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Automotive lighting industry assessment

NEOLITE ZKW Lightings Ltd | **December 2025**

by S&P Global

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Contents

Macroeconomic overview of the global and Indian economies

Overview of the global economy

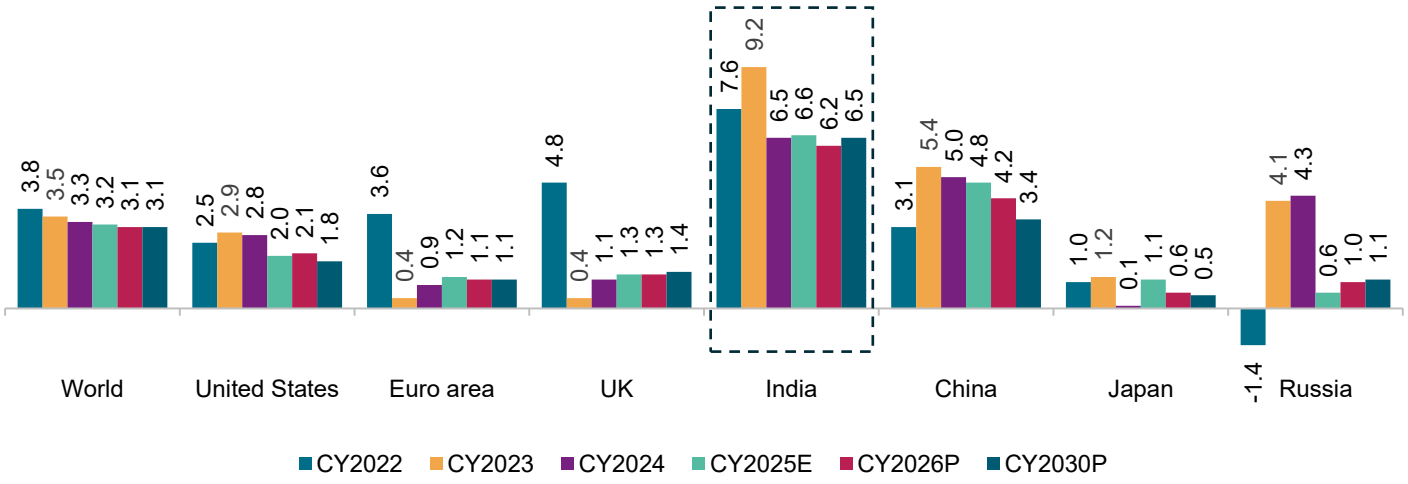
Review of and outlook on global GDP

Global economic growth remained rangebound in calendar year 2024, with large economies showing resilience despite geopolitical tensions, high interest rates and extreme weather events. However, tightening of financial conditions challenged global trade and industrial production.

A significant shift in policy is reshaping the global trade system, bringing uncertainty to the resilient global economy. The outlook for global trade has declined sharply due to a surge in tariffs and trade policy uncertainty. The new tariff measures by the United States (US) and countermeasures by its trading partners may have an adverse impact on economic growth and inflation, and the escalating trade tension and heightened policy uncertainty are expected to weigh heavily on global economic activity. Consequently, the global growth pace is projected to witness a minor decline in calendar year 2025.

Growth in advanced economies is projected to slow on account of greater policy uncertainty, trade tensions and waning demand momentum. In emerging markets and developing economies, growth is expected to slow down, with pronounced downgrades for countries affected most by recent trade measures. The growth outlook is relatively more stable for India, despite global environment uncertainty and subdued growth. The steady expansion of the economy is supported by private consumption, particularly in rural areas.

GDP growth (% y-o-y) of key economies



Note: On calendar year (CY) basis

** Euro area comprises 19 member countries of the EU*

Source: International Monetary Fund (IMF); World Economic Outlook (WEO) – October 2025 update, Crisil Intelligence

Global GDP growth was expected to decline from 3.3% in calendar year 2024 to 3.2% in calendar year 2025, marginally higher than previous estimates of International Monetary Fund (IMF) due to a decrease in tariff rates.

Overview of the Indian economy

Review of GDP growth over fiscals 2020-2025 and outlook for fiscals 2025-2030

According to the IMF's October 2025 database, India is the fifth-largest economy in the world and is projected to become the fourth in the short term. At present, it is the fastest-growing major economy, outpacing its global peers.

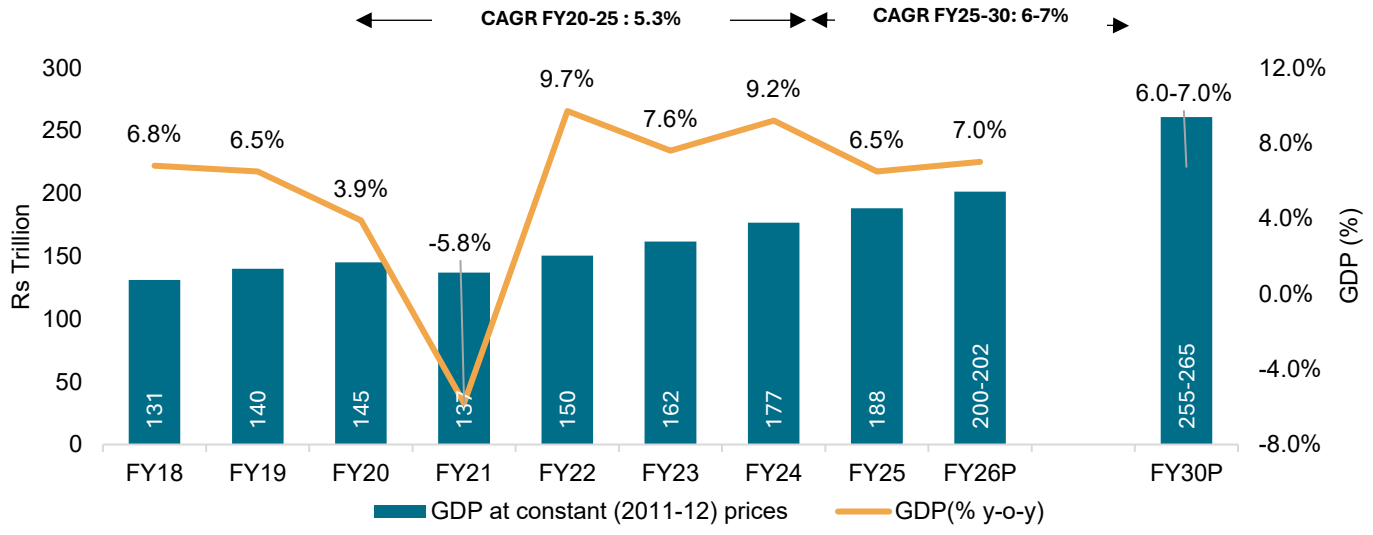
The Indian economy is estimated to have logged a CAGR of 5.3% between fiscals 2020 and 2025, driven by benign crude oil prices, soft interest rates and low current account deficit.

According to the National Statistics Office's (NSO) second advance estimates (SAE), India's real gross domestic product (GDP) growth was projected to be 6.5% for fiscal 2025, slightly higher than the first advance estimates. GDP growth was revised upward to 9.2% for fiscal 2024 and 7.6% for fiscal 2023. However, growth in fiscal 2025 showed significant slowdown compared with fiscal 2024, owing to weak investments and reduced government consumption, but private consumption and exports saw improvement.

We expect a GDP growth of 7.0% for fiscal 2026, driven by slower global growth, owing to tariff tensions and heightened uncertainty on investment and spending decisions by businesses and households. India's goods exports are expected to be impacted due to its trade agreement with the US. However, services exports are expected to be resilient, considering domestic drivers will support growth momentum.

Private consumption is poised to be the primary driver of GDP growth in fiscal 2026. A healthy monsoon will support the agriculture sector and rural incomes. Robust agricultural production on the back of the favourable monsoon will help keep food inflation in check, which will free up household budgets for discretionary spending.

India's GDP growth trend and outlook



Note: P – projected

Source: National Statistical Office (NSO), IMF, Crisil Intelligence estimates

We expect the GDP growth momentum to continue and the economy to clock a CAGR of 6-7% between fiscals 2025 and 2030.

India to remain a global outperformer

Despite slowdown in the near term, India's growth is expected to outperform other emerging and advance economies in the medium run. Its steady growth momentum will be accelerated by resilient domestic demand, with rural consumption gaining momentum, rise in urban spending and private investment increasing at a faster rate. We expect GDP growth to average 6-7% between fiscals 2025 and 2030, compared with 3.3% globally as estimated by the IMF.

Key factors impacting the business environment:

- Strong domestic demand is expected to drive India's growth over peer economies in the medium term
- Investment prospects are optimistic, given the government's capital expenditure (capex) push, the progress of the Production Linked Incentive (PLI) scheme, healthier corporate balance sheets and a well-capitalised banking sector, with low non-performing assets
- The government's future capex is expected to be supported by tax buoyancy, simplified tax structures with lower rates, reassessment of the tariff structures and digitalisation of the tax filing process
- The medium-term growth is anticipated to be bolstered by increased capital spending on infrastructure and asset development projects, thereby translating into enhanced growth multipliers

GST reforms to accelerate consumption and support domestic sales:

- The government of India has revamped the goods and services tax (GST) structure with three slabs—5%, 18% and 40%
- In the automobile industry, electric vehicles will continue to be taxed at 5%, while other segments have undergone a rate revision to either 18% or 40% (see tables below)

Consumption driven goods:

Category	Items	Old GST rate	New GST rate
Consumer electronics	Air conditioners, dishwashing machines, televisions over 32 inches, monitors, projectors	28%	18%
Food items	Packaged namkeens, sauces, pasta, instant noodles, chocolates, coffee, preserved meat, cornflakes, butter, and ghee	12-18%	5%
Daily usage items	Hair oil, soap bars, shampoos, toothbrushes, toothpaste, tableware, kitchenware, and other household articles	12-18%	5%

Source: Press release document by MoF dated 3 September 2025

- Lower GST on consumer goods, food, and daily-use items to reduce expenditure for households, leaving them with more money to spend. This is likely to boost overall consumption, especially in price-sensitive rural and semi-urban areas
- Higher demand for essentials will increase goods movement, which will benefit small commercial vehicles (SCVs) and light commercial vehicles (LCVs) for last-mile deliveries and intermediate commercial vehicles (ICVs) for mid-mile distribution

Category	Items	Old GST rate	New GST rate
Agriculture	Tractors, harvesters, sprinklers, drip systems, pumps	12%	5%

Source: Press release document by MoF dated 11 September 2025

- The reduction in GST on agricultural inputs such as seeds, fertilisers, and farm equipment will lower costs for farmers, improving affordability

- Lower GST on medical, healthcare and insurance services will reduce household expenses on essential services, effectively increasing disposable income
- This is likely to moderately increase consumption, hence support demand for SCV, LCV, and ICV segments

GST for vehicle pricing

Category	Old GST rate	New GST rate
Buses	28%	18%
LCVs — goods	28%	18%
Medium and heavy commercial vehicles (MHCV) — goods	28%	18%

Source: Press release document by MoF dated 11 September 2025

- Prices for LCVs, MHCVs and buses will reduce ~7.8%. However, price drop does not consider any pass-through that may happen from automotive component manufacturers to original equipment manufacturers (OEMs) in the form of GST reduction as all automotive components have been brought under the ambit of 18%

Category	Old GST rate	New GST rate
Two-wheelers ≤350cc	28%	18%
Three wheelers	28%	18%
Off road vehicles	28%	18%
Small cars (petrol/LPG/CNG)	28% + 1% cess	18%
Small car (diesel)	28% + 3% cess	18%
Larger/luxury cars/SUVs/big cars	28% + 17% cess	40%
Larger/luxury cars/SUVs/big cars	28% + 20% cess	40%
Larger/luxury cars/SUVs/big cars	28% + 22% cess	40%
PV- EV	5%	5%

Source: Press release document by MoF dated 11 September 2025

- Lower GST led to reduction in prices of two-wheelers, making it affordable for youth and professional and lower middle-class households
- Two-wheelers are the primary mode of transport in rural and semi-urban areas. The price reduction will directly benefit farmers, small traders and daily wage earners
- It is expected to boost the saving of the consumers through reduced cost and EMIs for two-wheeler loans, thus providing a fillip to vehicle demand
- By reducing the effective rate on small cars to 18% and capping larger vehicles at 40%, the government has simplified what was earlier a mix of GST plus compensation cess
- Cars in the affordable segment will become cheaper, encourage first time buyers and increase household mobility
- No more cess on any of these car categories. The compensation cess (which added up significantly in luxury/large vehicle segment) is removed under the new structure
- Reduced GST is expected to drive higher car sale, and it will provide an added push to industry sales, supporting PV industry and the auto component industry

The auto component industry is set to benefit from the revised GST rates, which will simplify the tax structure and reduce compliance burdens for manufacturers, dealers and suppliers. Previously, disparate GST rates of 18% and 28% on

various auto parts led to disputes and complexities. The new rates will lower input costs for manufacturers, reduce working capital requirements and drive demand for new vehicles.

Category	Old GST rate	New GST rate
Auto component	28%	18%

Source: PIB.gov published on 8 September 2025

Per capita income

According to the provisional estimates by the NSO, the per capita income (per capita net national income; NNI) is estimated to have grown 5.4% in fiscal 2025, compared with 8.6% in fiscal 2024. In fiscal 2021, the per capita income declined 8.9% owing to GDP contraction, driven by the pandemic impact. The per capita income rose 7.6% in fiscal 2022 on the lower base of fiscal 2021.

According to the IMF's estimates, India's per capita income (at current prices) is expected to log a CAGR of 9% over calendar years 2025-2030.

Indian economy is expected to surpass the $5 trillion mark over the next seven fiscals (2025- 2031) and inch closer to $7 trillion. A projected average GDP growth of 6.7% in this period will make India the third-largest economy in the world and lift its per capita income to the upper middle-income category. By fiscal 2031, India's per capita income will rise to ~$4,500, thereby making it an upper middle-income nation.

The anticipated growth in per capita income is poised to enhance disposable income and purchasing power, thereby driving up demand for personal vehicles, including two-wheelers and passenger vehicles. Further, the rising incomes are likely to fuel a trend of premiumisation in these segments, where consumers opt to upgrade to higher-end vehicles and variants, seeking enhanced feature and quality.

Government policy support

PLI scheme provides boost to industrial investments in the short-to-medium term

The PLI scheme aims to make India's manufacturing globally competitive by removing sectoral obstacles and creating economies of scale. The scheme, implemented from 2022 to 2029, has already shown significant results:

- Rs 1.76 lakh crore in realised investments across 14 sectors as of August 2024
- Rs 16.50 lakh crore in revenue generated by mid-2025
- ~12 lakh jobs created directly and indirectly

The scheme provides time-bound incentives to companies, rewarding them 5-15% of their annual revenue for achieving pre-decided targets for production, exports and capital expenditure. The scheme has led to a revival in capital expenditure and is expected to boost economic growth and create more employment opportunities.

The automobile and auto component sector saw a sharp increase in the allocation in the past few years—from Rs 2.63 crore in fiscal 2024 to Rs 346.87 crore in fiscal 2025 to Rs 2,818.85 crore for fiscal 2026. The allocation for automobile and auto component industry for fiscal 2026 was the second largest among all sectors.

Budgeted incentives for each sector under the PLI scheme

Sector	Segment	Revised estimates FY25 budget Rs crore	FY26 budget estimates (Rs crore)
Electronics	Electronic manufacturing and hardware	5,777.00	9,000.00
Pharma	Pharmaceuticals	2,150.50	2,444.93
Automobile	Advance chemistry cell (ACC) battery	15.42	155.76
	Automobiles and auto components	346.87	2,818.85
Textile	Textile	45.00	1,148.00
White goods	Air conditioners and LED lights	213.57	444.54
Steel	Specialty steel	55.00	305.00

Source: PIB, budget documents, Crisil Intelligence

Supply chain diversification trend in global manufacturing and procurement policies

The supply chain diversification strategy has reshaped global manufacturing and sourcing patterns, driven by the need to reduce over-dependence on a single country. While China continues to be a critical node in global manufacturing, recent geopolitical tensions, pandemic-induced disruptions and rising labour costs have compelled companies to explore alternative destinations to ensure operational continuity and cost efficiency. The objective of the strategy is not to replace China entirely but to complement existing operations by expanding into countries such as India, Vietnam, Indonesia and Mexico. This shift is helping companies to access new markets, leverage favorable trade agreements and reduce exposure to policy-related uncertainties.

For India, the supply chain diversification strategy presents a medium-to-long-term opportunity to integrate more deeply into global value chains. With its large and skilled labour force, improving infrastructure and government-backed initiatives, such as the PLI scheme and Make in India, the country is well-positioned to absorb incremental investments from multinational corporations looking to diversify. In sectors such as electronics, pharmaceuticals, textiles and automotive components, several companies have already begun to relocate or expand production into India.

The Indian auto component industry players are proactively partnering with foreign firms through Joint ventures, acquisitions, and technological collaborations to enhance its global competitiveness, gain access to cutting edge and expand its market presence. These collaborations bring advanced R&D, high-value manufacturing, and market access, while Indian firms leverage cost advantages and local expertise, aiming to capture more of the high-value global trade.

This has translated into rising foreign direct investment (FDI) inflows, new manufacturing partnerships and greater emphasis on domestic sourcing, thereby boosting the country's industrial ecosystem. Further, this trend aligns with India's broader economic strategy of import substitution, employment generation and becoming a global manufacturing hub. Over the next few years, the supply chain diversification strategy is expected to strengthen India's role as a strategic alternative in global manufacturing. Continued policy support, regulatory simplification and timely execution of infrastructure projects will be key to sustaining investor confidence and capitalising on this evolving global realignment.

Increased focus on foreign trade agreement

India is actively negotiating and reviewing bilateral trade agreements with major global economies to boost its trade prospects. As of 2025, India has 13 active free trade agreements (FTAs) in place and is currently pursuing several bilateral FTA negotiations with key partners, including the United Kingdom (UK), European Union, Chile, Oman, Qatar, Peru, and New Zealand, as well as the US.

India signed a trade and economic partnership agreement with the European Free Trade Association (EFTA) on March 10, 2024, and the India-UAE bilateral investment treaty came into effect on August 31, 2024.

It is also in the process of reviewing its 2009 trade agreement with the Association of Southeast Asian Nations (ASEAN) to make it more equitable and aligned with current economic realities.

The recent tariff changes imposed by the US, along with potential trade deal adjustments by affected countries, are expected to reshape global trade dynamics. Given that the US accounts for ~20% of India's merchandise exports, and over 60% of India's auto component exports go to North America and Europe, the Indian government is proactively exploring other economies to mitigate the impact and sustain export growth. Companies in the auto component sector with limited exposure to the US market are relatively insulated from these increased tariffs, but the government is focusing on diversifying trade relationships to support exports.

India and the UK signed a landmark FTA in July 2025 to improve bilateral trade and investment flows. The agreement is expected to double trade between the two nations—currently valued ~$60 billion—by 2030. Under the deal, India will gain near-complete duty-free access for its exports to the UK, especially in key sectors, such as textiles, gems and jewellery, engineering goods and processed foods. In return, the UK will benefit from phased tariff reductions on high-value goods such as automobiles, Scotch whisky, medical devices and premium food products. The FTA also introduces streamlined customs procedures and a special mobility pathway for Indian professionals.

Beyond goods trade, the agreement includes provisions on digital trade, services, intellectual property and government procurement. A key highlight is the social security pact that exempts Indian professionals from double contributions for up to three years, benefiting around 75,000 workers. The deal is also aligned with sustainability and ESG goals, featuring cooperation on clean energy and green technology. The India-UK FTA is a strategic milestone that strengthens India's trade diversification strategy, complements the supply chain diversification trend and reinforces its position in global supply chains.

India -EU Free Trade Agreement (FTA) discussions

The India-EU FTA, also known as the Broad-based Trade and Investment Agreement (BTIA), aims to liberalise trade in goods, services and investment between India and the 27-member European Union. The negotiations were launched in 2007, but progress has been slow due to various challenges and disagreements.

After several years of negotiations, the India-EU FTA has made significant progress. In February 2025, India and the EU announced a breakthrough in their FTA negotiations, with both sides agreeing on the core elements of the agreement.

The India-EU FTA is expected to have a notable impact on trade and investment between the two regions. According to Industry estimates, the agreement could increase bilateral trade by up to 20% and attract significant foreign investment into India. Overall, the India-EU FTA has the potential to be a game-changer for trade and investment between the two regions. While there are still challenges ahead, the breakthrough in negotiations is a significant step forward, and both sides are committed to making the agreement a success.

Atmanirbhar Bharat campaign

The Atmanirbhar Bharat Abhiyan or the self-reliant India campaign was launched in May 2020 amid the Covid-19 pandemic, with a special and comprehensive economic package of Rs 20 trillion, equivalent to 10% of the country's GDP.

The stimulus package announced by the government under the scheme consisted of five tranches, intended to boost businesses, including Micro, Small and Medium Enterprises (MSMEs), help the poor (including farmers), boost agriculture, expand the horizons of industrial growth, and bring in governance reforms in the business, health, and education sectors.

The mission emphasises the importance of encouraging local products and aims to reduce import dependence through substitution and enhance compliance and quality requirements to meet international standards and gain global market

share. The mission will support in bolstering manufacturing activity in the upcoming EV sector by prioritising domestic production to reduce import dependency, adopt technological innovation and create job opportunities in the country.

The government has also rolled out other reforms, such as supply chain reforms for agriculture, rational tax systems, simple and clear laws, capable human resources and a strong financial system. These reforms will further promote business, attract investment and strengthen the Make in India initiative.

Make in India

The ‘Make in India’ initiative was launched in September 2014 to give a push to manufacturing in India and encourage FDI in manufacturing and services. The objective of the initiative was to increase the share of manufacturing in GDP to 25% by 2020 by boosting investment, fostering innovation and intellectual property. It also aimed to build best-in-class infrastructure for manufacturing across sectors, including but not limited to automobile, auto components, aviation, biotechnology, chemicals, defense manufacturing, electrical machinery, electronic systems, food processing, mining, oil and gas, pharmaceuticals, renewable energy, thermal power, hospitality and wellness.

In the Union Budget 2025-2026, the government announced the National Manufacturing Mission, covering small, medium and large industries to bolster the 'Make in India' initiative, providing policy support, execution road maps and a governance and monitoring framework for central ministries and states. The mission will also support clean tech-related manufacturing. The aim is to improve domestic value addition and build an ecosystem for solar photovoltaic (PV) cells, electric vehicle (EV) batteries, motors and controllers, electrolysers, wind turbines, very high voltage transmission equipment and grid scale batteries.

The ‘Make in India’ initiative has been a catalyst for the auto components industry, drawing substantial investments from domestic and foreign sources. This influx of investment has been facilitated by a range of supportive policies and incentives, including the PLI scheme and a reduced GST rate on electric vehicles (EVs). Notably, the GST Council, in a meeting held in September 2025, reaffirmed the continuation of the lower GST rate for EVs. This decision offers a significant tax advantage for EVs over their conventional petrol and diesel counterparts, which are subject to a much higher GST rate. Although the GST 2.0 framework did not introduce further reductions in GST rates for EVs, the existing lower rate continues to provide a considerable incentive, promoting the adoption of electric vehicles and contributing to the growth of the auto components industry in India.

FDI

FDI plays a pivotal role in economic growth, aiding development and shaping the economic landscape. Through the FDI route, international corporations can invest in India, capitalising on the investment incentives offered by the Indian government, including tax incentives and relatively competitive labour costs. This fosters job creation, offers various additional advantages and facilitates the acquisition of technological expertise from global peers.

FDI to India almost doubled to $83.6 billion in fiscal 2022 from $45.15 billion in fiscal 2015. Over the past decade (April 2014 to September 2024), total FDI inflows amounted to $709.84 billion, accounting for 68.69% of the overall FDI inflow in the past 24 years. This robust inflow of investments underscores India’s pivotal role in shaping the global economic landscape. FDI inflows have received an impetus, with India gaining the eighth position in the list of the worlds’ largest FDI recipients in 2022 from 12th in 2018, according to the World Investment Report 2024. From 2000 to 2024, a total FDI inflow of $991 billion was recorded. FDI equity inflow in the manufacturing sector rose from $98 billion in 2004-2014 to $165 billion in 2014-2024, demonstrating a 69% increase. In the first quarter of fiscal 2025, FDI inflow reached $22.5 billion, a 26% increase compared with $17.8 billion in the first quarter of fiscal 2024.

There are two FDI routes in India—the government route and the automatic route. The automatic route allows foreign investors to invest in sectors without requiring a prior approval from the Indian government. Under this route, investors are

only required to notify the Reserve Bank of India (RBI) within a specified time frame. While the government route mandates prior approval from the Indian government or relevant authorities for investments in India.

The automobile (including auto components) industry is one of the largest, fastest-growing sectors in India, with a significant contribution to the country's GDP. The sector has attracted significant FDI over the years, driven by government policies, a large domestic market and skilled workforce.

Summary of FDI in key Indian sectors

Sector	FDI cap	Route
Automobile and auto components	100%	Automatic
Airports - greenfield projects	100%	Automatic
Satellites - manufacturing and operation, satellite data products and ground segment and user segment	74%	Government
Hospitals sector	100%	Automatic
Defense	74%	Automatic Government route up to 100% if resulting in access to modern technology

Source: Department for Promotion of Industry and Internal Trade DPIIT, PIB

The automatic route for FDI in the automobile sector has been a game-changer for the Indian auto component industry because it allows companies to seamlessly form joint ventures (JVs) and subsidiary companies with foreign players, facilitating equity participation from global investors. This liberalised investment regime has had a profoundly positive impact on the Indian auto component industry, enabling it to attract significant foreign investment, technology, and expertise, which in turn has accelerated the growth of the Indian automobile and auto component industry.

Major investments have been made by global automotive companies such as Suzuki, Hyundai, Ford, Volkswagen, and Fiat. The auto component sector has also seen significant FDI, with companies such as Bosch, Continental, ZKW and ZF Friedrichshafen investing in the country.

Government's focus on infrastructure

The national infrastructure pipeline (NIP) for fiscal 2019-2025 is a government initiative to develop infrastructure across the country and provide world-class services to its citizens. The total capital expenditure in infrastructure sectors in India during fiscals 2020 to 2025 was projected at Rs 111 lakh crore.

The initiative aims to double infrastructure investment per year from the current average of Rs 10 lakh crore per year to Rs 22 lakh crore per year. Of the total NIP investment of Rs 111 lakh crore, projects worth Rs 44 lakh crore (40%) are under implementation, projects worth Rs 34 lakh crore (30%) are at the conceptualisation stage and projects worth Rs 22 lakh crore (20%) are under development. Almost 83% of project allocation indirectly benefits the CV sector in India, and this push for infrastructure is a major driver of growth.

Gati Shakti

The PM Gati Shakti National Master Plan (NMP) is a government-led transformative initiative aimed at overhauling India's infrastructure development framework. By removing bottlenecks and enabling multimodal connectivity across road, rail, ports, airports, and logistics infrastructure, the initiative is designed to reduce project delays, cut logistics costs and improve the ease of doing business.

The initiative aims to support the manufacturing ecosystem by improving last-mile connectivity to industrial parks, economic zones, freight corridors and export hubs.

According to the roadmap outlined by the government, infrastructure investments under the Gati Shakti initiative are expected to peak during fiscal 2026-2028, aligning with rising demand from industrial expansion and urbanisation. Sectors such as logistics, warehousing, energy and transport are set to benefit from improved connectivity and time-bound project implementation. In the long run, the initiative is expected to play a catalytic role in strengthening India's global competitiveness, improving trade efficiencies and reducing logistics costs from the current 13-14% of GDP to global benchmarks of 8-9%.

Scrappage policy

The Indian government aims to promote vehicle scrapping by exempting the registration charges for new truck purchases after scrapping older trucks. Owing to this policy, the registration charges for older vehicles have increased and it is mandatory to have strict fitness tests for older vehicles. There is a strict fitness test for older vehicles, which includes an age-based fitness test that needs to be done every six months for the vehicles older than 15 years, stricter emission norms to reduce pollution and safety inspections for vehicles.

FAME I (2015-2019)

The Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME I) scheme was implemented to promote manufacturing of electric and hybrid vehicle technology and ensure sustainable growth of the same. The first phase of the scheme had four focus areas—demand creation, technology platforms, pilot projects and charging infrastructure. About 2.78 lakh EVs were supported through demand incentives and 465 buses were sanctioned to cities/states under the scheme.

FAME schemes

S. NO.	Fiscal	Fund allocated	Fund utilisation
1	**2015-16**	Rs 75 crore	Rs 75 crore
2	**2016-17**	Rs 144 crore	Rs 144 crore
3	**2017-18**	Rs 165 crore	Rs 165 crore
4	**2018-19**	Rs 145 crore	Rs 145 crore
Total		Rs 529 crore	Rs 529 crore

Source: PIB

Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME II) India Scheme (2019-2024)

According to PIB, Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme Phase-II was implemented for five years with a Rs 11,500 crore budget. Of the total budget, about 86% was earmarked for demand incentives to boost EV adoption in the country. The scheme incentivised the sale of EVs (i.e., e-2Ws, e-3Ws and e-4Ws) and offered grants for deployment of e-buses and EV public charging stations (EVPCS). This phase aimed to generate demand by supporting 7,000 e-buses, 5 lakh e-3Ws, 55,000 e-4W passenger cars (including strong hybrid) and 10 lakh e-2Ws.

Incentives offered under the scheme

Segment	Maximum vehicles supported	Approx size of battery (kWh)	Incentive offered (Rs/kWh)	Maximum ex-factory price to avail incentive (Rs)
2W	1,000,000	2	10,000	1.5 lakh
3W	500,000	5	10,000	5.0 lakh
4W	35,000	15	10,000	15.0 lakh
4W strong hybrid	20,000	1.3	10,000	15 lakh
Bus	7,090	250	20,000	2.0 crore

Source: Ministry of Heavy Industries

In June 2021, demand incentive for 2Ws was increased to Rs 15,000/kWh capped at 40% of the vehicle cost. In June 2023, this was again revised and reduced to Rs 10,000/kWh of battery, and the maximum subsidy cap was reduced to 15%.

The scheme, which was initially set to end by March 2024, was extended till July 2024, to avoid any disruption in the EV ecosystem. The government did not extend the scheme further, rather it announced a replacement scheme called Electric Mobility Promotion Scheme 2024.

The FAME scheme was supported by the Phased Manufacturing Programme and PLI schemes.

Electric Mobility Promotion Scheme 2024

The Ministry of Heavy Industries (MHI) launched the Electric Mobility Promotion Scheme 2024 (EMPS 2024) in March 2024, with a budget of Rs 500 crore, to promote the adoption of e-2Ws and e-3Ws in India. The scheme, which was initially set to run from April 1 to July 31, 2024, was extended till September 30, 2024. The scheme aimed to support the adoption of 372,215 EVs, including 333,387 e-2Ws and 38,828 e-3Ws, by providing subsidies of up to Rs 10,000 for e-2Ws, Rs 25,000 for e-rickshaws and carts, and Rs 50,000 for e-3Ws in the L5 category. The scheme helped drive EV sales in the short term, filling the gap after the expiration of FAME II in March 2024, and has since been replaced by the PM E-DRIVE scheme.

PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) scheme

The PM E-DRIVE scheme, with a budget of Rs 10,900 crore, aims to accelerate the adoption of EVs in India. The scheme has three key components: Subsidies for EVs, grants for creating capital assets, and administration costs. The scheme targets:

- 24.79 lakh e-2Ws with advanced batteries
- 3.2 lakh e-3Ws with advanced battery technology for commercial use
- Deployment of e-ambulances with a budget of Rs 500 crore
- Incentivising e-trucks with a budget of Rs 500 crore, subject to receiving a scrapping certificate from MoRTH-approved centres
- Procurement of 14,028 electric buses by state transport undertakings (STUs) with a budget of Rs 4,391 crore
- Establishment of a robust network of public charging stations, including 22,100 fast chargers for e-4Ws, 1,800 for e-buses, and 48,400 for e-2Ws and e-3Ws, with a total outlay of Rs 2,000 crore

The scheme has already shown success, with over 1 million EVs sold in fiscal 2025, and 10,10,101 e-2Ws and 1,22,982 e-3Ws registered under the scheme. The subsidy for e-3Ws has been reduced to Rs 2,500/kWh, capped at Rs 25,000,

from November 2024. The scheme aims to promote the adoption of EVs, reduce CO_2 emissions, and establish a robust EV manufacturing ecosystem in India.

Incentives under PM E-DRIVE for e-2W and e-3W segments

Vehicle segment	No. of vehicles to be supported		Incentives for vehicles		Maximum ex-factory price
	FY25	FY26	FY25	FY26	
e-2W	1,064,000	1,415,120	Rs 5,000/kWh, capped at Rs 10,000	Rs 2,500/kWh, capped at Rs 5,000	Rs 1.5 lakh
e-3W (L3)	43,371	67,225	Rs 5,000/kWh, capped at Rs 25,000	Rs 2,500/kWh, capped at Rs 12,500	Rs 2.5 lakh
e-3W (L5)	80,546	124,846	Rs 5,000/kWh, capped at Rs 50,000	Rs 2,500/kWh, capped at Rs 25,000	Rs 5 lakh

Source: Ministry of Heavy Industries (MHI)

Additionally, the scheme will support around 14,028 e-buses. The scheme aims to establish a robust network of public charging stations, including 22,100 fast chargers for e-4Ws, 1,800 for e-buses, and 48,400 for e-2Ws and e-3Ws, boosting user confidence. These charging points are to be installed in key cities with high EV penetration and along select highways. The total outlay for charging infrastructure under the scheme is Rs 2,000 crore.

Review of and outlook on the Indian passenger vehicle industry

Industry review

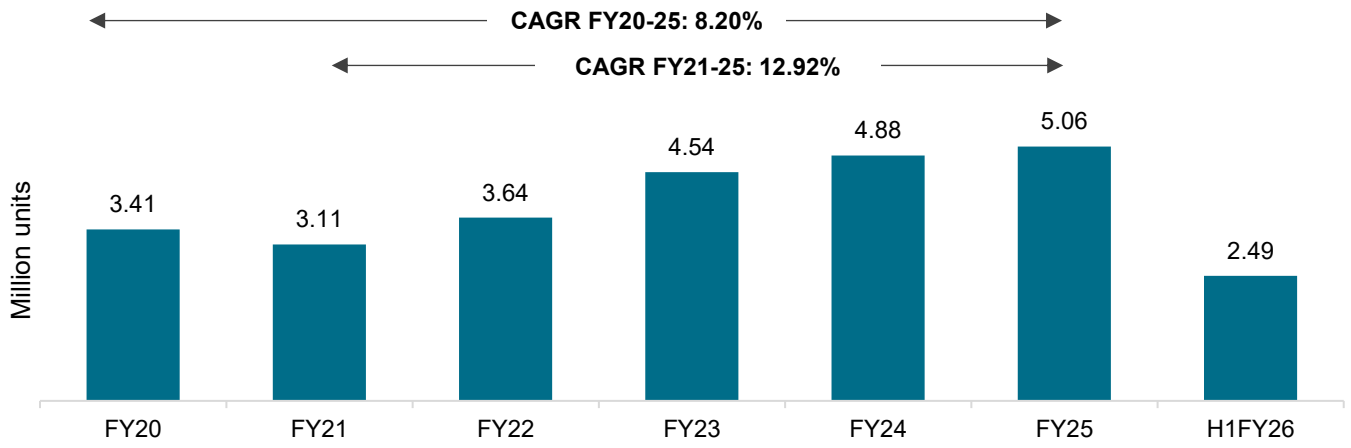
India's PV industry sales (domestic sales + exports) logged a healthy CAGR of 8.20% between fiscals 2020 and 2025, driven by domestic sales, which account for more than 80% of the industry's sales volume. Domestic sales clocked a 9.26% CAGR, while exports grew at a relatively slow pace of 3.22%.

The contribution of domestic sales to total sales increased to 85% in fiscal 2025 from 81% in fiscal 2020.

The relatively slow growth in exports could be attributed to the moderate growth in the global automobile industry and the fact that major OEMs focused on catering to the fast-growing domestic market.

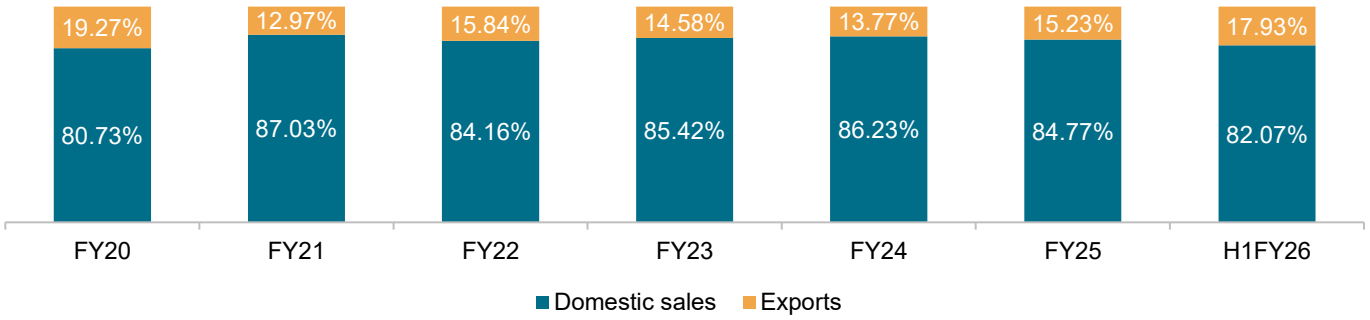
Between fiscals 2021 and 2025, PV sales logged a CAGR of 12.92%.

Trend in total PV sales volume



Source: Society of Indian Automobile Manufacturers (SIAM)

Domestic sales vs exports volume contribution

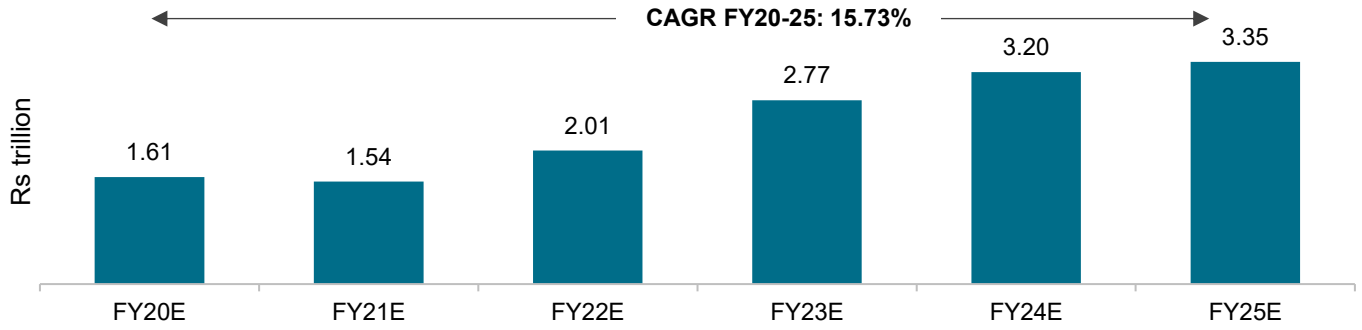


Source: SIAM

Overall PV sales (domestic sales + exports) saw an 8.81% drop in fiscal 2021 amid the pandemic. With economic activity and mobility gradually normalising from fiscal 2022, industry sales bounced back to a record-high 5.05 million units in fiscal 2025, logging a robust 12.92% CAGR.

In the first half of fiscal 2026, domestic PV sales declined 1.44%, while exports saw a healthy 18.37% y-o-y growth, which expanded their share in total sales to nearly 18%.

Trend in PV industry value



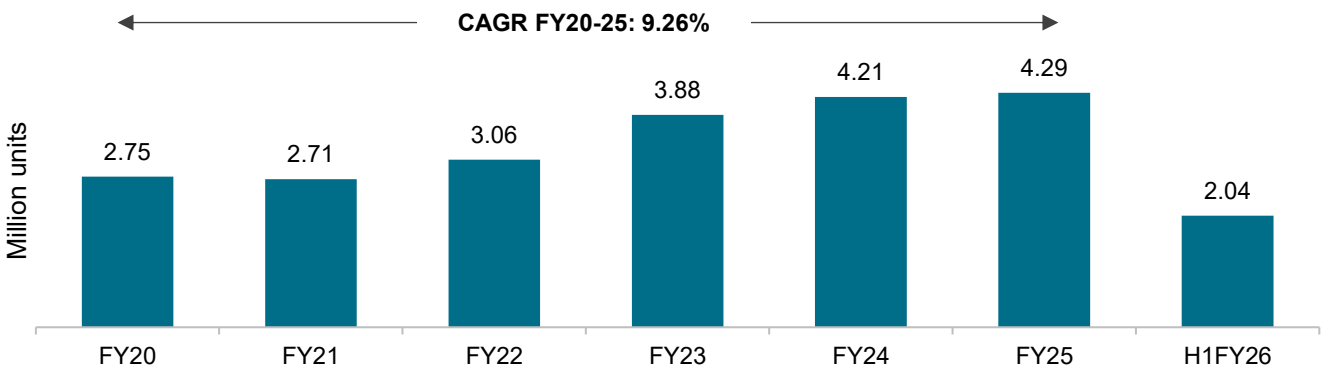
Source: SIAM, Crisil Intelligence

In terms of value, the PV industry clocked a robust CAGR of 15.73% over fiscals 2020-2025. This impressive expansion was fuelled by dual drivers: A notable increase in sales volumes and a substantial rise in average pricing. The growth in average pricing was supported by several key factors, including escalating vehicle prices, a pronounced shift towards premium segments, and a growing trend of premiumisation within each segment, as consumers increasingly opted for higher-end models and features.

Domestic PV sales

Between fiscals 2020 and 2025, domestic PV sales clocked a 9.26% CAGR despite a 10% decline (in CAGR terms) in sales during fiscals 2019-2021. From the low base of fiscal 2021, PV sales bounced back and grew to a historic high of 4.29 million vehicles in fiscal 2025.

Review of domestic PV sales volume



Source: SIAM

In fiscal 2023, the domestic PV industry grew 27% y-o-y, more than double the 13% y-o-y growth seen in fiscal 2022. The order books of auto OEMs were further supported by several new launches in the growing SUV category, which saw

higher traction. Facelifts of existing models and easing supply of semiconductors also helped. The overall wholesale volumes reached a historic high of 3.88 million units in the fiscal.

Fiscal 2024 marked the third year of consecutive growth in the domestic PV industry by recording 8.36% growth. This growth was over a high base of fiscal 2023. During the fiscal, the order books of auto OEMs were supported by a plethora of launches in the growing utility vehicle (UV) category, which had witnessed high traction, along with multiple facelifts of existing models and easing semiconductor supplies that drove record sales in each quarter in fiscal 2024. The overall wholesale volumes settled at ~4.21 million units in fiscal 2024.

The growth momentum continued into fiscal 2025, though the pace slowed somewhat. This was backed by continued traction in the SUV segment, intermittent launches and an increase in disposable incomes. On the high base of fiscal 2024, the industry grew ~2% in fiscal 2025 to hit a record 4.29 million units in fiscal 2025.

In the first half of fiscal 2026, domestic sales declined ~1% because of the increased inventory at the end of fiscal 2025 and subdued retail sales during the fiscal.

Segmental shifts within the domestic PV industry

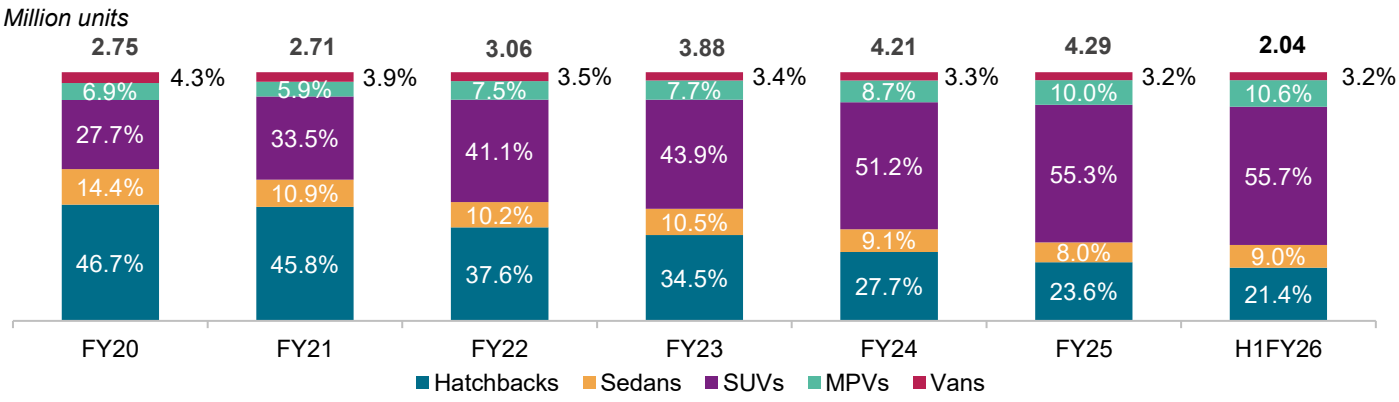
The PV industry can be broadly classified based on body types into hatchbacks, sedans, SUVs, multipurpose vehicles (MPVs) and vans. Indian PV buyers have traditionally been very cost-conscious, basing their decisions on the vehicle's mileage and initial purchase price. Consequently, hatchbacks have led PV sales over the years, primarily because their lower price and running costs make them affordable for the average Indian customer.

However, with a growing share of younger buyers in India, there is an increasing awareness and preference towards parameters other than price, such as exterior and interior design, driving experience, safety, advanced features, lighting and aesthetics, resulting in an inter-segmental shift towards SUVs.

OEMs have addressed this shift by showcasing enhanced vehicle safety in their recent launches. Several OEMs have also gradually introduced advanced features—including safety features and advanced lighting technologies such as LEDs, and made them available in both their top variants and mid-level ones. Furthermore, rising disposable incomes have given an impetus to growth in the SUV segment.

Customer buying behaviour is also changing. They are increasingly prioritising vehicle experience and technology over cost and are willing to pay a premium and are also ready to accept longer waiting times for the desired vehicle. More customers are now opting to buy mid- to top-level variants, driving the intra-segmental shift. This shift towards feature-loaded vehicles is also driving the premiumisation trend.

Segmental shift within the domestic PV industry

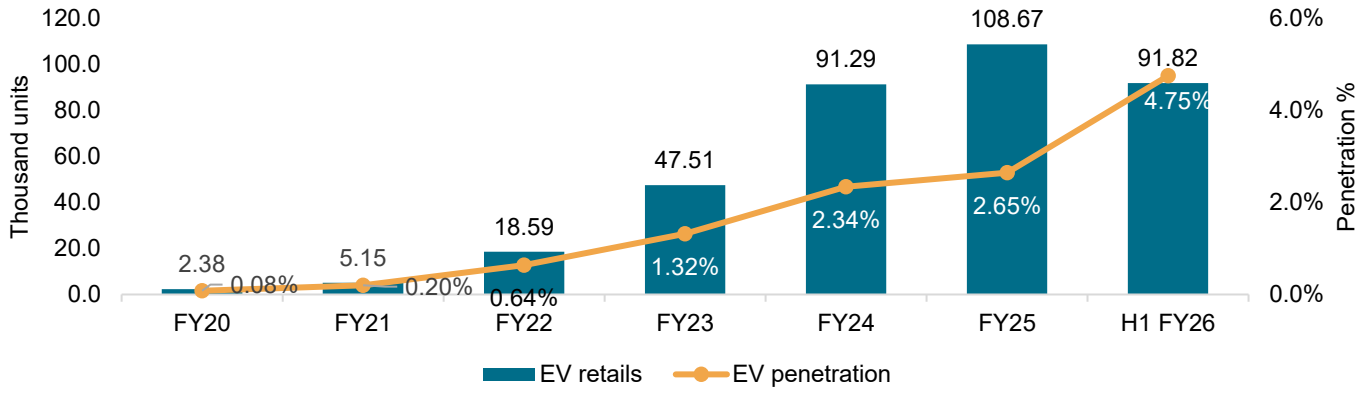


Note: Figures above bars are sales volumes.
Source: SIAM

Electrification within the domestic PV market

EV adoption in India is led by 2Ws and 3Ws; however, PVs are catching up fast. EV penetration in the PV segment was insignificant until fiscal 2021 amid a limited vehicle portfolio and lower customer awareness. Fast expansion of the portfolio, rising environmental awareness, government support and expanding EV infrastructure have led to a sharp rise in EV adoption. Consequently, the penetration of EVs within the retail industry rose to 2.65% in fiscal 2025 from 0.08% in fiscal 2020.

Domestic EV retail and penetration trend in PVs



Note: Vahan figures exclude Telangana retails. Data is as of October 2025.
Source: Vahan, Crisil Intelligence

The real impetus for EV adoption started in fiscal 2022 with gradual normalisation of the economy, improvement in the macro-economic scenario, increase in mobility, expansion of the EV portfolio and continued government support. Moreover, a further rise in internal combustion engine (ICE) vehicle prices, a sharp hike in petrol and diesel prices, increasing customer awareness and younger buyers provided an added boost to EV adoption.

Entry of new players such as BYD, as well as introduction of models such as Tiago EV, Tigor EV, Punch EV, XUV400, Comet EV, eC3, Ioniq and Atto 3 in a short span, provided a thrust to EV adoption. The introduction of the Tiago and Comet in the hatchbacks segment and the Tigor in the sub-4-meter sedans segment expanded the customer base for EVs. Tigor's traction in the commercial fleet segment further aided EV growth.

During fiscals 2020-2025, EV retail sales increased 45x, which translated into a 2.65% EV penetration in fiscal 2025. EV launches, especially during the second half, including Windsor, Creta EV, BE6 and 9E, deepened EV penetration in fiscal 2025.

Aided by continued traction for these latest launches, fiscal 2026 started on a positive note for EVs with the penetration level rising to 4.2% in the first quarter.

However, electrification in the PV segment is still at a nascent stage, and there is significant scope for expansion. In the first half of fiscal 2026, electrification within the industry crossed 4.5%.

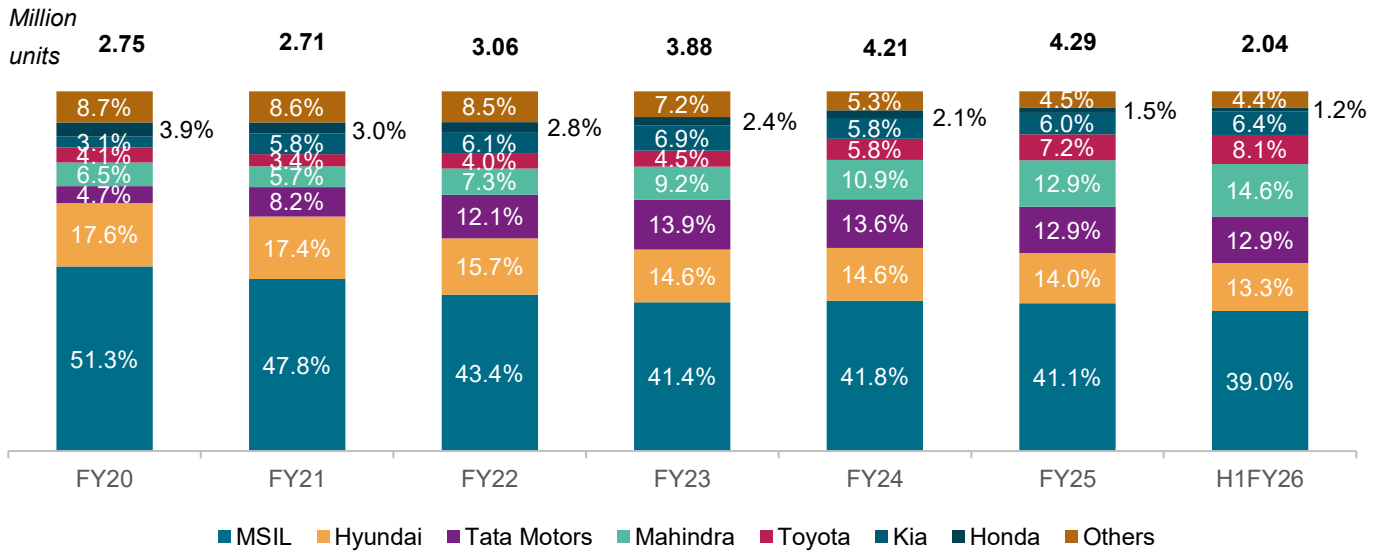
Competitive landscape

Domestic market

The domestic PV industry has an oligopolistic structure where a handful of players dominate the industry. Maruti Suzuki leads the PV industry in terms of domestic sales volumes, followed by Hyundai Motor India, Tata Motors and Mahindra & Mahindra. These four players together hold ~80% of the market.

However, over the past five years, competition has intensified amid competitively priced feature-rich vehicle launches by all players, as well as recent entrants such as Kia and MG grabbing sizeable shares.

Domestic PV market share by OEM



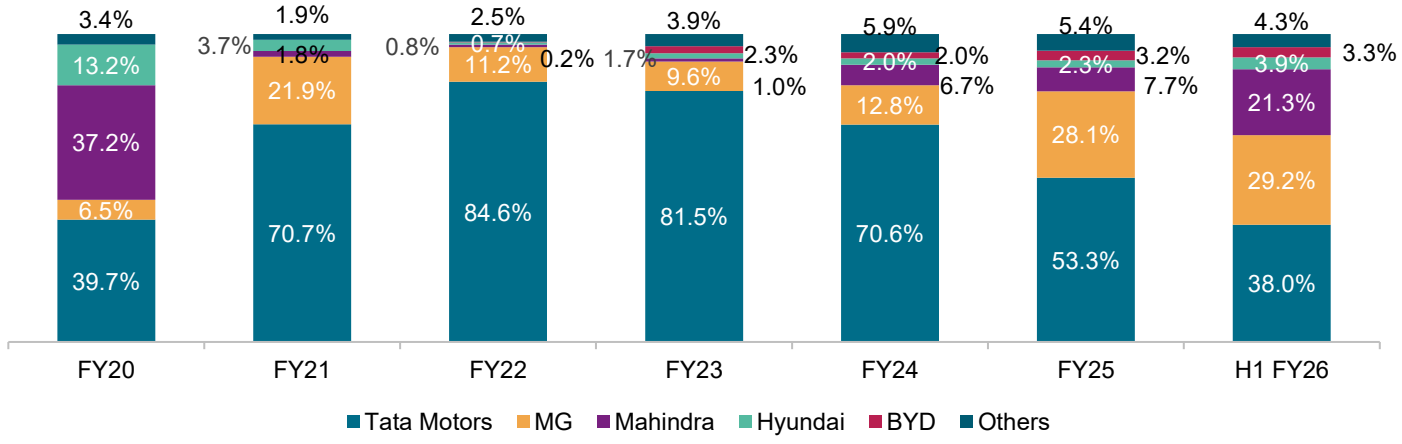
Note: Others include Renault/Nissan, Skoda, PCA, Volkswagen, etc. MG EV (ZS, Comet and Windsor) figures are not available in SIAM numbers since Q2FY24. Figures above bars are sales volumes. Tata Motors represents Tata Motors Passenger Vehicles Ltd

Source: SIAM, Crisil Intelligence

Intensifying competition in the EV PV space

Competition within the EV space has been intensifying, as evidenced by the fluctuating market shares and positions of automobile companies in India that offer EVs in the PV space.

Player-wise share in EV retails



Note: Vahan figures exclude Telangana retails. Data is as of October 2025.

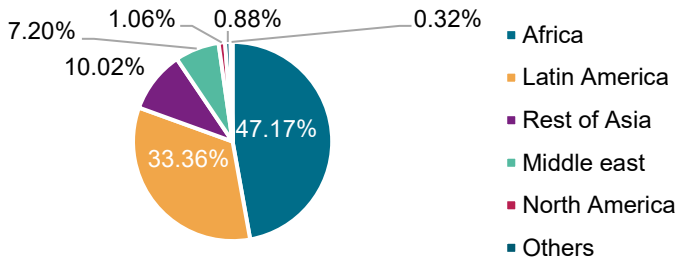
Source: Vahan, Crisil Intelligence

Exports market

Domestic sales dominate the PV industry with more than 80% share. India primarily exports to developing regions including Africa, Latin America and Asia, which account for more than 90% of exports from India.

A few years back, India was a major export hub for hatchbacks and compact sedans. However, it has successfully transitioned to be a large vehicle (premium sedans and SUVs) exporter over the past 5-6 years. OEMs are actively broadening their portfolios to cater to changing consumer preferences in both domestic and global markets. SUV sales are accelerating exports, and models such as the Hyundai Creta, Maruti Suzuki Grand Vitara, Hyundai Venue, Toyota Urban Cruiser HyRyder, Maruti Suzuki Jimny, Maruti Suzuki Fronx and Volkswagen Taigun have gained strong traction in export markets. Premium sedans such as the Hyundai Verna and Volkswagen Virtus are key models driving the market for large cars. Further, models such as Ertiga, Carens and XL6 are driving the demand for MPVs.

Region-wise contribution to India's exports (fiscal 2025)



Note: Rest of Asia is Asia excluding the Middle East.
Source: Directorate General of Foreign Trade, Crisil Intelligence

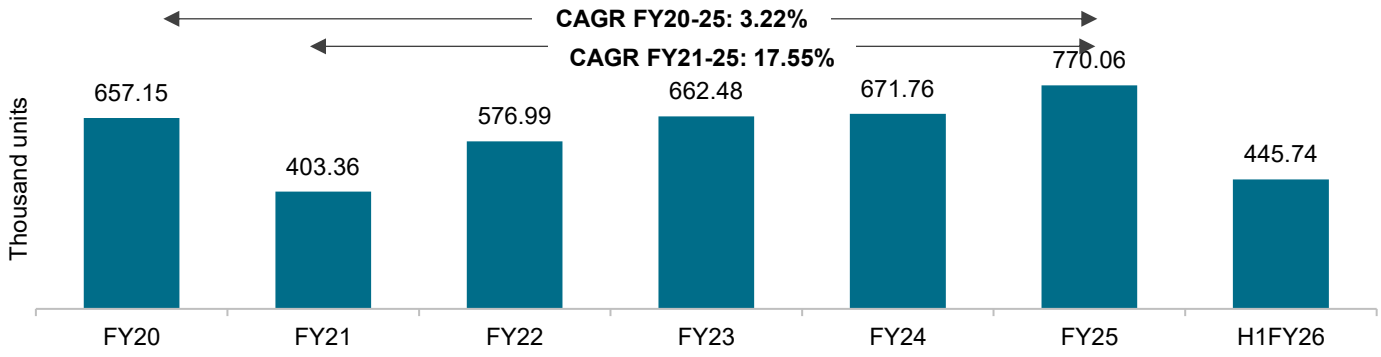
Domestic sales rose at a CAGR of 9.26% over fiscals 2020-2025, faster than exports (3.22% CAGR). The relatively slow growth in exports could be attributed to the moderate growth in the global automobile industry, coupled with major OEMs focusing their attention on catering to the fast-growing domestic market.

Notably, exports recovered quickly after the pandemic, growing at the faster rate of 17.55% annually between fiscals 2021 and 2025, from a lower base in fiscal 2021, when exports had slumped 38.62% compared with a 1.69% drop in domestic sales.

In fiscal 2025, industry exports clocked a healthy 14.63% growth, aided by doubling of UV exports from India. Portfolio expansion and rising demand for UVs supported this sharp growth. On the other hand, exports of cars declined 7.16%, reducing the share of cars in industry exports to 51.80% during the fiscal.

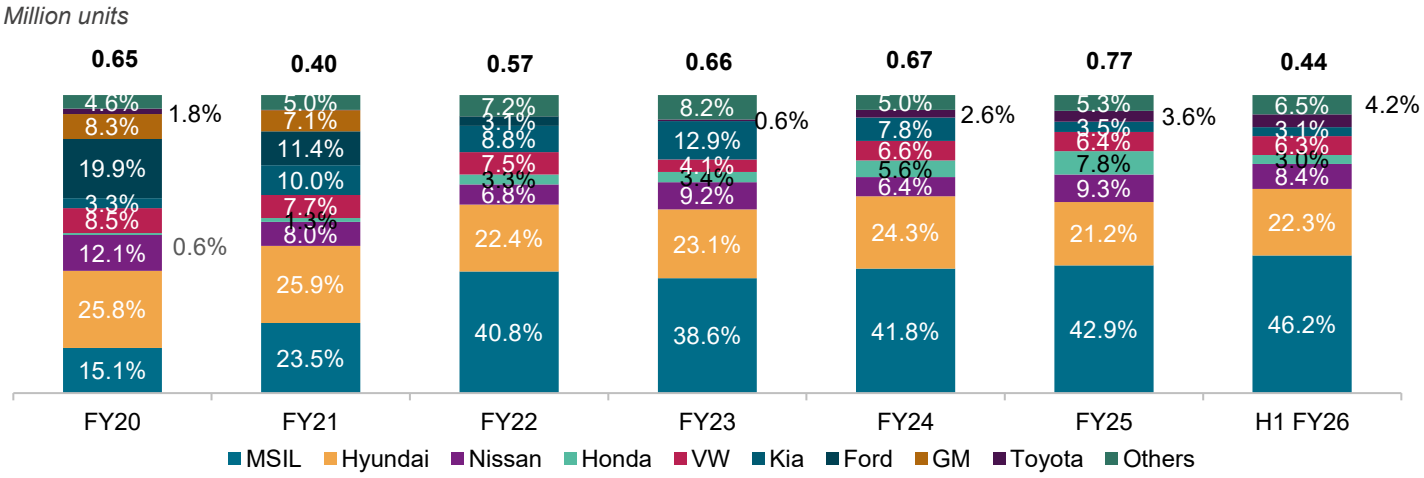
In the first half of fiscal 2026, exports accelerated ~18% y-o-y amid sluggish domestic demand and a broader vehicle portfolio.

Trend in exports



Source: SIAM, Crisil Intelligence

PV export market share by OEM



Note: Others include Renault, Tata Motors, Mahindra, PCA, Skoda, etc. Figures above bars are export volumes.
Source: SIAM, Crisil Intelligence

Luxury vehicles

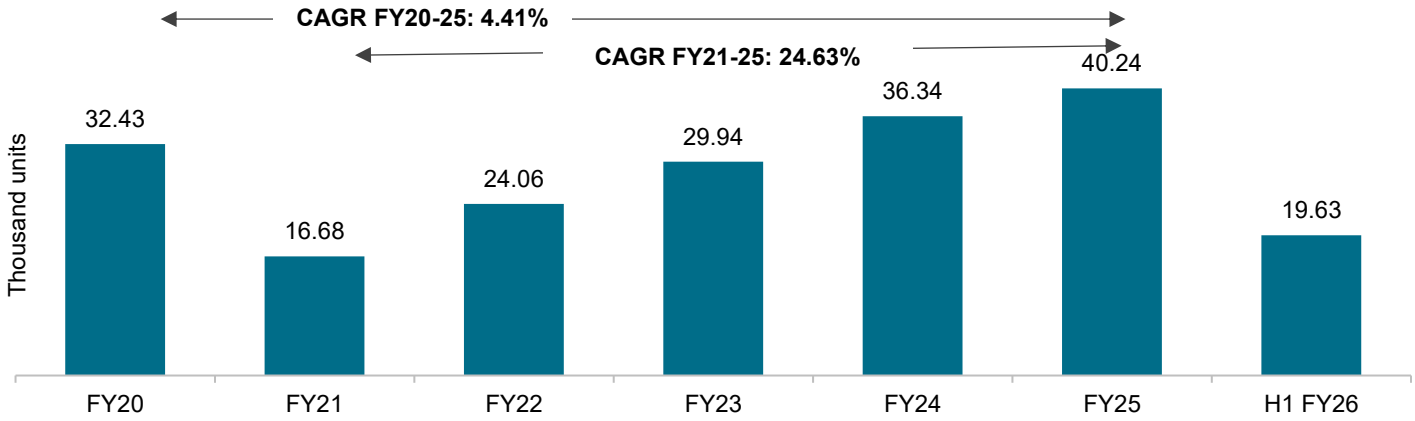
This niche segment, which consists of high-priced ultra-premium vehicles, forms an additional ~1% of the market. The segment includes brands such as Mercedes-Benz, Audi, BMW, Volvo and Jaguar Land Rover (JLR). The ultra-luxury brands such as Ferrari, Rolls-Royce and Lamborghini form an insignificant part of the overall Indian market.

Sales of luxury vehicles logged a 4.41% CAGR between fiscals 2020 and 2025, supported by favourable economic growth, increased disposable incomes and more model launches by luxury OEMs.

The luxury segment witnessed a sharp 48.58% drop in retail sales in fiscal 2021 amid the pandemic. On this lower base, the segment rebounded from fiscal 2022, clocking a healthy 24.63% CAGR between fiscals 2021 and 2025.

In the first half of fiscal 2026, the luxury segment grew 7.54% y-o-y.

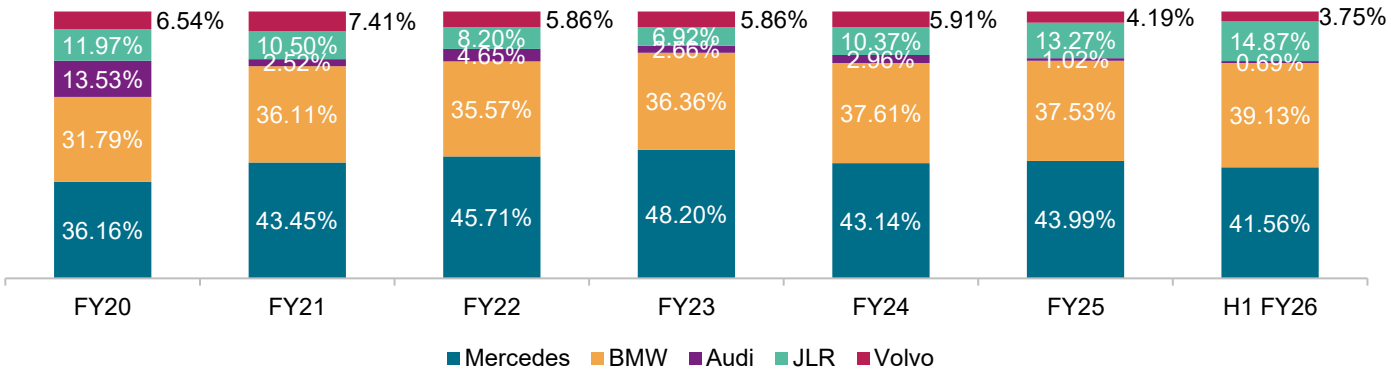
Trend in luxury segment retail sales



Note: Vahan figures exclude Telangana retails. Data is as of October 2025.
Source: Vahan, Crisil Intelligence

Given its long history in India, Mercedes-Benz dominates the luxury car market with a 40-45% share, followed by BMW (35-40%). JLR is a distant third in the market, while Audi and Volvo hold relatively modest market shares.

Luxury market share by player



Note: Vahan figures exclude Telangana retails. Data is as of October 2025.
Source: Vahan, Crisil Intelligence

Demand drivers and trends

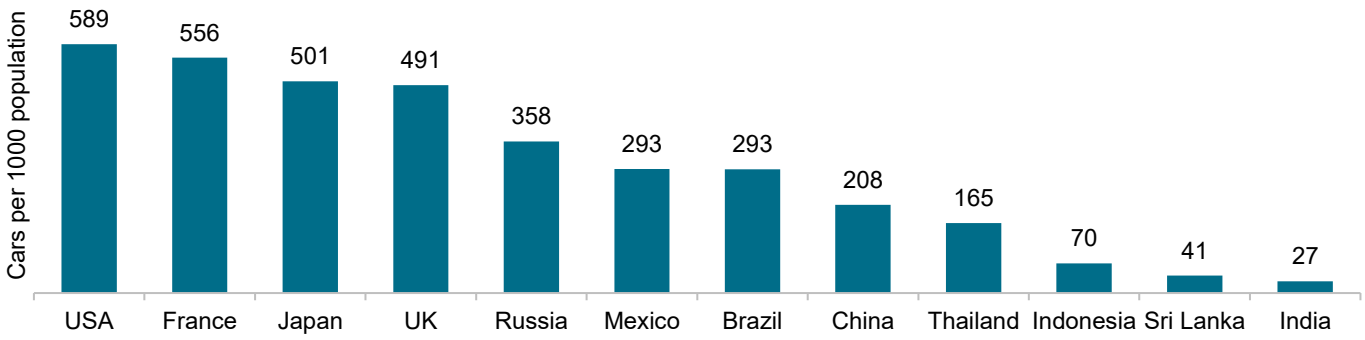
Vehicle penetration in India

The Indian PV market is one of the fastest-growing in the world; it ranked second in terms of annual sales (after China) in 2023. However, the market is highly underpenetrated. According to Crisil Intelligence, India's car penetration of 26 per 1,000 people as of fiscal 2024 was significantly lower than that of developed countries and even emerging economies such as Brazil, Russia and Mexico. This provides automobile manufacturers significant headroom for growth, especially given the expected increase in disposable income, faster economic growth, younger population and increased focus of international OEMs.

In fiscal 2020, India had 32 million vehicles, with a penetration rate of 23 PVs per 1,000 people. By fiscal 2025, this number increased to 39 million and the penetration rate to 27 cars per 1,000 people. This growth indicates a significant expansion in the automotive market. The PV population grew by seven million vehicles. The penetration rate increased by four cars per 1,000 people. This upward trend is expected to continue in the coming years.

We expect the population of PVs to increase at 48 to 50 million cars, which puts the penetration level at 32 to 34 cars per 1000 people by fiscal 2030.

Car penetration by country



Note: Data for CY 2023, India car penetration data for FY24
Datapoints shown above do not include the light trucks segment, which contributes to a significant share of the USA market
Source: International Road Federation- World Road Statistics 2025, Crisil Intelligence

Evolving emission standards

The landmark shift to Bharat Stage (BS) VI emission norms in April 2020 from BS IV, skipping an entire generation of standards, aligned India closer to global and Euro 6 norms. This transition required substantial investment in engine technology, after-treatment systems and fuel quality upgrades, resulting in higher vehicle cost and increased cost per vehicle (CPV). The upcoming BS VII norms are expected to be similar to the Euro 7 norms applicable across Europe and on-road vehicle categories. OEMs are preparing for another wave of capital expenditure focused on advanced emission control technologies. While this raises affordability challenges, it also pushes the industry toward cleaner technologies, potentially accelerating the shift to zero- or low-emission vehicles.

While the stricter norms elevate acquisition costs, they typically trigger pre-buying ahead of price revisions. In addition, consumers increasingly prefer newer, cleaner and more efficient vehicles, supporting replacement demand and accelerating the shift away from older models. Over time, the improved performance, better fuel efficiency and higher reliability of BS VI-compliant vehicles will further strengthen customer preference for upgraded models, aiding sustained PV demand.

Safety norms

MoRTH launched the Bharat New Car Assessment Programme (BNCAP) on August 22, 2023 to enhance the road safety standards of passenger cars. The programme aims to promote healthy competition between home-grown and international OEMs to manufacture safer cars, along with boosting the safety and quality of vehicles in India. The BNCAP rating system is a voluntary assessment programme that came into effect on October 1, 2023.

GST tax structure

The government has been imposing a hefty tax on diesel vehicles to curb their use. This is despite their popularity among consumers due to their superior fuel efficiency compared with petrol variants. Moreover, to promote the adoption of EVs, the government has maintained a favourable GST rate of 5%, significantly lower than the 28%+ levied on internal combustion engine (ICE) PVs.

In a notable move, the government reduced the GST rates on PVs in September 2025, which lowered vehicle prices and stimulated demand. This 3-9% drop in prices is expected to boost the industry's growth trajectory, paving the way for

further premiumisation. The decision has incentivised consumers to purchase new vehicles, ultimately driving industry expansion.

Vehicle category	Old GST rates			New GST rates		
	Base GST	Compensation cess	Total tax payable	Base GST	Compensation cess	Total tax payable
Passenger vehicles (petrol, CNG, LPG) up to 4m in length and uyp to 1200cc engine	28%	1%	29%	18%	0%	18%
Passenger vehicles (diesel) up to 4m in length and up to 1500cc engine	28%	3%	31%	18%	0%	18%
Passenger vehicles (up to 1500cc engine)	28%	17%	45%	40%	0%	40%
Passenger vehicles (above 1500cc engine)	28%	20%	48%	40%	0%	40%
Passenger vehicles popularly known as SUVs (above 4m in length, above >1500cc engine and >170 mm ground clearance)	28%	22%	50%	40%	0%	40%

Note: GST on EVs maintained at 5%

Government measures to boost CNG vehicles

On April 6, 2023, the Cabinet Committee on Economic Affairs approved a revised pricing mechanism for natural gas produced in India. The revision was based on the recommendations made by the Kirit Parikh Committee in December 2022. The committee evaluated ways to boost natural gas production and ensure the availability and affordability of gas for end-users. The recommendations focused on price capping, deregulating the gas market and bringing natural gas under the GST umbrella.

With the new pricing mechanism, the domestic gas price was capped at $6.5 per mmBtu (metric million British thermal unit) for fiscal 2024. Thus, CNG prices declined 4% to Rs 74/kg in the fiscal. This decline in prices affected the difference in the total cost of ownership of diesel and CNG vehicles, favouring the transition to CNG and, hence, the long-term prospects for its adoption. Additionally, enhanced affordability resulting from reduced operating expenses, coupled with an expanded portfolio of CNG vehicles, is anticipated to further bolster industry growth over the long term.

The CNG station infrastructure has also undergone significant expansion over the past few years, further boosting sales. The number of CNG stations in India has grown from over 2,200 in fiscal 2020 to over 8,000 in fiscal 2025.

New model launches

Even as the sales of existing models have been increasing, sales of new models have supported industry growth over the past decade. This is especially true of recent launches in the SUV segment.

In short to medium term, Maruti E Vitara, Tata Motors Sierra EV, Avinya Kia EV3, Mahindra 9S, Mahindra 7XO are expected to be launched. Over and above these, facelifts/ refreshed versions of popular models such as Punch and Duster will likely provide an added sales push.

Premiumisation trend

Amid the rise in disposable income, younger customer base, improving finance availability and global exposure, a notable paradigm shift of premiumisation is underway in the PV industry, driven by evolving customer preferences.

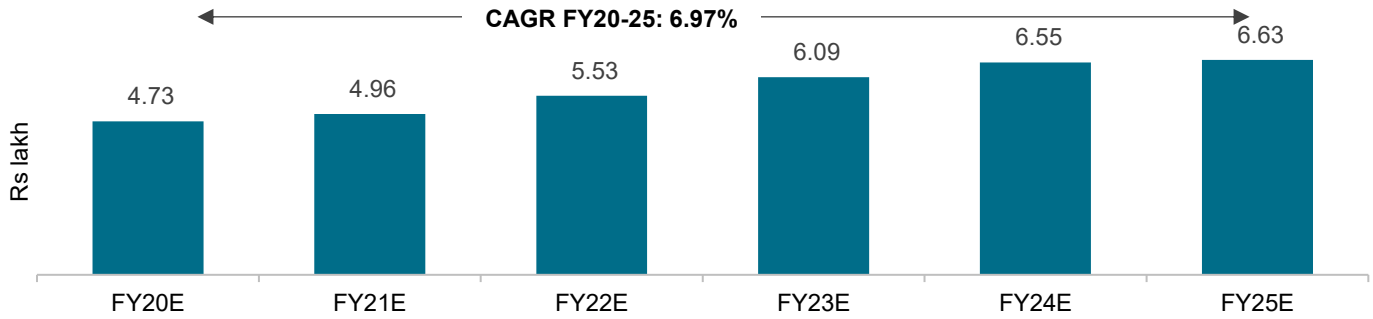
Consumers are opting for mid- or top-end versions of vehicles. They are moving away from traditional fuel-efficient budget-friendly small cars to higher-priced, feature-loaded large cars, which offer more space, better ride height, seamless connectivity and improved performance. Further, the launch of compact and mid-size SUVs is also driving the change.

Buyers are increasingly prioritising vehicle experience and their aspirations over cost considerations, demonstrating a willingness to pay a premium for desired features and accepting longer wait periods for their preferred models. They are opting for vehicles that offer the best balance of features and budget. This trend is driving inter- and intra-segmental shifts.

In response to this evolving landscape, OEMs are not only incorporating the latest safety and luxury features but also revolutionising their automotive lighting offerings that were once exclusive to the luxury segment.

This premiumisation has supported a healthy ~7% growth in the average selling price of PVs from fiscals 2020 to 2025.

Trend in the average price* of the domestic PV industry



*Note: *Based on the OEM invoicing price to dealers*
Source: SIAM, company annual reports, Ministry of Corporate Affairs, Crisil Intelligence

The premiumisation trend is, in turn, also yielding benefits for OEM suppliers who have successfully adapted to the evolution. These suppliers are well-positioned to capitalise on the growing demand for high-end features and technologies, thereby driving growth and profitability.

Premiumisation in the lightings segment

With the PV industry gradually heading towards premiumisation, with greater penetration of sales in higher variants of vehicle models, the requirements of PV lights have changed as well. Premium models are equipped with LEDs across DRLs – Daytime running lamps, headlights, taillights, foglamps, ambient lights and even in CHMSL-centre high mounted stop lamp.

OEMs are focusing on LED DRLs as brand signatures through connected light-bars for headlights and taillights. Certain OEMs are also offering customisation options for a personalised touch.

The connected and sequential lights, which were earlier only found in luxury models, are also being placed in mass-market models. Majority of the OEMs are offering LED DRLs as standard for several models in their line-up, right from the UV segment.

With increasing emphasis on safety, OEMs such as Hyundai have started offering cornering lamps, which improve visibility in blind spots in poorly lit roads. These features were limited to luxury models in the past. Leading automotive lighting players, such as Uno Minda, Lumax Industries, Neolite ZKW Lightings, Varroc and Marelli Motherson Automotive Lighting, among others, are poised to capitalise on the shifting landscape, given their robust portfolio of advanced lighting solutions.

Headlights

In the headlights segment, the bulb-based halogen lights are still prevalent in the small cars, MPV and vans segments.

Within the small cars segment, halogens are widely used in the entry-level models such as Alto, Wagon R and lower variants of Swift, while the premium hatchbacks such as i20, Altroz, Baleno, etc., have started offering LED DRLs and

LED headlights across variants. The shift towards LEDs is gradual due to the cost-centric entry-level models still contributing to most small cars.

Similarly, in the MPVs and vans segment, models such as Ertiga and Eeco only offer halogen headlights across variants since they are for cost-conscious customers. However, large lighting manufacturers such as Lumax Industries, Neolite ZKW Lightings, Uno Minda and Varroc, among others, are well-positioned to cater to the diverse needs due to their comprehensive portfolio of halogen and LED-based headlights. These companies can service the full spectrum of vehicles, from entry-level models to premium variants, and across segments, including small cars, MPVs and vans.

LED DRLs are widely being offered in the large cars and UVs segment. Since some models offer halogen headlights, these segments have relatively higher penetration for the bulb and LED-based combination lights. LED lights in headlights are also offered in the mid-higher variants across most models in the segments. In the higher variants, OEMs are offering bi-LED lamps and sequential head lamps, with increased functionality, but also with incremental pricing.

Taillights

The taillights segment is the most LED-penetrated segment within the PV industry. Even within the small cars segment, while entry-level cars still offer halogen-taillights, most other models have LED lights from the base variants. The connected light strip is commonly seen in the UV and large car models, where Tata Nexon offers aesthetical features such as Wide X- Graphic across its taillights in the higher variants of Creative and Fearless.

Fog lamps

The adoption of separate fog lamps continues to be on the lower side. The small-car segment has the lowest penetration of fog-lamps in the industry; these are limited to top-end variants. There are OEMs such as Hyundai, who are not offering fog lamps across any variant of models such as the Verna, since the low-beam light, placed lower on the front bumper also doubles down and provides the functionality of fog-lamps.

The adoption is relatively higher in large cars, UVs and MPVs, but with the presence again limited to top-end variants.

Interior lights

The standard OHCL (overhead cabin lamp) is offered across models. But within that, the adoption of LED is high and increases across the large cars and UV segments.

The reading lamps are largely not offered in the small cars segment but have a high adoption rate in the large cars/sedan segment. It again has lower adoption in UVs because the higher variants of most models in the segment have smaller sunroofs or panoramic sunroofs; hence, there is no space for a reading lamp. However, there are models such as Creta, which offers two reading lamps on the sides.

Ambient lights, which is a recent trend in industry, is limited to top variants of UV models such as Creta/Seltos, etc. These multi-colored lights, which offer up to 64 or 128 colours, and often termed as ‘mood lighting’ in the industry. This feature was found only in luxury models a few years back. But it has been increasingly adopted since as it appeals to customers preferring aesthetic interiors. The added functionality of light synchronisation with the music also appeals to younger car buyers.

Centre high mounted stop lamp (CHMSL)

While all the cars have these stop lamps, there is extremely high LED adoption in the segment. Apart from the entry-level models in small cars, LED is widely used for these lights since it improves the functionality due to brighter light output.

The Indian PV industry is undergoing a significant transformation, driven by evolving customer preferences and a growing demand for premium features. The premiumisation trend is evident in the increasing adoption of advanced technologies, such as LED lighting, sunroofs, digital infotainment systems, and smartphone connectivity solutions. Buyers are

prioritising the vehicle experience over cost considerations, leading to a shift towards mid-to-top level variants and a growing demand for high-end features such as advanced driver assistance systems (ADAS) and ambient lighting.

The lighting segment is also witnessing a shift towards LEDs, with leading manufacturers like Uno Minda, Lumax Industries, Neolite ZKW Lightings and Varroc well-positioned to capitalise on this trend. As the industry continues to evolve, OEMs and suppliers are adapting to changing customer preferences, driving growth and profitability in the premium vehicle segment.

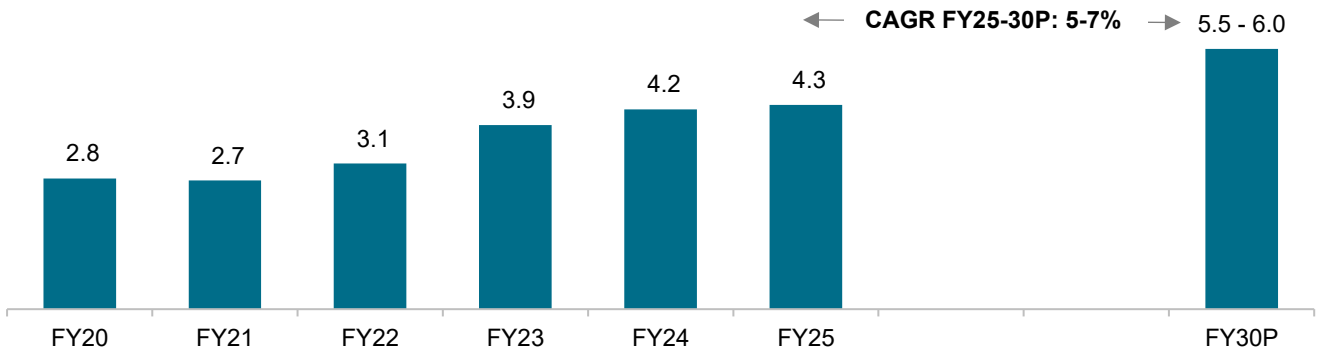
Outlook on the domestic passenger vehicle industry

We expect the Indian PV industry grow at a robust pace driven by a favorable macroeconomic scenario, with GDP projected to grow at 6-7% between fiscals 2025 and 2030, outperforming other major geographies. The industry will also benefit from continued government support, favourable demographics and OEMs launching feature-rich and competitively priced vehicles.

Additionally, a favorable financing scenario, with expanding financing reach, high loan-to-value levels and expected interest rate cuts will also support demand. Changing market dynamics, including a younger consumer base, premiumisation, electrification and shorter replacement cycles, will drive growth, while the government's push for scrapping old vehicles and capacity expansion by major players like Maruti Suzuki, Hyundai and Tata Motors will shorten replacement cycles and support demand. Furthermore, the expansion of supporting infrastructure, such as EV charging stations and CNG pumps, will enhance customer choice and propel the industry forward.

Between fiscals 2025 and 2030, we expect domestic sales to grow at a 5-7% CAGR to 5.5-6.0 million vehicles.

Domestic PV industry outlook



Source: SIAM, Crisil Intelligence

Segmental outlook

The domestic PV industry is expected to witness healthy growth, driven by evolving lifestyles and increasing affordability and led by the growing popularity of SUVs and a GST cut-induced boost to hatchback sales. Additionally, the increasing adoption of electric vehicles is expected to further accelerate industry sales, presenting new opportunities for growth and expansion

Rise of SUVs

The SUV segment, which traditionally appealed to customers valuing larger seating capacity and its ability to navigate rough terrain, has gained greater preference over the years. The compact SUV segment, especially, provided the much-desired SUV body styling at competitive rates, bringing the segment within the reach of many consumers.

Recognising the changing consumer preferences, OEMs also launched a higher number of vehicles in the SUV segment, helping expand the share of SUVs.

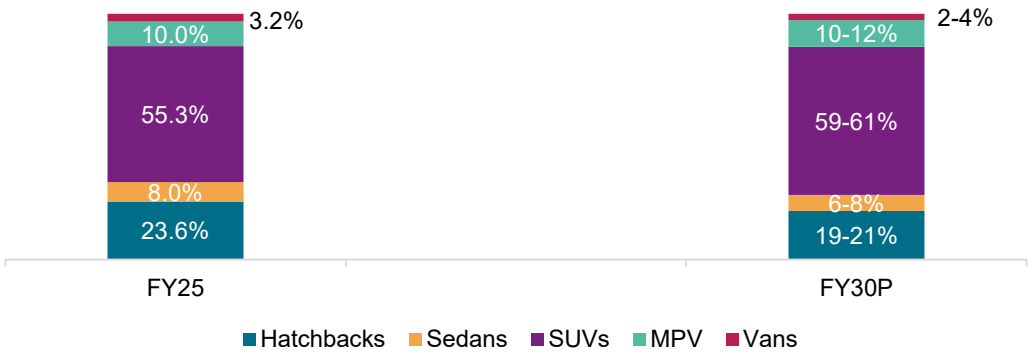
Moreover, the entry of global players such as Kia and MG, with their SUV portfolios, lent further support.

Segmental volume growth outlook

Segment	FY20-FY25 CAGR	FY25-FY30P CAGR
Hatchbacks	(4.7) %	1-3%
Sedans	(2.8) %	1-3%
SUVs	25.5%	7-9%
MPVs	17.6%	7-9%
Vans	2.8%	1-2%
Total	**9.3%**	**5-7%**

Source: SIAM, Crisil Intelligence

Outlook by industry segment



Source: SIAM, Crisil Intelligence

Electrification outlook

The electric PV segment is poised to experience a significant surge in growth over the next five years, driven by a combination of factors including a supportive policy framework, declining battery costs, an expanding network of charging infrastructure and an increase in consumer awareness and acceptance. OEMs are intensifying their investments in research and development for EVs and are aggressively expanding their EV product portfolios, with a multitude of launches scheduled across segments.

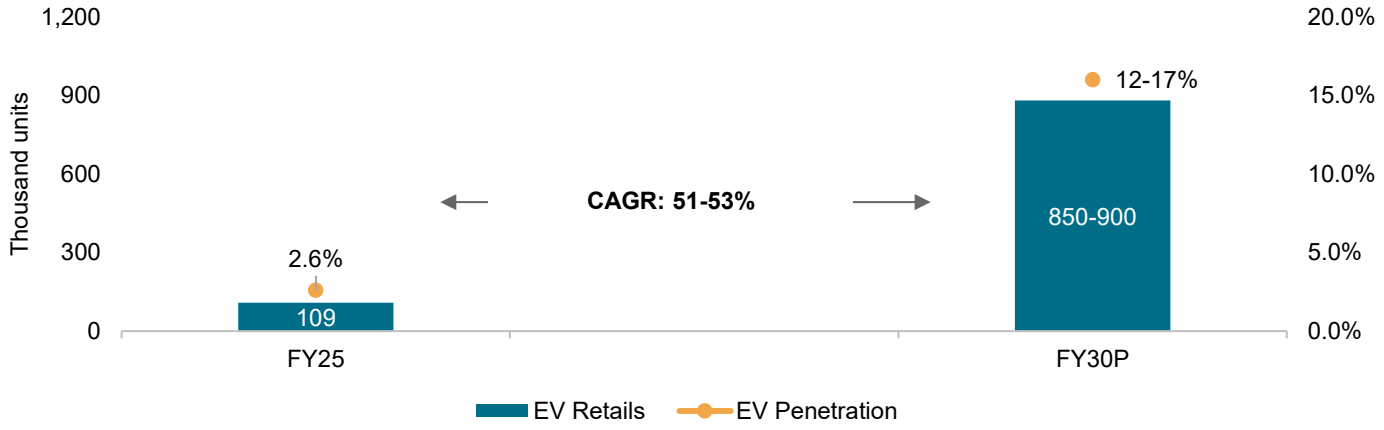
Furthermore, the decreasing cost of batteries is expected to offset the reduction in government subsidies, enhancing the competitiveness of battery electric vehicles (BEVs) and leading to a further improvement in the total cost of ownership (TCO) for EVs. This is expected to incentivise the transition towards electrification. Moreover, ride-hailing platforms such as Uber, Ola, Rapido and Namma Yatri are adopting EVs due to the associated TCO benefits. The increasing electrification of fleets is expected to provide an additional impetus to the industry's transition towards EVs.

The government's support for the expansion of charging infrastructure is also expected to alleviate customer concerns regarding the range of EVs, thereby further facilitating their adoption. Furthermore, entry of global players like Tesla and VinFast will also aid electrification in the longer term.

However, the impact of rare earth crisis and the current global political scenario remain key monitorables.

The share of EVs in total passenger car sales is projected to increase to 12-17% by fiscal 2030, from 2.65% in fiscal 2025. Additionally, EV sales are forecast to reach 850 to 900 thousand units by fiscal 2030, growing at 51-53% CAGR.

EV penetration outlook for PVs



Source: Crisil Intelligence

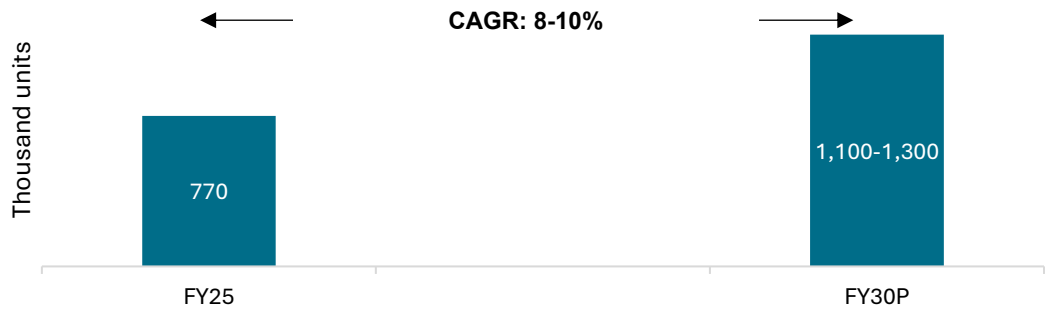
Outlook on exports from India

PV exports from India grew 14.63% in fiscal 2025; they are expected to grow at 8-10% CAGR between fiscals 2025 and 2030. The expected economic growth in key export regions and the push from OEMs will likely make India the export base for certain models, which will boost exports. However, current global uncertainties, including the tariff disagreements, remain a key monitorable. A rise in crude oil prices could impact fuel prices in export destinations, increasing inflation pressure and impacting exports demand.

Major OEMs in India are expanding their production capacities with an aim to make India as an export hub for Africa, Middle East and Asia. Further, policies, including the PLI scheme, are providing domestic OEMs the momentum to manufacture and export EVs from India. The government offers incentives through PLI for the entire EV ecosystem, including automobiles, auto components and ACC batteries. Major OEMs in India have announced plans to export EVs from India starting this fiscal.

Anticipated economic stability and growth, an increased push from OEMs and India's trade agreements are expected to boost exports. These factors are expected to back the faster growth of exports over long term, albeit from a lower base.

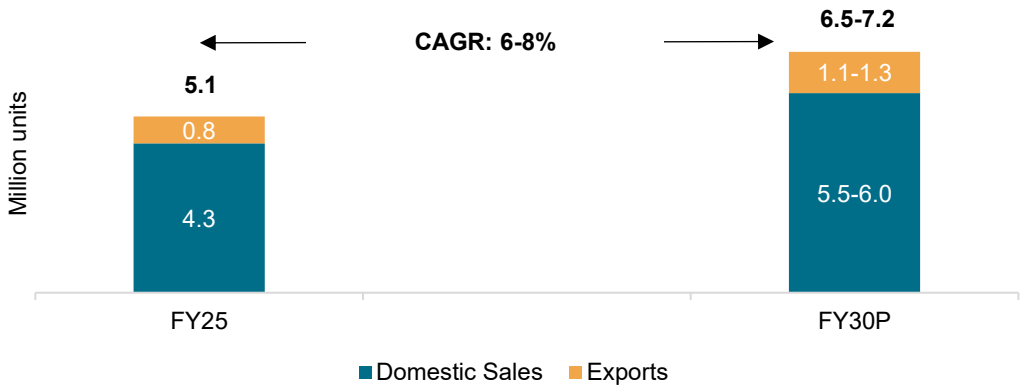
Outlook on exports



Source: SIAM, Crisil Intelligence

The industry (Domestic sales + exports) is expected to grow at 6-8% CAGR to reach 6.5-7.2 million units by fiscal 2030.

Overall PV industry outlook by domestic sales and exports (fiscals 2025-2030P)



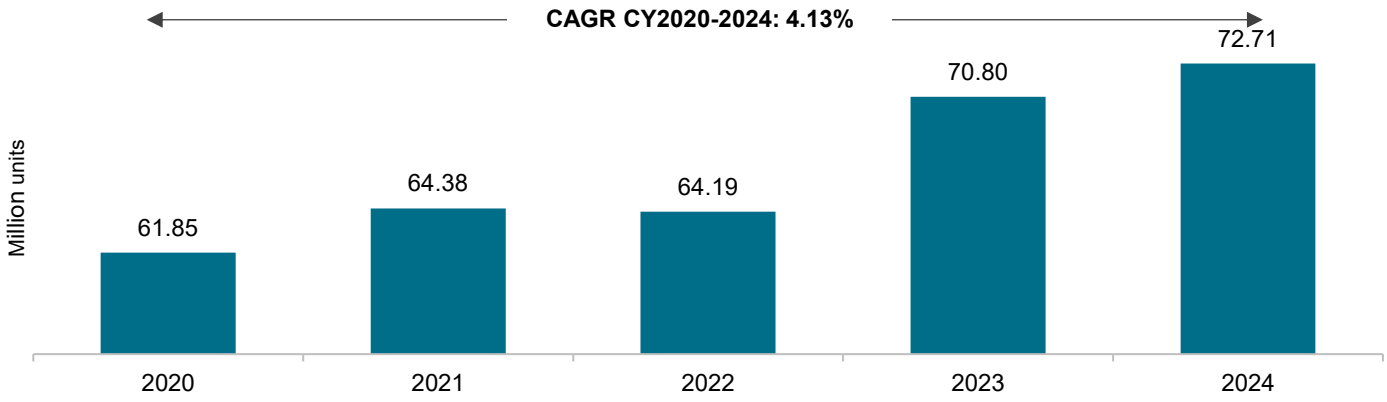
Source: SIAM, Crisil Intelligence

Review of the global PV industry

PVs remain one of the largest automotive industry segments globally. With two large markets, China and India, Asia dominates the global PV industry followed by Europe and North America. The Commonwealth of Independent States contributes 3-5%.

Global PV industry sales rose at a healthy 4.13% CAGR between calendar years 2020 and 2024. Although there was a downturn during the pandemic, the industry clocked a steady recovery in the post-pandemic years. This highlights the industry's resilience after the pandemic-induced slowdown and subsequent supply chain disruptions in semiconductors and logistics. The growth during the post-pandemic period was supported by pent-up consumer demand, stabilisation of production capacity and wider availability of electric and hybrid models at more affordable prices.

Trend in PV total sales volumes



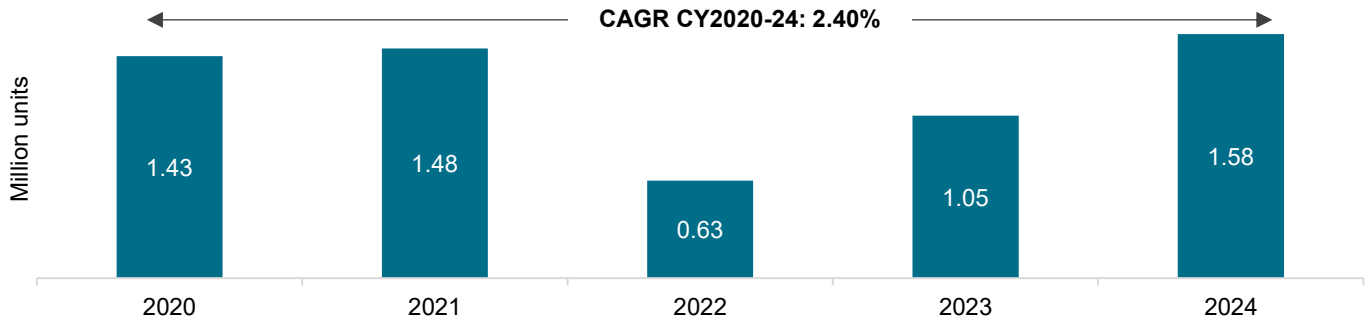
Source: Nexdigm data

The period from 2022 to 2023 marked a sharp turnaround, with PV sales surging from 64.19 million in 2022 to 70.8 million in 2023, a 10.30% on-year growth. This rebound was driven by pent-up demand, easing semiconductor shortages, normalisation of supply chains and rise in demand for SUVs and crossovers. The momentum continued during 2024 and the industry clocked a 2.70% growth.

Review of the Russian PV industry

Russian PV industry sales rose at a moderate 2.40% CAGR from 1.43 million units in calendar year 2020 to 1.58 million units in 2024. The growth reflected cautious consumer sentiment along with the economic uncertainties. Overall, the market saw steady but limited progress.

The Russian PV market



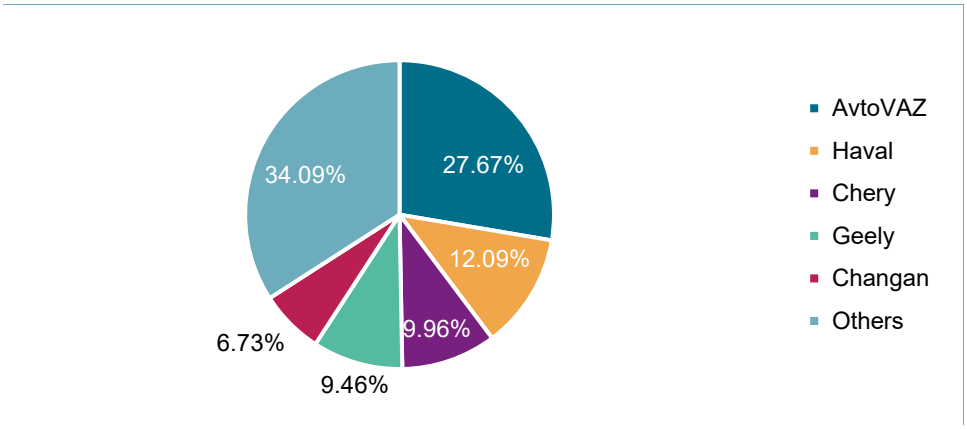
Source: Nexdigm data

In recent years, the Russian PV market has remained volatile, influenced by geopolitical tensions, economic sanctions and realignment of trade partnerships. The sales volumes were relatively stable during 2020 and 2021.

The market contracted sharply in 2022, declining by nearly 57.54% to 0.63 million units. This was primarily attributable to the Ukraine–Russia uncertainties and subsequent international sanctions. This led several global automakers to suspend or exit operations owing to supply chain disruptions, regulatory barriers and reputational risks.

Following this contraction, the market rebounded strongly in 2023 and 2024. Sales reached 1.58 million units in 2024, representing nearly 50% on-year growth. The recovery was largely driven by the rapid expansion of Chinese automakers, who leveraged competitive pricing, local assembly arrangements and partnerships to capture market share. In 2024, contribution of Chinese OEMs such as Haval, Chery, Geely and Changan was significant.

Share of OEMs in the Russian PV market (2024)



Source: Nexdigm data

Competitive landscape in the Russian PV market (2024)

Players	Sales (thousand units)
AvtoVAZ	436
Haval	191
Chery	157
Geely	149
Changan	106
Others	537
Total	1,576

Source: Nexdigm data

Their success has been supported by affordability, faster localisation and alignment with Russia's growing economic and trade ties with China. While specific product offerings gained visibility among consumers, broader market momentum has been underpinned by aggressive marketing, feature-rich value propositions and strategic positioning to fill the gap created by the exit of Western players.

Player	Key models
AvtoVAZ	Lada Granta, Lada Vesta
Haval	Jolion, F7, Dargo
Chery	Tiggo 7 Pro Max, Tiggo 4 Pro, Arrizo
Geely	Monjaro, Coolray

Source: Nexdigm data

Lada Granta and Lada Vesta have been the dominant models in the Russian market. Despite the collapse in 2022, these models maintained their dominance of the Russian market. With increasing presence of Chinese brands in the Russian market, Jolion has emerged as one of the notable models in recent years.

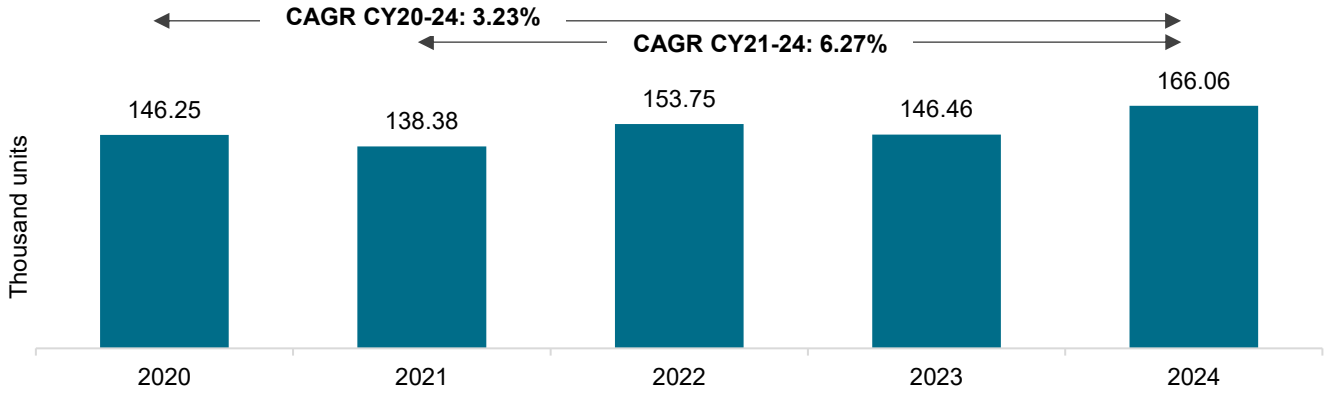
Overview of the Uzbekistan passenger vehicle industry

The Uzbekistan passenger vehicle industry logged a CAGR of 3.23% between calendar years 2020 and 2024, with sales growth reaching 166 thousand units from 146 thousand units.

Following a 5.4% dip in calendar year 2021, caused by pandemic-induced disruptions, the industry rebounded strongly, with a CAGR of 6.20% between 2021 and 2024. The resumption of economic activities post the pandemic, strategic portfolio expansions by industry players and sustained government investments in infrastructure development fuelled the industry's resurgence, driving demand.

UzAuto Motors accounts for over 75% of the Uzbekistan passenger vehicle market). However, ADM Jizzakh, BYD Uzbekistan, Chery and Haval also contribute significantly.

Uzbekistan passenger vehicle market growth



Source: Organisation Internationale des Constructeurs d'Automobiles

Growth drivers of the global passenger vehicle market

The transformation in the global passenger vehicle market is shaped by technological innovation, shifting consumer preferences and an evolving regulatory landscape. Countries strive for sustainability and economic development. Hence, the automotive industry is responding with smarter, cleaner and more accessible mobility solutions.

- **Economic growth**

  Strong economic growth in multiple countries is leading to higher consumer spending power, which is driving demand for passenger vehicles

- **Increasing middle-class population**

  Growing middle-class population in emerging economies, such as China, India and Southeast Asia, are driving demand for passenger vehicles, led by higher disposable income and more people aspiring to own cars

- **Electrification and sustainability**

  Electrification is one of the most transformative forces in the global passenger vehicle market. Governments worldwide are offering subsidies and incentives, which have boosted EV adoption. In addition, governments are also investing in the expansion of supporting infrastructure, including charging. Expansion in portfolio, sluggish battery prices and rising customer awareness are also aiding the demand for EVs. These efforts are not only reducing emissions but also supporting industry growth

- **Environmental concerns**

  Growing concerns about climate change, air pollution and other environmental issues are driving demand for environment-friendly passenger vehicles, such as electric and hybrid

- **Technological advancements**

  Technological innovation is redefining the passenger vehicle landscape with increasing integration of advanced features such as autonomous driving, artificial intelligence-powered systems, connected infotainment and driver-assistance technologies. Vehicles are evolving into smart, connected platforms, aligning with broader convergence of mobility and digital ecosystems. Such technological advancements make cars smarter, safer and more personalised.

- **Evolving consumer preferences**

  Consumer expectations are shifting quickly, with stronger demand for safety, connectivity and flexibility. Subscription models, ridesharing and on-demand access are gaining momentum, particularly in urban centres where convenience and cost-efficiency are critical

- **Government regulations**

  Government regulations pertaining to emission standards and safety are driving demand for passenger vehicles that meet these standards, which is leading to higher demand for newer and more efficient models

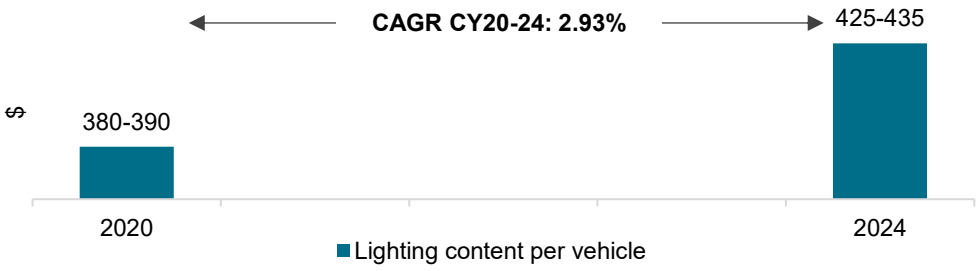
- **Concerns around trade and tariffs**

  Trade policies and tariffs are reshaping global market access by increasing landed costs, redirecting exports and altering competitive dynamics. For companies, this necessitates strategic choices on localisation, product mix and sourcing, while also creating breathing space for domestic players. However, higher trade barriers may also impact the macroeconomic growth and in turn, industry dynamics

Increase in lighting content per vehicle

The automotive lighting industry has witnessed a consistent increase in CPV – content per vehicle over the past decade. While the fundamental role of lighting remains safety and visibility, the rising value share of lighting systems is being driven by a mix of technology, regulation and consumer preferences toward premium vehicles.

Global lighting CPV for passenger vehicles



Source: Nexdigm data

Nexdigm data reveals that lighting-CPV logged a CAGR of ~3% between calendar years 2020 and 2024 to reach $425-$435 per vehicle from $380-$390. The growth was driven by the increasing shift toward LED-based systems and the associated higher component costs of LED. The adoption of LED headlights is not just limited to headlights, but extends to taillights, fog lights, interior lighting and CHMSL.

Key trends influencing the increase in CPV in the global market are highlighted below:

Shift towards LED-based systems

Higher LED penetration across headlamps, tail lamps, DRLs and interior ambient lighting is a primary contributor to higher value content. Compared with halogen or basic bulb solutions, LEDs carry a significantly high unit cost. However, they also offer superior performance in energy efficiency, durability and styling flexibility. Premium and mid-level vehicle segments are increasingly adopting full-LED headlamp systems right from entry-level variants, pushing up average lighting CPV.

The transition from halogen and Xenon/HID- high intensity discharge solutions to LED-based lighting systems has been the driving factor behind the increase in lighting CPV. Unlike halogen lamps, which are relatively standardised and inexpensive, LEDs bring in higher costs, greater technological complexity and added manufacturing sophistication.

Higher component costs and manufacturing complexity of LED-based systems

LED chips are more expensive compared with halogen bulbs, but the cost difference goes beyond the emitter. A complete LED lighting system requires: Heat sinks and thermal management systems, optical lenses and reflectors, and electronic drivers and control units to regulate current and enable adaptive functions. Collectively, these add significant value per lamp module compared with the simple bulb-holder-reflector assembly of halogens.

From a manufacturing standpoint, LED headlamps and tail lamps involve multi-stage assembly–integration of LED chips, printed circuit boards (PCBs), optics, heat sinks, sealing and electronic controllers. The precision is critical, while the optical alignment, thermal dissipation and water/dust sealing are more demanding than in halogen lamps. As a result, LED lighting production requires advanced tooling, automation and testing facilities, pushing up capex and unit manufacturing cost.

LEDs last longer than halogens (over 20,000 hours vs 500–1,000 hours), which reduces replacement demand but increases OEM-level integration costs upfront. To ensure reliability, suppliers add robust sealing solutions, electronic protections and thermal management layers, further raising system costs.

Customisation and styling flexibility

Increasing adoption of LEDs allows OEMs to create complex light signatures, segmented DRLs and dynamic animations, which halogens could never achieve. For automakers, lighting has shifted from being a standardised component to a design differentiator, enabling premium pricing of vehicles. This trend fuels demand for multiple LED modules per vehicle, with connected light bars and sequential indicators being a trend in the industry, which contributes to the increase in cost, thereby raising CPV.

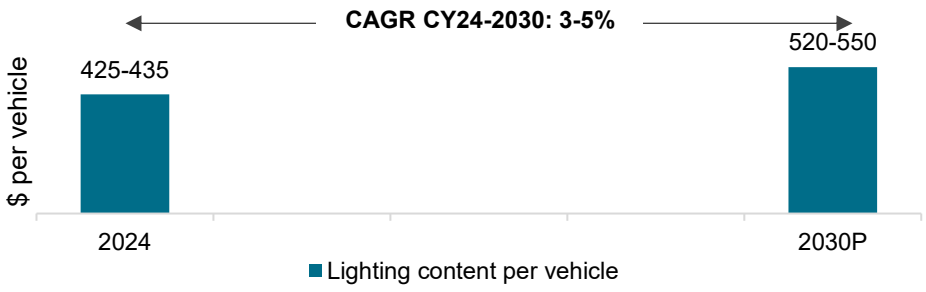
Regulatory push for safety and standardisation

Global regulatory programmes (United Nations Economic Commission for Europe, National Highway Traffic Safety Administration and Bharat New Car Assessment Programme) have mandated DRLs, rear fog lamps, side indicators and more stringent requirements on beam quality and intensity. Compliance with these norms adds to incremental lighting components and higher-value technologies.

Interior lighting for comfort and luxury

Interior ambient lighting and multi-colour options have become standard in mid-to-premium cars. There is an increasing base of customers preferring the ambient light feature in cars, which also syncs with music and provides an immersive experience inside the cabin. The average number of interior lighting content per vehicle has increased significantly over the past decade, contributing to CPV growth.

Outlook of global lighting CPV for passenger vehicles



Source: Nexdigm data

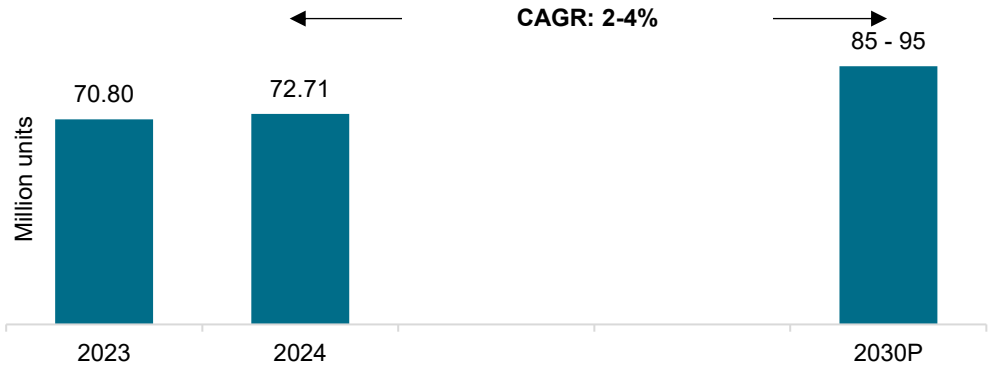
According to Nexdigm projections, lighting CPV is expected to grow to $520-$550 in calendar year 2030 from $425-$435 in 2024 at a CAGR of 3-5% compared with 3% between 2020-2024. The growth is expected to be driven by higher adoption of LEDs even by entry-level segments in cost-sensitive markets. In mature LED markets, the growth is expected to be driven by higher penetration of advanced LED technologies such as OLEDs and adoption of advanced lighting technologies such as laser lights in the premium segments, contributing to the overall increase in lighting CPV.

While niche due to higher costs, laser lights represent the pinnacle of advanced lighting, combining performance with exclusivity owing to their energy-efficient nature. They offer enhanced visibility with compact design and size. The cost of manufacturing these headlights is expensive. Hence, they are preferred by select luxury OEMs. The cost, complexity of manufacturing and regulatory issues hindering wider adoption are expected to reduce over the next decade, increasing adoption.

Outlook on the global passenger vehicles industry

Nexdigm estimates the global passenger vehicle industry sales to clock a CAGR of 2-4% between calendar years 2024 and 2030. It is expected to grow steadily, yet make an impact, with annual sales expected to rise to 85-95 million units from 72.7 million units.

The global passenger vehicle market is expected to log a CAGR of 2-4% by 2030



Source: Nexdigm

The expansion of the market is likely to be shaped by new technologies, regulatory pressures and evolving consumer preferences. Governments are tightening emission standards such as Euro 7 in Europe and China's Stage VI norms, which are accelerating the adoption of hybrid vehicles and EVs. The shift is creating opportunities for traditional automakers as well as new ones.

The Asia-Pacific region is expected to continue accounting for over half of global passenger vehicle sales until calendar year 2030, driven by demand from China and India, supported by rising income, government incentives, a strong domestic supply chain and competitive local players.

Europe and North America are likely to witness slower sales growth but deeper structural changes, as ICE vehicles gradually give way to electric and hybrid alternatives. Policy measures such as the EU's 2035 phase-out target for combustion engines and the US Inflation Reduction Act, 2022, which provides incentives for EV adoption, will be crucial in driving this transition.

Meanwhile, geopolitical uncertainties and trade disputes are prompting automakers to localise production and invest in regional supply chains, including battery gigafactories and EV infrastructure. By 2030, the passenger vehicle market is

expected to reflect a broader shift toward sustainability, digital integration and innovative business models that redefine global mobility.

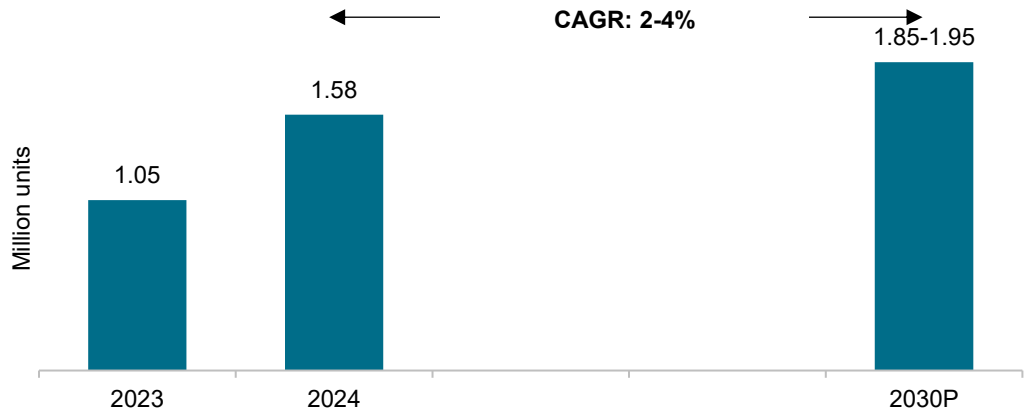
Outlook for the Russian passenger vehicles market

The Russian passenger vehicles market is expected to clock a CAGR of 2-4% to reach 1.85-1.95 million units by calendar year 2030 from 1.58 million units in 2024. The recovery is underpinned by government-led incentives promoting domestic production, increasing localisation to reduce import dependency and improving replacement demand. Gradual income recovery and affordability-driven preferences are likely to support volumes, while early regulatory push towards electrification and mobility infrastructure investments may provide additional momentum in the long term.

Moreover, efforts toward capacity expansion by Haval, portfolio expansion by AvtoVaz and Jetour and localisation by Chery are expected to boost industry growth.

However, challenges persist, including ongoing sanctions that restrict participation from the west, as well as concerns surrounding inflation and financing costs. Additionally, the pre-owned vehicle segment continues to pose a threat to new vehicle sales, potentially constraining market growth.

Outlook for the Russian passenger vehicle market



Source: Nexdigm

For Uzbekistan, government push to localise production, export and competition, and rising interest from foreign players are expected to support industry growth over the long term.

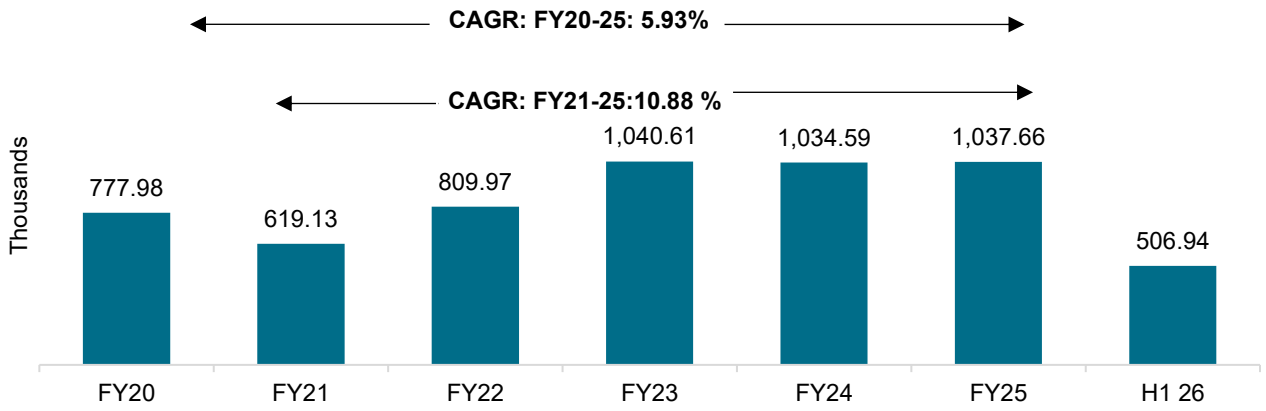
Review of and outlook on the Indian commercial vehicle industry

Review of the industry

India is the third-largest commercial vehicle market in the world, with total of domestic sales and export volumes recording 1.04 million units in fiscal 2025. The volumes have consistently been over 1 million units over the past three fiscals, indicating healthy demand in the market, albeit steadily. The market logged a CAGR of 5.93% over the past five years, driven by an e-commerce surge in the country and the increasing number of infrastructure development projects.

In the first half of fiscal 2026, industry sales rose 5.3% on-year, with exports clocking a healthy 23% growth.

Sales trend in the CV industry (domestic and exports)



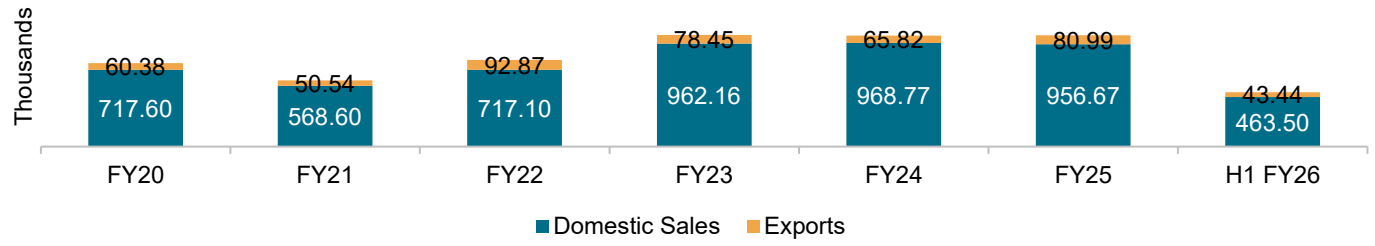
Note: Data includes domestic sales and exports of LCV – light commercial vehicles, IMHCV – intermediate medium and heavy commercial vehicles and buses, and excludes Daimler

Source: SIAM, Crisil Intelligence

Exports, which form 7-8% of the overall CV industry rose to 81 thousand units in fiscal 2025 from 60 thousand units in fiscal 2020 at a CAGR of 6.05%. The growth was led by increasing demand for Indian commercial vehicles in emerging markets, strategic investment in localisation of products and rising competitiveness of Indian OEMs on cost and quality parameters.

After consecutive drops in fiscals 2023 and 2024 on the high base of fiscal 2022, industry exports rose at a healthy pace of 23.04% in fiscal 2025. A sharp rise of 24.32% in the exports of the cargo segment supported growth.

Split by market



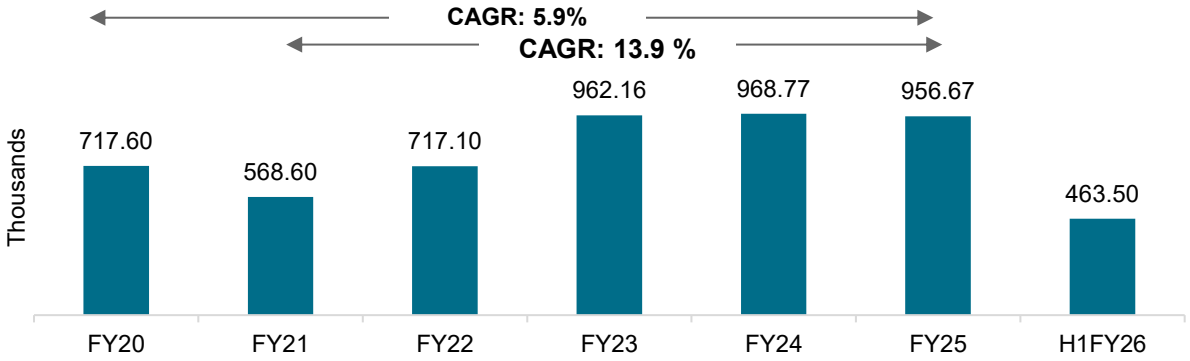
Note: Analysis excludes Daimler as the data for the company is not available in SIAM

Source: SIAM, Crisil Intelligence

Domestic market

The larger domestic segment, which contributes more than 90% of the industry logged a CAGR of 5.93% between fiscals 2020 and 2025. The industry witnessed a 20.76% drop in fiscal 2021, led by Covid-induced restrictions. However, the segment rebounded at a CAGR of ~14% between fiscals 2021 and 2025, with resumption in economic activity and improved mobility. The sharp rise post the pandemic was led by the buses segment, which clocked a CAGR of 58.25% between fiscals 2021 and 2025, followed by 19% in IMHCV. However, LCVs, the largest segment, clocked 7% growth.

Domestic sales trend

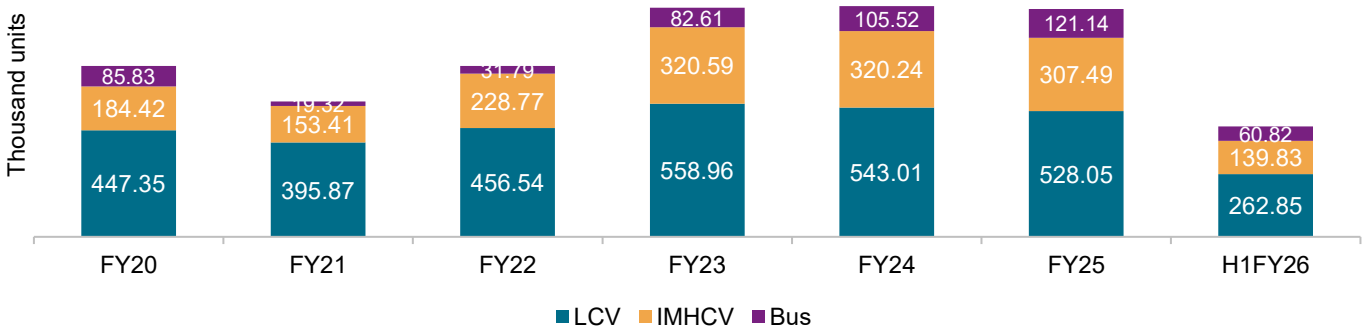


Note: Analysis excludes Daimler as the data for the company is not available in SIAM
Source: SIAM, Crisil Intelligence

The market is split into the LCV (gross vehicle weight less than 7.5 tonne), IMHCV (more than 7.5 tonne) and buses segments.

Sales in the LCV segment declined 2.76% in fiscal 2025. Despite an increase in volume for replacement compared with the past years, the general slowdown in economic activity exerted a downward pressure on LCV sales. Reduction in construction activity, along with subdued demand for last-mile delivery and e-commerce activity due to declining urban spending and extended rainfall, impacted the segment.

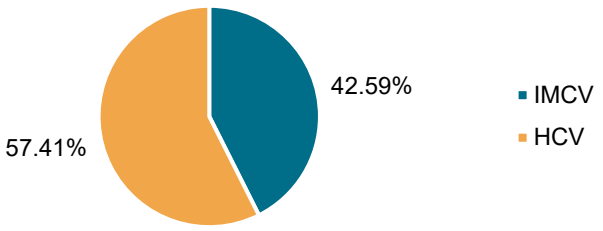
Domestic sales by segment



Note: Analysis excludes Daimler as the data for the company is not available in SIAM
Source: SIAM, Crisil Intelligence

The domestic IMHCV industry experienced notable volatility in sales volumes over the past few fiscals, shaped by economic downturns, pandemic-induced disruptions and a gradual recovery backed by infrastructure spending and replacement demand.

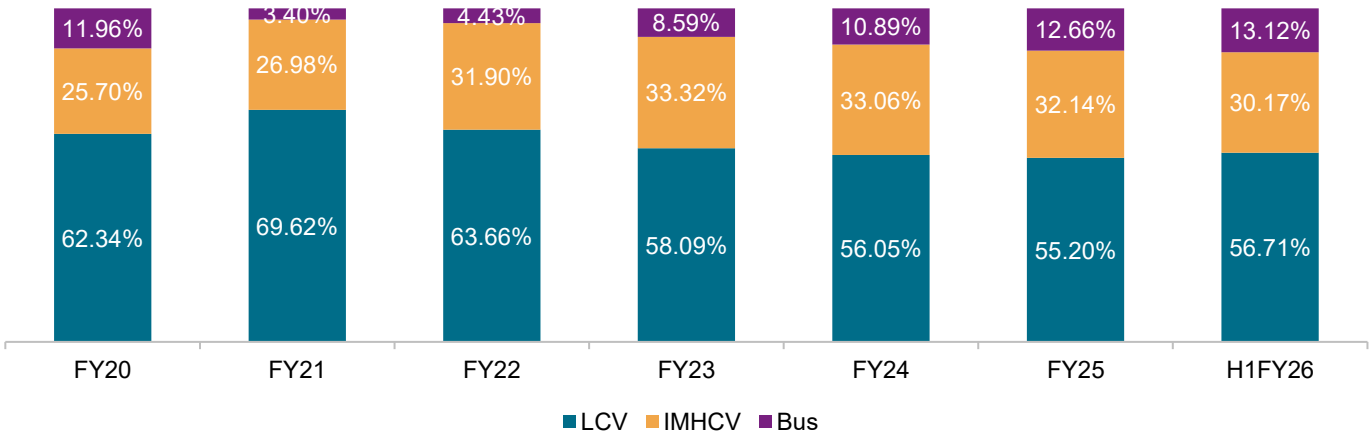
Split of IMHCV (by IMCV and HCV for fiscal 2025)



Note: Analysis above excludes Daimler as the data for the company is not available in SIAM
Source: SIAM, Crisil Intelligence

In the first half of fiscal 2026, the industry grew 3.92% compared with the year-ago period, driven by a 5.10% growth in the LCV and buses segment and 1.32% rise in the IMHCV segment.

Segment-wise contribution of the domestic CV industry



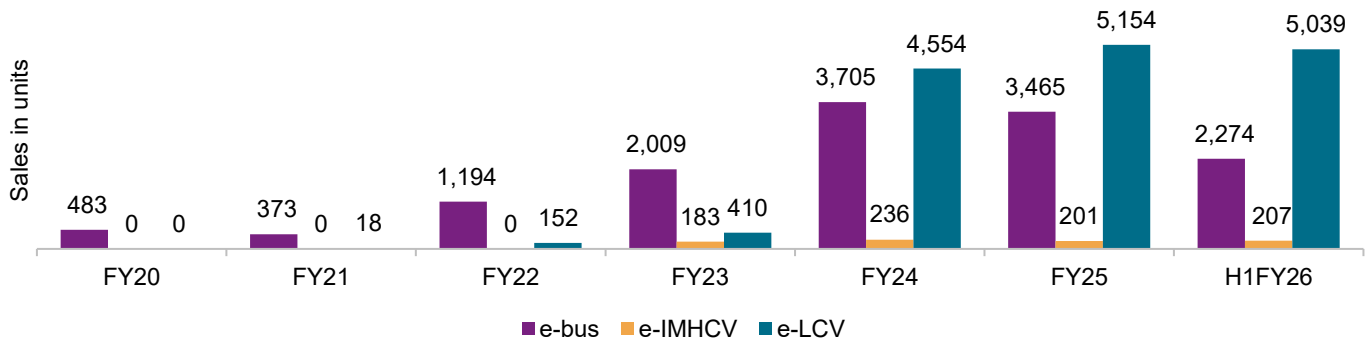
Note: Analysis excludes Daimler as the data for the company is not available in SIAM
Source: SIAM, Crisil Intelligence

Electrification in the domestic commercial vehicle industry

Electrification in the industry has been slow compared with other vehicle segments. This is caused by high upfront costs compared with other vehicle segments due to the large size of lithium-ion battery pack to meet operational demands and lack of charging infrastructure.

Within domestic CVs, the buses segment was the first to be electrified, followed by LCVs. The penetration of e-buses was largely driven by STUs procured through the gross cost contract model, supported by government policies. EV penetration within CVs increased to 0.90% in fiscal 2025 from 0.07% in fiscal 2020.

EV sales by segment

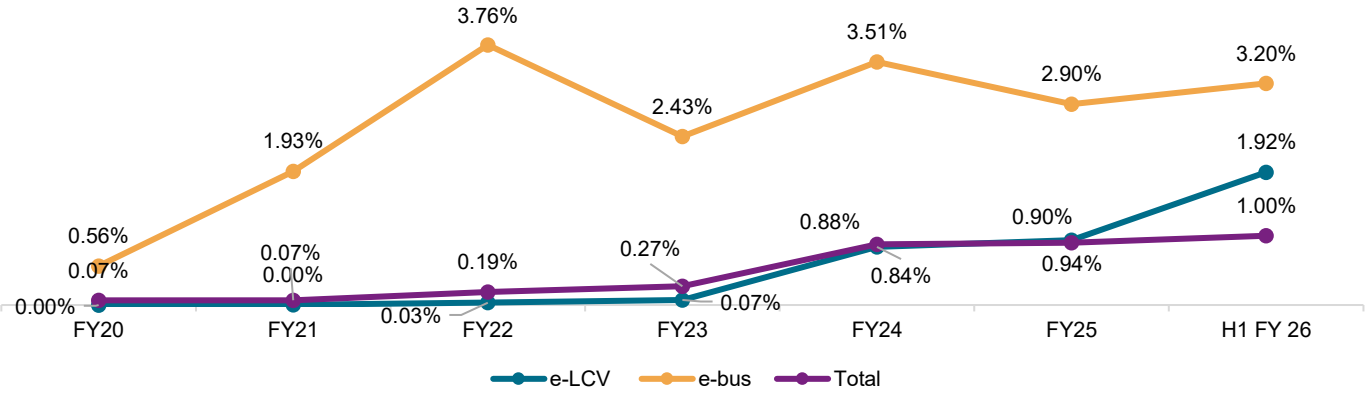


Note: Vahan figures exclude Telangana retails. Vahan data as of October 2025.
Source: SIAM, Vahan, Crisil Intelligence

The current EV penetration in LCV is ~1%. Most EVs used in the commercial vehicles industry as goods carriers are three-wheelers. However, as the cost difference between electric and diesel vehicles within LCV segment reduces, we expect new models to be launched in the LCV segment. This will drive sales in the LCV segment as third-mile logistics and local distribution of goods are well-suited applications for EVs. Tata Ace EV, Omega M1KA, JEM Tez, Switch Mobility EV are some of the e-LCVs available in the market.

Buses have the highest penetration of EVs within the CV industry. The penetration increased to 2.90% in fiscal 2025 from 0.56% in fiscal 2020.

EV penetration



Note: Vahan figures exclude Telangana retails. Data as of October 2025.
Source: SIAM, Vahan, Crisil Intelligence

Policies driving the adoption of EVs

The Government of India and several states together have introduced fiscal and non-fiscal incentives to support the adoption of electric mobility. These include tax breaks, subsidies and lower registration charges. Various policies have been launched to strengthen the component and charging infrastructure.

CPM e-Bus Sewa Scheme

The PM e-Bus Sewa Scheme is an initiative of the central government to promote electric mobility in public transportation. Under this scheme, the government aims to deploy 50,000 electric buses.

FAME I and II

As part of the National Electric Mobility Mission Plan 2020, the Department of Heavy Industry introduced the FAME scheme in 2015 to promote EV manufacturing and adoption.

During Phase I, it focused on creating demand for EVs through incentives and grants for various vehicle segments and supported about 2.78 lakh EVs. The FAME II scheme was approved with an outlay of Rs 10,000 crore, which was later enhanced to Rs 11, 500 crore. It aimed to support 7,000 e-buses, 5 lakh electric three-wheelers, 55,000 electric four-wheelers (commercial purposes) and 10 lakh electric two-wheelers (commercial and private).

FAME II subsidy for buses dependent on battery size

Under the FAME II incentive, the government provided a subsidy of Rs 20,000 per kWh of battery used in an electric bus. These needed to be advanced batteries with specific energy density of at least 70Wh/kg and a cycle life of at least 1,000 cycles. Of the Rs 11,500 crore demand subsidy under FAME II, , about 40% was for buses.

For electric small commercial vehicles (SCVs), the government provided subsidies of Rs 10,000 per kWh of battery. It also mandated a minimum range of 140 km and maximum ex-factory price of Rs 15 lakh.

PM E-DRIVE

The PM E-DRIVE scheme aims to provide support for 14,028 e-buses, 2,05,392 e-three-wheelers (L5), 1,10,596 e-rickshaws and e-carts, and 24,79,120 e-two-wheelers. The scheme also supports e-trucks, e-ambulances, EV public charging stations and upgrades to testing agencies

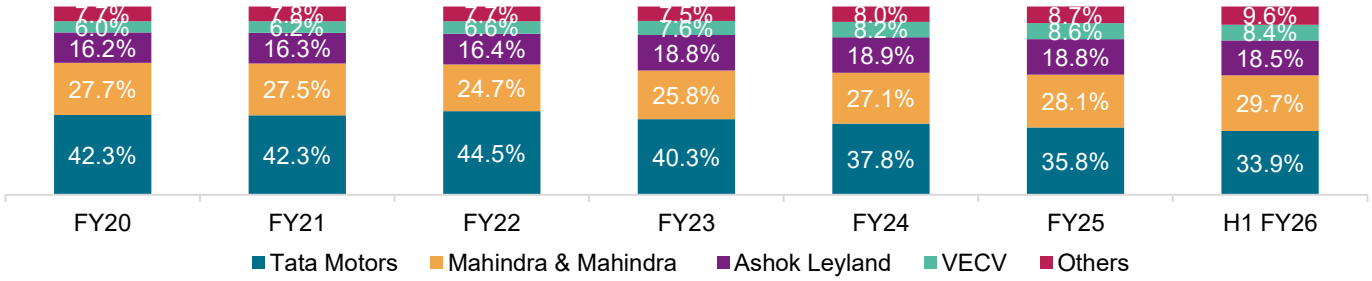
CGST 2.0

The rationalisation of GST rates in September 2025, which reduced the tax rate on commercial vehicles from 28% to 18%, led to a 7-8% decrease in vehicle prices. Although this change does not account for potential cost savings from lower GST rates on components that automotive component manufacturers may pass on to original equipment manufacturers (OEMs), it is expected to have a positive impact on the market.

Competitive landscape within the domestic CV industry

In the domestic CV industry Tata Motors leads the market with a 35.8% share as of fiscal 2025. Mahindra & Mahindra is the second largest player because of the contribution from the LCV segment, where the company holds almost 50% of the market share. Ashok Leyland holds a share of about 19% in the overall market and contributes in all segments. Volvo Eicher Commercial Vehicles (VECV) has gradually increased its presence in the market aided by an increase in IMHCV sales.

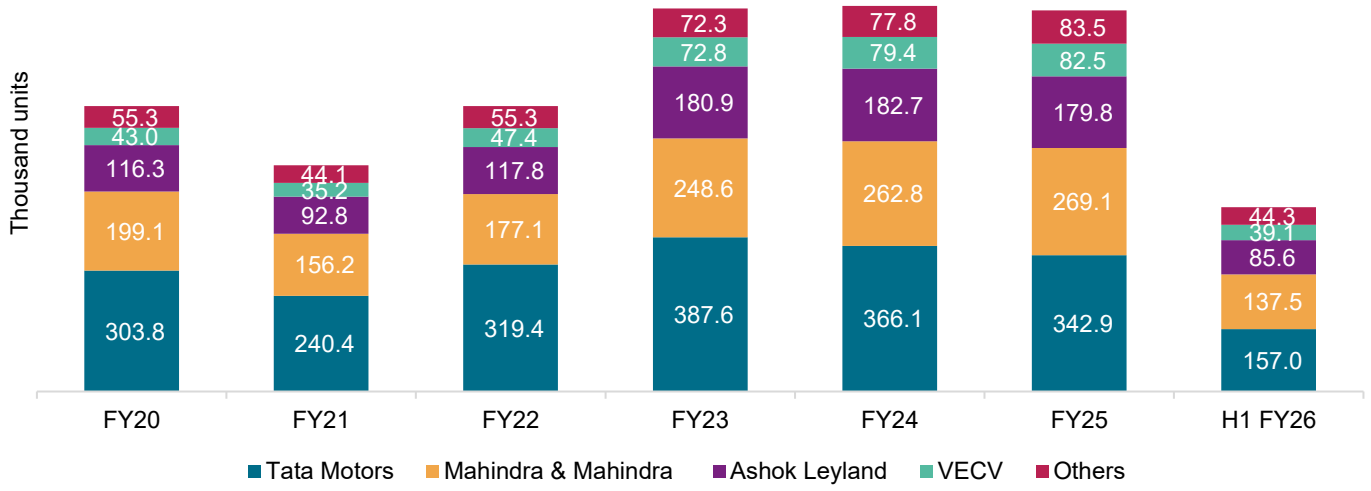
Market share of key players in the domestic CV industry (based on volume)



Note: The analysis excludes Daimler as the data for the company is not available with SIAM, Tata Motors: TML Commercial Vehicles Ltd

Source: SIAM, Crisil Intelligence

Market volumes of key players in the domestic CV Industry

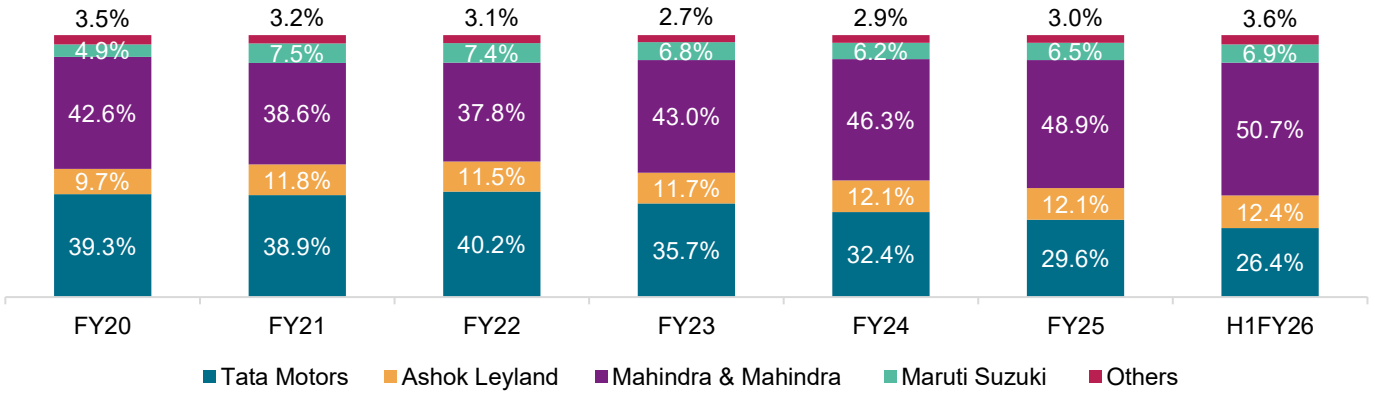


Note: The analysis excludes Daimler as the data for the company is not available with SIAM, Tata Motors: TML Commercial Vehicles Ltd

Source: SIAM, Crisil Intelligence

The graph below illustrates the market share distribution of the LCV segment. The segment has largely been dominated by Tata Motors and Mahindra & Mahindra over the past five years, with Ashok Leyland and Maruti Suzuki having limited shares. Mahindra & Mahindra has gained market share over these years because of the popularity of its models such as Jeeto, Bolero pickup and Furio. Tata Motors has gradually lost market share, but still ranks second in the LCV space.

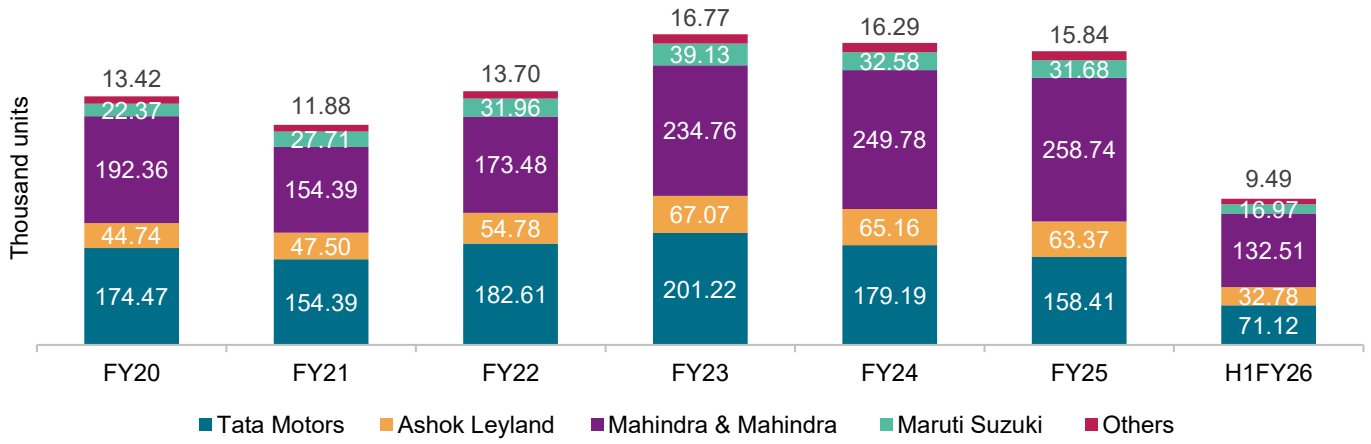
Market share distribution in the LCV segment



Note: The analysis excludes Daimler as the data for the company is not available with SIAM, Tata Motors: TML Commercial Vehicles Ltd

Source: SIAM, Crisil Intelligence

Volume distribution in the LCV segment



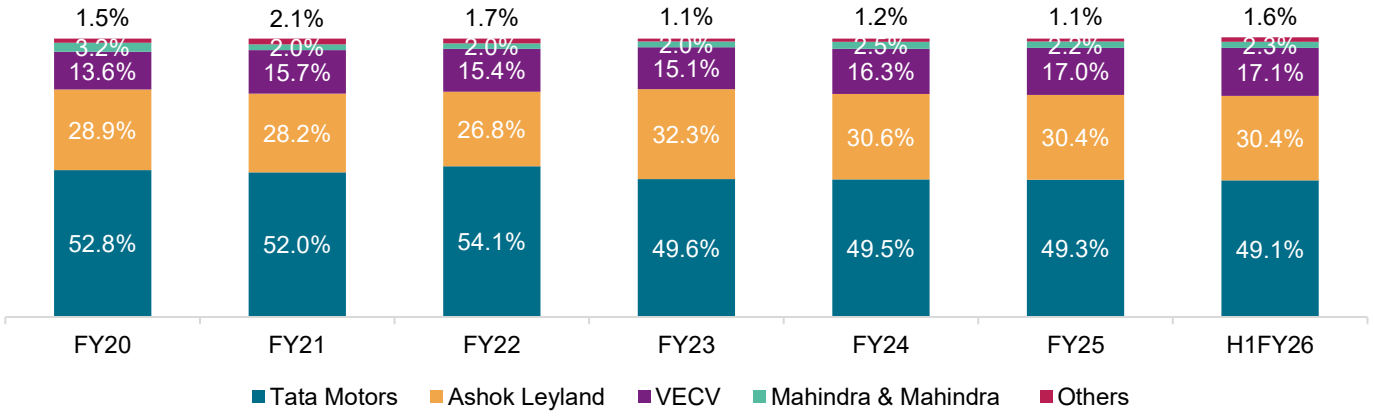
Note: The analysis above excludes Daimler as the data for the company is not available with SIAM; Tata Motors: TML Commercial Vehicles Ltd

Source: SIAM, Crisil Intelligence

In the IMHCV segment, the competitive landscape has evolved because of changing customer preferences, regulatory transitions and increasing penetration of alternative fuel technologies.

Tata Motors has consistently dominated the IMHCV segment in the past five years. Despite a slight decline from 53% in fiscal 2020 to 49% in both fiscals 2024 and 2025, the company continues to command nearly half of the market share. The dip in market share can be attributed to growing competition and shifting customer preferences.

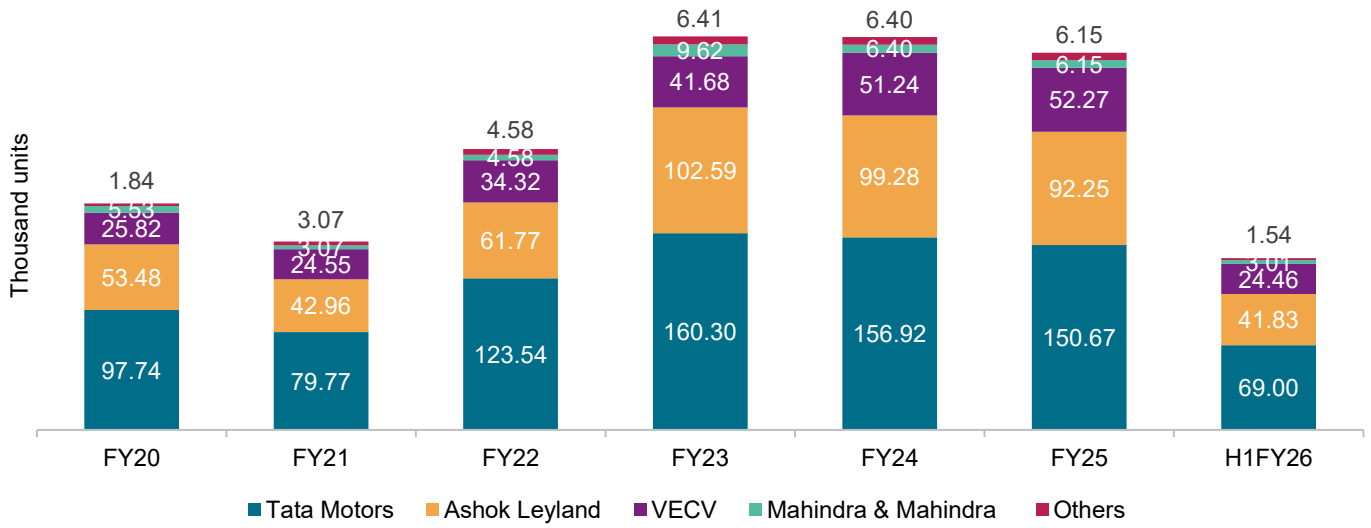
Market share distribution in the domestic IMHCV segment



Note: The analysis excludes Daimler as the data for the company is not available with SIAM

Source: SIAM, Crisil Intelligence

Player-wise volumes in the domestic IMHCV segment



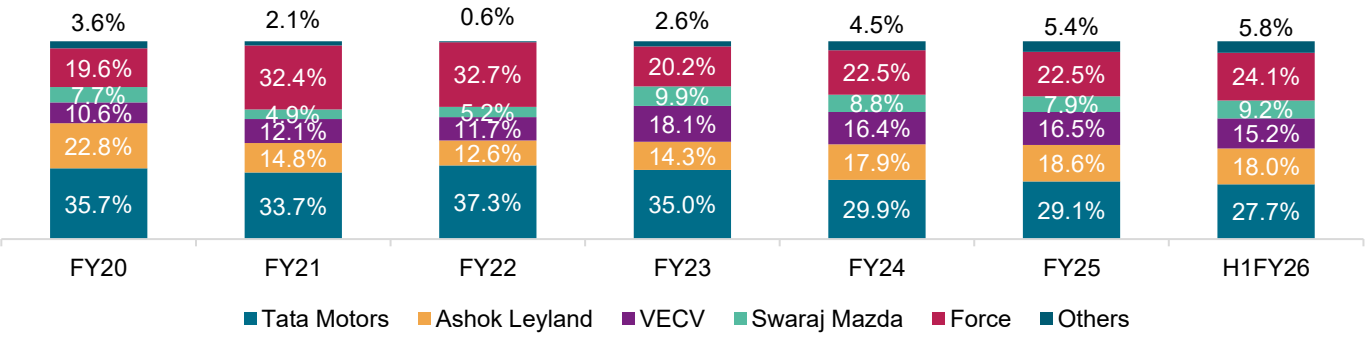
Note: The analysis excludes Daimler as the data for the company is not available with SIAM
Source: SIAM, Crisil Intelligence

Ashok Leyland has remained the second-largest player, with a market share ranging between 27% and 32% over the past five years. The company reached a peak share of 32% in fiscal 2023, because of robust demand for its heavy-duty trucks and improved fleet penetration. However, the share declined to 30% in fiscal 2025.

VECV has improved its IMHCV market share from 14% in fiscal 2020 to 17% in fiscal 2025. Consistent product upgrades and rising fleet demand, especially in the mid-duty range, have supported this growth momentum.

Swaraj Mazda and other smaller manufacturers collectively hold 1-2% of the IMHCV market. This indicates a highly consolidated segment, with the top three players—Tata Motors, Ashok Leyland and VECV—accounting for ~96% of the market as of fiscal 2025. However, increasing competitive intensity and alternative fuel opportunities could provide entry points for niche OEMs in the longer term.

Player-wise share in domestic bus sales



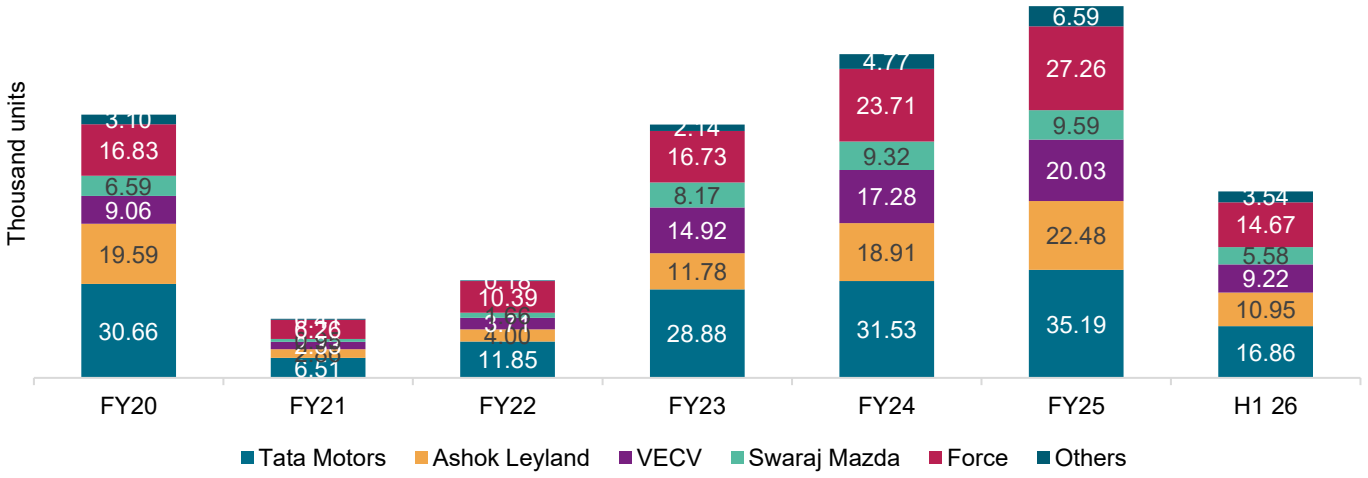
Note: Buses include >= 7.5 tonnage. Others include players such as Olectra Greentech, PMI Electro Mobility Solutions and Switch Mobility. The analysis excludes Daimler as the data for the company is not available with SIAM
Source: SIAM, Crisil Intelligence

Tata Motors has consistently held a leading position in the buses segment, with its market share ranging from 30-38% between fiscals 2020 and 2025. However, the share dipped from 36% in fiscal 2020 to 29% in fiscal 2025. Ashok

Leyland's share also declined gradually to ~18.5% in fiscal 2025. The shift reflects increasing competitive intensity and evolving customer preferences, especially with the rise of electric buses.

VECV's market share grew from 11% in fiscal 2020 to 16.5% in fiscal 2025, highlighting growing acceptability for the brand in the intercity and school bus segments. The surge in fiscal 2023 reflects the company's success in tapping state-level procurement and semi-urban demand pockets.

Player-wise domestic bus sales volumes



Note: Buses include >= 7.5 tonnage. Others include players such as Olectra Greentech, PMI Electro Mobility Solutions and Switch Mobility. The analysis excludes Daimler as the data for the company is not available with SIAM

Source: SIAM, Crisil Intelligence

Olectra Greentech, a newer entrant focused on electric buses, has gained traction, growing its market share from nil in fiscal 2020 to 1% in fiscal 2025. The company's performance underscores the acceleration of EV adoption in urban transit systems and its success in securing government and municipal contracts. Its presence is expected to grow further because of the electrification policy and support for funding.

The 'Others', category, includes emerging players and smaller OEMs such as Olectra Greentech. The segment remains highly consolidated with limited room for fringe competition, though specific regional or electric-focused players may see spot opportunities.

Market trends

In the CV industry, the usage of LEDs has increased gradually across tonnage and lighting segments.

Rising prominence of LEDs in the lighting ecosystem

In the CV industry, there is an increasing trend towards driver safety with the implementation of ADAS, AEBS- Advanced emergency braking system and stability systems ahead of the safety regulations from H2 2026. This has trend also extends to lighting systems, with LED lights, especially taillights. The LED taillights offer better visibility of the trucks' rear, given their higher output as compared to bulb-based halogen lights. LED lights, while expensive, offer significantly higher replacement intervals as compared with halogen-bulbs. This will potentially improve overall road safety, as some truck owners/drivers continue to use vehicles without replacing halogen-based lights.

Headlights

In the headlight segment, the bulk of the market is still accounted for by bulb-based halogen lights and the transition to LEDs is expected to be relatively gradual. VECV offers LED DRLs in its LCV models in the Pro 2000/3000 series, but the headlights are still halogen and hence the models are considered to have an LED and bulb-based combination. All the other major OEMs, such as Tata Motors, Ashok Leyland and Mahindra & Mahindra, primarily offer bulb-based lights across for their LCV and IMHCV headlights. The trend is the same for even the premium Prima, Signa, AVTR and Captain cabins offered by Tata Motors and Ashok Leyland. The only exception is Tata Ultra Prime in buses, which also offers DRLs.

However, with increasing preference for fully built cabins, the penetration of LED DRLs-plus-halogen headlights is expected to increase. Additionally, with the increasing electrification of the LCV segment, EVs are expected to transition to pure-LED sooner than their ICE counterparts in this segment.

Major lighting players, such as Neolite ZKW Lightings and Uno Minda, are poised to meet the varied requirements of the CV industry, leveraging their broad portfolio of halogen and LED-based headlights. This extensive range enables them to cater to the entire CV industry, providing a one-stop solution for diverse lighting needs.

Taillights

After the implementation of BS-VI Phase-II norms, major OEMs, such as Tata Motors, Ashok Leyland and VECV, are using LEDs in LCVs, IMHCVs and buses. In the LCV segment, the lower-tonnage mass-market models, such as like Tata Ace and Ashok Leyland Dost, retain bulb-based halogen lights in taillights.

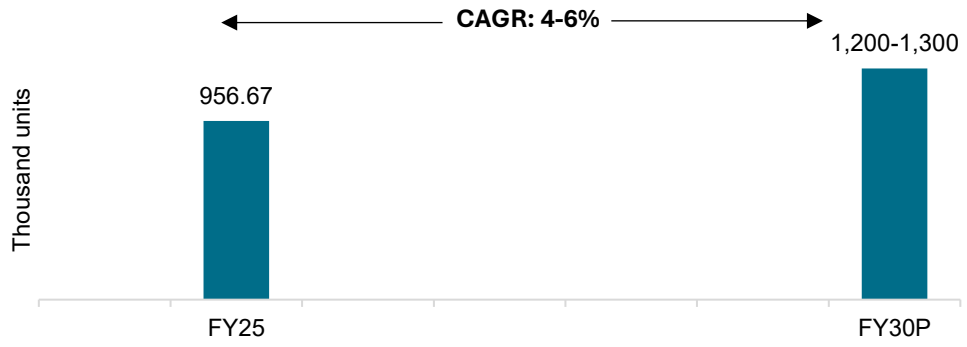
Fog lamps

Fog lamps are still widely offered as an accessory for CVs, but the adoption is largely dependent on the customers' preference. There are a few exceptions, such as Ashok Leyland, which offers fog lights as a standard feature in its Dost line-up.

Outlook for the domestic CV industry

With increasing infrastructure development and rising freight demand from multiple sectors, the Indian CV industry is poised for long-term expansion, projected to grow at a CAGR of 4-6% over the next five years, from ~957,000 units in fiscal 2025 to 1,200-1,300 thousand units by fiscal 2030.

Domestic CV industry outlook



Source: SIAM, Crisil Intelligence

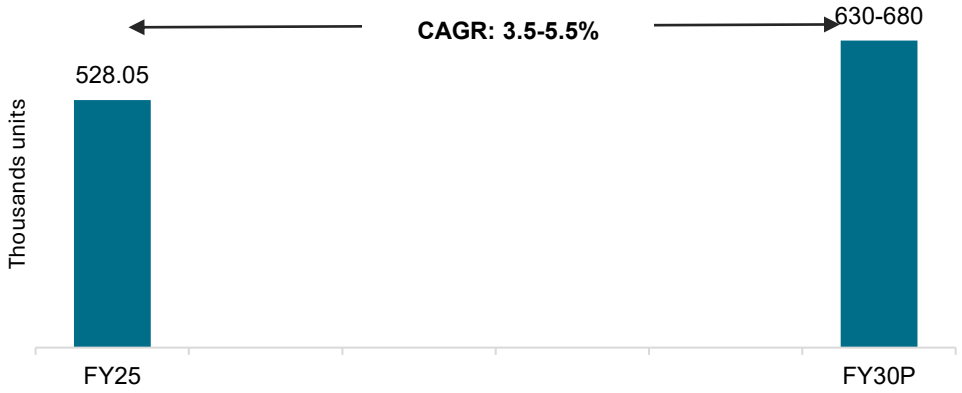
The segment-wise growth outlook is given below.

LCV outlook

LCV demand is expected to clock a CAGR of 3.5-5.5% from fiscal 2025 to 2030. During fiscals 2020 to 2025, the industry exhibited a 3% CAGR. Demand sustained despite the impact of the pandemic because of the expansion of e-commerce activity during the period.

In fiscal 2026, the LCV segment is projected to grow 1-2%, driven by increased economic and commercial activities. This growth is expected to be driven by replacement volumes from healthy sales over fiscals 2017 to 2019 and the resumption of government spending to usual levels. Additionally, the lowering of the repo rate and higher loan disbursements are expected to contribute to this growth.

LCV outlook



Source: SIAM, Crisil Intelligence

Over the long term, growth is expected to quicken to a CAGR of 3.5-5.5%.

Demand drivers for LCVs

Private final consumption expenditure (PFCE)

LCVs are primarily used for last-mile transport and redistribution of commodities. PFCE is a good indicator of domestic consumption demand, and accounts for more than 90% of the LCV goods tonnage segment. Apart from the usual freight demand, an increase in rural consumption and urban expenditure boosts demand for smaller vehicles to transport consumer goods. Moreover, a rise in consumption of non-food items, consumer durables and fast-moving consumer goods fuels demand for LCVs.

PFCE is expected to continue its momentum and clock a CAGR of 6.5-7.5%from fiscals 2025 to 2030, which is expected to support the growth of the LCV segment.

Increasing adoption of the hub-and-spoke network

The road transport industry is gradually moving towards the hub-and-spoke distribution model, wherein industries have large hubs in major regions. Goods are consolidated at these hubs and sent to several touch points (spokes) in the hinterland. This is expected to provide a continued push to LCV demand.

Replacement demand

LCVs are typically replaced every 6-8 years, and vehicles purchased between fiscals 2011 and 2013 were due for replacement in fiscal 2019. Replacement demand was expected to have been particularly high for the sub-one-tonne segment, given its robust sales during fiscals 2011 and 2013. This strategic replacement cycle contributed to stable sales

in the fiscal 2019 and prevented a major decline in LCV sales over fiscals 2020-2023. Of these, the latter three pandemic-hit years saw LCV sales of 81%, 125% and 137%, respectively, of pre-Covid levels compared with 65%, 174% and 209%, respectively, for MHCV sales. However, with the bulk of replacement demand actualised over fiscals 2021-2023, replacement sales saw a dip in fiscal 2024, with some pick-up in fiscal 2025.

Over the next five years, we anticipate replacements providing an added fillip to LCV segment growth.

Substitution of three-wheelers

SCVs, especially sub-one-tonne models (0.75-tonne payload), can substitute large three-wheelers, given their ability to carry loads beyond their payload capacity, run on longer routes, maintain better balance and be more cost-efficient. The pace of substitution, which is tapering off, is a key parameter impacting LCV sales.

IMHCV outlook

The IMHCV segment has seen a fluctuating yet resilient performance in recent years. In fiscal 2025, growth slowed, reflecting the impact of economic headwinds and supply-side challenges.

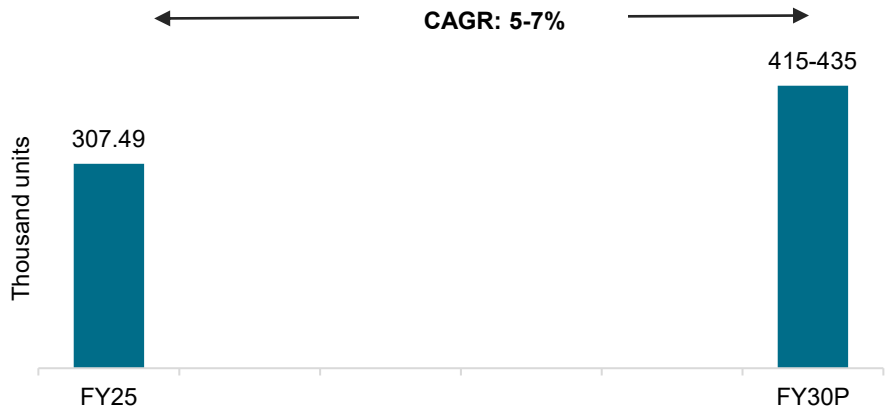
The segmental dynamics of the industry highlight a transition toward a more balanced fleet mix, IMHCVs recovering with tippers maintaining steady demand. The sustained push for infrastructure development, increased logistics digitisation and policy-driven fleet modernisation are expected to shape the segment-wise trends in the coming years. The increased construction and mining activity will be supported by a 9-11% higher budgeted construction capex.

The IMHCV segment is expected to clock healthy growth with a projected CAGR of 5-7% from fiscals 2025 to 2030. There may be a marginal slowdown in fiscal 2026 because of short-term economic uncertainties and a potential dip in pent-up replacement demand. However, the segment is likely to remain resilient, backed by continued infrastructure momentum.

Long-term IMHCV sales are likely to be driven by improving industrial activity, consistent agricultural output and the government's continued emphasis on infrastructure development, among other factors. However, volume growth may be limited by efficiencies gained from the implementation and rationalisation of the GST, the development of improved road infrastructure and the commissioning of the dedicated goods corridors. Nonetheless, the industry remains on a promising growth trajectory.

The IMHCV segment is projected to grow faster than the CV segment over the next five years.

IMHCV industry outlook

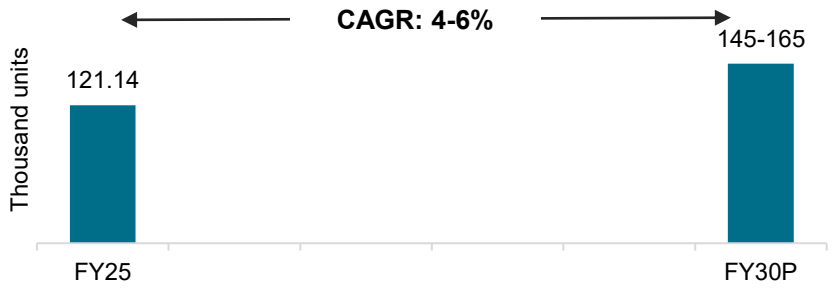


Note:

1. P: Projected

Source: SIAM, Crisil Intelligence

Buses industry outlook



Source: Crisil Intelligence

The buses segment is expected to register a CAGR of 4-6% over fiscals 2025 to 2030 (compared with 7% CAGR over fiscals 2020 and 2025). The segment is projected to expand to 145–165 thousand units by fiscal 2030 from 121 thousand units in fiscal 2025.

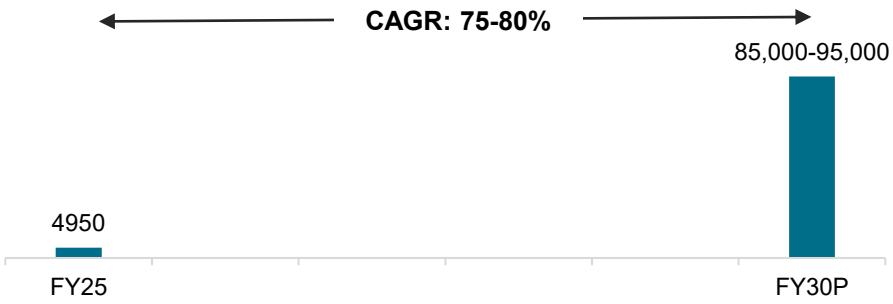
Growth is expected to be gradual as STUs and private operators incrementally replace aging bus fleets and respond to growing urban and intercity transportation needs. Central and state-led procurement schemes are expected to boost the momentum in the segment, on the back of a stronger push for cleaner public transport. However, slower penetration of electric buses outside STUs and higher acquisition costs could result in modest growth compared with goods vehicles.

Outlook on electrification

The government's push for clean mobility through policy initiatives, financial incentives and regulatory support is set to play a pivotal role in accelerating the adoption of e-LCVs in India. Various measures such as subsidies under the PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-Drive) scheme, lower GST rates, state incentives and tax benefits for EV buyers are making electric LCVs more economically viable and an attractive option for transporters and fleet operators.

As last-mile delivery and intra-city logistics expand with the growth of e-commerce, the need for cost-efficient and sustainable transport solutions is also on the rise. e-LCVs, with their lower operating and maintenance costs compared with their internal combustion engine (ICE) counterparts, are well-positioned to meet this demand. Additionally, increasing availability of charging infrastructure and OEMs focusing on introducing competitive and reliable electric models are contributing to market readiness.

Outlook for domestic e-LCVs



Source: Vahan, Crisil Intelligence

By fiscal 2030, the annual volumes of e-LCVs are expected to reach 85,000 to 95,000 units.

Demand drivers for electrification

- **Favourable total cost of ownership (TCO):** Despite higher upfront costs, e-LCVs offer significantly lower running and maintenance expenses due to fewer moving parts and lower energy costs. Over a vehicle's lifecycle, the TCO of an e-LCV is becoming increasingly favourable compared with ICE counterparts, especially for high-utilisation commercial applications
- **Advancements in battery technology:** Improved battery life, faster charging and falling battery costs are enhancing affordability of e-LCVs
- **Regulatory Push:** Stricter CO_2 emission and fuel economy norms (for example, BS-VI in India, Euro 6 in Europe).
- **Government Incentives:** Subsidies (like FAME-II in India), tax breaks, and exemptions on registration/road tax. Increasingly stringent emission norms and regulatory support for electric mobility are pushing OEMs and fleet operators toward cleaner alternatives
- **Replacement opportunity in ageing fleet:** A large portion of the existing ICE LCV fleet is aging and nearing replacement. This presents fleet operators a critical window for electrification, as they become more aware of the long-term cost benefits. Replacement cycles in commercial fleets also provide a structured and recurring demand pattern that can be targeted for EV penetration
- **Increased OEM presence:** Growing investment in public and private charging infrastructure, battery swapping stations and better service networks are reducing operational friction for commercial EV adoption and encouraging OEMs to tap into the EV segment
- **Capacity expansion:** Most OEMs are expanding production capacity to meet the expected rise in demand for EVs. Moreover, government push through mandatory localisation and PLI schemes will also support capacity expansion
- **Competitive pricing:** Battery is the primary contributor to the high prices of EVs. Through R&D, manufacturers are trying to lower the battery pricing, while increasing the vehicle range. Companies are trying to achieve the golden mean between pricing and the range. This improvement in the customer offering will provide an impetus to EV demand
- **Last-mile delivery boom:** Growth of e-commerce and hyperlocal deliveries (Amazon, Flipkart, BigBasket, Zomato, etc.) are fuelling demand for compact, efficient vehicles with low running costs. E-commerce, logistics and urban delivery companies are actively pursuing electrification to reduce operational costs and meet sustainability goals. ESG commitments and investor pressure are also accelerating the shift to greener last-mile delivery solutions
- **Urban pollution concerns and emission norms:** Cities like Delhi are increasingly moving towards low-emission zones. Regulatory pressure and environmental concerns are pushing logistics providers to shift to cleaner transportation like e-LCVs
- **Improving charging infrastructure:** Expansion of public and private EV charging stations, especially in urban and semi-urban areas, is making e-LCV adoption more viable

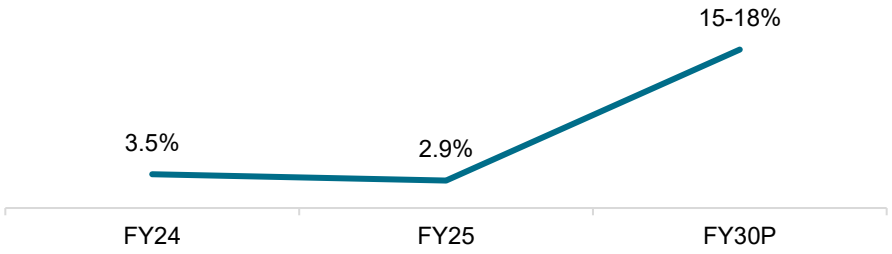
Electrification in buses

Electric bus registrations have skyrocketed in the past few years owing to adoption by STUs as well as government incentives. EV penetration picked up from fiscal 2020 levels (0.56%) and reached 2.9% in fiscal 2025.

The price of an electric bus is considerably higher that of a diesel-powered bus running. Thus, subsidies would be a key driving factor for electrification of STU buses. A large part of the STU intra city buses is expected to be electric by fiscal 2030.

Over the long term, the electric penetration within buses is expected to reach 15-18% by fiscal 2030.

EV penetration outlook in buses



Source: Crisil Intelligence, Vahan

Electrification in IMHCV

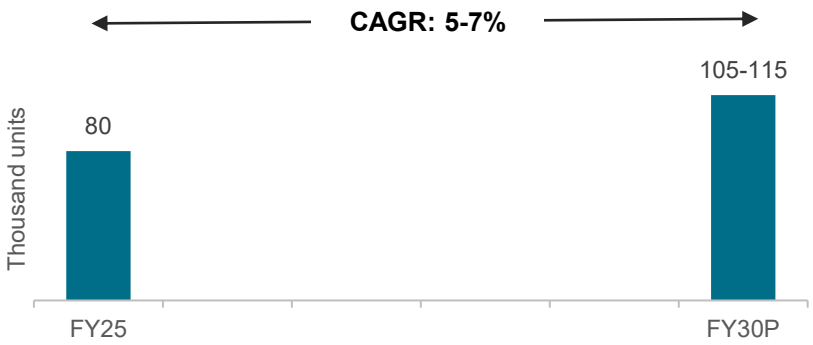
The electrification of long-haul trucks (above 16 tonne) is still a distant reality due to the lack of high-capacity charging network, long charging times and payload-related efficiency losses on account of the current battery technology. Hydrogen fuel cell trucks are also being explored as a cleaner alternative for this segment, with early research and collaboration underway in India.

Outlook for CV exports from India

On the exports front, manufacturers are directing their investments into expanding presence to other Asian countries from neighbouring countries such as Bangladesh, Nepal, and Sri Lanka to Africa and the Middle East. Domestic players are also considering setting up assembly operations across multiple markets. Also, going forward, new product line-ups and technology upgradation will allow domestic players to enter relatively advanced markets of southeast Asia.

Exports from India are expected to grow steadily over the forecast period, with volumes increasing to 105,000-115,000 units by fiscal 2030 from ~81,000 units in fiscal 2025, at a CAGR of 5-7%. This growth is likely to be supported by increasing demand for Indian commercial vehicles in emerging markets, strategic investment in localisation of products and rising competitiveness of Indian OEMs on cost and quality parameters. The current global political scenario and tariff structures, however, remain key monitorables.

Outlook for overall exports from India (fiscal 2025-2030)



Note: P: Projected.
Source: SIAM, Crisil Intelligence

Review of and outlook on the Indian two-wheeler industry

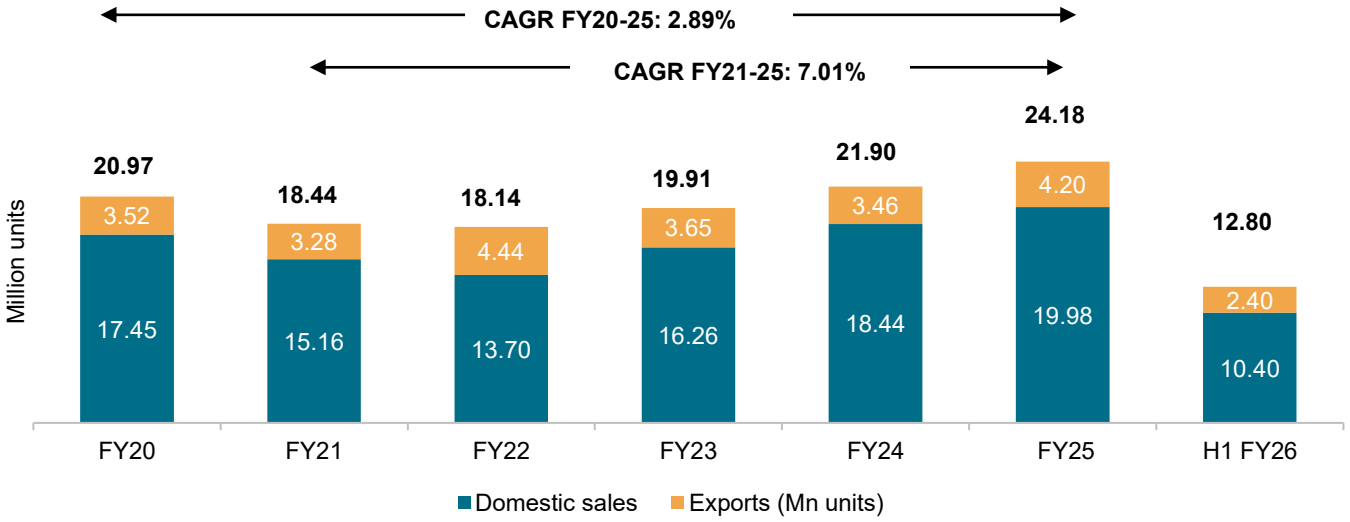
Review of the Indian two-wheeler segment

The Indian two-wheeler segment is one of the largest globally and contributes over 70% to domestic automobile sales.

The total sales of two-wheelers logged a CAGR of 2.89% between fiscals 2020 and 2025, reached 24.18 million units. Domestic sales, which contribute over 80% of the total sales of the industry, clocked CAGR of 2.74%, while the smaller exports segment logged a CAGR of 3.59%.

Industry sales fell at 6.99% CAGR between fiscal 2020 and fiscal 2022. From this lower base, industry sales clocked a healthy 10.16% CAGR between fiscal 2022 and fiscal 2025.

Domestic sales and exports of two-wheelers



Note: Data for ICE and EVs are the retail data based on Vahan; Exports are based on the SIAM reported numbers.
Source: SIAM, Vahan, Crisil Intelligence

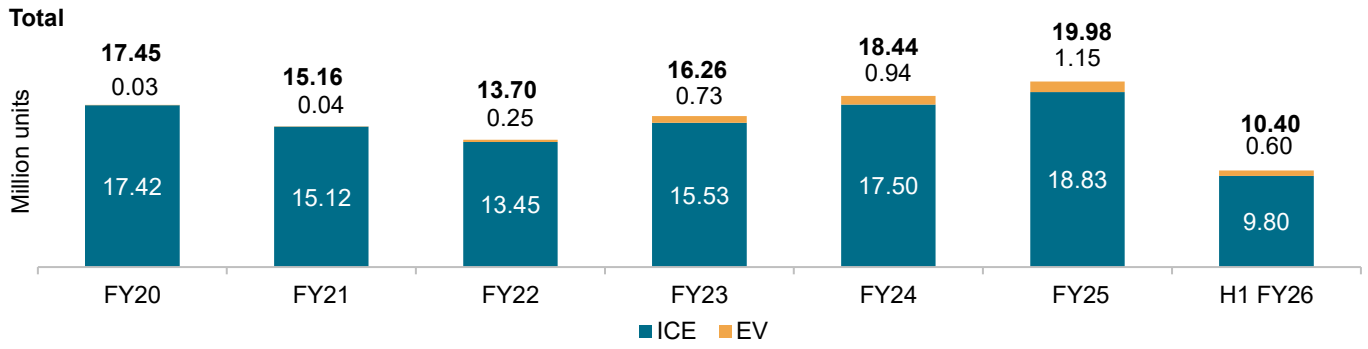
In fiscal 2024, domestic sales grew a further 13.40% because of an improvement in the macroeconomic scenario, rural support, traction for premium motorcycles as well as scooters. In addition, demand for electric two-wheelers, despite the subsidy cut, aided growth in fiscal 2024. New launches, especially in the premium segment, boosted demand. The commuter motorcycle segment also witnessed some improvement during the year after consecutive contractions, aided by limited rise in operating costs as well as increased customer incentives.

In the fiscal 2025, the industry sold 20 million units, up 8.46% on-year. According to the Federation of Automobile Dealers Associations (FADA), the two-wheeler market grew 8.39% in rural areas, compared with 6.77% in urban areas, in fiscal 2025. Healthy crop prices, robust incomes and rising demand for scooters drove the growth in the rural market. Demand for premium vehicles and electrification also supported the domestic market during the year.

Between fiscals 2020 and 2025, the domestic market logged a CAGR of 2.76% to reach ~20 million units.

In the first half of fiscal 2026, domestic sales clocked a marginal on-year growth of ~1%. On the other hand, exports clocked a steep 24.16% on-year growth during the same period.

Domestic two-wheeler sales volume trend (ICE vs EV)



Source: Vahan, Crisil Intelligence

On-year growth	FY20	FY21	FY22	FY23	FY24	FY25	FY20-25 CAGR
ICE	-17.77%	-13.19%	-11.05%	15.52%	12.66%	7.62%	1.56%
EV	-4.14%	67.03%	464.09%	187.93%	28.47%	22.88%	112.00%

Note: Vahan figures exclude Telangana retails. Data as of end-October 2025.
Source: SIAM, Vahan, Crisil Intelligence

Over the last five years, electrification within the industry has contributed significantly to the growth in overall industry sales. In fiscal 2022, electric two-wheelers achieved the highest growth because of the government's push for EV adoption and increasing consumer interest.

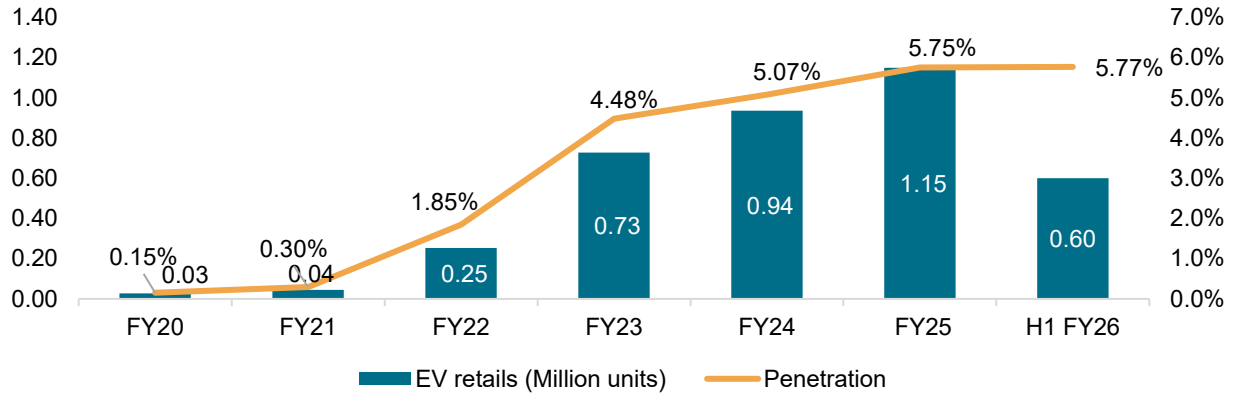
Even when ICE vehicle sales declined slightly, the rise in EV retails restricted the drop in the overall sales volume in fiscal 2022. During fiscal 2020 to 2025, ICE segment grew at a moderate 1.56 % CAGR. However, EV retails clocked 112.00% CAGR for the same period. For fiscal 2025, EV penetration reached ~5.8%, while EV volumes stood at 1.15 million units. In the first half of fiscal 2026, EV penetration increased to ~6%.

Electrification in the two-wheeler segment

In India EVs are gaining popularity, as the government is extending support through Faster Adoption and Manufacturing of Hybrid and Electric vehicles (FAME II), EMPS subsidy and the latest PM E-Drive subsidy, state subsidy and tax rate cuts to encourage EV adoption. Growing awareness about environmental issues is also likely to drive electrification in India.

EV sales have grown, especially following the pandemic, aided by rising awareness, government support and expanding EV portfolio. The entry of new age non-traditional OEMs such as Ola Electric, Ather Energy, Okinawa Autotech and Ampere (Greaves Electric) has provided an additional boost to the EV segment in India.

EV retails trend



Note: Vahan figures exclude Telangana retails. Data as of end-October 2025.
Source: Vahan, Crisil Intelligence

The high-speed electric two-wheeler segment has propelled momentum in electric two-wheeler having increased at a rapid pace from 27,000 units in fiscal 2020 to 1,150,000 units in fiscal 2025, at 112.00% CAGR during the period.

The penetration for electric two-wheelers grew from 0.15% in fiscal 2020 to 5.75% in fiscal 2025. In the first half of fiscal 2026, EV penetration stood at ~6%.

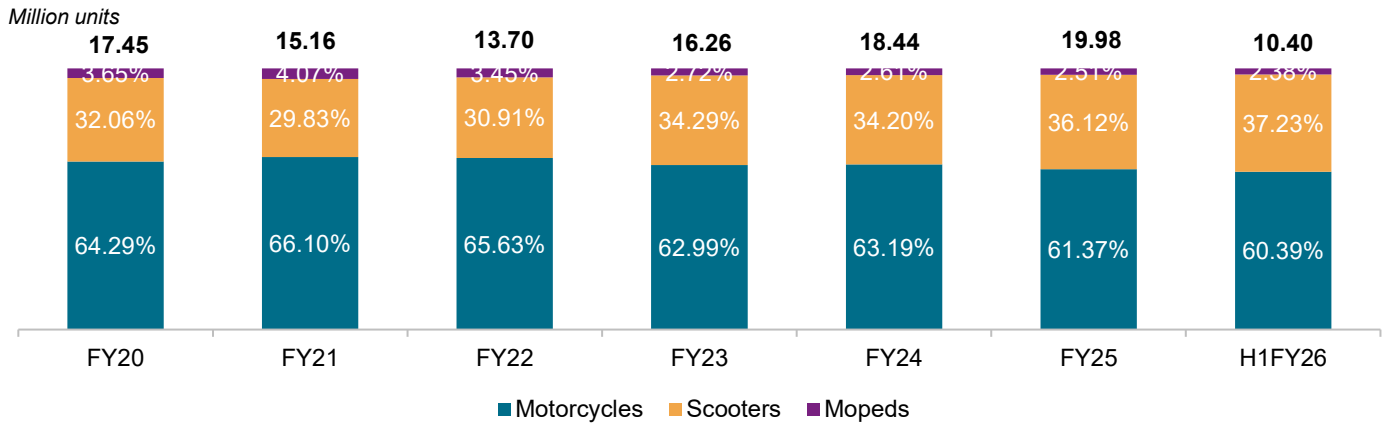
Notably, this segment boasts one of the highest penetration rates in the Indian automobile market, second only to three-wheelers in terms of domestic sales, highlighting its widespread presence and acceptance. Furthermore, electric two-wheelers hold the top spot in terms of EV sales volumes, solidifying their position as a leader in the country's rapidly evolving automotive landscape. Auto component players with EV agnostic portfolios are well placed to capitalise on this trend. The rise in electrification is estimated to contribute significantly to the industry growth over the long term.

Segment-wise domestic sales trend

Motorcycles contribute over 60% to the annual domestic sales volume. However, their contribution has declined to 61.37% by fiscal 2025 from 64.29% in fiscal 2020.

On the other hand, the contribution of scooters to overall sales rose to 36.12% in fiscal 2025 from 32.06% in fiscal 2020. The mopeds segment also lost some ground to scooters over the years, from 3.65% share in fiscal 2020 to 2.38% in fiscal 2025.

Domestic two-wheeler sales over fiscal 2020 to first half of fiscal 2026

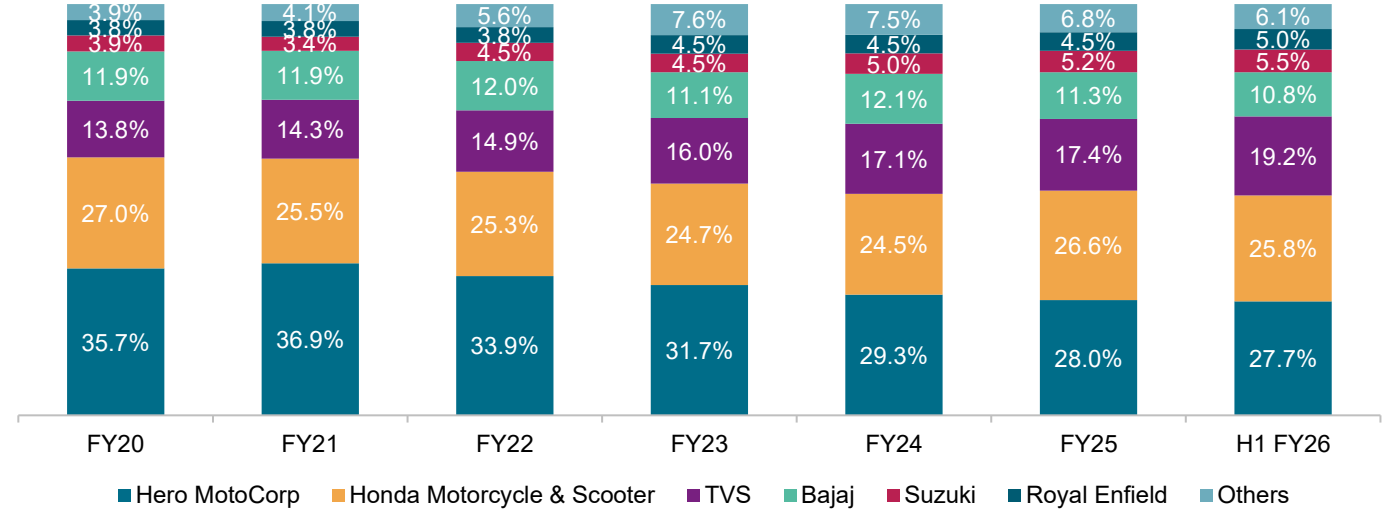


Note: Data includes ICE and EVs; EV retail data from Vahan has been considered.
Source: SIAM, Vahan, Crisil Intelligence

Key players in the domestic two-wheeler segment

India's two-wheeler industry is an oligopolistic market with the top four players contributing over 80% of the annual sales. However, over the years, competition has intensified within the industry, especially with the entry of start-ups such as Ola Electric, Ather Energy, and Okinawa Autotech, catering to the fast-expanding segment of EVs. In fact, the contribution of the top four OEMs has decreased to 84% in fiscal 2025 from 88% in fiscal 2020.

OEM-wise contribution to the domestic two-wheeler sales



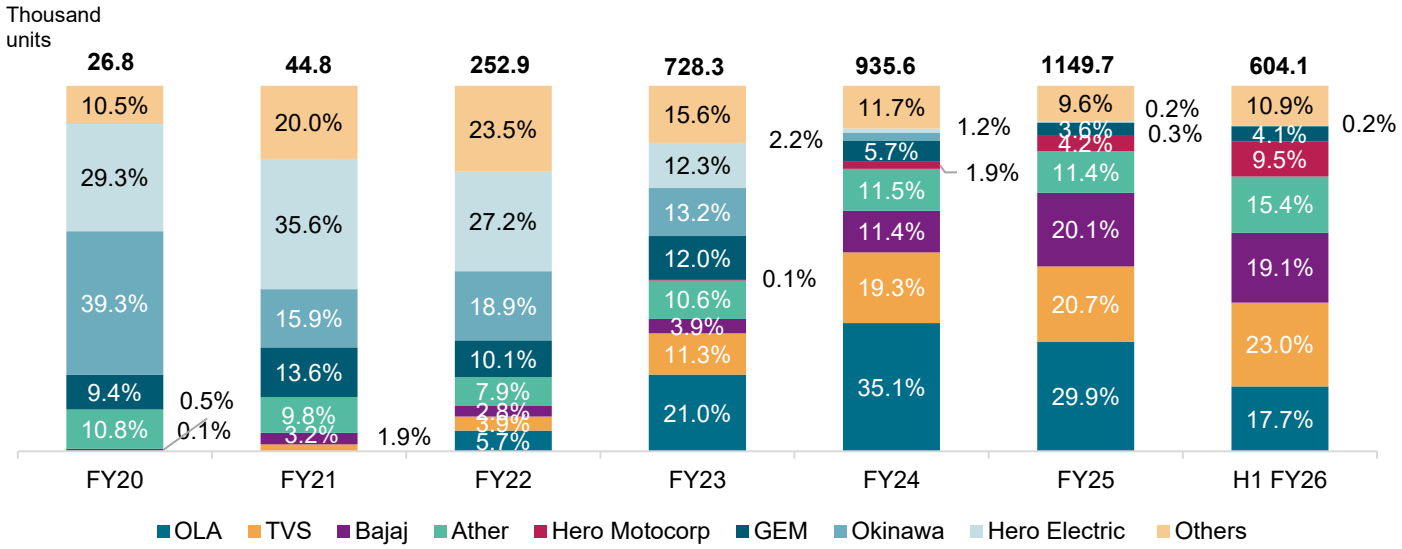
Note: Data includes ICE and EVs; EV retail data from Vahan have been considered. Vahan figures exclude Telangana retails. Data as of end-October 2025.
Source: SIAM, Vahan, Crisil Intelligence

Recent entrants such as Ola Electric and Ather Energy have also captured share from the legacy OEMs on account of the rising electrification within the domestic two-wheeler market. As of fiscal 2025, Ola Electric and Ather Energy contributed 2% and 1%, respectively, to annual domestic sales two-wheelers.

EV competitive scenario

The electric two-wheeler segment is highly concentrated with a few players primarily. During fiscal 2019, a few OEMs such as Hero Electric and Okinawa dominated the market with more than 80% share. Over the years, with the entry of new players, EV launches from legacy ICE OEMs as well as expansion in EV portfolio of players, competition intensified within the EV space.

OEM-wise contribution to electric two-wheeler retail sales

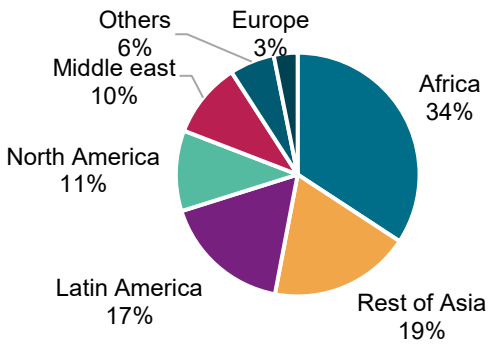


Note: Vahan figures exclude Telangana retails. Data as of end-October 2025.
Source: Vahan, Crisil Intelligence

Exports

Exports account for 15-20% of the overall two-wheeler sales. Two-wheelers are primarily exported to developing countries, with Africa accounting for a major share. Other Asian and Latin American countries also form a sizeable part of exports from India.

Region-wise exports in fiscal 2025



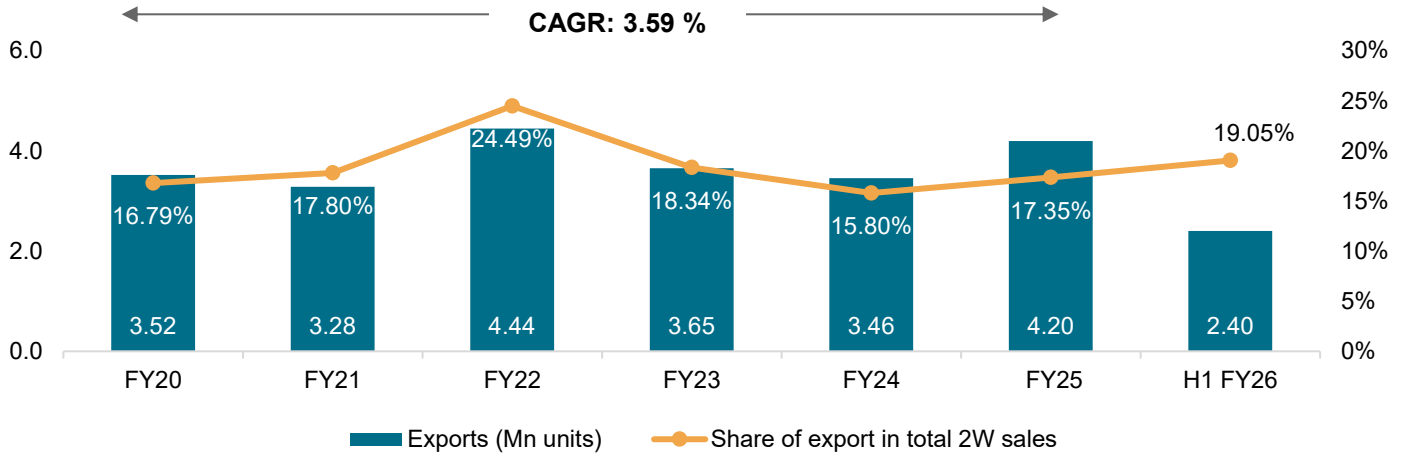
Note: The Rest of Asia does not include the Middle East
Source: Directorate General of Foreign Trade, Crisil Intelligence

Two-wheeler exports logged 3.59% CAGR, reaching 4.2 million units in fiscal 2025 from 3.5 million in fiscal 2020.

However, the tightening global monetary conditions after the inflation spiral and forex unavailability limited the exports. Geopolitical conflicts have also been impacting overseas demand.

Between fiscals 2020 and 2025, the share of exports within total sales was near steady at 16-18%, with fiscal 2022 being an exception, when shipments rose to a healthy 24% as OEMs focused on exports amid a slowdown in the domestic market.

Two-wheeler exports trend



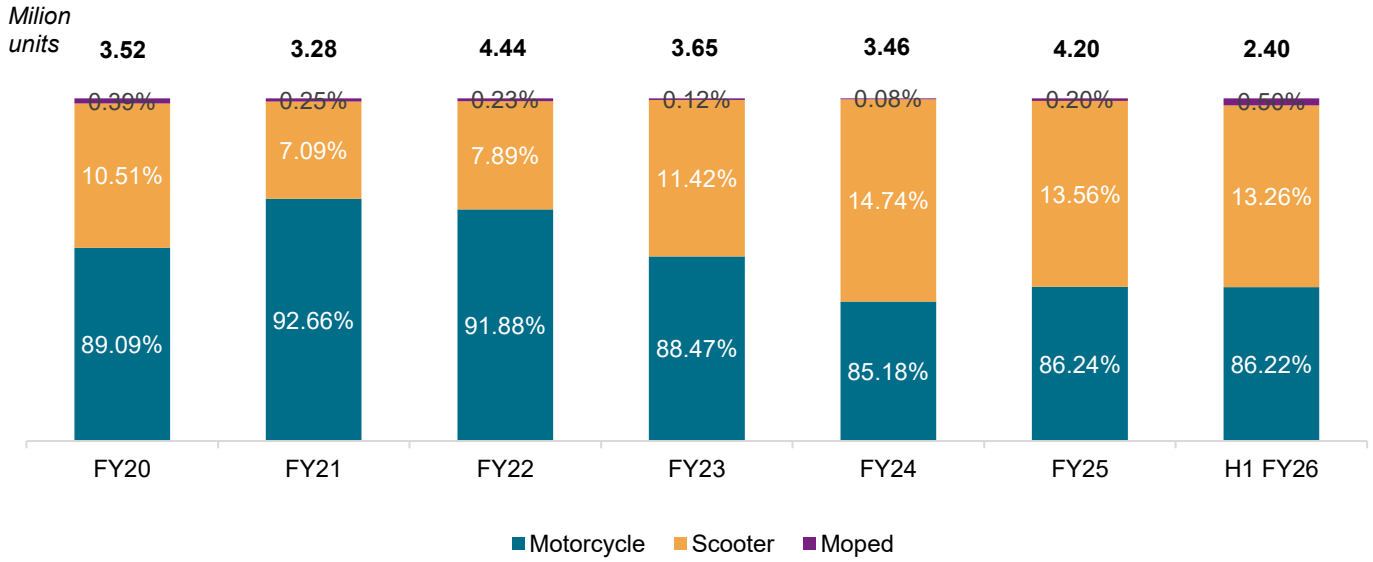
Source: SIAM, Crisil Intelligence

With the domestic market witnessing a revival after the pandemic, OEMs' focus remained on the domestic market as the share of exports declined to 18.34% in fiscal 2023. In fiscal 2025, two-wheeler exports grew 21.38% and reached 4.20 million units. The growth was primarily driven by portfolio expansion and a rise in demand from key regions such as Africa and Latin America. During the first half of the current fiscal, two-wheeler exports witnessed grew 24.16% on year.

Segment-wise exports

Motorcycles accounted for over 86% in the overall exports in fiscal 2025. However, they lost some ground to scooters, especially in the last three years. Motorcycle exports grew at a modest 2.92% CAGR during fiscals 2020-2025, while scooters clocked a 8.99% CAGR during the same period, albeit from a smaller base. Increased push from HMSI -Honda Motorcycle & Scooter India as well as TVS with further geographical expansion in Latin American and Southeast Asian countries aided the faster growth of scooter exports.

Segment-wise export share



Source: SIAM, Crisil Intelligence

Demand drivers and trends in the domestic two-wheeler market

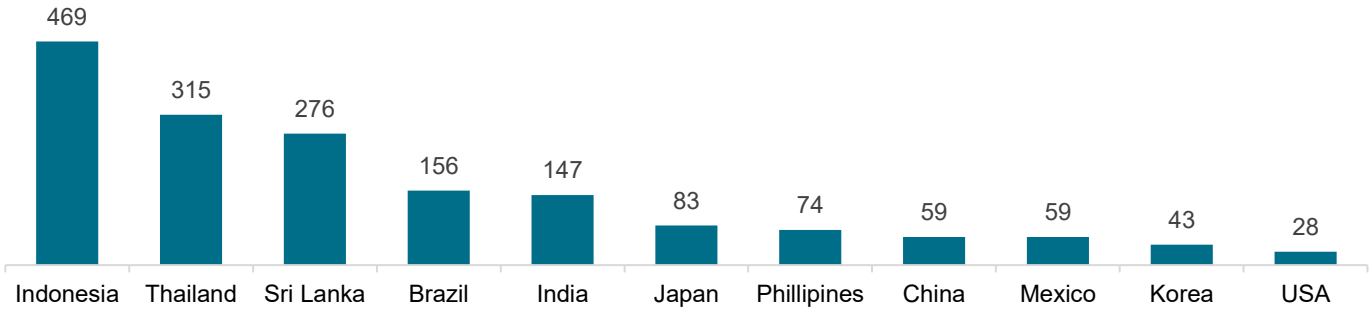
The performance of the Indian two-wheeler industry is dependent on numerous social and economic factors, including demographic trends and preferences, income levels, affordability, changes in government policies, economic conditions and the availability and affordability of finance. Certain factors, such as general macroeconomic and consumer trends, have a direct impact on the demand for two-wheelers.

Two-wheeler penetration by population

In year fiscal 2024, India had ~147 two-wheelers for every 1,000 people, much lower than countries such as Indonesia (469), Thailand (315), Sri Lanka (276) and Brazil (156), according to the International Road Federation - World Road Statistics 2025 report.

This provides a sizeable headroom for the two-wheeler industry to grow. Some of the key demand drivers of the domestic two-wheeler industry are rising rural income, premiumisation and electrification.

Two-wheeler penetration (per 1,000 people)



Note: Penetration numbers are for CY23, India numbers are for FY24
Source: International Road Federation - World Road Statistics 2025

Macroeconomic support

The growth in India's GDP and private consumption has supported long-term demand for two-wheelers. The post-pandemic recovery, coupled with rising income levels, has further aided the industry. Implementation of emission norms, OBD norms have had a temporary impact on the industry, but these issues were absorbed over time. Macro stability is now expected to fuel industry growth.

Rising rural income

Rural regions contribute 55–60% of India's two-wheeler sales, supported by better road connectivity, rural infrastructure and agricultural income. The government's push for rural development and good monsoon forecast are expected to sustain income growth in rural areas. Improved rural affordability is driving penetration even in tier 3–4 markets. So, rural incomes have a direct bearing on two-wheeler industry's sales.

Improvement in rural road connectivity has helped scooters make inroads into rural areas despite customer preference for motorcycles. With rising electrification, a significant portion of EV demand is also coming from tier 3 and rural areas.

Rural infrastructure

Rural infrastructure also has a pronounced impact on rural incomes and, in turn, two-wheeler sales. Though the Pradhan Mantri Gram Sadak Yojana (PMGSY), launched in 2000, the government aims to build all-weather roads in rural areas to improve connectivity and support rural economy. Over the years, the government has successfully executed a major portion of the annual PMGSY target.

Improvement of rural infrastructure impacts two-wheeler demand in two ways: Directly by generating rural employment during road construction works, thereby increasing wages and income, and indirectly by enabling accessibility, which increases mobility.

Thus, the continued expansion in rural infrastructure is expected to drive two-wheeler demand growth over the long term.

GST 2.0

The recent reduction in GST rates, effective from September 2025, led to a reduction in vehicle prices. This development is anticipated to provide some boost to two-wheeler demand, as the lower prices are expected to make vehicles more affordable and attractive to consumers.

Vehicle category	Old GST rates (%)			New GST rates (%)		
	Base GST	Compensation cess	Total tax payable	Base GST	Compensation cess	Total tax payable
Commuter segment up to 350cc	28	0	**28**	18	0	**18**
125cc segment	28	0	**28**	18	0	**18**
Scooter segment up to 350cc	28	0	**28**	18	0	**18**
Premium segment >350cc	28	3	**31**	18	22	**40**

Source: Press Information Bureau, Crisil Intelligence

Premiumisation in the industry

Consumers are increasingly opting for premium motorcycles and scooters with advanced tech, stylish design, LED lighting and better features. This trend is backed by rising disposable income, easy finance availability and lifestyle upgrades.

Premium models witnessed robust growth in fiscal 2025, reflecting a shift in buyer preferences. The share of premium motorcycles increased to ~54% in fiscal 2025 from 52% in fiscal 2024. Premium scooter's share was 45-50% in both the fiscals.

Premium two-wheelers offer a range of features such as larger engines, connectivity, keyless features, improved riding comfort and enhanced performance. High performance EVs also contribute towards premiumisation.

Shrinking replacement cycles

Replacement cycles have reduced from 10–12 years a decade ago to 6–7 years due to factors such as evolving customer preferences, availability of finance and faster tech obsolescence. This trend is driving a higher frequency of repeat purchases.

The rising share of scooters with a relatively lower ownership holding period is another factor contributing to the shortening of the replacement cycle. Rising premiumisation and electrification also support the trend. The shortened replacement cycle for the average customer is an added boost for the two-wheeler sales.

Advancements in vehicle technology

Today, the customer base of the two-wheeler industry has a much greater proportion of the young, tech-savvy Gen Z customers. They want their vehicles to have the latest features, attractive designs and colours, connected technology and hi-tech accessories. This customer base sees vehicles as an extension of their personality. Key trends driving these demands include the need for hybrid systems that improve efficiency, efficient start-stop systems and technologies that help reduce noise and improves performance.

Thus, all the OEMs spend a sizable amount on research and development (R&D) to integrate the latest tech, design and features into their latest models. R&D has also become a necessity to analyse the safety of two-wheeler riders. In the past six years, two-wheeler OEMs have spent ~2% of their annual operating income on R&D.

There have been significant advancements in vehicle technology. Various new features have been added in ICE and EVs, making them more appealing to customers, especially the younger ones. EVs have revolutionised the industry by incorporating the latest technology. ICE vehicles, too, can boast of notable advancements. New-age vehicles offer a wide range of features and innovations to ensure safer, more efficient and environmentally friendly transportation.

Over the years, two-wheelers have seen addition of features such as the digital instrument cluster, navigation tools, USB charging port, Bluetooth connectivity and cruise control. As technology continues to advance, the two-wheeler industry will witness more innovations, making ride safer and more enjoyable. The customer will, in turn, support the growth of the industry over the long term.

Advancements in lighting

The adoption of LEDs has been increasing with premiumisation in motorcycles and scooters. The share of premium motorcycles was 54% in fiscal 2025 and of scooters was 45-50%. Most premium models have LED headlamps and tail lamps as a standard offering.

Consumer dynamics are drastically shifting in the 2W industry as there is more demand for connected technology, hybrid technology, efficient start-stop systems, etc. Just a few years ago, the buying preference, especially in scooters, was largely tied to vehicle efficiency and boot space. But premiumisation, which started with motorcycles, has slowly caught up with scooters as well.

Since aesthetic appeal is playing a larger role in consumer preferences, OEMs are leveraging this opportunity and including signature LED DRLs, across multiple models to showcase their design language. This has led to increased adoption of LEDs in DRLs, headlights and tail light assemblies.

Headlights

In headlights, the bulb-based halogen lights are still widely used in entry-level motorcycles. Shine and Splendor Plus (110 cc) are among the top selling models that still offer halogen headlights to cater to the price-sensitive customer base of this segment.

Most motorcycles in the 125cc and above segments are equipped with LED headlamps, tail lamps and DRLs. The DRLs are integrated within the headlight assembly or offered as position lamps, or a separate assembly. In scooters, the use of LEDs is relatively higher as even mass-market and entry-level models have this feature. The moped segment, which has only one model with the XL 100, comes with the bulb and LED combination: LED position lamps are offered but the headlight assembly is still bulb-based halogen.

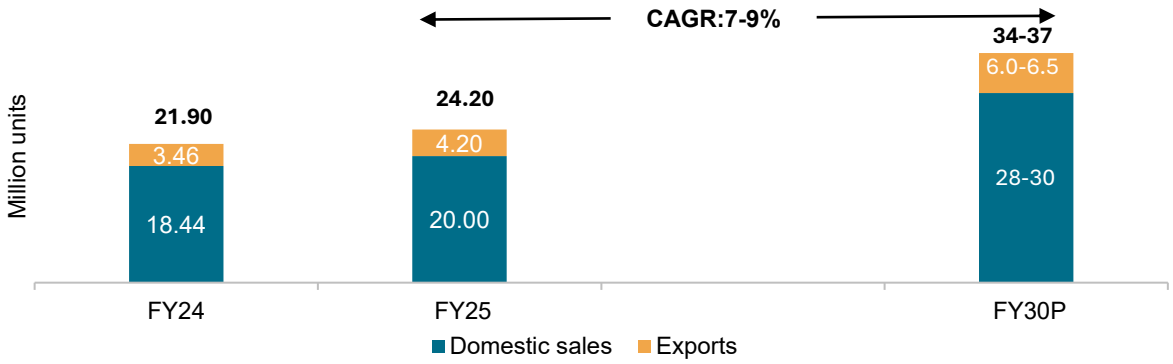
Tail lights

In tail lights, the adoption of LEDs is in line with headlights. Entry-level motorcycles offer halogen-based tail lights while those in the 125cc or above segment mostly offer LED lamps. In scooters, LEDs is more widely used in the mass-market entry-level models. In mopeds, the XL 100 still offers bulb-based halogen tail lights.

Outlook for the Indian two-wheeler industry

The two-wheeler segment (domestic + exports) is expected to clock a healthy 7-9% growth. The primary domestic segment is projected to grow at 6.5-8.5% CAGR, driven by a positive economic environment, favourable rural demand, growing young population, premiumisation, electrification and technological advancements.

Two-wheeler industry sales



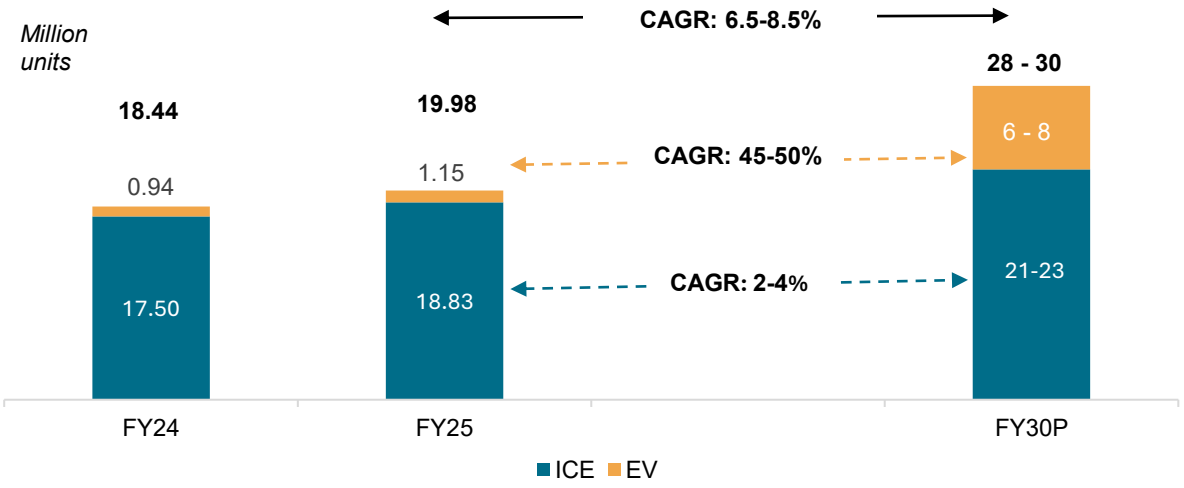
Source: SIAM, Vahan, Crisil Intelligence

The domestic two-wheeler market is expected to continue its growth momentum over the long term due to positive microeconomic and macroeconomic environment, favourable rural demand, rising penetration in semi-urban and rural markets, growing young population, premiumisation, electrification, intermittent launches, shrinking replacement cycle and continued support from financers. Continued R&D investments by the OEMs and technological advancements in the industry provide added support to the growth of the industry.

Additionally, legacy players expanding their EV portfolios and new players increasing EV manufacturing capacity will accelerate the growth.

Led by these positive industry drivers, the domestic two-wheeler industry's sales are projected to clock a CAGR of 6.5-8.5% and reach 28-30 million by fiscal 2030. Of this, the EV segment is projected to register a CAGR of 45-50% and the ICE segment is expected to see 2-4% CAGR.

Domestic two-wheeler sales outlook (ICE vs EV)



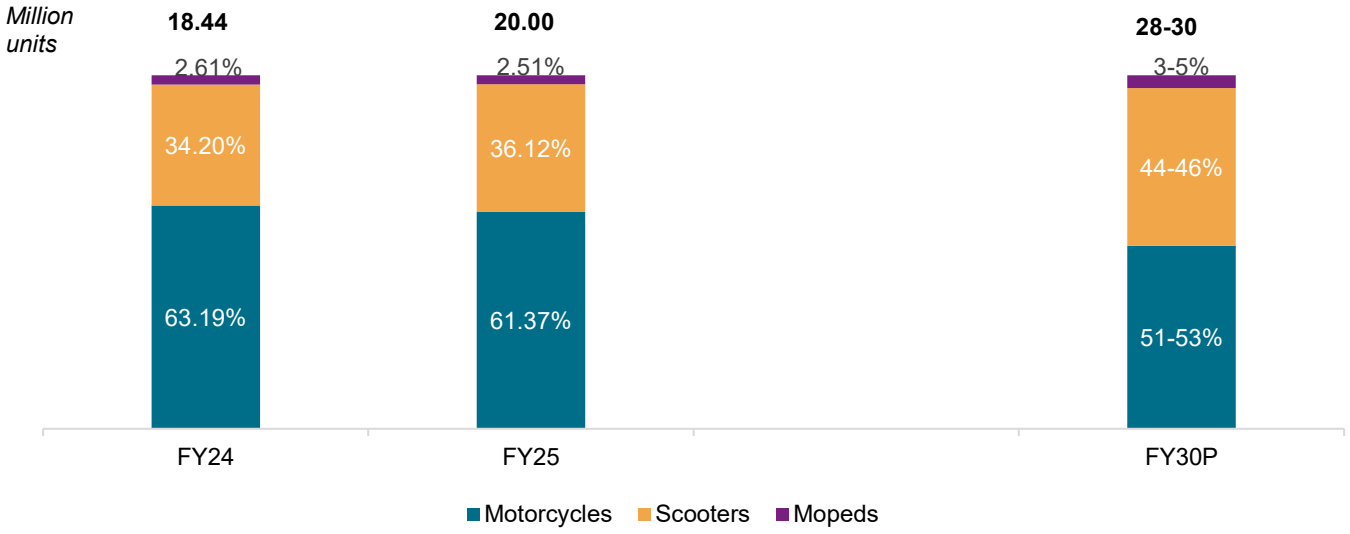
Source: SIAM, Vahan, Crisil Intelligence

We expect scooters to grow at a much faster pace on the relatively lower base, backed by a sharp rise in demand for EVs, ubiquitous usage of scooters, rising share of women in workforce, projected growth of e-commerce and the continued focus of OEMs on the segment. The strong launch pipeline, especially for e-scooters, and faster replacement cycles will also be tailwinds. Improvements in charging infrastructure are expected to provide added impetus.

We expect scooters to clock 12-14% CAGR over the long-term. However, the ICE scooter segment is expected to remain rangebound amid the shift towards EVs. A sizeable portion of the ICE scooter replacement demand will shift towards the electric variants. EV penetration within scooters is expected to grow significantly from 16% in fiscal 2025 to 45-50% by fiscal 2030.

Motorcycles, on the other hand, are projected to clock a slower 4-6% CAGR till fiscal 2030. The primary contributor will be ICE motorcycles, which are expected to register 3-5% CAGR.

Segmental split outlook



Source: SIAM, Vahan, Crisil Intelligence

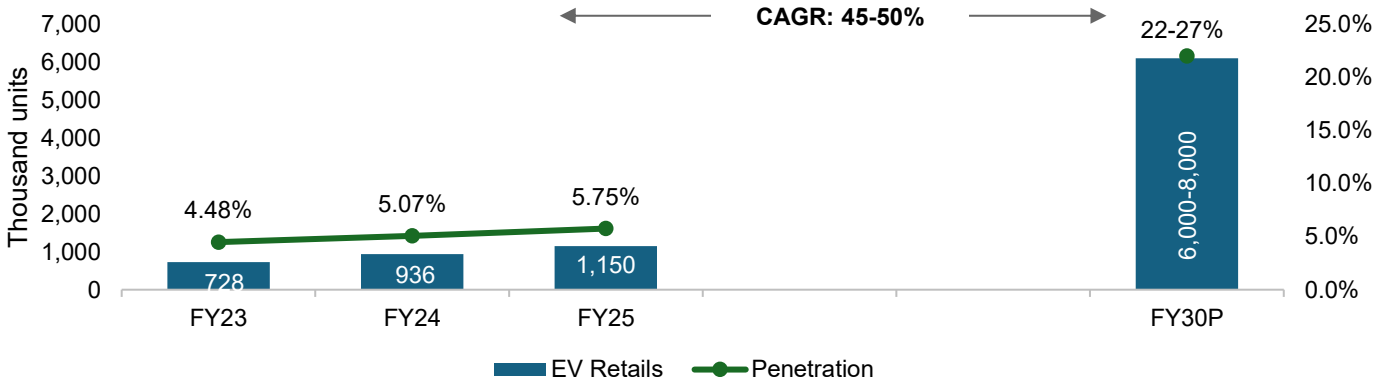
Outlook of e-2W segment

The electric two-wheeler retail sales clocked 112% CAGR in the past 5 years, albeit on the back of a small base in fiscal 2020. The growth momentum is expected to remain healthy due to rising awareness, improving TCO for electric vehicles, narrowing acquisition cost between EV and ICE, rising vehicle portfolio, expanding charging infrastructure, furthering financing support, increasing EV manufacturing capacity and continued government support.

Moreover, the combined effects of network expansion, technological advancements and cost optimisations are poised to drive EV demand, as manufacturers leverage improved battery technology, efficient production processes and localised components to offer competitively priced electric two-wheelers, making them more accessible to consumers.

We expect EV retail sales to register a CAGR of 45-50% and reach 6-8 million by fiscal 2030. EV penetration will then reach 22-27% by fiscal 2030. Such expansion will make e2Ws one of the fastest growing segments in the automotive industry in India, thereby benefiting players with EV-agnostic auto component portfolios.

e2W outlook

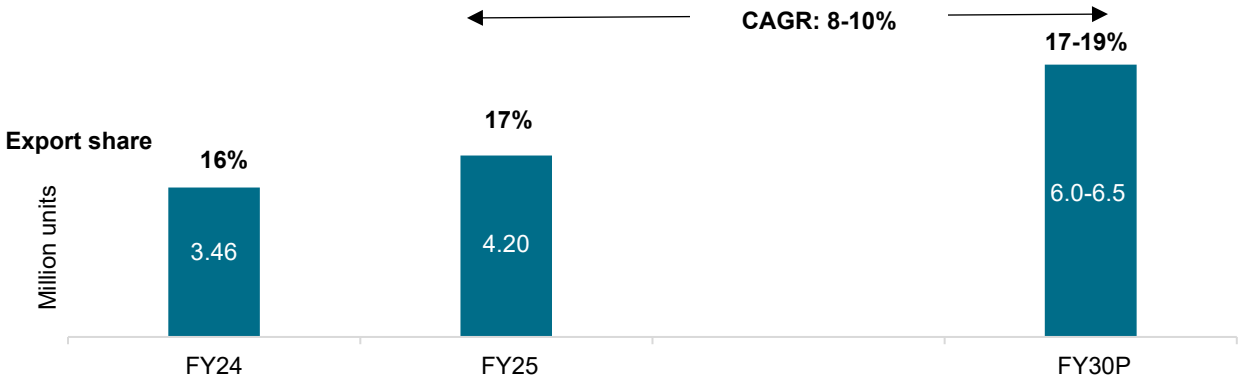


Note: Only high-speed electric two-wheelers have been considered for analysis
Source: SIAM, SMEV, Vahan, Crisil Intelligence

Outlook for exports

Two-wheeler exports clocked 3.59% CAGR during fiscal 2020 to fiscal 2025. We expect the volume to touch 6.0-6.5 million by fiscal 2030, clocking 8-10% CAGR between fiscals 2025-2030. The share of exports in two-wheeler sales is expected to rise to 17-19% in fiscal 2030 from 17% in fiscal 2025.

Exports outlook



Source: SIAM, Crisil Intelligence

The growth will be propelled by improvements in global macroeconomic conditions, expansion in geographical coverage by OEMs and a rise in demand. Moreover, the fast-growing EV segment is expected to contribute to exports amid capacity expansion, more focus on global markets and a sharp rise in the number of models.

Being one of the largest two-wheeler markets, India has a unique opportunity to leverage the scale and manufacturing competitiveness to produce EVs for the domestic and export markets. Further, policies such as the PLI scheme encourage domestic OEMs to manufacture and export EVs. The government offers incentives through PLI for the entire EV ecosystem, including automobiles, auto components and ACC – advanced chemistry cell batteries.

Moreover, India's trade agreements with major global economies would help domestic OEMs improve exports of automobiles and related components.

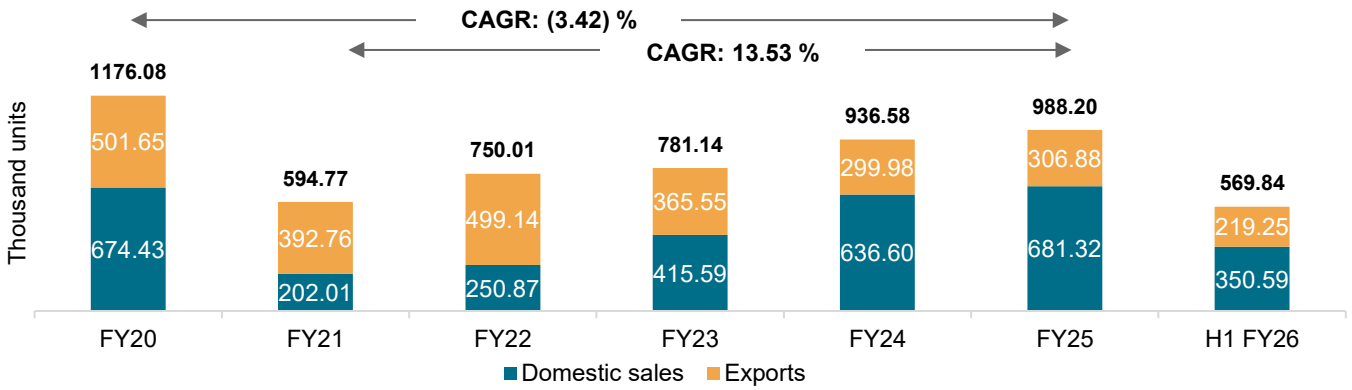
Nonetheless, geopolitical issues can have a negative impact on oil prices, increasing the inflationary pressure in major importing countries. This can, in turn, impact demand for vehicles in the near term. The on-going global uncertainties and concerns over tariffs are also key monitorables.

Review of and outlook on the Indian three-wheeler industry

Review of the three-wheeler industry

India is one of the largest three-wheeler markets. Despite facing significant challenges due to the Covid-19 pandemic, the industry has demonstrated remarkable resilience and bounced back strongly from the pandemic-induced slump, registering a robust recovery with 13.53% CAGR between fiscals 2021-2025.

Three-wheelers industry sales trend



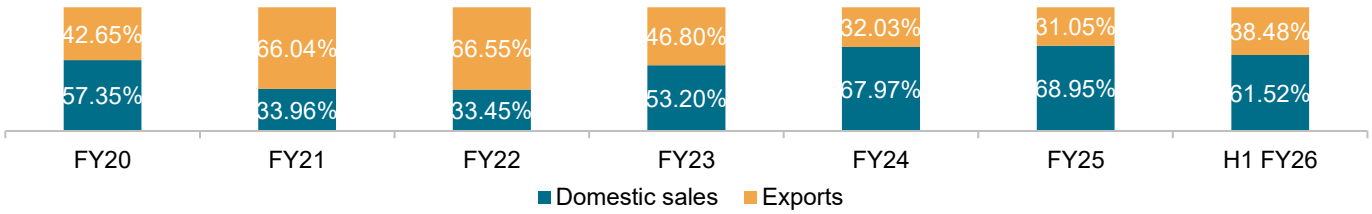
Note: Retails of L5 segment from Vahan have been considered for domestic sales. Vahan data does not include retails for Telangana. Data as of October 2025.

Source: SIAM, Vahan, Crisil Intelligence

From the lows of fiscal 2021, the industry rebounded at a healthy 13.53% CAGR. The larger domestic segment clocked an accelerated 36% growth while exports registered a 6% drop in CAGR as OEMs focussed on the rising domestic segment.

The domestic segment was badly impacted during the pandemic. But as the crisis ebbed and the Indian economy normalised, the domestic segment regained its share.

Three-wheeler industry's sales share



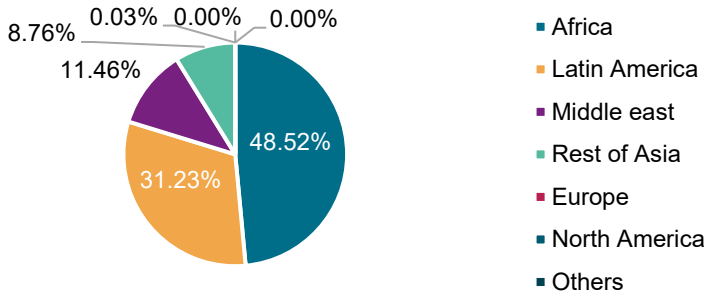
Note: Retails of L5 segment from Vahan have been considered for domestic sales. Vahan data does not include retails for Telangana. Data as of October 2025.

Source: SIAM, Vahan, Crisil Intelligence

India's export market is predominantly focused on developing and emerging economies, with a relatively limited presence in developed countries.

In contrast to the domestic market, the contribution of exports to the three-wheeler industry's sales has been declining over the years, with exports registering a 9% CAGR decline between fiscals 2020 and 2025.

Three-wheeler exports in fiscal 2025



Note: Rest of Asia is Asia excluding Middle East
Source: DGFT, Crisil Intelligence

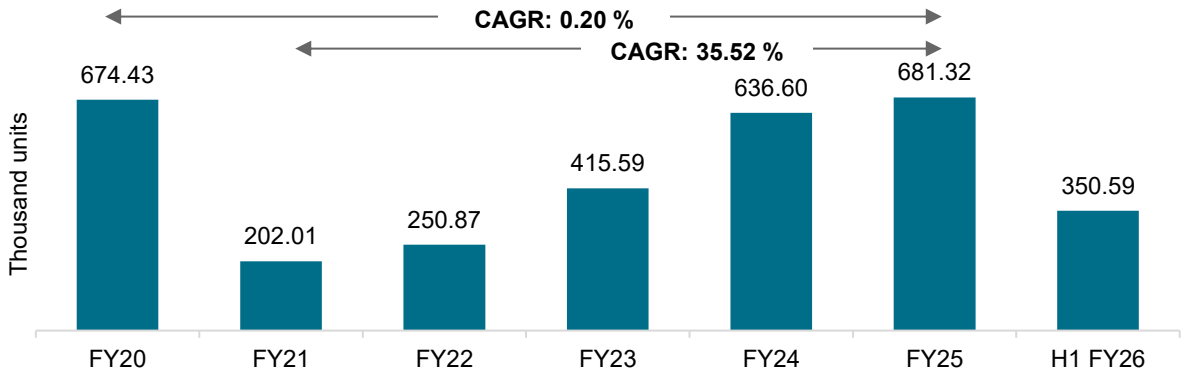
In the first half of fiscal 2026, three-wheeler (3W) exports surged 43% y-o-y. Domestic retail sales also grew but at a relatively modest 8%. The share of exports rose to 38% during the first half of the fiscal.

Domestic three-wheeler industry

The domestic 3W segment, which accounted for 69% of industry sales, clocked a nominal 0.3% CAGR during fiscal 2020-2025. The sales increased to 674,000 units in fiscal 2020 (from 647,000 in fiscal 2019) but declined by 70% in fiscal 2021 due to the reduced mobility requirements that set in during the Covid-19 pandemic.

However, as the economy gradually normalised and offices, colleges and schools reopened, the demand for three-wheelers rebounded at 36% CAGR during fiscal 2021-2025. The increase was primarily driven by the robust growth in passenger segment, which clocked 43% CAGR.

Three-wheeler industry's domestic retail sales



Note: Retails from Vahan have been considered for domestic sales. Vahan data does not include retails for Telangana. Data as of October 2025.
Source: Vahan, Crisil Intelligence

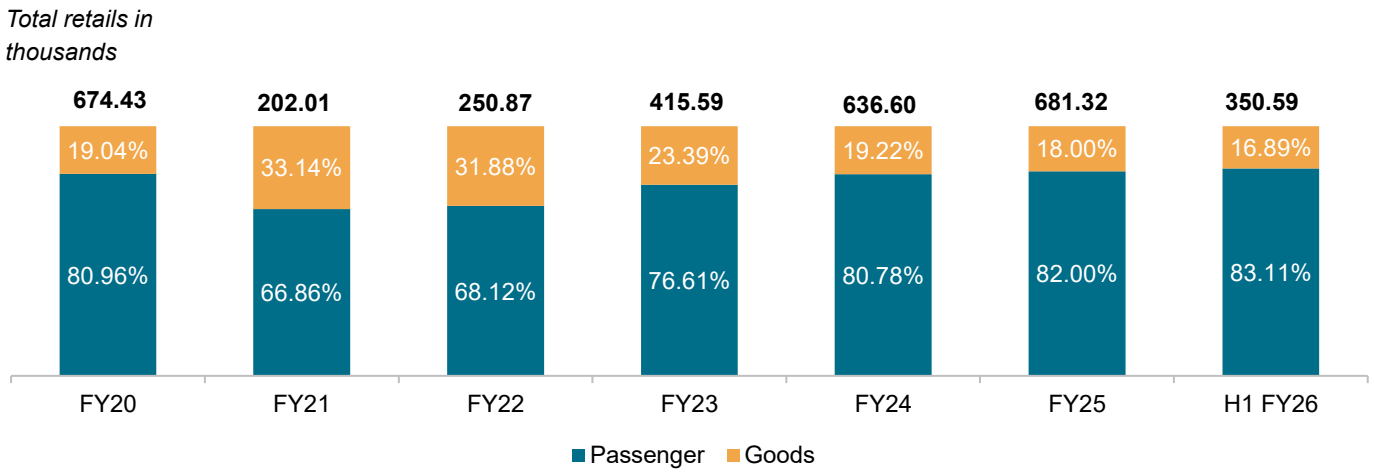
From a low base in fiscal 2021, the passenger segment clocked 43% CAGR till fiscal 2025.

The three-wheeler goods segment, which had a relatively lower impact from the pandemic, grew on the back of improvements in the macroeconomic condition, rise in investments, increased construction activity and the continued growth in e-retail and last-mile delivery. The goods segment clocked 16% CAGR between fiscals 2021 and 2025.

The relatively faster growth at 43% CAGR in the passenger segment during fiscal 2024 expanded its share to the pre-pandemic levels of over 80% and kept it in the region in fiscal 2025.

During first half of fiscal 2026, the passenger segment grew 8.5% and the cargo segment 6%. Consequently, the passenger segment's share in retail sales increased to approximately 83%.

Segment-wise share in domestic retails for fiscals 2020-2025



Note: Vahan data does not include retails for Telangana. Data as of October 2025.
Source: Vahan, Crisil Intelligence

Furthermore, in the last five years, the rise of EVs has provided an added boost to the domestic three-wheeler (3W) industry.

Electrification within domestic 3W industry

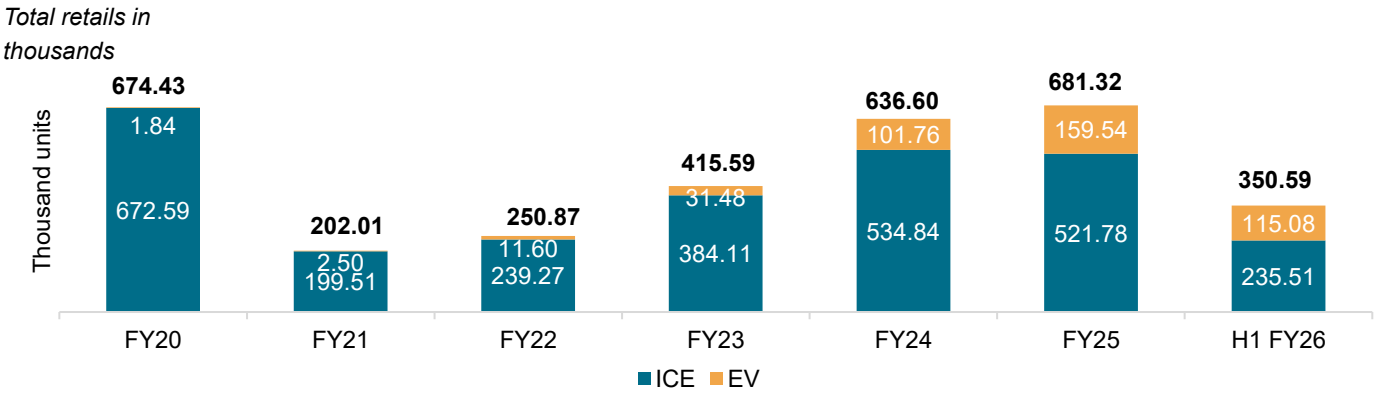
The EV segment has experienced a significant boost in the last two years, driven by new model launches, increasing awareness, rising fuel prices and improvements in infrastructure. Higher fuel costs over the last few years have provided an added incentive for price-sensitive customers to opt for EVs. Furthermore, the introduction of new models has supported EV adoption, particularly from fiscal 2023.

From a relatively low base in fiscal 2020, the sales of e-autos (L5 segment) have grown, surpassing the 100 thousand retail mark during fiscal 2024 and maintaining a healthy growth trajectory in fiscal 2025.

Additionally, growth in e-commerce and the preference for EVs, particularly 3Ws, by large e-commerce players, is driving sales. This category of usage requires vehicles with higher ranges and reliability, as well as better operating efficiencies that support income generation.

As a result, e-auto retails clocked a CAGR of 145% between fiscal 2020 and fiscal 2025. Even on this elevated base, e-auto retails grew 75% on-year in the first half of fiscal 2026, pushing EV penetration to 32.8%.

Share of EVs

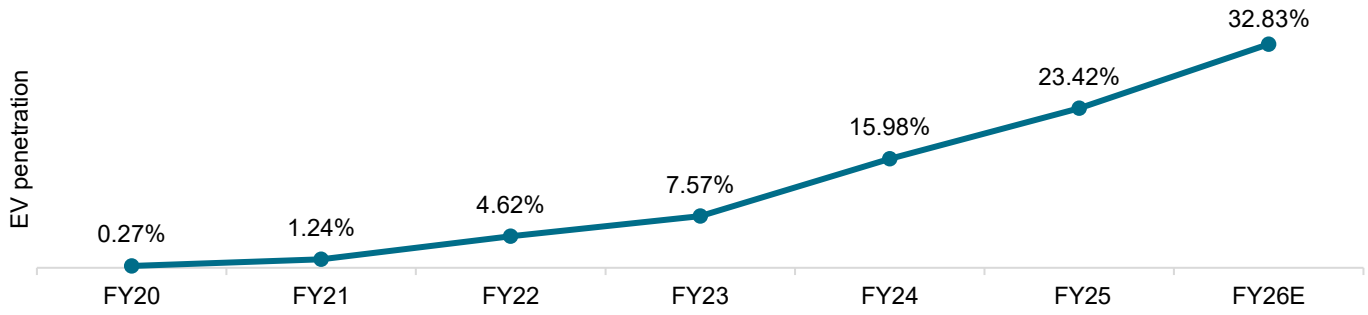


Note: Includes e-auto (L5) sub-segment sales data, does not include e-rickshaw (L3) sub-segment data. Vahan data does not include retails for Telangana. Data as of October 2025.

Source: Vahan

This shift towards EVs is expected to continue, driven by the efforts of the government, industry players and other stakeholders to promote the adoption of sustainable and environmentally friendly transportation solutions.

EV penetration in 3Ws (e-autos)



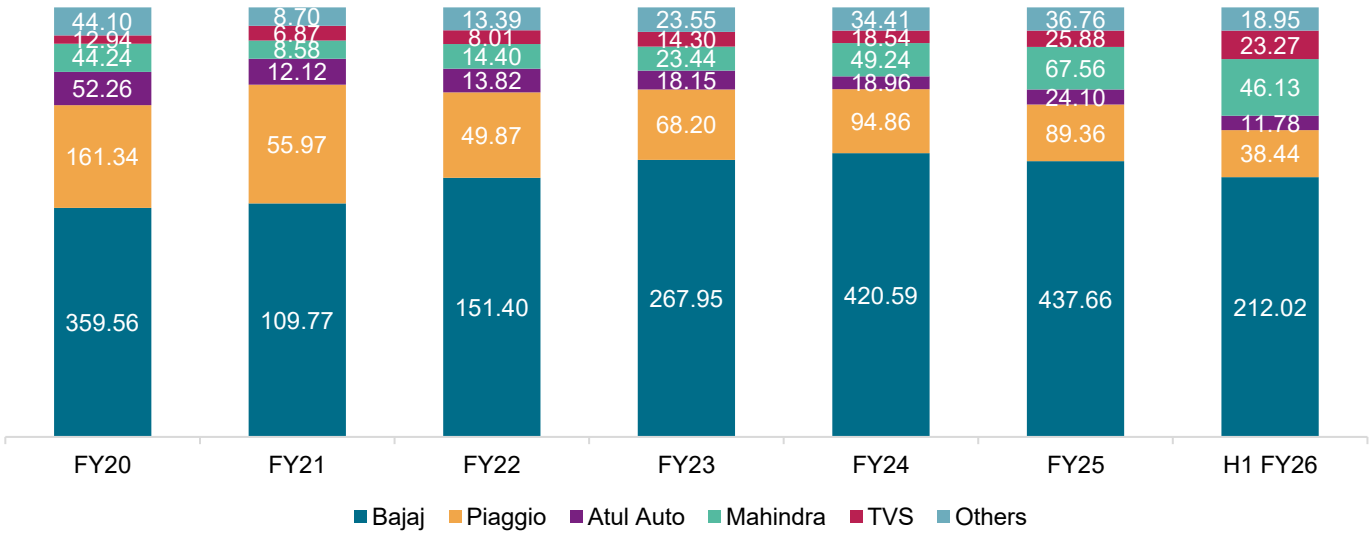
Note: Vahan data does not include retails for Telangana. Data as of October 2025.

Source: SIAM, Vahan, Crisil Intelligence

Competitive landscape within the domestic 3W industry

The domestic 3W industry is highly concentrated, with a limited number of large players accounting for more than 90% of demand. In fiscal 2025, leading players including Bajaj Auto, Piaggio, Mahindra Last Mile Mobility and Atul Auto collectively accounted for ~92% of the market share.

Player-wise retail volumes



Note: Includes e-autos (L5) sub-segment sales data. Vahan data does not include retails for Telangana. Data as of October 2025.; Bajaj: Bajaj Auto, Mahindra: Mahindra Last Mile Mobility, Piaggio: Piaggio Vehicles, Atul: Atul Auto, TVS: TVS Motor

Source: Vahan

Bajaj Auto's dominance is particularly pronounced in the passenger segment, where it has consistently maintained a share of over 60% in c the last five fiscals.

Piaggio, the second-largest player, has historically dominated the goods segment, with a share of over 37% in fiscal 2020. However, the company has been losing ground to Bajaj Auto in recent years. As of the first half of fiscal 2026, Piaggio was among the top three contributors in the 3W industry.

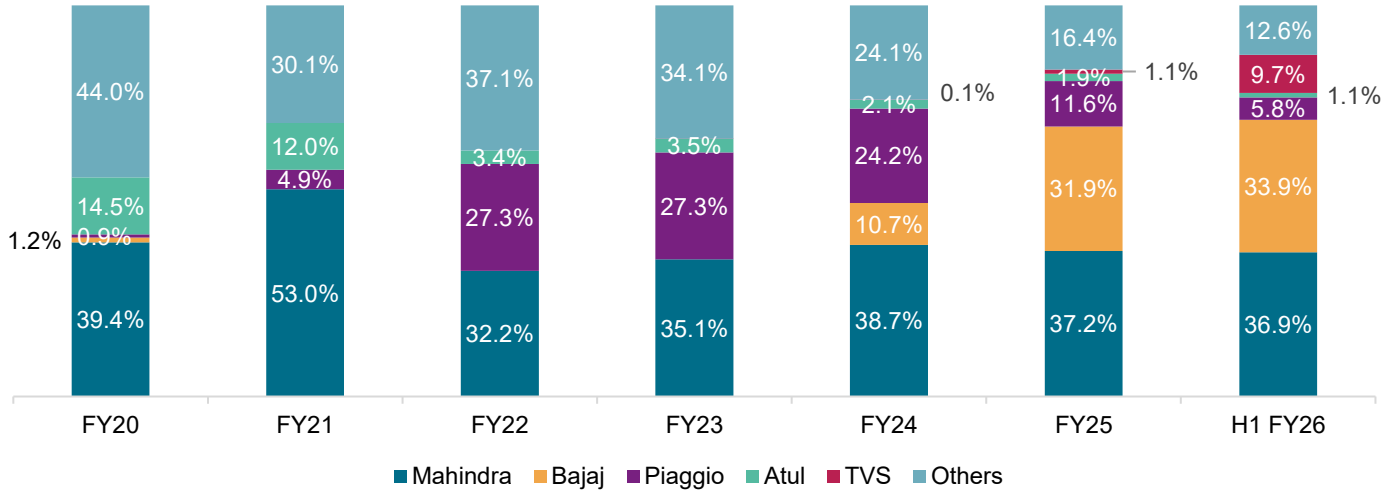
Competitive landscape within the e-auto sub-segment

In the pre-Covid period, the e-auto segment of the 3W industry was characterised by a relatively fragmented market landscape. Among the larger players, Mahindra Last Mile Mobility and Atul Auto had a significant presence. However, over the last five years, the share of other large players has increased, driven by product launches, improved vehicle supply and increased coverage.

In fiscal 2025, Mahindra & Mahindra contributed ~37% to the e-auto retail sales. The company's strong presence in this segment can be attributed to its early-mover advantage, robust product offerings and extensive distribution network.

Bajaj Auto, on the other hand, has made significant inroads over the last two years, driven by improved supply and expanded reach of its e-auto models. The company's aggressive product launch strategy and focus on electrification have helped it gain a sizeable market share.

Player-wise contribution



Note: Includes e-auto (L5) sub-segment sales data. Vahan data does not include retails for Telangana. Data as of October 2025.Bajaj: Bajaj Auto, Mahindra: Mahindra Last Mile Mobility, Piaggio: Piaggio Vehicles, Atul: Atul Auto, TVS: TVS Motor Company
Source: Vahan

Over the last few years, Piaggio has also expanded its presence in the e-auto space with increased offerings. As a result, its market share rose from 0.9% in fiscal 2020 to ~12% in fiscal 2025. However, the company lost some ground to Bajaj Auto and TVS Motor Company in fiscal 2025 and the first half of fiscal 2026, highlighting the intense competition in the segment.

The segment is expected to play a crucial role in the growth of the 3W industry, driven by government incentives, declining battery costs and growing environmental concerns. As the market evolves, it is likely that the competition will intensify, with each player striving to expand its market share and maintain its competitive edge.

Key demand drivers for 3Ws

- **Availability of finance:** With 95% of sales being financed, continuous availability of credit, competitive interest rates and increased funding from banks and non-banking financial companies (NBFCs) will drive industry growth.
- **Stable agricultural output:** With over 50% of demand coming from rural areas, the rural economy is a vital contributor to the growth of the 3W segment. A stable agricultural output and favourable monsoon season have a positive impact on rural incomes, which in turn drive demand for 3Ws.
- **Steady growth in industrial and services GVA- Gross value added:** Industry and services sectors, which require transportation and logistics services, drive demand for 3Ws. Improvement in the industry sector leads to higher production and transportation of goods, while growth in the services sector leads to more employment and personal transportation needs.
- **Growth in gig worker economy and e-commerce industry:** The gig economy and e-commerce sector drive demand for 3Ws, particularly electric 3Ws, for last-mile delivery. The growth of these industries is likely to continue, with the e-commerce market size expected to reach Rs 8 trillion by fiscal 2028.
- **Technological advancements:** Ongoing technological advancements, particularly in battery technology, have enhanced the efficiency of 3Ws, making them more viable and attractive. Future advancements are expected to drive demand through innovations in areas such as LED headlamps, digital instrument clusters and improved performance.

- **Rising electrification:** A sustained total cost of ownership (TCO) advantage, an expanding vehicle portfolio, government support and technological advancements are expected to support further electrification and, in turn, industry growth.

Outlook for the 3W industry

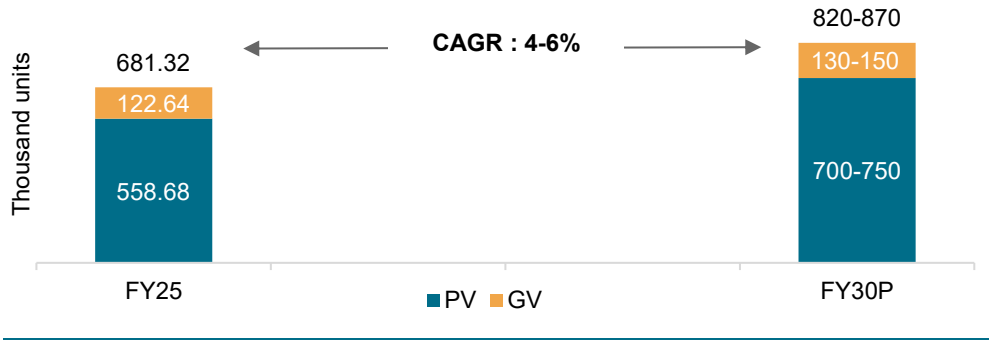
In the long term, domestic retail sales are expected to expand at a CAGR of 4-6%, reaching 820-870 thousand units by fiscal 2030. As the industry continues to evolve, the pace of growth is anticipated to taper slightly in the coming years from an elevated base.

The EV sub-segment, which is poised to gain momentum due to factors such as increasing portfolio expansion, government support, technological enhancements, and expansion in charging infrastructure, is expected to be the primary growth driver for the domestic industry.

EV sales are projected to grow at a CAGR of 18-23%, while the internal combustion engine (ICE) segment sales are expected to contract at a CAGR of 2-4%. This is expected to lead to higher EV penetration within the segment, increasing to 40%-50% by fiscal 2030 from 23% in fiscal 2025.

Notably, EV penetration within the L5 segment has already demonstrated significant growth, rising to 23.42% in fiscal 2025 from negligible levels (0.27%) in fiscal 2020. This trend is expected to continue with EVs becoming an increasingly important part of the 3W industry's product mix.

Domestic sales outlook



Note: P-projected
Source: Vahan, Crisil Intelligence

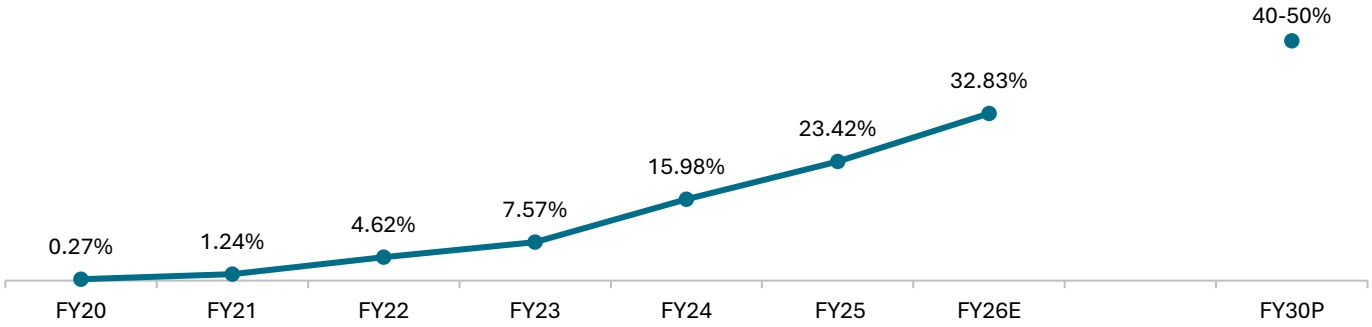
Outlook on e-3W segment

The growth prospects for the L5 segment are expected to be driven primarily by increasing demand from the EV subsegment. The EV sub-segment is poised for significant growth, supported by several factors, including:

- **Portfolio expansion:** Manufacturers are expected to introduce new EV models, broadening their offerings and catering to diverse customer needs.
- **Government support:** Favourable government policies and incentives are likely to encourage EV adoption and drive segment growth.
- **Technological enhancements:** Advances in technology are expected to improve performance, range and efficiency, making EVs more appealing.
- **Expansion in charging infrastructure:** The development of a comprehensive charging network will alleviate range anxiety and make EVs a more practical option.

As a result, e-auto sales are projected to grow at a CAGR of 18-23%. This growth will be accompanied by an increase in EV penetration within the L5 segment, which is expected to rise to 40-50% by fiscal 2030 from 23.4% in fiscal 2025.

EV penetration trend



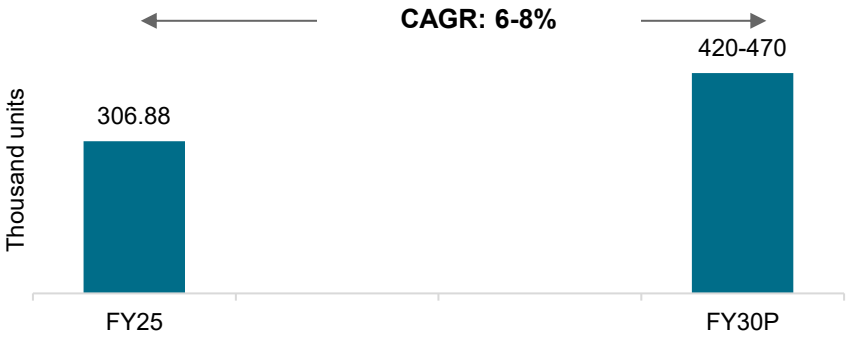
Note: Retail sales data from Vahan has been considered for analysis. Vahan data does not include retails for Telangana. Data as of October 2025.

Source: Crisil Intelligence, Vahan

Outlook on 3W exports

Crisil Intelligence expects industry exports to clock a CAGR of 6-8% between fiscal 2025 and 2030, from the low base of fiscal 2025. The improvement in macroeconomic landscape of key exporting regions, expansion of OEMs' geographical presence and product portfolios is expected to provide a boost to industry exports. However, the ongoing trade war and its impact on global economies remain key monitorables that could potentially affect the industry's export growth.

3W exports outlook



Source: SIAM, Vahan, Crisil Intelligence

In terms of overall industry growth, the 3W industry is projected to clock a CAGR of 5-7% over the next five years, reaching 1,280-1,330 thousand units by fiscal 2030. This growth will be driven by higher domestic demand, expansion of OEMs' geographical presence and product portfolios, and improving macroeconomic conditions in key exporting destinations.

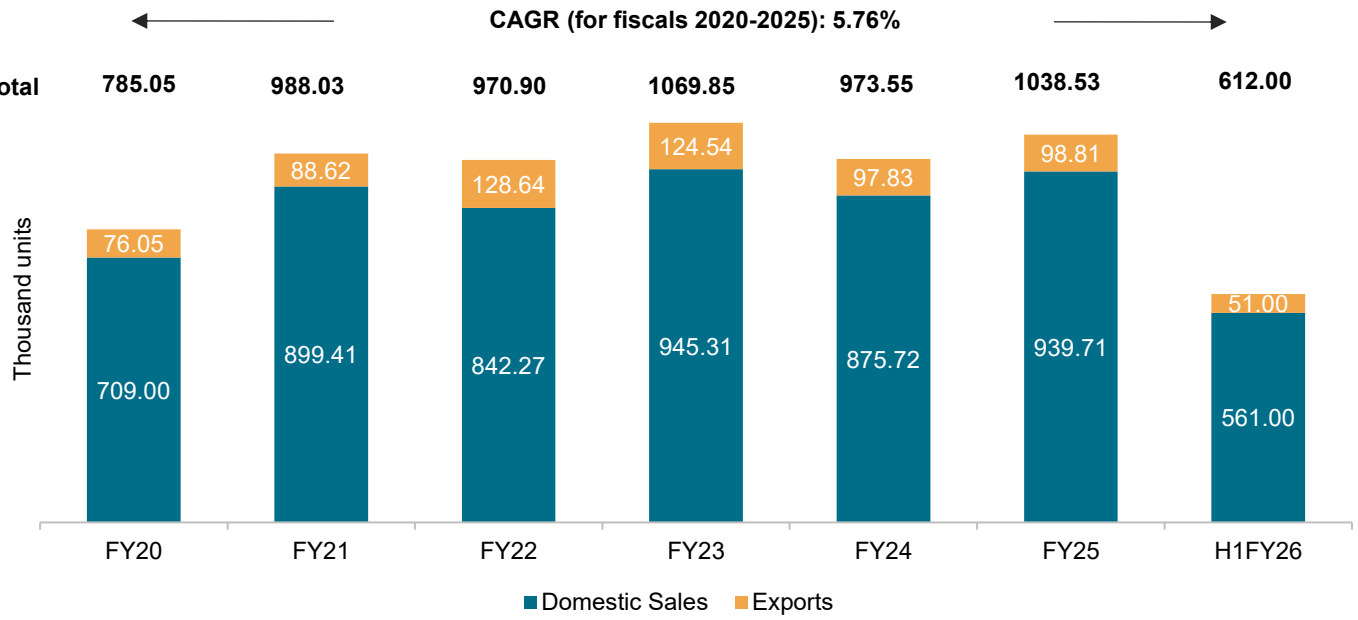
Review of and outlook on the Indian tractor industry

Review of Indian tractor industry

Sustained growth of the Indian agricultural sector has been a key catalyst for the tractor industry's expansion over the years. The industry's growth has been augmented by a deliberate and strategic emphasis on exports, with India emerging as a major exporter of tractors to countries in South Asia, Africa and Latin America.

In fiscal 2020, total tractor sales stood at 785.05 thousand units. By fiscal 2025, this figure had increased to 1038.53 thousand units, representing a notable surge in demand at a CAGR of 5.76% over the five-year period. This growth rate is a testament to the industry's resilience and adaptability, as well as the government's initiatives to promote agricultural development and exports.

Overall tractor industry (domestic + exports) sales trend



Source: Tractor Manufactures Association (TMA), Crisil Intelligence

Domestic sales, which dominate the overall industry sales in India, have constituted around 90% of the total sales, while exports have accounted for the rest 10% during the last five fiscals.

During fiscals 2020-2025, domestic sales clocked a CAGR of 5.80% compared with exports, which witnessed a CAGR of 5.38%. During the first half of fiscal 2026, the domestic tractor industry witnessed healthy growth of ~18.80% on-year, whereas exports registered a growth of ~3.57%.

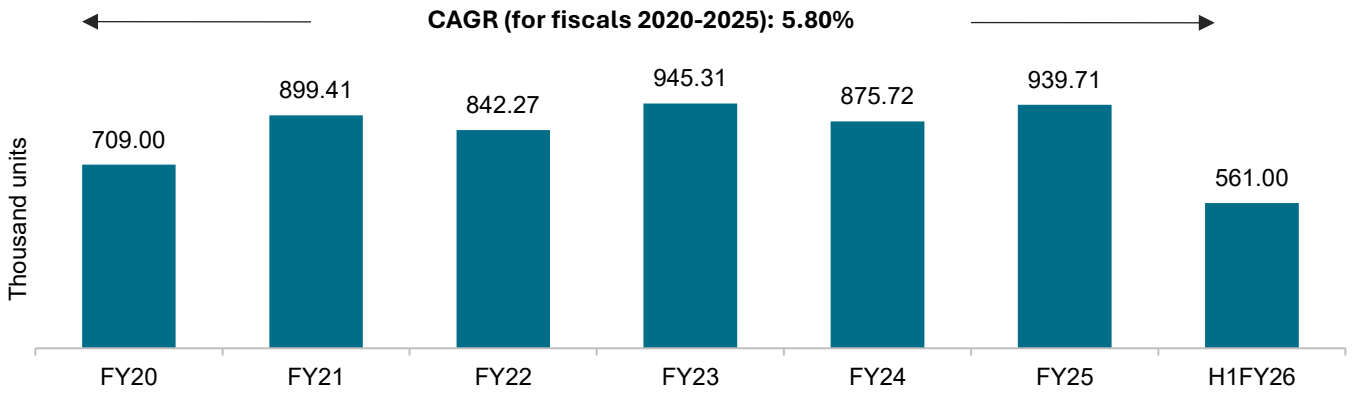
Domestic tractor industry (fiscals 2020-2025)

In recent years, the Indian tractor industry has displayed healthy growth, reflecting the significance of the agricultural sector and the increasing mechanisation of farming practices.

In fiscal 2020, domestic tractor sales stood at 709.00 thousand units, which surged to 939.71 thousand units by fiscal 2025, clocking a CAGR of 5.80%.

The growth trajectory can be attributed to several factors, including the government's focus on rural development and the promotion of agriculture, which has incentivised farmers to invest in modern farming equipment such as tractors. Additionally, technological advancements and innovative financing options have made tractors more accessible to a wider range of farmers, further driving sales.

Sales trend



Source: TMA, Crisil Intelligence

In fiscal 2024, domestic tractor sales dropped 7.36% on-year to ~875.72 thousand units. In fiscal 2025, with an above-normal monsoon season aiding farmer sentiments, domestic tractor sales grew 7.31% on-year in volume terms to 939.71 thousand units

In the first half of fiscal 2026, domestic sales clocked growth of ~18.80%, supported by a positive monsoon, the festive season and the implementation of new GST rates from September 22.

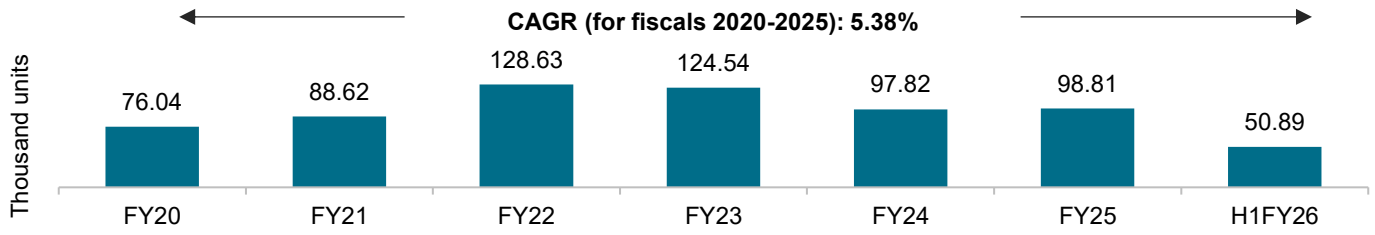
Tractor exports (for fiscals 2020-2025)

In fiscal 2025, exports accounted for ~10% of the overall tractor sales, rising ~1.02% on-year to 98.81 thousand units from a low base of fiscal 2024, which had recorded a 21.60% on-year decline. Even though there was a revival in demand from the US, Europe and Asia, it was not enough to reach the highs seen in fiscal 2022. Tractor exports grew ~3.57% in the first half of fiscal 2026.

Fluctuations in exports can be attributed to changes in global demand, foreign exchange rate variations and economic conditions in importing countries. The resurgence in exports in recent years suggests that Indian tractor manufacturers have adapted to these challenges, improved product quality and expanded their global reach.

With most global companies de-risking exports from China due to complexities and disruptions in the country, India has become the natural hedge against Chinese exports. Furthermore, with most companies equipped to comply with TREM IV norms, exports have grown significantly in the past few years.

Exports trend



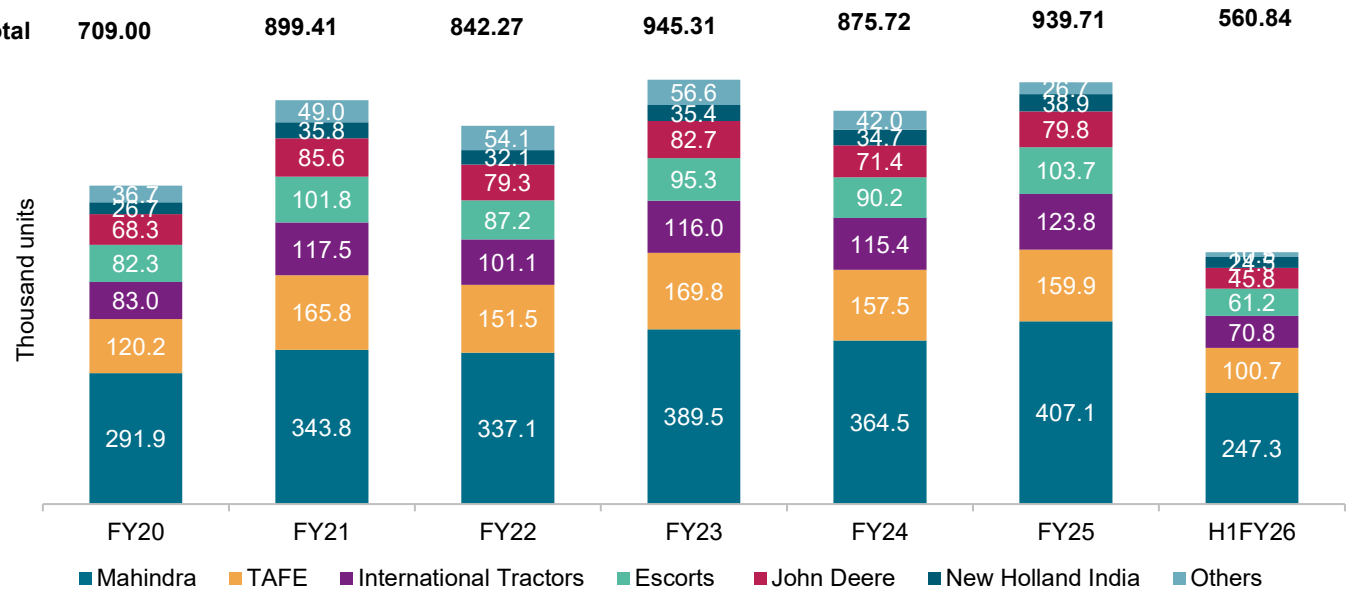
Source: TMA, Crisil intelligence

Competitive landscape

The structure of the domestic tractor industry has remained largely steady over the years, with the top five players accounting for ~90% of the industry. A strong distribution network, brand recall, captive financing and diverse product range have helped them maintain their market position.

As of fiscal 2025, Mahindra & Mahindra led with a 43.32% market share, followed by Tractors and Farm Equipment Ltd (TAFE) with 17.01%.

OEM-wise domestic sales

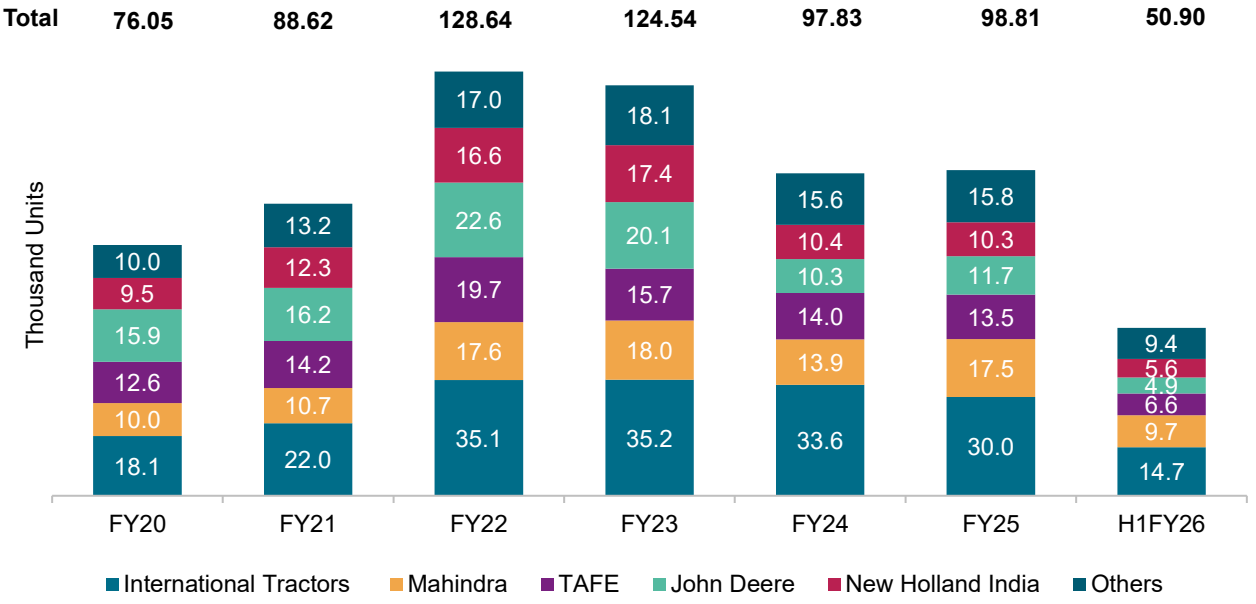


Note: Others include players such as New Holland India, SAME DEUTZ-FAHR, Captain, VST, Preet, Action-construction, IFEL
Source: TMA, Crisil Intelligence

Competition in tractor exports

Indian tractor exports are more fragmented than domestic sales. Unlike the domestic market, International Tractors Ltd (ITL) dominates the exports segment. Leading domestic player, Mahindra & Mahindra also expanded its presence in exports with its share rising to 17.76% by fiscal 2025 from 13.17% in fiscal 2020.

OEM-wise exports



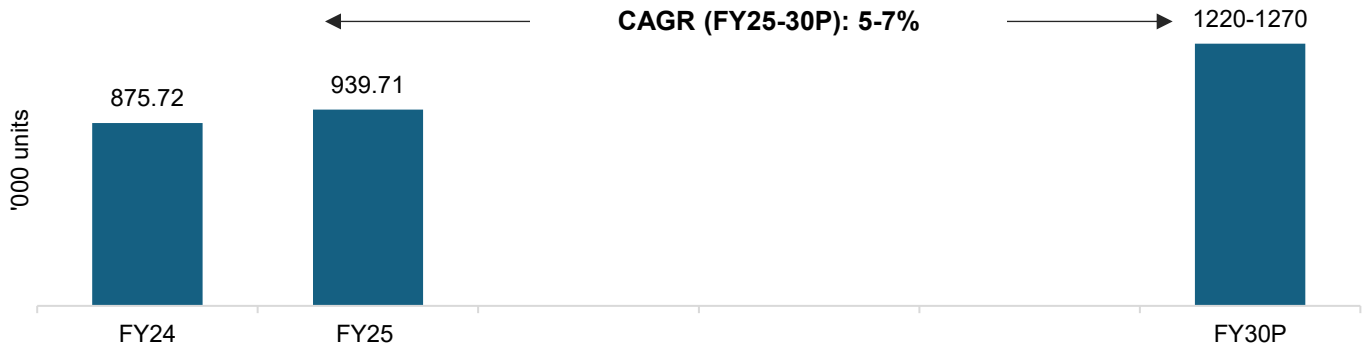
Note: Others include players such as Escorts, SAME DEUTZ-FAHR, Captain, VST, Preet, Action-construction, IFEL
Source: TMA, Crisil Intelligence

Outlook for Indian tractor industry

Domestic demand outlook

We expect domestic tractor sales to clock 5-7% CAGR between fiscals 2025 and 2030, factoring in one to two years of erratic monsoon and healthy rainfall in the remaining years.

Tractor industry domestic sales projections



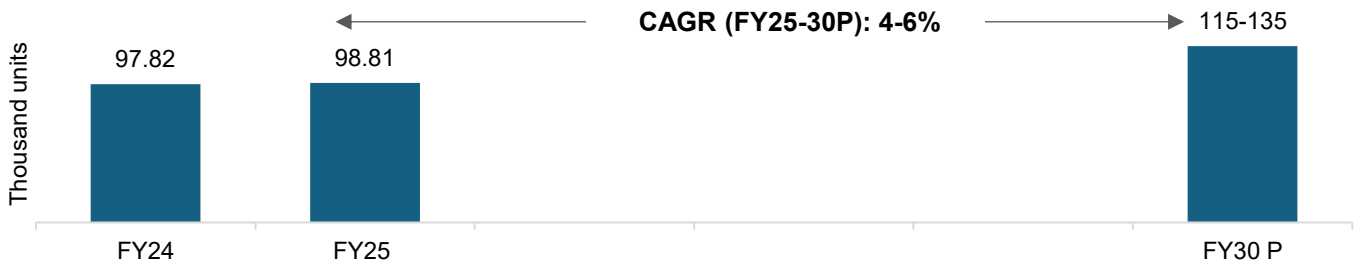
Note: P: Projected
Source: TMA, Crisil Intelligence

Domestic tractor sales until fiscal 2030 are expected grow on the back of low penetration in the country (three tractors per 100 hectares), government's focus on improving farm incomes through various schemes, promotion of farm mechanisation and investments to improve rural infrastructure. Also, continued replacement demand will provide an added impetus to tractor sales over the long term.

Exports outlook

Exports, accounting for about 10% of the overall tractor sales as of fiscal 2025, are expected to grow 1-3% on-year this fiscal on account of a demand revival in the US, Europe and other Asian countries. In Last fiscal, exports rose a slower ~1% on-year to ~99,000 units.

Exports outlook



Note: P: Projected
Source: TMA, Crisil Intelligence

Between fiscals 2025 and 2030, we see sustained exports growth, logging 4-6% CAGR. Rising demand for <30 HP tractors for gardening and hobby farming purposes is also expected to support growth.

Review of and outlook on the Indian construction equipment industry

Review of the domestic demand

Construction equipment (CE) are engineering machines and vehicles used for construction (industrial and infrastructure), agriculture, mining, waste management and logging operations. They are also used to prepare the ground, excavation, haulage of material and dumping/ laying in a specified manner. The various types of machines used are backhoe loaders, excavators, wheeled loaders, skid steer loaders, graders, cranes, dozers and compactors.

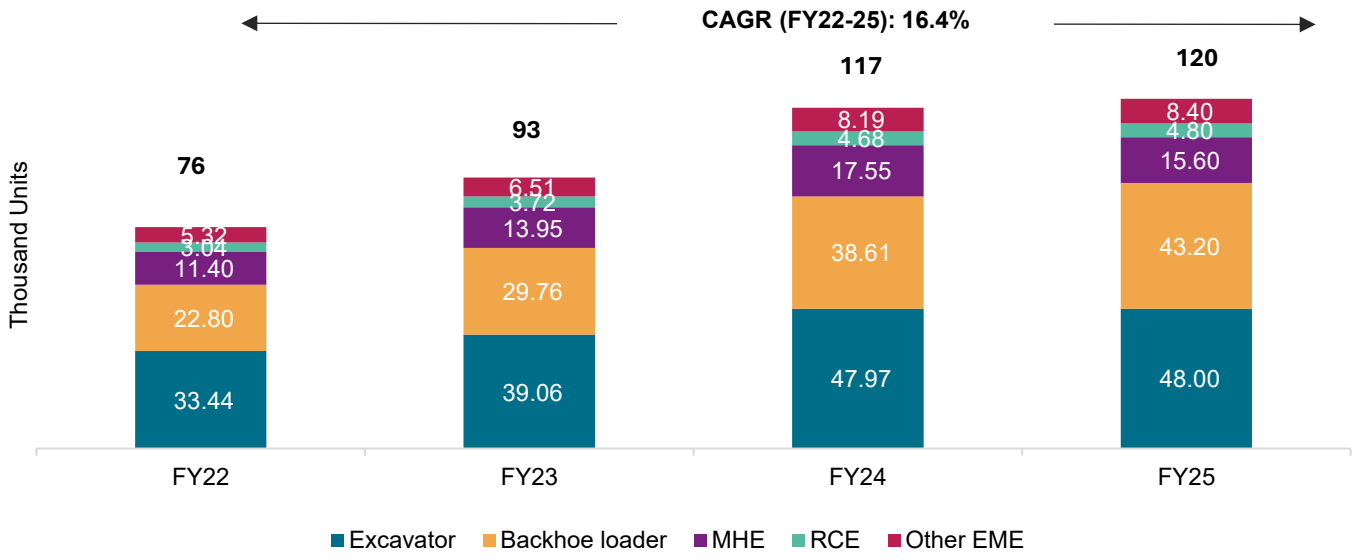
Hirers and small contractors are the major end-users of CE. Large engineering, procurement and construction companies account for only about 10% of the total demand.

Industry structure

Earthmoving equipment	Material handling equipment	Road construction equipment
Backhoe loader	Pick & Carry Cranes	Compactors
Excavator	Crusher & screener	Pavers
Wheel loader		
Motor grader		
Skid steer loader		
Track type loader		
Off-highway truck		

Source: Crisil Intelligence

Historic growth trend



Notes: MHE - material handling equipment; RCE - road construction equipment; EME - earth moving equipment
Source: Crisil Intelligence

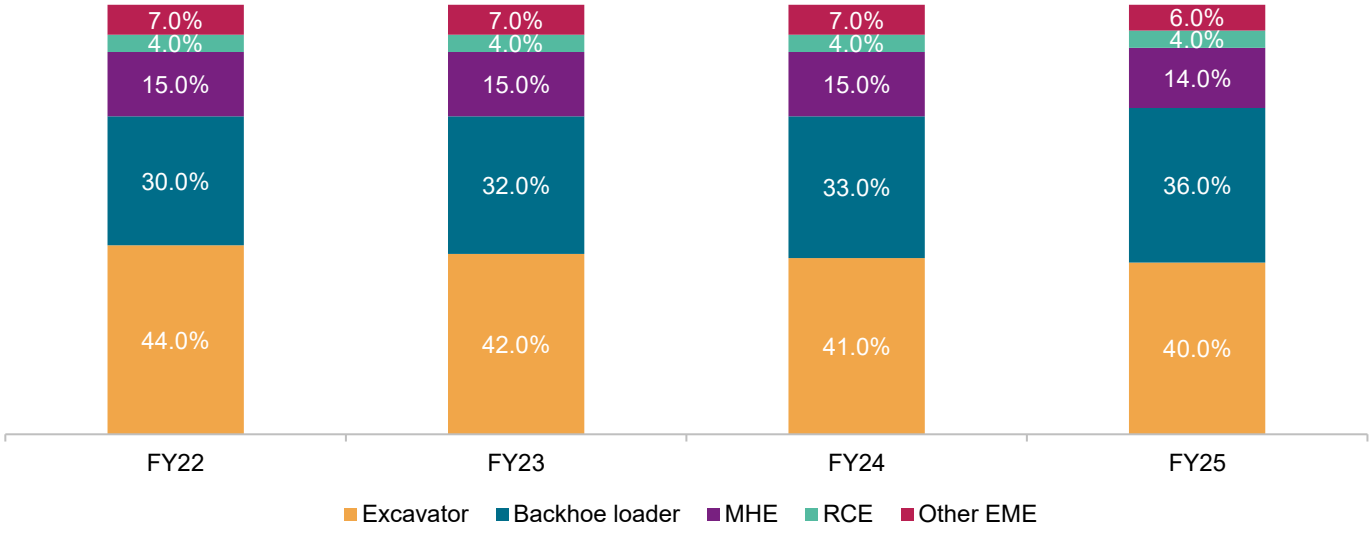
The CE industry in India grew from 76,000 units in fiscal 2022 to 120,000 in fiscal 2025, clocking a CAGR of 16.4%.

The market witnessed more than 20% growth in fiscals 2023 and 2024, driven by the government's renewed emphasis on the infrastructure sector through increased budgetary outlays and other incentives.

The industry recorded double-digit growth in fiscal 2024 on a high base, followed by a moderate growth in fiscal 2025. In volume terms, the growth was 25.81% in fiscal 2024 driven by growth in the end-user industries.

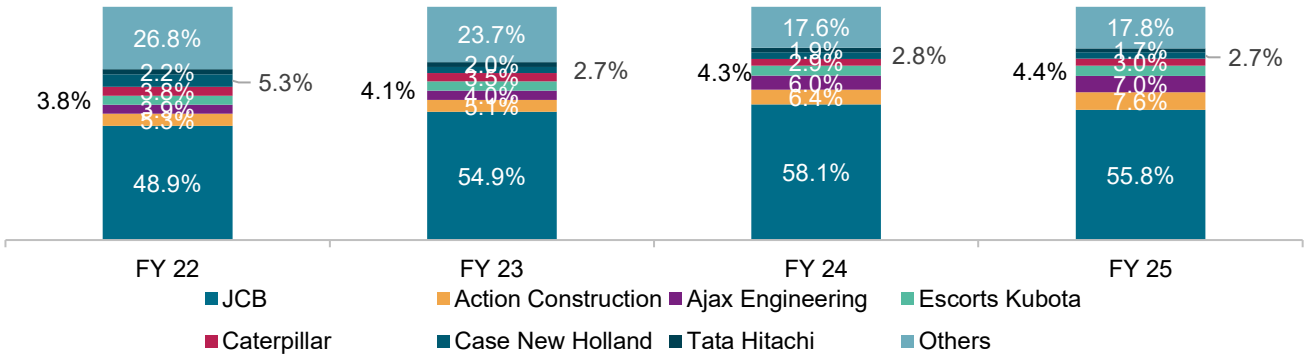
With the double-digit growth witnessed in fiscals 2023 and 2024, the volume sold hit an all-time high owing to the increase in infrastructure building and mining as newer machinery complying with the Construction Equipment Vehicles Stage V emission norms that were rolled out.

Market split by key segments



Notes: Vahan data excludes Telangana retails
Data as of end-October 2025
Source: Vahan, Crisil Intelligence

Key players in the industry and their market share (fiscal 2025)



Notes: The categories considered for the market share analysis from the Vahan portal are excavators, excavators (NT), construction equipment vehicles, construction equipment vehicles (commercial), earth moving equipment, road rollers
Others include Doosan, Schwing Stetter, L&T etc.

Vahan data excludes Telangana retails
Data as of end-October 2025
Source: Vahan

JCB dominated the industry last fiscal with 55.8% share in industry retails. Strong brand name and its large service network helped the company maintain its strong market share despite competition.

Electrification in the industry insignificant

Despite the broader push for electrification across the automobile sectors, EV adoption in the CE industry remains insignificant, largely limited to pilot deployments of compact equipment such as electric mini-excavators and loaders. Key barriers include the lack of high-capacity battery technology for heavy-duty use, limited charging infrastructure on construction sites and high upfront costs. Given these structural challenges, the industry's transition to electric equipment is expected to remain slow in the near term.

However, OEMs are gradually ramping up research and development and collaborating with global partners to localise electric variants.

Recent lighting trends in the CE industry

In the CE industry, which encompasses key product segments, such as backhoe loaders, excavators and material handling equipment, the lighting systems market is dominated by traditional bulb-based systems, particularly in headlights and taillights. LED lights, however, are gaining traction, albeit mainly in premium OEMs and select models.

A notable exception is the work lamps segment, where LED lights are increasingly adopted. Market leaders, like JCB, are at the forefront of this trend, offering LED lights as a standard feature in certain models, such as the 3DX Plus and 3DX Super variants. Additionally, the company provides LED lights as an optional accessory across various models, indicating a growing demand for this technology. Other manufacturers, like Escorts Kubota, are also incorporating LED lights in some of their soil compactor models.

The advantages of LED lights are multifaceted. They provide superior visibility due to their higher light output, making them ideal for low-light conditions common in construction sites. Furthermore, LEDs have a longer lifespan, reducing the need for frequent replacements, which can be a significant hassle given the remote locations of many construction sites. LEDs are also more durable and resistant to harsh environments, vibrations, shocks and dust, making them a more reliable choice.

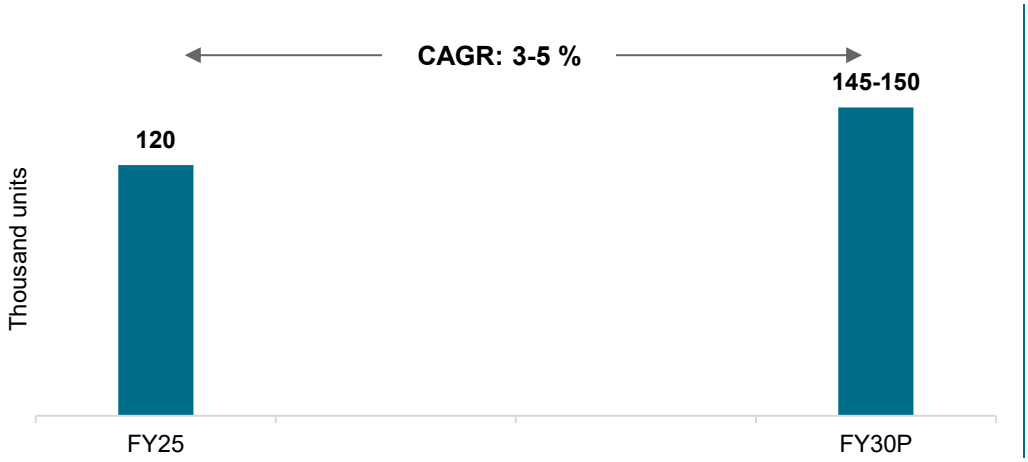
Despite these benefits, halogen-based systems are expected to dominate the market in the near future. However, the penetration of LED lights is anticipated to grow gradually, driven by their increasing adoption in the work lamps segment and increasing awareness of their advantages among manufacturers and end users. As the industry continues to evolve, it is likely that LED lights will become more prevalent, eventually gaining a larger share of the market.

Outlook for the CE industry

The rapid pace of expansion of construction activities has begun to taper and the government's efforts to boost investment in key sectors have started to yield more moderate and stable growth. The normalisation of growth last fiscal suggests that the industry is transitioning from a period of accelerated expansion to a more sustainable and steadier pace of development.

The CE industry is expected to continue its growth momentum, albeit clocking a moderate 3-5% CAGR to reach 145,000-150,000 units by fiscal 2030.

Industry outlook



Source: Industry, Crisil Intelligence

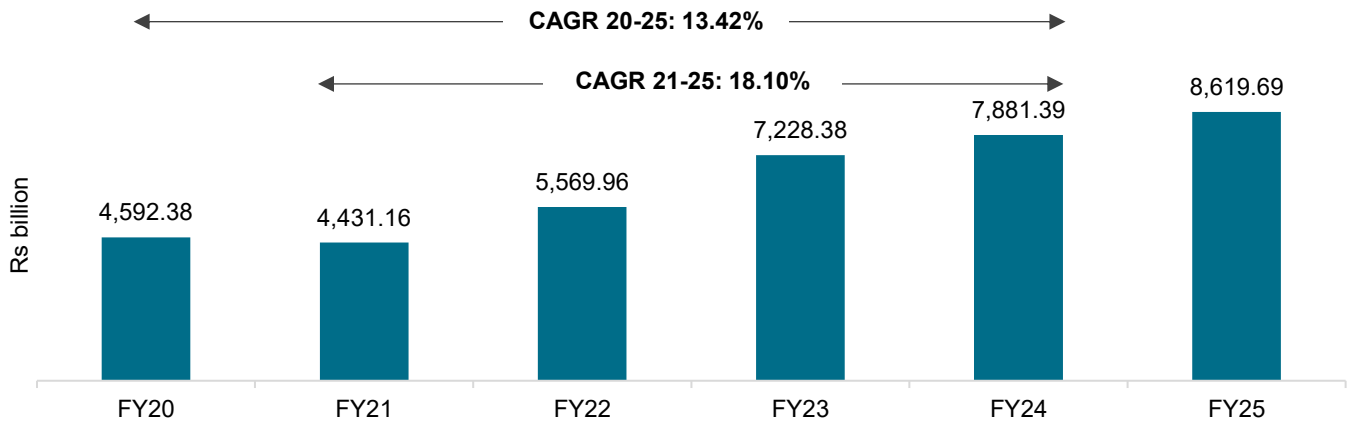
Review of and outlook on the Indian automotive component industry

Review

Between fiscals 2020 and 2025, the domestic auto components industry (which includes sales to OEMs, exports and the replacement market) clocked 13.42% CAGR, nearly doubling the revenue to Rs 8,619.69 billion from Rs 4,592.38 billion. The robust growth was driven by a combination of factors, including resilient domestic demand, increase in exports, increasing content per vehicle and enhanced value addition. As the country navigates its transition towards advanced mobility solutions, the industry is witnessing requisite investments, adopting cutting-edge technologies and augmenting localisation efforts to effectively cater to both the domestic and international markets.

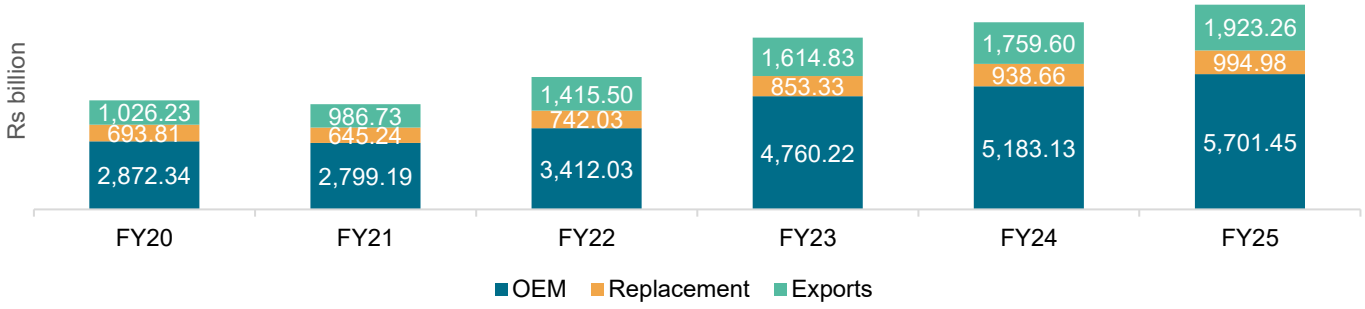
While domestic sales reflect evolving market conditions shaped by various factors such as regulatory changes, fuel prices, economic cycles, etc., exports and aftermarket help support the overall growth, insulating the industry from fluctuations.

Automotive component industry growth



Source: Automotive Component Manufacturers Association of India (ACMA), Crisil Intelligence

Segment-wise production trend



Source: ACMA, Crisil Intelligence

Segment-wise CAGR

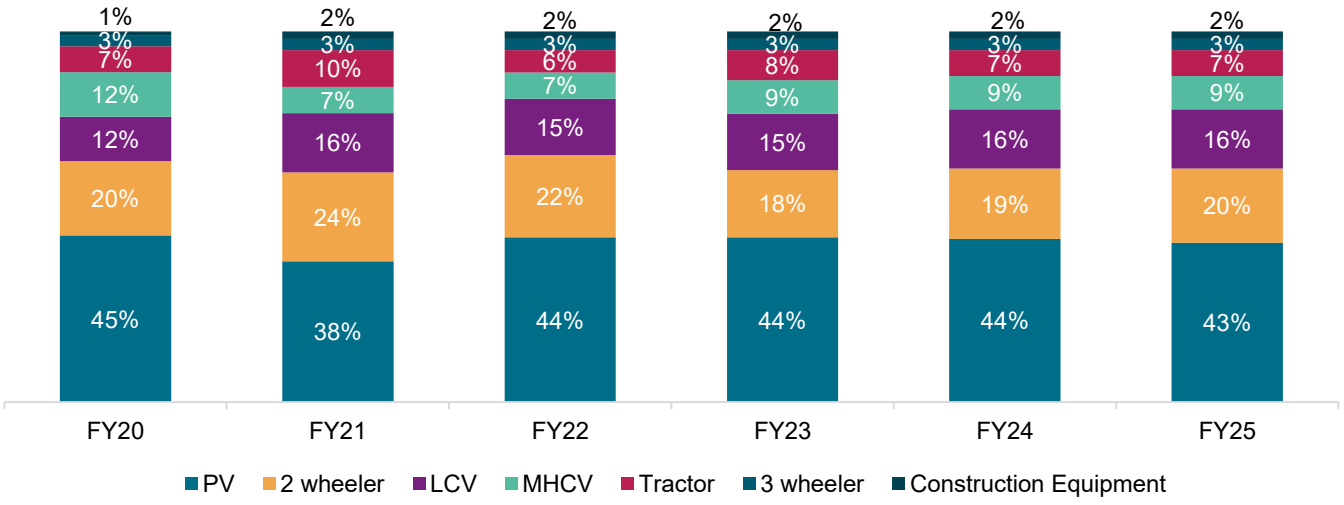
Period	OEM	Replacement	Exports
FY20-25	14.69%	7.48%	13.38%

Source: ACMA, Crisil Intelligence

Between fiscals 2020 and 2025, the OEM segment, which tops the overall auto component demand, clocked a healthy CAGR of 14.69% from Rs 2,872.34 billion to Rs 5701.45 billion, expanding its share in overall demand during the period. In fiscal 2020, demand from OEMs accounted for 63.17% of auto component production by value. This increased to 66.14% in fiscal 2025.

OEM demand can be further segregated based on various vehicle segments. Among OEMs, cars and utility vehicle manufacturers remain the largest consumers with 40%+ share.

Review of auto component market share by vehicle category



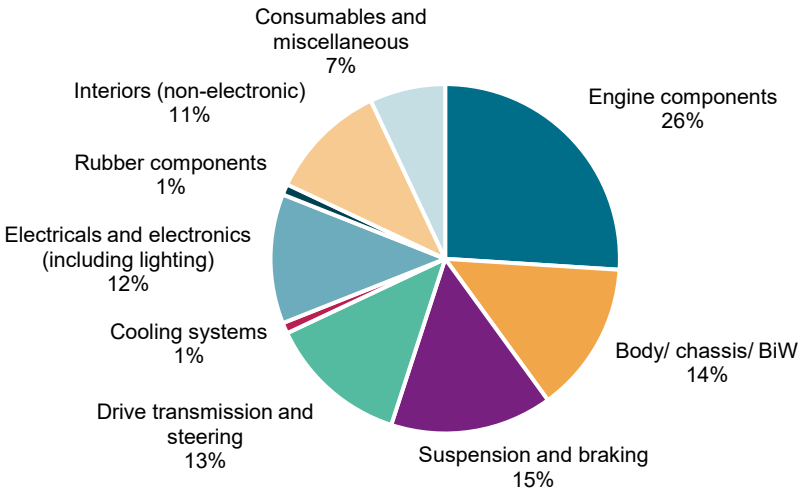
Note: Percentage share is by value and is for the domestic production for OEMs
Source: ACMA, Crisil Intelligence

Segment-wise major automotive component categories

Engine components, and suspension and braking command the major share of the auto component industry size, followed by body/ chassis/ body-in-white (BiW) and drive transmission and steering.

High-value components, such as engine parts, transmission and steering systems, and electricals and electronics (including lighting), possess a higher level of technological sophistication compared with lower-margin components, which were previously dominated by Indian manufacturers. These critical components offer more lucrative profit margin for manufacturers, but demand significant investments in research and development, as well as precise engineering capabilities to meet the rigorous quality standards of global OEMs.

Segment-wise production break-up (fiscal 2025)



Source: ACMA, Crisil Intelligence

Drivers and trends

Demand-side drivers

Growing demand for vehicles

The sustained increase in automobile sales is the primary driver for auto components, comprising supplies to OEMs as well as replacement parts in the aftermarket segment. The growth is enabled and accelerated by improving economic scenario, infrastructure development, investments in highways and expressways, and urban transport networks.

Also, rising consumer spending capacity is shaping the scale and nature of demand, especially in the case of passenger vehicles and two-wheelers. Higher disposable incomes are enabling the purchase of not only more vehicles but also premium and technologically advanced models, translating into requirement of high-value components.

Electrification

EV adoption is expected to continue to rise in India over the next five years as well, driven by the government's ongoing support for the vehicle segment, as well as the expansion of charging infrastructure creating a conducive ecosystem for EVs. Supporting the space is also the increasing number of EV models and declining cost of batteries, making these vehicles more affordable.

The automotive component industry will be the beneficiary of these developments. Also, a substantial range of components, including suspension systems, steering systems, lighting systems and body/chassis parts, are powertrain-agnostic, i.e. these can be easily adapted for EVs and ICE vehicles, as well as for autonomous vehicles and connected car technologies.

This enables automobile component manufacturers to leverage their existing expertise, manufacturing capabilities and infrastructure, ensuring stable and ongoing demand for these components. Companies with EV-agnostic product portfolios are well-positioned to benefit from the ongoing electrification trend, as their offerings can seamlessly serve both ICE and EV platforms. This also enhances their resilience amid a shift in propulsion technology and enables the manufacturers to capture a wider spectrum of demand.

Further, as the demand for EV-specific components, such as electric motors, battery systems, power electronics and charging systems, grows, the need to develop and manufacture specialised parts will fuel innovation. In fact, by foraying into new product segments such as battery systems, electric motors, sensors and vehicle electronics traditional component manufacturers can not only remain relevant but also gain a competitive edge in the evolving industry landscape.

This shift towards electrification is also expected to create new avenues for component manufacturers to expand their product offerings, invest in R&D, and establish themselves as key players in the EV ecosystem.

The utilisation of semiconductors is increasing exponentially in the automotive industry as well. Semiconductors have become an indispensable component of modern vehicles, owing to their crucial role in a wide range of applications, including engine control units, power steering, airbags, reverse parking assist, smart keys, telematics, in-car entertainment, etc.

By capitalising on these opportunities, the automotive component industry is poised to experience significant growth.

Growing electronics content per vehicle

The automotive industry has experienced a profound transformation in recent years, with the utilization of semiconductors increasing exponentially. These chips have become an indispensable component of modern vehicles, playing a vital role in a wide range of applications, including engine control units, power steering, airbags, reverse parking assist, smart keys, telematics, in-car entertainment, and numerous other systems.

The growing electronics content per vehicle is emerging as a key demand driver for the auto lighting industry, as lighting systems are increasingly integrated with advanced electronics to enhance safety, functionality, and aesthetics. Features such as adaptive headlights, ambient mood lighting, and communication lights rely on electronic modules and control units, leading to higher lighting sophistication and value per vehicle. Additionally, premiumization and personalization enabled by electronics are transforming lighting from a purely functional component into a smart, connected, and experiential feature, thereby significantly boosting demand in the automotive lighting segment.

The Indian automotive industry is undergoing a significant shift, with the electronics content per vehicle increasing substantially. This trend is driven by the growing demand for advanced safety features, comfort, and convenience, as well as the rising adoption of electric vehicles (EVs), autonomous vehicles, and connected car technologies. The increasing popularity of premium vehicles, which often boast an array of sophisticated features, is also contributing to the growing electronics content per vehicle.

The Indian automotive industry is poised to experience a sustained growth in electronics content per vehicle, driven by a combination of regulatory, consumer, and technological factors. As industry continues to evolve, the demand for semiconductors and other electronic components is expected to increase, presenting opportunities for manufacturers and suppliers to develop and provide advanced electronics solutions for the automotive sector.

Growth of pre-owned vehicles market

A thriving pre-owned vehicle market, particularly in the passenger vehicle segment, has a positive rub-off on the auto components industry. As vehicles remain on the road for longer periods, the demand for replacement parts surges, providing a significant boost to auto component manufacturers.

Furthermore, the pre-owned market unlocks lucrative aftersales opportunities, enabling auto component suppliers to offer services such as maintenance, repair and refurbishment of used vehicles.

Impact of GST rate change on the auto components industry

Also, the recent implementation of a uniform 18% GST rate on all auto components offers significant benefits, primarily through simplified taxation and lower input costs leading to increased market demand.

Key benefits for the auto component industry are:

- **Tax simplification**: The uniform 18% rate, irrespective of the HSN (Harmonized System of Nomenclature) code, resolves long-standing classification and compliance issues that arose because of varying rates of 18% and 28%
- **Reduced input costs**: Vehicle manufacturers will also benefit from lower input costs because components previously taxed at 28% now fall into the 18% bracket, providing financial relief and improving profitability
- **Boosted demand**: The lower overall cost of manufacturing leads to more affordable vehicles for end-customers as well, which, in turn, stimulates demand for new cars and two-wheelers. This increased demand directly results in higher OEM orders for auto components, creating a positive multiplier effect for ancillary industries and MSMEs
- **Strengthened aftermarket**: The reduction in GST narrows the price gap between OEM- authorised spare parts and cheaper, unauthorised alternatives. This strengthens the position of organised aftermarket players and ensures a more stable replacement market
- **Enhanced supply chain efficiency**: A unified and simplified tax structure across the supply chain helps eliminate state-level taxes and checkpoints, leading to faster transit times, lower logistics costs and improved overall operational efficiency
- **Support for 'Make in India'**: Policy certainty and rationalised GST rates encourage fresh investments in the automotive sector, promoting domestic manufacturing and aligning with the government's 'Make in India" initiative

Diversification within the industry

Diversification in the automotive component industry involves expanding into the manufacturing of new products, implementation of the latest technologies and entry into markets, or implementing new business models to reduce dependency on traditional revenue streams and adapt to evolving trends.

In the case of the Indian automotive component industry, the rapid transformation is being driven by:

- **EV transition:** EVs require fewer mechanical parts and more electronics, forcing traditional suppliers to diversify
- **Policy push:** Central government initiatives such as FAME, PLI and Atmanirbhar Bharat encourage R&D and localised production.

Also, the Maharashtra government has launched a new EV policy (2025-2030) targeting 30% EV penetration by fiscal 2030. The state also introduced Package Scheme of Incentives in 2019 (till March 31, 2024 or launch of a new policy) to attract new investments, promote industrial growth and create employment opportunities. The scheme offers incentives in the form of capital investment subsidy, interest subsidy, electricity duty exemption, R&D incentives, etc.

Also, the Tamil Nadu government has launched Electric Vehicle Policy 2023, the Delhi government has launched Electric Vehicle Policy 2020 (extended till fiscal 2026), with EV Policy 2.0 under preparation, and has also launched Delhi Air Pollution Mitigation Plan 2025

- **Global supply chain shifts:** Post-Covid-19 and owing to geopolitical issues, companies are exploring new export markets and domestic manufacturing
- **Sustainability goals:** Pressure to meet ESG standards is prompting investment in green technologies as well

The increasing electronics content per vehicle makes a strong case for diversification in the auto component industry, allowing companies to capitalize on emerging trends and technologies.

Moreover, diversification offers alternative revenue streams to protect against cyclical impacts which may arise due to over-reliance on a limited number of customers, products, or domestic markets. By expanding into new geographic markets, catering to EV startups, and developing aftermarket services, companies can reduce their vulnerability to

demand shocks and policy changes, while unlocking new revenue streams. Diversification also enables companies to better navigate supply chain disruptions, regulatory shifts, and commodity price volatility, making these more resilient and adaptable.

Furthermore, diversification allows companies to leverage government initiatives, such as the PLI scheme, which supports the development of advanced and sustainable technologies. As global OEMs increasingly view India as a sourcing hub, diversified suppliers are well-positioned to secure international contracts and participate in global value chains.

Partnerships with global players

Partnerships with global players are common in the Indian automotive component industry, driven by the need for technology transfer, access to global markets and enhanced manufacturing capabilities. The Indian automotive component industry is actively embracing partnerships to drive innovation, expand its global presence and contribute to the growth of the Indian economy.

The advantages of joint ventures are:

- **Technology transfer:** Indian companies often seek access to advanced technologies and product design from their global partners
- **Access to markets:** Joint ventures help Indian companies expand their reach into international markets and gain a competitive edge
- **Enhanced manufacturing capabilities:** Partnerships can also improve manufacturing processes and quality control
- **Diversification:** Joint ventures allow companies to diversify their product portfolios and enter new segments of the automotive industry as well
- **Cost and risk sharing:** Joint ventures can also help in sharing costs and risks associated with new product development and market entry
- **Meeting government mandates:** Government policies and schemes such as PLI encourage investment and collaboration in the automotive sector

Benefits of long-term relationship with OEMs for automotive component players

The establishment of strategic partnerships between Original Equipment Manufacturers (OEMs) and suppliers has become a vital component in the automotive industry facilitating innovation, cost optimization, and supply chain stability. These collaborative relationships are found upon a framework of trust, mutual cooperation, and aligned objectives, enabling both parties to efficiently scale their operations and generate value.

The automotive sector is undergoing significant transformation, with a pronounce shift towards collaborative business models that enhance production planning, mitigate risks, and promote sustainable sourcing practices. In this context, the importance of robust relationships between OEMs and their suppliers has never been more pronounced, particularly in the face of digital transformation and global supply chain complexities. The role of suppliers in the automotive manufacturing process encompasses the provision of critical materials and components, as well as the development of innovative solutions for complex challenges.

As specialised experts in their respective domains, suppliers collaborate closely with OEMs, offering unique and specialised knowledge that informs and enhances the manufacturing processes.

Hence, a strong and collaborative relationship between the OEMs and their supplier partners is essential for accessing innovative solutions, advanced technologies, and specialised expertise that may not be readily available otherwise.

By fostering such relationships, automotive component players can leverage the collective strengths of their OEM partners, ultimately yielding enhanced quality, efficiency and competitiveness in the automotive market.

Such strategic partnerships between OEMs and automotive component players yield numerous benefits, including:

- **Predictable revenue stream:** A long-term relationship with an OEM provides a predictable revenue stream, as the component player can expect steady offtake of their products over an extended period
- **Increased trust and credibility:** It builds trust and credibility between the component player and the OEM, increasing the confidence in a component player's ability to deliver high-quality products
- **Improved communication and collaboration:** It fosters open communication and collaboration, enabling the component player to better understand the OEM's needs and preferences, and to provide tailored solutions. These also engage in joint R&D, resulting in the creation of cutting-edge technologies and products that drive industry advancement
- **Reduced transaction costs:** It helps reduce transaction costs, as the component player and OEM can negotiate prices and terms over a longer period, reducing the need for frequent renegotiations
- **Increased investment in R&D:** An OEM can encourage the component player to invest in R&D, with an expectation of a return on the investment over an extended period
- **Competitive advantage:** OEMs can also provide a competitive advantage, as the component player can differentiate themselves from competitors and establish a strong reputation in the industry
- **Improved quality and reliability:** It encourages a component player to focus on quality and reliability, as they are more invested in the OEM's success and reputation
- **Increased flexibility and adaptability:** OEMs allow the component players to be more flexible and adaptable, as they are able to respond to changes in the OEM's needs over time
- **Cost optimisation:** The economies of scale achieved through bulk purchasing and lean manufacturing practices enable auto component players to reduce production costs, thereby enhancing their market competitiveness
- **Market expansion:** Automotive component players also benefit from access to larger markets and customer bases through OEM distribution channels, facilitating their growth and expansion
- **Supply chain resilience:** Long-term partnerships between OEMs and automotive component players ensure consistent flow of raw materials, mitigate risks and foster a stable supply chain ecosystem

Supply-side drivers

Vertical integration within the industry

Traditionally, companies have relied on multiple suppliers for raw material, technology and components. Vertical integration, therefore, provides greater control of upstream or downstream operations by developing internal expertise or by acquiring capabilities that are traditionally outsourced. It entails building from the ground up in-house capabilities that were not considered part of a company’s core competence.

Vertical integration allows the auto component player to manage multiple stages of production in-house from raw material processing to machining, assembly, and testing. With in-house tooling, engineering, and quality control, such facilities reduce supplier dependence, improve cost efficiency, ensure consistent quality, accelerate development, and deliver higher value addition while meeting stringent OEM requirements.

Vertical integration in India's automotive component industry is a growing trend, with companies increasingly bringing various stages of production, from raw materials to finished components, under their control. A company’s strategy to control multiple stages of its production process or supply chain is gaining traction, particularly with the rise of EVs and increasing criticality of technology.

Drivers of vertical integration in the Indian auto component industry are:

- **Increased control and efficiency:** Vertically integrating helps companies gain greater control over product quality, costs and delivery times by reducing reliance on external suppliers
- **Technological advancement:** The transition to EVs and the adoption of advanced technologies such as ADAS and connected vehicles are driving companies to develop software and essential components in-house for better integration and performance
- **Market dynamics and competition:** Rapid shifts in the automotive market, fuelled by evolving consumer demands and new technologies, encourage vertical integration to gain a competitive edge
- **Supply chain resilience:** Disruptions in the global supply chain, highlighted by events such as semiconductor shortages, emphasise the need for greater control over the supply of critical components, leading companies to consider vertical integration. It can streamline production, reduce reliance on external suppliers, and potentially lower costs
- **Cost reduction and economies of scale:** Companies can achieve cost savings by eliminating the need to purchase components from other companies and potentially leveraging economies of scale, especially at higher levels of integration
- **Focus on sustainability:** Increasing demand for environmentally friendly vehicles and practices is driving companies to integrate technologies and processes that reduce their environmental impact
- **Make in India initiative:** The government's push for domestic manufacturing and reduced reliance on imports has fuelled the trend of vertical integration

Going forward, vertical integration is expected to become more prevalent in the Indian automotive component industry, as companies aim for greater control, efficiency and competitiveness in an evolving market.

The growing uptake of EVs and the adoption of new technologies will continue to drive vertical integration in software development, battery technology and other critical areas. Many companies may also opt for a hybrid approach or strategic partnerships to balance the advantages of vertical integration with the need for flexibility and access to specialised expertise.

Government initiatives such as Automotive Mission Plan and Atmanirbhar Bharat aim to foster a competitive ecosystem, promote R&D and encourage the localisation of advanced components as well, which may indirectly influence vertical integration strategies.

In conclusion, vertical integration is emerging as a critical strategy for the Indian auto component industry, enabling companies to strengthen control over quality, costs, and supply chains while adapting to rapid technological shifts. By integrating essential processes in-house, firms can achieve greater efficiency, resilience, and competitiveness in a dynamic market environment. Additionally, the emphasis on sustainability and the government’s Make in India initiative further reinforces the importance of reducing external dependencies and fostering domestic capabilities. Collectively, these drivers position vertical integration as a key enabler of long-term growth and global competitiveness for Indian auto component players.

Qualitative overview of India’s role in automotive component manufacturing

- India has a cost advantage in auto component manufacturing owing to relatively low labour cost, #2 producer of steel in the world and proximity to important automotive markets. This makes the country an ideal location for OEMs to source vehicle components
- To be sure, India already exports a significant amount of car components, which is likely to increase. At a component level, India has a competitive advantage over other countries in the manufacturing shafts, bearings and fasteners

- The domestic industry has been continuously improving its quality standards and developing new products to compete globally. Trade liberalisation in western markets has led to the emergence of Asia as an export hub for Europe and North and South America over the past decade. With supply chain realignment, several countries, including India, are likely to emerge as global outsourcing hubs
- Many domestic manufacturers have also successfully entered strategic alliances/collaborations, whereas others are actively testing the landscape. Many of the world's leading tier 1 suppliers have set up manufacturing facilities in India as well, including Bosch, Delphi, Visteon and Denso. Additionally, some domestic suppliers already meet global technical and quality standards at the tier 1 level
- Propelling the industry is also OEMs in India introducing new models more frequently. This will drive growth of the country's auto component industry, as changes in the process of manufacturing and designing will support the pricing power of component manufacturers
- Another factor supporting domestic auto component manufacturers is a decline in auto component manufacturing in Europe largely due to rising energy costs owing to geopolitical issues and stringent environmental regulations, as well as diversification of the supply chain driving companies to choose India as a preferred alternative due to lower costs, supportive government policies and strategic location near growing markets

Key automotive clusters and advantages of strategic location of manufacturing units for automotive component players

India has a diverse and robust automotive manufacturing sector, encompassing the production of passenger vehicles, commercial vehicles, two-wheelers, three-wheelers, tractors and auto components. The country has become a sizeable exporter of automobiles and auto components, with substantial market presence in Africa, Europe and Latin America.

Notably, several major automotive manufacturing hubs have emerged in India:

- **Chennai-Bengaluru-Hosur:** This cluster has prominent global as well as domestic automotive manufacturers such as Ashok Leyland, BMW, Caterpillar, Hyundai, Hindustan Motors, Renault, Tata Motors (land acquisition in Ranipet), Toyota, TVS Motors, Yamaha, etc. The cluster is also renowned for its extensive auto component manufacturing capabilities
- **Mumbai-Pune-Nashik-Aurangabad:** As a major automotive hub, it hosts manufacturers such as Bajaj Auto, Hindustan Motors, Hyundai, John Deere, Piaggio, Mahindra & Mahindra, Mercedes-Benz, Tata Motors, Volkswagen, etc, with significant focus on component production and engineering services
- **Delhi-Gurugram-Faridabad:** This cluster has evolved into a substantial automotive manufacturing base, with Escorts, Hero MotoCorp, Honda Cars, Maruti Suzuki, Suzuki Motorcycles and Yamaha key players. The region also boasts a range of auto parts and engineering facilities
- **Sanand-Hansalpur-Vithalpur (Gujarat):** The cluster hosts several major automotive production plants, including the Sanand Industrial Estate, which is notable for hosting the Tata Motors plant, Suzuki Motors plant in Hansalpur, and MG Motors and Hero MotoCorp plants in Halol, and Honda plant in Tapukara
- **Kolkata-Jamshedpur:** This cluster is also one of the major auto manufacturing bases in the country, with Hindustan Motors and Tata Motors the key players

Source: Crisil Intelligence

The automotive clusters in India have been pivotal role in establishing the country as a significant player in the global automotive industry, with strong emphasis on exports as well as domestic manufacturing capabilities. These clusters have created a robust ecosystem for automotive component manufacturers and suppliers, in turn supporting vehicle manufacturing plants located within these clusters.

Majority of the large auto component manufacturers have set up production facilities in proximity to these strategic clusters, thereby creating a symbiotic relationship between the vehicle manufacturers and their suppliers. This has resulted in a highly efficient and integrated supply chain, with components and parts sourced locally, reducing logistics costs and lead times.

Advantages of strategic location for automotive component manufacturers

- **Proximity to OEMs:** Being close to major automobile manufacturers reduces transportation costs and lead times for component delivery
- **Access to skilled labour:** Established clusters offer a readily available pool of skilled workers experienced in automotive manufacturing processes
- **Efficient logistics and infrastructure:** Proximity to ports, highways and other transportation networks facilitates efficient movement of raw materials and finished goods
- **Strong supplier ecosystem:** Established clusters often have a well-developed ecosystem of ancillary industries, making it easier for component manufacturers to source inputs and services
- **Government incentives:** Specific states offer various incentives to attract investment in the automotive sector, including tax breaks, subsidies and streamlined regulations
- **Cost optimisation:** Strategic location can lower overall production costs due to reduced transportation expenses, efficient logistics and access to competitive labour
- **Enhanced competitiveness:** By leveraging these advantages, component manufacturers can improve their competitiveness in the domestic and global markets

Overall, the strategic location of automotive component manufacturers plays a pivotal role in ensuring operational efficiency, cost effectiveness and long-term competitiveness. By capitalising on proximity to OEMs, availability of skilled labour, robust logistics infrastructure and strong supplier ecosystems, manufacturers can streamline production and delivery processes. Proximity to OEM hubs provides significant operational benefits, including reduced lead times, enhanced responsiveness, and improved supply reliability to OEMs. Furthermore, government incentives and potential for cost optimisation strengthen the sector's growth prospects.

Collectively, these factors not only enhance the efficiency of domestic operations but also position manufacturers to compete effectively in the global automotive market.

Outlook of the Indian auto component industry

The size of the auto component market is projected to increase 7-9% on-year in fiscal 2026, aided by continued economic growth supporting buoyant demand from the OEM and replacement market. Within the space, exports (accounting for 22% of the overall demand in fiscal 2025) are projected to grow 6-8% on-year on the back of demand from North America and Europe, which together contribute 60-65% to export demand. Export revenues are also expected to be supported by increased global demand and diversification of the supply chain. However, the global tariff scenario remains a key monitorable.

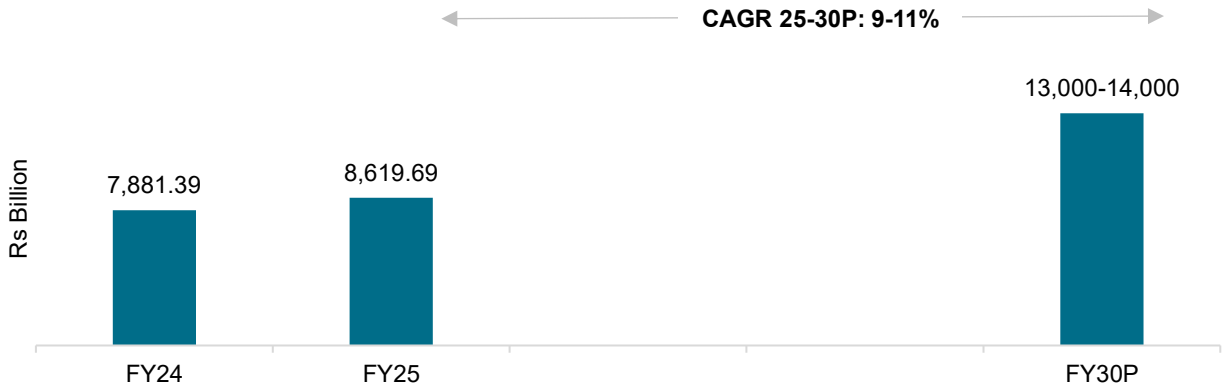
Between fiscals 2025 and 2030, Crisil Intelligence expects the auto component industry to grow at 9-11% CAGR, to Rs 13,000-14,000 billion, which is faster than the automobile industry's growth. The high growth rate will be driven by rising electronics content per vehicle, accelerating electrification and export opportunities, growing localisation under Make in India, and increasing demand for high-value, technology-driven auto components, price increases as well as sustained increase in vehicle sales across all segments.

Within the auto component space, replacement domestic offtake is projected to clock 6-8% CAGR and exports 8-10% CAGR, owing to healthy OEM sales in the past five years, barring the pandemic-impacted fiscals 2020 and 2021, along with 2-3 years of replacement cycles.

Moreover, auto component players undertook price hikes to offset the uptick in commodity prices. Hence, rising realisation is also likely to aid the replacement demand growth. Besides, demand in the replacement market is projected to grow due to increase in penetration of cab aggregator services in the overall stock of passenger vehicles. Nonetheless, increased durability of components (better quality), better road infrastructure and increase in service intervals would restrict the robust growth.

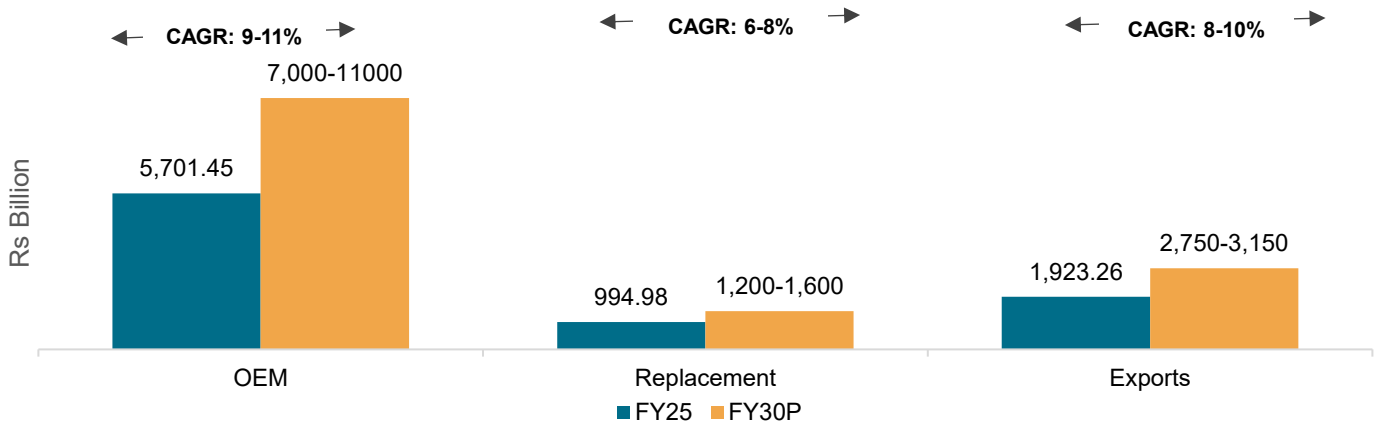
Exports are expected to grow at 8-10% CAGR over the period, driven by diversification strategies adopted by auto component players to cater to larger geographies. Exports are also expected to grow as the global economy improves and demand for sourcing from India moves towards higher value, mission critical components.

Outlook on auto components industry



P – projected
Source: Crisil Intelligence

Segment-wise outlook on auto components industry



P – projected
Source: Crisil Intelligence

Meanwhile, imports are expected to grow at 6-8% CAGR. The government's high focus on EVs and import of batteries and cells, and battery management systems is expected to drive the rise.

Still, government initiatives such as Make in India and PLI are expected to increase localisation, in turn decelerating the rate of growth of imports. As Indian players focus on localisation, backed by better corporate tax rates and policies, growth in imports is expected to be relatively muted in the long run.

Review of and outlook on the automotive lighting industry

The automotive lighting segment is a vital and integral part of the automotive component industry, playing a pivotal role in ensuring the safety, comfort and visibility of drivers and passengers across all vehicle categories, including passenger vehicles (PVs), commercial vehicles (CVs), two-wheelers (2Ws), three-wheelers (3Ws), tractors and construction equipment (CE). The segment encompasses a comprehensive range of lighting systems, including front lighting, rear lighting and interior lighting, which serve the dual purpose of illuminating the road for drivers and improving the visibility of vehicles to fellow road users, ensuring safety in all conditions.

The automotive lighting segment is a complex and multifaceted industry that caters to diverse vehicle segments, each with its unique lighting requirements, driven by factors such as aesthetics, safety, functionality and regulatory compliance. The segment's primary objective is to provide effective and efficient lighting solutions that enhance road visibility, vehicle safety and regulatory compliance, while also integrating advanced features that augment driving experience. The growing integration of electronics and smart features in vehicles has further expanded the role of lighting beyond illumination, serving as a tool for communication, brand differentiation and regulatory compliance.

The two primary functions of the automotive lighting segment are:

- **Illumination:** Providing adequate lighting to illuminate the road, enabling drivers to navigate safely and comfortably, even while visibility is low.
- **Visibility:** Ensuring that vehicles are visible to other road users, including pedestrians, cyclists, and other drivers, reducing the risk of accidents and enhancing overall road safety.

Beyond these primary functions, automotive lighting systems also play a pivotal role in enhancing the premium feel, product differentiation and overall aesthetic appeal of vehicles, particularly in the premium segment. By offering a unique blend of style, sophistication and technological innovation, advanced lighting solutions have become a key factor in distinguishing high-end vehicles and elevating the overall driving experience, contributing significantly to automotive manufacturers’ premiumisation and brand differentiation strategies.

Automotive lighting plays a crucial role in ensuring the safety, efficiency and regulatory compliance of vehicles, while also enhancing driver comfort. It provides visibility, warns other road users of the vehicle's presence and indicates the driver's intentions, reducing the risk of accidents and minimising downtime. Proper lighting is essential for commercial vehicles, tractors and CE, and vehicles must comply with regulatory requirements set by authorities such as the Automotive Research Association of India (ARAI) and the MoRTH. Furthermore, automotive lighting improves driver comfort and wellbeing by reducing eye strain and fatigue during long hours of driving, ultimately contributing to a safer and more efficient driving experience.

Types of automotive lighting in India

- **Front lighting**
  - **Headlights:** Also known as headlamps, these are the primary source of illumination for the driver, providing a beam of light to illuminate the road ahead.
  - **Daytime running lights (DRLs):** These lights are designed to increase the visibility of the vehicle during the day, reducing the risk of accidents.
  - **Fog lights:** These lights are used to improve visibility during fog, rain or snow.
  - **Work lamps:** These lights are used to illuminate work areas such as construction/excavation sites, fields or implements attached.

  - **Turn signal lights**: Also known as indicators, these lights are used to signal the driver's intention to change direction or turn.

- **Rear lighting**
  - **Taillights:** Located at the rear of the vehicle, taillights indicate the vehicle's presence to other road users and provide a warning signal while braking.
  - **Brake lights:** These lights are activated when the driver presses the brake pedal, warning other road users of the vehicle's intention to slow down or stop.
  - **Turn signal lights:** Also known as indicators, these lights are used to signal the driver's intention to change direction or turn.
- **Interior lighting:** This includes lights used to illuminate the vehicle's interior, such as dashboard lights, reading lights, overhead cabin lamps and ambient lighting.

The automotive lighting market is dominated by three main lighting technologies: Halogen or bulb-based, purely light-emitting diode (LED)-based and a combination of LED and bulb.

- **Halogen or bulb-based systems:** These traditional lighting systems have been widely used in the automotive industry for decades. They are relatively inexpensive and easy to manufacture, making them a popular choice for many vehicle manufacturers. However, they have some drawbacks, such as lower energy efficiency and a shorter lifespan compared to LED-based systems.
- **Purely LED-based systems:** LED technology has gained significant traction in the automotive lighting market due to its energy efficiency, longer lifespan and design flexibility. LED-based systems are more expensive than Halogen-based systems, but they offer better performance, safety and aesthetics. Many vehicle manufacturers have adopted LED-based systems for their headlamps, tail lamps and interior lights.
- **Combination of LED and bulb:** This hybrid approach combines the benefits of LED and bulb-based systems. It uses LEDs for certain functions, such as daytime running lights or turn signals, while using traditional bulbs for other functions such as low-beam headlights. This combination offers a balance between cost, performance and energy efficiency.

LED vs halogen

Parameters	Halogen	LED
Brightness	1,000 to 1,500 lumens	3,000+ lumens
Lifespan	800-2000 hours	20,000-30,000+ hours
Energy consumption	**High**	**Low**
Heat generation	**High**	**Low**
Design flexibility	**Low**	**High**

Source: Industry, Crisil Intelligence

The automotive lighting sector serves a diverse range of vehicle segments, each with its unique lighting requirements. These can be broadly categorised into two primary domains: Exterior lighting and interior lighting.

Exterior lighting: The exterior lighting requirements vary across different vehicle segments, including:

- **PVs:** These vehicles necessitate a comprehensive array of exterior lighting systems, encompassing headlights, taillights, fog lights and DRLs. These lighting systems are designed to provide optimal visibility, safety and aesthetic appeal.

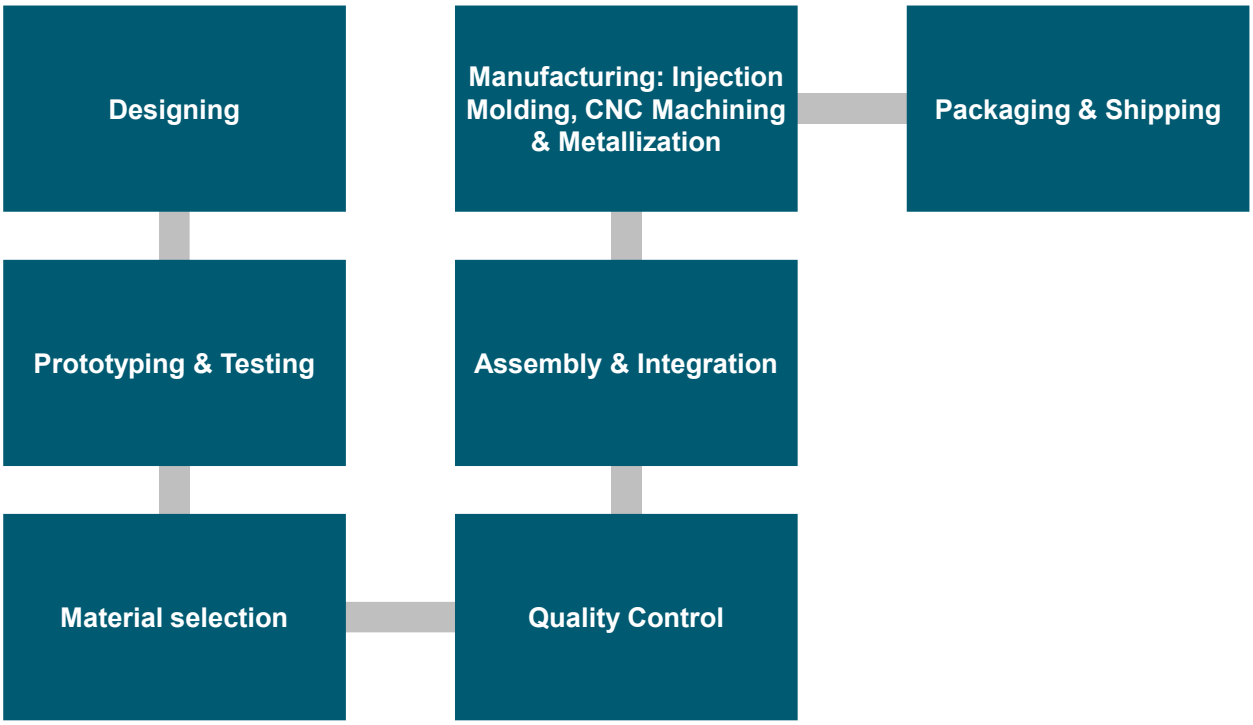
- **2Ws and 3Ws:** These vehicles require compact and energy-efficient exterior lighting systems, including headlights, taillights and indicators. The emphasis is on minimising power consumption while ensuring sufficient visibility and safety.
- **CVs, tractors and CE:** These vehicles demand robust and durable exterior lighting systems, including headlights, taillights and work lights. The primary objective is to ensure safety and visibility, particularly in low-light conditions, while withstanding the rigours of heavy-duty operations.

Interior lighting: The interior lighting requirements also vary across different vehicle segments, with a focus on:

- **PVs:** Interior lighting systems, such as dashboard lights, ambient lighting and reading lights, are designed to enhance driving experience and provide functionality. These systems often feature advanced technologies such as LED lighting to create a premium ambiance.
- **Other Segments:** In contrast, other vehicle segments such as 2Ws, 3Ws, CVs, tractors and construction equipment typically require minimal interior lighting. The emphasis is on simplicity, functionality and durability, with a focus on providing essential lighting for operational purposes.

Manufacturing process for the automotive lighting industry

The manufacturing process for automotive lighting is a sophisticated combination of design, engineering, material science and precision assembly, resulting in high-performance lighting systems for vehicles. Each step in production is crucial for achieving quality, durability and compliance with regulatory standards.



Source: Industry, Crisil Intelligence

Design and conceptualisation

The process begins with the conceptualisation of lighting design, which considers the vehicle's aesthetics, optical functionality and strict regulations related to brightness, beam pattern and energy consumption. Designers also use advanced computer-aided design (CAD) software to create detailed 3D models, simulating the structural and optical performance of the lighting components before physical production starts. The interplay between OEMs (automakers) and

lighting manufacturers during the design phase is a rigorous, iterative negotiation between stylistic ambition and technical feasibility. The process typically starts with the OEM’s design studio setting the visual intent, defining the brand's specific light signature and the external shape of the lamp within the car's bodywork. The lighting manufacturer acts as the engineering anchor, tasked with fitting complex optical systems, thermal management units and electronic drivers into the often-restrictive packaging space. This dynamic involves a process where suppliers must innovate to meet the OEM’s desire for slim, futuristic aesthetics without violating safety regulations. Ultimately, they co-develop the final product to ensure that the light not only looks seamless and premium, but also survives the vehicle's lifespan and meets all photometric requirements.

Prototyping and testing

After digital design, prototypes are produced using technologies such as 3D printing and CNC machining. Prototyping allows engineers to physically assess the form, fit and functionality of the lighting assembly. Rigorous testing follows, including photometric evaluation to measure light output and distribution, vibration tests for durability and environmental simulations for water resistance, heat management and chemical exposure.

It is highly beneficial when the lighting manufacturer also has an in-house design center as this internal capability allows the supplier to validate styling concepts against engineering constraints in real-time, drastically reducing the feedback loop between the OEM's studio and the manufacturing floor. Instead of rejecting an OEM's concept due to technical infeasibility later in the process, the manufacturer’s designers can proactively offer alternatives that preserve the original artistic intent while ensuring optical performance and manufacturability.

Material selection and preparation

Automotive lighting demands materials with high optical clarity, impact resistance and thermal stability. Common choices include polycarbonate, acrylic, ABS and specialised metals for reflectors. Plastic granules are prepared and filtered to remove impurities and then prepped for molding processes.

Manufacturing: Injection molding and metallisation

Production typically utilises injection molding for lens and housing components—molten plastic is injected under pressure into molds, cooled and ejected as precise parts. For reflectors and components that require complex features or metallic surfaces, vacuum metallisation is used. Vacuum metallisation creates highly reflective surfaces by bonding the metal onto substrates under low pressure, producing superior optical characteristics for headlamp reflectors.

Surface treatment

Surface treatment plays a crucial role in elevating the quality of auto lighting components by enhancing their appearance, durability and performance. Through corrosion protection, aesthetic enhancement, durability improvement and optical performance optimisation, surface treatment ensures that the components meet the highest standards. Using various methods such as painting, chromating, electroless nickel plating, laser marking and polishing, manufacturers can guarantee standard quality, reliability and visual appeal, ultimately resulting in superior auto lighting components.

Assembly and integration

Finished components are cleaned and assembled in a controlled environment. Printed circuit boards (PCBs), LED chips or traditional bulbs are fitted into the housings. Power supply wires are soldered, and in the case of LED lighting, thermal management is critical; fans or heat sinks are installed to maintain temperature and longevity. Glue dispensing machines may be employed for waterproofing and stabilisation of internal wiring connections.

Quality control and inspection

Throughout assembly, quality audits are conducted at multiple stages. Automated and manual inspection ensures that electrical connections are sound, lenses are free from defects and reflectors meet optical standards. Advanced vision

systems or human inspectors check for defects such as colour inconsistency, inadequate beam angles or poor assembly. Final quality control may include waterproofing tests, durability trials and regulatory compliance confirmation to guarantee “zero defect” shipments.

Final packaging and shipping

After passing through inspection, the completed lighting assemblies are packaged using anti-static and impact-resistant materials and then shipped to automotive plants for vehicle integration or aftermarket sales.

Automotive lighting manufacturing is a blend of high technology, precision engineering and strict quality management. The entire process ensures that modern vehicles feature lighting systems that are efficient, compliant and reliable for consumer safety and satisfaction.

In recent years, the automotive lighting industry has undergone significant changes, driven by advances in technology and changing consumer demands. The use of LEDs has become increasingly popular due to their energy efficiency, long lifespan and flexibility. The use of advanced materials, such as polycarbonate and acrylic, has also become more widespread due to their high impact resistance and optical clarity. As the automotive industry continues to evolve, the automotive lighting manufacturing process should play an increasingly important role in ensuring the safety and performance of vehicles on the road.

The manufacturing process of automotive lighting components has also undergone a transformation, with a focus on improving efficiency, reducing costs and enhancing product quality. Below are some of the changing trends in the manufacturing process of automotive lighting components:

- **Increased use of advanced materials:** The use of advanced materials such as polycarbonate, acrylic and polypropylene is increasing in the production of automotive lighting components due to their improved durability, impact resistance and design flexibility.
- **Growing use of Injection molding:** Injection molding is a widely used process in the production of automotive lighting components, and its use is increasing due to its ability to produce high-volume parts with high precision and accuracy.
- **Increased focus on surface finishing:** The surface finishing of automotive lighting components is critical to their appearance and performance, and manufacturers are increasingly focusing on improving surface finishing techniques such as painting, coating and polishing.
- **More emphasis on optical quality:** The optical quality of automotive lighting components is critical to their performance, and manufacturers are increasingly focusing on improving optical quality using advanced materials, coatings and manufacturing processes.
- **Growing demand for LED-based components:** The use of LED-based components is increasing in the automotive lighting industry due to their energy efficiency, longer lifespan and design flexibility.
- **Increased use of automation and robotics:** The overall automotive industry, including automotive component manufacturers, is increasing the use of automation and robotics in its operations. Automation and robotics, including automated guided vehicles (AGVs)—computer-controlled, mobile robots that autonomously transport raw materials, components and finished products—are increasingly used in the production of automotive lighting components to improve efficiency, reduce costs and enhance product quality.
- **More focus on sustainability:** The automotive component industry is under pressure to reduce its environmental impact, and manufacturers are responding by adopting sustainable manufacturing practices such as using green buildings, renewable energy sources such as solar panels, reducing waste and implementing recycling programmes.

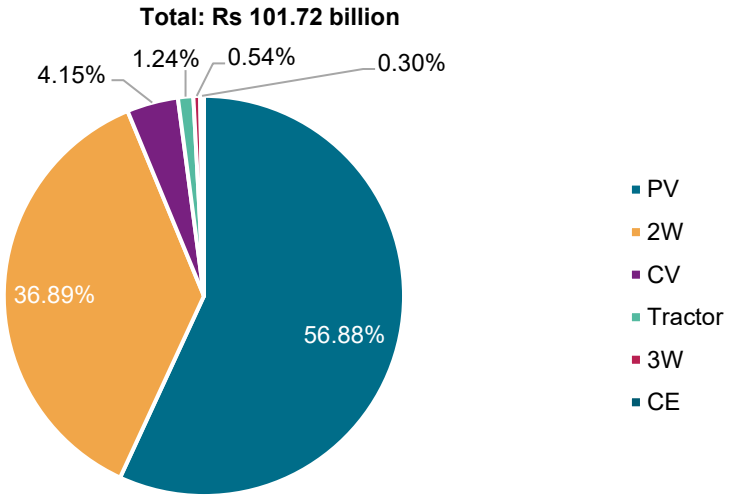
- **Growing demand for adaptive lighting components:** Adaptive lighting components that can adjust to changing driving conditions are becoming increasingly popular, and manufacturers are responding by developing advanced components that can adjust to different driving scenarios.
- **Increased use of simulation and modeling:** Simulation and modelling are being increasingly used in the design and development of automotive lighting components to improve their performance, reduce development time and enhance product quality.

Indian automotive lighting industry

Review of the industry for fiscal 2025

The domestic automotive lighting industry, which supplies OEMs, is estimated to be around Rs 101.72 billion as of fiscal 2025. The industry is primarily driven by the demand for lighting solutions from the passenger vehicle and two-wheeler segments, which account for the largest share of the market. The commercial vehicle segment also contributes significantly to the industry's growth. The contribution from other segments such as tractors, 3Ws and CE is relatively modest, indicating a smaller market size and limited demand for specialised lighting solutions in these areas.

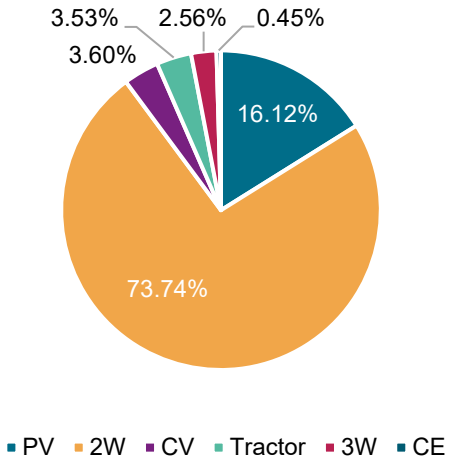
Automotive segment-wise split in the domestic automotive lighting industry in fiscal 2025



Note: Headlamps and tail lamps include DRLs and turn indicators wherever they are a part of the overall assembly and do not include connected/horizon light bars, centre position lamps and puddle lamps.

Source: SIAM, Vahan, Crisil Intelligence

Domestic vehicle sales split (in volumes) in fiscal 2025



Source: SIAM, Vahan, Crisil Intelligence

Despite accounting for a relatively modest ~16% of overall automotive sales, passenger vehicles (PVs) have emerged as the dominant force in the automotive lighting market, commanding a substantial ~57% share.

The passenger vehicle segment's dominance can be attributed to its higher usage of lights, including a wide range of exterior and interior lighting systems. Exterior lights, such as headlights, taillights, DRLs, fog lamps and CHMSLs, are complemented by interior lights, including reading lights, cabin lamps and ambient lights. This extensive use of lighting systems has created a significant demand for advanced lighting technologies, particularly premium LEDs.

The PV segment is characterised by the adoption of relatively costlier, aesthetically appealing advanced lights. These lights are designed to enhance the overall driving experience, providing a premium feel and a range of benefits, including improved safety and energy efficiency.

The increasing share of premium segment vehicles, coupled with the launch of feature-rich models offering the latest safety and comfort features, has driven the adoption of premium lighting technology within the PV segment.

Additionally, the share of LEDs in the overall lighting component volumes is also notably higher for PV Vis-à-vis other automotive segments of 2Ws, as well as CVs, and it is insignificant for CE, 3Ws and tractors.

In turn, the PV segment leads the automotive lighting market, driven by higher usage of lights, higher LED penetration and the associated higher costs, and a notable contribution to overall automotive sales.

The 2W segment, which accounted for a substantial ~74% of vehicle sales in fiscal 2025, made a notable contribution of ~37% to the automotive lighting market. The 2W segment's lighting requirements are distinct, with a primary focus on exterior lighting in the form of headlights and tail lamps.

The 2W segment's reliance on exterior lighting is driven by the need for visibility and safety on the road. Headlights and tail lamps are essential components of a 2W lighting system, providing critical illumination for the rider and other road users. The design and functionality of these lights are crucial in ensuring the safety and comfort of the rider.

The 2W industry is undergoing a significant transformation, driven by the trends of premiumisation and electrification. As consumers increasingly seek high-end features and advanced technologies, the demand for premium lights, such as LEDs, has increased. The share of premium lights in the 2W segment is also notable. This notable contribution is supported by the adoption of LEDs in premium motorcycles and scooters that offer improved performance, efficiency and aesthetics. The premiumisation of vehicles, the electrification of the automotive sector and the increasing adoption of LEDs are all expected to drive up the lighting content per vehicle. Moreover, the 2W segment is anticipated to emerge as

a significant contributor to the auto lighting market, driven by the growing demand for high-end 2Ws with advanced lighting features.

CVs, which accounted for ~4% of the total vehicle sales in fiscal 2025, contributed a similar share to the automotive lighting segment during the year. CVs' lighting requirements have historically been distinct from those of PVs and 2Ws, with a primary focus on robustness, durability and functionality. Hence, halogen is still the preferred technology in headlights. A few OEMs such as Eicher offer LED DRLs and halogen headlight combinations, which are expected to be widely adopted over the pure LEDs in this segment. The CV industry has also witnessed premiumization, with increasing customer preference for fully built cabins and premium cabins, with an increased emphasis on driver comfort and safety. This trend was also witnessed when the LCV and IMHCV truck segments completely shifted to LED taillights after BS-VI Phase-II norms, improving visibility and increasing the life of the lamps significantly.

Although the overall share of premium lighting in CVs may be lower, the industry is shifting, especially with the fast electrification of the LCV segment, and the growing preference for pure LED lights in EV should increase the use of LED lighting, as it offers improved visibility, aesthetic appeal, durability and reliability, significantly improving safety as the life of these LED lights are relatively high.

The 3W segment, which accounted for a relatively small 3% of the overall sales in fiscal 2025, has a distinct approach to lighting that is driven by functionality and cost considerations. Unlike the PV and 2W segments that prioritise advanced lighting technologies and aesthetics, the 3W segment focuses on basic lighting that meets the essential requirements of safety and visibility.

Given the commercial usage and price-sensitive nature of the 3W segment, halogen-based lighting is the preferred choice for both headlights and taillights. This is due to the lower cost and simplicity of halogen-based lighting systems, which are well-suited to the functional needs of 3Ws. The use of halogen-based lighting also reflects the segment's emphasis on affordability and reliability, rather than advanced features or aesthetics.

As a result of its relatively low sales volume and limited use of lights per vehicle, the 3W segment's contribution to the automotive lighting industry is estimated to be ~0.5%. This is a relatively small share compared with the PV and 2W segments that dominate the market with their higher sales volumes and greater use of advanced lighting technologies.

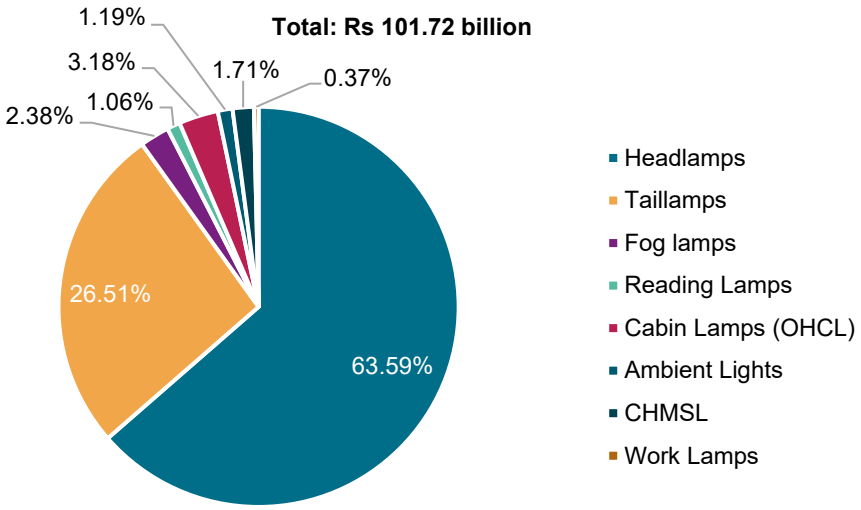
The tractor and CE segments, which accounted for a relatively small share of automotive sales in fiscal 2025, utilise basic lighting technology that prioritises functionality, robustness and durability. This approach is reflected in their limited contribution to the automotive lighting market.

Tractors, which contributed around 4% to automotive sales in fiscal 2025, primarily employ halogen-based lighting systems for their headlights, taillights and work lamps. These lighting systems are relatively inexpensive and focus on providing basic illumination, rather than advanced features or aesthetics. As a result, the tractor segment's share of the automotive lighting market was limited to ~1%.

The CE segment, which accounted for less than 1% of industry sales in fiscal 2025, has a limited number of lights and primarily uses halogen-based or bulb-based lighting systems. Although some construction equipment may feature LED usage in work lamps, the overall contribution of the CE segment to the automotive lighting industry was restricted to ~0.3% in fiscal 2025.

The tractor and CE segments prioritise basic lighting technology that focuses on functionality, robustness and durability, rather than advanced features or aesthetics. Their limited contribution to the automotive lighting market reflects the relatively simple lighting requirements and emphasis on affordability in these segments.

Lighting segment-wise split in domestic automotive lightings industry in fiscal 2025



Note: Headlamps and tail lamps include DRLs and turn indicators wherever they are part of the overall assembly and do not include connected/horizon light bars, centre position lamp and puddle lamps.

Source: SIAM, Vahan, Crisil Intelligence

The automotive lighting industry is a vital component of the overall automotive sector, providing essential illumination for vehicles and ensuring safety on the roads. Automotive lighting has transcended its functional role to become a key contributor to the premium feel, distinctiveness, and visual appeal of vehicles, particularly in the high-end segment. By offering a unique fusion of style, technology and sophistication, advanced lighting solutions have become a vital element in the premiumisation and brand differentiation strategies of automotive manufacturers, enabling them to create a luxurious and exclusive driving experience that justifies the premium price point and sets their vehicles apart from the competition.

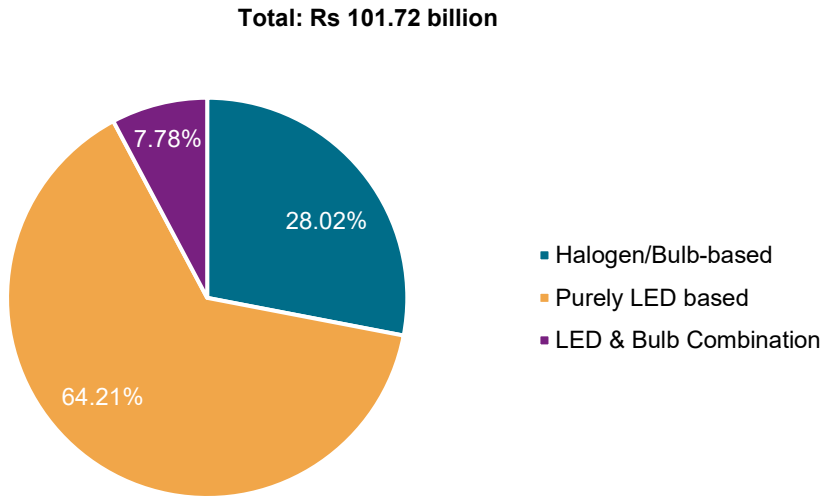
Within this industry, headlamps, also known as headlights, play a crucial role as the primary source of illumination for drivers across various automotive segments. They contribute the most to the automotive lightings industry, accounting for a significant share of the market.

Headlamps		Headlamps are a crucial part of a vehicle's lighting system, and demand for them has increased due to the adoption of DRLs and LEDs in premium vehicles, especially passenger vehicles and two-wheelers supporting their lead in the domestic automotive industry.
Tail lamps		Tail lamps are a vital part of a vehicle's lighting system, providing essential illumination for safety and visibility, although they contribute less to the industry compared to headlamps due to their smaller size and lower pricing.

Fog lamps		Fog lamps have limited contribution to the automotive lighting industry due to their restricted use in passenger vehicles and low demand, despite being an essential safety feature in low-visibility conditions.
OHCL - overhead cabin lamps and reading lamps		A part of interior lightings, OHCL are more than mere reading lamps due to their multiple features and higher cost.
Ambient lights		Ambient lights are mainly used in premium vehicles in the PV segment to create a luxurious ambience and their use of LEDs has supported their industry share, despite limited application.
Centre high-mounted stop lamp (CHMSL)		CHMSL is a common feature in passenger vehicles, but its small size and low cost limit its contribution to the automotive lighting market.
Work lamps		Work lamps are used in tractor and construction equipment. They are mostly halogen-based and have a small market share due to their niche application and limited demand.

The automotive lighting industry is dominated by headlamps and tail lamps, which are essential components of a vehicle's lighting system. The increasing adoption of DRLs and LEDs, particularly in premium personal vehicles, has resulted in headlamps leading in the domestic automotive lightings industry. While tail lamps contribute significantly to the industry, their average pricing is lower than that of headlamps. Fog lamps, interior lights and work lamps also play important roles in the industry, although their contributions are relatively smaller due to limited applications and demand.

Lighting technology-wise split in domestic automotive lightings industry



Source: SIAM, Vahan, Crisil Intelligence

The automotive lighting market can be segregated into three primary lighting technologies: Halogen or bulb-based, purely LED-based, and a combination of LED and bulb-based lighting. Headlamps and tail lamps, which are the primary contributing sub-segments, predominantly use either halogen-based systems or purely LED systems. This has resulted in a significant contribution from these technologies to the overall industry.

The notable presence of LEDs in ambient lighting and CHMSL has supported its leading position in the overall industry. The premium prices of LED have also contributed to their dominance in value. As a result, LED technology has emerged as the foremost lighting technology in the automotive lighting market.

The combination of LED and halogen technology has a limited presence in the market, which is restricted to the headlights of a few models of passenger vehicles, two-wheelers and commercial vehicles. This hybrid technology has not gained significant traction, resulting in its limited contribution to the overall industry. The dominance of halogen and LED technologies has overshadowed hybrid technology, making it a niche technology in the market.

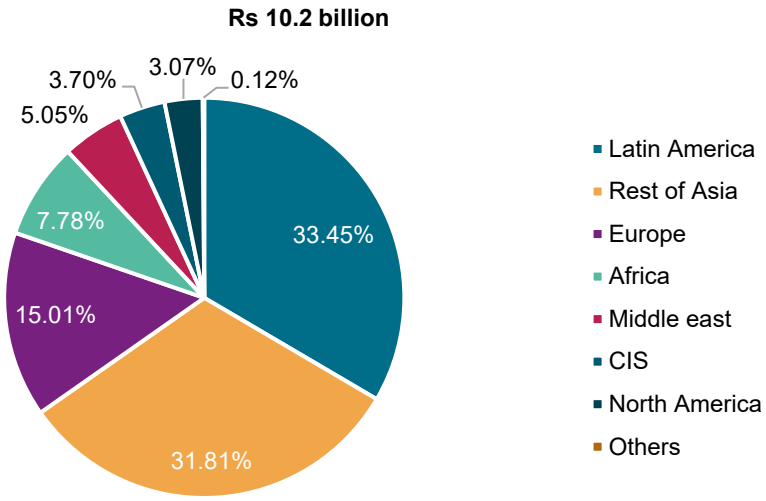
Exports in the automotive lighting industry

India's automotive lighting industry not only meets domestic demand but also caters to the global market, supplying high-quality lighting assemblies to renowned OEMs worldwide. In fiscal 2025, the industry achieved a significant milestone, with exports of automotive lighting assemblies reaching a substantial Rs 10.2 billion.

In terms of regional distribution, India's automotive lighting exports were diversified across various geographies. Latin America emerged as the largest recipient, accounting for 33% of India's total exports in fiscal 2025. The rest of Asia (Asia, excluding the Middle East) was the second-largest market, followed by Europe and Africa. The Commonwealth of Independent States (CIS) contributed ~4% to India's automotive lighting exports. This demonstrates the industry's growing global presence and its ability to tap into the emerging markets.

Looking ahead, the export demand for automotive lightings is likely to see a positive trajectory, driven by sustained vehicle sales growth, ongoing technological advancements, and an increasing lighting content per vehicle.

Region-wise split of exports



Note: Rest of Asia is Asia excluding the Middle East; Others include Australia, New Zealand and the neighbouring countries.
Source: DGFT, Crisil Intelligence

Growth drivers of automotive lighting industry in India

The automotive lighting industry in India is clocking significant growth, driven by various factors that are transforming the market landscape. Some of the key growth drivers include:

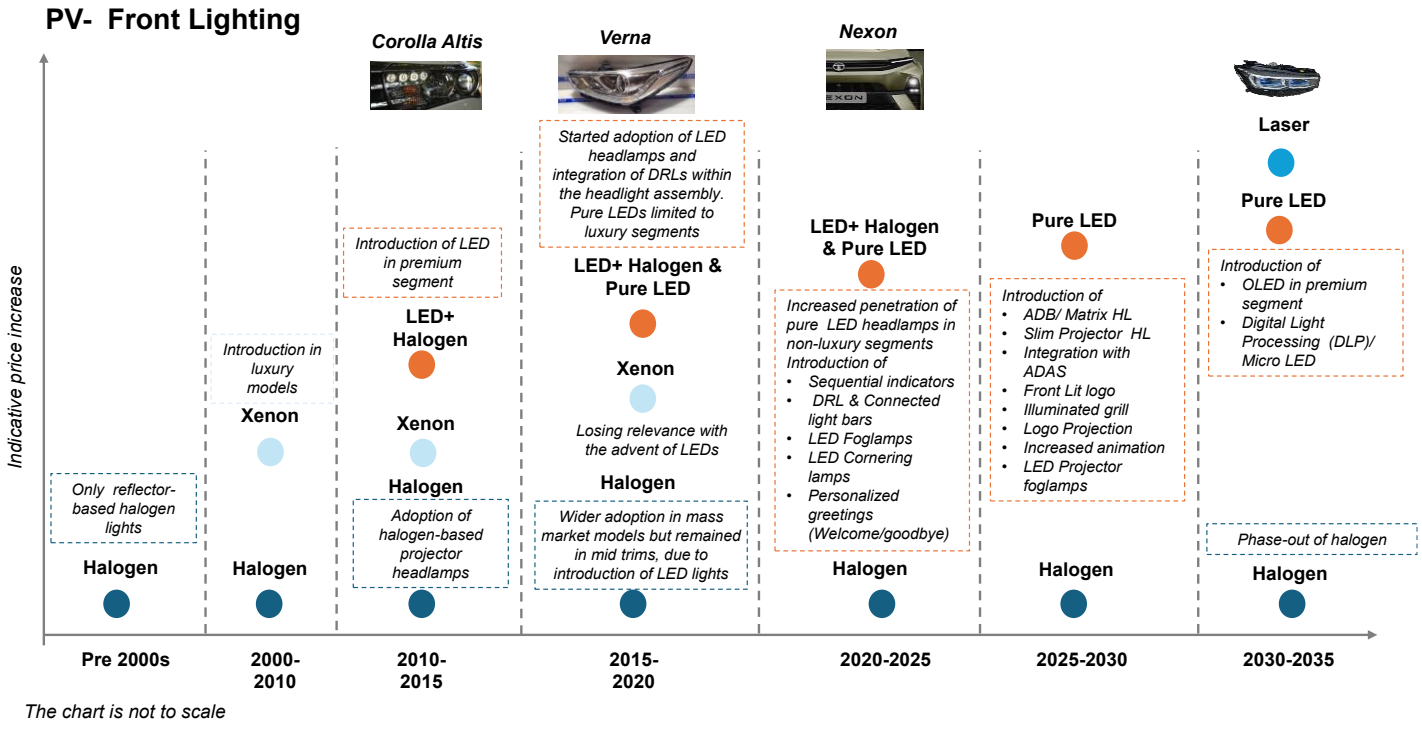
- **Growing demand for vehicles**: The growing demand for vehicles in India, driven by increasing disposable income, urbanisation and government initiatives, is driving the demand for automotive lighting components.
- **Rising demand for luxury and premium vehicles**: The uptick in demand for luxury and premium vehicles in India is driving the adoption of advanced lighting technologies, such as LED and laser lighting, that can provide unique and distinctive lighting effects.
- **Increasing demand for electric and hybrid vehicles**: The rising demand for electric and hybrid vehicles in India is driving demand for specialised lighting systems that are energy-efficient and environmentally friendly.
- **Increasing focus on safety and security**: The increasing focus on safety and security in the automotive industry is driving demand for advanced lighting technologies, such as LED and laser lighting, that can provide better visibility and safety.
- **Government regulations and policies**: Government regulations and policies, and stricter regulations mandating the use of advanced and energy-efficient lighting to enhance road safety, are acting as catalysts for the growth of the automotive lighting segment.
- **Increasing importance of aesthetics and design**: The growing importance of aesthetics and design in the automotive industry is driving demand for advanced lighting technologies, such as LED and OLED lighting, that can provide unique and distinctive lighting effects.
- **Advances in technology**: Advances in technology, such as the development of new materials and manufacturing processes, are enabling the creation of more efficient, reliable and cost-effective lighting solutions.

- **Integration with smart and connected vehicles:** Integration of lighting with ADAS, connected and autonomous vehicle technologies is another crucial factor impacting market dynamics
- **Increasing focus on sustainability and energy efficiency**: The growing focus on sustainability and energy efficiency in the automotive industry is driving the adoption of energy-efficient lighting technologies, such as LED and OLED lighting, that can reduce energy consumption and minimise environmental impact.
- **Government initiatives and investments**: Government initiatives and investments, such as the Make in India programme, are driving the growth of the automotive lighting industry in India by promoting domestic manufacturing and attracting foreign investment.

The growth drivers mentioned above are expected to increase the lighting content per vehicle due to increased premiumisation expected across segments, enabling deeper penetration of LEDs, increased adoption of advanced lighting systems like ADB/Matrix, OLEDs, etc. and latest features such as illuminated grill, personalised greetings, dynamic roof lightings, etc.

The automotive lighting industry is undergoing rapid transformation driven by technological advancements, evolving consumer preferences, and regulatory developments. The shift towards LED and adaptive lighting systems is creating opportunities for manufacturers to innovate and expand their product portfolio with high-value solutions. OEMs are increasingly focused on styling and enhanced comfort, driving demand for modern lighting features like slimline projectors, ambient lighting, illuminated grilles, and lit logos. The accelerating adoption of EVs, both in India and globally, further increases the need for energy-efficient and intelligent lighting. Additionally, stricter safety and emission norms are encouraging the integration of advanced lighting systems.

Evolution of automotive lighting in the Indian automotive industry



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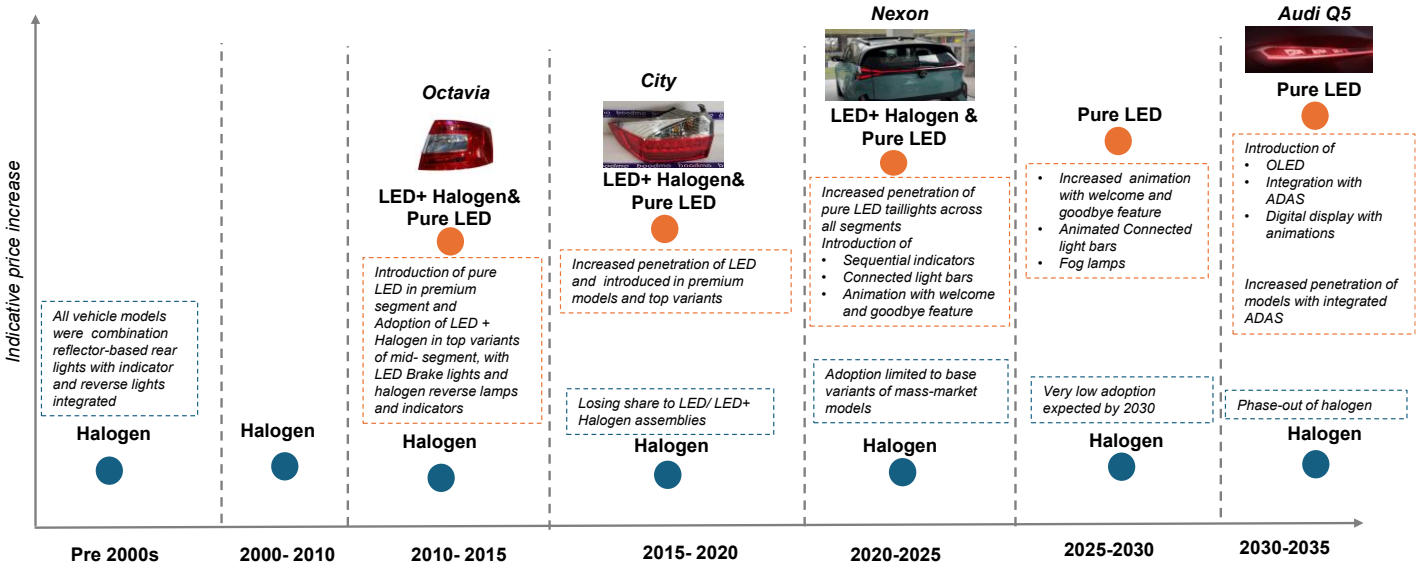
PV Rear-lighting



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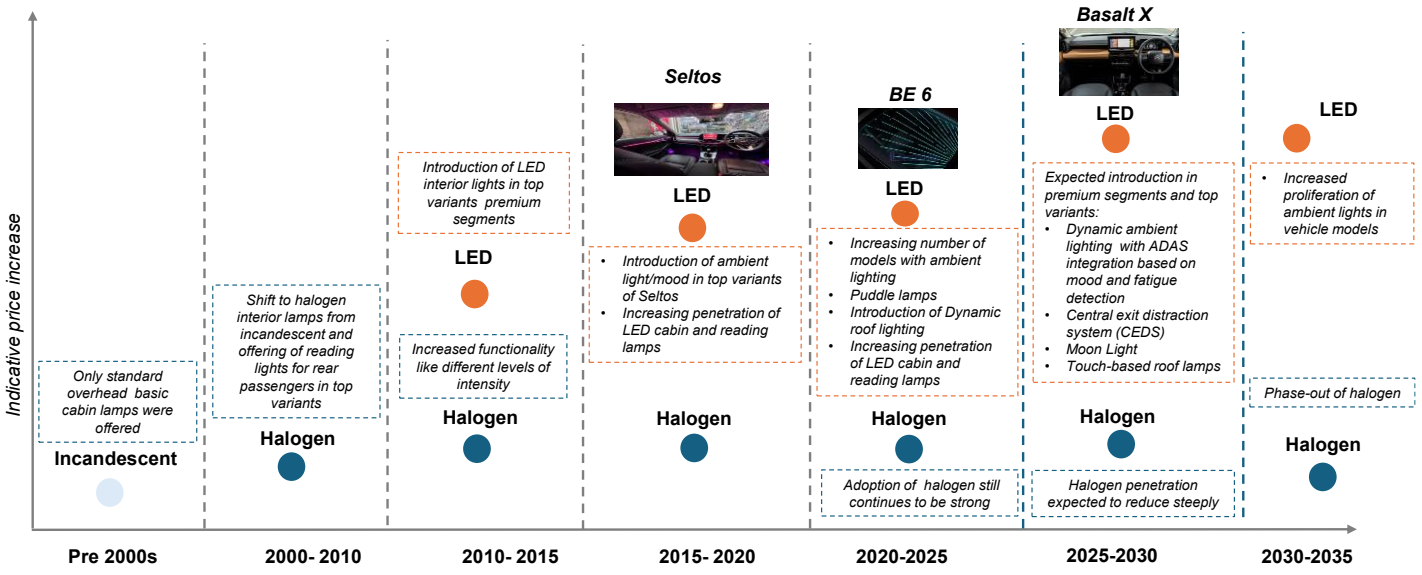
PV Interior light



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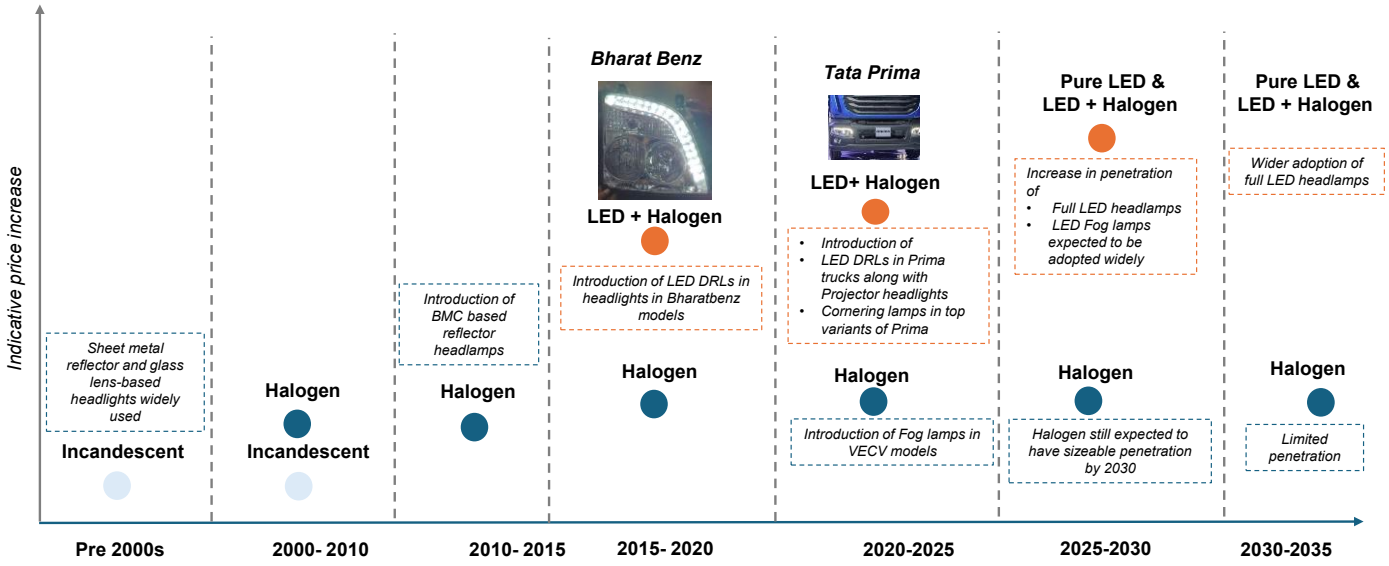
CV Front Lighting



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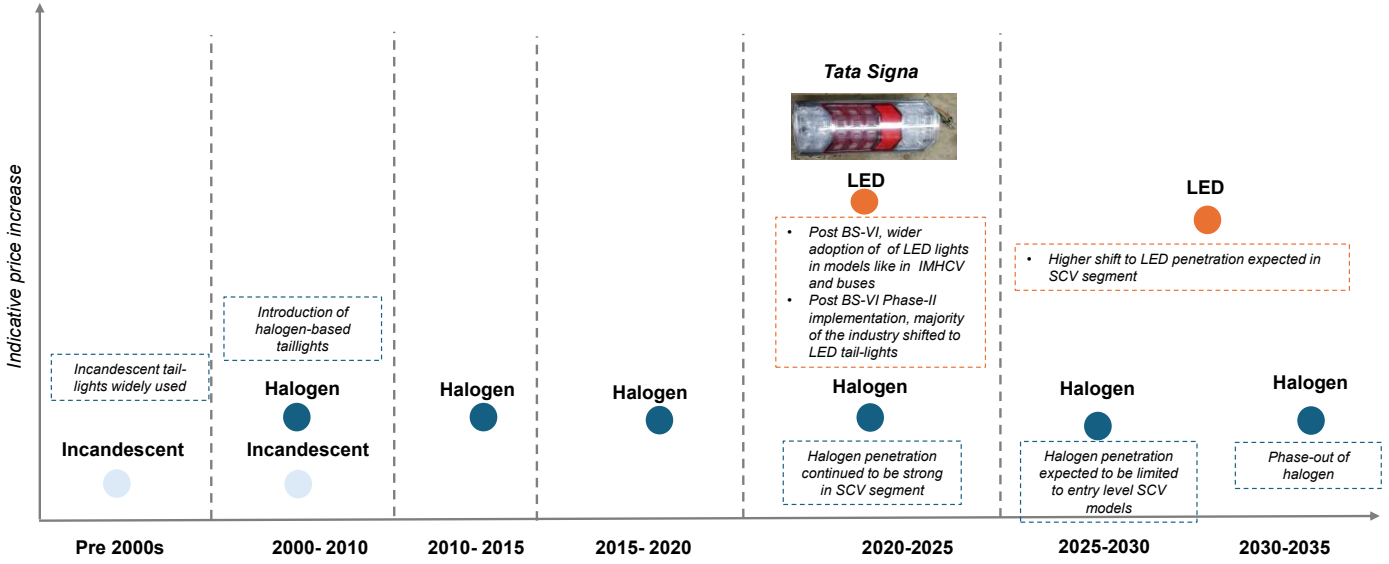
CV Tail-light



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Source: Industry, Crisil Intelligence

- **Early stage (pre-2000s):** Only the basic reflector-based halogen lights were used for headlights and taillights across vehicle segments

- **2000s–2010:** With globalisation of the Indian automotive industry, multinational OEMs and Tier-1 suppliers entered the market. Lighting quality improved, premium vehicles in the PV segment introduced Xenon/HID in the headlights segment, though penetration remained limited. In other segments such as CVs, halogen lights remained dominant.
- **2010–2015:** Adoption of halogen projector headlamps started during this period, with the introduction of LED+ halogen combination assemblies, but the penetration of LED was still very low for both headlights and taillights within the PV industry. Reflector-based halogen lights remained the most widely adopted technology in the industry while Xenon was offered as an option in the higher variants of premium models of Skoda and VW. The CV and two-wheeler segments were still predominantly halogen based.
- **2015:2020**: This period witnessed wider adoption of projector halogen headlamps in mass-market models within PVs, where DRL LEDs were also offered by OEMs, with the combination of a halogen projector headlamp. The PV industry witnessed increased penetration of LED due to the introduction of DRLs in the industry and OEMs explored opportunities to provide signature design elements with headlight design. Xenon lights also lost their relevance owing to the increasing penetration of LEDs in the market. The CV industry witnessed the introduction of halogen and LED combination in some models.
- **2020-2025:** Lighting in India saw a notable shift from pure functionality to aesthetics and safety, with increasing emphasis on styling, regulatory compliance, and premiumisation, especially within the PV and 2W segments. In the previous decade, LED was only offered in the higher variants. it is now being used even in base variants across different segments. In the previous decade, a combination of LED and halogen lights were used even in LED offerings. Currently, pure LED lighting systems account for a large share of the market. Within PVs, ambient lighting, sequential indicators, puddle lamps, LED foglamps, connected/horizon light bars which integrate with DRLs were introduced during this period. OEMs also started focusing on integrating brand signature with the connected DRLs during this period. The CV industry witnessed further penetration of LED and halogen combination lamps in front lighting. Pure LED taillights also penetrated further in the CV industry.
- **2025-2030:** Within PVs, wider LED penetration across the mass-market segments, integration of adaptive and smart lighting features like Matrix LEDs in higher trims along with integration with ADAS is expected. Advanced technologies such as illuminated logo, logo projection and LED projector fog lamps are also expected to be introduced in this period. The CV segment will see penetration of full LED headlamps and wider adoption of fog lamps.
- **2030-2035:** Considering the current technology readiness level and higher costs, laser headlights are expected to be introduced in some premium models within PVs, which can project light nearly twice as far as conventional LED systems while consuming less power. Higher penetration of ambient lighting is also expected with LED penetration increasing overall in interior lights. OLED and Digital Light Processing (DLP)/Micro-LED technology are also expected to be introduced. CVs are likely to see wider adoption of full LED headlamps.

Recent and upcoming market trends

Sustainability and energy efficiency

As global regulations push for greener technologies, automotive lighting is evolving with sustainability in mind. LED and laser systems consume less energy than halogen or xenon lights, but manufacturers are also exploring recyclable materials and eco-friendly production processes.

Lightweight components reduce vehicle emissions and improve efficiency, especially in electric models. Furthermore, advances in control systems allow lighting units to operate only when necessary, minimising energy waste. This alignment with sustainability goals is a key reason why governments and regulators support modern lighting adoption in vehicles.

In India CAFÉ norms III, which will be effective from April 2027, LEDs are expected to play a role to boost energy efficiency of vehicles, since LEDs consume significantly less power than halogen/HID lamps. Additionally, LEDs enable compact and lighter lamp assemblies, compared with bulkier halogen systems, indirectly supporting OEMs' lightweighting efforts for CAFÉ compliance. In the case of EVs, LEDs directly help to extend the driving range by reducing the electrical load.

Shift towards LED and OLED lighting systems

One of the most impactful innovations in reshaping the Automotive Lighting Market is the widespread adoption of LED (Light-Emitting Diode) and OLED (Organic Light-Emitting Diode) technologies. LEDs have already surpassed halogen and xenon lights due to their energy efficiency, longer lifespan, and ability to integrate into sleek designs. Automakers now use LEDs to create dynamic lighting patterns, enhancing vehicle aesthetics while reducing energy consumption, a crucial factor in EVs where every Watt matters.

OLED lighting, on the other hand, provides ultra-thin, flexible panels that enable new levels of design freedom. These panels allow manufacturers to create seamless taillights and interior lighting solutions that deliver both functionality and premium aesthetics. As OLED production costs decline, their integration is expected to rise significantly in luxury as well as mid-range models.

Adaptive and matrix beam headlights

Modern vehicles are increasingly equipped with adaptive lighting systems, which automatically adjust the direction and intensity of light based on driving conditions. Matrix beam technology represents a leap forward, breaking down headlight beams into multiple segments that can be controlled individually. This innovation allows drivers to maintain high beam illumination without dazzling the oncoming traffic, dramatically improving nighttime safety. Some Indian mass-market PV OEMs like Hyundai are already offering cornering lamps, which enables to improve visibility in low-lit areas while taking a turn.

Several leading manufacturers are investing in adaptive systems that communicate with onboard sensors and navigation data, enabling headlights to anticipate curves, road conditions, or approaching intersections. By combining safety and convenience, matrix headlights are quickly becoming standard in next-generation vehicles.

Laser lighting

Laser lighting technology is another exciting innovation redefining how far and bright automotive lights can go. Laser headlights can project light nearly twice as far as conventional LED systems while consuming less power. This makes them particularly attractive for high-performance and luxury vehicles, where visibility and efficiency are equally important. Although currently expensive and limited to premium brands, advancements in production and cost reduction strategies will likely make laser lighting accessible to a wider market segment in the coming years. Their superior range and brightness position laser lights as a future-ready solution, especially for long-distance and high-speed driving.

Digital lighting processing

One of the most futuristic trends in the automotive sector is digital lighting. This technology goes beyond illumination, enabling headlights and taillights to project symbols, animations and even road warnings directly onto the surface. For example, digital headlights can project pedestrian crossings, lane guidance, or warning signals onto the road ahead.

This innovation enhances safety and aligns with the growing integration of ADAS. By combining lighting with communication, digital lighting is set to become a crucial element in autonomous vehicles, where clear signalling between cars, the driver and pedestrians will be essential.

Smart interiors, lighting personalisation and interactive lighting

Automotive lighting innovation is not limited to the exterior. Interior ambient lighting has become a popular trend, offering drivers and passengers personalised experiences. Colour-changing LED systems, customisable lighting zones, and mood-responsive features are now being integrated into dashboards, doors and footwells. A few Chinese models have also introduced interactive symbols like emojis and other customised messages for users.

Beyond aesthetics, smart interior lighting improves functionality. It can highlight important controls, guide drivers during night journeys, or alert them to safety warnings. As vehicles become more connected and autonomous, interiors are transforming into living spaces, and lighting will play a vital role in enhancing comfort and personalisation.

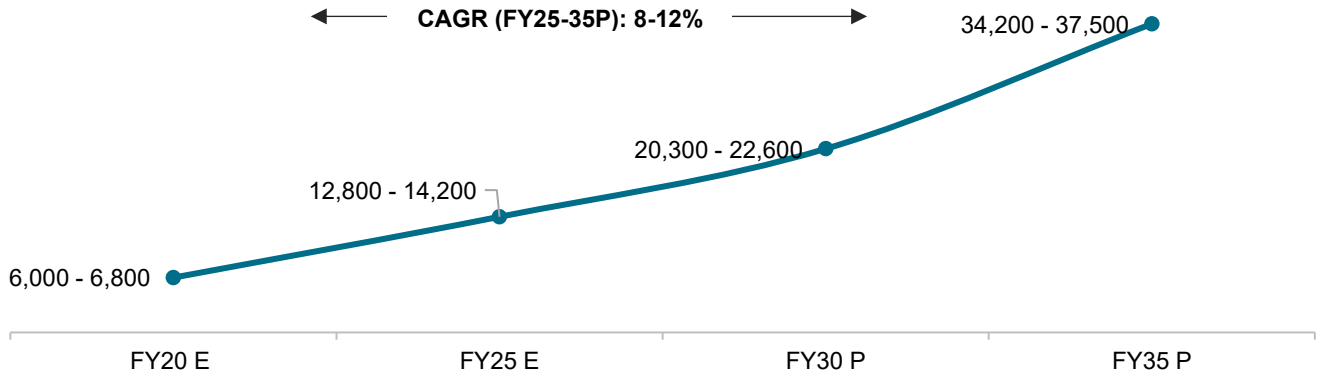
Integration with ADAS

Safety remains one of the strongest drivers of innovation in the automotive lightings market. Advanced lighting systems are now being designed to integrate seamlessly with ADAS features. For example, headlights linked to cameras and radar sensors can identify obstacles or pedestrians and adjust illumination accordingly. Similarly, rear and side lighting systems can be synchronised with blind-spot monitoring alerts or lane-departure warnings.

This integration helps create a holistic safety ecosystem, where lighting is no longer just passive but actively contributes to accident prevention. With autonomous driving on the horizon, lighting innovations will serve as an essential bridge between vehicles and their environment.

The below graph shows the trend in the value for lighting content per vehicle in PVs, the largest contributor to the automotive lighting industry.

Value of lighting content per vehicle for PVs (in Rs)



Note:

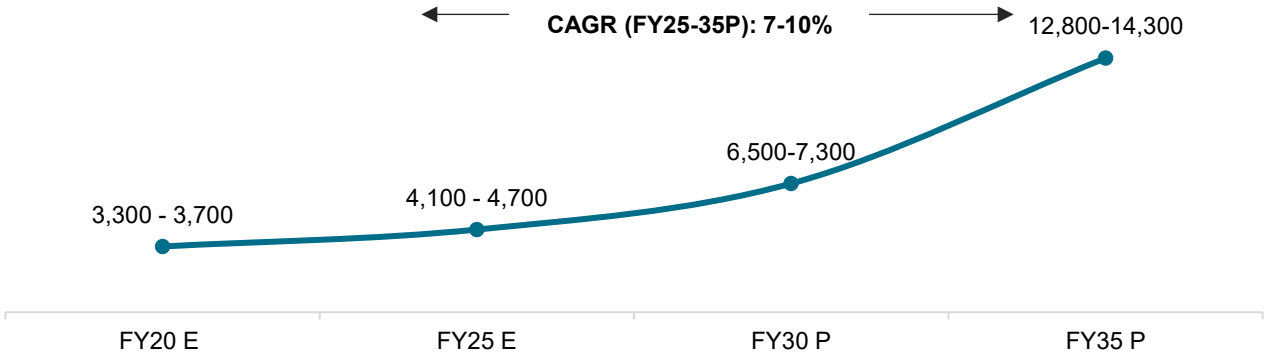
- *Includes headlamps, tail lamps, foglamps, select interior lighting and CHMSL*
- *In addition to the above content, there may be styling-driven new lighting introductory products, such as centre position lamps, illuminated logos, puddle lamp and moonlight, that have not been considered in the above estimates*
- *The above estimates are based on weighted average lighting content across the entire spectrum of domestic sales volume*

Source: Crisil Intelligence

The lighting content per vehicle has been growing significantly with advancements in lighting technology in PVs. Pre-2020, halogen penetration across lighting segments was significant, while between fiscals 2020 and 2025, LED penetration increased significantly across sub-segments, particularly in the UV segment. This enabled the growth for lighting content in a PV from Rs 6,000- 6,800 per vehicle in fiscal 2020 to Rs ~14,000 in fiscal 2025 at a CAGR of 14-16%.

Over this elevated base, over the next 5 years, the lighting content per PV is expected to grow at a CAGR of 8%-10% and reach Rs ~21,000 by fiscal 2030, driven by increased LED penetration, higher cost of Matrix headlights, increased ambient lighting penetration, integration with ADAS and increased animation. It is further expected to grow and reach Rs ~37,000 by fiscal 2035 driven by introduction of laser lights in premium models, OLED, DLP and increased LED penetration. The higher cost of these components is expected to drive growth in lighting content in PVs at a CAGR of 10%-12% between fiscal 2030 to fiscal 2035.

Value of lighting content per vehicle for CVs (in Rs)



Note:

- *Includes headlamps, tail lamps and select interior lighting*
- *In addition to the above content, there may be signalling and aesthetic lighting, which depends on the body-building practices of CVs*
- *The above estimates are based on weighted average lighting content across the entire spectrum of domestic sales volume*

Source: Crisil Intelligence

In the CV segment, growth between fiscals 2020 and 2025 was relatively moderate at a CAGR of 4-5%, as technology evolution was slower in CVs due to cost sensitivity of customers and fleet owners. While penetration of LEDs in taillights in the IMHCV segment and bus segment has already reached 100% post BS-VI Phase-II, there is still a limited number of models offering LED headlights. Some OEMs are currently adopting LED DRLs with an LED+ halogen setup instead of offering pure LEDs for headlights. This approach is expected to become more widespread.

In the period between fiscal 2025-2030, the lighting content in CVs is expected to grow by 8%-10% and reach Rs ~7,000, driven by increased LED penetration in headlights, increased LED DRL penetration. Electrification of the LCV segment is also expected to drive the growth since EV models are typically offered with premium features and hence LED lights will be provided as standard across a wide range of models. Until 2030, halogens are still expected to be the preferred lighting technology in the CV segment. However, LED penetration is expected to reach ~70-80% by 2035, which will drive up the lighting content to Rs ~14,000, which is a CAGR of ~12-15% from fiscal 2030 to fiscal 2035.

Key advantages of R&D capabilities

- **Technology leadership and differentiation:** The shift from halogen to xenon, LEDs and now laser lighting highlights how fast the segment evolves. Companies with in-house R&D are better equipped to anticipate and respond to these transitions. Strong R&D enables manufacturers to co-develop bespoke lighting modules with OEMs—this is particularly critical in premium PVs and EVs. By developing competencies in adaptive lighting systems, OLEDs, matrix LEDs and intelligent headlamps, Indian suppliers can position themselves as preferred partners for global and domestic markets

- **Cost competitiveness and localisation:** In India, cost sensitivity is critical. Companies with R&D capabilities can design solutions that balance performance with affordability. R&D facilitates indigenous development of lighting modules, reducing dependence on imports of advanced technologies and lowering the bill of materials for OEMs. R&D allows modular product architecture, enabling economies of scale by adopting one core technology platform across different vehicle models and segments
- **Compliance with regulations and safety standards:** Global and Indian regulations increasingly emphasise visibility, energy efficiency and driver safety. With governments mandating energy-efficient systems and recyclability, R&D helps manufacturers develop eco-friendly lighting materials and designs. Proactive R&D ensures readiness for upcoming regulations (for example, adaptive driving beam regulations in Europe or Indian BIS-led efficiency norms)
- **Enhancing OEM partnerships:** Indian OEMs seek suppliers that can engage at the concept stage of vehicle development. R&D allows lighting manufacturers to provide design inputs early in the cycle, leading to stronger relationships. Lighting today is not only a functional but also a branding element. R&D teams can work with OEM design houses to integrate signature lighting patterns, DRLs and ambient lighting that align with brand identity. Proven R&D capabilities increase credibility with international OEMs, unlocking opportunities for export contracts
- **Premiumisation and aesthetics:** With lighting becoming a key feature in defining vehicle aesthetics and consumer perception, R&D supports the development of differentiated styling. Advanced R&D enables development of programmable LED modules, sequential indicators and ambient lighting systems that elevate the user experience. In EVs, where grilles are disappearing, lighting signatures are emerging as the “new face” of the vehicle. R&D provides the expertise to create unique visual identities for OEMs

Innovation for the future of mobility: R&D is enabling V2X communication through lighting, such as brake-light signals integrated with ADAS or communication with pedestrians in autonomous driving environments. Development of recyclable materials, energy-efficient LEDs, and reduced carbon footprint manufacturing are possible through R&D. Advanced R&D allows the use of simulation tools, AR/VR, and digital twin technologies for faster and more accurate product development. As the automotive lighting industry undergoes a shift driven by electrification, autonomous driving, digitalisation, and sustainability, investment in R&D, design, engineering and software is critical to maintaining competitive edge and supporting the evolving needs of OEMs globally.

By embracing R&D in automotive lighting, manufacturers can propel themselves to the forefront of the industry, driving innovation and excellence. This strategic investment will enable them to stay ahead of the competition, while significantly enhancing safety, efficiency and customer satisfaction and minimising costs and environmental footprint. Pioneering companies such as Lumax Industries, Varroc, Neolite ZKW Lightings and Uno Minda are exemplars of this approach, continually bolstering their R&D capabilities to ensure future readiness and maintain their competitive edge.

Key entry barriers in the Indian automotive lighting industry

The Indian automotive lighting industry has transformed into a highly competitive and technologically advanced sector, driven by escalating consumer expectations, stringent safety regulations, and the rapid transition from traditional halogen lamps to standard LED and advanced LED lighting systems. While the industry continues to experience growth, it also presents significant obstacles for new entrants and smaller players seeking to expand their presence.

There are several entry barriers for new players in the Indian automotive lighting industry, including:

- **OEM relationships and long development cycles:** The Indian automotive industry is characterised by a rigorous and demanding vendor selection process, with OEMs exercising extreme caution when onboarding new suppliers. This stringent evaluation process, which can span 2-3 years, poses a significant barrier to entry for new players seeking to break into the supply chain. Established players such as Uno Minda, Lumax Industries, Neolite ZKW Lightings and Varroc enjoy a distinct advantage due to their proven track records and long-standing relationships with OEMs

- **Design and development complexity:** Lighting systems are intricately designed in tandem with vehicle aesthetics, making it challenging for new entrants to penetrate the market. OEMs typically prefer established suppliers that can engage at the conception stage, leaving limited space for new entrants. The safety-critical nature of lighting components also makes OEMs reluctant to switch to unproven suppliers
- **Cost sensitivity and economies of scale:** Indian OEMs are highly cost-sensitive, and established suppliers with scale and backward integration can achieve cost competitiveness that new entrants cannot easily match. Larger players have localised supply chains for critical components, thereby reducing costs and improving profitability. New players may face higher import dependence, making it challenging to match prices of existing players
- **Supply chain and vendor ecosystem:** Production of automotive lighting components requires reliable sourcing of critical materials, such as LEDs, optical-grade plastics, coatings and electronic drivers. Established players have strong supplier partnerships, and larger players often control key processes such as reflector metallisation or PCB assembly, thereby improving margins and quality control. New entrants without such capabilities are at a significant disadvantage
- **High capital requirements:** Setting up a manufacturing facility for automotive lighting components requires significant investment in machinery, equipment and technology, posing a significant barrier for new entrants with limited financial resources
- **Stringent quality and safety standards:** The automotive industry has strict quality and safety standards that must be met by all suppliers, including lighting component manufacturers. Meeting these standards requires significant investment in quality control and testing infrastructure, which can be a barrier for new entrants
- **Economies of scale:** The Indian automotive lighting industry is characterised by large-scale production, making it challenging for new entrants to compete on price and scale
- **R&D:** The Indian automotive lighting industry is evolving rapidly, with new technologies and innovations emerging regularly. New entrants must invest in R&D to stay ahead of the competition and meet the changing needs of OEMs and consumers. The automotive lighting sector demands adherence to rigorous global safety regulations and complex integration with advanced electronics, necessitating massive capital investment in specialised testing infrastructure such as photometric labs and environmental chambers.

  This high technical bar creates a formidable barrier to entry, as new players often lack the resources and expertise to conduct the exhaustive validation cycles required to prove long-term reliability to major OEMs.

The Indian automotive lighting aftermarket

The domestic automotive lighting aftermarket is a competitive space, driven by the country's large and ageing vehicle parc, diverse consumer base, and increasing emphasis on safety, aesthetics and personalisation. Aftermarket demand for lighting systems stems from a few major areas. One is replacement due to failure of the lighting system, which can occur prematurely or after its full service life. Another is replacement due to accidents. Replacement demand resulting from accidents is fulfilled by both the independent aftermarket and the original equipment supplier (OES) through dealerships and retail channels. In the PV segment, if a vehicle is still under warranty, the premature failure or replacement of lighting assemblies due to accidents is typically handled by the OES. However, in all other segments, aftermarket brands play a significant role.

Another growing area in the aftermarket is the customer segment seeking to upgrade lighting output by replacing original lighting with newer, more advanced lighting.

The aftermarket is highly fragmented, with a strong presence of local manufacturers and traders alongside organised players linked to OEMs. Consumers in India are highly cost-conscious, often opting for low-cost halogen replacements, though premium customers in metros are willing to pay extra for LEDs and styling upgrades. With falling LED prices, there

is a gradual shift towards LED headlamps, DRLs and tail lamps in the aftermarket, especially for 2Ws and PVs. While a large share of demand is replacement-driven (functional), there is also growing aspirational demand for aesthetic enhancements such as projector lamps, sequential indicators and ambient lighting kits.

In urban areas, aftermarket sales are increasingly driven by premiumisation and personalisation, and in rural and semi-urban regions, affordability and durability dominate consumer preference.

Aftermarket demand acts as a promising growth avenue for the automotive lighting manufacturers especially the established players with the expanding vehicle parc, rising pre-owned vehicle market requiring aftermarket replacement, increasing customer preference for aesthetic enhancements especially in the PV segment, as well as rising preference for usage of branded/ original parts.

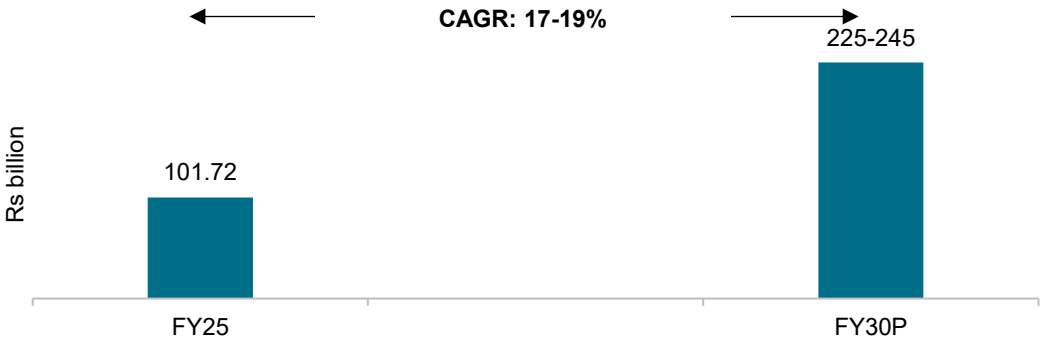
As the vehicle parc continues to expand and customer preferences evolve, the aftermarket segment is expected to remain a key area of focus for manufacturers seeking to capitalise on emerging trends and opportunities.

Outlook for the Indian automotive lighting industry

The domestic automotive lighting industry is anticipated to experience a remarkable growth trajectory, with a projected compound annual growth rate (CAGR) of 17-19% in value terms between fiscal 2025 and fiscal 2030. This robust growth will be driven by a combination of factors, including the sustained increase in vehicle sales, the trend towards premiumisation, the rising adoption of electrification, hybridisation within the automotive industry, and the growing demand for premium lighting solutions, as well as the advancements in lighting technology.

The Indian automotive industry has been undergoing a significant transformation, driven by the government's initiatives to promote the adoption of EVs, enhance road safety and improve the overall driving experience. The automotive lighting industry, a critical component of the overall automotive sector, is poised to play a vital role in this transformation. The industry's growth will be underpinned by the increasing demand for energy-efficient and advanced lighting solutions, as well as the growing trend towards premiumisation and electrification.

Outlook for the domestic automotive lighting industry



Source: SIAM, Vahan, Crisil Intelligence

A primary driver of this growth is the projected 7-9% CAGR in vehicle sales, which will provide a solid foundation for the industry's expansion. Moreover, rising use of lighting components per vehicle is expected to provide an added impetus to industry growth.

In addition to the growth in vehicle sales and lighting components per vehicle, the increasing trend towards premiumisation and the rising use of advanced components, such as LEDs, OLEDs and lasers, are expected to accelerate growth of the industry over the long term. As consumers increasingly demand more advanced and sophisticated features in their vehicles, the use of these components is expected to become more widespread, driving growth in the industry.

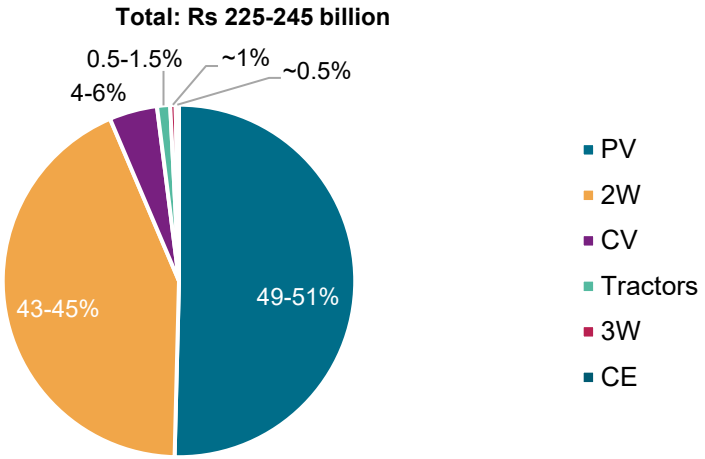
Furthermore, the shift towards energy efficiency is expected to provide a significant boost to the use of LEDs, particularly in segments where their usage is currently relatively limited. As the industry continues to evolve and consumers become more environmentally conscious, demand for energy-efficient solutions is expected to increase, driving the adoption of LEDs and other advanced lighting technologies.

In terms of specific segments, from the current lower base, LED penetration is expected to grow for the 2W and CV segments. This growth will be driven by the increasing demand for energy-efficient and advanced lighting solutions in these segments, as well as the increasing trend of premiumisation.

The PV segment, which is the largest contributor to the automotive lighting market, is expected to continue to drive growth in the industry. While LED penetration is already notable within the PV segment, this segment is poised to witness further growth in LED adoption. The increasing demand for energy-efficient and advanced lighting solutions, coupled with the increasing trend of premiumisation, is expected to fuel growth of LED penetration in PVs. Large players, such as Lumax Industries, Uno Minda, Varroc and Neolite ZKW Lightings, with established track records with manufacturers and advanced product portfolios are well positioned to drive growth going forward.

In addition to PVs, the commercial segments of 3Ws, tractors and construction equipment are expected to see some LED penetration. Currently, these segments are primarily dominated by halogen-based lighting solutions, but the industry is shifting towards more energy-efficient and advanced lighting technologies. As a result, LED penetration is expected to increase in these segments over the long term, driven by the growing demand for improved safety as well as energy efficiency.

Projected automotive segment-wise split in the domestic automotive lighting industry (fiscal 2030)



Source: SIAM, Vahan, Crisil Intelligence

The automotive lighting industry is expected to witness significant growth in the coming years, driven by the increasing demand for energy-efficient and advanced lighting solutions. 2Ws and CVs are expected to play a crucial role in driving the expansion of the industry.

The 2W segment is expected to experience faster domestic sales growth, at a CAGR of 6.5-8.5%, coupled with an expected rise in the usage of LEDs. This will support the expansion in the share of 2Ws in the automotive lighting industry, as consumers increasingly demand more energy-efficient and advanced lighting solutions.

The CV segment is also expected to witness healthy domestic sales growth, at a CAGR of 4-6%. This growth, coupled with the shift towards premium lighting solutions, will support the expansion of the CV segment's share in the automotive lighting industry, as manufacturers increasingly adopt advanced lighting technologies.

PVs are expected to witness healthy sales growth, at a CAGR of 5-7%. The shift towards premium vehicles as well as increasing adoption of the latest lighting technology will further support the PV lighting subsegment. However, from an already elevated base, the PV segment's share is expected to decline.

The smaller segments of tractors, 3Ws and construction equipment (CE) are projected to grow in tandem with the overall automotive lighting industry growth, maintaining their share in the industry until fiscal 2030. These segments will continue to play an important role in the industry, driven by the increasing demand for energy-efficient and advanced lighting solutions.

The global automotive lighting market

The global automotive lighting industry plays a pivotal role in enhancing vehicle safety, aesthetics, luxury and energy efficiency, making it one of the most dynamic segments within the broader automotive ecosystem. Over the years, lighting technology has evolved from traditional halogen systems to advanced LED, laser and adaptive lighting solutions that not only improve visibility but also contribute to the overall driving experience. The growing integration of electronics and smart features in vehicles has further expanded the role of lighting beyond illumination, serving as a tool for communication, brand differentiation and regulatory compliance. With the rise of connected and autonomous vehicles, lighting systems are becoming more intelligent and multifunctional, aligning with broader trends in automotive innovation.

At the same time, the sector is being shaped by multiple external forces, such as stricter safety regulations, consumer demand for premium aesthetics and the global shift towards sustainable mobility. Energy-efficient lighting technologies, particularly LEDs, are witnessing accelerated adoption as automakers strive to reduce carbon emissions and improve fuel efficiency. Moreover, the increasing production of EVs and the expansion of emerging automotive markets are driving new opportunities for manufacturers and suppliers across regions. Against this backdrop, the global automotive lighting market is set to undergo significant transformation, with growth supported by both technological advancements and evolving market dynamics.

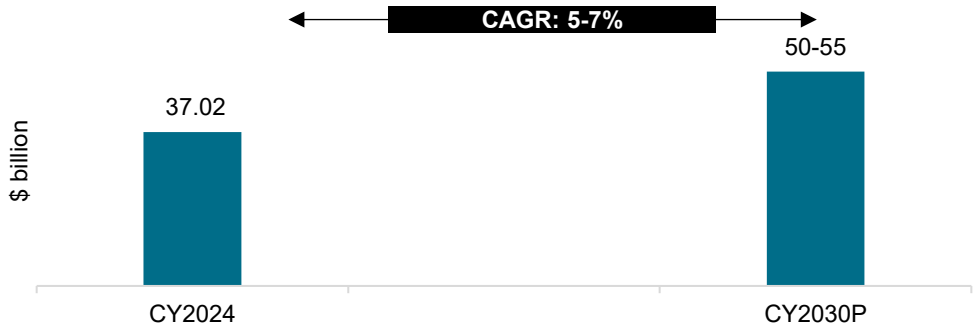
Lighting has evolved from being a functional component to a major element of automotive styling and safety. Features such as matrix LED, OLED and laser lighting systems are increasingly being integrated by automakers, not only for visibility but also to provide aesthetic appeal and brand differentiation.

The global automotive lighting market, which includes headlamps, tail lamps, interior lighting and other vehicle illumination systems, has shown consistent growth despite disruptions in the automotive supply chain.

As per Nexdigm estimates, as of calendar year 2024, the global automotive lighting industry was estimated at almost $37 billion, dominated by the PV and CV segments.

The global automotive lighting sector is expected to witness continued and more transformative growth over the longer term. The market size is expected to expand from $37 billion in calendar year 2024 to $50-55 billion by calendar year 2030, representing a CAGR of 5-7%. The growth trajectory will be supported by stricter global safety regulations, increasing EV penetration, and the evolution of smart and connected vehicle technologies.

Outlook for the global automotive lighting industry



Source: Nexdigm projections

A major driver of the growth in automotive lighting industry will be the rising adoption of ADAS and intelligent lighting. Regulatory standards in Europe, North America and China increasingly require vehicles to include adaptive driving beam (ADB) headlamps and daytime running lights for enhanced safety.

Electrification will be another growth catalyst. By calendar year 2030, EVs are projected to account for more than 35% of global PV sales. Since EVs demand energy-efficient lighting, automakers are rapidly shifting to OLED, matrix LED and laser lighting.

Geopolitical risks and supply-chain localisation will also influence the industry. Companies such as Valeo and Koito are investing in local manufacturing hubs in India and Southeast Asia to reduce dependence on single-market sourcing. These strategic shifts will not only ensure resilience but also expand regional markets.

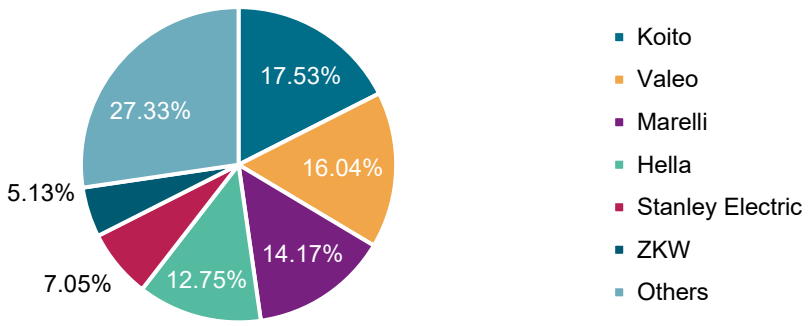
Few of the prominent global lighting manufacturers, including large Indian players with a well-established international presence, are strategically positioned to capitalise on the burgeoning demand for innovative lighting solutions. This is attributed to their comprehensive and cutting-edge product portfolios, robust R&D capabilities, and the inherent cost competitiveness that India offers.

Competitive landscape in calendar year 2024

A few major component suppliers dominate the global automotive lighting market. Smaller players are also present, competing on the basis of price, quality and innovation.

Koito led the global automotive industry in calendar year 2024, supported by its strong partnerships with Japanese OEMs such as Toyota, Honda and Nissan. A key supplier to European OEMs such as Renault, Stellantis and Volkswagen, Valeo had a notable share in the global automotive lighting market. Players such as Marelli, Hella and Stanley also played a sizeable role.

Player-wise contribution in the global automotive lighting industry (CY2024)



Note: Others include Continental AG, Denso, Hyundai, LG, General Electric Company and others
Source: Nexdigm data

ZKW, a subsidiary of LG Electronics since 2018, is another noteworthy player in the global automotive lighting market. The company, with its expertise in premium lighting solutions, supplies high-tech LED and laser headlamps for brands such as BMW and Audi, giving it a stronghold in the European luxury segment. Backed by LG's expertise in electronics, ZKW has also advanced in digital and matrix lighting solutions, aligning with the autonomous driving trend.

Evolution of automotive lighting in the global automotive market

Automotive lighting has progressed from basic lamps to advanced intelligent systems, driven by technology, safety regulations and automaker initiatives worldwide. While early developments focused mainly on visibility, the shift towards halogen, HID and later LED lighting marked turning points that redefined both safety and vehicle design.

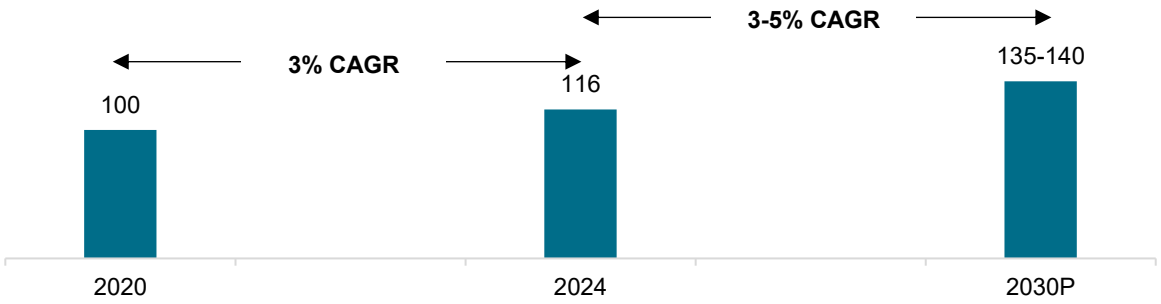
Stages of the global automotive lighting evolution

- **Early stage (pre-1990s):** Halogen lamps dominated, offering basic illumination at low cost. Styling differentiation was limited
- **1990s-2000s:** Xenon/HID lamps emerged, providing brighter, whiter light and improving nighttime visibility
- **2000s:** By the 2000s, xenon headlights expanded into broader segments, with features such as bi-xenon with smart high beam, reducing glare for oncoming drivers
- **2008 onwards:** LEDs gained prominence. They offered superior brightness, lower energy consumption and design flexibility, making them a preferred choice for both premium and mass-market cars
- **2010s:** Intelligent and adaptive systems—automation features such as high beam assist and intelligent front lighting systems (IFLS) emerged, adjusting beams dynamically to maximise driver visibility without dazzling others
- **2020s:** Advanced systems such as matrix LEDs and laser lighting offer adaptive, high-intensity beams. Brands such as BMW, Audi, Mercedes-Benz and Hyundai now integrate these into vehicles, especially EVs, aligning with safety regulations and sustainability goals. Horizon/connected light bars have become more prominent in this decade with OEMs looking to adopt signature lights for the brand and offering customisation and personalisation options for customers
- **Going forward:** The global industry is moving towards smart, connected and sustainable lighting, with integration into ADAS, V2X communication, OLEDs and recyclable materials shaping the next phase

The evolution of automotive lighting reflects a convergence of safety, efficiency and aesthetics, driven by global regulatory standards and consumer demand. As vehicles become smarter and more connected, lighting systems are expected to play a critical role in communication, automation and energy optimisation. With continued innovation and policy support, automotive lighting will remain a key frontier in vehicle design and safety enhancement.

Amidst continued advancements in automotive lighting, the value of lighting content per vehicle in the global PV industry clocked a CAGR of ~3% over 2020-2024. With accelerated advancements in technology, the value of lighting content per vehicle in the global PV industry is projected to rise at a faster CAGR of 3-5% over the next 5-6 years.

Index of trend in the value of lighting content per vehicle in the global PV industry



Note: Values are indexed to CY2020 as 100
Source: Nexdigm data

Russia automotive lighting market

The Russian automotive lighting market has been affected by political instability and economic disruptions over the past few years. The imposition of Western sanctions following geopolitical uncertainties in 2022 led to the exit of many European and Japanese automakers, which severely reduced production volumes and disrupted supply chains for critical lighting components.

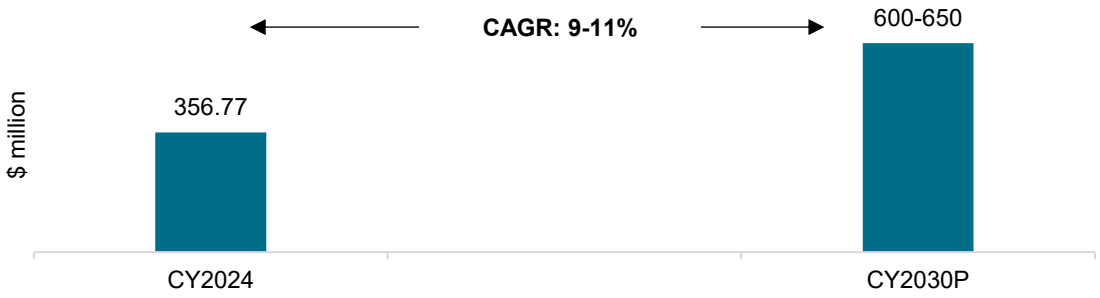
The shortage of imported LED modules, adaptive headlights and electronic control units further intensified the slowdown, while currency depreciation raised the cost of imports, making the segment highly vulnerable in this period.

Despite these challenges, several factors are driving the recovery of the Russian automotive lighting market. Government policies favouring localisation, combined with rising partnerships with Chinese automakers such as Chery, Haval and Geely, have revived demand and supply capacity. Consumer preference is shifting toward SUVs and crossovers, which typically feature higher-value lighting systems, such as LED DRLs – daytime running lights, ambient lighting and adaptive headlights, pushing up average unit prices.

As of calendar year 2024, the market was estimated to have reached $357 million and expected to clock a CAGR of 9-11% between 2024 and 2030, supported by rising domestic production, affordable Chinese imports, and gradual stabilisation of the economy.

The localisation of LED manufacturing and R&D investments in adaptive and energy-efficient systems are expected to be key growth levers. At the same time, rising vehicle electrification in Russia, although slower than in Europe or China, will gradually increase demand for smart and lightweight lighting solutions. While sanctions continue to limit access to Western technology, Russia's pivot to Asian suppliers, including Indian manufacturers and government-backed industrial policies suggest that the market will stabilise and achieve moderate but sustainable growth, reaching around $600-650 million by 2030.

Russia automotive lightings market



Source: Nexdigm data

Competitive profiles

Uno Minda Ltd

Brief profile
The company specialises in the manufacture of auto components for the global and domestic automotive market. It caters to two-wheelers, three-wheelers, PVs, CVs and offroad vehicles and serves ICE and electric/hybrid vehicle segments. Major business segments include switches, lighting, casting, seating and acoustics. It manufactures diverse parts and accessories for motor vehicles such as lighting parts, brakes, gearboxes, axles, road wheels, suspension shock absorbers, radiators, silencers, exhaust pipes, catalysers, clutches, steering wheels, steering columns and steering boxes. Company's manufacturing facilities are in West, North, East and South India near key automotive OEM clusters. Lighting business: Lighting contributed 23% of the overall product mix in fiscal 2025.

Source: Company website, company reports, Crisil Intelligence

Varroc Engineering Ltd

Brief profile
The company offers a diversified range of products, including auto components, polymers products, steel forging and exterior lighting systems. It specialises in designing, developing manufacturing and supplying electrical-electronics, polymers, metallic, exterior lighting systems, advanced driver assistance system (ADAS) and driver monitoring systems (DMS) to original equipment manufacturers. The company caters to major segments, including two-wheelers, three-wheelers, PVs, CVs, off highway and farm vehicles. Company's manufacturing facilities are in West, North and South India near key automotive OEM clusters.

Source: Company website, company reports, Crisil Intelligence

Lumax Industries Ltd

Brief profile
Lumax Industries Ltd (flagship of the DK Jain Group) designs and manufactures end-to-end automotive lighting systems (headlamps, rear combination lamps, fog/aux lamps, signal lamps and PCB assemblies) for PVs, two-wheelers, three-wheelers, and CVs. The company has a long-standing technical partnership with Stanley Electric (Japan) and SL Corporation (Korea). Its manufacturing facilities are in West, North and South India near key automotive OEM clusters.

Source: Company website, company reports, Crisil Intelligence

FIEM Industries Ltd

Brief profile
The company is primarily involved in manufacturing automotive lighting and signaling equipment and rear-view mirrors in India. The major business comes from the two-wheeler segment. The company has a wide range of automotive lighting products, ranging from headlamps, tail lamps, signaling lamps, roof lamps, rear view mirrors, wheel covers, warning triangles, complete rear fender assembly, frame assembly, mudguards, automobile sheets and plastic components, canisters and bank lean angle sensors. Its manufacturing facilities are in West, North and South India near key automotive OEM clusters.

Source: Company website, company reports, Crisil Intelligence

India Japan Lighting Pvt. Ltd

Brief profile
India Japan Lighting Pvt. Ltd. (IJLPL) is a private company specialising in automotive lighting, established as a joint venture between Lucas-TVS Ltd and Koito Manufacturing Company Ltd. Koito acquired the full ownership of the company making IJLPL a 100% subsidiary. IJLPL manufactures headlamps, tail lamps and other lighting components and supplies to leading OEMs of PVs, CVs and two-wheelers. Its manufacturing facilities are in West, North and South India near key automotive OEM clusters.

Source: Company website, company reports, Crisil Intelligence

Marelli Motherson Automotive lighting India Pvt Ltd

Brief profile
Marelli Motherson Automotive Lighting India is a joint venture between Marelli (formerly Magneti Marelli) and Samvardhana Motherson Group (Motherson) and focuses on specific automotive product lines, such as lighting and suspension components. The company designs and manufactures shock absorbers, gas springs, lighting systems and vehicle modules for domestic and international automotive OEMs. The lighting and electronic division, which includes Marelli Motherson Automotive lighting India Pvt Ltd, is a major part of the larger Motherson group and supplies premium/LED exterior lighting, including headlamps, tail lamp, fog lamps and rear combination lamps for PVs and CVs. Its manufacturing facilities are in West and North India near key automotive OEM clusters.

Source: Company website, company reports, Crisil Intelligence

Neolite ZKW Lightings Ltd

Brief profile
The company is an established manufacturer and global supplier of Automotive lighting products and components. The company has an alliance with ZKW group GMBH (which became a subsidiary of LG Electronics in 2018). Founded in 1938 and headquartered in Austria, ZKW group - formerly known as Zizala Lichtsysteme GMBH - is one of the leading players in global automotive lighting industry, known for its expertise in premium lighting solutions and for supplying high-tech LED and laser headlamps to marquee global OEMs such as BMW and Audi. Company's alliance with ZKW grants the company access to advanced technologies and engineering capabilities. The company, Neolite ZKW Lightings, caters to both OEM and aftermarket business in domestic and exports markets having its footprint across all vehicle segments including passenger vehicles, commercial vehicles, two and three-wheelers, tractors and construction equipment. Company offers a wide variety of technologies including advanced technologies like LED projector lamps, LSU based full LED lamps, advanced forward lighting, ADB, matrix headlamps, DRL and connected front and rear lamps, other signaling lamps along with interior lighting products such as ambient lights; as well as conventional technologies such as halogen. Neolite ZKW Lightings is a leading player in the domestic commercial vehicle lighting segment, with a market share of 34.43% in fiscal 2025, catering to the leading OEMs in this segment and is amongst the few leading exporters of automotive lighting products and components from India, exporting to over 50 countries across CIS regions, North America and Western Europe. The company's manufacturing facilities are strategically located near key automotive OEM clusters in North and West India, and with a new facility planned in Kancheepuram, Tamil Nadu company will have a manufacturing footprint across major automotive corridors in the country.

Source: Company website, company reports, Crisil Intelligence

Operating parameter comparison

Operating parameters	Uno Minda				Varroc			
	Q1FY26	FY25	FY24	FY23	Q1FY26	FY25	FY24	FY23
Number of manufacturing facilities	76	76	74	73	37	37	36	36
R&D as percentage of revenue	NA	NA	NA	NA	NA	NA	NA	NA
Number of OE customers	NA	NA	NA	NA	NA	NA	NA	NA
Revenue from operations - domestic and export	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Domestic	89.00%	89.91%	85.98%	85.05%	87.00%	89.12%	87.16%	82.39%
Export	11.00%	10.09%	14.02%	14.95%	13.00%	10.88%	12.84%	17.61%
Revenue from operations - by vehicle segments	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
PV	47.00%	47.00%	54.00%	54.00%	25.00%	21.90%	22.70%	24.70%
CV	4.00%	4.00%	-	-			2.50%	3.80%
Others	1.00%	2.00%	-	-				
2W	46.00%	45.00%	46.00%	46.00%	75.00%	78.10%	74.80%	71.50%
3W	2.00%	2.00%	-	-				
Revenue mix - LED and Non-LED	NA	NA	NA	NA	NA	NA	NA	NA
LED	NA	NA	NA	NA	NA	NA	NA	NA
Non-LED	NA	NA	NA	NA	NA	NA	NA	NA
Revenue mix – by business segments	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
OEM	93.00%	93.00%	93.00%	90.00%	90.00%	91.50%	91.60%	91.40%
Aftermarkets	7.00%	7.00%	7.00%	10.00%	10.00%	8.50%	8.40%	8.60%

Source: Company websites, company reports and Crisil Intelligence

Operating parameters	Lumax Industries				FIEM			
	Q1FY26	FY25	FY24	FY23	Q1FY26	FY25	FY24	FY23
Number of manufacturing facilities	12	12	12	11	9	9	9	9
R&D as percentage of revenue	NA	NA	NA	NA	NA	1.41%	1.15%	1.01%
Number of OE customers	NA	NA	NA	NA	NA	NA	NA	NA
Revenue from operations - domestic and export	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Domestic	NA	NA	NA	NA	NA	98.46%	98.52%	97.02%
Export	NA	NA	NA	NA	NA	1.54%	1.38%	2.98%
Revenue from operations - by vehicle segments	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
PV	65.00%	66.00%	67.00%	66.00%	2.80%*	2.82%*	3.33%*	3.33%*
CV	6.00%	6.00%	6.00%	7.00%	-	-	-	-
Others	-	-	-	-	-	-	-	-
2W	29.00%	28.00%	27.00%	27.00%	97.20%*	97.18%*	96.67%*	96.67%*
3W	-	-	-	-	-	-	-	-
Revenue mix - LED and Non-LED	100.00%	100.00%	100.00%	100.00%	74.64%	73.18%	72.22%	71.87%
LED	61.00%	58.00%	39.00%	35.00%	47.71%*	43.39%*	37.33%*	35.23%*

Operating parameters	Lumax Industries				FIEM			
	Q1FY26	FY25	FY24	FY23	Q1FY26	FY25	FY24	FY23
Non-LED	39.00%	42.00%	61.00%	65.00%	26.93%*	29.79%*	34.89%*	36.64%*
Revenue mix - by business segments	100.00%	100.00%	100.00%	100.00%	97.91%#	98.66%#	98.68%#	97.04%#
OEM	NA	NA	NA	NA	92.79%*	92.99%*	91.64%*	90.16%*
Aftermarkets	NA	NA	NA	NA	5.12%*	5.67%*	7.04%*	6.88%*

*Note: *Based on standalone financials for automotive segment, which contributed (99.72%, 99.77%, 99.62%, 99.59% of the standalone revenue for Q1 FY26, FY25, FY24 and FY23); #OEM and aftermarket split is not available for exports, hence the total is not 100%.*

Source: Company websites, company reports and Crisil Intelligence

Operating parameters	IJLPL				Marelli Motherson Automotive Lighting			
	Q1FY26	FY25	FY24	FY23	Q1FY26	FY25	FY24	FY23
Number of manufacturing facilities	NA	3	3	2	NA	5	5	4
R&D as percentage of revenue	NA	0.73%	0.63%	0.76%	NA	NA	NA	NA
Number of OE customers	NA	NA	NA	NA	NA	NA	NA	NA
Revenue from operations - domestic and exports	100.00%	100.00%	100.00%	100.00%	NA	NA	NA	NA
Domestic	NA	99.93%	99.84%	99.82%	NA	NA	NA	NA
Exports	NA	0.07%	0.16%	0.18%	NA	NA	NA	NA
Revenue from operations - by vehicle segments	NA	NA	100.00%	100.00%	NA	NA	NA	NA
PV	NA	NA	82.00%	75.00%	NA	NA	NA	NA
CV	NA	NA	3.00%	5.00%	NA	NA	NA	NA
Others	NA	NA	-	-	NA	NA	NA	NA
2W	NA	NA	15.00%	20.00%	NA	NA	NA	NA
3W	NA	NA	-	-	NA	NA	NA	NA
Revenue mix - LED and Non-LED	NA	NA	NA	NA	NA	NA	NA	NA
LED	NA	NA	NA	NA	NA	NA	NA	NA
Non-LED	NA	NA	NA	NA	NA	NA	NA	NA
Revenue mix - by business segments	NA	NA	NA	NA	NA	NA	NA	NA
OEM	NA	NA	NA	NA	NA	NA	NA	NA
Aftermarkets	NA	NA	NA	NA	NA	NA	NA	NA

Source: Company websites, company reports and Crisil Intelligence

Operating parameters	Neolite ZKW Lightings			
	Q1FY26	FY25	FY24	FY23
Number of manufacturing facilities	2	2	2	2
R&D as percentage of revenue	2.62%	1.61%	1.15%	1.07%
Number of OEM customers	44	44	39	36
Revenue from operations - domestic and exports	100.00%	100.00%	100.00%	100.00%
Domestic	44.92%	53.65%	65.31%	68.81%
Exports	55.08%	46.35%	34.69%	31.19%
Revenue from operations - by vehicle segments	100%	100%	100%	100%
PV	55.85%	53.73%	37.17%	42.30%
CV	32.82%	32.19%	45.38%	42.77%
Others#	9.65%	11.60%	14.40%	12.08%
2W	0.30%	0.01%	0.00%	0.00%
3W	1.38%	2.47%	3.05%	2.85%
Revenue mix - LED and Non-LED	97.38%*	96.55%*	96.14%*	96.28%*
LED	59.54%	35.33%	46.41%	52.26%
Non-LED	37.85%	61.22%	49.73%	44.02%
Revenue mix - by business segments	97.38%*	96.55%*	96.14%*	96.28%*
OEM	91.07%	87.41%	83.67%	84.78%
Aftermarkets	6.31%	9.14%	12.47%	11.50%

Note: #: Includes ORs (construction equipment and tractors), home lighting and other operating revenue

**: Excluding home lighting and other operating revenue, hence total does not add up to 100%*

Source: Company websites, company reports and Crisil Intelligence

Financial comparison

Parameters	Units	Uno Minda				Varroc			
		Q1 FY26	FY25	FY24	FY23	Q1 FY26	FY25	FY24	FY23
Revenue from operations	Rs Million	44,890.90	1,67,746.10	1,40,308.90	1,12,364.90	20,275.51	81,540.84	75,519.37	68,912.13
Gross profit	Rs Million	16,530.80	59,065.00	49,671.30	40,120.30	7,562.96	29,448.64	28,186.10	24,606.66
Gross profit margin	%	36.82%	35.21%	35.40%	35.71%	37.30%	36.12%	37.32%	35.71%
Operating EBITDA	Rs Million	5,431.20	18,737.80	15,852.60	12,419.80	1,945.71	7,887.55	7,735.62	5,748.34
Operating EBITDA margin	%	12.10%	11.17%	11.30%	11.05%	9.60%	9.67%	10.24%	8.34%
PAT	Rs Million	3,090.30	10,205.70	9,247.10	7,002.30	1,074.20	696.76	5,529.95	387.89
PAT margin	%	6.88%	6.08%	6.59%	6.23%	5.30%	0.85%	7.32%	0.56%
Total equity (including NCI)	Rs Million	NA	61,134.20	52,649.80	44,342.30	16,623.98	15,979.36	15,261.83	10,041.52
Net debt	Rs Million	NA	20,918.70	13,194.80	10,778.10	NA	7,876.23	10,822.49	13,251.09
Net debt to operating EBITDA	Times	NA	1.12	0.83	0.87	NA	1.00	1.40	2.31
Capital gearing ratio	Times	NA	0.25	0.20	0.20	NA	0.33	0.41	0.57
Return on average equity (ROE)	%	NA	17.94%	19.07%	17.08%	NA	4.46%	43.71%	2.57%
Return on average capital employed (ROCE)	%	NA	21.63%	23.10%	21.29%	NA	19.50%	19.60%	8.99%
Basic EPS	Rs per share	5.06	16.42	15.26	11.42	6.88	4.01	35.80	2.36

Note: Below mentioned formulas have been used to calculate the above ratios.

Source: Company reports, Ministry of Corporate Affairs, Crisil Intelligence

Parameters	Units	FIEM				Lumax Industries			
		Q1 FY26	FY25	FY24	FY23	Q1 FY26	FY25	FY24	FY23
Revenue from operations	Rs Million	6,588.97	24,226.12	20,287.81	18,480.60	9,225.22	34,003.92	26,365.95	23,195.23
Gross profit	Rs Million	2,571.57	9,201.28	7,861.26	7,166.27	3,088.11	10,896.24	9,193.53	8,082.44
Gross profit margin	%	39.03%	37.98%	38.75%	38.78%	33.47%	32.04%	34.87%	34.85%
Operating EBITDA	Rs Million	894.83	3,221.97	2,686.84	2,486.36	818.13	2,793.80	2,303.96	2,074.58
Operating EBITDA margin	%	13.58%	13.30%	13.24%	13.45%	8.87%	8.22%	8.74%	8.94%
PAT	Rs Million	575.20	2,049.20	1,657.05	1,398.32	361.85	1,399.09	1,110.18	1,030.80
PAT margin	%	8.73%	8.46%	8.17%	7.57%	3.92%	4.11%	4.21%	4.44%
Total equity (including NCI)	Rs Million	NA	10,381.91	8,869.17	7,611.65	NA	7,742.84	6,715.48	5,835.79
Net debt	Rs Million	NA	-2,984.40	-2,061.17	-1,831.23	NA	7,641.66	5,518.99	3,754.41
Net debt to operating EBITDA	Times	NA	-0.93	-0.77	-0.74	NA	2.74	2.40	1.81
Capital gearing ratio	Times	NA	-0.40	-0.30	-0.32	NA	0.50	0.45	0.39
Return on average equity (ROE)	%	NA	21.29%	20.11%	19.93%	NA	19.35%	17.69%	19.17%
Return on average capital employed (ROCE)	%	NA	28.08%	26.98%	26.83%	NA	16.63%	17.41%	19.28%
Basic EPS	Rs per share	21.85	77.86	62.96	53.13	38.71	149.67	118.77	110.27

Note: Below mentioned formulas have been used to calculate the above ratios.

Source: Company reports, Ministry of Corporate Affairs, Crisil Intelligence

Parameters	Units	IJLPL				Marelli Motherson Automotive Lighting			
		Q1 FY26	FY25	FY24	FY23	Q1 FY26	FY25	FY24	FY23
Revenue from operations	Rs Million	NA	16,747.96	16,180.96	13,667.13	NA	21,198.22	17,366.74	15,305.65
Gross profit	Rs Million	NA	5,316.02	4,692.00	4,135.09	NA	7,728.77	4,353.38	4,616.65
Gross profit margin	%	NA	31.74%	29.00%	30.26%	NA	36.46%	25.07%	30.16%
Operating EBITDA	Rs Million	NA	1,843.11	1,525.93	1,410.97	NA	4,906.08	3,814.83	3,048.70
Operating EBITDA margin	%	NA	11.00%	9.43%	10.32%	NA	23.14%	21.97%	19.92%
PAT	Rs Million	NA	1,429.58	928.01	1,345.14	NA	2,839.24	2,173.75	1,817.58
PAT margin	%	NA	8.54%	5.74%	9.84%	NA	13.39%	12.52%	11.88%
Total equity (including NCI)	Rs Million	NA	10,411.70	8,989.84	8,066.27	NA	8,762.76	6,725.99	5,606.29
Net debt	Rs Million	NA	-2,110.48	-1,990.90	-1,427.36	NA	-1,631.56	-981.89	-1,825.36
Net debt to operating EBITDA	Times	NA	-1.15	-1.30	-1.01	NA	-0.33	-0.26	-0.60
Capital gearing ratio	Times	NA	-0.25	-0.28	-0.21	NA	-0.23	-0.17	-0.48
Return on average equity (ROE)	%	NA	14.74%	10.88%	18.20%	NA	36.66%	35.25%	35.31%
Return on average capital employed (ROCE)	%	NA	16.86%	14.45%	11.75%	NA	53.56%	52.01%	47.39%
Basic EPS	Rs per share	NA	3.49	2.26	3.28	NA	18.93	14.49	12.12

Note: Below mentioned formulas have been used to calculate the above ratios.

Source: Company reports, Ministry of Corporate Affairs, Crisil Intelligence

Parameters	Units	Neolite ZKW Lightings			
		Q1 FY26	FY25	FY24	FY23
Revenue from operations	Rs Million	1,248.55	5,120.75	4,029.87	4,053.80
Gross profit	Rs Million	805.00	2,518.21	1,821.09	1,534.07
Gross profit margin	%	64.47%	49.18%	45.19%	37.84%
Operating EBITDA	Rs Million	368.44	964.60	504.81	415.54
Operating EBITDA margin	%	29.51%	18.84%	12.53%	10.25%
PAT	Rs Million	222.61	528.24	190.54	155.85
PAT margin	%	17.83%	10.32%	4.73%	3.84%
Total equity (including NCI)	Rs Million	2,035.48	1,819.07	1,297.28	1,106.88
Net debt	Rs Million	603.22	599.21	548.57	856.41
Net debt to operating EBITDA	Times	NA	0.62	1.09	2.06
Capital gearing ratio	Times	0.23	0.25	0.30	0.44
Return on average equity (ROE)	%	NA	33.90%	15.85%	15.14%
Return on average capital employed (ROCE)	%	NA	31.12%	15.54%	NA
Basic EPS	Rs per share	3.77	8.96	3.23	2.64

Note: Below mentioned formulas have been used to calculate the above ratios.

Source: Company reports, Ministry of Corporate Affairs, Crisil Intelligence

Formulas used:

Note: Financials for Uno Minda, Varroc, Lumax Industries and FIEM are based on consolidated financial statements. Financials for IJLPL and Marelli Motherson Automotive Lighting are based on standalone financial statements. Financials for Neolite ZKW Lightings are based on restated financial statements.

Operating KPIs

PARAMETER	DEFINITION
Number of manufacturing facilities	Represents the total count of the company's manufacturing facilities, both in India and overseas, as at the end of the reporting period.
R&D as % of revenue from operations	Represents total revenue expenditure incurred on research and development activities as a proportion of revenue from operations for the reporting period
Number of OEM customers	Represents number of relationships with OEMs across segments for the period.
Revenue from operations - Domestic and Exports	Represents the share of revenue from operations earned from customers in India and from exports during the fiscal
Revenue from operations - by vehicle segments	Computed as the share of revenue from operations of automobile segments during the fiscal
Revenue mix – LED and Non-LED	Represents the share of revenue coming from LED technology and non-LED technology respectively as a % of revenue from operations
Revenue mix – by business segments	Represents the share of revenue from operations generated from OEMs and aftermarkets during the fiscal

Financial KPIs

PARAMETER	DEFINITION
Revenue from operations	Computed as the sum of Revenue of products, revenue of services and revenue from other operating income
Gross Profit	Gross Profit is calculated as Revenue from operations minus Cost of goods sold. Cost of goods sold is computed as sum of Cost of raw material and components consumed, Purchase of stock-in-trade and changes in inventory of finished goods, work in progress and stock in trade
Gross profit margin	Computed by dividing Gross Profit with Revenue from operations * 100
Operating EBITDA	Operating EBITDA is calculated as Profit / (Loss) before share of profit / loss of Joint Ventures & Associates, Exceptional items and Tax minus other Income plus Finance Costs and Depreciation & Amortization expense
Operating EBITDA margin	Computed by dividing Operating EBITDA with revenue from operations * 100
PAT	Profit for the year/period without considering other comprehensive income
PAT margin	Profit for the year/period without considering other comprehensive income divided by revenue from operations * 100
Total equity (including NCI)	Total Equity including Non-Controlling Interests as per financial information
Net Debt	Computed as sum of long-term borrowing, short term borrowings, interest accrued and not due and interest accrued and due minus cash and cash equivalents and bank balances other than cash and cash equivalents, excluding any deposits held as lien or margin money.
Net debt to operating EBITDA	Computed as Net Debt divided by Operating EBITDA
Capital gearing Ratio	Computed as Net Debt divided by Sum of Total Equity and Net Debt
Return on average equity (ROE)	Computed by dividing PAT minus preference dividend, if any by the Average Total Equity * 100.

PARAMETER	DEFINITION
	Average Total Equity is calculated as the average of the opening and closing balances of Total Equity.
Return on average capital employed (ROCE)	Computed as EBIT as a % of average capital employed. EBIT is calculated by adding finance cost to Profit / (Loss) before Exceptional items and Tax (but after share of profit / loss of Joint Ventures & Associates). Average Capital Employed is calculated by averaging the opening and closing balance of capital employed. Capital employed is calculated by adding Tangible Net Worth, Total Debt and Deferred Tax Liability. Tangible Net worth is computed as Total Equity minus Net Intangible assets and Net Right of use assets. Total Debt is computed as sum of long-term borrowings, short term borrowings, interest accrued and not due, interest accrued and due and total Lease Liabilities.
Basic EPS	Computed as profit for the year attributable to equity holders of the company divided by the weighted average number of equity shares outstanding

In terms of revenue from operations, Neolite ZKW Lightings was one of the fastest growing companies in fiscal 2025, registering a y-o-y growth of 27.07% as compared to the 16.91% average growth clocked by above mentioned peers during the same period.

Compared to the peers, company had the highest gross profit margin of 49.18% and 45.19% in fiscal 2025 and fiscal 2024 respectively and its gross profit grew at a CAGR of 28.12% between fiscal 2023 and fiscal 2025 - one of the fastest amongst the mentioned peers and the fastest growth amongst the listed peers.

The company's operating EBITDA margin stood at 18.84% in fiscal 2025 and 12.53% in fiscal 2024, surpassing the peer averages of 12.75% and 12.49% during the same periods, respectively. Notably, the company's fiscal 2025 margin was the highest among its above listed peers.

Moreover, the company clocked the highest EBITDA growth at 52.36% CAGR during fiscal 2023 to fiscal 2025 period.

Company’s PAT margin of 10.32% in fiscal 2025 was higher than the peer average of 6.91% and was the second highest amongst the above peers considered and highest amongst the listed peers.

Moreover, company’s return ratios of ROE and ROCE at 33.90% and 31.12% respectively were higher than peer averages of 19.07% and 26.04% during fiscal 2025. The ratios were 2nd highest amongst the considered peers and highest amongst the listed players.

During fiscal 2025, amongst the above listed peers, Neolite ZKW Lightings maintained the second lowest capital gearing ratio of 0.25 as well as net debt to operating EBITDA ratio of 0.62.

Threats and challenges for automotive lighting manufacturers

Players in the Indian Automotive Lighting industry, such as Neolite ZKW Lightings, Lumax Industries, Uno Minda, and Varroc, face a variety of threats and challenges.

Threats

- **Factors affecting automotive sales:**
  - **Economic slowdowns:** Moderation in GDP growth, elevated inflation and disruptions in rural income due to below-normal monsoons may adversely impact the growth of underlying end-use automotive segments
  - **Inherent cyclicity of the domestic automotive sales:** The automotive industry has close links with GDP growth and business cycles, impacting incomes of probable customers thereby making the industry susceptible to these changes
  - **Policy uncertainty:** Ad hoc changes in EV subsidies (for instance, FAME) and inconsistent state-level incentives impact the pace of electrification
  - **Infrastructure development:** Reduction in the pace of infrastructure development may have a negative impact on sales of CVs, construction equipment and three wheelers. Moreover, expansion in charging infrastructure is one of the key drivers of electrification
  - **Rising acquisition costs:** Price increases due to input cost inflation and lack of economies of scale and uncertainty around imported component costs continue to affect affordability
- **Global competition:** The Indian automotive lighting market is becoming increasingly competitive with the entry of global players, which can lead to a decline in market share for local manufacturers
- **Trade wars and tariffs:** Trade tensions and tariffs imposed by countries such as the US, China, and the EU can impact the export-oriented Indian automotive lighting industry, making it challenging to maintain competitiveness

Challenges

- **Supply chain management:** Managing a complex supply chain, including sourcing raw materials, components and electronics, can be a challenge, particularly in the context of global trade uncertainties. Global events such as the pandemic or geopolitical tensions disrupt the supply of critical raw materials and components
- **Cost competitiveness:** Indian manufacturers must maintain cost competitiveness to remain attractive to OEMs and tier-1 suppliers, while also ensuring profitability
- **Skilled labour and talent acquisition:** Attracting and retaining skilled labour, particularly in areas such as R&D, design and engineering can be a challenge in the Indian automotive lighting industry
- **Environmental and sustainability concerns:** Manufacturers must address environmental and sustainability concerns such as reducing energy consumption and waste management
- **Intensifying competition:** New entrants and portfolio expansions by legacy players intensifies competition, making customer acquisition challenging

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Crisil Intelligence is a leading provider of research, consulting, risk solutions and advanced data analytics, serving clients across government, private and public enterprises. We leverage our expertise in data-driven insights and strong benchmarking capabilities to help clients navigate complex external ecosystems, identify opportunities and mitigate risks. By combining cutting-edge analytics, machine learning and AI capabilities with deep industry knowledge, we empower our clients to make informed decisions, drive business growth and build resilient capacities.

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About Crisil

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