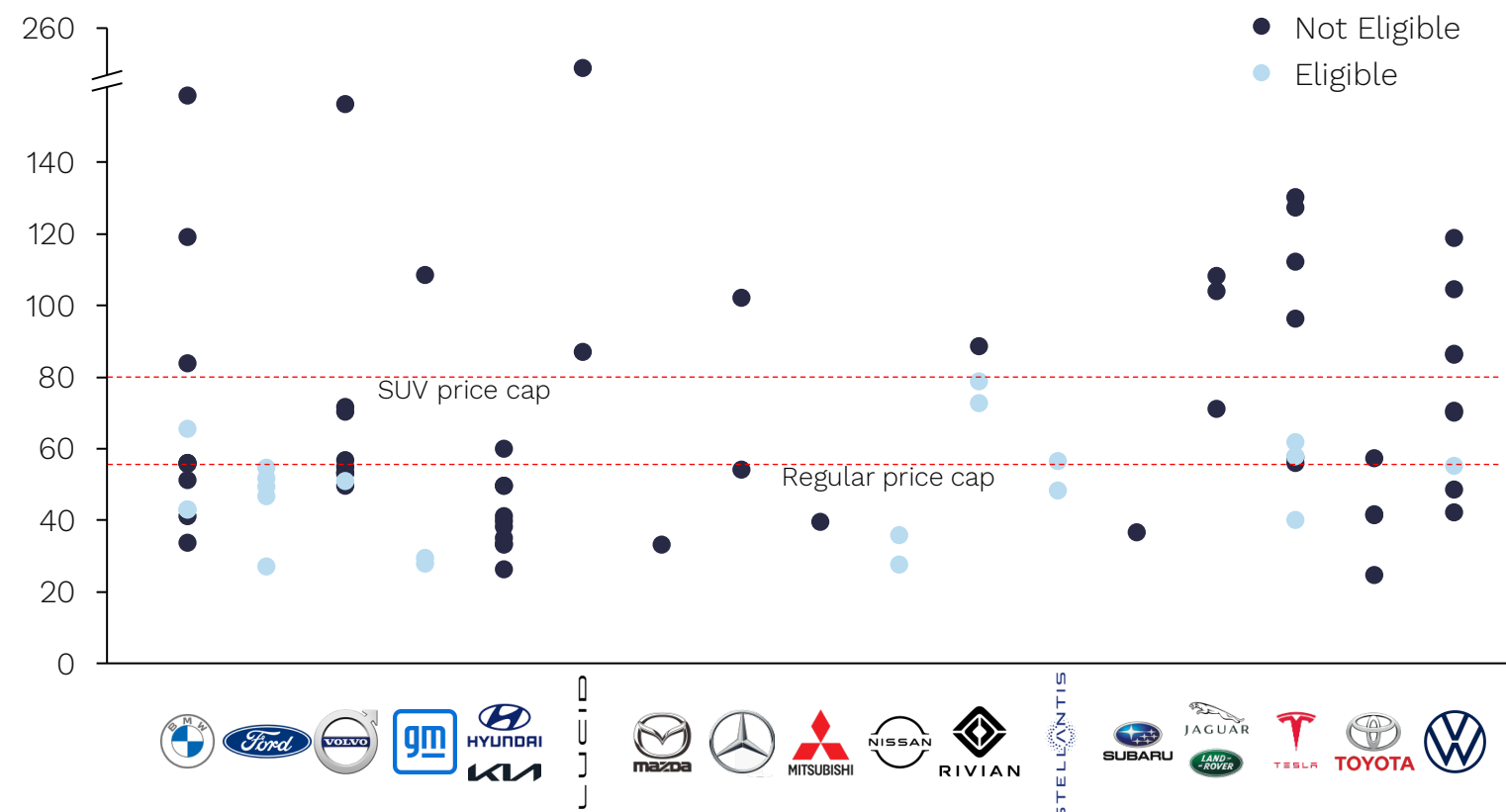


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## EV purchase price by OEM and IRA eligibility

Vehicle price, USD '000

Based on just the assembly location and vehicle price criteria a majority of EVs on sale in the US right now will not be eligible for the new tax credits under the IRA



## 20 companies awarded USD2.8 billion funding from the Infrastructure Law

### Metal concentrates, salts



### Cathode precursors



### Recycling



### Electrodes, binder, separator, electrolyte



### NMC, LFP cathode active materials



### Graphite anode active materials



### Silicon anode active materials



### Projects could provide:

Lithium	2 million EVs
Graphite	1.2 million EVs
Nickel	400,000 EVs
Binder	45% US demand

Source DoE

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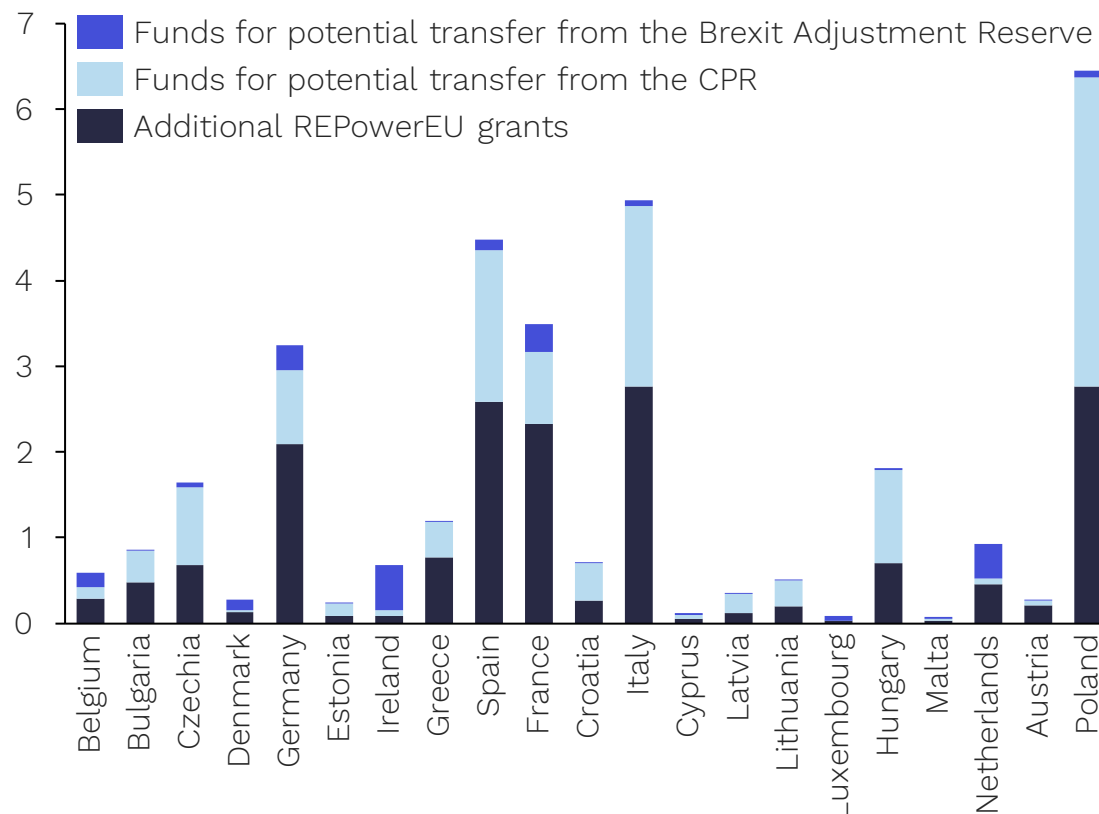
# Europe responds to the IRA

## The Four Pillars of the Green Deal Industrial Plan

- Simplify the regulatory environment – ease of **permitting**
- **Financing** through grants and loans
- Enhancing **skills** for net-zero related industries
- Facilitate open and fair **trade** to build supply chains

## New Guidance of access to REPowerEU funds, by Member State

Billion EUR



Loan pool:  
€225 billion

Grant pool:  
€39.5 billion

New  
European  
Sovereignty  
Fund TBA

Source: European Commission

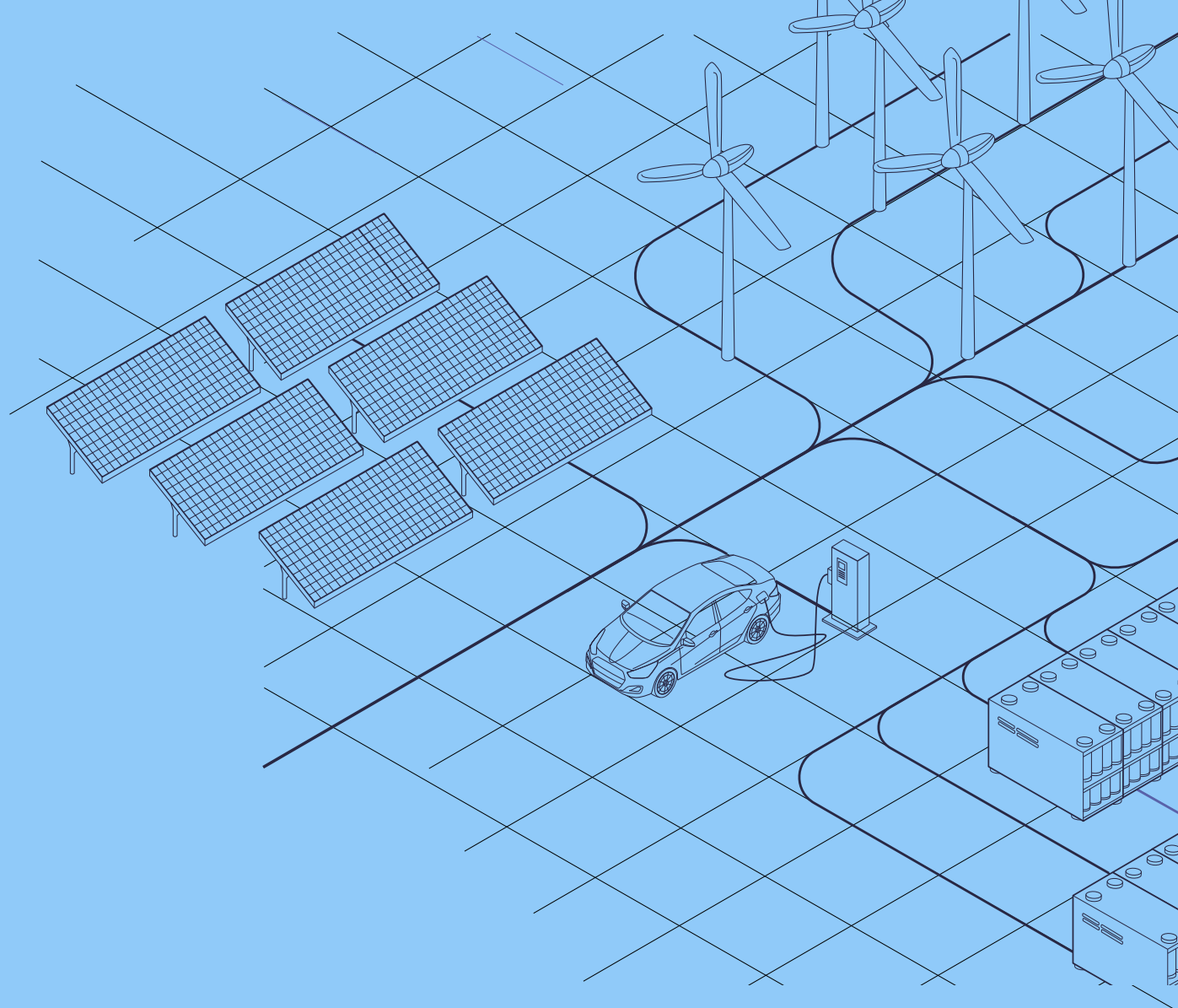
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# Any Questions?

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