

Can the EU and US meet their electric vehicle targets while derisking supply chains?

11 June 2024

Electric vehicle and battery supply chain service



ABNASIA.ORG

Agenda

- 01** Policy landscape for EV adoption and supply chain resiliency
Prateek Biswas
- 02** Ramifications for automakers: balancing consumer demands with commercial viability
Egor Prokhodtsev
- 03** Repercussions for incumbent battery raw material suppliers
Max Reid
- 04** How robust are selective battery supply chains?
Sakshi Mehra
- 05** Feasible mechanisms to decarbonise road transport
Alasia Zhang

Policy landscape for EV adoption and supply chain resiliency

Prateek Biswas

US: Consumer tax credits remain the strongest drivers of EV adoption

Long-term EV growth however hinges upon the stringency of federal emission norms

COMPLIANCE NORMS



EPA Tailpipe Emission Standard

68% EV by 2032



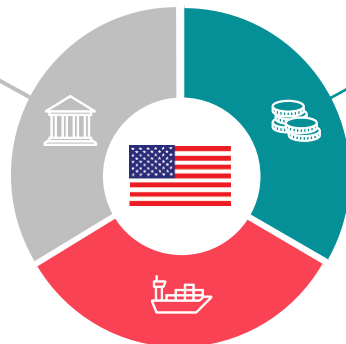
NHTSA Fuel Economy Standard

58 mpg fleet average by 2032



California+ Advanced Clean Cars (ACC II)

100% ZEV by 2035



SUBSIDIES



Clean Vehicle Credit (30D and 45W)

US\$7,500-US\$40,000 tax credit for EVs



Domestic Manufacturing Conversion Grants

US\$2 billion in grants to retrofit auto plants to EV



Advanced Manufacturing Production Credit (45X)

US\$45/kWh for domestic battery production

TRADE RELATIONS



Section 301 tariffs on Chinese products

102.5% tariff on EVs, 27.5% tariff on batteries



Critical Minerals Agreements (CMA)

Free trade agreement specifically pertaining to critical minerals – Japan, EU (potential)



Minerals Security Partnership (MSP)

Collaborated investment in critical mineral projects

Source: Wood Mackenzie

Europe: Tax exemptions and corporate incentives continue to drive EV adoption

Electrification is being aided by lower range requirements and high market acceptance of Chinese investments

COMPLIANCE NORMS



Tailpipe emission standard

100% ZEV by 2035



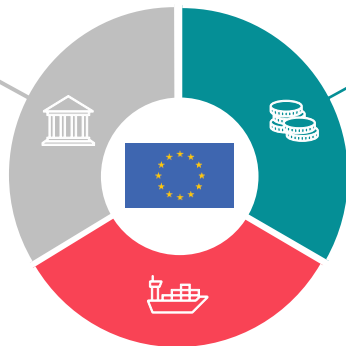
Corporate fleet ZEV mandate (potential)

100% ZEV purchase targets by 2030



Euro 7 battery durability requirements

72% battery durability up to 8 years



SUBSIDIES



Point-of-sale subsidy

Subsidies in France, Italy



Road/registration tax exemptions

Available in France, Germany, Italy, Spain



Aid for domestic manufacturing

State aid available for EV, battery plants

TRADE RELATIONS



Counter-vailing duties on Chinese EVs (potential)

Expected ~25-30% additional duties on Chinese EV imports



EU-MERCOSUR FTA (potential)

Reduced restrictions on imports of lithium from Argentina, Bolivia, nickel from Brazil



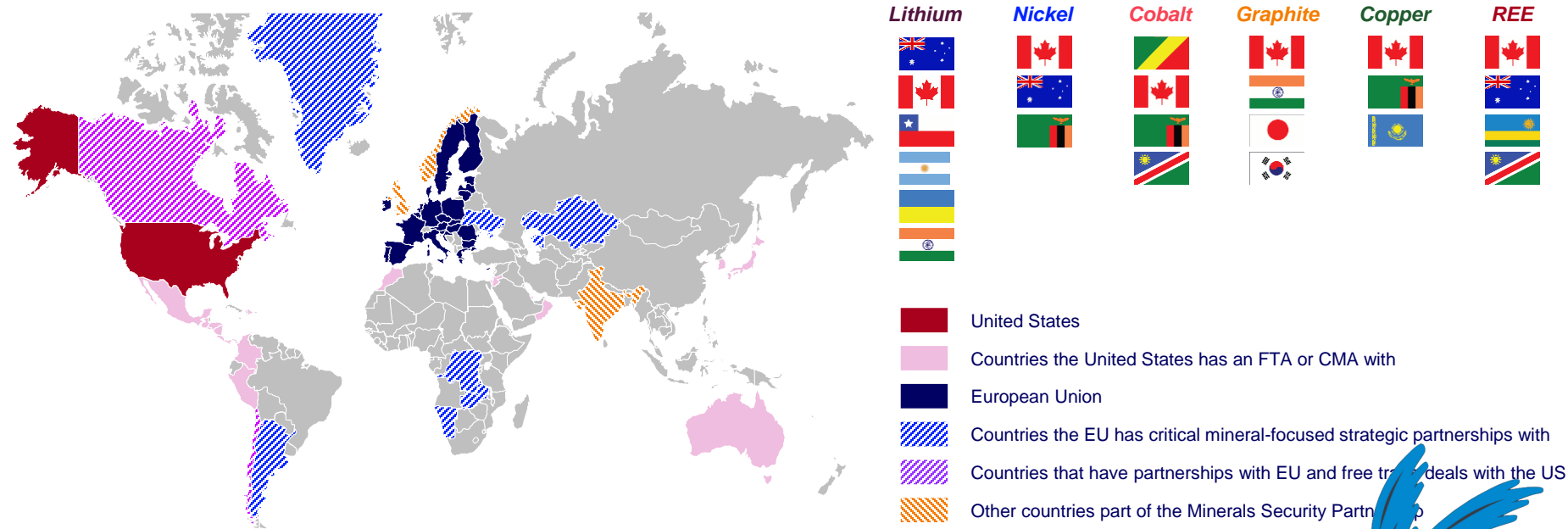
MoUs with Chile, DRC, Zambia, Argentina, Canada

Eased access to battery minerals for EU companies, eased investment rules

Source: Wood Mackenzie

Both US and EU are attempting to diversify their EV supply chains for future resiliency

Trade agreements and “strategic partnerships” are emerging as key tools for reducing reliance on China



Source: Wood Mackenzie, FTA: Free Trade Agreement, CMA: Critical Minerals Agreement, REE: Rare Earth Elements, Graphite includes both natural and synthetic versions

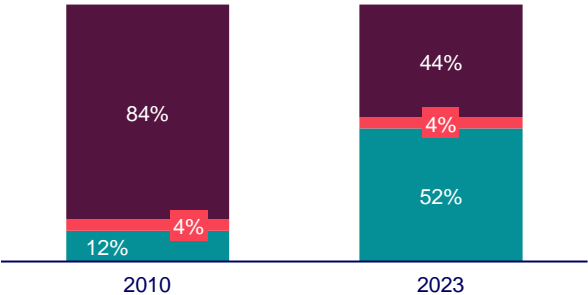
Ramifications for automakers

Egor Prokhodtsev

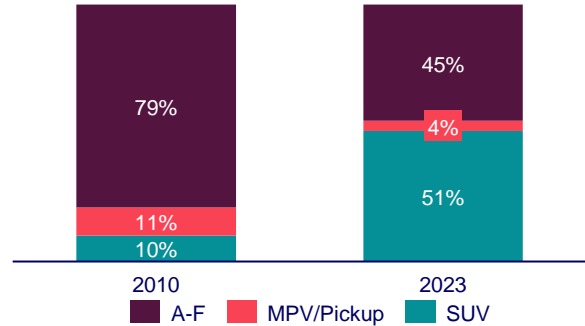
Since 2010 the automotive market has strongly shifted to SUV vehicle segments

Long-standing regional leaders face the challenge of required emission reduction and electrification rates

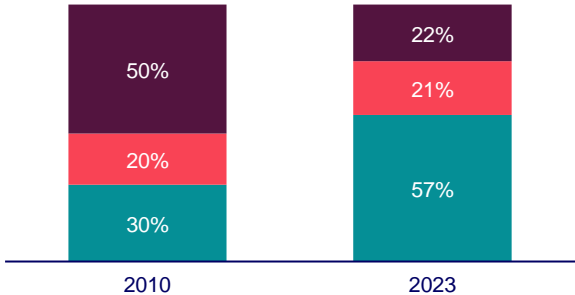
Vehicle sales by segment, China



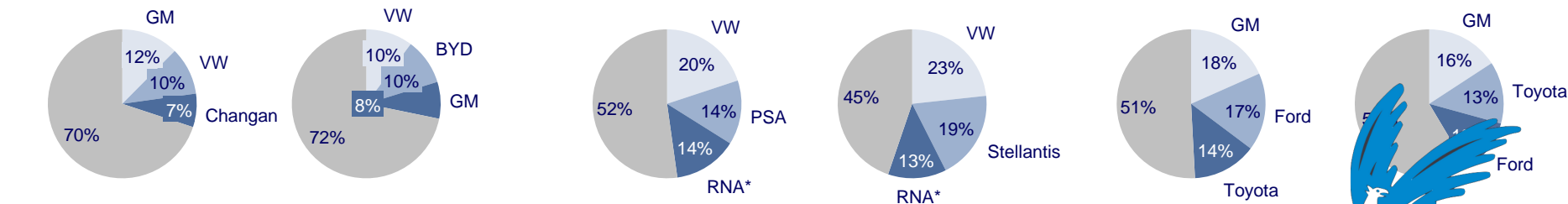
Vehicle sales by segment, Europe



Vehicle sales by segment, N.America



Vehicle sales by automaker group



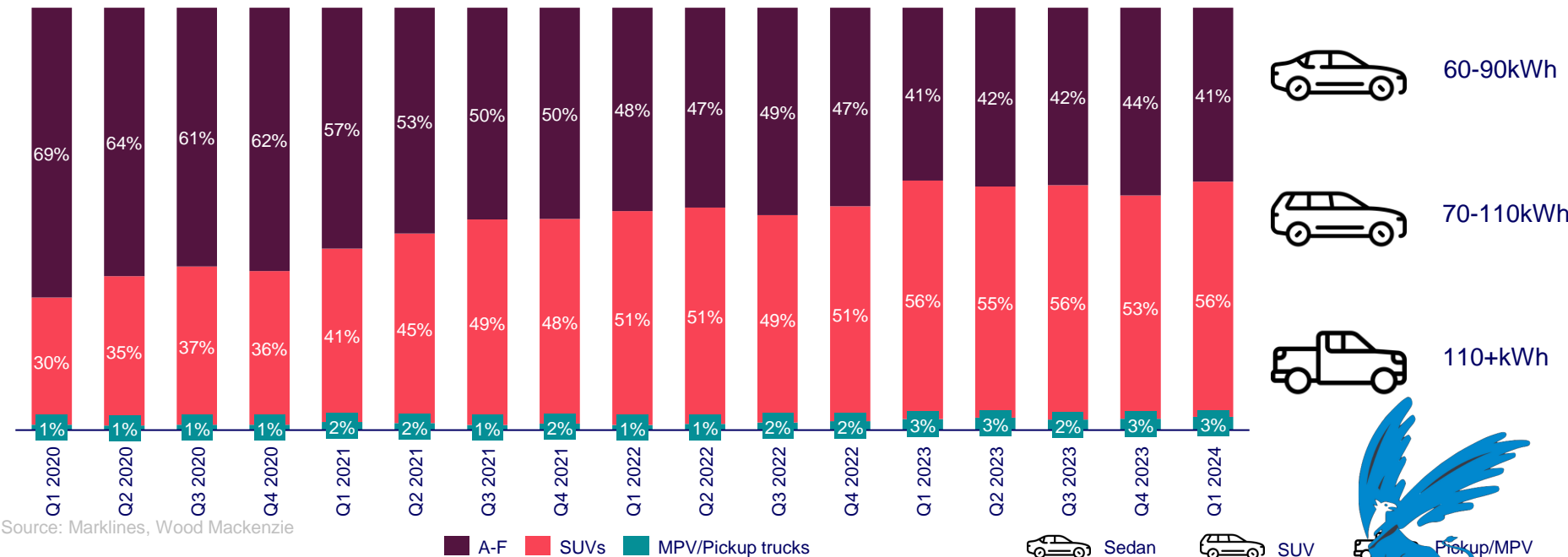
Source: Marklines, Wood Mackenzie

*Renault Nissan Alliance

Plug-in EV segment share is trending with the overall automotive market

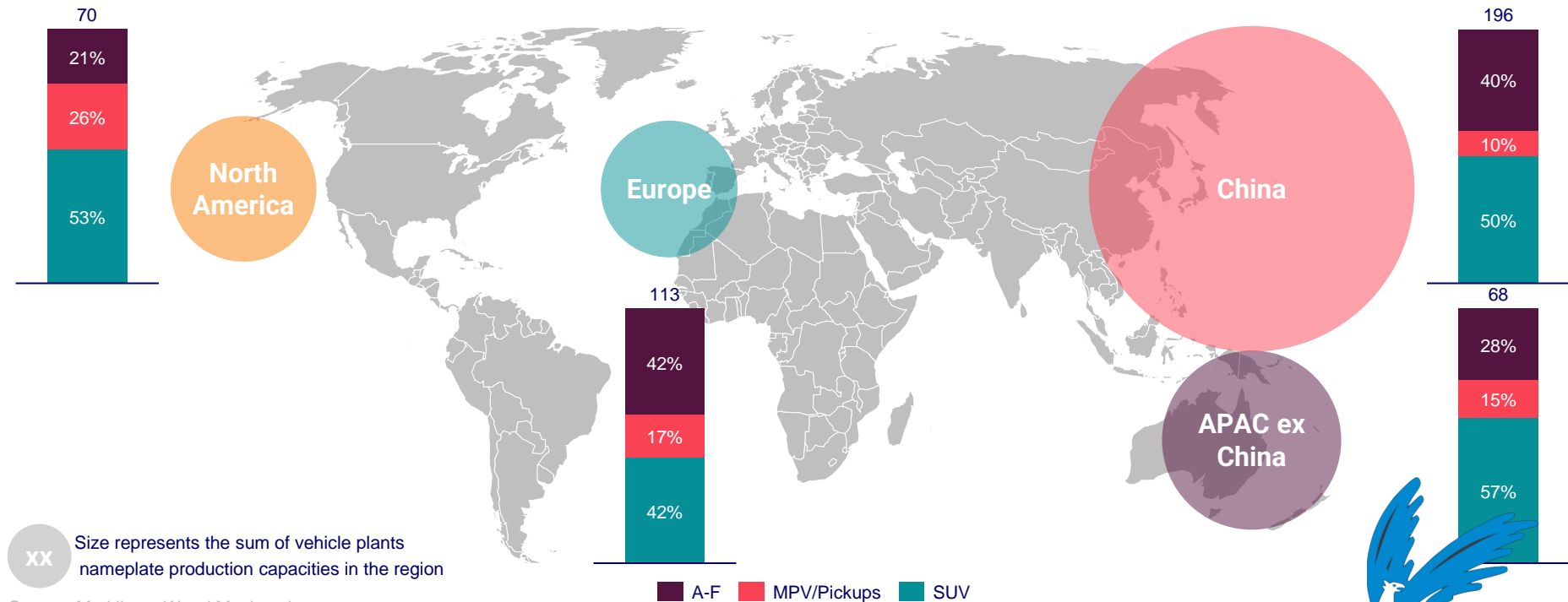
While the battery pack sizes for SUVs and A-F segments overlap, SUVs are generally less energy efficient

Quarterly plug-in EV sales by segment share



Asia-Pacific will remain a leader vehicle producer, both in capacity and model rollout

We don't expect strong shifts in market structure by 2030, with SUVs remaining the most popular segment



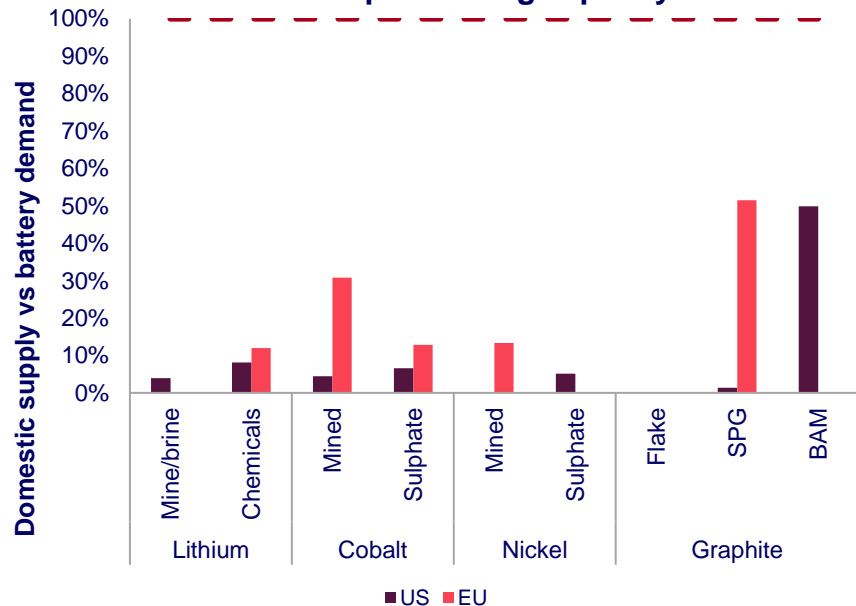
Source: Marklines, Wood Mackenzie

Repercussions for incumbent suppliers

Max Reid

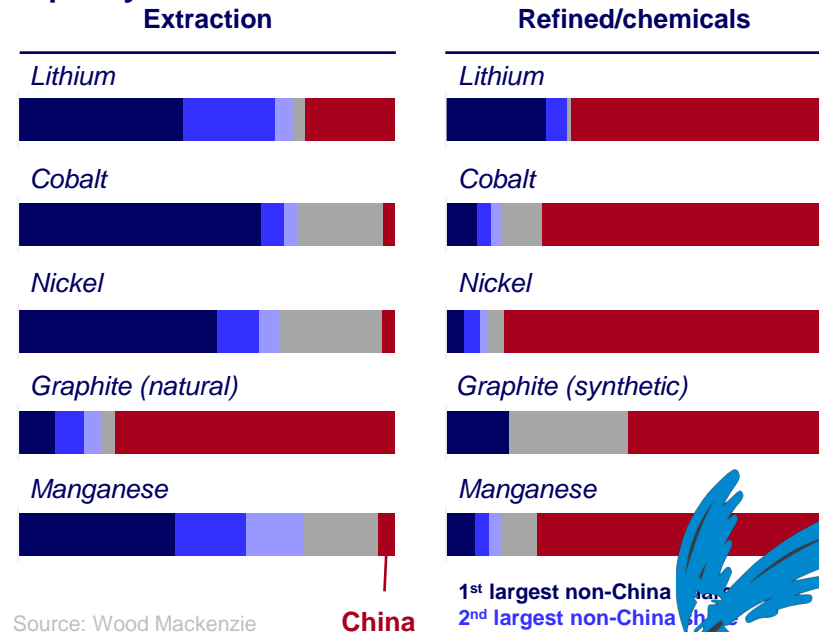
The EU and US will heavily rely on allies to make up for its short-fall in battery raw material supply

The EU and US lack domestic battery raw material resources extraction and processing capacity



Source: Wood Mackenzie

China has a high concentration of battery supply chain capacity



Source: Wood Mackenzie

China

1st largest non-China
2nd largest non-China
3rd largest non-China
All others

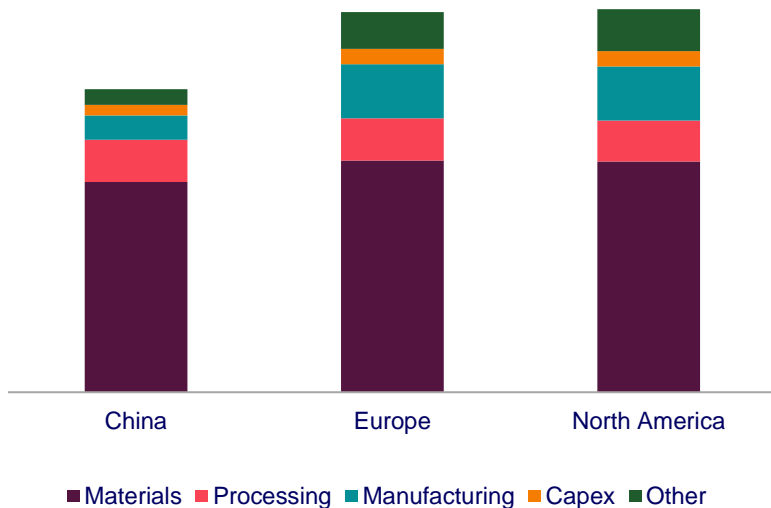


How robust are selective battery supply chains?

Sakshi Mehra

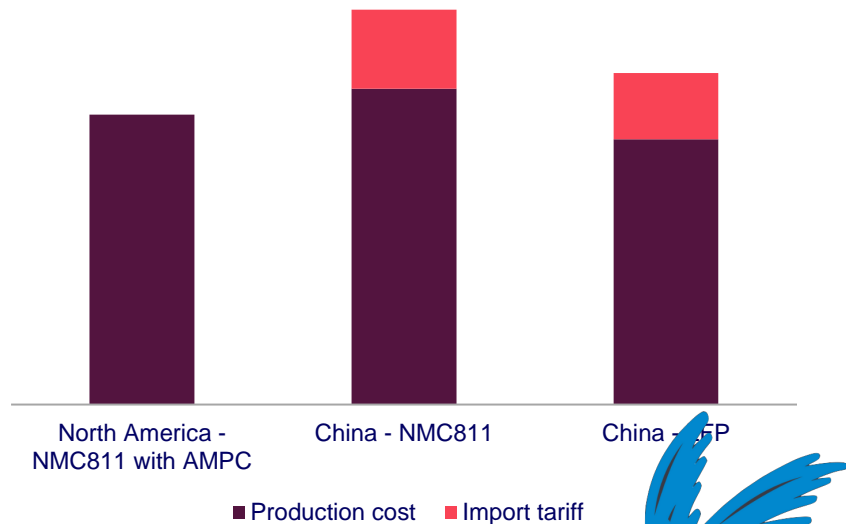
Higher average manufacturing costs hinder the EU and US being competitive in cell production

EV cell costs by region



Source: Wood Mackenzie

Chinese vs domestic cell costs in North America with AMPC and import tariffs



Source: Wood Mackenzie





Feasible mechanisms to decarbonise

Alasia Zhang

Non-battery powertrains are also transitional solutions to decarbonised road transport

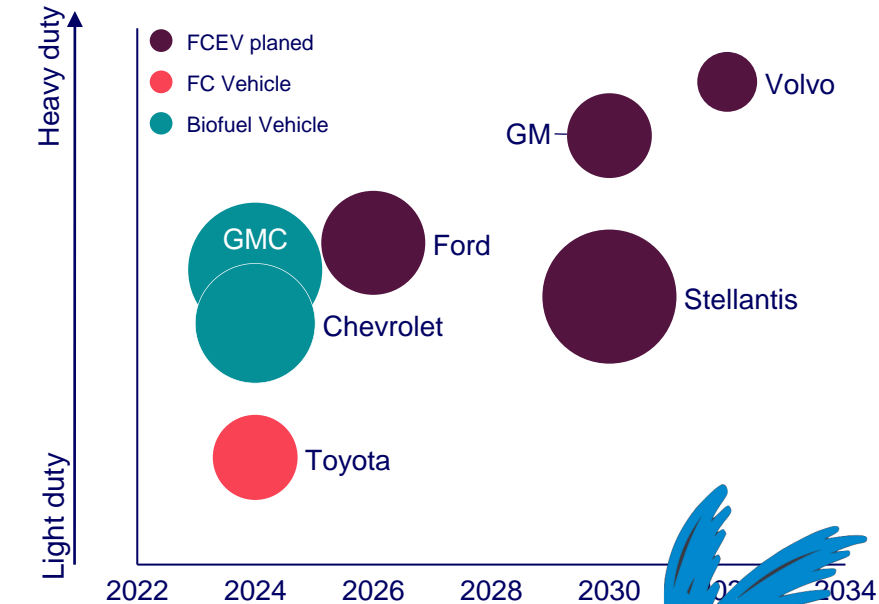
However, EV alternatives are difficult to commercialise by 2035

Comparison chart of different powertrain types

	Technology capabilities			
	 xEV	 FCEV	 Biodiesel vehicle	 Flexible Fuel Vehicles
Cost Average US\$/vehicle	●●●	●	●●	●●●
Energy Gasoline Gallon Equivalent	●	●●●	●●●	●●
Range km	●●	●●●	●●●	●●●
Carbon offset Potential	●●●	●●●	●●	●●
Accessibility of infrastructure	●●	●	●	●●
Maturity of manufacture	●●●	●	●●●	●●
Policy Support	●●●	●●	●●	●●

Source: Wood Mackenzie

OEMs investing in FC and Bio fuel vehicles



Source: Wood Mackenzie. Size represents model roll-out numbers.

Q&A

Disclaimer

These materials, including any updates to them, are published by and remain subject to the copyright of the Wood Mackenzie group ("Wood Mackenzie"), or its third-party licensors ("Licensors") as relevant, and are made available to clients of Wood Mackenzie under terms agreed between Wood Mackenzie and those clients. The use of these materials is governed by the terms and conditions of the agreement under which they were provided. The content and conclusions contained are confidential and may not be disclosed to any other person without Wood Mackenzie's prior written permission. Wood Mackenzie makes no warranty or representation about the accuracy or completeness of the information and data contained in these materials, which are provided 'as is'. The opinions expressed in these materials are those of Wood Mackenzie, and do not necessarily represent our Licensors' position or views. Nothing contained in them constitutes an offer to buy or to sell securities, or investment advice. Wood Mackenzie's products do not provide a comprehensive analysis of the financial position or prospects of any company or entity and nothing in any such product should be taken as comment regarding the value of the securities of any entity. If, notwithstanding the foregoing, you or any other person relies upon these materials in any way, Wood Mackenzie does not accept, and hereby disclaims to the extent permitted by law, all liability for any loss and damage suffered arising in connection with such reliance.

Copyright © 2024, Wood Mackenzie Limited. All rights reserved.

Europe +44 131 243 4477
Americas +1 713 470 1700
Asia Pacific +65 6518 0888
Email contactus@woodmac.com
Website www.woodmac.com

Wood Mackenzie™ is a trusted intelligence provider, empowering decision-makers with unique insight on the world's natural resources. We are a leading research and consultancy business for the global energy, power and renewables, subsurface, chemicals, and metals and mining industries.

For more information visit: woodmac.com

WOOD MACKENZIE is a trademark of Wood Mackenzie Limited and is the subject of trademark registrations and/or applications in the European Community, the USA and other countries around the world.

