EV Markets and Recharging Infrastructure in North America

NAATBatt 2025

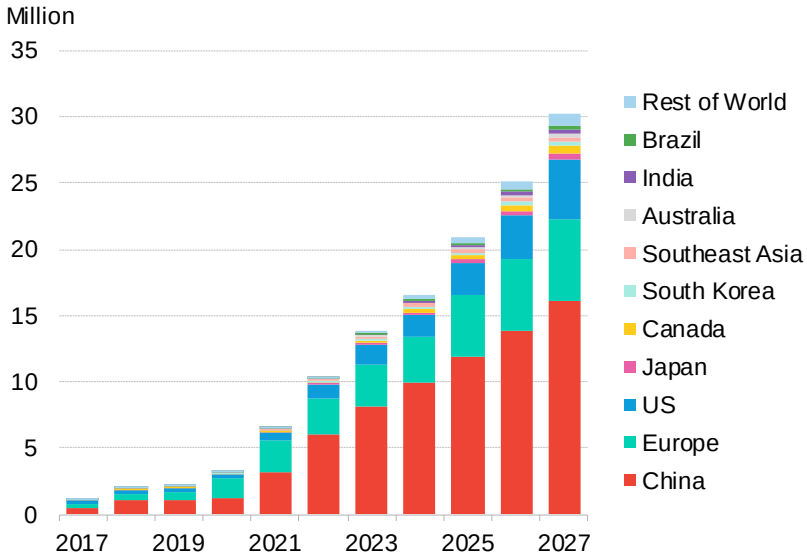
Evelina Stoikou

February 18, 2025

BloombergNEF

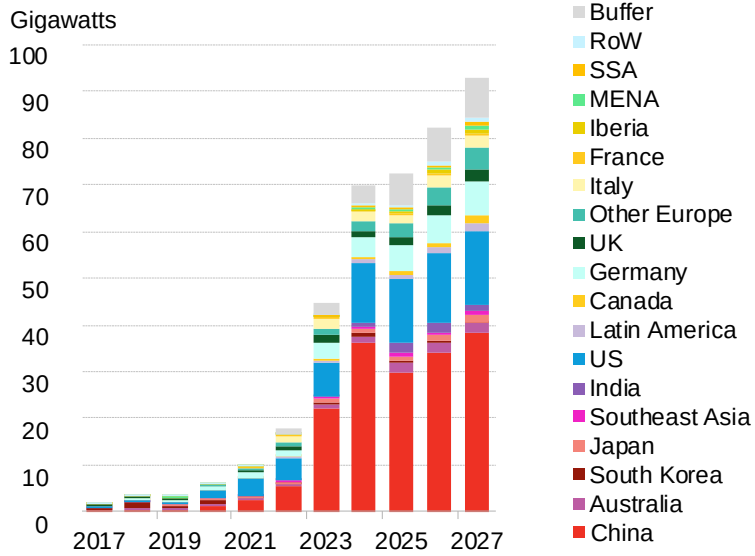
Demand for EVs and stationary storage is rising around the world

Global near-term EV sales by market



Source: BloombergNEF. Note: Europe includes the European Union, the UK and European Free Trade Association (EFTA) countries. EV includes battery-electric and plug-in hybrid vehicles.

Global gross energy storage capacity additions by market



Source: BloombergNEF. Note: SSA is Sub-Saharan Africa, MENA is Middle East and North Africa. Markets ordered by regional group. Buffer refers to headroom not explicitly allocated to an application. RoW is Rest of World.

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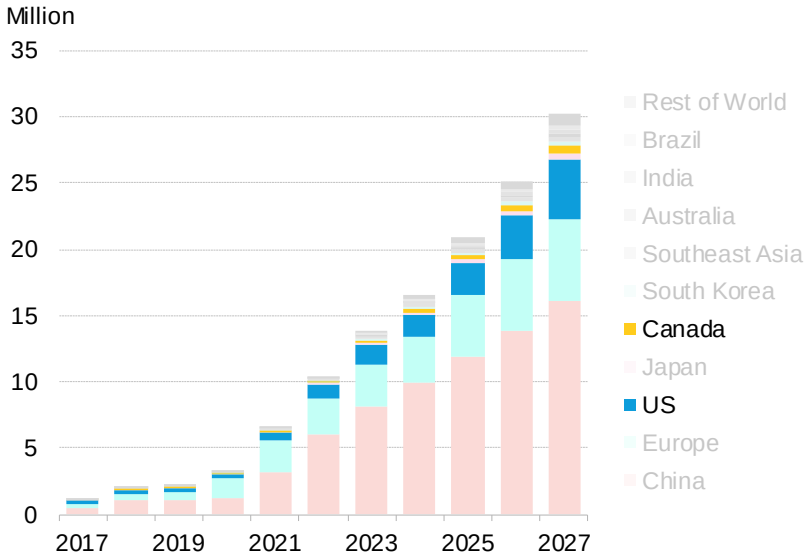
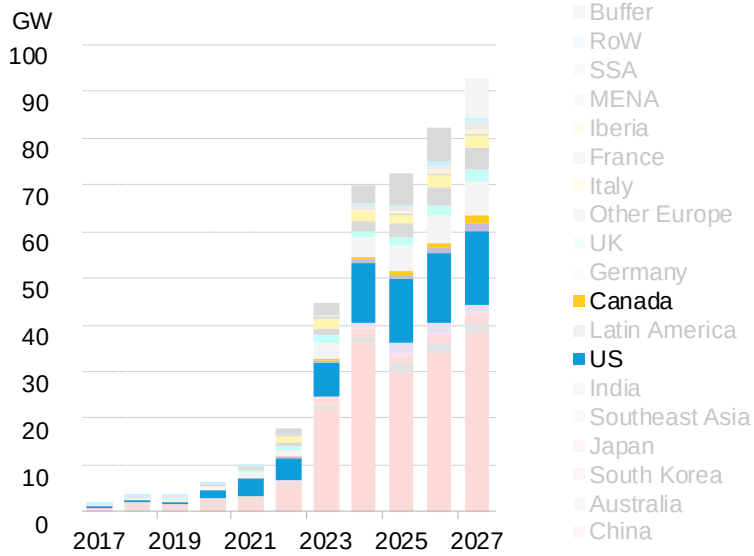
… with North America being a significant part of the market

Global near-term passenger EV sales by market



Source: BloombergNEF. Note: Europe includes the European Union, the UK and European Free Trade Association (EFTA) countries. EV includes battery-electric and plug-in hybrid vehicles.

Global gross energy storage capacity additions by market



Source: BloombergNEF. Note: SSA is Sub-Saharan Africa, MENA is Middle East and North Africa. Countries ordered by regional group. Buffer refers to headroom not explicitly allocated to an application. RoW is Rest of World.

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The picture of the EV industry today

Vans and trucks

4%
EV share of sales

1,518,916
Size of EV fleet

Passenger cars

18%
EV share of sales

40,863,996
Size of EV fleet

Buses

26%
EV share of sales

720,884
Size of EV fleet

2 and 3 wheelers

47%
EV share of sales

301,995,237
Size of EV fleet

Source: BloombergNEF. Note: Data as of the end of 2023.

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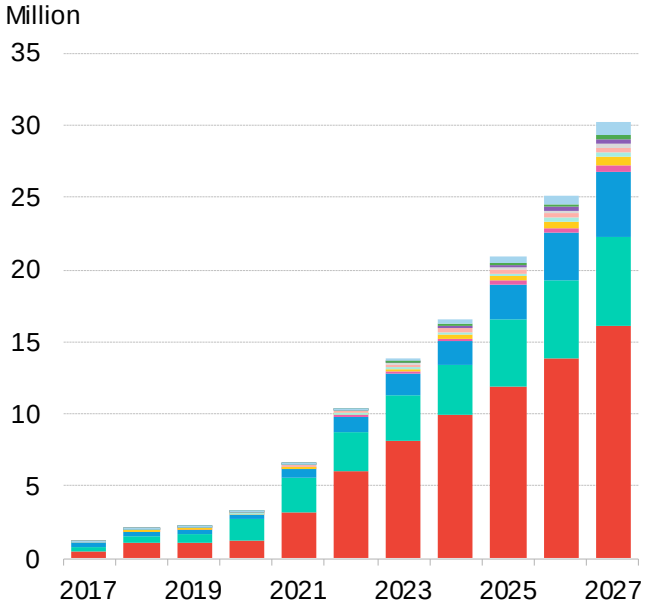
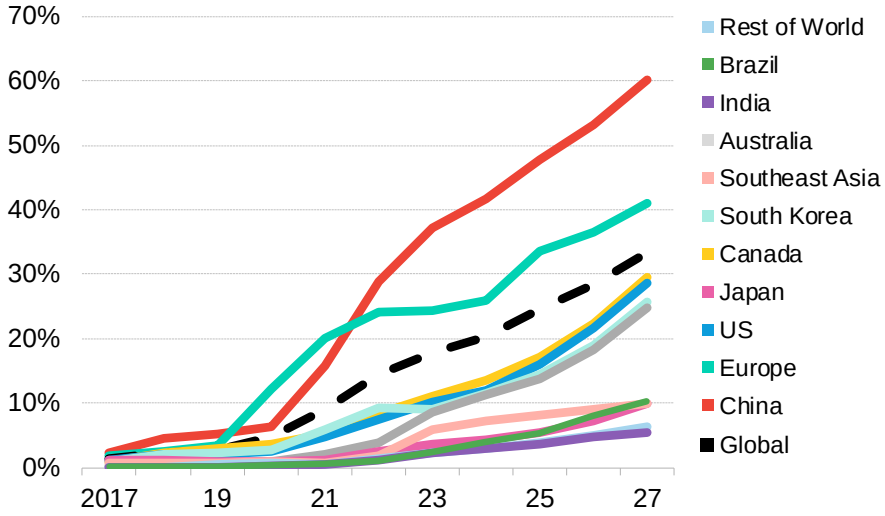
Some EV markets are doing better than others

Global near-term passenger EV sales by market



Share of new passenger-vehicle sales by market



Source: BloombergNEF. Note: Europe includes the European Union, the UK and European Free Trade Association (EFTA) countries. EV includes battery-electric and plug-in hybrid vehicles.

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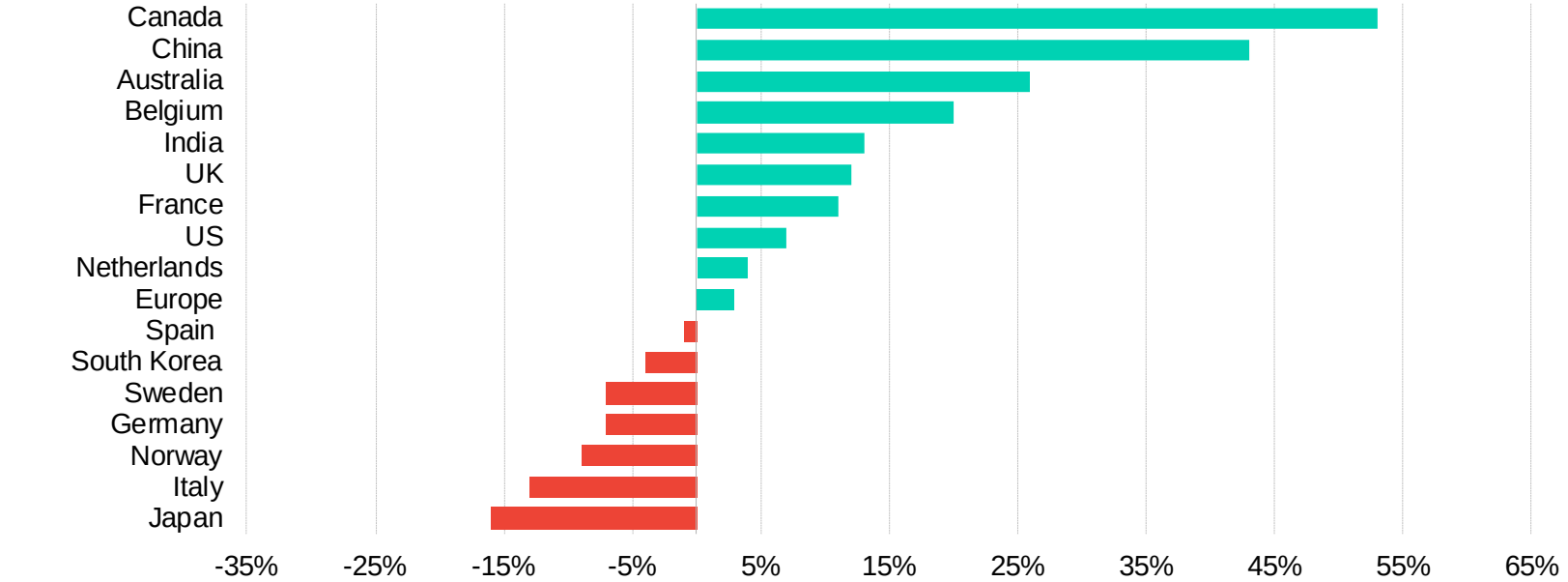
Some EV markets are experiencing slower sales growth

Year-on-year change in passenger EV sales in selected markets, 1H 2024



Source: BloombergNEF, MarkLines, Jato Dynamics. Note: Includes battery electric vehicles and plug-in hybrids. Europe includes the 27 European Union countries, plus the UK, Norway, Iceland and Switzerland.

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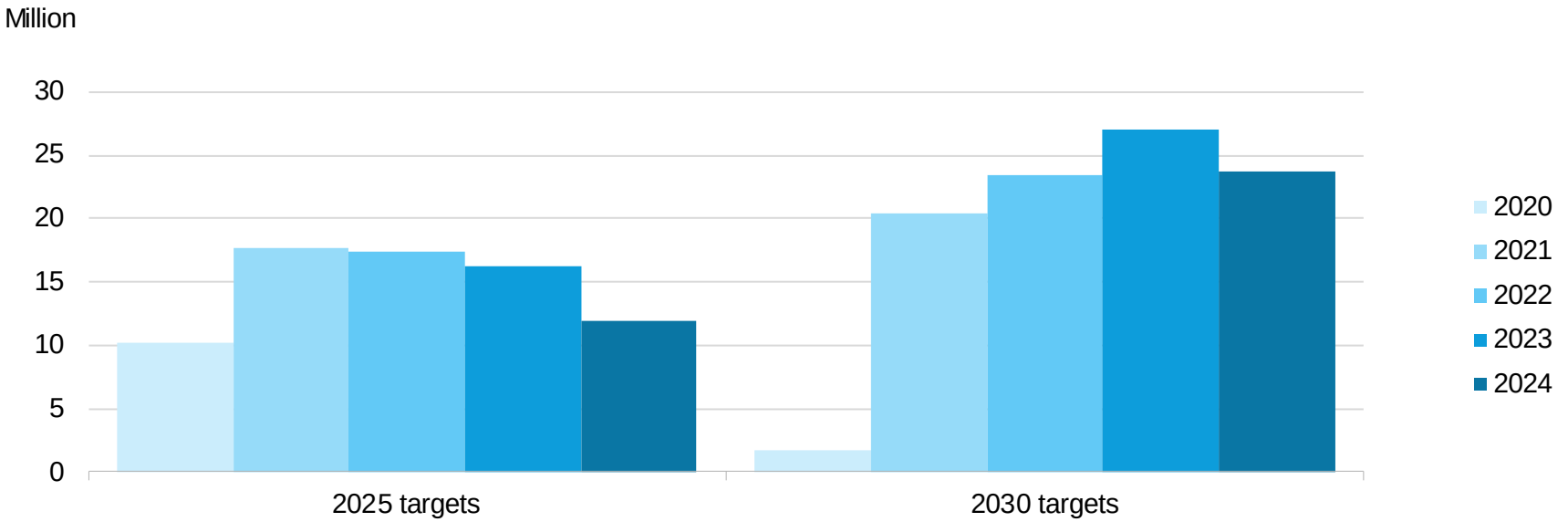
Several automakers have pulled back from their aggressive EV sales and ICE phase-out targets

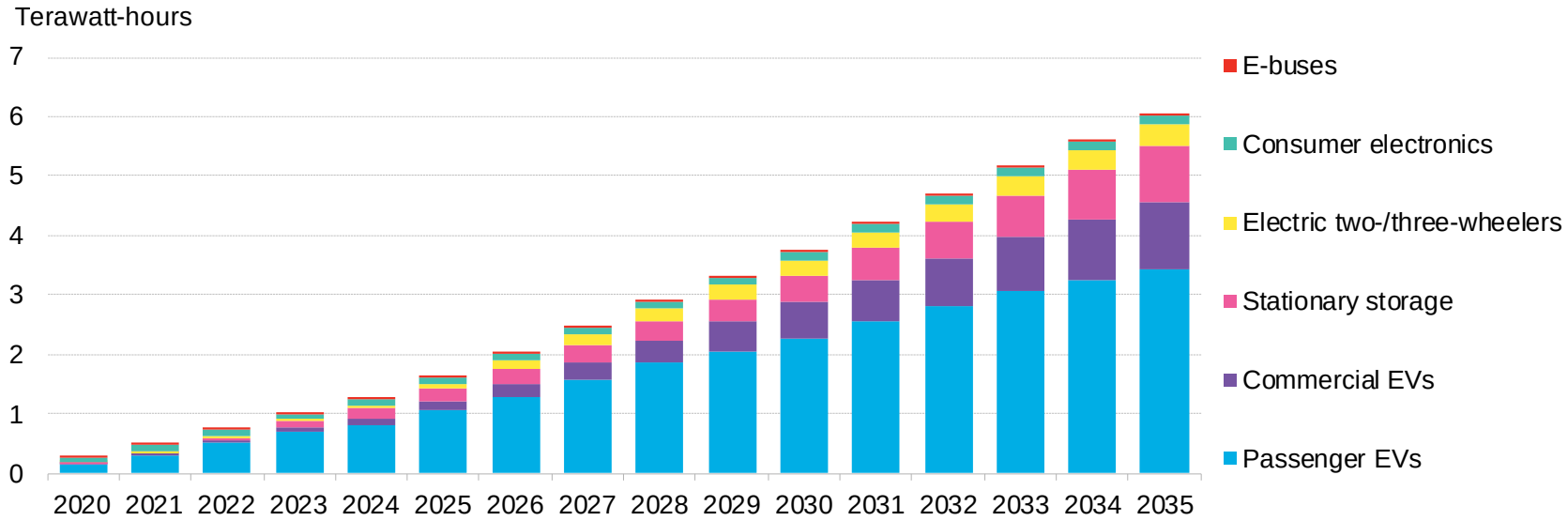
Global annual combined EV sales targets announced by legacy automakers



Source: BloombergNEF, automaker announcements. Note: Excludes targets by EV-only automakers, such as Tesla. Values for 2024 consists of EV sales targets announced through September 5, 2024.

Demand for batteries expected to exceed 3.7 terawatt-hours by 2030

Lithium-ion battery demand outlook in the Economic Transition Scenario



Source: BloombergNEF, Avicenne.

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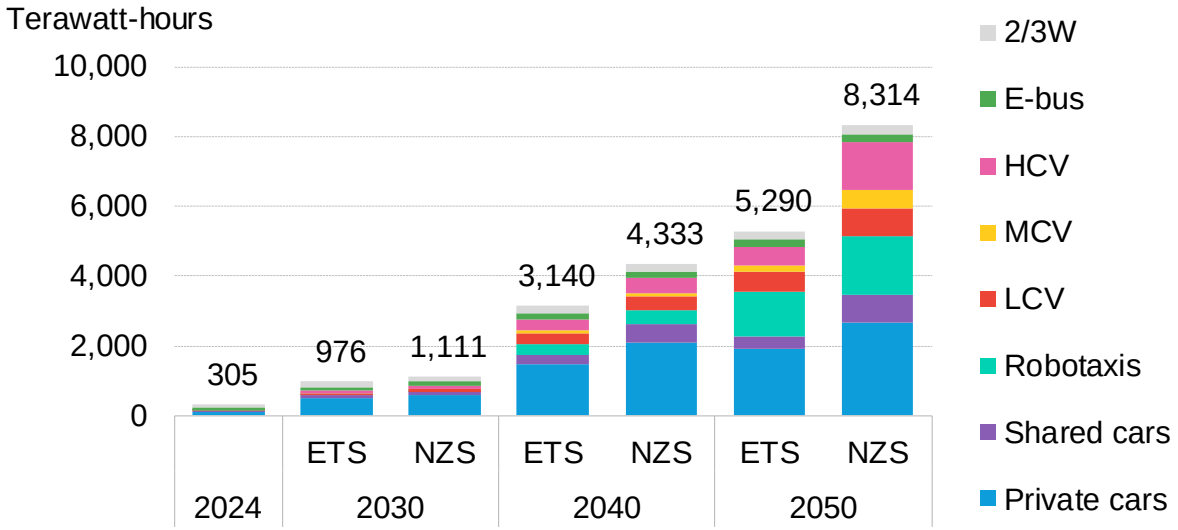
EV charging infrastructure is a key part of the equation

Source: EV Safe Charge

A fully electric fleet requires more than 8,000TWh by 2050

Global electricity demand outlook by electric-vehicle segment and scenario



Source: BloombergNEF. Note: ETS is Economic Transition Scenario, NZS is Net Zero Scenario. LCVs, MCVs and HCVs are light-, medium- and heavy-duty commercial vehicles.

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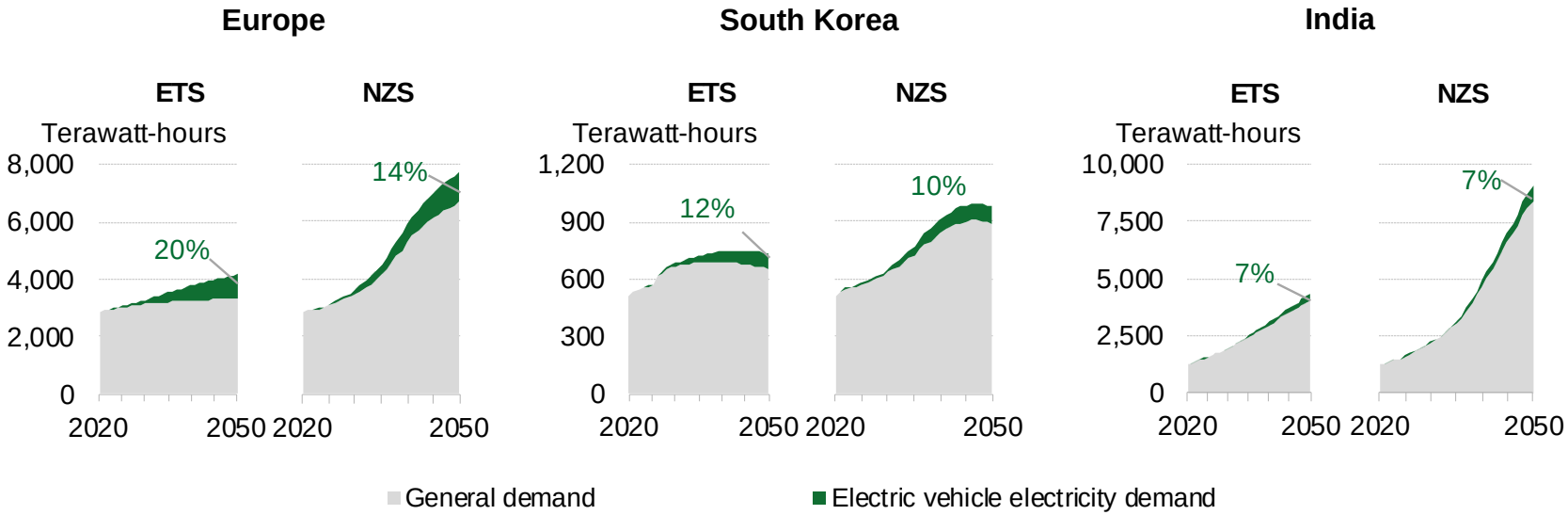
… accounting for 7-20% of electricity demand

Electricity demand outlook for selected regions, Economic Transition Scenario (ETS) and Net Zero Scenario (NZS)



Source: BloombergNEF. Note: Uses general electricity demand projections from BNEF's New Energy Outlook 2024*. This is the final energy consumption and excludes any losses in transmission. EV electricity demand includes demand from passenger EVs, commercial EVs, e-buses and electric two- and three-wheelers. Percentages refer to EV electricity demand's share of the total in 2050.*

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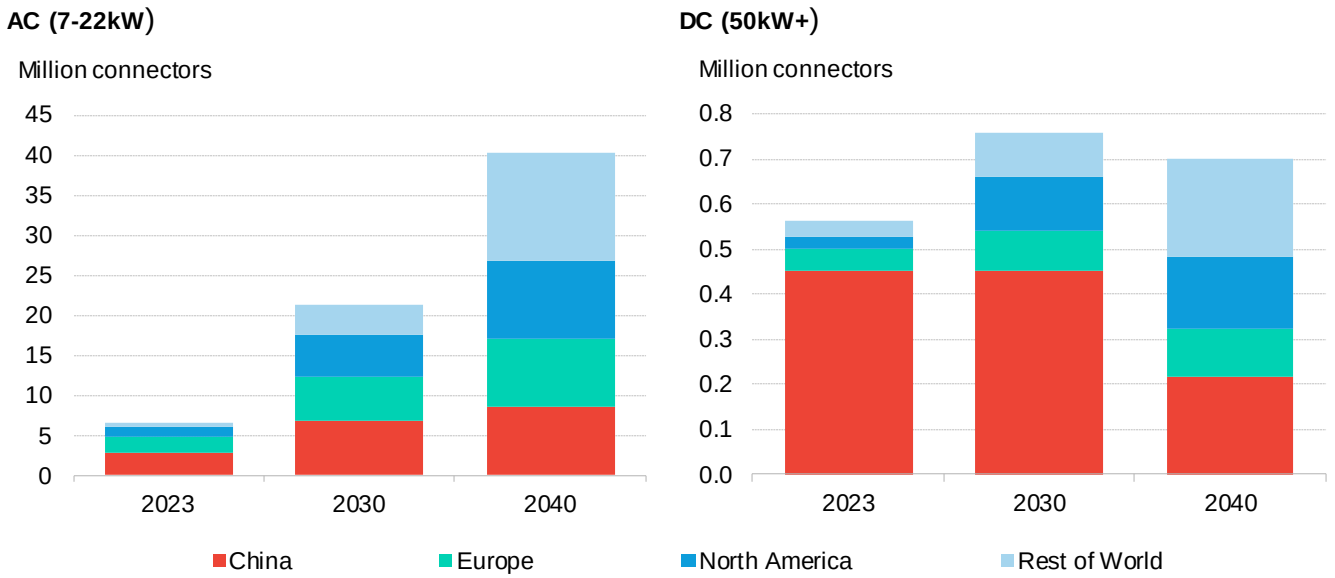
AC will grow more than the DC charger market

Annual sales of chargers, by power category and region



Source: BloombergNEF. Note: AC is alternating current; DC is direct current; kW is kilowatt.

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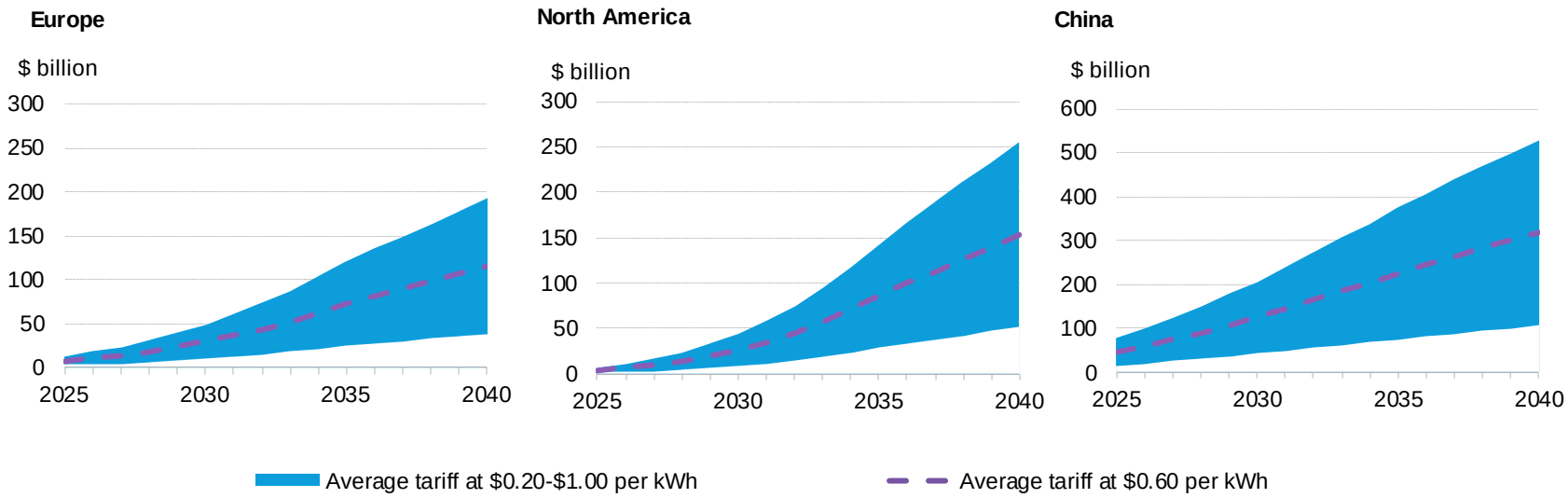
Public charging revenues rocket

Public charging revenue, by region and average tariff price



Source: BloombergNEF. Note: Includes public charging for all vehicle types. Real tariffs can vary from those shown; kWh is kilowatt-hour.

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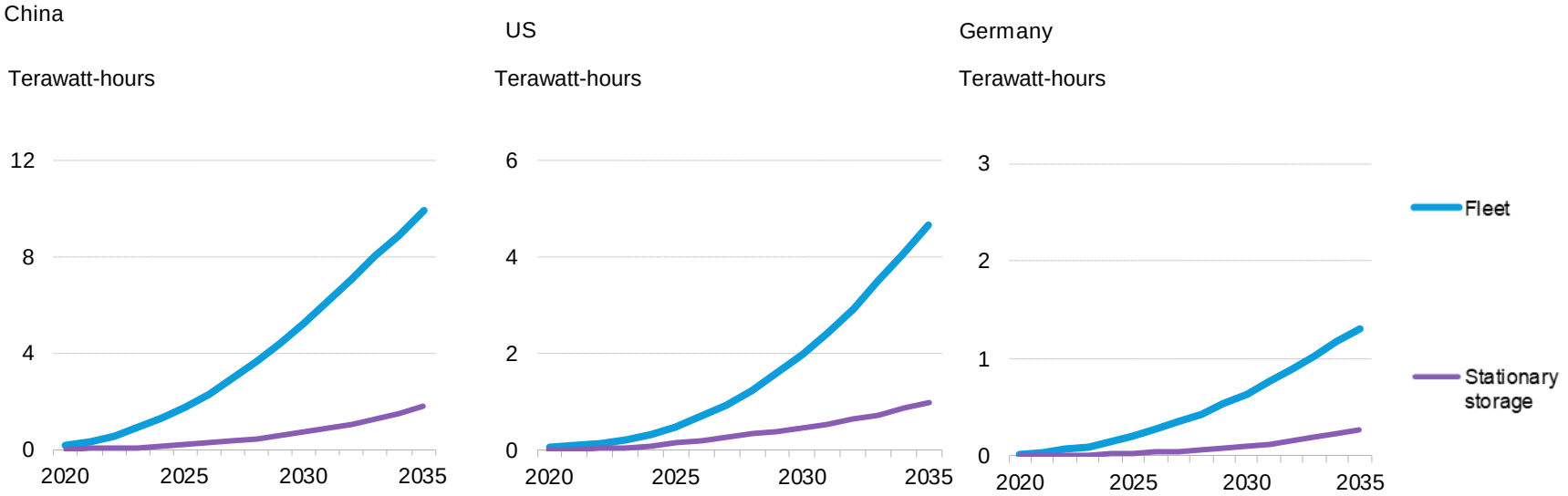
Fleet capacity will far exceed BNEF's forecast for stationary storage

Forecast stationary storage and BEV fleet capacity



Source: BloombergNEF's Electric Vehicle Long-Term Outlook interactive dataset, Energy Storage Battery Outlook interactive dataset. Note: Uses fleet forecast from the Long-Term Electric Vehicle Outlook 2023 *and assumes average BEV battery capacity of 55 kilowatt-hours to account for spread in model specifications. Stationary storage outlook includes grid scale and residential storage.*

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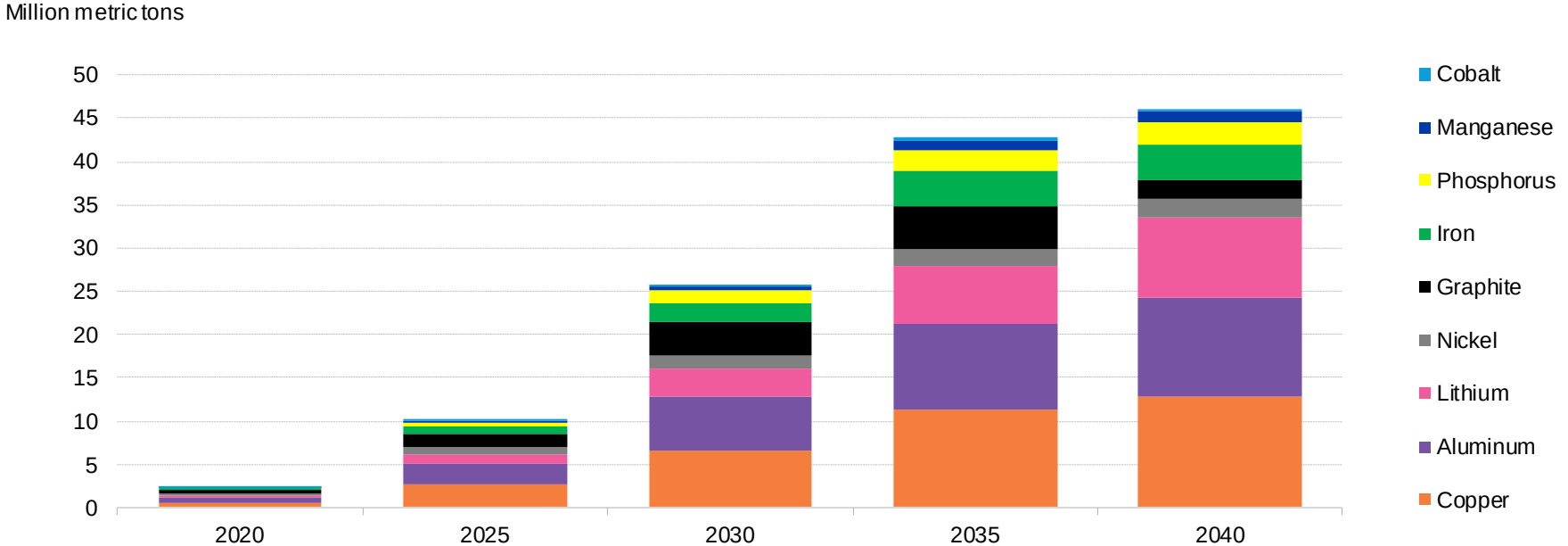
Growing EV demand will have downstream implications

Photographer: Krisztian Bocsi/Bloomberg

Demand for metals from lithium-ion batteries exceeds 25 million metric tons in 2030

Annual metals demand from lithium-ion batteries under the Net Zero Scenario



Source: BloombergNEF. Note: Lithium is expressed in million metric tons lithium carbonate equivalent (LCE). Note: Demand occurs at the mine mouth, one year before battery demand.

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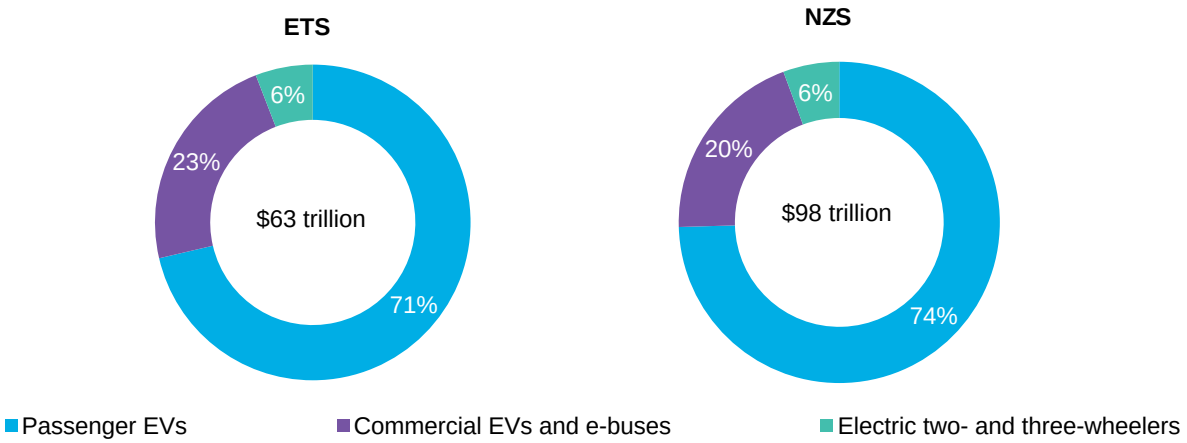
EVs create a $63 trillion market opportunity by 2030 based on ETS modeling

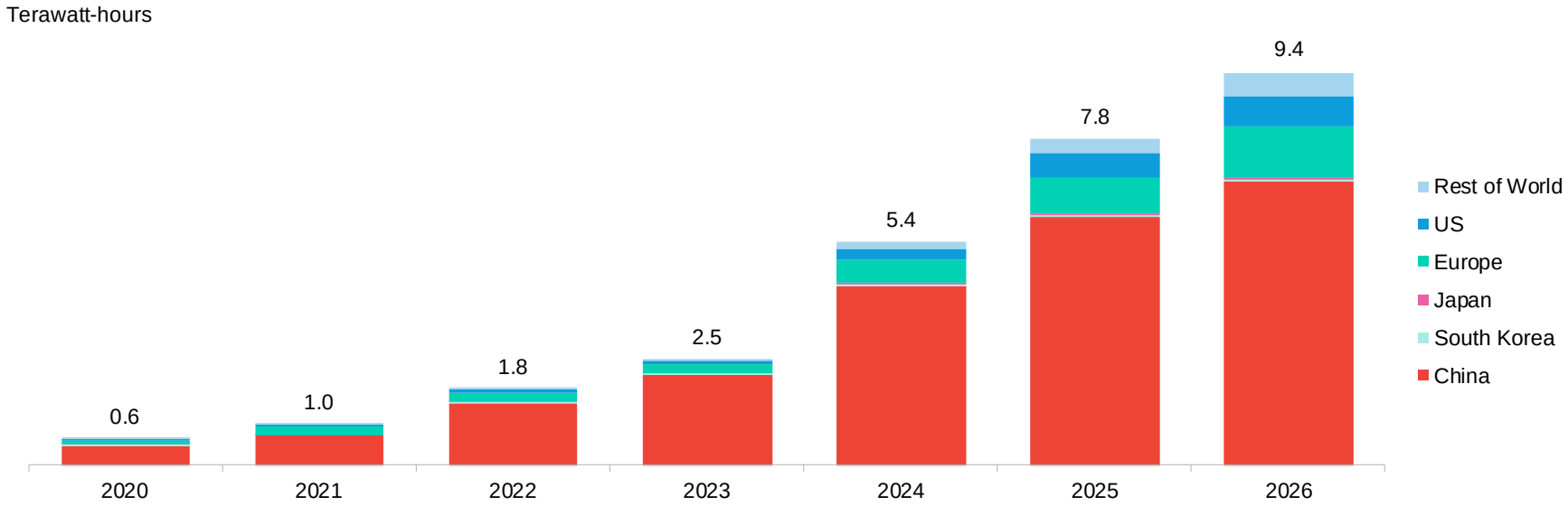
Estimated global EV market opportunity by 2050 – Economic Transition Scenario and Net Zero Scenario



Source: BloombergNEF. Note: Includes battery electric and plug-in hybrid electric passenger and commercial vehicles, battery electric buses and electric two- and three-wheelers. Estimates are cumulative, spending starts in 2024. Dollars are in real 2023 terms. ETS is Economic Transition Scenario, NZS is Net Zero Scenario.

Battery manufacturing ramping up globally, but China leads the way

Global lithium-ion nameplate cell manufacturing capacity



Source: BloombergNEF. Note: Data up to 2024 includes fully commissioned capacity. Data starting from 2025 includes announced, under-construction and fully commissioned capacity, not risk adjusted.

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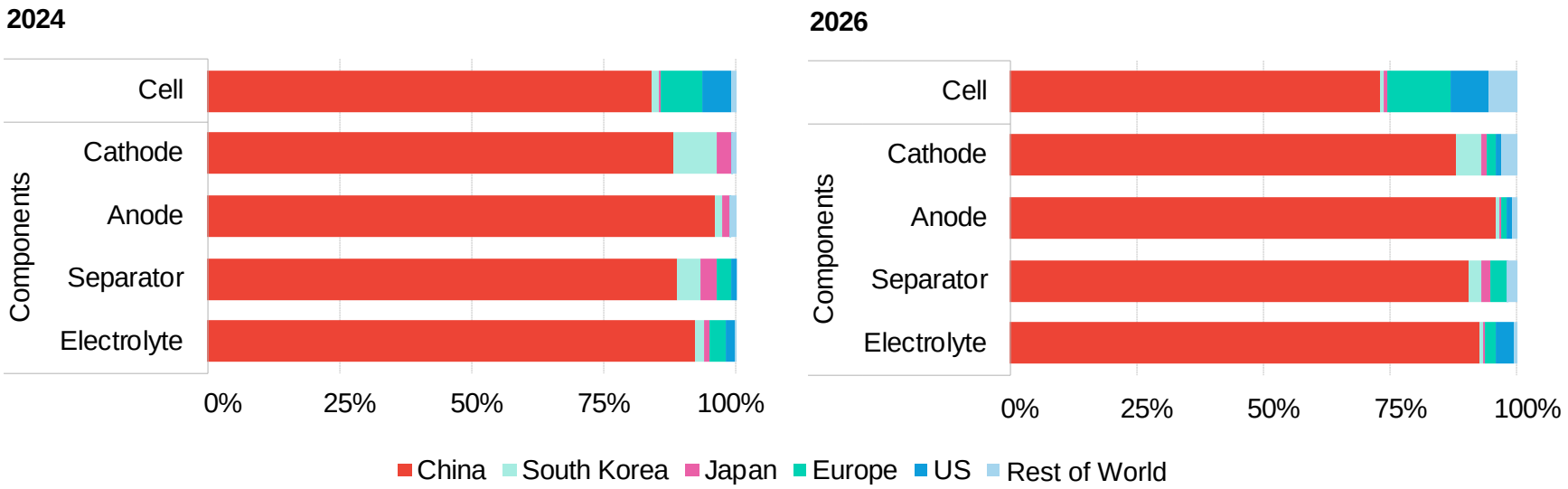
China dominates across the battery value chain

Global lithium-ion battery cell and component manufacturing capacity by location, 2024 and 2026



Source: BloombergNEF. Note: Supply data are fully commissioned plants as of November 2024. 2026 data is based on fully commissioned, under-construction and announced capacity additions.

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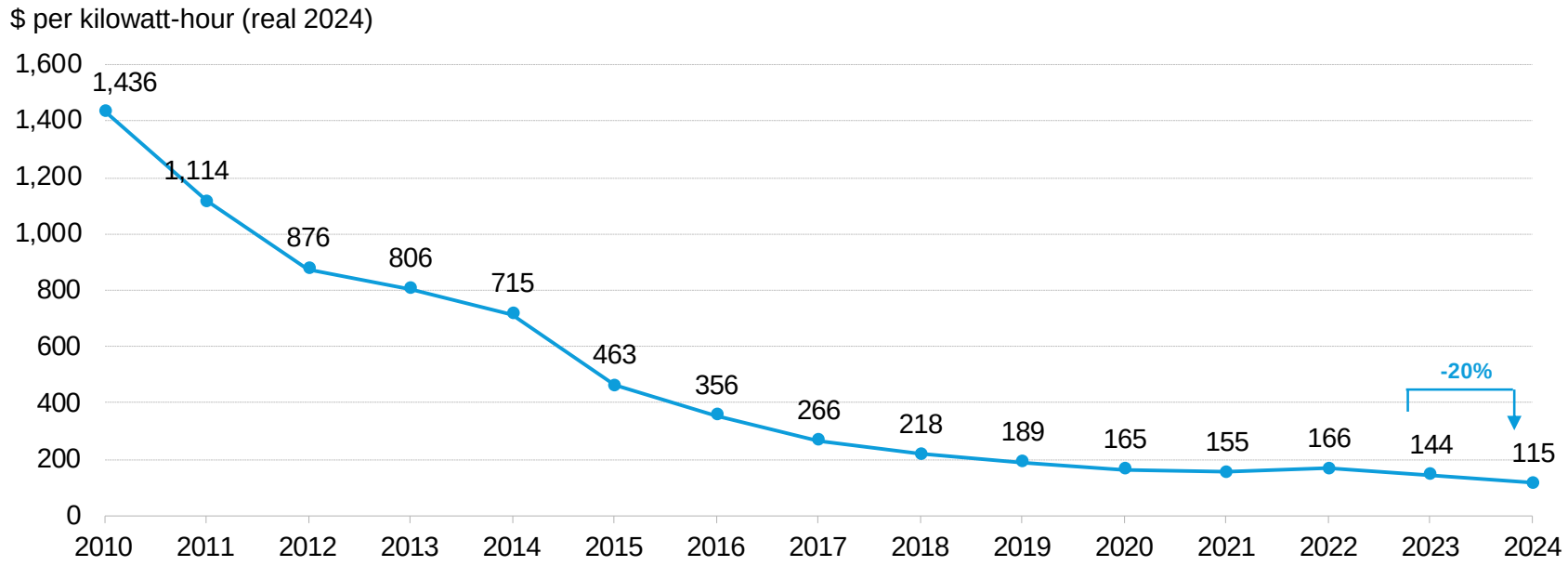
Lower battery prices have greatly contributed to the uptake in EVs and stationary storage

Volume-weighted average of lithium-ion battery pack prices, all sectors



Source: BloombergNEF. Note: Historical data has been adjusted to real 2024 dollars.

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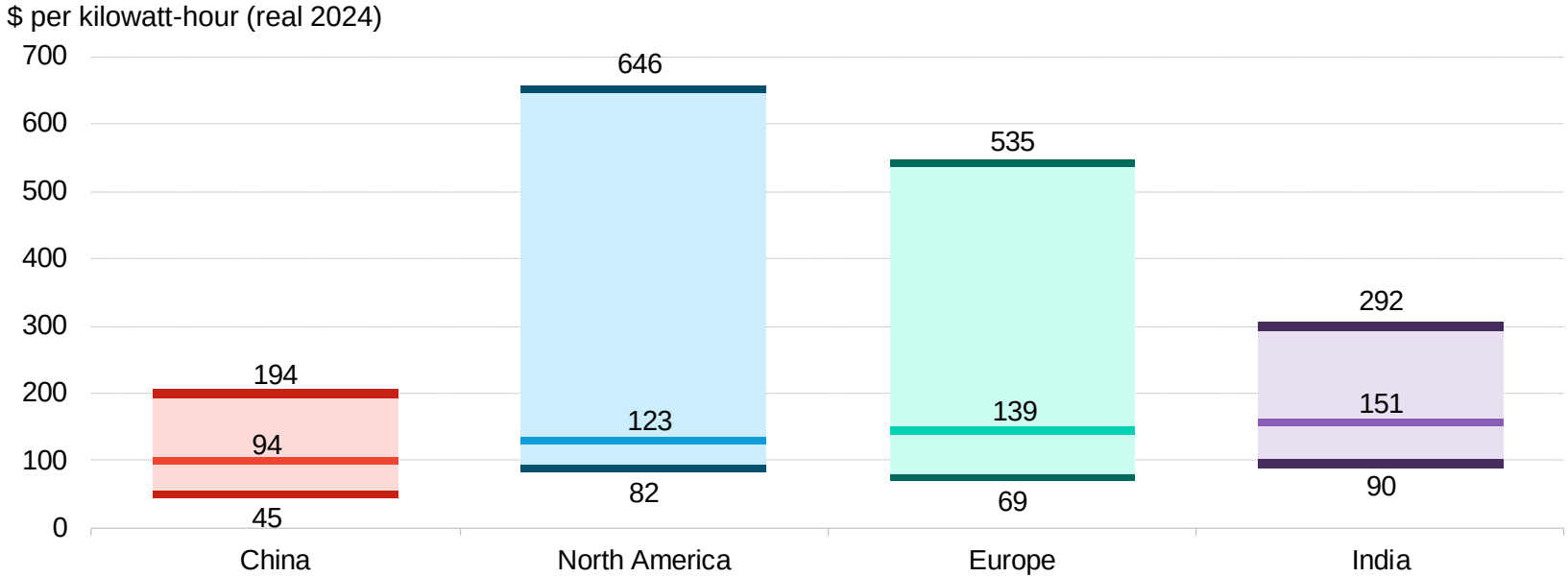
Average prices in North America and Europe were 31% and 48% higher than in China

Volume-weighted average pack price and range by region delivered in 2024



Source: BloombergNEF

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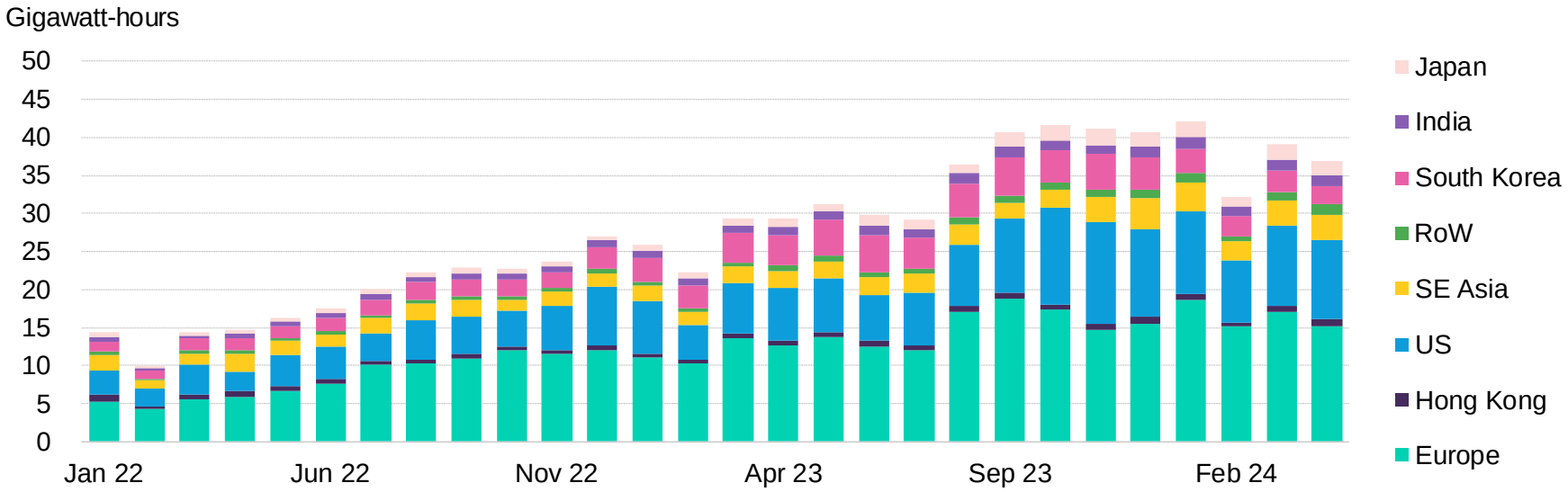
China has become a major exporter of batteries

Mainland China's estimated lithium-ion battery export capacity, by destination



Source: BloombergNEF, General Administration of Customs of China, Sinoimex. Note: The HS code is 85076000, which includes both 'lithium-ion accumulators monomer' and 'lithium-ion accumulators system'. The code includes batteries for consumer electronics, electric vehicles and energy storage sectors. RoW is Rest of World, SE Asia is Southeast Asia.

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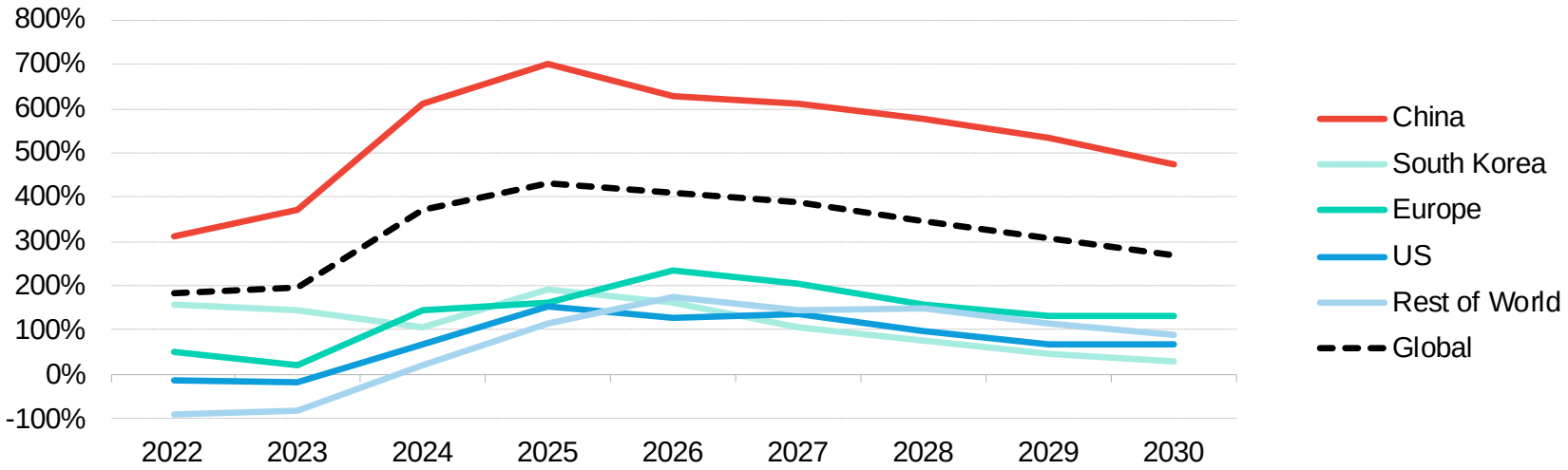
Almost three years since the US Inflation Reduction Act was passed…

Photographer: Stefani Reynolds/Bloomberg

China is experiencing overcapacity

Lithium-ion battery cell manufacturing overcapacity ratio if planned factories are built, by market



Source: BloombergNEF. Note: Overcapacity ratio is based on the excess cumulative cell manufacturing capacity (cumulative cell manufacturing capacity minus annual demand) over each year's demand in corresponding markets. Demand is based on BNEF's Long-Term Electric Vehicle Outlook 2024 *and* 2H 2024 Energy Storage Market Outlook. *Nameplate cumulative manufacturing capacity is as of November 2024. Excludes pack assembly plants. Manufacturing capacity up to 2023 includes only fully commissioned capacity. Future capacity is based on plans tracked by BNEF's battery manufacturing database based on commissioning date before December 31 of respective years.*

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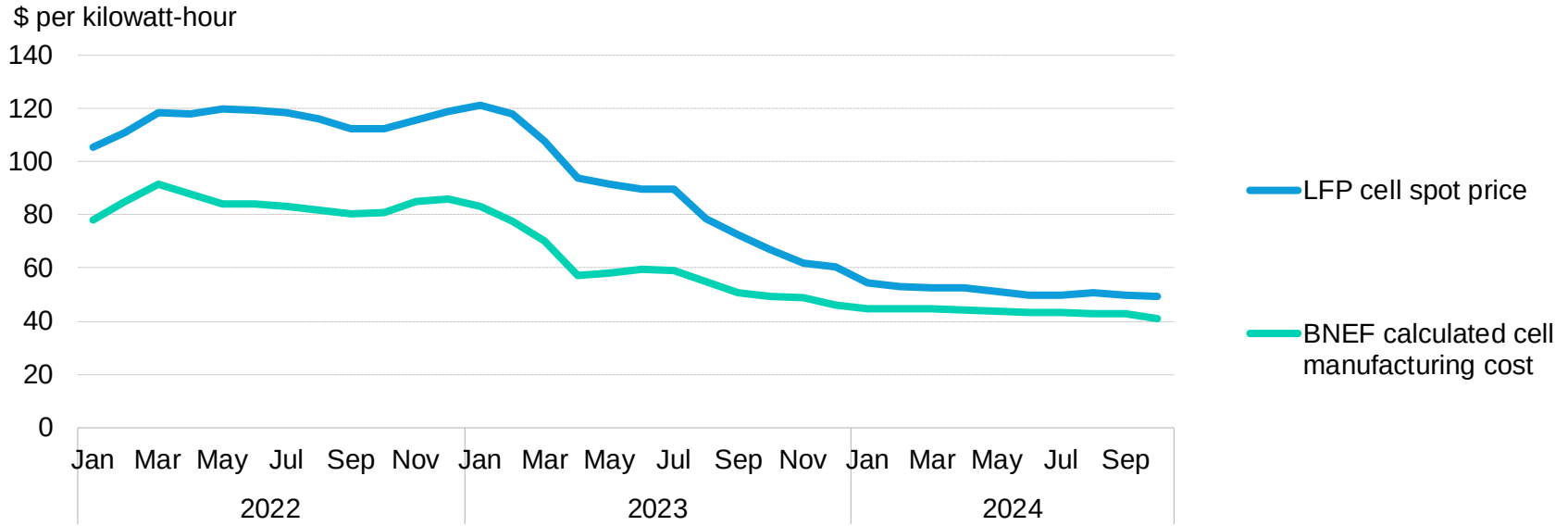
Lithium-ion battery cell margins are being squeezed

China LFP cell spot price and BNEF calculated LFP cell manufacturing cost



Source: BloombergNEF, ICC Battery. Note: The cell mentioned here is in prismatic format and excludes taxes. Lithium iron phosphate (LFP) spot price comes from the ICC Battery price database. Estimated cell manufacturing cost uses the BNEF BattMan Cost Model.

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North America and Europe face challenges…

GM delays Indiana electric vehicle battery factory, finalizes deal with Samsung

Production at an electric vehicle battery cell plant jointly run by General Motors and Samsung SDI has been delayed as EV sales have slowed in the U.S. The companies finalized their agreement Tuesday to jointly run the new factory in New Carlisle, Indi...

By The Associated Press
August 28, 2024, 10:22 AM

CNBC

Ford delays new EV plant, cancels electric three-row SUV as it shifts strategy

PUBLISHED WED, AUG 21 2024•8:02 AM EDT | UPDATED WED, AUG 21 2024•10:09 AM EDT

Michael Wayland
@MIKEWAYLAND

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LG Slows EV Cell Plant With GM in US as Political Worries Swirl

- LG is 'adjusting the speed of overall investment' in Michigan
- South Korean firms worried Trump may roll back IRA legislation

By Heejin Kim
July 21, 2024 at 11:43 PM EDT

Bloomberg

Umicore Delays $2 Billion Ontario Plant as EV Demand Slows

- Postponement is latest blow for Canada's nascent industry
- Freeland says government's industrial plan still on track

By Monique Mulima
July 26, 2024 at 4:01 PM EDT

Northvolt Files for Bankruptcy With Debt of $5.8 Billion

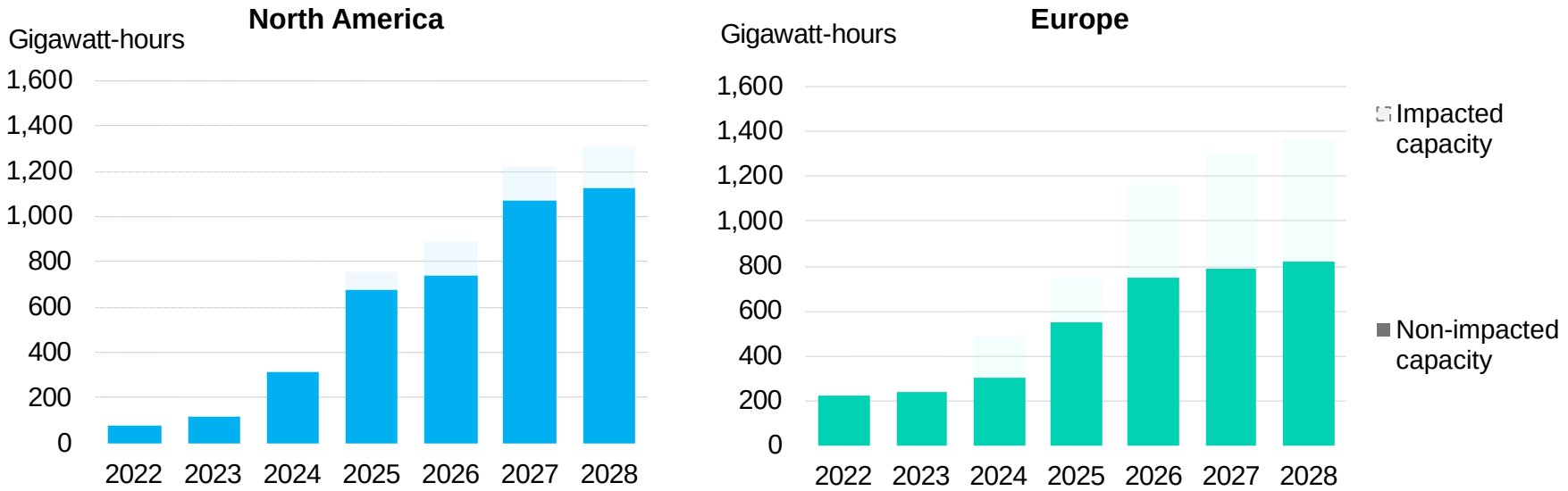
- Swedish battery maker to restructure under US Chapter 11
- Move marks blow to Europe's bid to stand up an EV supply chain

By Irene Garcia Perez, Kati Pohjanpalo, Rafaela Lindeberg, and Luca Casiraghi
November 21, 2024 at 12:47 PM EST
Updated on November 22, 2024 at 3:30 AM EST

Source: Associated Press, Bloomberg, CNBC.

About 745 gigawatt-hours of battery manufacturing capacity in North America and Europe is affected

Cumulative lithium-ion battery cell manufacturing capacity, North America and Europe



Source: BloombergNEF. Note: Impacted capacity refers to capacity that has been delayed, reduced from original plans or at risk based on public disclosures. Capacity is cumulative battery cell manufacturing capacity and is not risk adjusted. It refers to fully commissioned plants up to 2023, and abandoned, fully commissioned, under-construction and announced plants starting from 2024.

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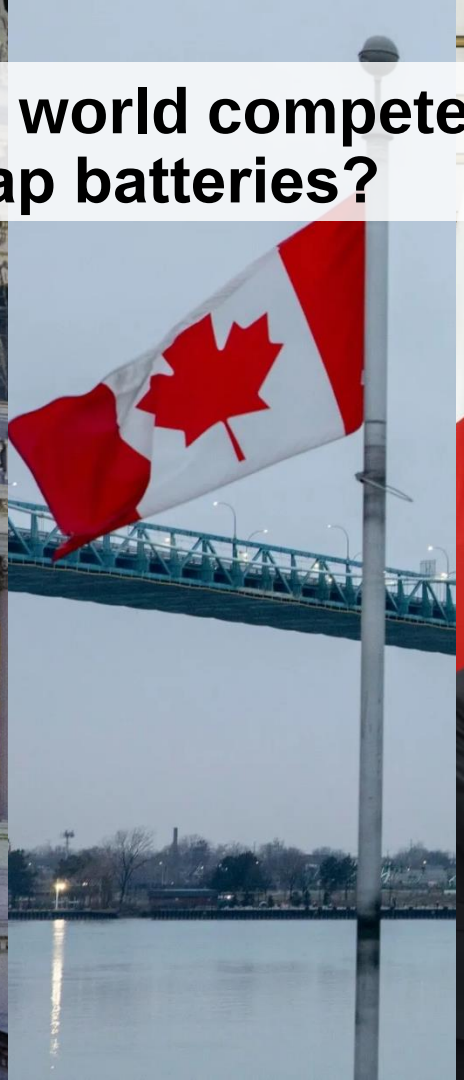
How can the world compete with China’s cheap batteries?



Source: Bloomberg

How can the world compete with China's cheap batteries?

Technological innovation

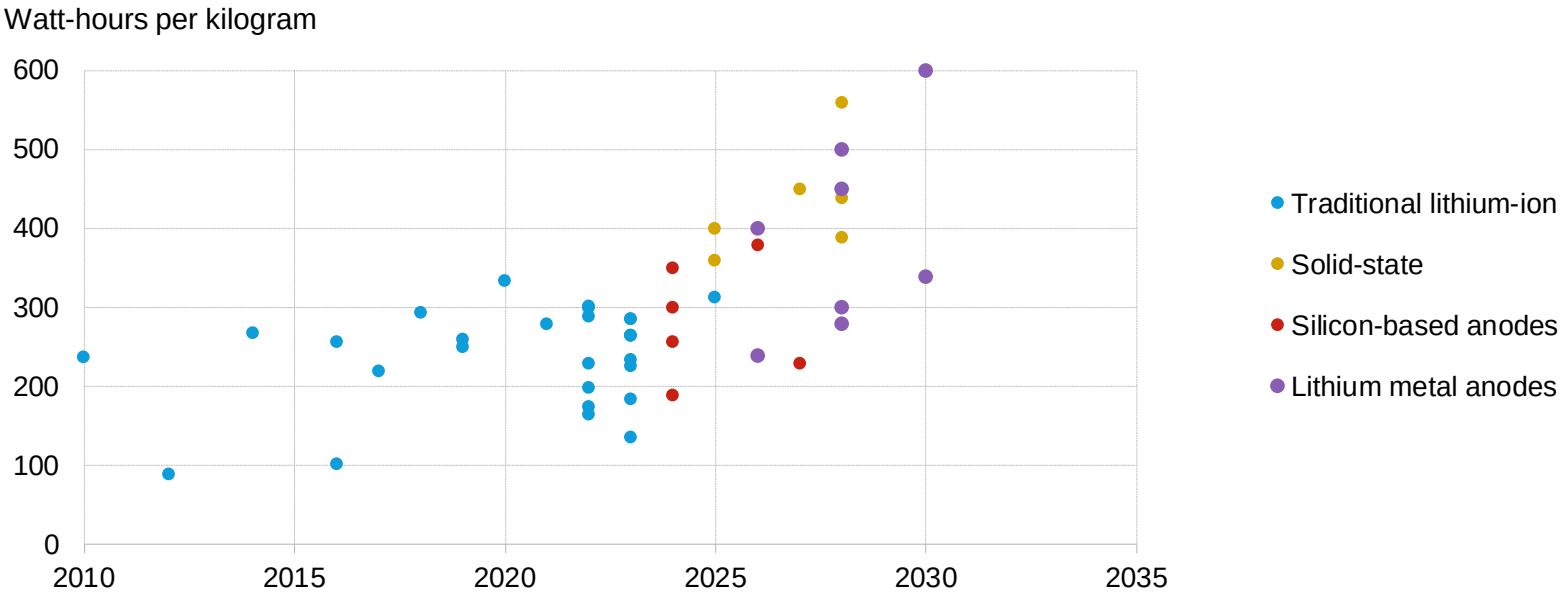
Policy intervention

Supply chain diversification

How can the world compete?

1. Technological innovation

Selected cell energy density targets, 2010-2030



Source: BloombergNEF, company statements, Bloomberg Terminal. Note: Silicon-based anodes are typically paired with lithium-nickel-manganese-cobalt-oxide (NMC) cathodes. Solid-state batteries are typically paired with silicon-based anodes or lithium metal anodes and nickel-based cathodes. Dates correspond to target commercialization dates.

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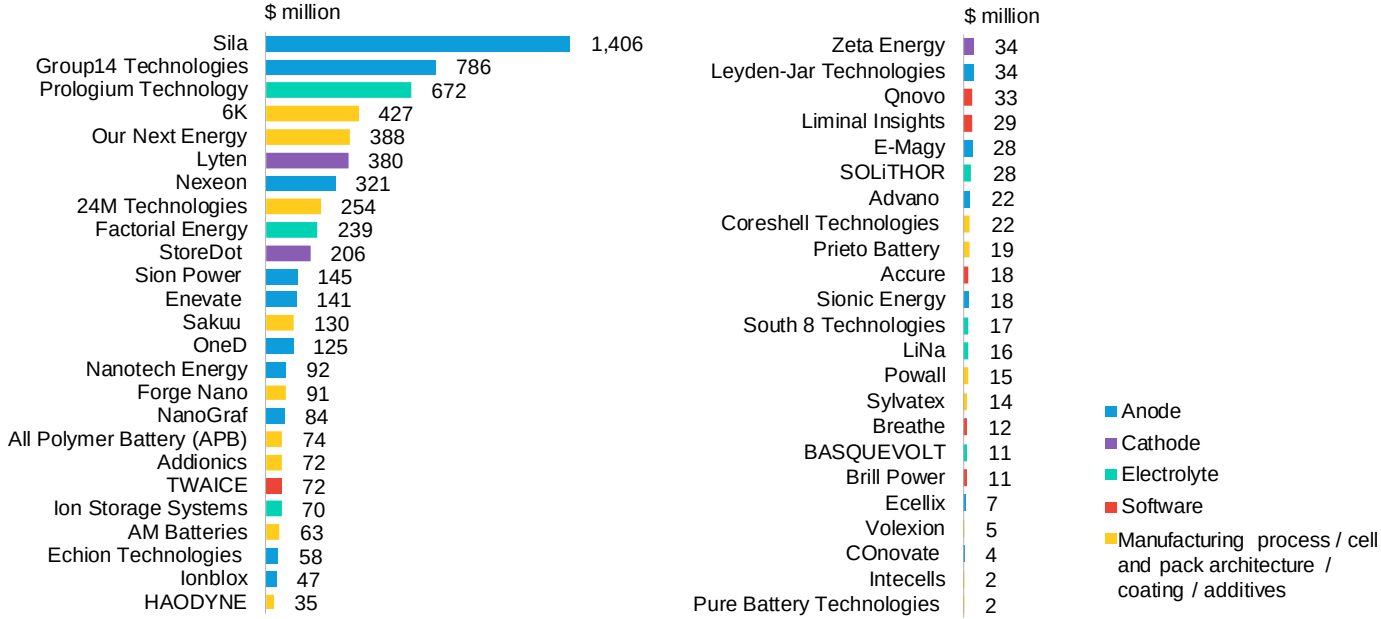
How can the world compete?

1. Technological innovation

Total VC/PE and grant funding raised by selected battery startups



Source: BloombergNEF, CB Insights, company statements, Bloomberg Terminal. Note: The technology categories in the legend reflect the companies' core competency, but they may also work on other components of the battery. Values indicate capital raised as of September 10, 2024. VC/PE refers to venture capital and private equity.

How can the world compete?

2. Policy intervention

Battery-related tax credits in the US Inflation Reduction Act

Raw materials	Components	Cell	Pack	Applications	End of life
					
Critical minerals* production tax credit **10% of costs**	**Battery electrode active materials** production tax credit **10% of costs**	**Battery cells** production tax credit **$35/kWh**	**Battery modules** production tax credit **$10/kWh**	**EV** tax credit ** **$7,500** **Energy storage** investment tax credit *** **6% (base credit)** **Up to 30%** **+ 10%**	**Critical minerals*** production tax credit **Battery electrode active materials** production tax credit **Recycled materials** indirectly through EV tax credit

*Source: EVBox, Daimler, Bloomberg, Ascend Elements, Bloomberg Mercury, BASF. Note: *Critical minerals require mining or refining in the US at specific purity levels. **EV credits include additional incentives for used clean vehicles and commercial clean vehicles. ***Energy storage is eligible for additional credits of 10% energy community adder and 10% or 20% environmental justice adder. kWh is kilowatt-hour.*

How can the world compete?

2. Policy intervention

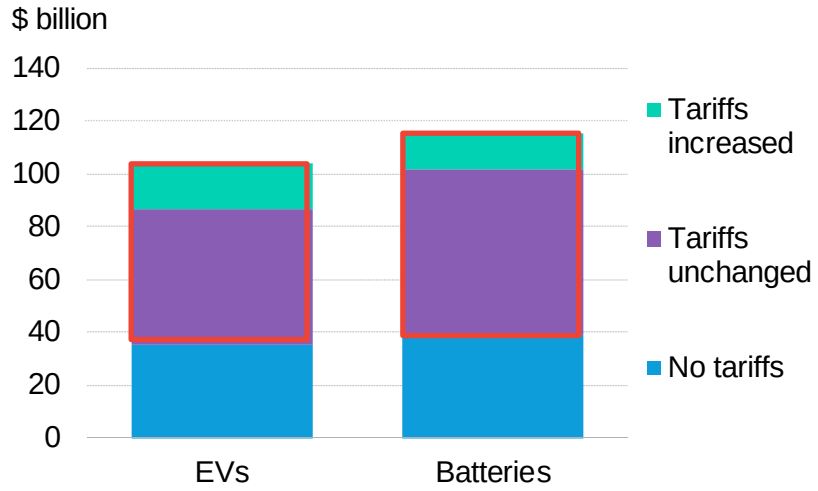
Proposed change in US clean-tech tariffs on Chinese imports related to batteries

Technology	Prior Section 301 tariff	New Section 301 tariff	New maximum tariff	New Section 301 tariff date		
				2024	2025	2026
Electric vehicles (EVs)	25%	100% ▲	102.5%	●		
EV lithium-ion batteries	7.5%	25% ▲	28.4%	●		
Other lithium-ion batteries	7.5%	25% ▲	28.4%			●
Battery parts (non-lithium-ion batteries)	7.5%	25% ▲	Varies	●		
Natural graphite	0%	25% ▲	25%			●
Other critical minerals	0%	25% ▲	Varies	●		

Source: BloombergNEF, US International Trade Administration, US International Trade Commission, Bloomberg. Note: Maximum tariffs are the sum of the new tariffs and other countrywide tariffs, including base rates, anti-dumping and countervailing duty tariffs. Actual tariff rates may be lower for goods imported under a US quota and for companies that cooperate with US trade regulator audits. ● indicates year in which a revised tariff becomes effective.

Tariff hikes affected imports for EVs and batteries in 2024, across regions

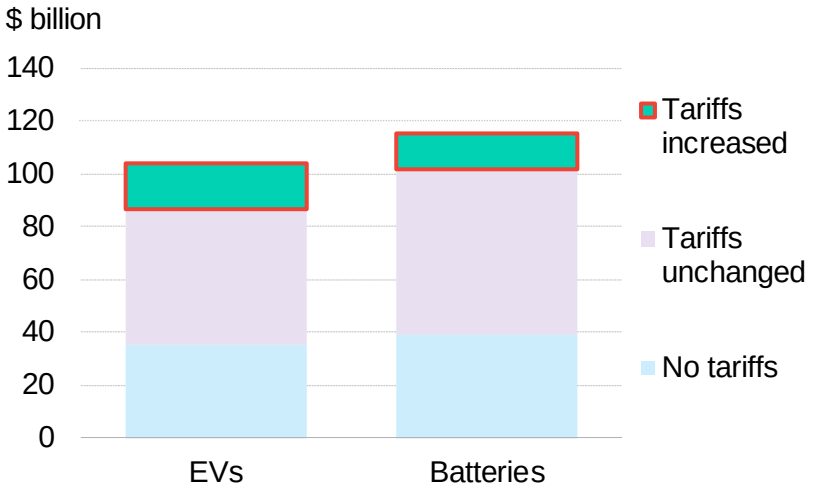
Value of global EV and battery imports by applicable tariff over 2024



Source: BloombergNEF, Sinoimex. Note: Value of imports through October. Import tariffs tracked across Group of 20 members, which account for the bulk of imports for the sectors shown.

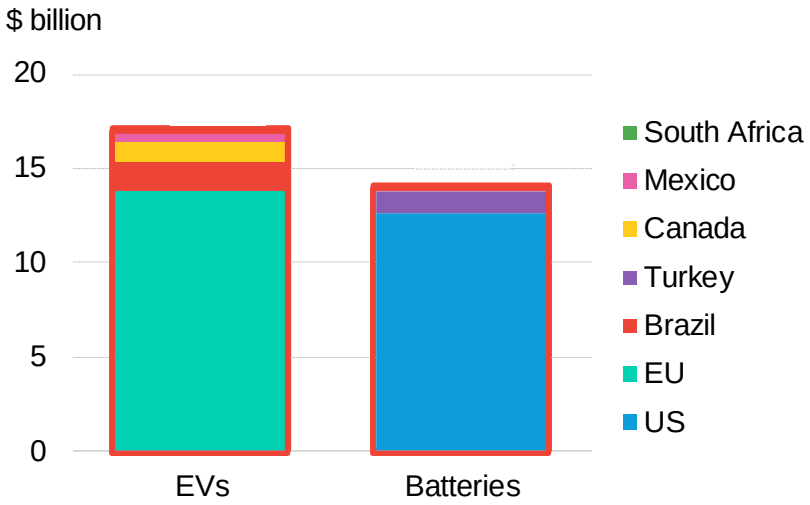
Increased tariffs added over $31 billion to EV and battery imports

Value of global EV and battery imports by applicable tariff over 2024



Source: BloombergNEF, Sinoimex. Note: Value of imports through October. Import tariffs tracked across Group of 20 members, which account for the bulk of imports for the sectors shown.

Value of EV and battery imports on which tariffs increased over 2024



Source: BloombergNEF, Sinoimex. Note: Value of imports through October.

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President Trump announced additional tariffs on imports from Canada, Mexico and China

FACT SHEETS

FACT SHEET: PRESIDENT DONALD J. TRUMP IMPOSES TARIFFS ON IMPORTS FROM CANADA, MEXICO AND CHINA

February 1, 2025

ADDRESSING AN EMERGENCY SITUATION: The extraordinary threat posed by illegal aliens and drugs, including deadly fentanyl, constitutes a national emergency under the International Emergency Economic Powers Act (IEEPA).

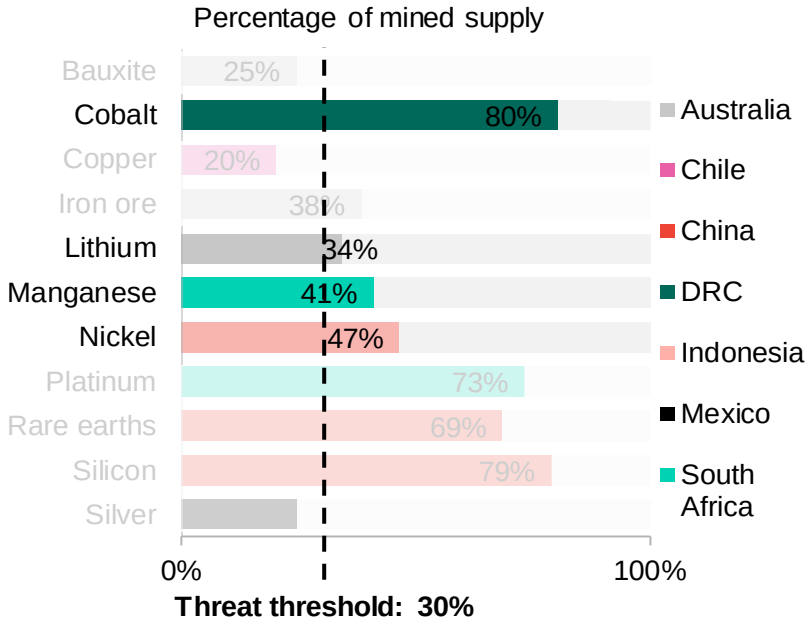
- Until the crisis is alleviated, President Donald J. Trump is implementing a 25% additional tariff on imports from Canada and Mexico and a 10% additional tariff on imports from China. Energy resources from Canada will have a lower 10% tariff.

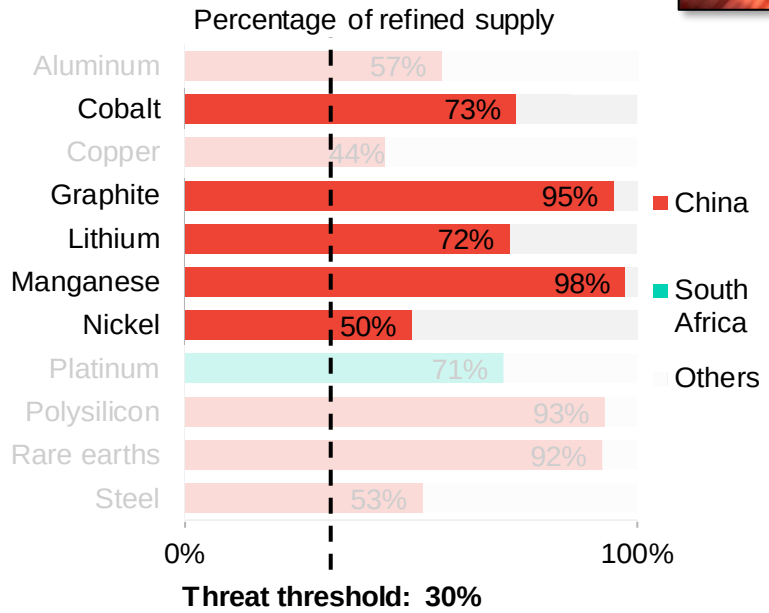
Source: US White House

How can the world compete?

3. Supply chain diversification

Mined and refined supply of energy transition metals in 2023, by top producing country





Source: International Energy Agency, International Manganese Institute, US Geological Survey, World Platinum Investment Council, BloombergNEF. Note: For details see BNEF's Transition Metals Outlook 2024.

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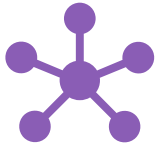
How can the world compete with China's cheap batteries?

Technological innovation

Policy intervention



Supply chain diversification

International collaboration

Thank you!

Get in touch with us

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