Automobiles

India | Automobiles | Sector Update

Global Markets Research

Elara Auto Tech-Insights: China visit

11 June 2025

Post our thematic note, "China energizing seismic shifts" dated 27 January 2025, we facilitated an investor visit to China. During the five-day visit, interactions with some leading EV and legacy OEMs (Geely, Nio, dealerships of legacy OEMs), battery players (Sunwoda, CALB), autonomous driving company, Momenta and test drives experiences of Chinese EV and autonomous vehicles were arranged. Following are some insights.

Consumer preference has shifted massively to Chinese OEMs from global legacy OEMs: Recently, Chinese OEMs have been able to topple the dominance of global OEMs, and now hold ~69% market share from ~36% in CY20. This was led by factors such as rapid adoption of new energy vehicles (NEVs), customer preference for digital cars (smartphone on wheels) and continued government support in form of incentives or trade-in subsidies.

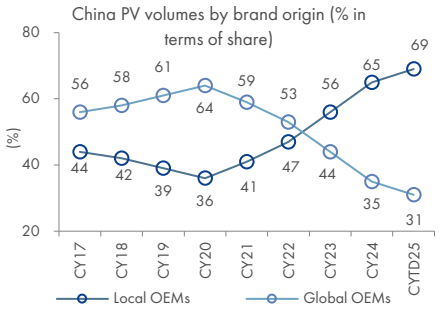
Notably, it is the youth who prefer digital-native cars, and herein, Chinese OEMs far outweigh global legacy OEMs. German OEMs as brands do not invite the same enthusiasm as before, which we think is structural. Among other OEMs, BYD's competitive edge should remain in the long-term owing to its unique backward integration of batteries. Scale of BYD blade cells on a similar platform is also a key edge versus peers. We were also impressed by the test drive of *Nio ET9* and its luxurious feel and at an attractive price point of ~USD 100-120k, a serious competition to many peer models. On the contrary, legacy OEMs such as Geely (owner of Volvo cars) continue to adopt a mixed approach between ICE and NEVs, as they expect ICE models to remain relevant in the longer term.

Battery price may come down further: Our interactions with key battery players – Sunwoda and CALB – suggest that battery prices may reduce further. Some batteries may be recycled in a meaningful way in the next 1-2 years, thereby also providing cost advantage for players in China. A huge shift in automation is also underway – As an indication, CATL's employee count pared from ~250/Gwh to just 25/Gwh. Over-capacity in cells in China may strain prices further in the medium term. Most cell makers are expanding capacities by +50%, which is a concern for profitability of the industry. That said, battery prices in China still remain 10-20% below that in the US and Europe. We expect the gap to widen further as China continues to dominate the supply chain and global capacities are still miles away from China's. We also see meaningful progress happening on the charging and infrastructure front, especially with BYD and CATL's megawatt chargers and advanced batteries, which commit ~500kms range in five minutes. However, closely monitor key safety risks at mass scale related to 1000V architecture. Our takeaways on autonomous driving, investments in battery and battery swapping were also interesting.

Readthrough for our coverage universe: We believe incrementally Chinese OEMs would gain global PV market share in medium to long-term from legacy OEMs which is a negative for suppliers such as **Samvardhana Motherson** (MOTHERSO IN; reiterate Sell), as also increasing uncertainty from US tariffs (refer our note, "Tariff uncertainty looms on Global demand").

These risks are relatively smaller for **Sona BLW Precision Forgings** (SONACOMS IN, reiterate BUY) given its smaller exposure to legacy European OEMs (though challenges related to Tesla volumes remain). For **JLR**, China is a concern, and our interactions with legacy dealers in the country suggest premium customers have started evaluating luxury Chinese models as an option too (not the case earlier). This poses a structural risk to premium brands in China. JLR is hosting an investor day on 16 June 2025, when we expect more color on China and its much awaited FY26 guidance.

Global OEMs tested in China



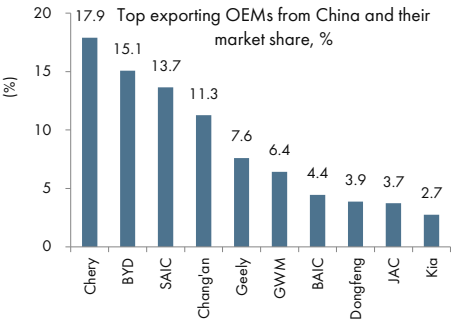
Source: Automobility, Elara Securities Research

Chinese OEMs slowdown in market share gain in BEVs compensated by PHEVs in EU

Market share of China brands in EU (%)	CY23	CY24	Q1CY25
BEV	4.9	6.3	7.4
PHEV	2.5	1.6	5.7
Total	1.3	1.5	2.3

Note: Volvo and MG not included in Chinese brands as they are known as European brands despite owned by Chinese OEMs, Source: MarkLines, Elara Securities Research

BYD now second-largest exporter out of China, with 15% market share



Source: Automobility, Elara Securities Research

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Coverage matrix

Company	Ticker	Rating	Mcap	CMP	TP	Upside	P/E				EV/EBITDA				ROE			
			(INR mn)	(INR)	(INR)	(%)	FY25	FY26E	FY27E	FY28E	FY25	FY26E	FY27E	FY28E	FY25	FY26E	FY27E	FY28E
Tata Motors	TTMT IN	Accumulate	2,711	736	791	7	11.1	11.3	9.7	8.7	4.9	4.7	4.3	3.9	21.8	17.4	17.3	16.5
Samvardhana Motherson	MOTHERSO IN	Sell	1123	160	129	(19)	29.2	23.8	22.0	21.1	11.6	10.5	10.1	9.7	11.1	11.6	11.1	10.3
Sona BLW Precision Forgings	SONACOMS IN	Buy	323	519	587	13	53.0	44.7	38.1	30.9	31.9	26.8	23.2	19.1	14.7	12.4	13.3	14.9

Note: Pricing as on 11 June 2025; Source: Company, Elara Securities Estimate

Elara tracks China's auto-tech surge firsthand

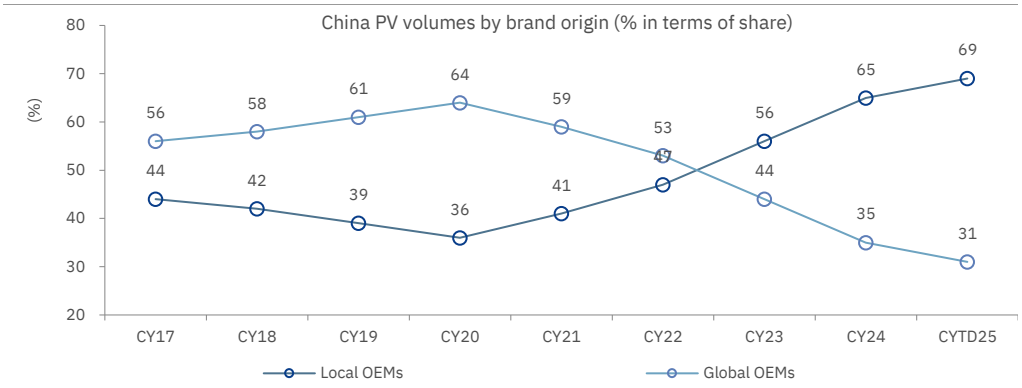
Post our thematic note, "China energizing seismic shifts" dated 27 January, we scheduled a China visit for investors. The five-day interaction spanned leading EV and legacy OEMs (Geely, Nio, dealerships of legacy OEMs), battery players (Sunwoda, CALB), autonomous driving company, Momenta and test drives experiences of Chinese EV and autonomous vehicles were arranged. Following are some key takeaways:

- **Consumer preference shifts to Chinese OEMs from global legacy OEMs**: The youth are choosing digital-native cars, wherein Chinese OEMs far outweigh global legacy OEMs. This shift is structural in nature (as highlighted in our recent thematic "China energizing Seismic shifts"). The earlier enthusiasm for German OEMs as brands has ebbed.
- **BYD's competitive edge is expected to remain for the long-term** owing to its unique backward integration of batteries. The scale of BYD blade cells on a similar platform is also a key edge.
- **Battery price will continue shrinking**, per our interactions. Battery recycling will also start meaningfully in the next 1-2 years; thereby putting downward pressure on pricing. Automation is increasing – Indicatively, CATL's employee count reduced from ~250/Gwh to just 25/Gwh now.
- **Consolidation in the industry is imminent**, in both OEMs and the battery industry in China, as profitability for players remains a concern.
- **Our test ride of pony.ai autonomous vehicle was impressive**, but the vehicle still had a driver for emergency purposes. In our view, this is still work in progress (we noticed a few jerky brakes by the vehicle without any real threats from adjoining cars).
- **We were impressed by the test drive of *Nio ET9*** and its luxurious feel and at an attractive price point of ~USD 100-120k, a serious competition to many of its peers, in our view. SONACOMS had won the suspension motor order for this particular model recently via Clear Motion.
- **In China, cell over-capacity is a key concern,** which may strain price in the medium term. Most cell makers are expanding capacities by +50%, which is a concern.
- **Players such as Geely still plan to have a balanced portfolio of ICE and NEVs** as these expect some ICEs to remain relevant, even in the long term.
- **Overall CALB targets a total volume growth of ~60% in CY25**. Capex per Gwh is a mere USD 30-40mn (relatively lower than Sunwoda commentary). Expect some more scope of cell price reduction to continue and margin expansion for cell makers to be led by more of cost efficiencies rather than raw material cost reductions. Tesla is not a client for CALB mainly due to state ownership in CALB.
- **Dealerships of legacy OEMs continues to remain unprofitable** due to high discounts. Also, customers of German OEMs are evaluating the premium models of Chinese OEMs (as an additional vehicle initially). This is significant as Chinese models are now being considered by brand-conscious customers too.
- **Expect sharp growth for software and ADAS/ autonomous tech players** such as Momenta, which also supply to BYD's upper-end God's Eye autonomous driving models.
- **Cost economics of battery swap stations continue to be a concern**, in the long term, in our view.
- **Amidst the US-China trade war, the US may lose more than China**, as per a supply chain expert.

Local new-age OEMs taking charge from global OEMs in China

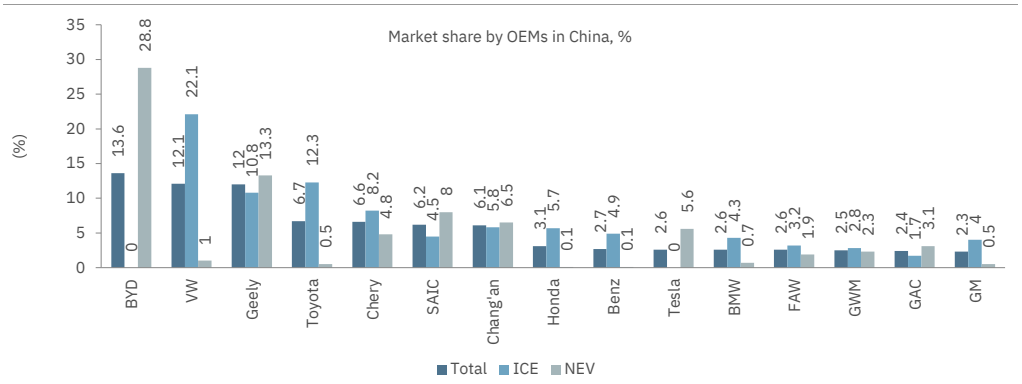
The share of global OEMs in China dropped further to 31% in Q1CY25 from 35% in CY24 (earlier ~60%).

Exhibit 1: Global OEMs tested in China



Source: Automobility, Elara Securities Research

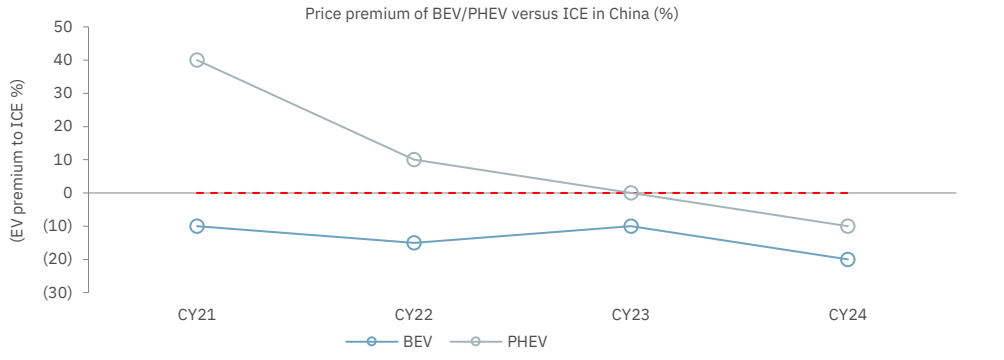
Exhibit 2: BYD continues to lead, with ~14% total market share and ~29% market share in NEVs



Source: Automobility, Elara Securities Research

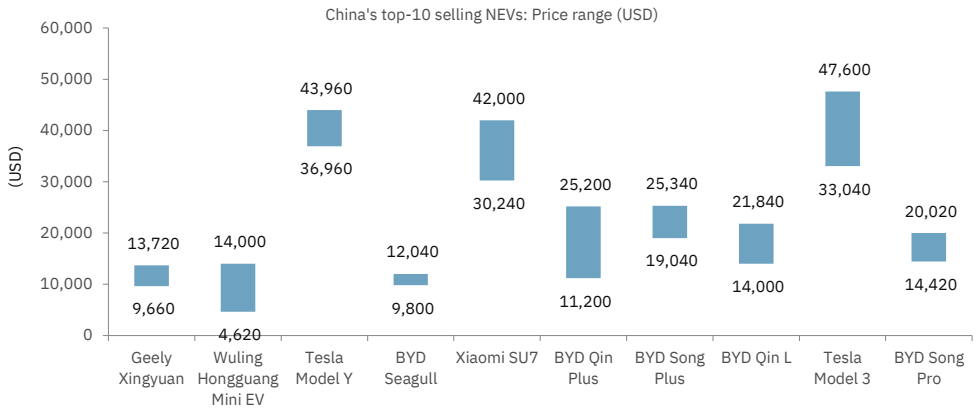
The affordability of electric cars improved in China in CY24, led by falling battery prices, high level of vertical integration in supply chains and fierce competition within the Chinese EV market. In CY24, two-thirds of BEVs sold in China were cheaper than their ICE equivalents, with BEV prices, on an average, ~20% below their ICE equivalents. To give a context, developed nations in the West are yet to see price parity between ICEs and EVs, with the gap even wider in the US.

Exhibit 3: BEV prices in China already ~20% below ICE prices



Source: IEA, Elara Securities Research

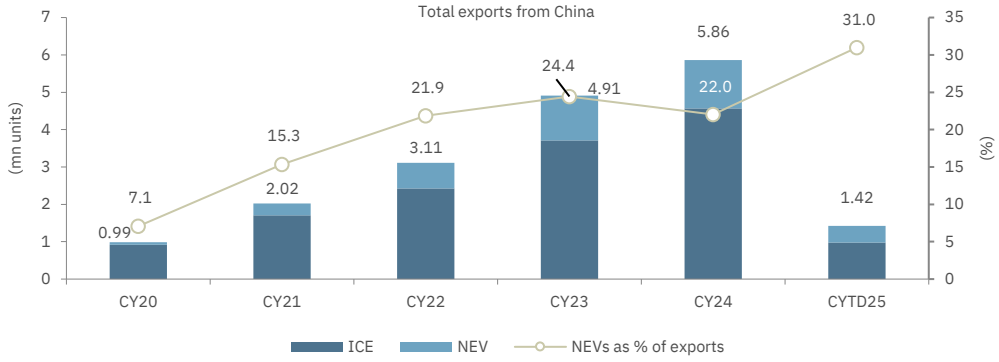
Exhibit 4: Five out of 10 top-selling NEV models in China are from BYD



Source: Automobility, Elara Securities Research

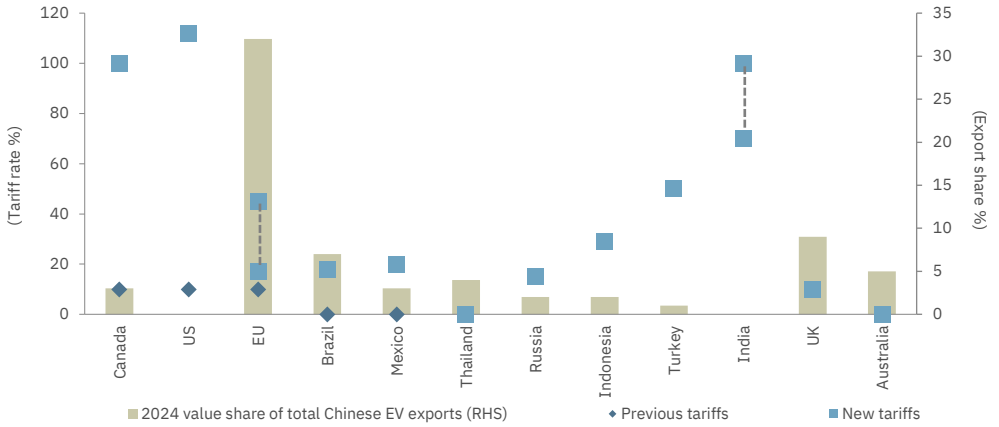
In CY24, total exports from China grew by ~19% YoY (up ~58% in CY23). This growth further slowed down to ~7% YoY in Q1CY25. Within this, NEV exports grew by 8% YoY in CY24 (76% in CY23). This is largely led by the tariffs imposed by many countries on Chinese exports (different from US tariffs). For example, the EU, which constitutes ~37% of Chinese exports (in value terms) levied an additional tariff within 7.8-35.3% apart from the exiting 10% import tariff on Chinese-made BEVs. This has slowed down BEV exports from China to the EU. However, Chinese OEMs were swift to transfer the export share to PHEVs, which compensated for the market share loss in BEVs, thus increasing the effective market share of Chinese OEMs in the EU.

Exhibit 5: Exports from China have grown by 7% YoY in Q1CY25, with NEV share rising to 31%



Source: Automobility, Elara Securities Research

Exhibit 6: Change in tariffs imposed on Chinese imports by various countries



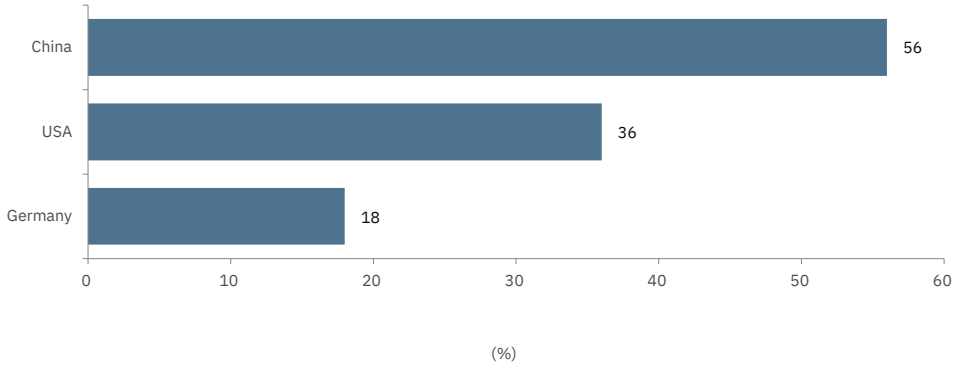
Source: IEA, Elara Securities Research

Exhibit 7: Models produced in China but sold in both China and home market (Europe) show price variation of 40-200%

Price in China	Produced in China	Price in Europe
210kw 540km CLTC range CNY 405,000 Euro 52,000	 BMWIX3	210kw 462km WLTP range Euro 74,600 in Spain
272hp, 400km CLTC, LFP battery, 49kwh Standard CNY 154,000 Euro 20,170	 Smart#1	272hp, 310km, WLTP, LFP battery, 49kWh Pure Euro 34,990 in Germany
Volkswagen ID, UNYX 340ps, 80.2kWh, 555km CLTC, dual motor 4WD CNY 209,000 Euro 27,312	 Cupra Tavascan	Cupra Tavascan VZ1, 340ps, 77kwh, 515km WLTP, dual motor 4WD GBP 55,935 Euro 67,551 in the UK
129kW,4-cyl, 1.6T gasoline CNY 131,700 Euro 17,136	 Citroen C5 X	132kW, 4-cyl, 1.6T gasoline hybrid Euro 53,500 in France
Donfeng Nano 33kW, 201km CTLC, 15.97kWh, Light wind CNY 48,700 Euro 6,336	 Dacia Spring	Dacia Spring, 33kW, 225km WLTP, Expression Euro 17,900 in Italy

Note: Data as of January FY24 (before the imposition of EU tariffs on Chinese cars); Source: JATO, Elara Securities Research

Exhibit 8: Requirement of digital cars higher in China than in other developed nations



Source: BMW, Elara Securities Research

Exhibit 9: EU – Slowdown in market share gains in BEVs compensated by PHEVs

Market share of Chinese brands in the EU (%)	CY23	CY24	Q1CY25
BEV	4.9	6.3	7.4
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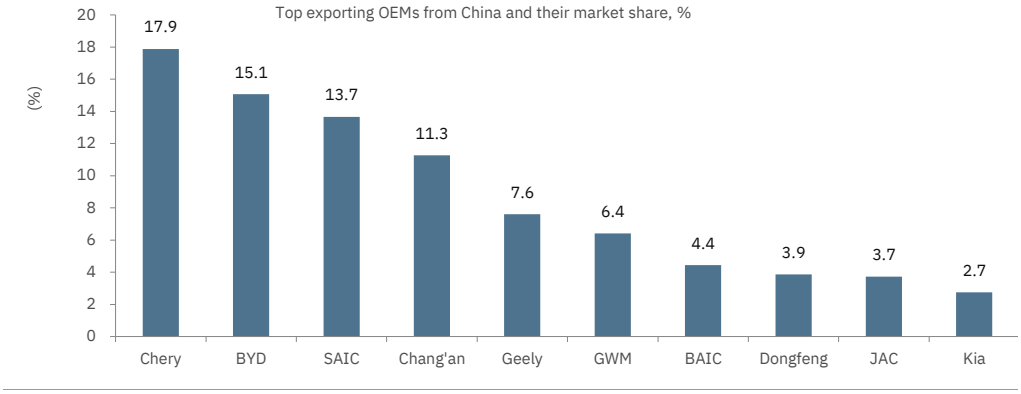
Note: Excludes Volvo and MG from Chinese OEMs as they are known as European brands despite owned by Chinese OEMs; Source: MarkLines, Elara Securities Research

Exhibit 10: BYD now second-largest exporter out of China, with 15% market share



Source: Automobility, Elara Securities Research

Exhibit 11: BYD's market share in the EU still insignificant, but growing rapidly

BYD's market share in the EU (%)	CY23	CY24	Q1CY25
BEV	0.8	2.2	3.1
PHEV	0.0	0.7	3.8
Total	0.1	0.4	0.8

Source: MarkLines, Elara Securities Research

Meetings with Chinese OEMs – Highlights

Geely is a Chinese OEM and the parent of Volvo Cars and Polestar. It is the third-largest automaker in China, with a market share of 12% in Q1CY25 (10.8% market share in ICEs; 13.3% in NEVs). It is also present in the Middle East, Africa, Asia-Pacific, Latin America and Europe. Geely has a whole host of brands – *Geely, Zeekr, Lynk and Co, Volvo, Polestar*. Also, because of its *Volvo* brand, it has a head-start in sales in Europe.

Going forward, it expects to position *Zeekr* as its high-tech brand, and *Volvo* as its global brand. It is one of the few companies to currently have a good balance of NEVs and ICEs (45:55, similar to China's average). Geely expects ICEs to also play a pivotal role in its strategy, apart from higher-growth NEVs. It expects tariffs by the EU to be lowered eventually and thus, anticipates the geography to play a key role in its global expansion strategy.

Other takeaways

- **Ownership in global brands**: Geely invested in Daimler in 2018 and owns a 9.6% stake in Mercedes Benz. It also established a JV with Mercedes Benz, establishing *Smart* brand. In 2021, it crafted the Zeekr intelligent technology.
- **Powertrain break-down**: Geely has a balanced portfolio of products, with 45% of sales from NEVs and 55% from ICEs.
- **Brand positioning**: *Volvo* is a global brand, and *Geely Auto* mainly for developing countries (due to its pricing).
- **Tariff:** Geely expects tariffs by the EU to be lowered eventually. The EU is an extremely important market for the company.
- **Batteries**: Geely is buying batteries from CATL, with a few models having LG batteries as well.
- **Autonomous driving** is the future of mobility. However, Geely does not view this as easy.
- **Other highlights:** Geely employs 30,000 people in R&D. It exported ~500k vehicles last year and has ~8% market share in total exports from China.

NIO Inc. is a leading Chinese electric vehicle (EV) manufacturer, headquartered in Shanghai. NIO is renowned for its battery-swapping technology, allowing users to exchange depleted batteries for fully charged batteries in minutes. The company operates >1,300 battery swap stations across China. Additionally, NIO develops semi-autonomous and autonomous driving technologies, enhancing the driving experience. While NIO's primary market is China, it has expanded into Europe, with presence in countries such as Germany, Norway, and the Netherlands. Plans for further expansion include markets in the UAE, Israel, and South-East Asia. In 2025, NIO aims to enter 16 new markets across five continents, including the UK, Nepal, Singapore, and New Zealand.

Nio has adopted a different way of expanding by betting on the battery swapping stations. It has launched three brands – *Nio* (premium), *Onvo* (entry-level) and *Firefly* (premium compact). Current annual capacity is 600k units, which it plans to expand to 900k units (dual shifts). However, annual sales in 2024 were at 221k units. With the launch of *Onvo* and *Firefly*, the management expects strong growth in CY25. Cost economics of swap stations are a concern, in our view. Nio is targeting break-even in terms of profitability in Q4CY25.

Other takeaways

- **Key brands:** Sub brands of *Nio* are *Nio, Onvo* and *Firefly*. The *Onvo* brand is cheaper (USD 20.8-41.6K) and was launched in December 2023, but now exceeds a monthly run rate of 10k unit sales. *Nio* has nine products in total. The *ET7* competes with *BMW 5* series, and *ET9* with the *BMW 7*.
- **Capacity:** Nio has two manufacturing facilities with 300k units (double shifts). It is planning to set up another factory in CY25.
- **Swap stations:** Nio has 3,201 swap stations currently. By the end of this year, it will build additional 1-2k swap stations. Nio also has 25.6k public chargers.
- **Swap stations – Cost economics**: Capex for power swap stations is currently at USD 0.42-0.49mn.As per Nio, **70 charges are required daily to reach the break-even point.** Nio currently has >3,000 power stations. The average swap is at 30-40 daily. Nio is currently half-way to the break-even point. The gap is because power swap stations have been built in advance. Nio's current car fleet is ~607k and the current requirement is 5,000 power swap stations in China. Nio has collaborated with OEMs in China, who will launch their swapping-compatible models. That would help in viability of swap stations, as per Nio.
- **Key competitors** are BMW, Mercedes and Audi.
- **Unit sales:** Nio sold 220k vehicles in 2024, of which the new brand *Onvo* sold 20k. Nio expects *Onvo* sales to double to 180k units annually. *Firefly* may sell 30k units annually. The *Nio* brand may grow ~9-10%. The company is targeting operating break-even in Q4CY25.

Meetings with legacy OEM dealerships – Highlights

Key takeaways: Annual sales at the legacy dealership are at 1,000 units, down from a peak of 1,200 units. In CY25, the target is flat growth YoY. However, profitability is a concern. Due to high discounts, the dealership is loss-making.

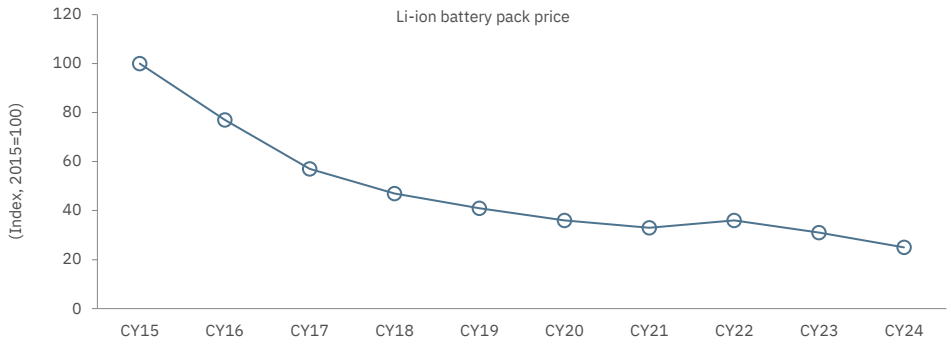
Chinese customers, at the high price point of a luxury vehicle *Range Rover or Porsche Cayan*, have also started evaluating premium Chinese OEM models such as *Nio ET9*. This just goes to show that that the wealthy are assessing Chinese OEMs, and thus, the imminent threat of market share loss for premium legacy OEM brands also exists in China. Dealership count of JLR is reducing continuously and increasing discounts are a key reason for losses at the dealerships, while for Porsche dealership count reduction is not much as they had not expanded their network meaningfully during good times.

Battery segment

Recent trends

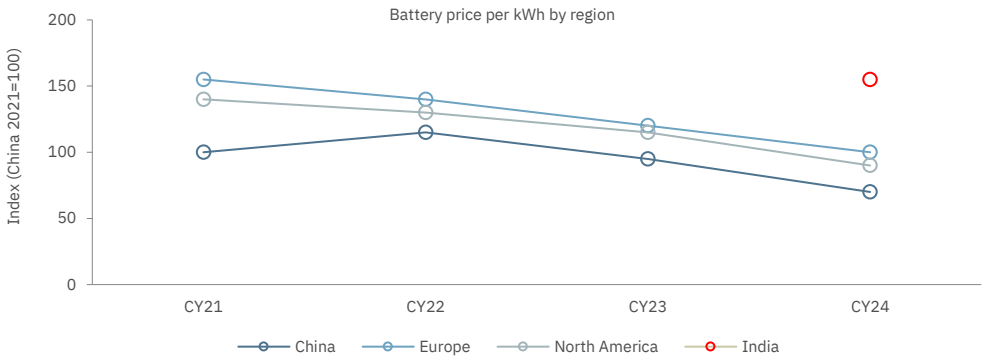
Prices for lithium ion battery packs fell by ~20% in CY24, the steepest drop since CY17. This was driven by a drop in critical mineral prices. Battery margins are being squeezed by higher competition, especially in China. China also witnessed ~30% drop in battery pack prices, versus a decline of ~10-15% in Europe and North America. This has widened the gap between battery prices in China versus the rest of the world, further increasing the competitive edge of Chinese EVs.

Exhibit 12: Li-ion battery pack prices continue to decline in CY24



Source: IEA, Elara Securities Research

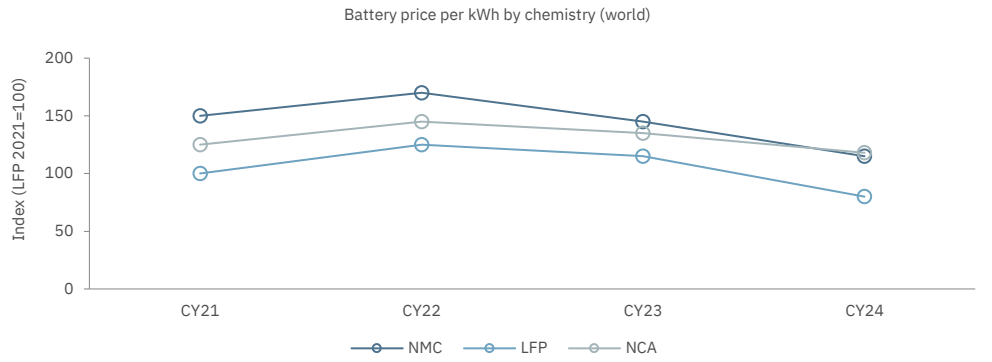
Exhibit 13: Battery prices in China still 10-20% cheaper than in Europe and North America



Source: IEA, Elara Securities Research

Battery chemistry plays a vital role in cost. For example, Lithium iron phosphate (LFP) batteries, the main battery chemistry used in China, is ~30% cheaper per kWh than NMC (lithium nickel cobalt manganese oxide), which is the most used chemistry in Europe and the US. Despite NMC batteries having high energy density, LFP batteries have now reached a performance level sufficient for most EV applications, making their low cost an edge for mass-market OEMs.

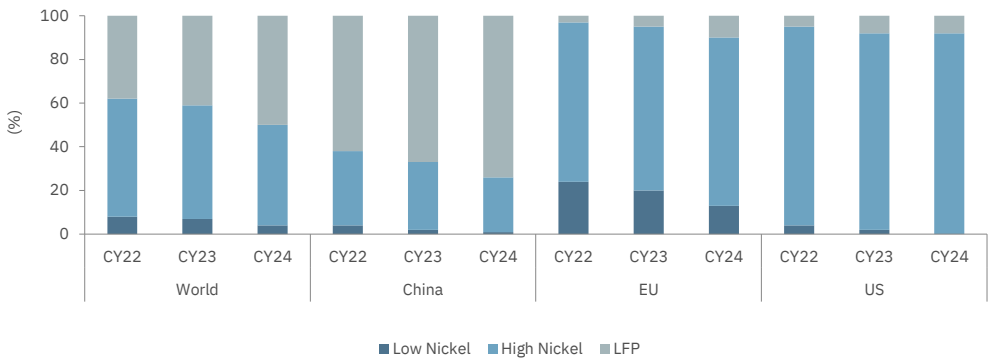
Exhibit 14: LFP battery prices ~30% lower than NMC



Note: LFP = Lithium iron phosphate, NMC= Lithium nickel cobalt manganese, NCA = Lithium nickel cobalt aluminium oxide; Source: IEA, Elara Securities Research

LFP batteries now make ~80% of the EV battery in China, which is <10% in the US (further contraction seen in CY24, largely due to tariffs on Chinese batteries). However, in the EU, the adoption of LFP grew by ~90% to reach >10% of the EU EV market. Note that nearly all the LFP batteries for EVs sold in the EU or the US were produced in China, indicating China's monopoly in LFP batteries. In South-East Asia, and in Brazil and India too, the share of LFP reached >50% in 2024. In South-East Asia and Brazil, this was led by significant growth in BYD vehicles, while in India, this was led by Tata Motors.

Exhibit 15: China shifted early to LFP, while rest of the world is still shifting gradually, which yielded it a cost edge



Source: IEA, Elara Securities Research

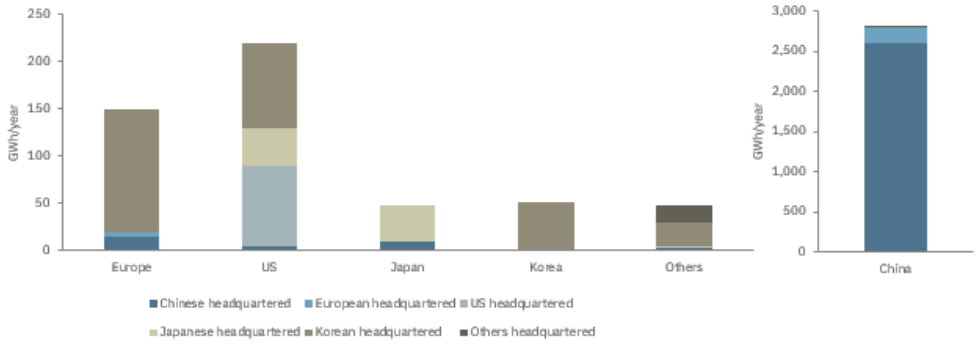
Among other emerging battery technologies, Sodium-ion batteries are seeing some traction, also led by Chinese companies. For example, despite falling lithium prices, CATL, the world's largest battery producer, announced the second generation of Sodium-ion batteries in CY25, alongside the launch of a dedicated Sodium-ion battery brand, *Naxtra*. These are designed for passenger vehicle EVs and are likely to compete with LFP batteries. The mass production is expected to begin from December 2025. BYD is also increasingly investing in Sodium-ion batteries for EVs and battery storage.

Solid state batteries are gaining traction, moving closer to commercial production in CY24, with prototypes and large investments from Samsung SDI, Toyota, Nio, Honda, Quantum Scape, BASQUEVOLT and Factorial. The creation of government-led Chinese battery alliance, including prominent producers such as CATL, BYD, SAIC and Geely, is also accelerating the development of solid state battery in China. Currently, despite offering potential advantages over other conventional technologies, solid state batteries are still in the pilot stage on technology readiness level. However, this will gain traction rapidly, with companies such as Toyota and BYD planning the first mass production by 2027-28.

Global battery (cell) manufacturing capacity reached >3TWh (up 30% YoY) – ~3x EV and battery storage demand, as per IEA. Of this, China still dominates global battery manufacturing, with ~85% capacity. Battery capacity in the US grew by ~50%, led by Korean companies, and that in the EU increased by ~10%, despite NorthVolt plant being halted due to bankruptcy. Korean manufacturers

were the largest investors in overseas battery manufacturing capacity, accounting for >400Gwh globally, compared with 60Gwh by the Japanese and 30Gwh by Chinese manufacturers.

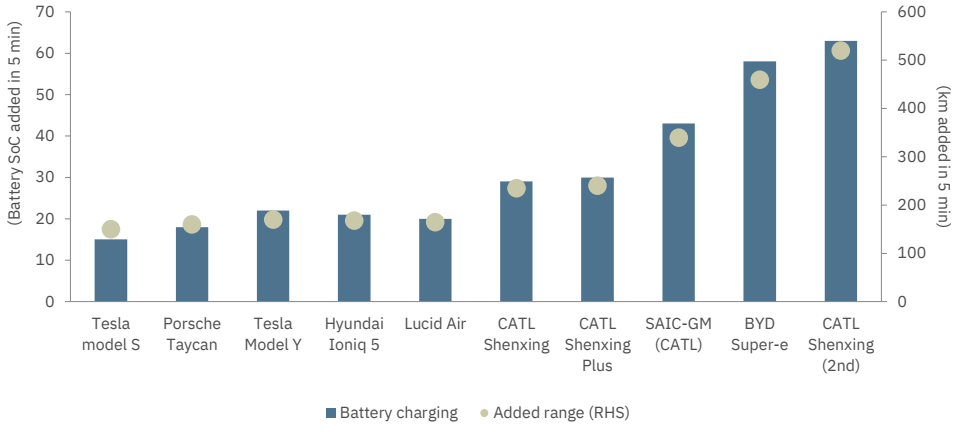
Exhibit 16: China continues to lead global battery manufacturing, with ~85% share in CY24



Source: IEA, Elara Securities Research

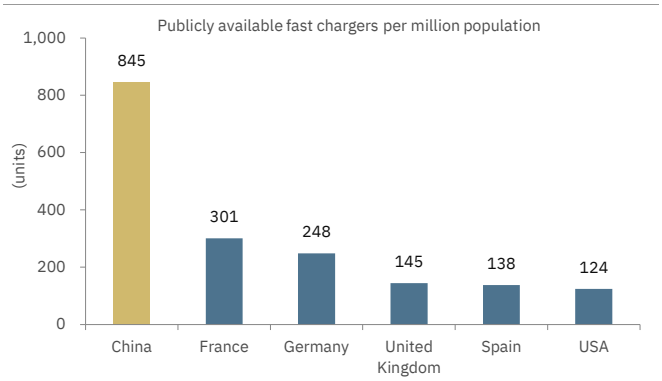
In March 2025, BYD unveiled its Super-e-platform, which claims to deliver ~400km range in five minutes of charging. This was made possible largely due to next-generation silicon carbide chips, all-liquid-cooling and a 1,000V architecture, which allows for coupling with 1MW charging. Following that, CATL also announced its second-generation Shenxiang battery, offering even higher charging speeds. Megawatt charging was previously limited to heavy-duty vehicles, wherein the energy was distributed across battery packs (~10x larger than those used in PVs). However, led by advancement in battery technology and charging platforms, this capability is now available to PVs, with models already being sold in China. The adoption of this, however, depends on the availability of ultrafast charging stations. Notably, BYD, together with its Super-e platform has announced that it is also planning to deploy 4,000MW chargers supported by battery storage in China.

Exhibit 17: Maximum battery capacity charged and electric range added in five minutes, by EV model or battery technology



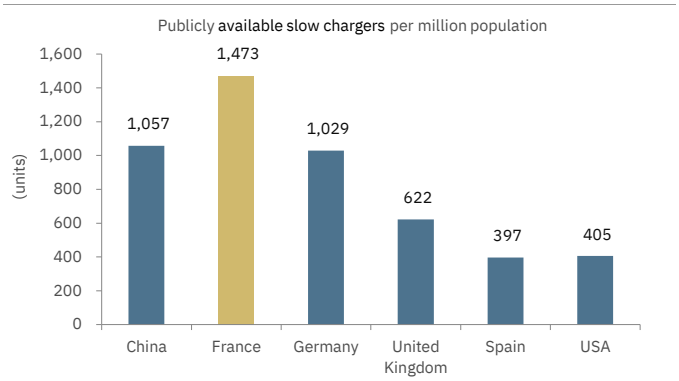
Source: IEA, Elara Securities Research

Exhibit 18: Number of fast chargers per mn – China far ahead



Note: Data for CY23, Source: IEA, Elara Securities Research

Exhibit 19: Number of slow chargers per mn – France leads and then China



Source: IEA, Elara Securities Research

Sunwoda: Sunwoda is a prominent Chinese technology company, specializing in lithium-ion batteries and energy storage solutions. It posted a revenue of USD 7.78bn in CY24 and EBITDA of USD 498mn, with margin at 6.4%.

Key takeaways: Sunwoda is the market leader in hybrid Li-ion batteries in China and is the sixth-largest battery in terms of PV installed capacity. Sunwoda plans to grow aggressively (~162% YoY in CY25 to ~55Gwh). Bulk of the sales expansion is expected to come from orders by legacy OEMs such as VW. So, Sunwoda could be at risk if legacy OEMs do not meet their production targets. This is also likely to lead to systemic over-capacity and further strain sell prices. Per Sunwoda, cell prices may still face downward pressure given that the recycling of cell batteries will start from CY26 for all the vehicles sold in the past 6-8 years.

Other takeaways

- **Market share:** In China, Sunwoda's market share in EV battery is 3.3% and globally, 2.1%.
- **Customers**: Sunwoda started supplying to Renault-Nissan models since 2018. It also supplies to EVTOL and Vessel Space. Sunwoda is one of two suppliers for Li auto as also for Xiaomi. For Nio, it is among the three suppliers.
- **Battery chemistry:** Sunwoda uses both NCM and LFP chemistries. Sunwoda expect Sodium-ion production to start in 2026.
- **Raw material** such as Cobalt and nickel need to be imported.
- **Long-term plans:** Sunwoda plans to have 81Gwh capacity in China, 37Gwh in Thailand, 20Gwh in the US, 32Gwh in Hungary and 10Gwh in the Middle East.
- **Production cost in Europe (Hungary) is 40-50% higher than in China. In Thailand, it is 20% higher and in the US, 100% higher than in China.**
- **Pricing: Many batteries will come up for replacement next year and so, battery recycling may strain prices, as per Sunwoda.**
- **Fungibility of capacities:** The battery lines are fungible between chemistries, but not with solid state batteries.
- **BYD's strong competitive edge will continue, as it is the only player with a battery-first approach. And that yields it a sharp advantage. Its scale with Blade batteries for its own models gives it significant cost edge.**

CALB: China Aviation Lithium Battery (CALB) is a prominent Chinese battery manufacturer, specializing in lithium-ion batteries for electric vehicles (EVs) and energy storage systems (ESS). CALB is the third-largest maker of cells in China and the fourth largest globally. It also supplies to Indian players such as Ashok Leyland, Mahindra and Mahindra (MM; maybe to its LMM business and not UV), Electra EV. Last year, it supplied ~1Gwh of batteries in India.

Overall, CALB targets a total volume growth of ~60% in CY25. Capex per Gwh is a mere USD 30-40mn (lower than commentary by Sunwoda; and much lower than what Amara Raja in India mentions of USD 70-80mn per Gwh). Expect cell prices to correct even from here; margin expansion for cell makers to be led more by cost efficiencies than reduction in raw material cost. Tesla is not a client, mainly due to state ownership in CALB.

Other takeaways

- **Growth and production capacity:** CALB expects >60% growth in 2025, with planned deliveries reaching 110GWh. Of this, 65GWh will be for electric vehicles (EVs) and 35GWh for energy storage systems (ESS). In 2024, CALB's effective production capacity was 100GWh, which increased to 120GWh by the end of the year. By the end of 2025, CALB expects to reach a production capacity of 150-160GWh, although the effective operational capacity will be ~130GWh. The company has long-term plans to expand capacity to 260GWh by 2028.
- **Technology and products:** CALB makes both NCM (Nickel Cobalt Manganese) and LFP (Lithium Iron Phosphate) battery chemistries. It is among the few in China — along with CATL — with strong R&D capabilities in both battery chemistries. Also, CALB is developing Li-Nickel Manganese Oxide and LMFP (Lithium Manganese Iron Phosphate) batteries.

  In 2025, CALB delivered its first LFP cylindrical batteries to Geely. CALB's high-performance 5C energy solutions are being used in models such as *Xpeng G6* and *G9*. In the plug-in hybrid (PHEV) market in China, prismatic cells are dominant, but cylindrical cells are gaining popularity for smaller battery packs (8-10kWh), where cost and size efficiency matter. CALB is investing in smart battery tech and has a dedicated R&D team developing battery intelligence and data analytics.
- **Financial performance:** In 2024, CALB delivered 70GWh of batteries, generating a revenue of RMB 27.7bn. Gross margin for the year was 16% – Q1CY25 gross margin improved to 17.3% per Chinese standards and 19% per Hong Kong standards. The company's net profit margin was 3% in 2024 and exceeded 5% in Q1CY25. Raw material price for battery dropped significantly —by up to 80% —since 2023, with prices falling from RMB 1/Wh to RMB 0.3/Wh. However, most margin improvements have come from internal efficiency gains, and not just lower raw material cost.
- **Business segments:** In 2024, of the 70GWh delivered, 55GWh was for passenger vehicles (PVs) and 10GWh for commercial vehicles (CVs). CALB expects higher profitability in the commercial vehicle battery segment compared with passenger vehicles and ESS. While ESS margins are low in China, these are higher in the US. CALB believes that the ESS market will eventually become larger than the EV battery market, although not in the next five years. China's aggressive renewable energy targets will drive increased demand for energy storage systems.
- **Market reach and customers:** About 80% of CALB's current sales are to Chinese OEMs. In India, CALB has supplied batteries to Electra EV, MM, and Ashok Leyland, delivering >1GWh batteries last year. CALB has secured new order nominations from major global OEMs, including Volkswagen, Audi, Toyota, Mazda, Hyundai, and Kia. It began a collaboration with Daimler in 2025 for commercial vehicle battery systems and is currently in discussions with Volvo. CALB aims to secure >10GWh in sales from the CV segment.
- **Global expansion and strategy:** Construction for CALB's factory (capacity of 15-20GWh) in Portugal has started. The ground-breaking took place in February 2025. To avoid increased tariffs on imports of Chinese battery, currently at 3.4% in the EU, CALB and other Chinese manufacturers are establishing local production in Europe. The company sees solid-state batteries as the future, but expects liquid batteries to remain dominant for at least the next 10 years, with widespread adoption of solid-state batteries likely after 2030.

- **Cost efficiency and R&D:** In China, the capital expenditure per GWh of battery production capacity is between RMB 200-300mn (~USD 30-40mn), inclusive of all costs. CALB employs 3,000 R&D professionals and spends ~RMB 1bn annually on research and development. Rather than investing heavily in mining companies such as CATL, CALB forms strategic partnerships to secure raw material. The company expects that in the long term, most raw material will come from recycled batteries. CALB was the first company in 2021 to pass the nail penetration safety test for NCM batteries.
- **Partnerships and ownership:** CALB has been in discussions with Tesla for years, both in China and the US, but has yet to secure a major supply agreement. A reason may be that CALB has partial government ownership, while Tesla may prefer to work with privately-owned companies such as CATL and BYD. Although the government holds shares, the largest shareholder in CALB owns <30%, and none of the management team members are from the government.
- **Risks and industry trends**: Over-supply of batteries in China is a key risk that could exert downward pressure on pricing. CALB believes that while the battery bill of material (BOM) is already quite low, future cost reductions will come primarily from efficiency improvements rather than raw material costs. The company does not see itself as solely a battery manufacturer in the long term. It aims to expand into areas such as energy management, battery recycling, and smart battery data services.

Software and Autonomous driving

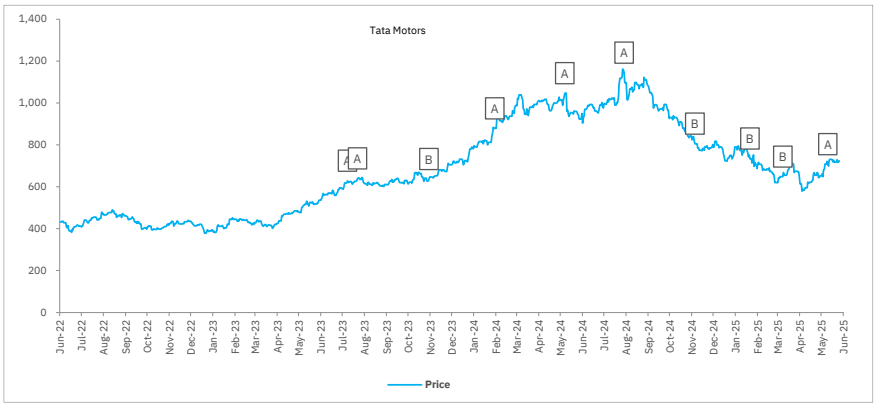
Momenta is a leading Chinese autonomous driving technology company founded in 2016 by Cao Xudong, a former Microsoft Research scientist and ex-SenseTime executive. Headquartered in Suzhou and Beijing, Momenta specializes in deep learning software for intelligent driving, offering solutions ranging from Level 2 (L2) to Level 4 (L4) autonomy. The company employs a "flywheel" approach, iterating algorithms to enhance performance across diverse driving scenarios. While primarily focused on the Chinese market, Momenta is expanding its reach internationally, with operations in Germany, Japan, and the US. The company's collaborations with global automakers underscore its ambition to become a significant player in the global autonomous driving industry.

Key takeaways: Momenta is one of the leading start-ups in autonomous driving technology, with ability to achieve scalable L4. It believes in vision-based systems such as Tesla. It has bagged orders from clients such as Mercedes, BYD, Toyota to name a few. Currently, 140 models are nominated globally. It generates two types of revenues: a) from platform engineering (currently 50% of fees) and b) as license fee (RMB 2-3k per vehicle, 100% gross margin revenue). It is a preferred supplier to BYD's upper-end autonomous driving of God's Eye A and B, while God's Eye C (mass segment) is produced in-house by BYD. Customer profile is as follows: 50% from Chinese OEMs and 50% from global OEMs, but within China.

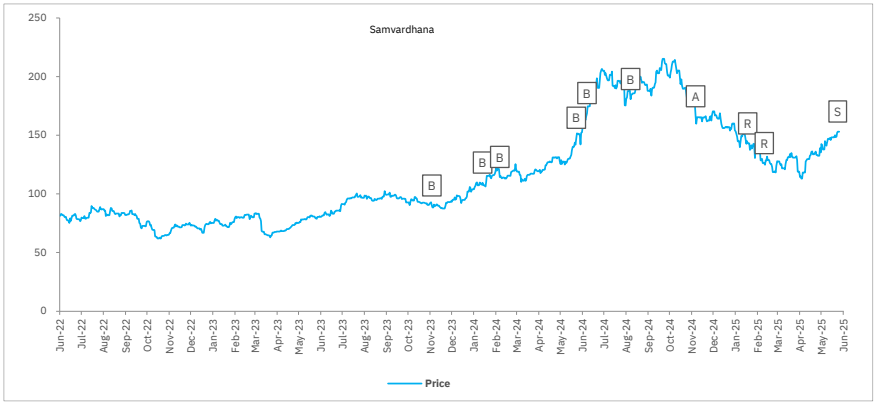
Other takeaways

- **Vision and strategy:** Momenta's primary goal is to achieve **scalable Level 4 (L4) autonomous driving**, which is expected to be **10-100x safer than a human driver**. Momenta is taking a **data-driven approach**, leveraging its large and growing fleet for real-world training and validation. It is the only major player aside from Tesla that believes in a **vision-based system** rather than relying on LiDAR. The company positions itself as the **"Android of autonomous driving"**, in contrast to Tesla, which it sees as the "Apple" of the industry, implying a more open and scalable platform.
- **Data and fleet:** Momenta currently has 300,000 vehicles on the road, collecting real-world driving data, and it targets reaching 1mn vehicles next year for enhanced data collection and training.
- **Customers, partners and market reach**: Momenta has global OEM customers, including major names such as Toyota, Honda, and BYD. It currently has 140 vehicle models nominated globally for integration with its autonomous driving systems. Key strategic partners and shareholders include SAIC, GM, Mercedes-Benz, Toyota, and BYD. In China, 50% of its customers are Chinese OEMs, while the other 50% are global OEMs operating within China. The company is also involved in BYD's self-driving platform 'God's Eye', specifically handling more advanced functions in the A and B modules, which make up 90% of the project, with Huawei handling the remaining 10%. The simpler functions for BYD's mid- to low-end models (e.g., BYD C) are managed in-house by BYD.
- **R&D and team:** Momenta employs >1,300 people, with 85% dedicated to R&D. Major R&D investments go into cloud infrastructure and talent development, which support advancements in both perception and decision-making systems. The company provides solutions that serve both internal combustion engine (ICE) and electric vehicle (EV) platforms. It has secured 15+ OEM and tier-1 supplier partnerships, resulting in 130+ nominated car lines.
- **Product offerings and deployment:** Momenta has launched many mass-production products, including Mpilot ADAS, Super CP (Compute Platform), Super Parking. It offers multiple supervised driving solutions such as MSD-HNP Supervised, UNP Supervised, These systems are already integrated into various vehicle models and are part of Momenta's scalable L2++ and L4 roadmap.
- **Momenta has raised USD 1.5bn in funding**, so far. It plans to go public with a Nasdaq-listing in September or October 2025.

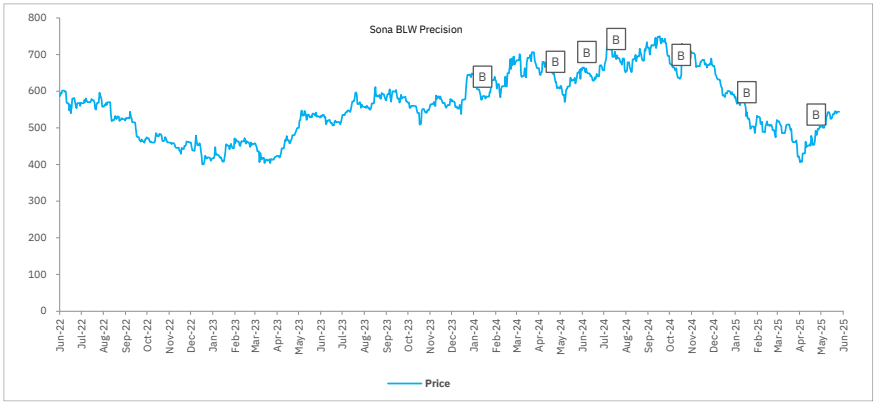
Coverage History



Date	Rating	Target Price (INR)	Closing Price (INR)
11-Jul-2023	Accumulate	650	529
25-Jul-2023	Accumulate	752	639
02-Nov-2023	Buy	779	636
02-Feb-2024	Accumulate	935	879
10-May-2024	Accumulate	1,100	1,047
01-Aug-2024	Accumulate	1,300	1,144
08-Nov-2024	Buy	1,088	805
24-Jan-2025	Buy	909	753
11-Mar-2025	Buy	872	648
13-May-2025	Accumulate	791	708



Date	Rating	Target Price (INR)	Closing Price (INR)
09-Nov-2023	Buy	125	90
19-Jan-2024	Buy	131	110
12-Feb-2024	Buy	141	114
29-May-2024	Buy	173	148
13-Jun-2024	Buy	196	169
13-Aug-2024	Buy	213	181
12-Nov-2024	Accumulate	194	166
24-Jan-2025	Reduce	147	143
16-Feb-2025	Reduce	129	126
30-May-2025	Sell	129	152



Date	Rating	Target Price (INR)	Closing Price (INR)
19-Jan-2024	Buy	700	585
30-Apr-2024	Buy	748	625
13-Jun-2024	Buy	785	652
24-Jul-2024	Buy	822	687
23-Oct-2024	Buy	843	644
23-Jan-2025	Buy	644	543
30-Apr-2025	Buy	587	481

Guide to Research Rating

BUY (B)	Absolute Return >+20%
ACCUMULATE (A)	Absolute Return +5% to +20%
REDUCE (R)	Absolute Return -5% to +5%
SELL (S)	Absolute Return < -5%

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