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SOLAR & STORAGE

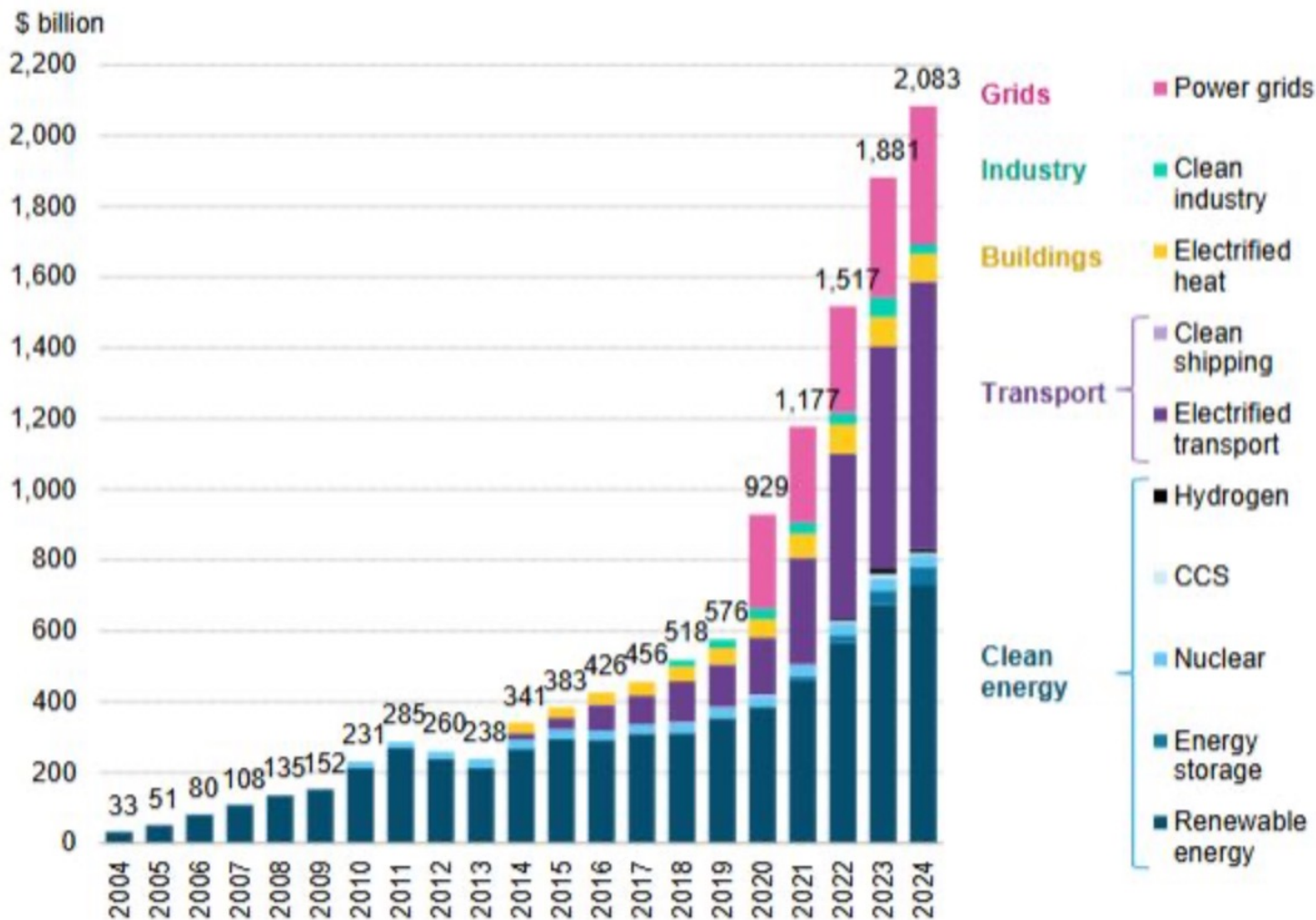
LIVE Queensland

**Exploring the global trend
of EV uptake and the role
of enabling charging
infrastructure**

27 March 2025

China's Cleantech Manufacturing Dominance

The world invested US\$2.1 trillion in cleantech in 2024, +11% yoy



China is Moving in Decarbonisation, Rapidly

China leads the world in firmed renewable energy globally, by far, adding another 50GW of renewables capacity in 2MCY2025 YTD.

New Capacity Installed in China in Jan-Feb 2025

		Jan-Feb 25	% Share of total new adds	% yoy change	Jan-Feb 24	% Share of new adds
Th Office on the web Frame	GW	3.6	7%	-6%	3.9	7%
Hydropower	GW	1.3	2%	45%	0.9	2%
Nuclear Power	GW	-	0%	0%	-	0%
Wind Power	GW	9.1	17%	1%	9.0	17%
Solar Power	GW	39.6	74%	3%	38.4	74%
Total capacity added	GW	53.7	100%	3%	52.2	100%
Renewable Energy adds	GW	50.0	93%	4%	48.3	93%
Zero Emissions Capacity Adds	GW	50.0	93%	4%	48.3	93%
Total new spent on power grid investment	US\$bn	6.0		34%		

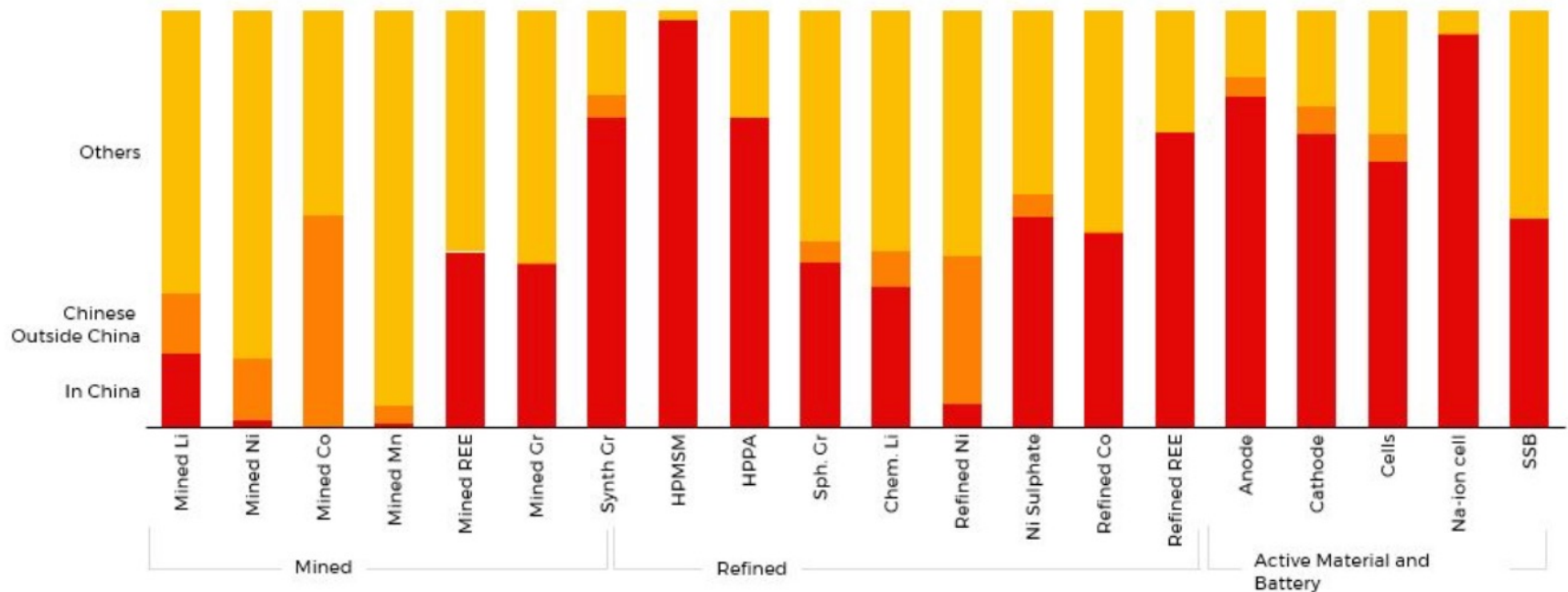
Source: National Energy Administration, Climate Energy Finance Calculations

China is Moving in Decarbonisation, Rapidly

China is increasingly dominating the entire battery supply chain system

China's Grip on the Battery Supply Chain: From Mines to Gigafactories

China Leads the Battery Supply Chain, But It Doesn't Own It All - A Global Breakdown of Mining, Refining, and Manufacturing

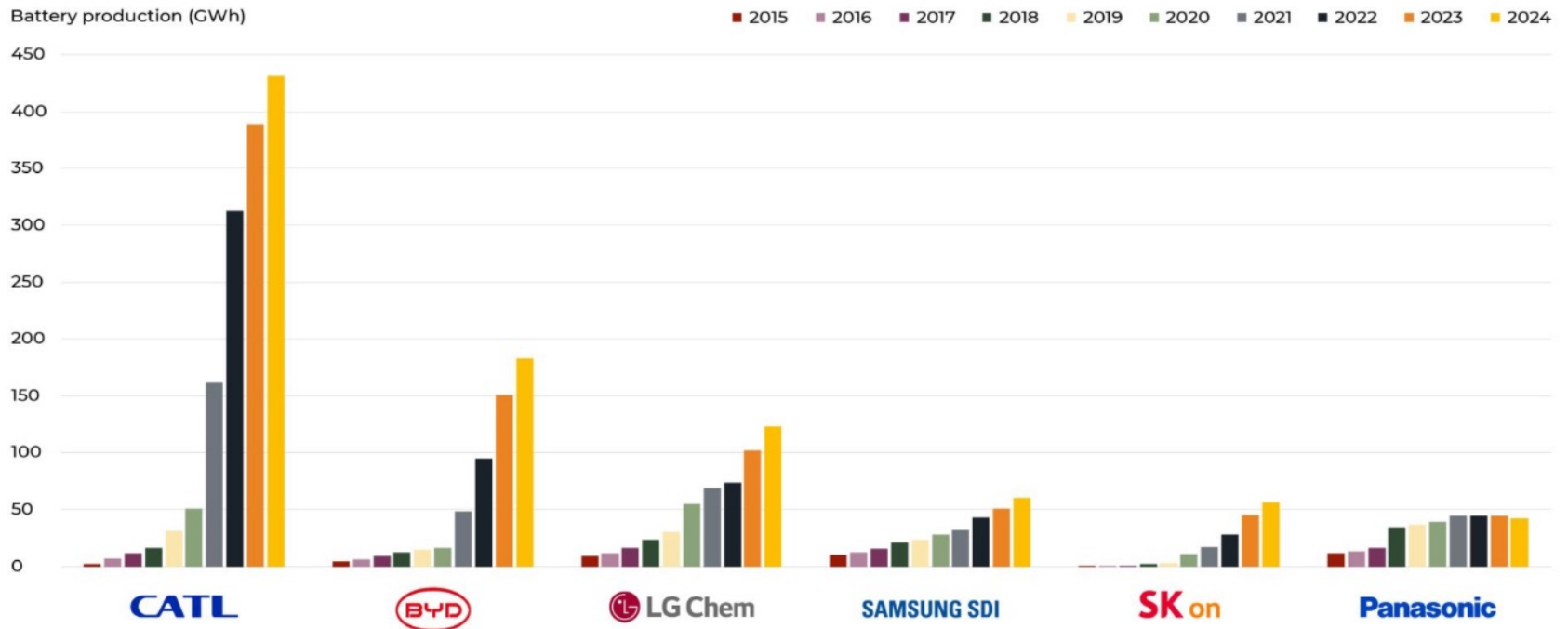


China is Moving in Decarbonisation, Rapidly

China is increasingly dominating the entire battery supply chain system

CATL and BYD account for the majority of Tier 1 battery supply

The two Chinese companies had a combined market share of 33% in 2020 but are forecast to account for 65% of supply in 2024. The chart shows the top six Tier 1 battery manufacturers and battery production reflects gigafactories operated by each company.



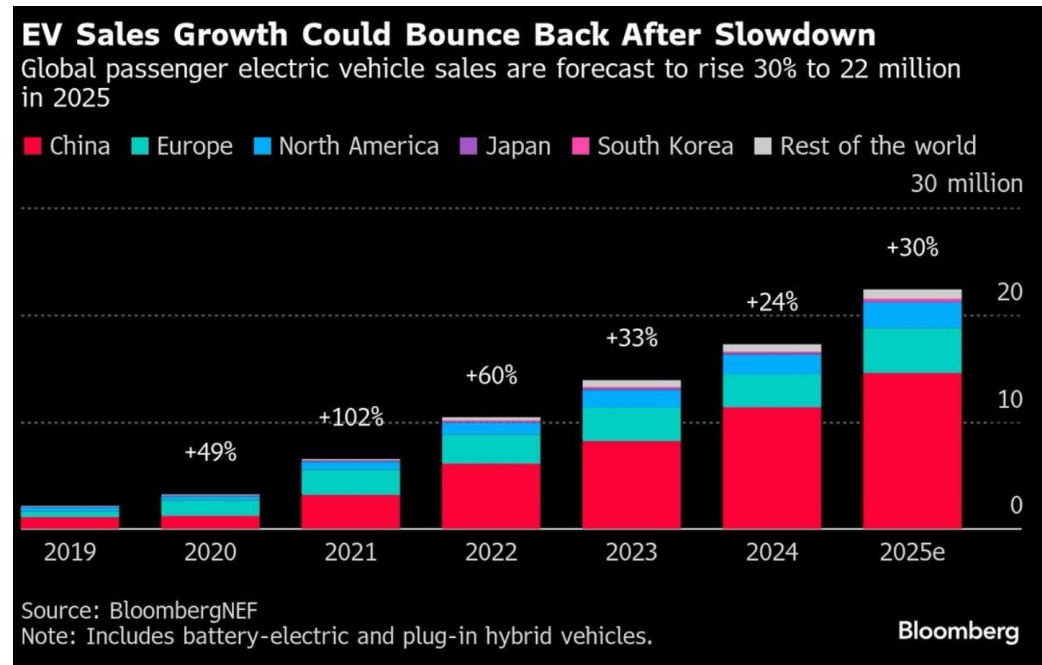
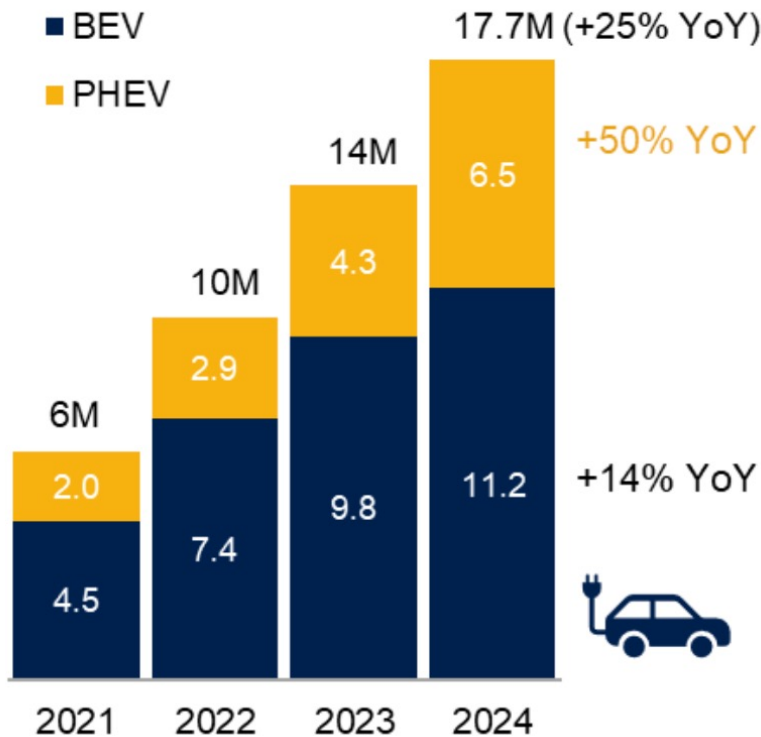
SOURCE: BENCHMARK LITHIUM ION BATTERY FORECAST



China is Moving in Decarbonisation, Rapidly

Despite regular western media reports parroting the stalling of EV sales, global NEV sales grew +25% yoy to 17.7M cars in 2024

GLOBAL LIGHT DUTY EV* SALES, MILLION VEHICLES



Source: GlobalData Auto, Volta Foundation 2024 Battery Report

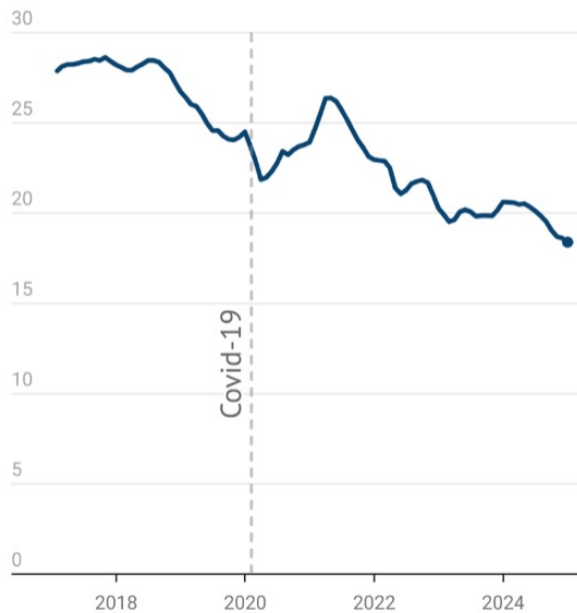
<https://volta.foundation/battery-report-2024>

China New Energy Vehicles

China led the major markets of the world when it comes to new energy vehicles overtaking ICE in the passenger vehicle market in CY2024.

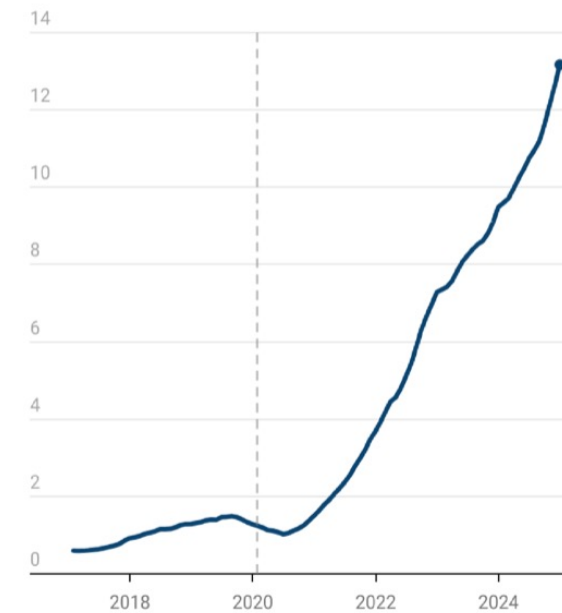
Combustion engine cars

Million units, 12-monthly totals



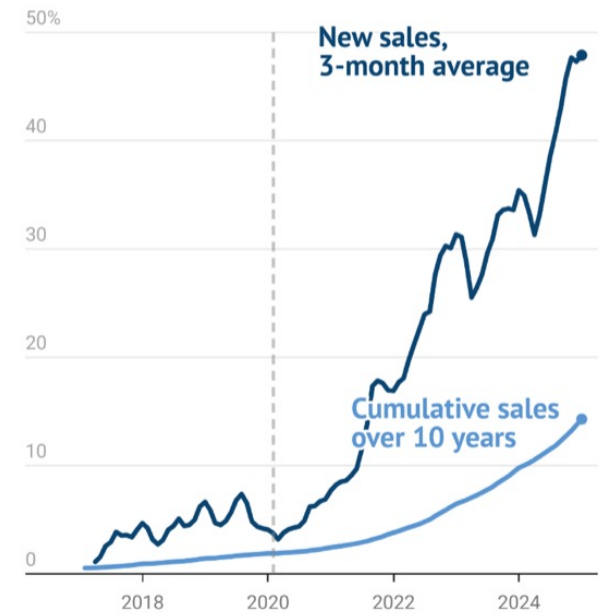
New energy vehicles

Million units, 12-monthly totals



NEV sales share

New energy vehicle share, %



In CY2024 China invested Rmb122bn / US\$17bn in Charging infrastructure, +20% yoy. China also invested US\$194bn in CY2024 in EV manufacturing capacity, and US\$29bn in battery manufacturing.

China New Energy Vehicles

NEV momentum has accelerated to-date in 2025

Snapshot electric vehicle sales in Jan-Feb 2025 vs Jan-Feb 2024, Year to Date (YTD) %

- Global: 2.4 million, +30%
- China: 1.4 million, +35%
- EU & EFTA & UK: 0.5 million, +20%
- USA & Canada: 0.3 million, +20%
- Rest of World: 0.2 million, +35%

Source: RhoMotion, 12 March 2025
<https://rhomotion.com/news/global-ev-sales-up-50-in-february-2025/>

- BYD Global NEV sales in 2MCY2025 were 623,384 vehicles, +92.5% yoy (within this, EV were 250,279 vehicles, +56.2% yoy).
- Tesla's EU sales 45% yoy 2MCY2025 to 25,582 vehicles
- Tesla's China sales in 2MCY2025 were 60,480 -13.6% yoy

‘Greatest brand destruction of our times’: Musk’s Tesla China crisis

BYD has Tesla playing catch-up on technology as production and sales fall in the world’s biggest car market.

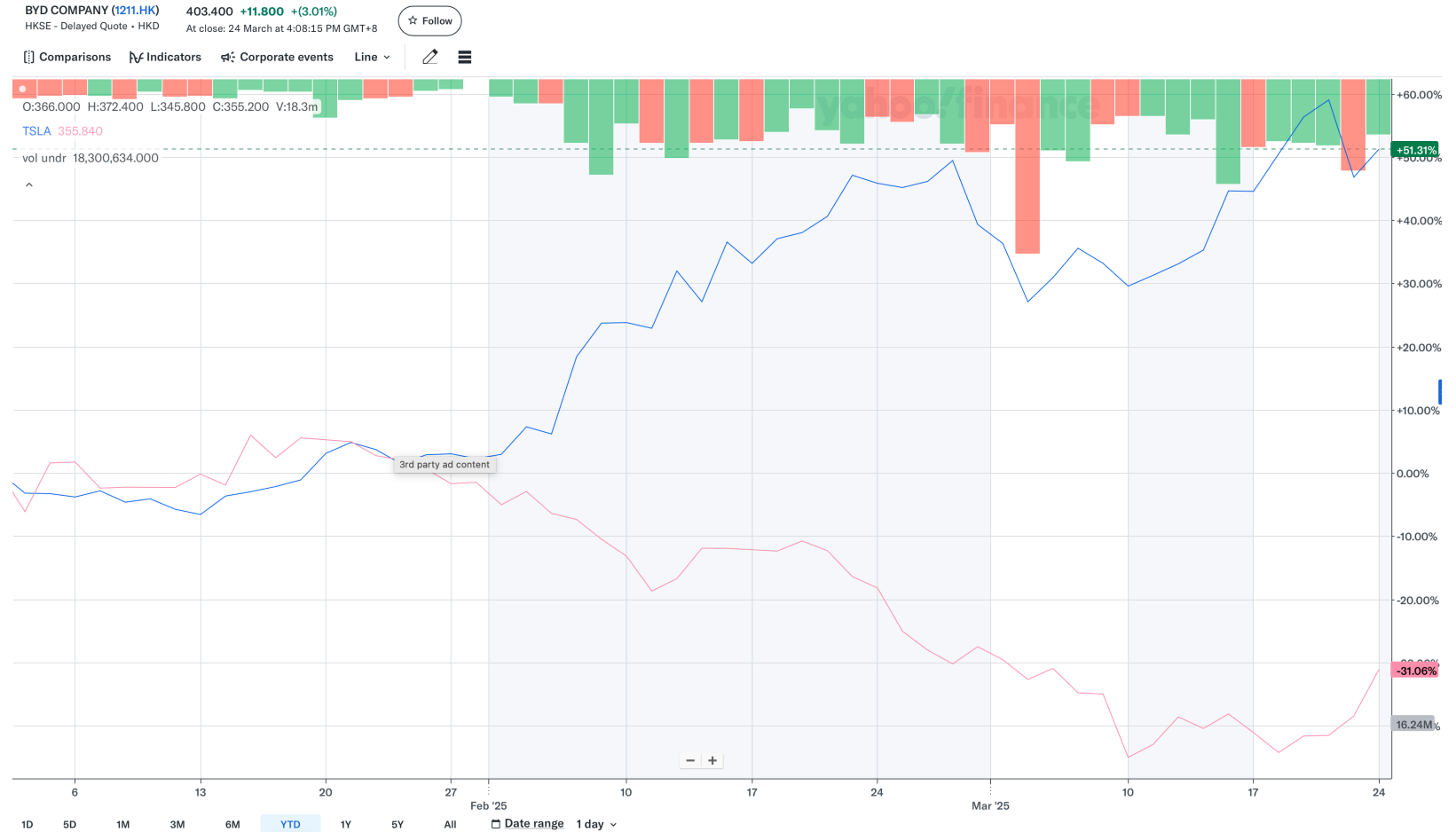
Jessica Sier North Asia correspondent AFR Mar 21, 2025

Unlike the rest of the world, China’s consumers don’t seem to care about Elon Musk’s controversial politics amid a dramatic backlash against his Tesla EVs. Tesla sales have tanked in Europe and elsewhere as the CEO has gone to work dismantling US government agencies with President Donald Trump’s support, attacking political figures across Europe and backing far-right parties.

<https://www.afr.com/world/asia/greatest-brand-destruction-of-our-times-musk-faces-tesla-crisis-20250319-p5lkum>

China New Energy Vehicles

BYD (+51%) vs Tesla (-31%) year-to-date in 2025



Source: RhoMotion, 12 March 2025
<https://rhomotion.com/news/global-ev-sales-up-50-in-february-2025/>

China New Energy Vehicles

BYD's CY2024 financial results are mindblowing

- In 2024, China registered 31.4m new autos, +4.5% yoy, including 12.9m NEVs, +35.5% yoy. In passenger vehicles, China's annual penetration rate of 47.6% throughout 2024, with the percentage of new sales exceeding 50% for five consecutive months in 2H2024!
- As the world's largest NEV producer, BYD is leading the charge both domestically and internationally on transforming electrified mobility and household electrification.
- BYD reported Rmb777bn (US\$107bn) sales in CY2024, +29.0% yoy, driven by +40% yoy growth in NEV sales. This translated to net profit of RMB 40bn (US\$5.6bn), +34% yoy.
- BYD has once again demonstrated its commitment to market dominance, innovation and technology leadership, with a 2024 R&D investment of 35% MORE THAN its net profits.
- BYD invested RMB 54.2bn / **US\$7.5bn into R&D in 2024**, up 36% yoy!
- BYD now has 120,000 R&D engineers! BYD submitted an average of 45 patent applications and 20 patent licenses EVERY SINGLE DAY.
- BYD incredible growth continues, with 2M2025 YTD sales up 93% yoy to 623,300 units.
- China was already the winner. Now it is clear, the runner-up has left the race. Incredible to see the EV revolution and China's leadership in real time.

Source: BYD Financial Results, 24 March 2025

<https://www1.hkexnews.hk/listedco/listconews/sehk/2025/0324/2025032401228.pdf>

China New Energy Vehicles

CATL and Nio plan to build world's largest battery swapping network

- China's CATL and Nio have announced a strategic partnership to deliver the world's largest battery swapping network for EVs.
- CATL, the world's leading battery manufacturer, and Nio, a leading Chinese EV automaker, signed an MoU in March 2025 sets out a plan to create the "largest and most advanced battery swapping service network for passenger vehicles" in the world, and promotes the standardisation of industry technologies.
- Nio's importance to this new partnership is its battery swap technology, which it operates as part of a Battery as a Service (BaaS) program for its cars.
- Late last year, Nio surpassed 60 million battery swaps in China, four months after it had passed the 50 million mark. By March 2025 it reached 69 million.
- Nio is building its battery swap stations in Europe.



Source: The Driven, Joshua S. Hill 20 March 2025

<https://thedriven.io/2025/03/20/catl-and-nio-plan-to-build-worlds-largest-battery-swapping-network/>

Charging Infrastructure: China Leads the World

Average vehicle charging speed has been increasing in China



Sales weighted average charging speed China, Three month rolling average



Source: Rho Motion's Monthly Charging Assessment

Fastest charging cars to date

Maker	Max charging speed kW
BYD 极越 ZEEKR 领克 & CO	500
Li Auto	520
ZEEKR	560
BYD	1,000

BYD's new vehicle platform will be available in its new Han L & Tang L models

March 2025 saw BYD unveil its "Super e-Platform" capable of reaching charging speeds of 1,000 kW (1 MW), the fastest charging platform on the market.

Source: RhoMotion, 19 March 2025 "What does BYD's megawatt charging system mean for the charging industry?"

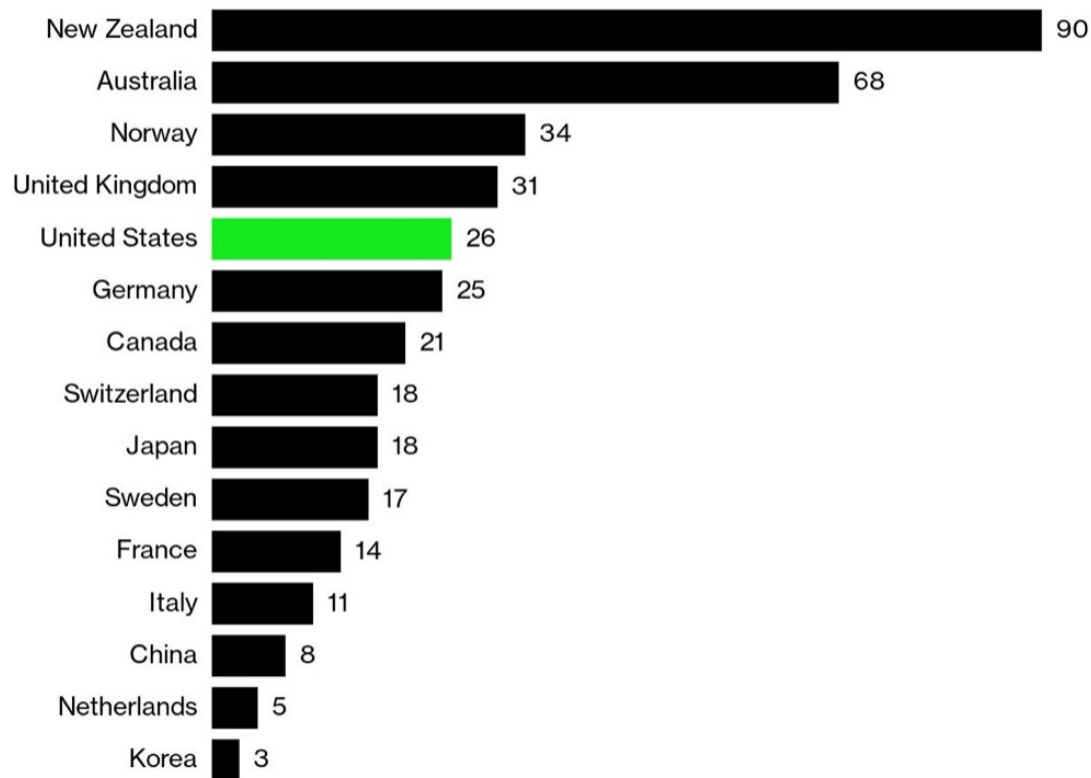
<https://rhomotion.com/news/what-does-byds-megawatt-charging-system-mean-for-the-charging-industry/>

Public Charging Infrastructure

China leads the major markets globally

EVs Per Station

Although charging deserts are now rare in the US, EV adoption has ramped quickly as well, making for more crowded stations.



Cars per public charging station

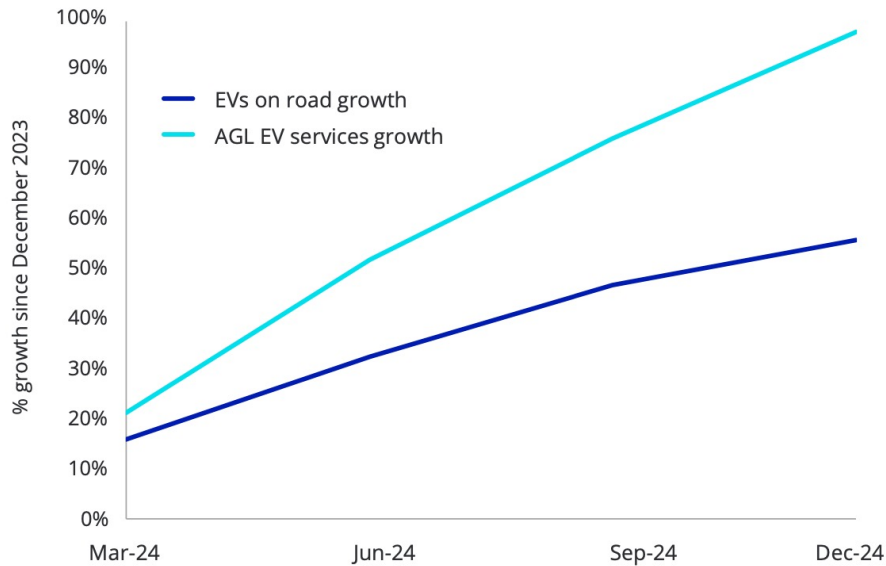
Australia's EV Response

Utility Majors are Increasingly focussed on this

AGL has launched new propositions that are capturing the demand growth from EVs



AGL Residential EV service plans growth outstripping growth of EVs on the road¹



We are capturing EV load, which is projected to account for around 4% of total demand by 2030²

- **~26k EV Energy plan customers, 38% new to AGL**
- **Launched EV Night Saver plan**, which has seen up to 44% of customers' daily load shift away from peak prices to a lower tariff, overnight time period
- **Expanded OVO Energy Australia's EV Control** to Mini and BMW as well as Tesla customers to access advanced demand-response charging, and progress Vehicle-to-Grid readiness
- Launched new **EV curbside public charging offer** in partnership with **PlusES**, with 1,750 charging sessions in the first month
- **Purchase of Evertly** Chargepoint Management System
- **Expansion of BP partnership** and scaling beyond fuel

1) EV Council - www.electricvehiclecouncil.com.au

2) AEMO 2024 ISP Step Change Scenario