State of the EV Industry

2022: A record-breaking year

Evelina Stoikou

February 21, 2023

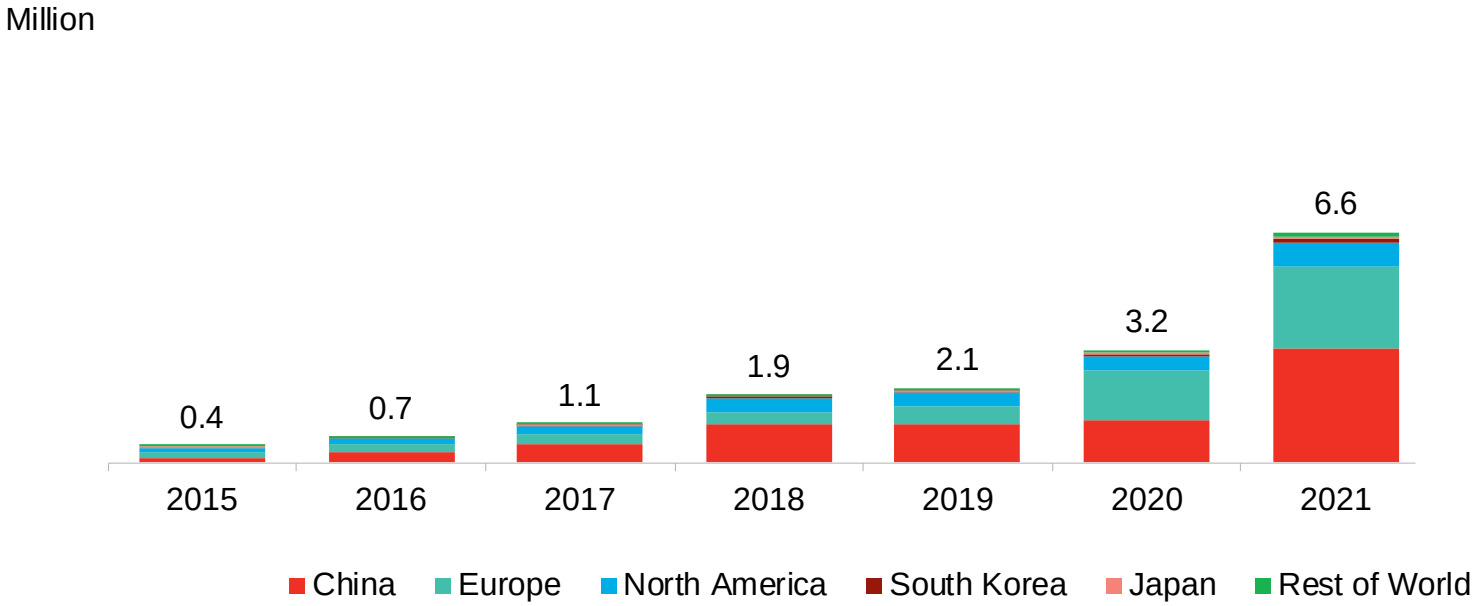
BloombergNEF

The road traveled

Looking back at the EV and battery industry

EV sales hit >6 million in 2021… more than 6x 2017 final sales numbers

Annual passenger EV sales by region



Source: BloombergNEF, Marklines.

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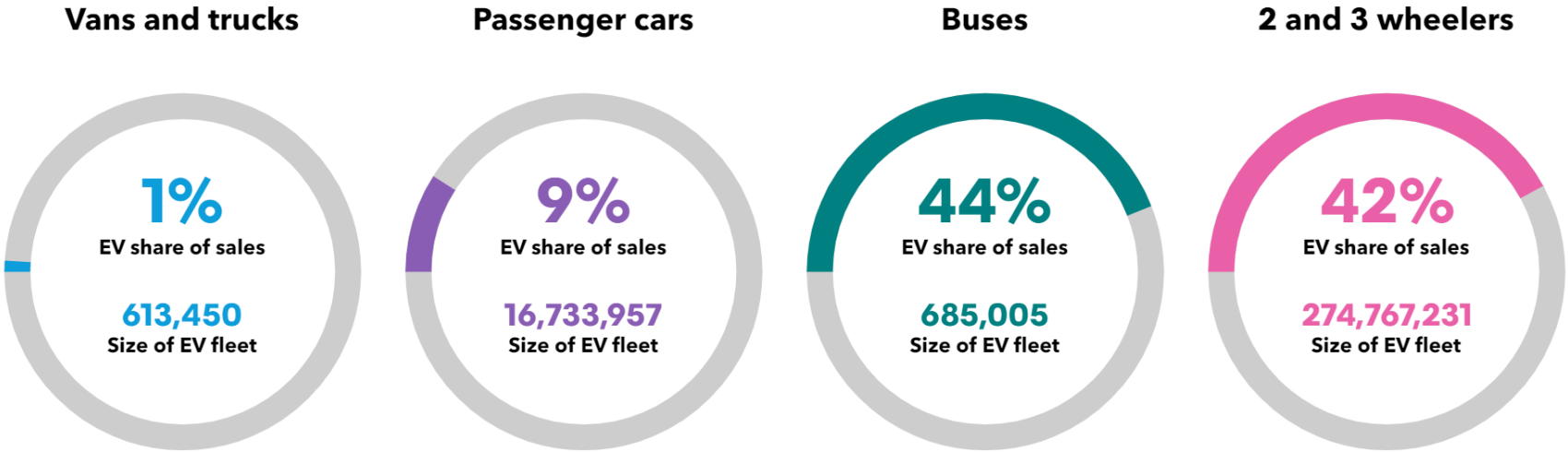
The picture of the EV industry today



Source: BloombergNEF. All data as of end of 2021.

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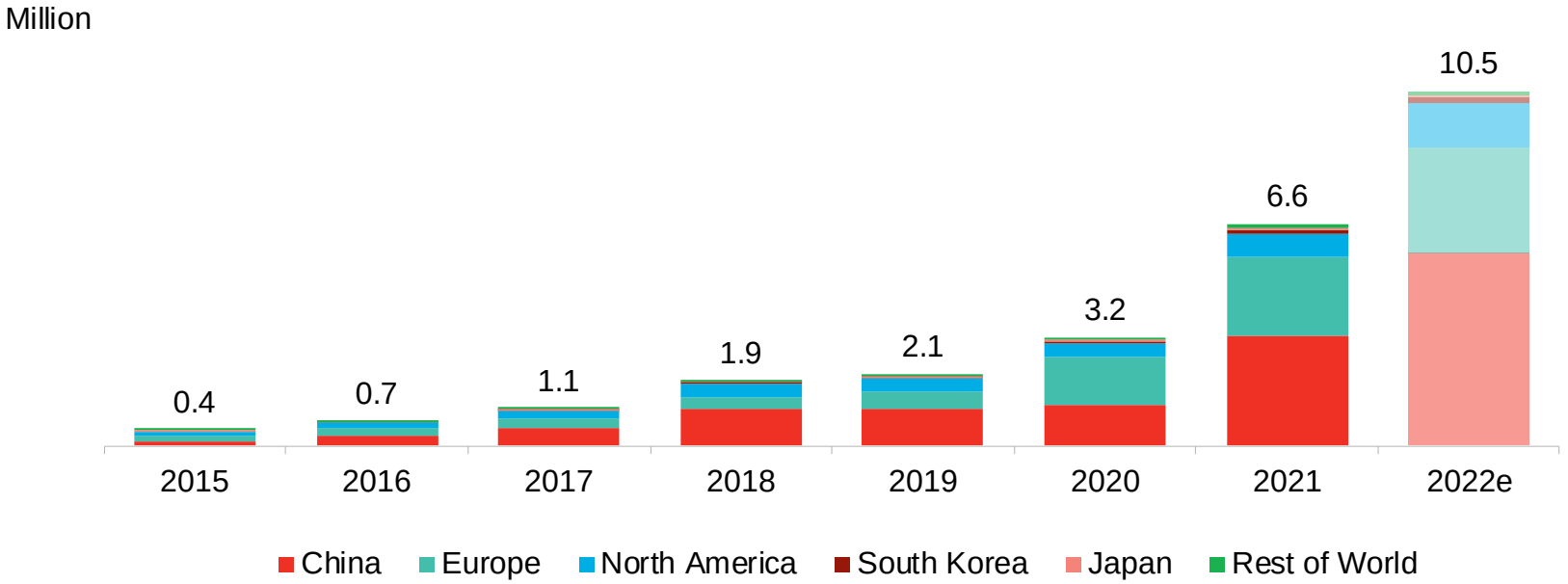
And we're expecting a record-breaking 2022 of > 10 million sales

Annual passenger EV sales by region



Source: BloombergNEF, Marklines.

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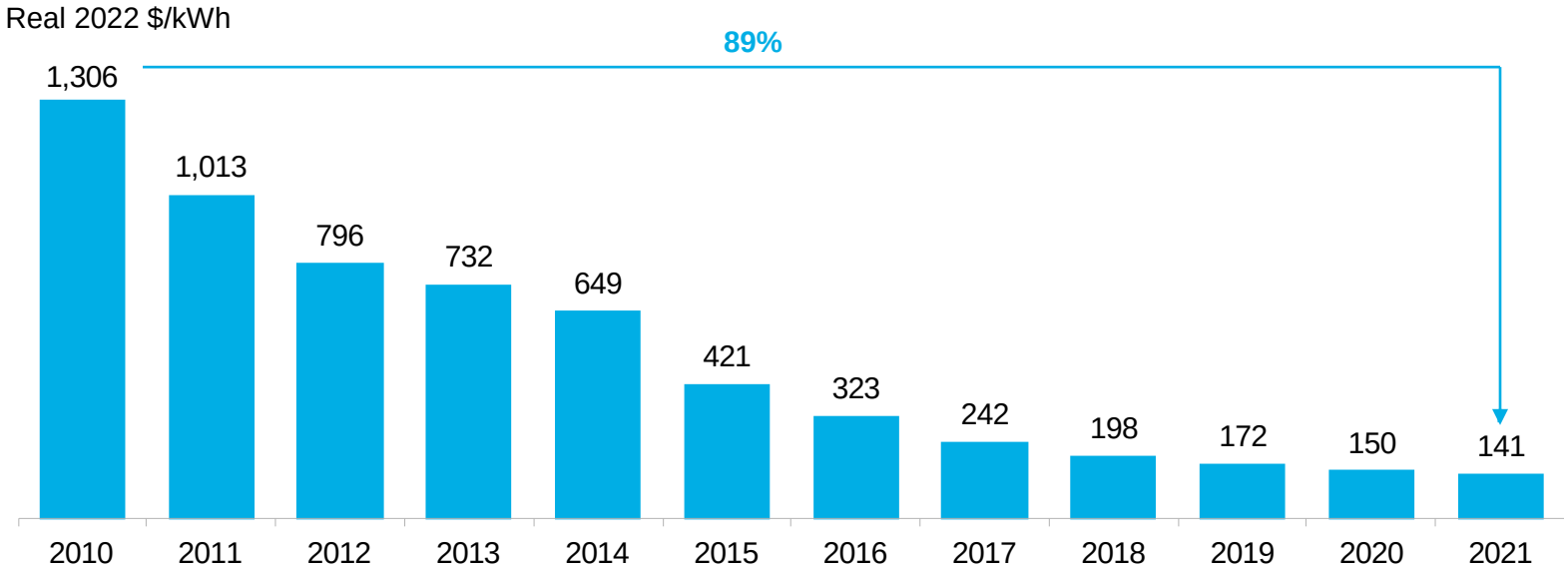
But not all the records broken in 2022 were good

Source: Bloomberg

Declining battery prices were key in lowering EV costs

Volume-weighted average lithium-ion battery pack prices



Source: BloombergNEF. Note: Historical prices have been adjusted using June 2021 to June 2022 inflation rates based on the US Consumer Price Index (CPI) index.

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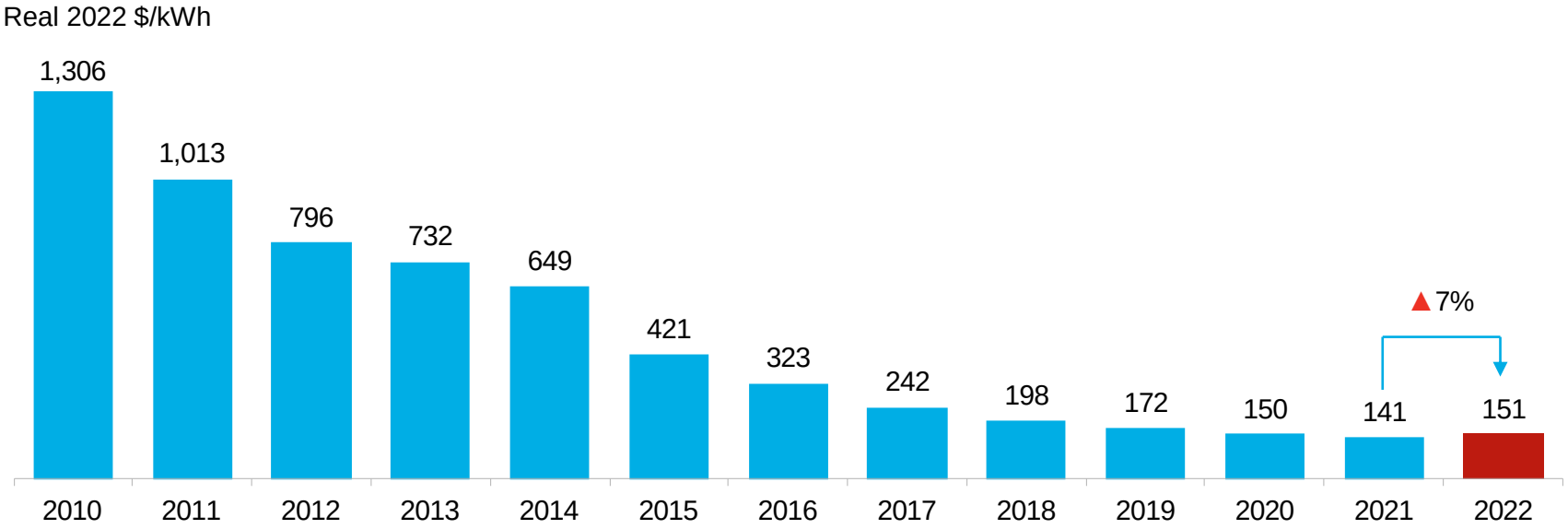
However, battery prices increased for the first time in 2022

Volume-weighted average lithium-ion battery pack prices



Source: BloombergNEF. Note: Historical prices have been adjusted using June 2021 to June 2022 inflation rates based on the US Consumer Price Index (CPI) index.

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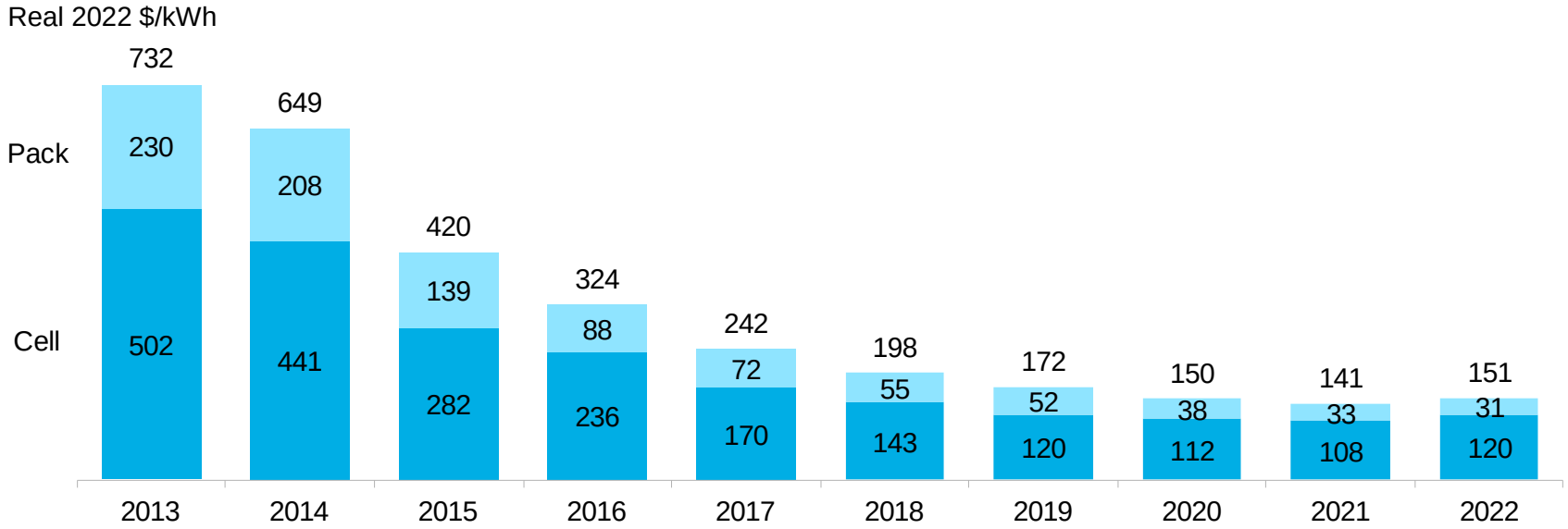
Cell prices increased by 11% in 2022 compared to the previous year

Volume-weighted average lithium-ion battery pack prices: pack and cell split



Source: BloombergNEF. Note: Historical prices have been adjusted using June 2021 to June 2022 inflation rates based on the US Consumer Price Index (CPI) index.

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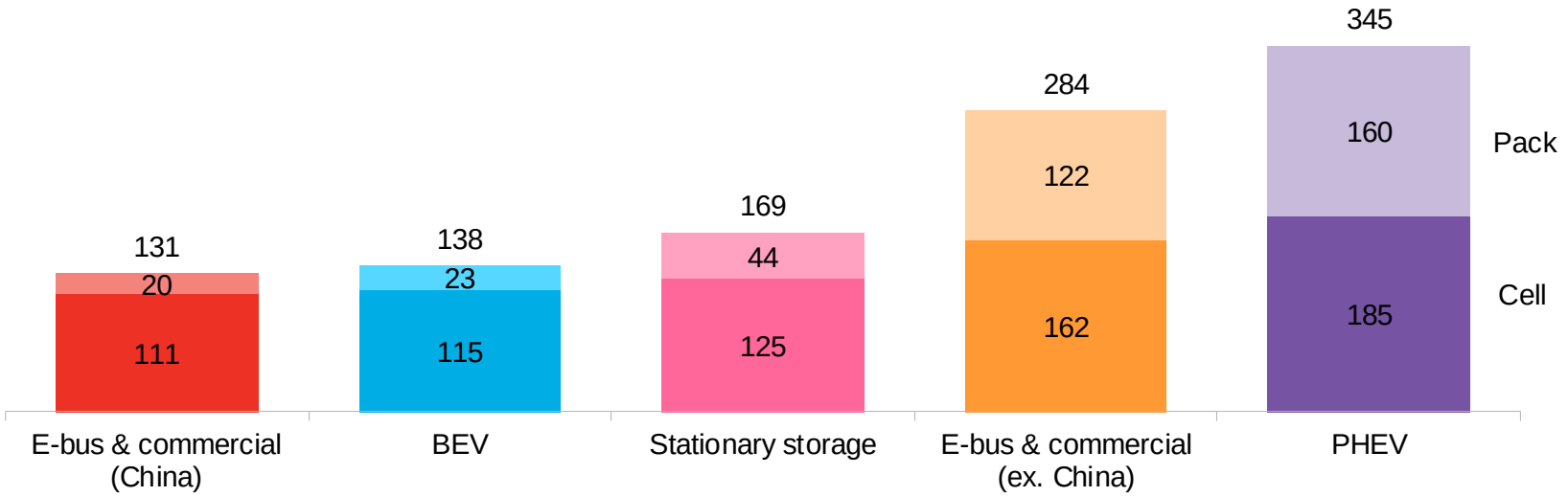
Battery prices for EVs reached $138/kWh

Volume-weighted average lithium-ion battery prices by sector: pack and cell split

real 2022 $/kWh



Source: BloombergNEF

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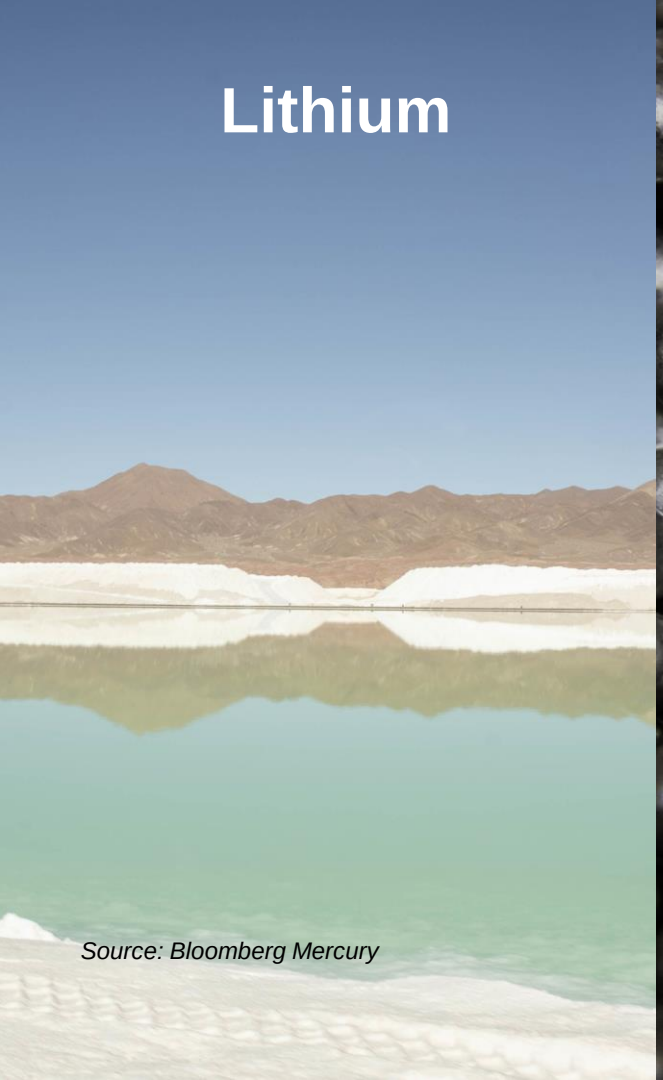
Lithium



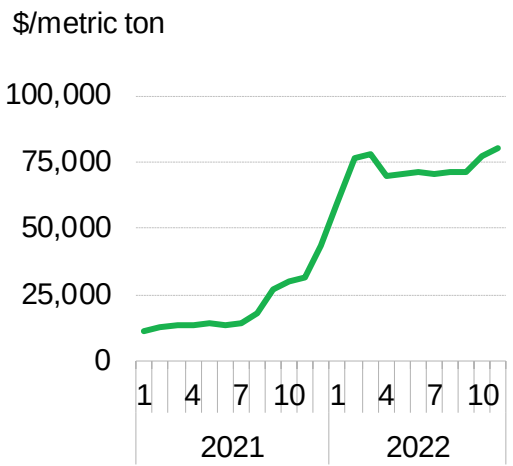
Source: Bloomberg Mercury

Nickel

Cobalt

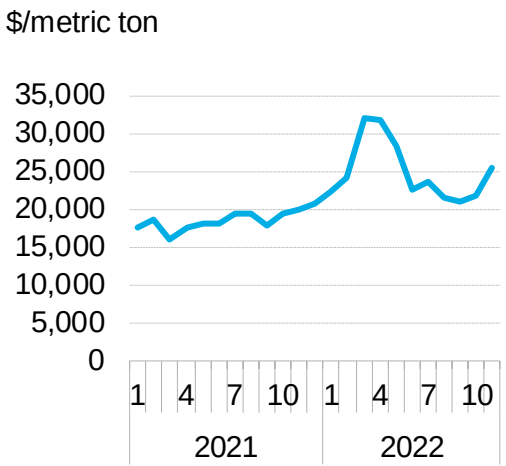
Prices for key battery metals went up

Lithium carbonate prices



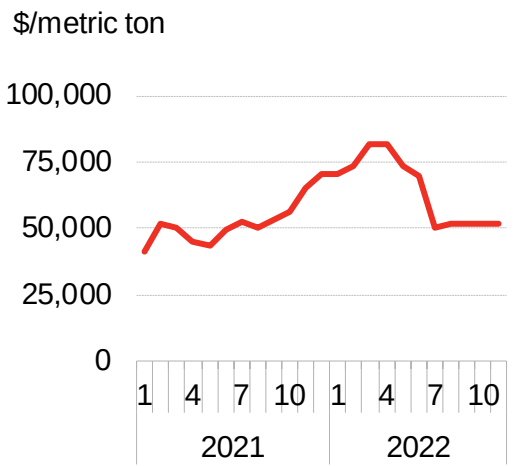
Source: BloombergNEF, Asian Metal. Note: Used China lithium carbonate 99.5% DEL and China lithium hydroxide monohydrate 56.5% DEL index.

Nickel prices



Source: BloombergNEF, London Metal Exchange (LME). Note: Used LME Nickel three-month rolling forward index.

Cobalt prices



Source: BloombergNEF, London Metal Exchange (LME). Note: Used LME Cobalt spot index.

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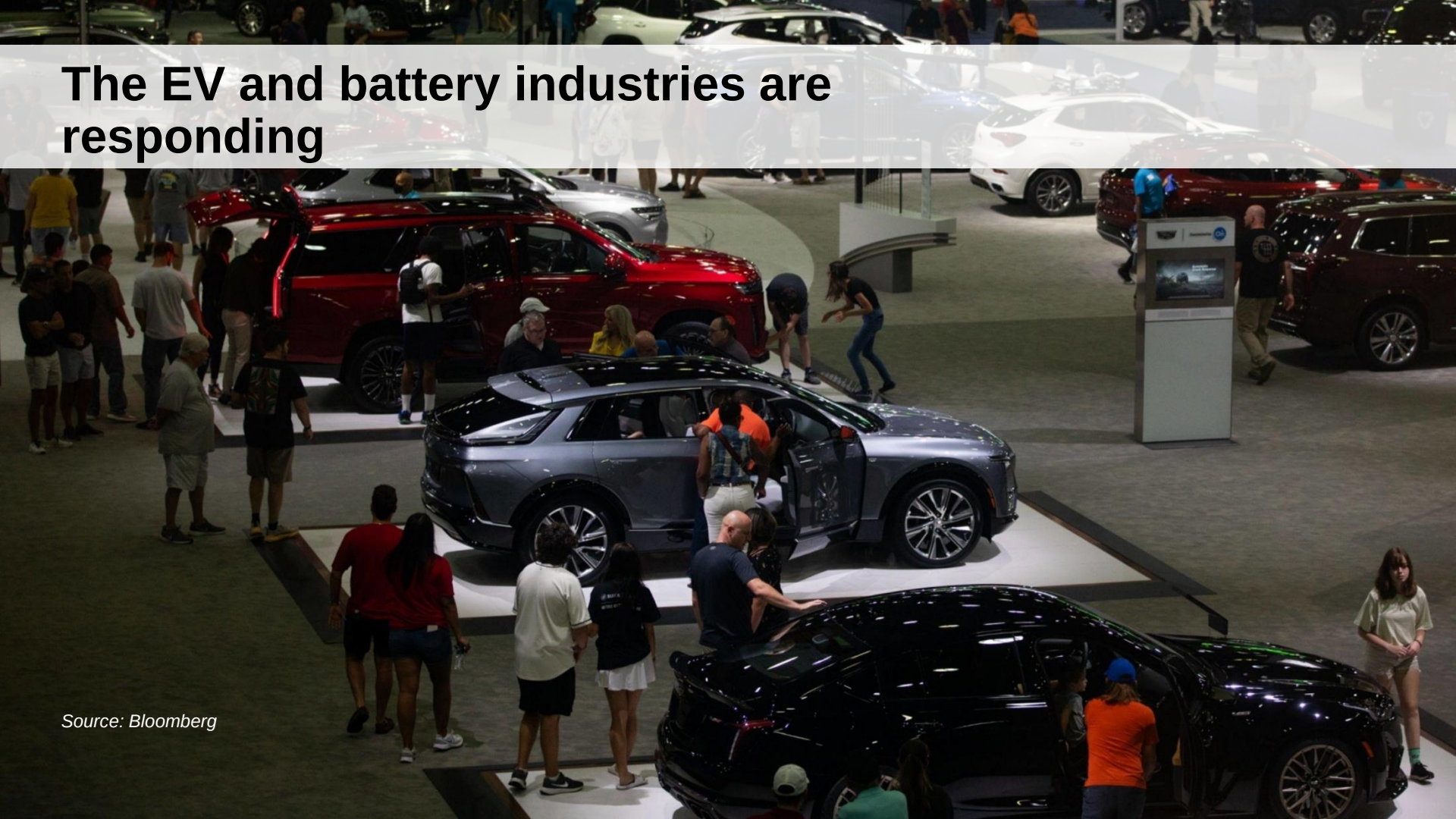
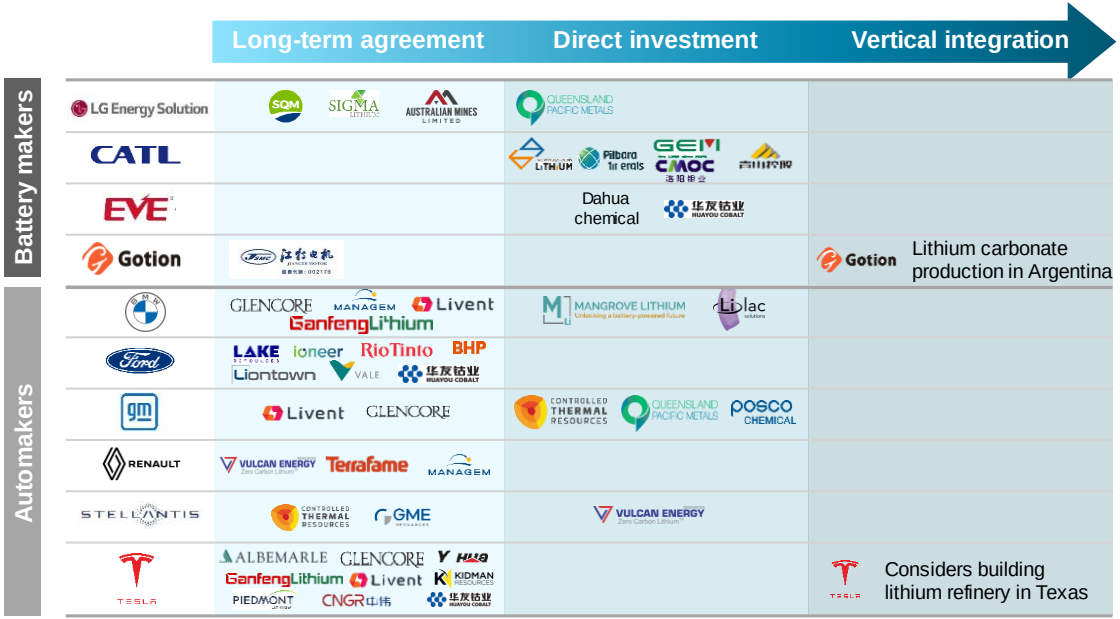
The EV and battery industries are responding



Source: Bloomberg

Battery makers and automakers invest upstream

Selected automaker and battery manufacturer raw material supply strategies



Source: BloombergNEF, company statements.

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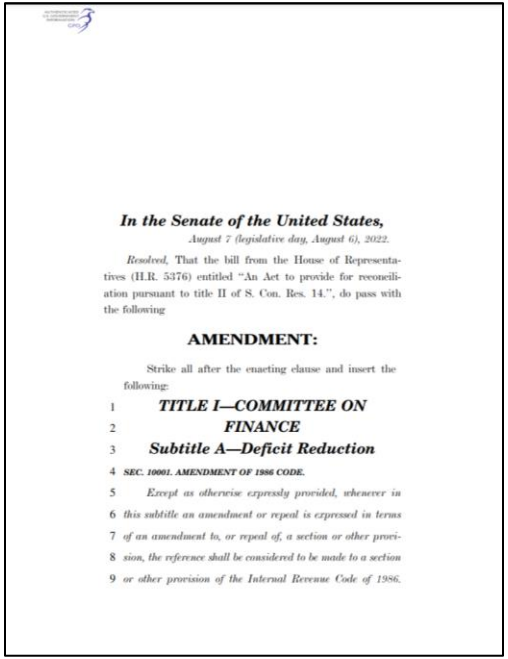
The story in North America

EV and battery supply chains are emerging

New US climate bill is a gamechanger



In the Senate of the United States,

August 7 (legislative day, August 6), 2022.

Resolved, That the bill from the House of Representatives (H.R. 5376) entitled "An Act to provide for reconciliation pursuant to title II of S. Con. Res. 14.", do pass with the following

AMENDMENT:

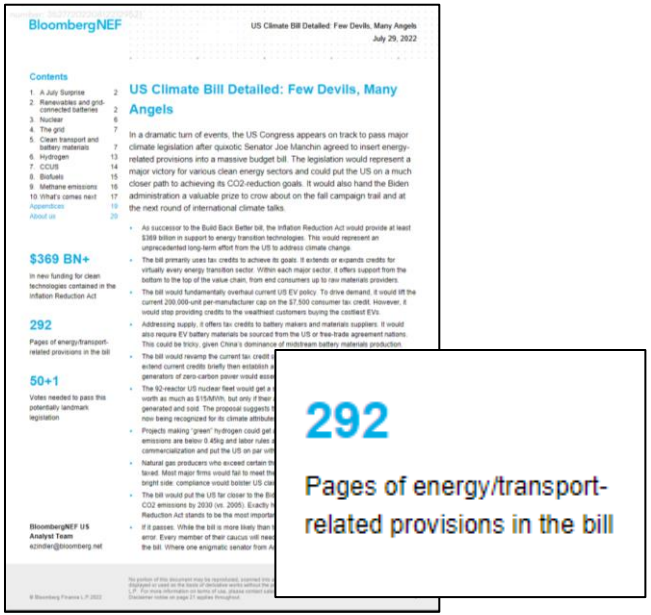
Strike all after the enacting clause and insert the following:

TITLE I—COMMITTEE ON FINANCE

Subtitle A—Deficit Reduction

SEC. 10001. AMENDMENT OF 1986 CODE.

Except as otherwise expressly provided, whenever in this subtitle an amendment or repeal is expressed in terms of an amendment to, or repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of the Internal Revenue Code of 1986.



Inflation Reduction Act

Source: BloombergNEF, Bloomberg

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IRA introduces multiple battery-related tax credits

Tax credits

	Area	Tax credit
Input materials	Critical minerals*	10% of costs
	Battery electrode active materials	10% of costs
Batteries	Battery cells	$35/kWh
	Battery modules**	$10*/kWh
Applications	EVs***	$7,500**
	Energy storage****	6% (base credit) Up to 30% + 10%

*Source: BloombergNEF. Note: *Critical minerals require mining or refining of the material in the US at specific purity levels. ** Battery module tax credit can go up to $45/kWh for modules which do not use battery cells. ***EV credits include additional incentives for used clean vehicles and commercial clean vehicles, which are not directly tied to battery manufacturing in certain locations so have been removed from this table. ****Energy storage is eligible for additional credits of 10% energy community adder and 10% or 20% environmental justice adder, under specified provisions that will be further clarified by December 31, 2022.*

Select production tax credits are phased out in 2032

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Production tax credits' timeline for battery electrode active materials, cells and modules

*Source: BloombergNEF. Note: *Critical minerals require mining or refining of the material in the US at specific purity levels. ** Battery module tax credit can go up to $45/kWh for modules which do not use battery cells. ***EV credits include additional incentives for used clean vehicles and commercial clean vehicles, which are not directly tied to battery manufacturing in certain locations so have been removed from this table. ****Energy storage is eligible for additional credits of 10% energy community adder and 10% or 20% environmental justice adder, under specified provisions that will be further clarified by December 31, 2022.*

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To access the full $7,500 EV tax credit, automakers need to satisfy two requirements

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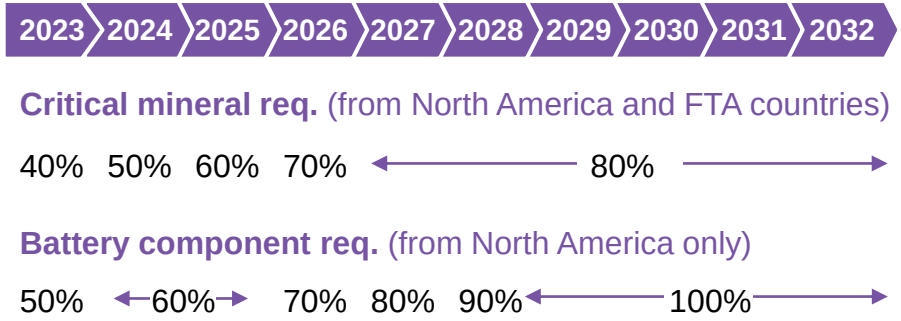
Requirements to access EV credit



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The challenge: IRA origination requirements will be hard to meet

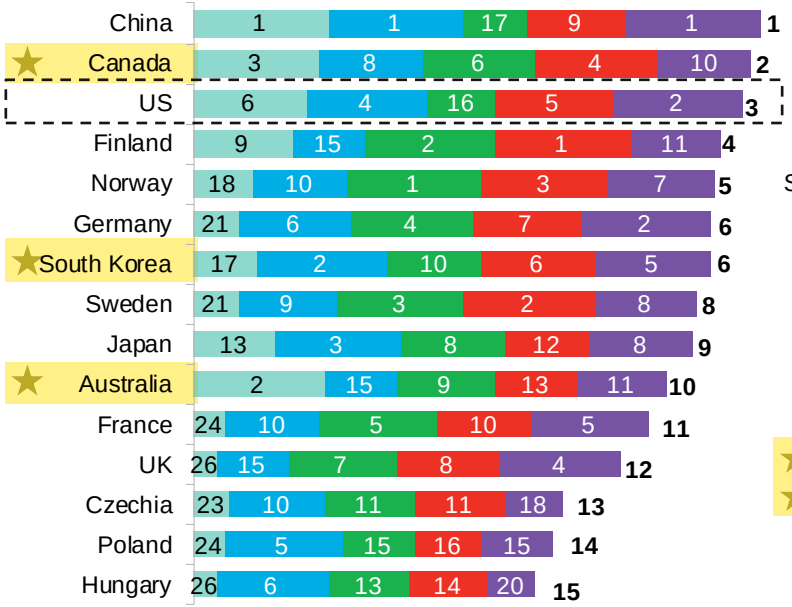
Origination requirements for battery supply chain tax credits

Production tax credits				
Battery electrode active materials, cells and modules requirement	Manufactured in:	US		
EV tax credit				
Critical mineral requirement	Extracted or processed in:	US		
		FTA countries*		Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Singapore and South Korea
	Recycled in:	North America**	US	
			Canada	
			Mexico	
Battery component requirement	Manufactured or assembled in:	North America**	US	
			Canada	
			Mexico	

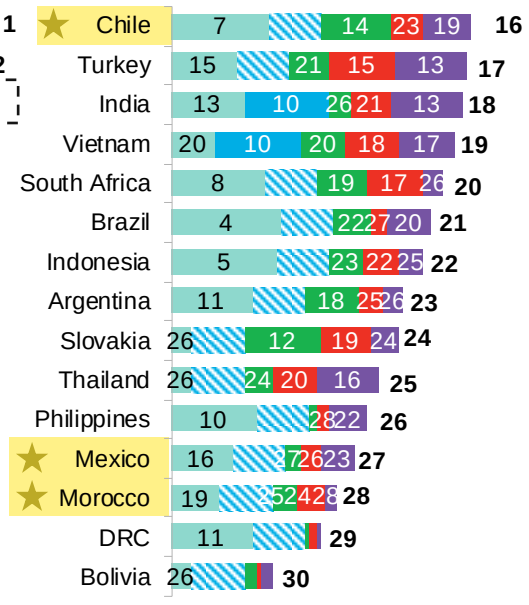
*Source: BloombergNEF, state.gov. Note: *US has free trade agreements (FTA) in force with 20 countries. **Table includes selected large countries in North America region.*

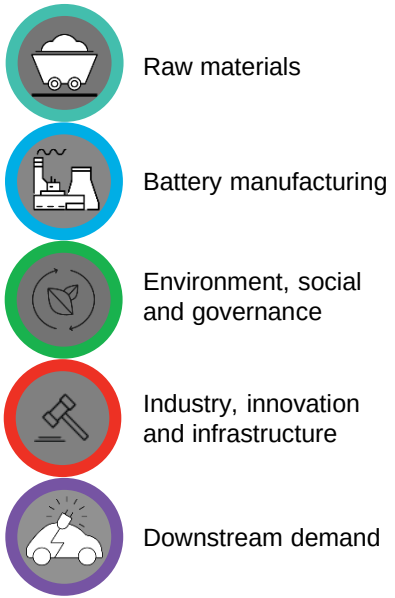
Global battery supply chain rankings summary: 2022

Top 15



Rank 16 - 30





Source: BloombergNEF. Note: Segment bars represent inverse of rankings, e.g. Rank 1= 30. Shaded areas for manufacturing indicate that the country has no capacity and comes joint last in the rankings with other countries. Final rankings are an average of the scores in the five categories and are indicated by the labels at the end of the bars. Starred countries have free trade agreements (FTAs) with the US.

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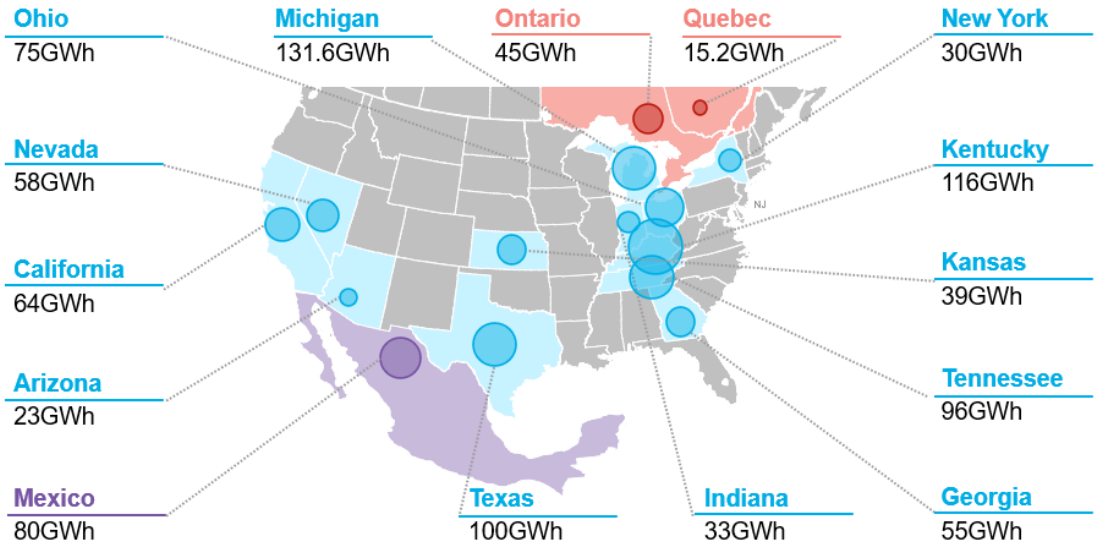
A North American EV battery supply chain is emerging

North America's cell manufacturing activity



Source: BloombergNEF. Note: Capacity includes fully commissioned, under construction and announced battery manufacturing plants. Bubble size corresponds to total capacity commissioned, under construction and announced.

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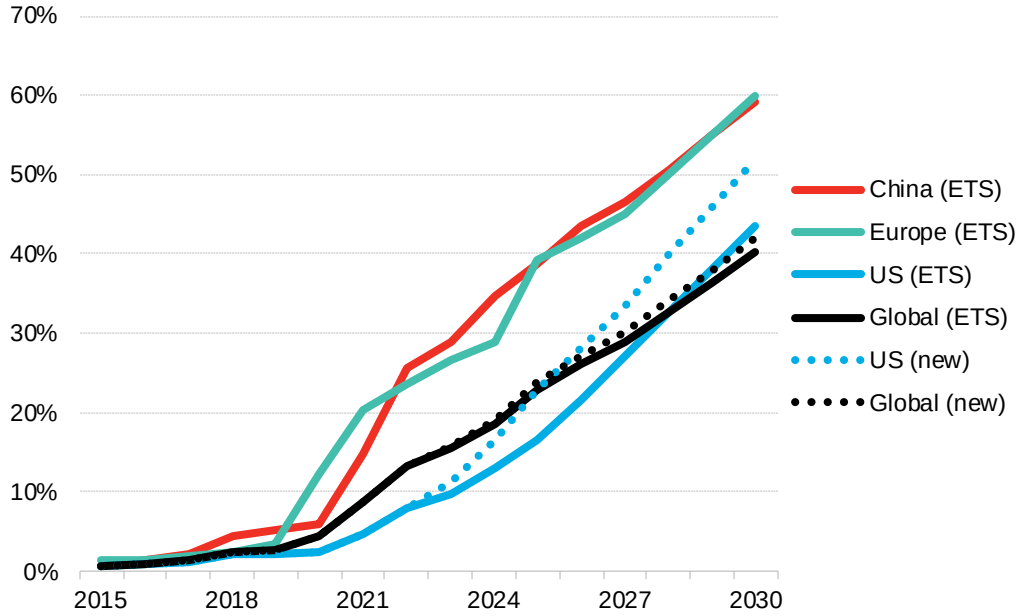
…Though the US still lags behind China and Europe

Passenger EV share of sales outlook



Source: BloombergNEF. Note: ETS is the Economic Transition Scenario from BNEF's Long-Term EV Outlook 2022 (web | terminal).

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Thank you!

Get in touch with us

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BNEF coverage

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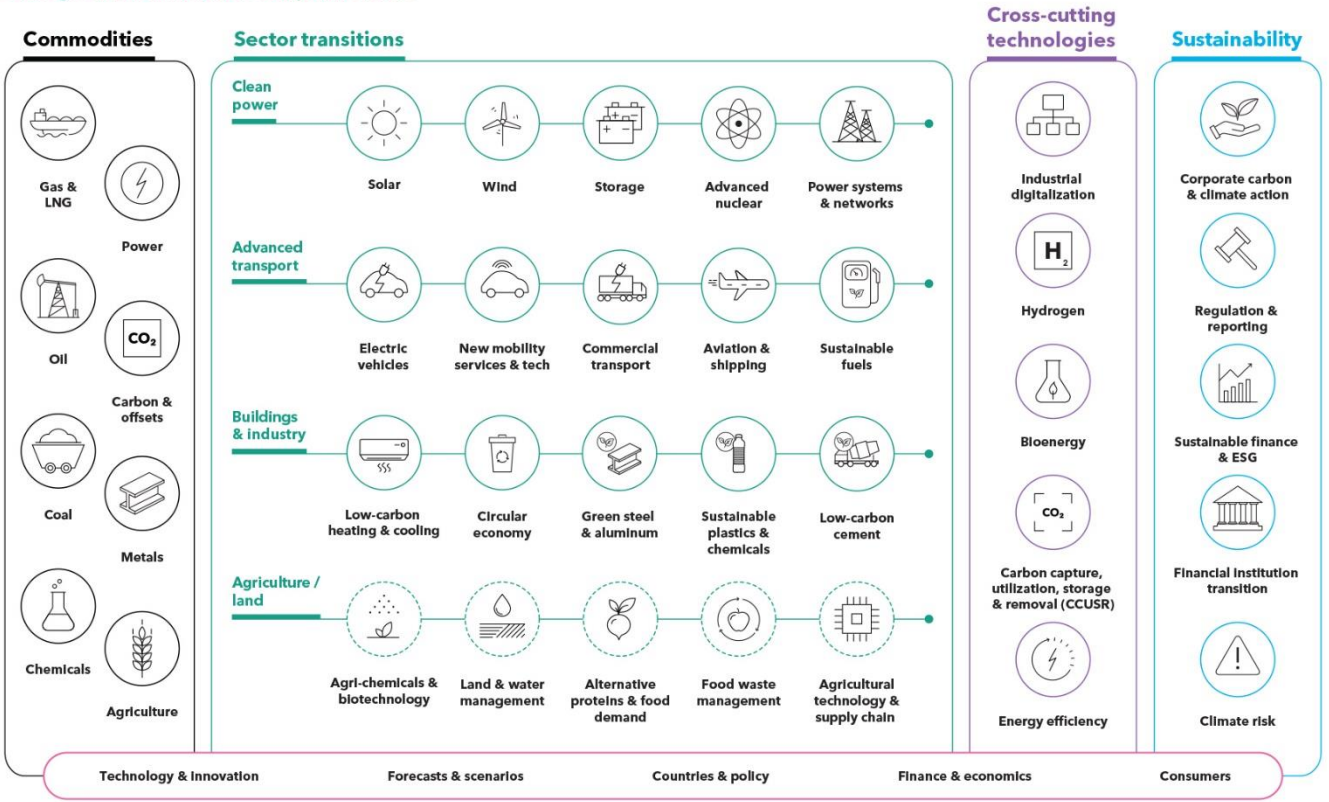
Strategies for a cleaner, more competitive future



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We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities.

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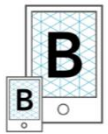

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