Research

CRISIL
An S&P Global Company

Assessment of Indian and Global markets for specific precision engineered components in tools & hardware and auto components industry

JK Files & Engineering Limited

December 2021

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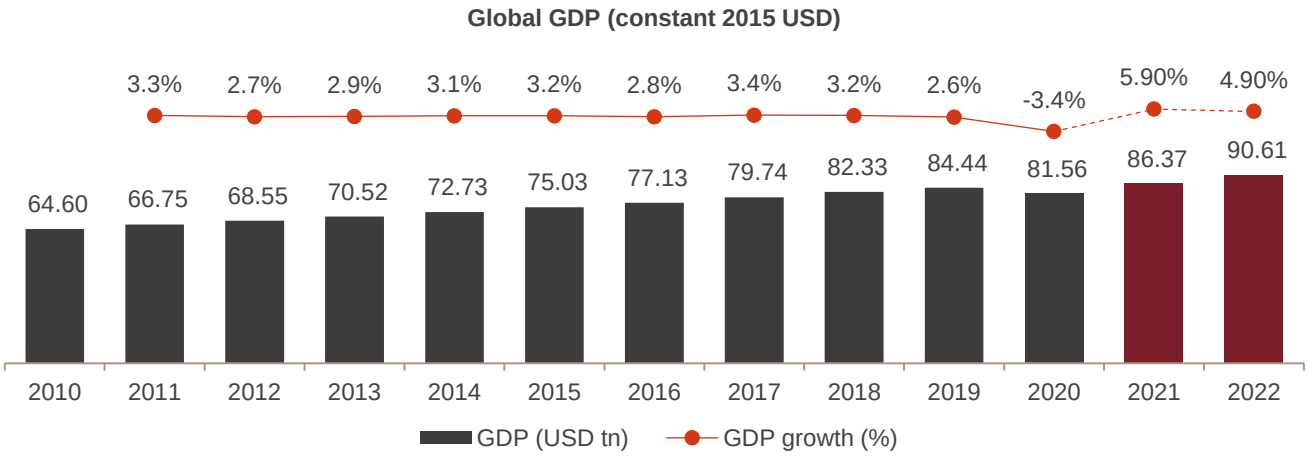
1 Global macroeconomic overview



Source: The World Bank, International Monetary Fund

- The global economy, though recovering, has been impacted by new Covid-19 variants (e.g. delta), disparities in vaccine access in low-income countries, tight financing conditions in emerging and developing economies, supply-chain disruptions, and higher commodity prices.
- Global gross domestic product (GDP) growth is projected at 5.9% for 2021 and 4.9% for 2022. Beyond 2022, it is forecast to moderate to about 3.3% over the medium term.
- Advanced-economy output is forecast to exceed pre-pandemic medium-term projections, largely reflecting sizeable anticipated further policy support in the US. By contrast, persistent output losses are anticipated for the emerging- and developing-economy group due to slower vaccine rollouts and generally less government support than advanced economies.
- Globally, Asia-Pacific is expected to perform better than other regions in the coming years.

Europe

- An increasingly resilient economic recovery is taking hold in Europe, aided by gradual increases in vaccination rates (highest share of fully vaccinated people in the world) and strong macroeconomic policies.
- Advanced European economies are forecast to expand by 5.2% and emerging European economies by 6% in 2021. The recovery is expected to consolidate in 2022, with growth forecast at 4.4% in advanced European economies and 3.6% in emerging European economies. Growth is expected to be supported by an improving labour market, still high savings, favourable financing conditions and the full deployment of the Recovery and Resilience Fund (RRF).
- The household saving rate, which jumped in 2020, is receding and consumption is growing in tandem with better income prospects, signalling higher consumer spending as compared to last year.
- Surging energy prices, most notably for natural gas and electricity, are also expected to dampen the growth momentum in the short term. After falling sharply in 2020, energy prices have increased at a tumultuous pace over the last month and are now above pre-pandemic levels.

North America

- The US economy has cooled somewhat but remains resilient. It is expected to grow 5.7% in 2021 and 4.1% in 2022, supported by a stimulus-driven surge in demand.
- Increased savings from the various COVID-19 relief packages have helped lift personal income and savings rates dramatically. The personal saving rate, at 9.6% in July 2021, is well over its precrisis historical average back to 1980 of 7.3% and is expected to drive retail sales in the near term.
- However, persisting covid-19 cases, tapering of asset purchases by the US Federal Reserve (the process will see reductions of $15 billion each month - $10 billion in Treasurys and $5 billion in mortgage-backed securities from the current $120 billion a month that the Fed is buying), and supply-chain risks could impact the recovery.

Latin America

- Real GDP in Latin America is projected to grow 6.3% in 2021, followed by more moderate growth of 3% in 2022.
- GDP growth in 2021 reflects a rebound from the collapse in 2020 and is broad-based, encompassing consumption, investment and exports, partly offset by the increase in imports associated with the recovery in domestic demand.
- External demand is an important growth driver for commodity exporters in South America. US demand is expected to support growth especially in Mexico and Central America — Central America is additionally supported by robust remittances.
- The main risks include rising domestic inflation, further bouts of social and political instability, faster-than-expected U.S. monetary policy normalization, and the ramifications from a potential sharp deterioration in China's property market This could play out through three channels: first, by tightening credit conditions for Chinese companies that invest in infrastructure in Latin America; second, by having a negative impact on commodities, by reducing the outlook of Chinese investment on infrastructure, which relies heavily on industrial metals; and third, by increasing risk aversion toward emerging market assets. The emergence of more contagious COVID-19 variants that push governments to impose strict lockdowns will remain a risk for some time.
- Argentina is expected to grow at 7.2% in 2021 and 2.1% in 2022 and will recover to pre-covid levels only be the end of 2022. Brazil is expected to grow at 5.1% in 2021 and 1.8% in 2022 due to higher inflation and tighter monetary policy. Chile is expected to grow at 9% in 2021 and 2.5% in 2022. Pension withdrawals in 2021 led to healthy demand for consumer durables. Colombia is expected to grow at 8% in 2021 and 3% in 2022. Opening up of travel related services and energy dependent services is expected to drive demand for oil exports. Mexico is expected to grow at 6.2% in 2021 and 2.9% in 2022 supported by a strong US recovery, domestic consumption from higher remittances and manufacturing exports. Peru is expected to grow by 12% in 2021 and 3% in 2022 and is expected to reach pre-covid levels by mid-2022.

Africa

- Africa’s economy is set to grow 3.7% in 2021 and 3.8% in 2022, due to sharp improvement in global trade and commodity prices.
- East Africa was the only region on the continent to have avoided a recession in 2020, thanks to agriculture, sustained public spending on large infrastructure projects, and increased regional economic integration. Expansion in the region is expected to accelerate to 4.1% in 2021, 4.9% in 2022 and 5.6% the following year on account of rising commodity prices and growing economic diversification. While the sustained spending on development projects kept output ticking, the flip side is that East African nations’ fiscal deficits widened considerably in 2020.

- Southern Africa is the region that was hardest hit by the pandemic, with an economic contraction of 7.0 percent in 2020. It is projected to grow by 3.2 percent in 2021 and 2.4 percent in 2022. South Africa's economy is projected to grow 5% in 2021 on the back of better performance in services, industry and agriculture, following better-than-expected growth in the first half owing to structural reforms. However, growth is expected to decelerate to 2.2% in 2022 on account of social unrest and limited scope for further reforms.
- Nigeria's economy is forecast to grow 2.6% in 2021, driven by recovery in services and non-oil sectors and higher oil prices.
- Sub-Saharan Africa's economy is expected to grow by 3.3% this year and 3.5% in 2022, buoyed by rising commodity prices, the lifting of some anti-coronavirus restrictions and a pick-up in global trade
- Africa's tourism-dependent countries will see a long road to economic recovery given the subdued global tourism industry.

Asia

- Asia-Pacific is set to remain the fastest growing region in the world with its economy projected to grow 6.5% in 2021, led by China and India.
- China's economy is projected to grow 8.0% in 2021, but the recovery remains unbalanced because private consumption continues to lag amid repeated Covid 19 outbreaks and significant fiscal-policy tightening.
- India's economy is forecast to grow 9.5% in 2021, supported by favourable external conditions and monetary and fiscal policy accommodation.

Impact of the pandemic on economies

- Lower economic activity due to lockdowns and other restrictions led to revenue loss for governments globally in 2020, causing severe fiscal challenges. Advanced economies are recovering faster from the pandemic than low-income countries, driven by greater access to vaccines and government support.
- There has been a broad rise in core inflation and food prices across economies, and high unemployment continues to be a concern. According to the ILO, around 220 million people are expected to remain unemployed globally in 2021, while the global unemployment rate may reach 6.3 per cent, falling to only 5.7 in 2022, which still would be above the pre-pandemic level of 5.4 per cent registered in 2019.
- Against the background of the global labour market distress, many developed economies, including Australia, Canada, the United States, and numerous economies in Europe, are confronted with acute labour shortages in specific sectors (such as manufacturing due to huge backlog of orders, suspension of production activity, etc.)
- Supply chain disruptions have been a constant challenge for companies since the pandemic with commodity prices rebounding, high shipping rates, scarcity of key input materials, etc. impacting the recovery of industries globally

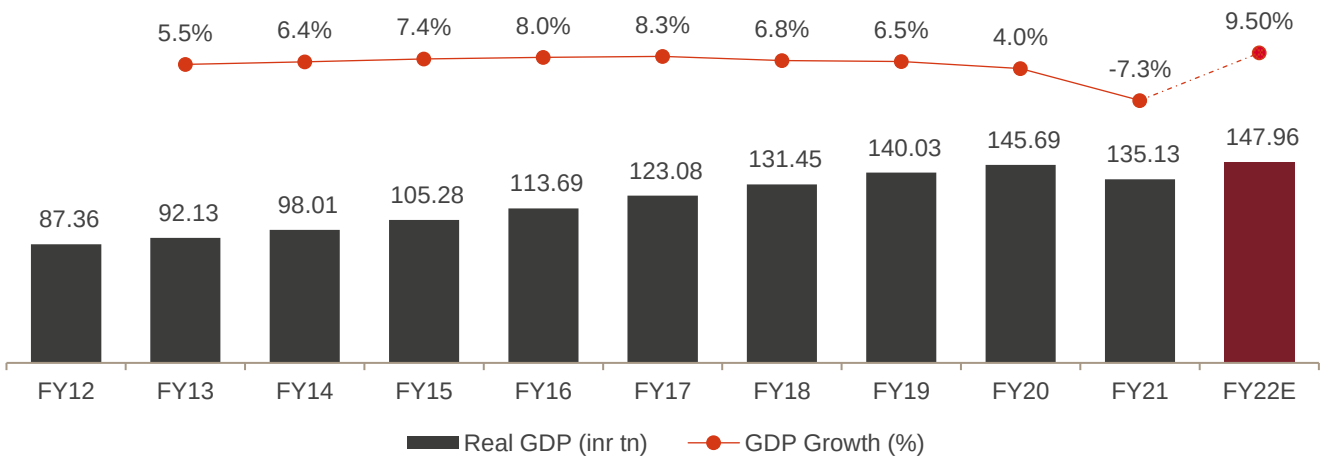
2 Domestic macroeconomic trend

2.1 India's GDP review and outlook

In 2015, the Union Ministry of Statistics and Programme Implementation changed the base year for calculating India's gross domestic product (GDP) to fiscal 2012 from fiscal 2005. Based on this, the country's GDP rose at 6.6% CAGR between fiscals 2012 and 2020, to Rs 145.6 trillion.

In fiscal 2020, though, it contracted to 4.0% from 6.5% in fiscal 2019. The print worsened in fiscal 2021, with the GDP declining -7.3% as pressure from an already slowing economy got aggravated by challenges heaped by the Covid-19 pandemic.

India's GDP trend



E: Estimated

Source: CRISIL Research, CSO, CEIC

While real GDP grew 20.1% on-year in the first quarter of fiscal 2022 as per the National Statistical Office data, it was purely base effect driven. Sequentially, real GDP contracted a sharp 16.9% in the quarter, impacted by a severe second wave of Covid-19 infections.

On-year demand-side real GDP growth

At constant 2011-12 prices	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
Private consumption	7.3%	6.4%	7.9%	8.1%	6.2%	7.6%	5.5%	-9.1%
Government consumption	0.6%	7.6%	7.5%	6.1%	11.9%	6.3%	7.9%	2.9%
Gross fixed capital formation	1.6%	2.6%	6.5%	8.5%	7.8%	9.9%	5.4%	-10.8%
Exports	7.8%	1.8%	-5.6%	5.0%	4.6%	12.3%	-3.3%	-4.7%
Imports	-8.1%	0.9%	-5.9%	4.4%	17.4%	8.6%	-0.8%	-13.6%

Source: CRISIL Research, CSO, CEIC

On the supply side, agriculture and allied sectors sustained momentum, while industry and services were severely impacted by the pandemic in fiscal 2021.

On-year supply-side gross value added by economic activity

At basic prices	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
Agriculture and allied	5.6%	-0.2%	0.6%	6.8%	6.6%	2.6%	4.3%	3.6%
Industry*	3.8%	7.0%	9.6%	7.7%	5.9%	5.3%	-1.2%	-7.0%
Manufacturing	5.0%	7.9%	13.1%	7.9%	7.5%	5.3%	-2.4%	-7.2%
Construction	2.7%	4.3%	3.6%	5.9%	5.2%	6.3%	1.0%	-8.6%
Services^	7.7%	9.8%	9.4%	8.5%	6.3%	7.2%	7.2%	-8.4%

** Industry includes mining and quarrying, manufacturing, electricity, gas, water supply and other utility, and construction*

^ Services include those related to trade, hotels, transport, communication, broadcasting, finance, real estate, public administration, defence, and professional and other services

Source: CRISIL Research, CSO, CEIC

That said, continuous improvement in most high-frequency indicators since June 2021 suggests that the economy is clearly moving past the impact of the second wave with the pace of vaccination gathering pace. Real GDP growth is projected to end fiscal 2022 with an expansion of 9.5%.

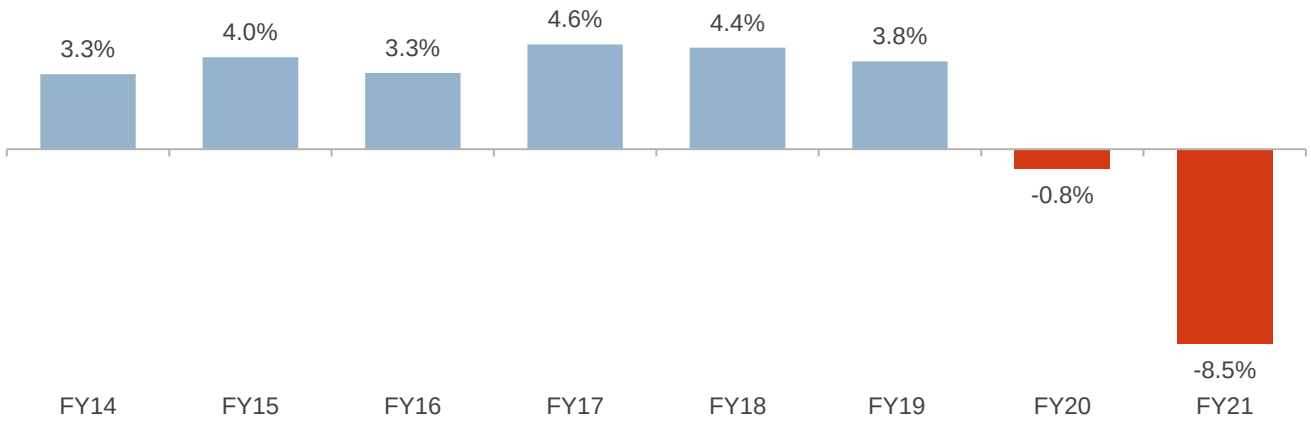
Factors that will contribute to the rebound are:

- Improving performance of contact-based services, which were hit the hardest
- Uptick in exports owing to healthy global demand as well as green shoots in private capital expenditure, especially in core industries such as steel and cement, and some push from the Production-Linked Incentive scheme in sectors such as pharmaceuticals, mobile and IT hardware. However, investments would still heavily depend on government capital expenditure
- Continued easing of financial conditions in the Indian economy, with ample liquidity

2.2 Performance of key macroeconomic indicators

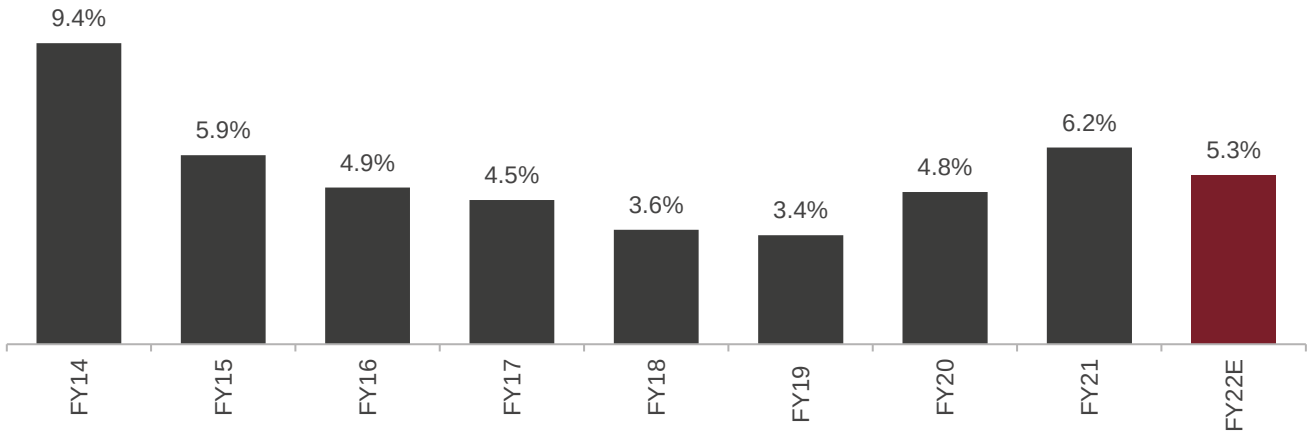
- Agriculture was the silver lining in fiscal 2021, while contact-based services, manufacturing, construction were hit hard as lockdowns impacted the urban economy. On the other hand, the rural economy, which employs over 50% of India's population was shielded from the first wave, growing 3.4% on-year even as the overall economy contracted
- One of biggest policy challenges in the fiscal 2021 was the sustained increase in inflation, while the economy negotiated a deep recession

Index of Industrial Production trend (Growth %)



Source: CRISIL Research, CSO, CEIC

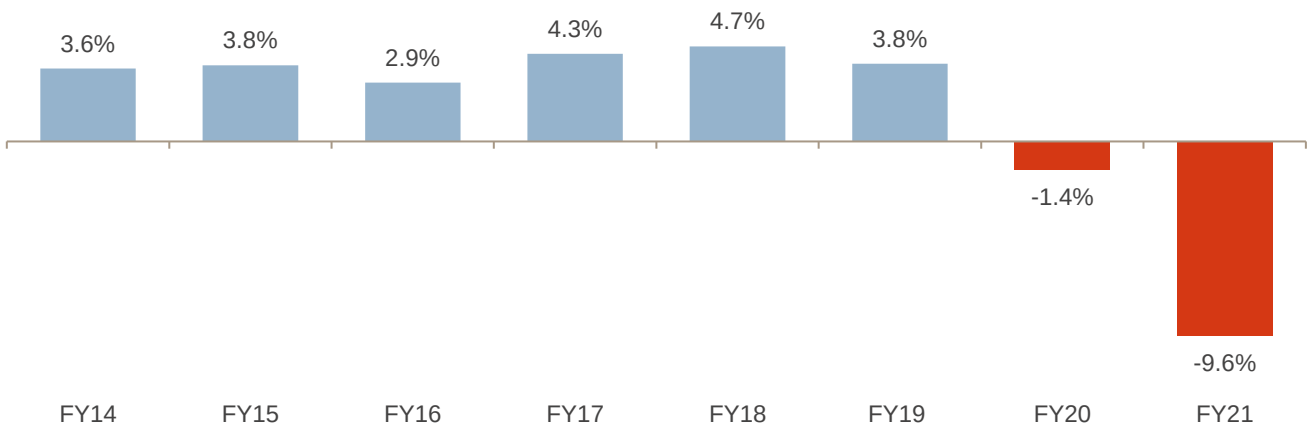
Consumer price index Inflation trend



E: Estimated

Source: CRISIL Research, CSO, CEIC

Manufacturing trend (Growth %)

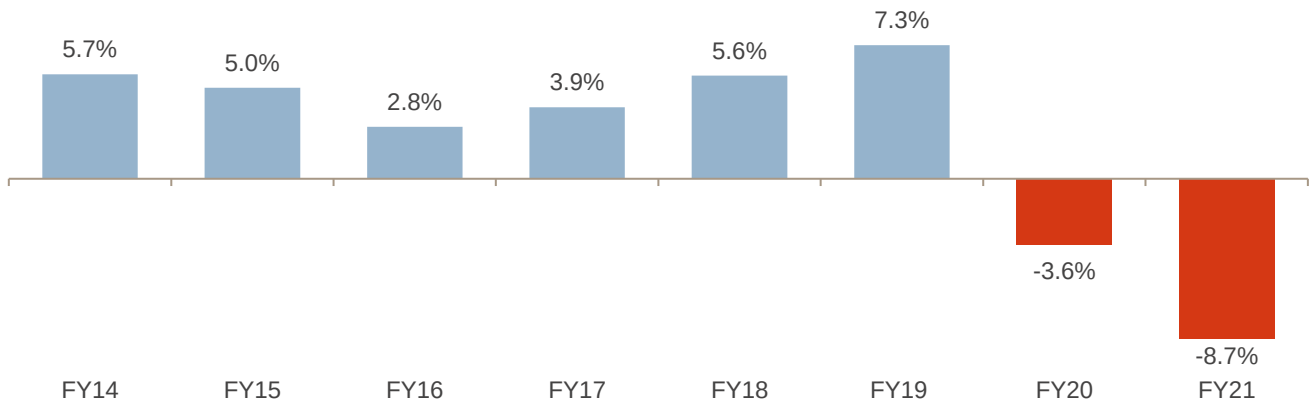


Source: CRISIL Research, CSO, CEIC

2.3 Performance of construction parameters

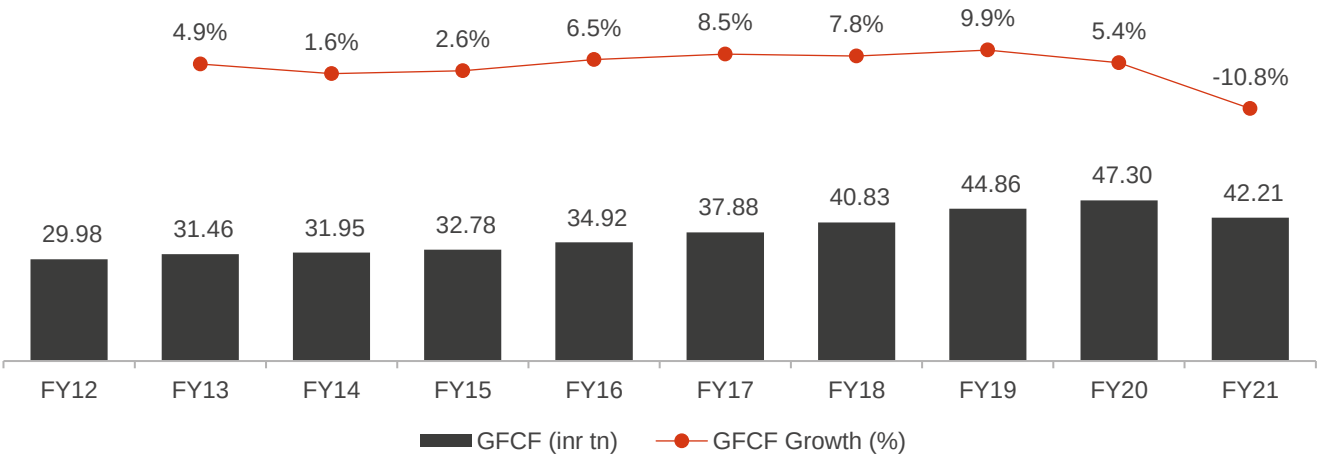
- Construction spends in fiscal 2022 are expected to rise 25-30% on year surpassing pre-Covid levels post an 16-20% decline in fiscal 2021 which had seen the sector set back to fiscal 2017 levels. This growth will be led by recovery in building construction and healthy growth in infrastructure projects (led by roads and followed by railways). Industrial investments are expected to rise by 30-35% in fiscal 2022 led by deferred capex, time bound PLI schemes, healthy operating margins, and stronger than expected pickup in demand.
- The total budgetary allocation on capital expenditure in infrastructure for FY2021-22 saw a 20% rise over the revised estimates for FY 2020-21 to Rs 5.64 lakh crore with roads and railways being the biggest beneficiaries.
- The government has announced PLI schemes covering electronics manufacturing (~Rs 41,000 Cr between 2021-26), automobiles & auto components (~Rs 26,000 Cr between 2023-28), white goods (~Rs 6,200 Cr between 2022-29), solar PV modules, specialty steel, textiles, etc. to boost India's manufacturing industry. Tools and hardware are widely used in the manufacturing of automobiles, electronics, white goods, etc. and is expected to grow in tandem with these sectors.

Infrastructure and construction goods trend (Growth %)



Source: CRISIL Research, CSO, CEIC

GFCF trend



Source: CRISIL Research, CSO, CEIC

2.4 Impact of Covid-19 on the Indian economy

- The Indian economy was severely impacted in fiscal 2021, with rising unemployment, widening income inequality, sharp fall in household incomes, and declining consumption
- However, the economy has recovered swiftly with the government utilising fiscal, monetary and health levers, and owing to healthy pace of vaccinations. While the global economy is expected to grow by 6.0% in 2021, the Indian economy is expected to expand 9.5% (fiscal 2022)
- The large stimulus packages announced by developed countries and the aggressive vaccination drives has helped Indian manufacturers increase their exports. India recorded its highest exports in July 2021 at $35.4 bn vs $23.7 bn and $26.2 bn in July 2020 and July 2019 respectively due to higher global demand.
- On the domestic front, activity in many sectors, including agriculture, automobile, construction, and retail, has gained momentum; only a few sectors, high contact-based sectors, such as transport, tourism and hospitality, remain weak. With most of the high-frequency indicators reaching pre-covid levels, consumer propensity to spend is increasing as evident from the GST collections which stood at Rs 1.3 lac crore in October 2021. Similarly, retail sales have recovered to their pre-covid levels with consumer durables, electronics, food and groceries and QSR segments reporting healthy growth. The automobile sector which is constrained by production challenges is expected to witness a V shaped recovery on account of the high order backlog.
- Supply chain disruptions caused during the pandemic has led to a ‘China plus one’ strategy among global companies. As these companies look to enhance supply chain resilience by diversifying manufacturing into other countries, India stands as an attractive option owing to its strategic location, large domestic market, skilled manpower, and low labour cost. The Indian government has been focusing on making India an attractive investment destination for global companies through various initiatives such as Atmanirbhar Bharat, PLI, etc. in order to encourage domestic manufacturing. Among 190 countries, India ranked 63rd in ease of doing Business 2020.

3 Indian tools and hardware industry

3.1 Overview

The tools and hardware (T&H) industry includes all types of tools used in daily activities and industrial applications. Products are broadly divided into steel files, cutting tools, hand tools, power tools and power tool accessories.

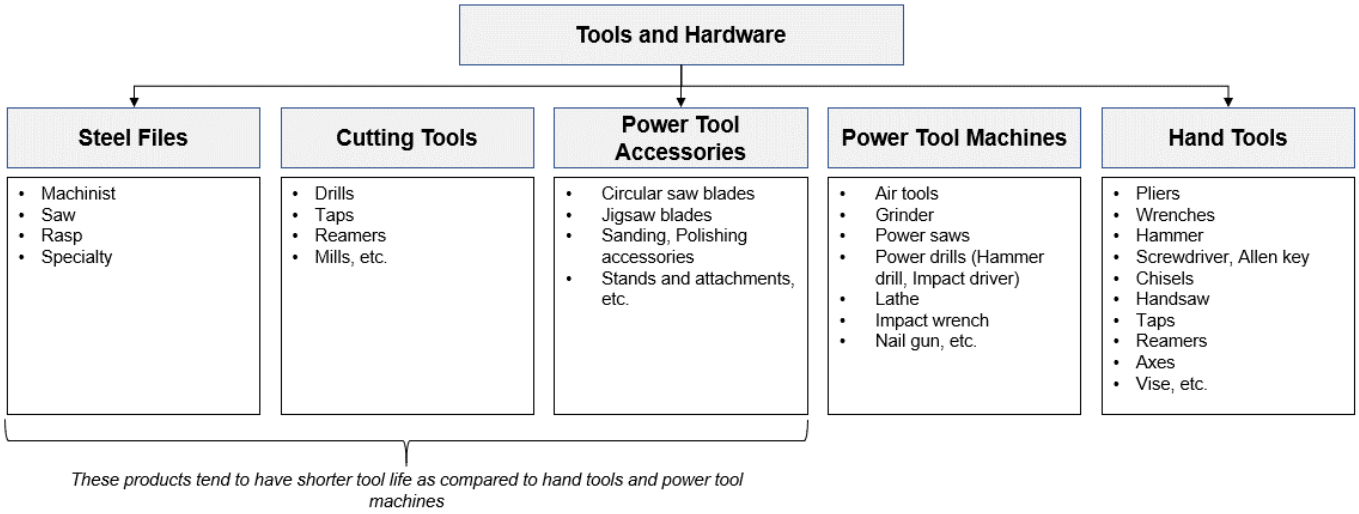
A file is a tool used to remove fine amounts of material from a work piece. It is predominantly used in metalworking, woodworking, and similar trade tasks in engineering, automotive, construction, defense, jewelry, watchmaking, agriculture, carpentry, fabrication, masonry, and forestry.

A cutting tool is used to remove excess layer of material from the workpiece by shearing during machining in order to obtain desired shape, size and accuracy.

A hand tool is any tool that is powered by hand such as wrenches, pliers, cutters, files, striking tools, struck or hammered tools, screwdrivers, vises, clamps, snips, saws, and knives.

A power tool is a tool actuated by an additional power source and mechanism. The most common types of power tools use electric motors. Power tools are used in industry, construction, driving (fasteners), drilling, cutting, shaping, sanding, grinding, routing, polishing, painting, heating, and more. Drills, screwdrivers, and router bits, abrasives wheels, saw blades, chippers and threading products are some of the commonly used power tool accessories.

The classification of T&H by products is as below:



The steel files and power tool machines segment are fairly organized with close to 70% of the market catered to by the leading players. However, the hand tool and power tool accessories segments are dominated by the unorganized segment. There are more than 2,500 manufacturers in the Indian T&H industry engaged mainly in the manufacturing of hand tools, out of which more than 90% are in the small-scale sector, catering to local markets and exports. At present, these participants are mainly at the middle and low end, battling overcapacity, low industry concentration and fierce competition. The high-end products of the T&H industry are supplied by a few key global companies such as Robert Bosch Tool Coproration in power tools, Stanley Black & Decker Inc. in hand tools, JK Files & Engineering Ltd in steel files. Since these manufacturers have strong R&D, design, manufacturing, and brand operation capabilities, they can maintain a high market share in middle and high-grade products according to the consumption characteristics of different countries. Moreover, the Indian economy is expected to experience a

significant growth in industrial, construction and real estate sectors, which would require quality branded products. India is also expected to experience consumption of more branded, high quality products compared to products from the unorganized sector.

3.2 Files market assessment

Overview

A file is a tool used to remove fine amounts of material from a work piece. It is predominantly used in metalworking, woodworking, and similar trade tasks in engineering, automotive, construction, defense, jewelry, watchmaking, agriculture, carpentry, fabrication, masonry, and forestry. The file is a hand tool made of a hardened steel bar that is rectangular, square, or triangular. One or more of its surfaces are cut with sharp, parallel teeth. Moreover, it is common to find a tang at one end of the file. This is generally constructed so that a handle may be fitted. In fact, a great number of files with abrasive surfaces have been developed, such as silicon carbide or synthetic diamond grains.

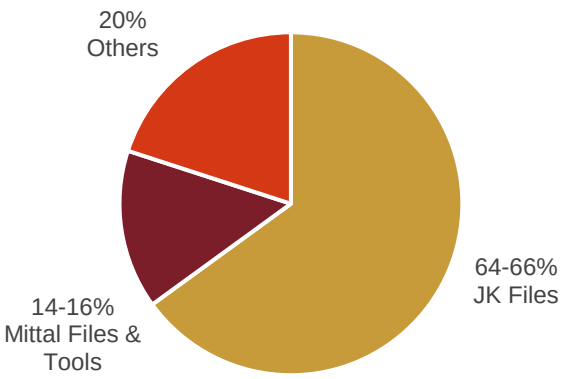
Types of files

Files can be classified as machinist files, saw files, rasps, and special purpose files based on their applications. Machinist's files (also known as engineer's files) are designed for shaping and finishing material. Saw files (such as mill files, taper files, double-ended saw, feather-edge saw, round chain saw and pit saw), sometimes referred to as sharpening files, are most commonly used for sharpening bladed tools. A rasp (such as flat, half round and round rasps, cabinet rasp, shoe rasp, and horse shoe rasp) is a coarse file used for coarsely shaping wood or other material. Special purpose files (such as needle files, diamond coated files, chip breaker, hobby rasp, flat handle, and pillar regular) are used for precision applications in jewelry, watchmaking, etc.

Other classifications are based on:

- Shape: Flat, round, half-round, triangular, square, hand, knife. Flat files are the most used files for general purpose work
- Kind of teeth: Single cut, double cut, rasp cut, curved cut. Single-cut files are used with light pressure to produce a smooth surface finish while double cut is used with heavier pressure for faster material removal. Curved-cut tooth files are used in automotive body shops for smoothing body panels. Rasp cut is used on soft materials such as wood, hooves.
- Grades: Very smooth, smooth, second cut, bastard, rough

Market share (Sales volume, FY 2021)



Key players

The key file manufacturers in India are JK Files & Engineering Ltd, Mittal Files & Tools Private Ltd, Stanley Black & Decker India Private Ltd, Taparia Tools Ltd, etc. JK Files is the single-largest player in the domestic market with a market share of 64-66% (by volume) in fiscal 2021. The second largest player, Mittal Files & Tools, has a market share of 14-16%.

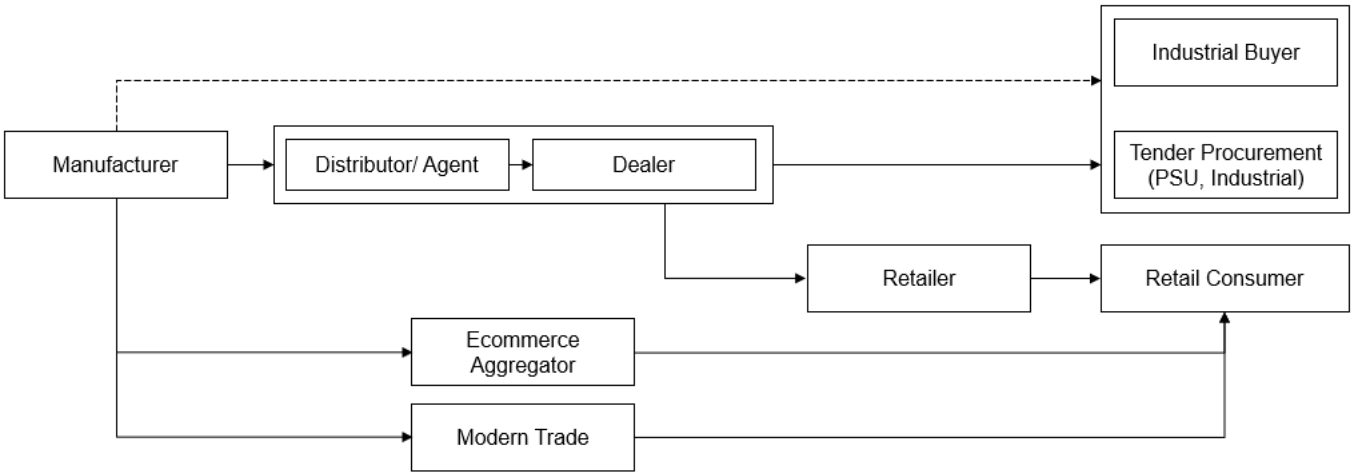
Since India has developed a robust manufacturing ecosystem for files, with established companies operating in the sector, the share of the unorganised segment is low (around 5-10%).

Note: Market share data is estimated based on extensive primary interactions in the industry

Availability in the customer's vicinity, product variety, brand recall, and price play a key role in influencing buying decisions and are key determinants of a company's success.

Source: CRISIL Research, Industry

Industry structure



Manufacturer

- India has a strong manufacturing base for steel files, with a capacity of more than 80 lac dozen pieces per year. Most players operate standalone manufacturing plants while meeting their raw material requirement (mainly flat steel) from steel mills
- JK Files is a leading player and operates its own hot rolling mill (14,000-15000 MT/year) in Pithampur to meet its raw material requirements, ensuring uninterrupted raw material supply
- Other leading manufacturers in the market are Mittal Files & Tools, Gardex India, etc. operate standalone file manufacturing units

Channel partners

- More than 99% of sales are through the dealer route (general trade), with marginal sales through modern trade and online channels due to customer preference for offline channels. Going forward, this is expected to continue with dealer route being the preferred sales channel.
- Manufacturers dispatch the packed products to dealers located across the country. The industry norm is to have at least one dealer present in a city. However, metros and Tier 1 cities may have many dealers based on demand patterns. The primary responsibility of a dealer is to enlarge the brand's retail presence and cater to industrial customers. (A distributor or agent may operate in certain large cities/towns and further supply to dealers in the region for a fixed margin)
- JK Files has more than 730 active dealers/distributors spread across 600 towns in India reaching ~1.5 lac retail outlets. The dealers ensure the brand is available across India. While Mittal Files & Tools, another key files manufacturer, has a network of close to 100 dealers/distributors in India majorly focusing on north India.

Customers

- The customer profile for files is diverse and includes retail customers, industrial buyers (large and small), public sector units, etc.

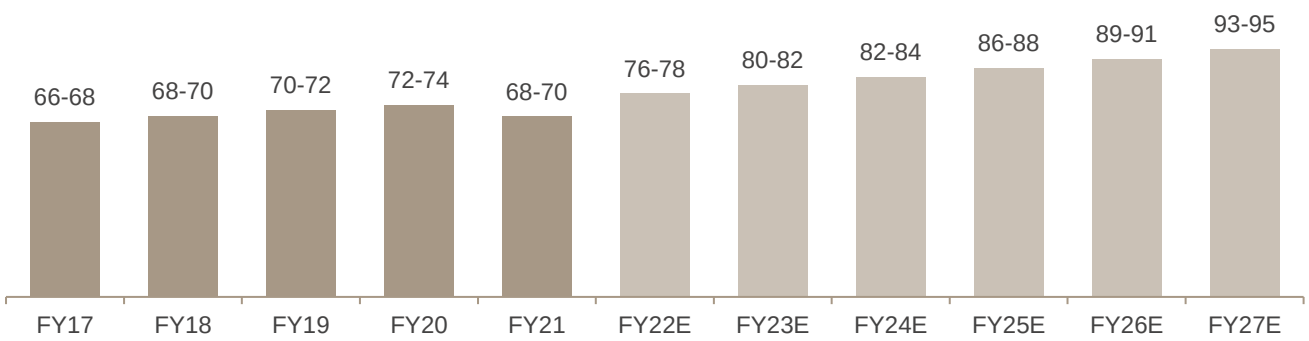
- Retail customers include segments such as farmers, carpenters, local fabricators, mechanics, artisans, lumbers, DIY users, etc.
  - Retail customers purchases are driven by availability at the point of sale, price, brand recall, etc.
- Industrial clients belong to industries such as manufacturing, automotive, industrial goods, construction, real estate, infrastructure, etc.
  - Industrial customers tend to focus on the product quality (and brand) for purchase decisions and are directly served by the dealers. Public sector units and large industrial customers often have a tender-based procurement process (few tenders have a list of qualified brands)

Production

Production of steel files in India has grown over the last 3-4 years owing to healthy domestic demand and increasing demand for Indian files in the global market. Going forward the growth is expected to be driven mainly to meet the export demand from North America, LatAm and Europe. India and China will continue to be the key producers globally, however, with China not focusing on capacity addition in files manufacturing, India's share in global production is expected to increase.

India files production (lac dozen units)

FY17-20 CAGR: 3-4%
FY22-27 CAGR: 4-5%

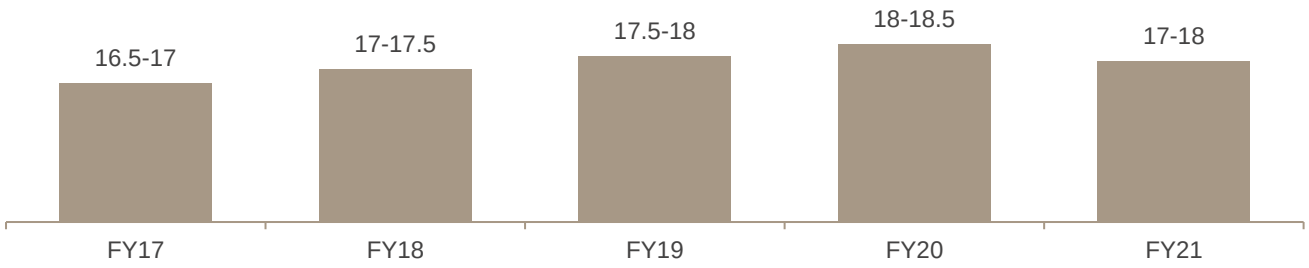


Demand review

The steel files market in India has grown at a 1-2% CAGR from ~16.5 lac dozen pcs in fiscal 2017 to ~17.5 lac dozen pcs in fiscal 2021 supported by stable demand from the agricultural sector. Fiscal 2021 was impacted by the pandemic induced lockdowns leading to lower demand from the non-agricultural sectors. The industry had clocked 3-4% CAGR between fiscals 2017 to 2020 due to moderate growth in the key consumption sectors, saturation of domestic demand, limited scope for innovation and new launches. Most players in the files market are engaged in exports in addition to domestic supply.

India files market size (lac dozen units)

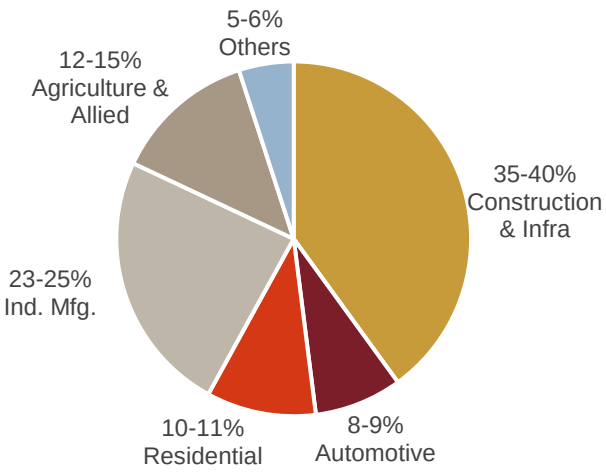
FY17-21 CAGR: 1-2%
FY17-20 CAGR: 3-4%



Source: CRISIL Research, Industry reports

Market Size by end user (by volume, FY 2021)

17-18
lac dozen units
FY21 demand



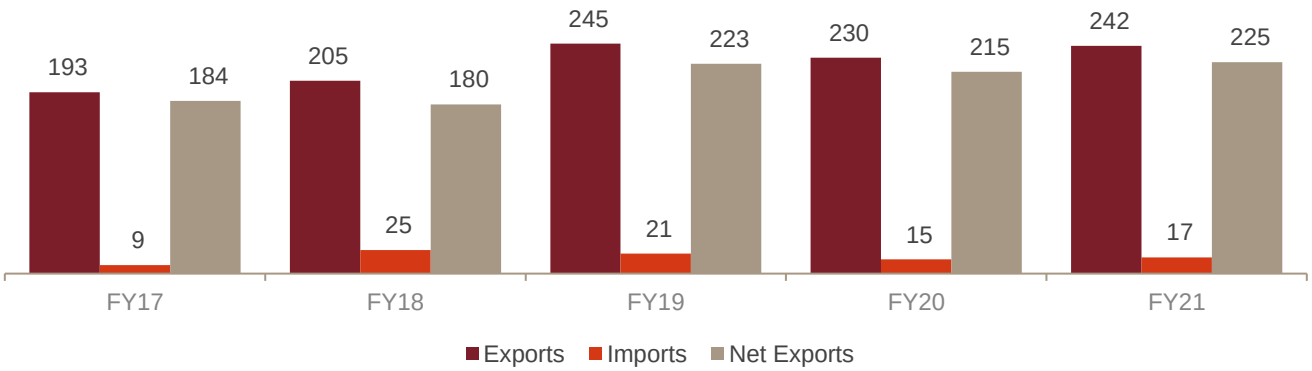
FY17-20 CAGR

Construction	: 3-4%
Automotive	: 4-5%
Residential	: 4-5%
Agriculture	: 3-4%
Industrial Mfg	: 4-5%

Source: CRISIL Research, Industry reports
Others includes small scale industries, retail users, educational institutes, etc.

Trade

Trade of files (Rs crore)



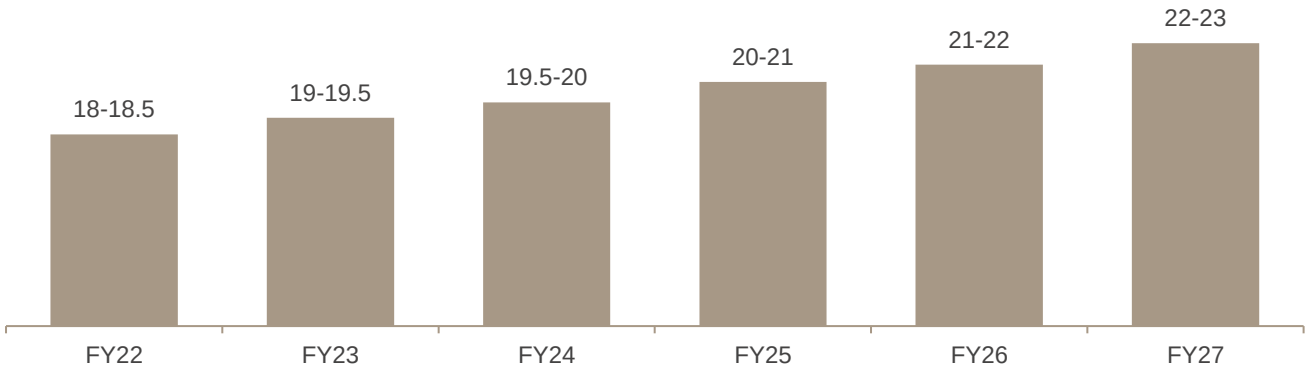
Source: DGFT data (HS Code – 82031000 which includes files, rasps and other similar tools)

India is a leading player in the global files industry and exported 50-55 lac dozen units in fiscal 2021. Western countries are looking to increase sourcing from Asia due to the relative cost benefits, low labor costs, economies of scale in Asian regions due to established capacities, and acceptable quality standards. While the African and LatAm markets have been destinations of Indian exports, these regions are engaged in agricultural activity due to the relatively underdeveloped industrial ecosystem. Hence, demand from these regions will continue to be primarily driven by agriculture growth which is expected to grow at a moderate rate in line with the gross domestic product growth of these countries.

Demand outlook

CRISIL expects demand for files will grow at 4-5% CAGR from ~18 lac dozen pcs in fiscal 2022 to ~23 lac dozen pcs in fiscal 2027over the next five years, driven by construction and manufacturing sector growth in the country.

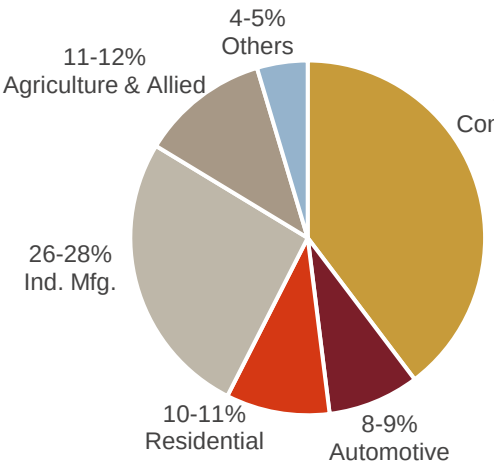
India files market size (lac dozen units) **FY22-27 CAGR : 4-5%**



Source: CRISIL Research, Industry reports

Market size by end user (by volume, FY 2027)

22-23
lac dozen units
FY27 demand



FY22-27 CAGR

Construction	: 4-5%
Automotive	: 5-6%
Residential	: 3-4%
Agriculture	: 2-3%
Industrial Mfg	: 6-7%

Source: CRISIL Research, Industry reports
Others includes small scale industries, retail users, educational institutes, etc.

Key growth drivers for files demand

Construction and infrastructure

- The government's focus on developing the national infrastructure (roads, railways, ports, airports, etc.) will drive demand for files required in fabrication activities at construction sites
- India's improving macroeconomy will drive demand for residential and industrial structures. This construction activity will further drive demand for files used in general purposes such as metal fabrication, wood working, etc.
- Construction sector is expected to clock 6-8% CAGR over the next 5 years largely driven by growth in infrastructure sectors, such as roads, metro transport, water supply and sanitation, and railways
- Some key initiatives introduced by the Central government are: Introduction of schemes, such as Pradhan Mantri Awas Yojana (PMAY), Swacch Bharat Abhiyan and Smart Cities Mission; Streamlining of existing schemes, e.g., Atal Mission for Rejuvenation and Urban Transformation (AMRUT), clubbing four major irrigation schemes under Pradhan Mantri Krishi Sinchai Yojana (PMKSY); Introduction of HAM (hybrid annuity model) in road construction.
- The total budgetary allocation on capital expenditure in infrastructure for FY2021-22 saw a 20% rise over the revised estimates for FY 2020-21 to Rs 5.64 lakh crore with roads and railways being the biggest beneficiaries.
- The Central government's focus on roads, urban infrastructure and railways will boost infrastructure investments. Conversely, spending on industrial projects is expected to be low as investments in auto-related sectors, metals and oil and gas are expected to be flat amid declining demand and capex commissioned and completed to meet regulatory requirements.
- Investments in building construction are expected to grow 6-8%. The majority growth is expected to come from urban affordable housing, which currently constitutes ~25% of the incremental urban addition and is expected to grow at a high pace.
- Within the infrastructure space, road projects will be a critical investment driver from fiscals 2022-26. The National Infrastructure plan outlined by the Government entails an investment of Rs 111 lakh crore over fiscals 2020-25 and will drive infrastructure investments.
- The government has announced PLI schemes covering electronics manufacturing (~Rs 41,000 Cr between 2021-26), automobiles & auto components (~Rs 26,000 Cr between 2023-28), white goods (~Rs 6,200 Cr between 2022-29), solar PV modules, specialty steel, textiles, etc. to boost India's manufacturing industry. Since files are widely used in the manufacturing and engineering industry, it is expected to grow in tandem with these sectors.

Automotive

- Steel files are used in automobile production (body finishing, etc.), the auto accessory industry and in vehicle repair/maintenance
- Demand for files from industrial buyers in the auto sector will be driven by higher production of vehicles for domestic sales and exports. The organised segment mainly caters to the industrial sector
- Usage of files in the aftersales market (service stations, etc.) is expected to remain healthy due to demand for used vehicles, better awareness among consumers, etc.
- The passenger vehicle production is expected to witness 7-9% growth between fiscal 2021 and 2026. Demand is expected to pick up bolstered by moderate macroeconomic growth, increasing disposable income and shift

towards personal mobility. Other factors that would aid demand are increasing urbanization, government support, and improved availability of finance.

- Commercial vehicle production is expected to grow by 12-14% in the next 5 years (over a low base of fiscal 2021) on account of improvement in infrastructure expenditure and lower penetration in light commercial vehicles. Demand is expected to increase during the period with medium & heavy commercial vehicle leading the growth in the upcoming five years. The growth can be attributed to an improvement in industrial activity, rising replacement volume and government's thrust on rural transportation.
- Two-wheeler production is expected to grow by a modest 9-11% CAGR between fiscal 2021 and 2026. There has been good recovery in demand post second wave and lockdown restrictions. In the medium term, demand is likely to be supported by rising farm incomes and improving rural infrastructure, especially as the government continues to invest in developing rural roadways. Adoption of electrification in this segment is expected to be quite rapid post fiscal 2021.
- Tractor production is expected to increase by a muted 0-2% CAGR in the next five years owing to high base. The government's aim to double farm income via initiatives such as e-NAM (National Agriculture Market), direct price support, farm loan waivers, expansion of crop insurance coverage, MSP price support and improvement in land productivity via soil health cards is expected to boost tractor demand.
- OEM demand which is the largest contributor to auto component revenue is pegged to grow at a healthy pace over the next 5 years. Auto component market size to grow at 13-15% CAGR between fiscals 2021 and 2026 to ~Rs 5,832 billion on the back of robust production growth across asset classes in the medium term (on a low base) and also aided by realization growth via OEM price increases.
- The auto component replacement market is projected to grow at 7-9% CAGR between fiscal 2021 and 2026. This is due to increased OEM demand between fiscals 2017 and 2019 along with two to three years of replacement cycle.
- As per the production linked incentive scheme, the government has earmarked Rs 44,000 crore towards the auto and auto components industry.

Industrial manufacturing

- Files are widely used in industries such as manufacturing, defence and aerospace, railways, automobiles, precision engineering, etc. The government’s focus on making India a manufacturing hub with a focus on the domestic and global market bodes well for growth in the files segment.
- The government has announced PLI schemes covering electronics manufacturing (~Rs 41,000 Cr between 2021-26), automobiles & auto components (~Rs 26,000 Cr between 2023-28), white goods (~Rs 6,200 Cr between 2022-29), specialty steel (~Rs 6,300 Cr between 2023-28), textiles, solar PV modules, etc. to boost India’s manufacturing industry.Forging: The auto sector, accounting for 50-60% of forging products consumption in India, is expected to grow at a healthy 9-11% (for passenger vehicles). Other sectors such as power, rail, oil and gas, and capital goods are consumers of forged products. As a tool used widely in the forging industry for metal working, files are expected to grow at a healthy rate due to improved demand from end-user industries

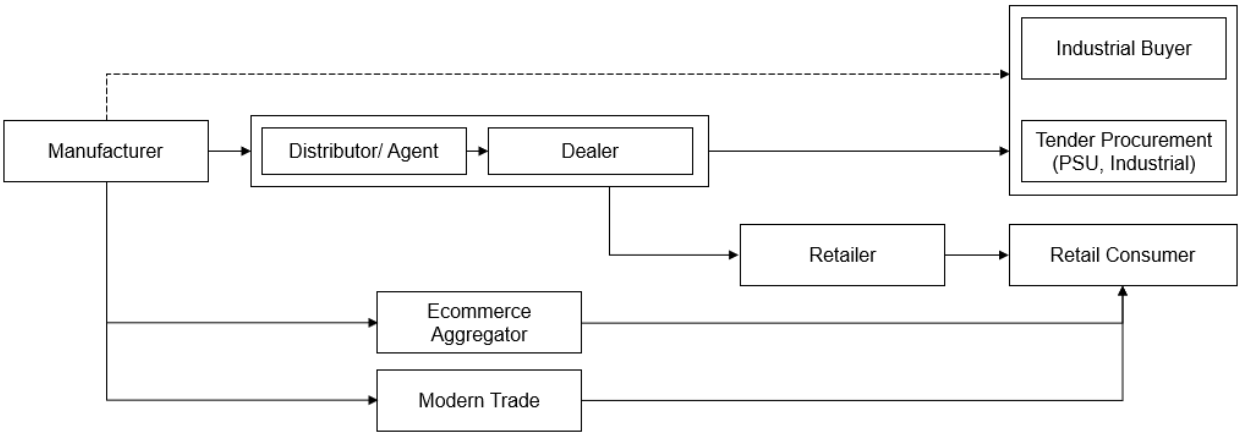
Agriculture

- India is the world's second-largest producer of rice, wheat, sugarcane, cotton, groundnuts and fruits & vegetables. It also produced 25% of the world's pulses, as of last decade, until 2019.

- Agriculture continues to be an integral part of the Indian economy owing to the large proportion of population dependent on the sector. While the level of farm mechanisation is 40-45%, the high share of small landholdings makes it a labour-intensive sector, thereby necessitating hand tools
- The government has recently approved the National Mission on Edible Oils with an outlay of Rs 11,040 crore for five years to increase production of oilseeds and oil palm to reduce India's import dependence on edible oils. Similarly, the National Rubber Policy envisages development of the entire rubber production and consumption ecosystem. These initiatives will encourage cultivation of the crops and drive demand for farm equipment tools and accessories, in turn driving demand for files.

3.3 Other tools and hardware market assessment

Industry structure



Manufacturers

- The Indian tools and hardware industry is comprised of the more than 2500 manufacturers and more than 90% are in small-scale sectors catering to the demand from local markets and for exports. Global brands such as Stanley Black & Decker, Bosch Group, Hitachi, Makita Corp., etc. together make up for more than 50% of the power tool machines market. However, hand tools and power tools accessories are dominated by the small and unorganized players (including products imported from China) having more than 70% market share.
- The high-end products are supplied by a few European and American giants with strong R&D, design, manufacturing and brand operation capabilities, enabling them to maintain a high market share in the middle and high-grade product categories, as per the consumption characteristics of different countries.

Channel partners

- More than 95% of sales are via the dealer route (general trade), with only marginal sales through modern trade and online channels due to logistical challenges, uncertainty in demand and greater customer preference for offline channels. Certain hand tools like screwdrivers, wrenches, pliers and portable power tools are sold through online channels.
- Manufacturers dispatch the packed products to dealers/distributors across the country. While dealers may have exclusivity with certain brands, they may stock popular competing brands in order to ensure that they do not lose customers. The primary responsibility of a dealer is to enhance the brand's retail presence and fulfil the customer orders.

Customers

- The customer profile for tools is diverse and includes retail customers, industrial buyers (large and small), PSUs, etc.
- Retail customers include segments such as households, electricians, farmers, carpenters, local fabricators, and do-it-yourself users. Retail customer purchases are driven by availability at the point of sale, price, brand recall.
- Industrial clients belong to industries such as manufacturing, wood working, industrial goods, automotive and construction. Industrial customers tend to focus on the product quality, service assurance and brand for purchase decisions.

Cutting tools market assessment

Overview

Cutting tools are type of tools with a blade at the end of the shank. The blade materials include diamond/CBN, high speed tool steel, cemented carbide, cermet, and ceramics. Hole-making and threading are the key applications of cutting tools with drills and taps & dies being the major product segments in the domestic market.

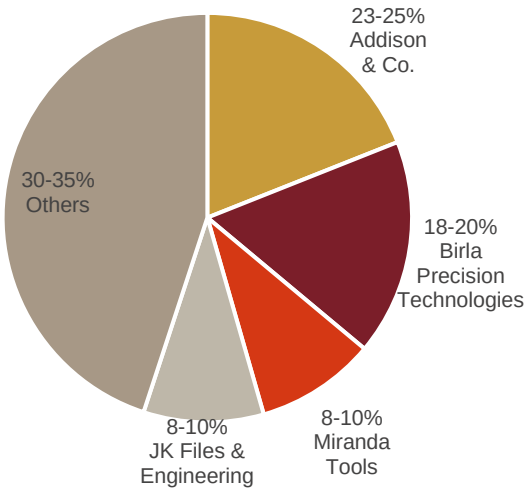
Types of cutting tools

The various types of cutting tools are:

- Drill: A cutting tool that pierces a hole in a workpiece that has a cutting edge at the tip and a groove in the body to discharge chips. It is the most common among cutting tools and is manufactured in a number of shapes and types for various applications, from home use to special processing.
- Tap: A tap is a tool for cutting female threads while cutting into the inside of the hole. The thread cutting die is a tool that cuts the male thread in the cylindrical workpiece while turning.
- Other cutting tools are mills, reamers, broach, etc.

Key players

Drills market share (Sales value, FY 2021)



Addison & Co. Ltd, Birla Precision Technologies Ltd, Dormer Tools India Private Ltd (Miranda Tools), and JK Files & Engineering Ltd are the leading players in the Indian drills market.

Addison & Co. Ltd and Birla Precision Technologies Ltd are preferred by industrial users due to their better quality/tool design, wide array of cutting tools and buyer preference for these brands. JK Files & Engineering Ltd has a strong presence in the retail market and caters primarily to the retail users.

There is a presence low priced drills manufactured locally or imported from China; however, these products are plagued with quality issues and hence aren't significant threats to the established brands.

Forbes & Company Ltd, Emkay Taps and Cutting Tools Ltd, and Addison & Co. Ltd are leading players in the tap segment with Forbes & Company (Totem) commanding a market share of close to 30% (by value in fiscal 2021).

Source: CRISIL Research, Industry

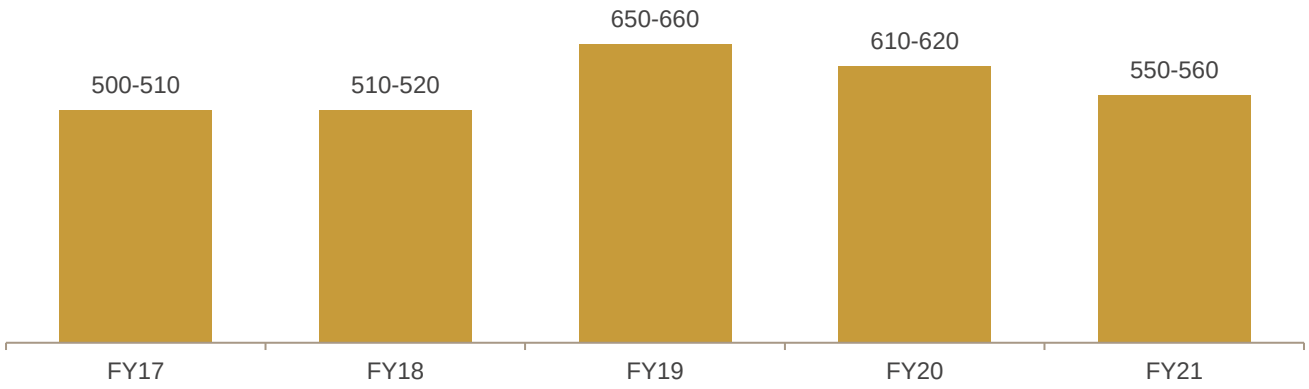
Note: Market share data is estimated based on extensive primary interactions in the industry

Demand review

India has a well-developed manufacturing base for drills to meet its domestic requirements. The drills segment has witnessed healthy growth in India, clocking 5-6% CAGR between fiscals 2017 to 2020 driven by the booming construction and infrastructure segment in the country. This segment accounts for more than 50% of drills demand and grew at a CAGR of 10-12% during this period. At the same time, the government's focus on making India a manufacturing hub in automobiles, electronics, capital goods, etc. has led to a healthy demand for cutting tools from the industrial segment.

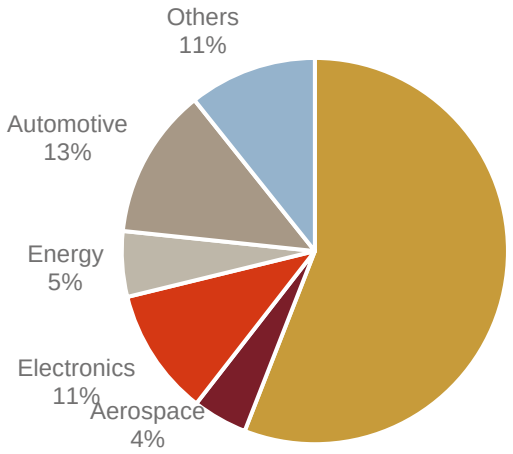
India drills market size (Rs crore)

FY17-21 CAGR : 1-2%
FY17-20 CAGR : 5-6%



Source: CRISIL Research, Industry
Note: Above numbers are only for drills segment and does not include other cutting tools. As per industry estimates overall cutting tools market size is Rs 1400-1500 Cr in fiscal 2021.

Market size by end-user (by value, FY 2021)



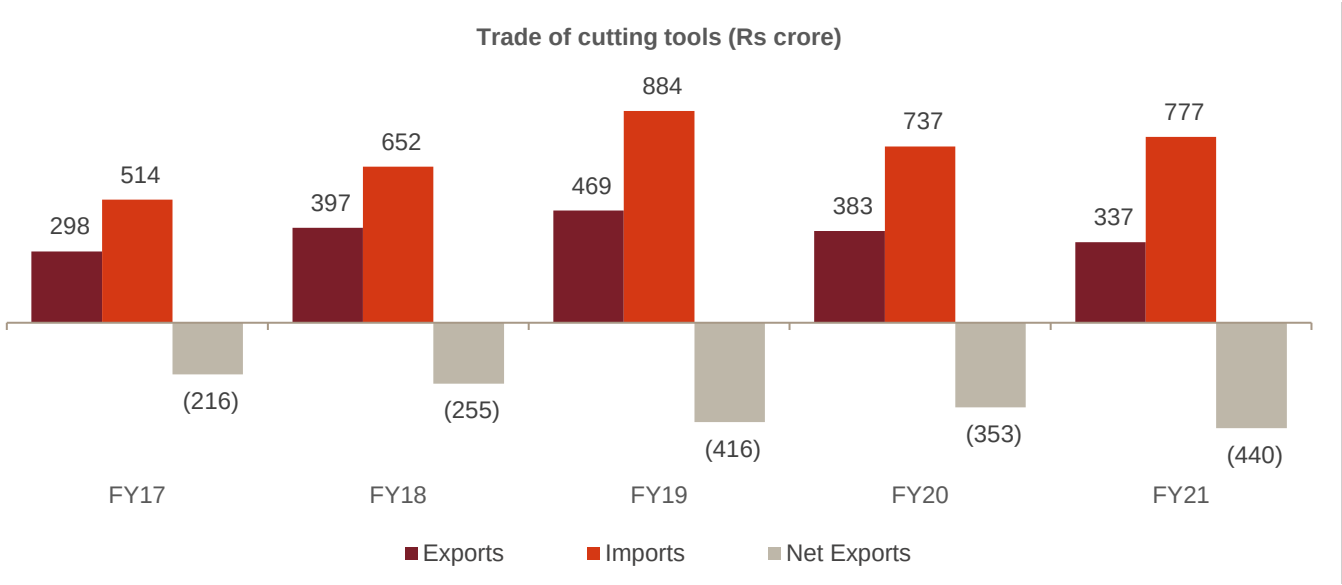
FY17-21 CAGR

Automotive	: 6-7%
Aerospace	: 6-7%
Electronics	: 7-8%
Energy	: 5-6%
Construction	: 5-6%

Source: CRISIL Research, Industry
Others includes small scale industries, retail users, educational institutions, etc.

Trade

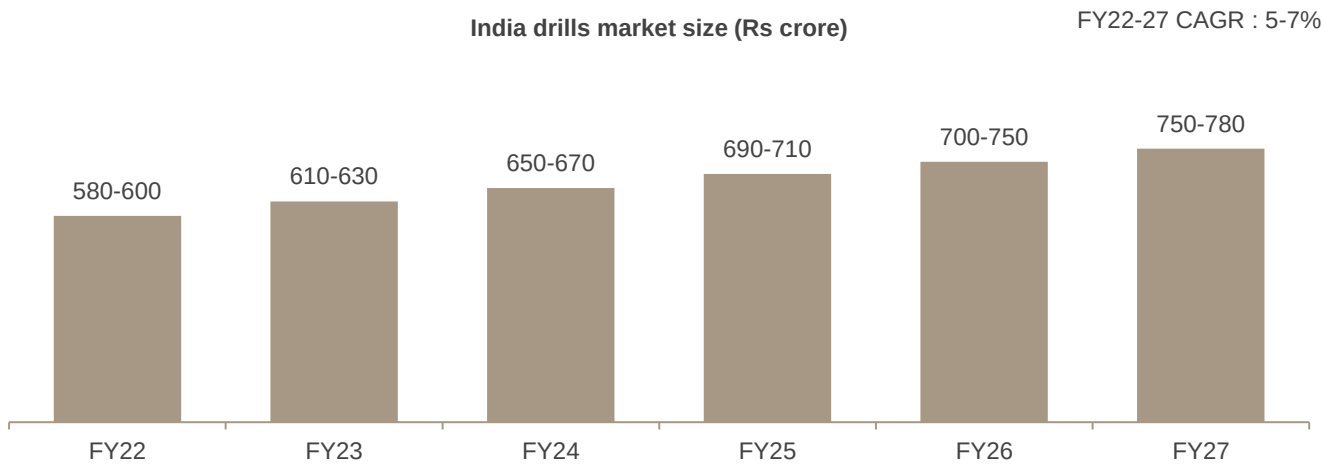
India is a net importer of cutting tools with China, Korea, Japan and Sweden making up for more than 75% of the total imports. Belgium, Germany and USA are the key markets for Indian exports of cutting tools.



Source: DGFT (HS Code – 82051000, 82075000, 82090010)

Demand outlook

Demand for drills is expected to rebound from the dip in fiscal 2021 and grow at a healthy CAGR of 5-7% over the next 5 years led by the construction & infrastructure sector and manufacturing sector.



Source: CRISIL Research, Industry

Hand tool market assessment

Overview

Hand tools refer to any type of tool that can be used by hand and does not require any motor or electrical power. This includes an array of tools such as hammers, wrenches, cutters and clamps.

Types of hand tools

Commonly-used hand tools are:

Wrenches

- A wrench is a hand tool that allows you to firmly hold standard--sized bolts and nuts that are going to be loosened and tightened.
- Wrenches can be classified into open-end or box-end wrenches

Screwdrivers

- Screwdrivers are devices that are designed specifically to drive in or remove screws.
- The size and shape of a screwdriver depends on the type of screw it is designed to fit.
- The blades of screw drivers are of various widths and lengths that are suited for special purposes.
- The blade is made of forged carbon tool steel and heat treated for hardness

Pliers

- Pliers are first-class levers that function when the force applied by the hand is executed at its jaws.
- Pliers are available in many shapes and sizes.
- The two most common types of pliers in widespread use are flat-nose pliers and needle-nose pliers

Hammers

- Hammers are robust hand tools that are used to deliver a tremendous force to a small area on hitting an object.
- Hammers are made from a good grade of tool steel. The primary aim of a hammer is to drive nails, especially in households.
- Hammers can be of diverse types such as carpenter hammers, sledgehammers, etc

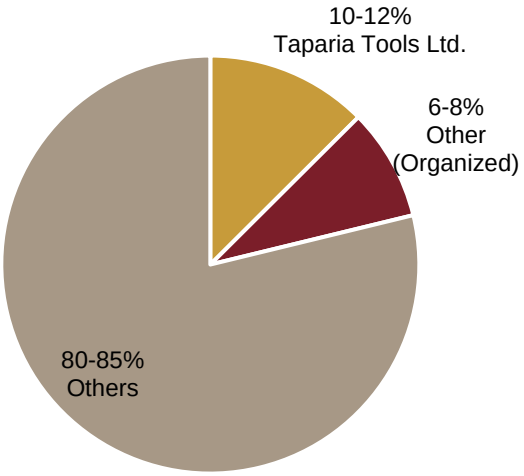
Hand saws

- Some examples of hand saws are ripsaws, crosscut saws, hacksaws, compass saws, etc.
- A hacksaw is the most famous and easily recognisable type of hand saw that is designed to cut through metal. Hacksaw blades are made from high-grade steels that are tempered and hardened.

Other hand tools are clamps, bench vises, tape measures, allen keys, punch tools, knives, axes, bars, chisel, mallet and hand planers.

Key players

Market share (Sales value, FY 2021)



The hand tools market is highly fragmented, with the unorganised segment accounting for a large share of it. The hand tool clusters are in Jalandhar and Ludhiana in Punjab, Nagaur in Rajasthan, Mumbai and Purulia in West Bengal. These small manufacturers make up for ~80% of the domestic sales.

In the organised segment, Taparia Tools Ltd is a leading player. Other key players in the organised segment are Stanley Black & Decker India Private Ltd, JK Files & Engineering Ltd, Ambika Overseas Ltd, Hindustan Everest Tools Ltd, and Venus Industrial Corporation Private Ltd. These organized players focus on product quality, product R&D, and supply chain efficiency.

In the last 2-3 years, the share of organized players has improved by 300-500 bps owing to customer preference for branded products, competitively priced products, sales through modern trade and online channels and financial stress in the unorganized segment due to the pandemic.

Source: CRISIL Research, Industry

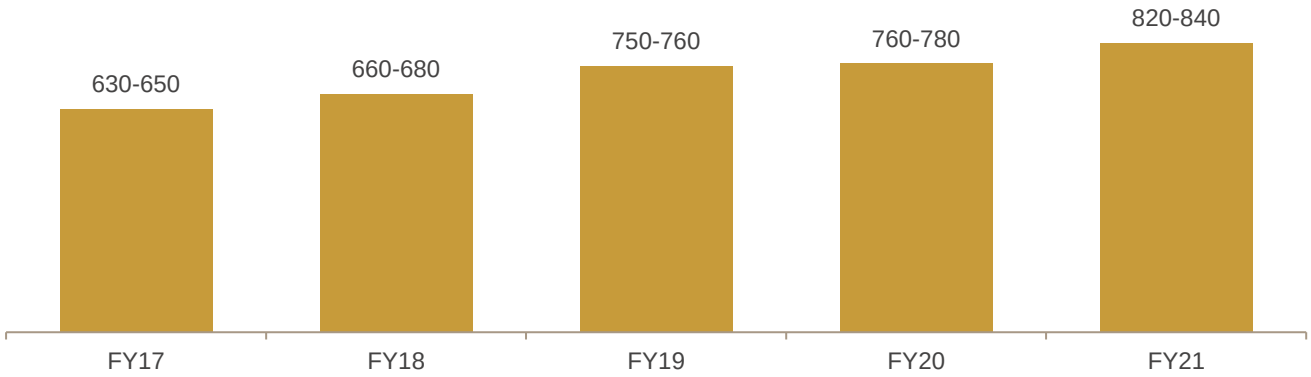
Note: Market share data is estimated based on extensive primary interactions in the industry

Demand review

Demand for hand tools clocked 6-7% CAGR between fiscals 2017 and 2021, supported by healthy growth in building & construction (MNREGA, PMAY); industrial construction across the steel, cement, auto and auto components; and investments in roads, railways, and urban infrastructure.

India hand tools - Organized market size (Rs crore)

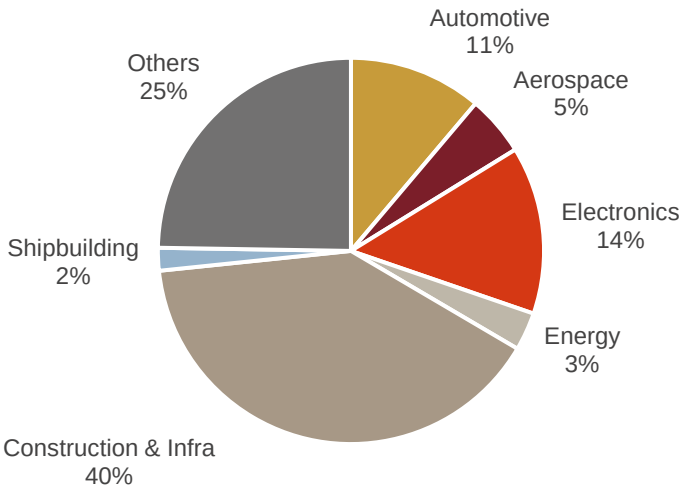
FY17-21 CAGR : 6-7%
FY17-20 CAGR : 7-8%



Source: CRISIL Research, Industry

Hand tools are essentially used in the construction, building projects, automotive and aerospace industries to perform manually operated tasks as their application is restricted as they are not powered by electricity. Hand tools are majorly used for cutting and sizing of wood, tiles, stones, concrete etc. thereby making construction & infra largest contributor with almost 40% of overall hand tools demand. Other key end industries using hand tools include electronics, auto, aerospace and energy constituting 14%, 11%, 5% and 3% of demand respectively.

Market size by end-user (by value, FY 2021)



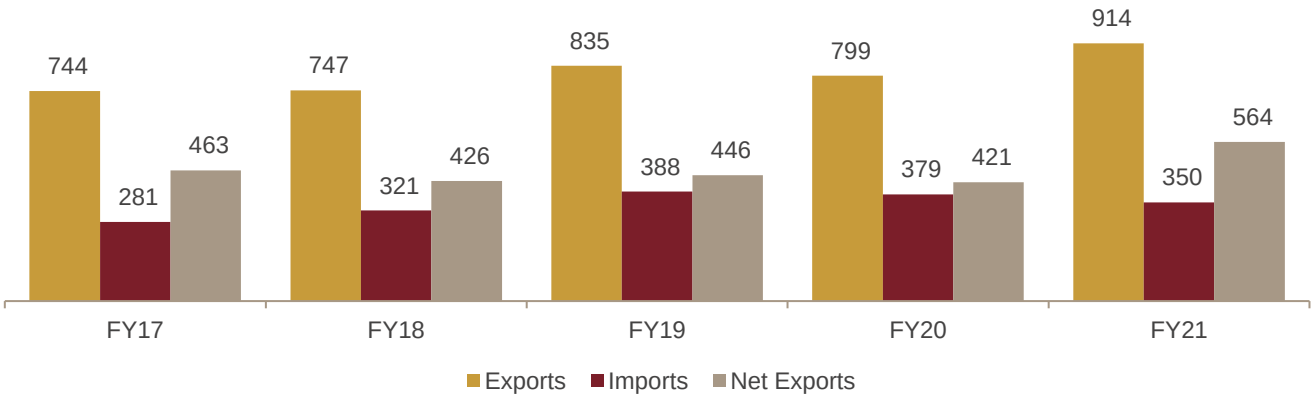
Source: CRISIL Research, Industry
Others includes small scale industries, educational institutions, retail users, etc.

Trade

Exports: India exported hand tools worth Rs 914 crore in fiscal 2021, with the US accounting for close to 40% of total exports. Exports are mainly to the US and the EU.

Imports: India imported hand tools worth Rs 350 crore in fiscal 2021, with China accounting for close to 33% of total imports. Imports are mainly from China, Germany, and Japan.

Trade of hand tools (Rs crore)



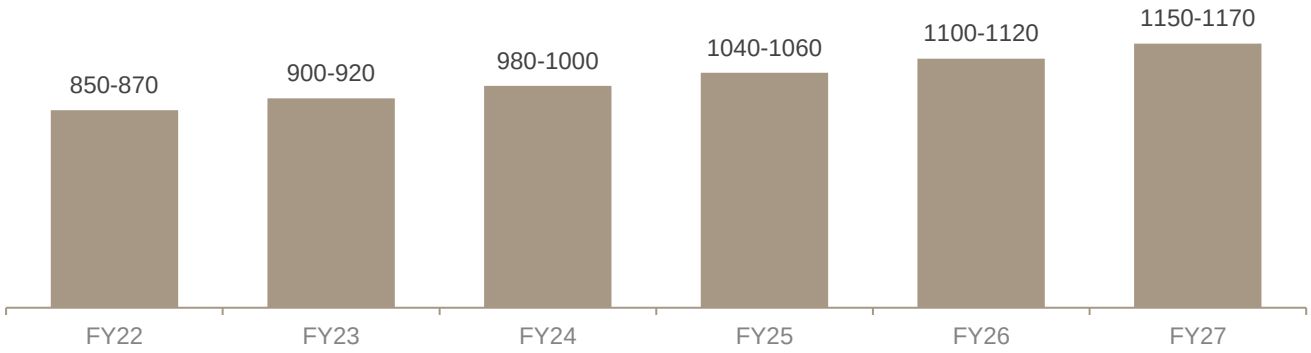
Source: DGFT (HS Code – 8205)

Demand outlook

The demand for hand tools is expected to clock 6-8% CAGR over the next 5 years, owing to healthy demand from the manufacturing and construction sectors. Within manufacturing, demand for hand tools will primarily be driven by the thriving automotive and electronics sector. The construction and infrastructure segments are expected to grow on the back of improved public and private investments in roads, railways, irrigation, industrial capacity expansion, etc. While the unorganized segment will continue to dominate the hand tool industry, the organized players are expected to gain some market share from this segment.

India hand tools - Organized market size (Rs crore)

FY22-27 CAGR : 6-8%



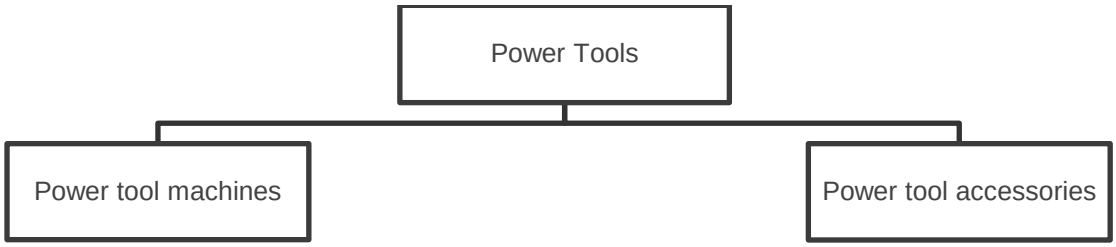
Source: CRISIL Research, Industry

Power tools market assessment

Overview

A power tool machine is defined as a device that is powered by a mechanism or source other than the human body. Power tools usually run on one of three types of power: compressed air, electricity, or combustion. Power tools usually come in one of two categories – stationary or portable. Stationary models usually have the advantages of precision, power, and smoothness, while portable versions are versatile and easy to transport. Power tools are widely used in the construction, automobile, forestry, tile and marble cutting, engineering and fabrication industries.

Power tools accessories refer to the additional fittings that are used in various engine-driven power, electric and pneumatic power devices. Power tool accessories need to be regularly changed for efficient performance owing to wear and tear under normal operating conditions.



Types of power tool machines

Commonly used power tool machines are drills, saws, sanders, grinders, oscillating and rotary tools, woodworking power tools (lathes, planers), concrete power tools and compressors.


Joiners


Drills


Saws


Electric Screwdrivers


Hammers


Grinders & Vibrators


Sanders & Polishers


Nibblers


Cutters


Impact Wrenches


Lawn Mowers


Blowers

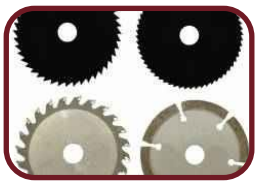

Heat guns


Power Mixers

Types of power tool accessories

Drills, screwdrivers, and router bits, abrasives wheels, saw blades, chippers and threading products are some of the commonly used power tool accessories.


Power tool attachments


Circular saw blades


Diamond abrasive blades


Jigsaw blades


Power tool stands


Wheel brushes


Chain saw blades

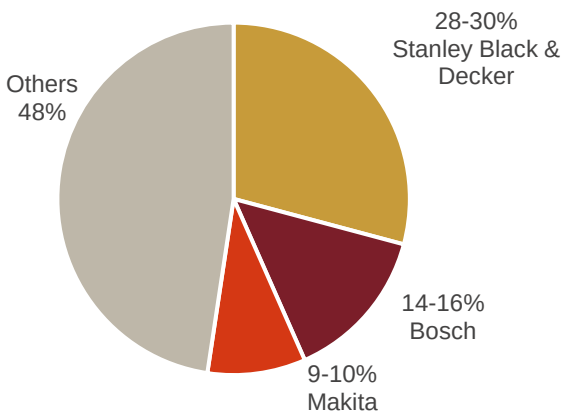

Flexible shaft


Screwdriver bits


Sanding and polishing accessories

Key players

Market share (Sales volume, FY 2021)



Stanley Black & Decker India Private Ltd, Bosch Ltd and Makita Power Tools India Private Ltd are some leading players in the Indian power tool machines market. Industrial customers prefer these reputed brands due to the reliable service provided by their dealers. About 75% of the power tool machines market is organised and dominated by European and US brands, owing to the highly technical nature of these products. While Chinese products are present in the market, they are mostly consumed for non-industrial applications.

On the other hand, power tool accessories is a highly fragmented market with presence of imports and domestic brands.

Source: CRISIL Research, Industry

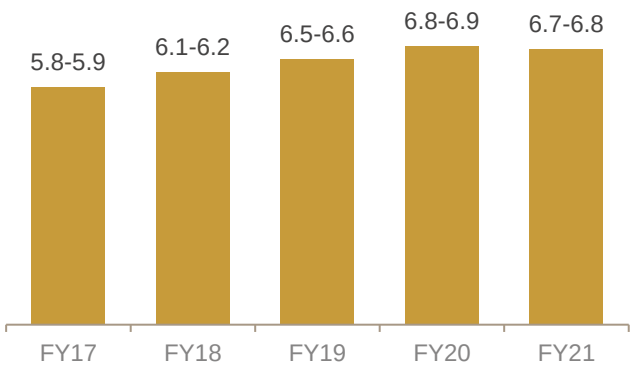
Note: Market share data is estimated based on extensive primary interactions in the industry

Demand review - PTM

The power tool machines market in India has clocked ~4% CAGR between fiscals 2017 and 2021, due to strong demand from the construction and infrastructure sector, increasing penetration of power tools in India along with improved availability and affordability, growing industrial activity in the country and increasing customer awareness of the benefits of power tools.

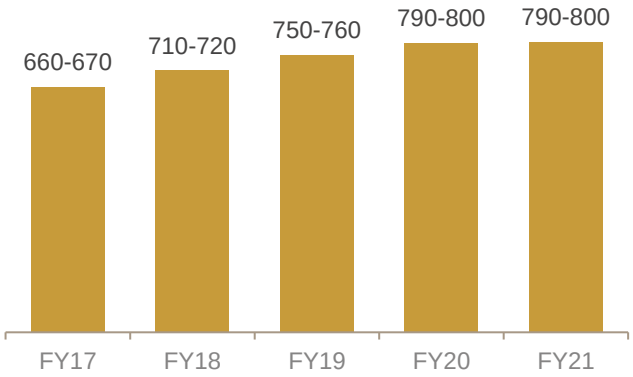
India power tools market size (million units)

FY17-21 CAGR : 3-4%
FY17-20 CAGR : 5-6%



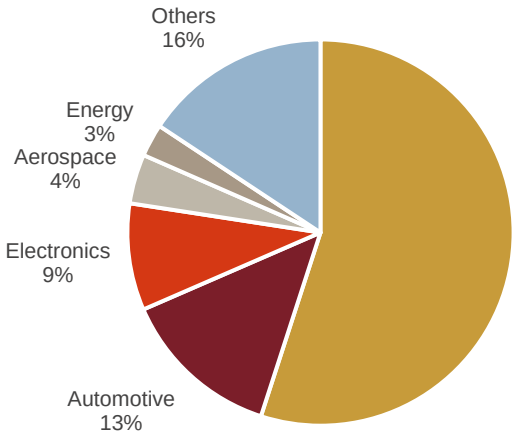
India power tools market size (USD million)

FY17-21 CAGR : 4-5%
FY17-20 CAGR : 5-6%



Market size by end-user (by volume, FY 2021)

6.7-6.8
million units
FY21 Demand



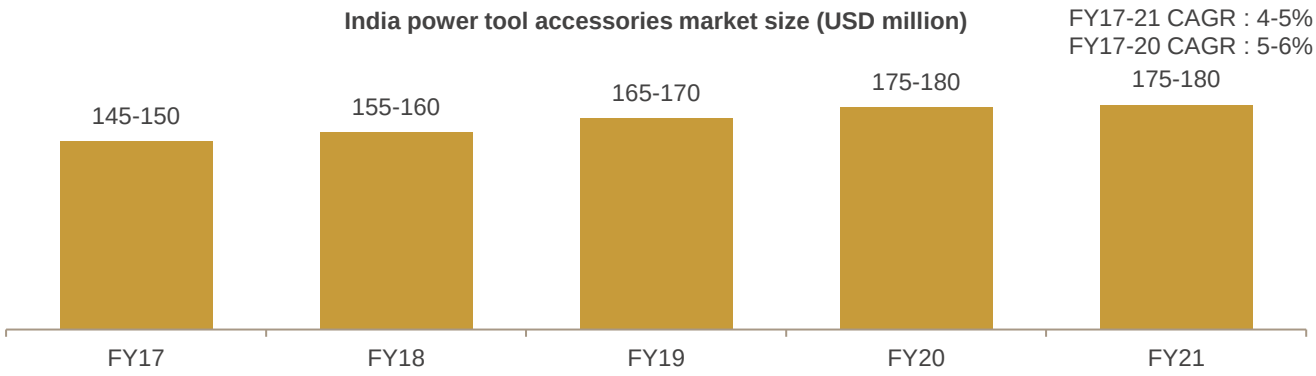
FY17-21 CAGR

Construction	: 3-4%
Automotive	: 4-5%
Electronics	: 5-6%
Aerospace	: 4-5%

Source: CRISIL Research, Industry
Others includes small scale industries, retail users, educational institutes, etc.

Demand review - PTA

Demand for power tool accessories has mimicked the growth in power tool machines. Additionally, increasing intensity of power tool usage in residential and commercial applications has driven the replacement demand for power tool accessories.



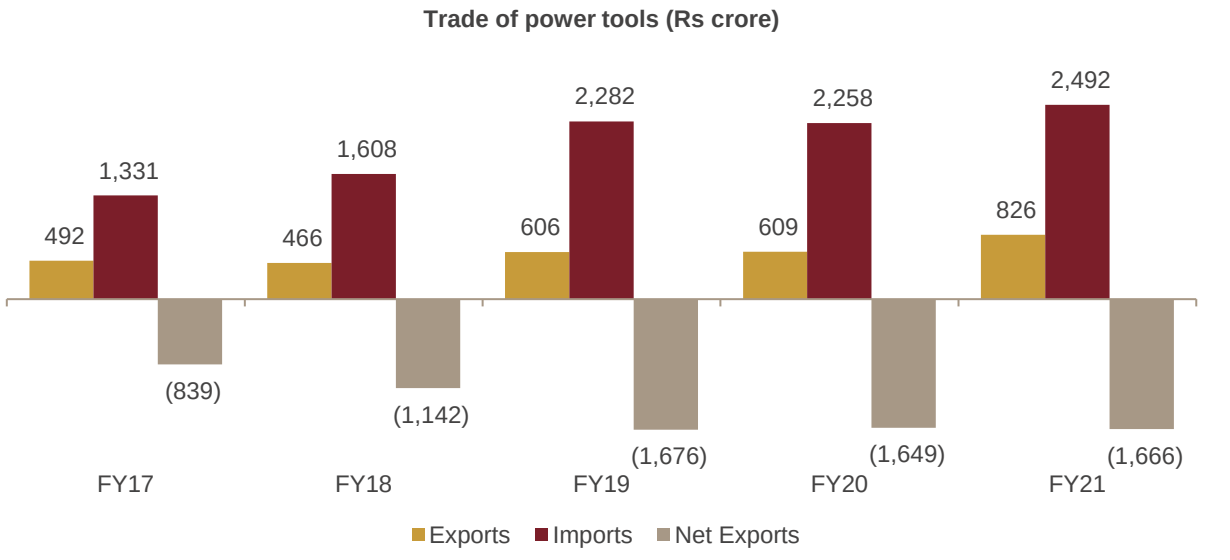
Source: CRISIL Research, Industry

Trade

India is a net importer of power tools due the limited manufacturing capabilities in power tools (which are mainly operated by global MNCs) and comparatively cheaper imports from China.

More than 70% of imports are from China. Other key countries exporting to India are Belgium, Germany and Japan.

Over 50% of the exports are to the US. Other key export destinations are the UAE, Mexico and Russia.



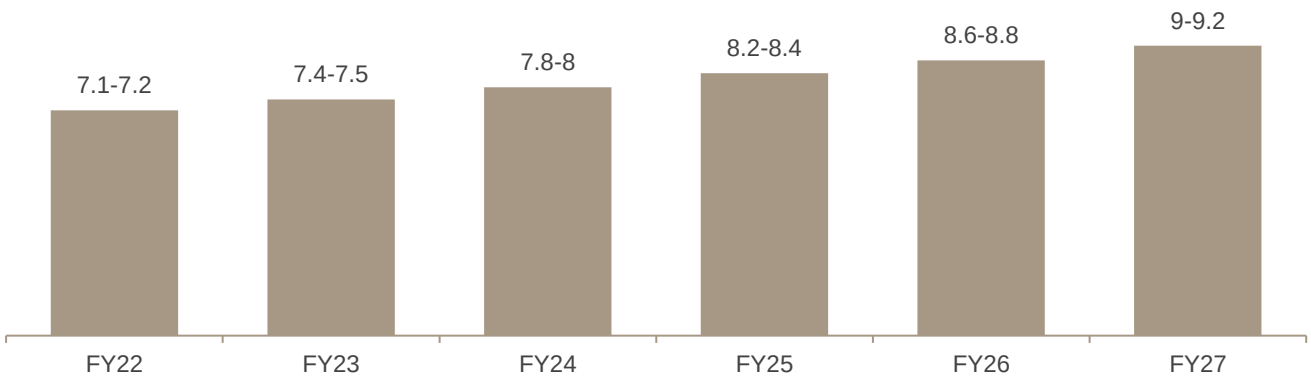
Source: DGFT (HS Code – 8467)

Demand outlook

Demand for power tools is expected to clock 5-6% CAGR over the next 5 years due to the demand for cordless power tools that are compact and mobile, the rising demand for fastening tools in industrial environments, and a

growing construction industry. Within power tools, drilling and fastening tools are expected to witness healthy demand.

India power tools market size (million units) **FY22-27 CAGR : 5-6%**



Source: CRISIL Research, Industry

Note: the above numbers are indicative of power tool machines segment which constitutes to the major share

Key growth drivers for tools demand

Construction & infrastructure

- The construction and infrastructure segments are the largest consumers of hand and power tools such as hammers, drills, saws, chisels, grinding and cutting tools and compressors.
- The growing number of infrastructure projects across roads, railways, irrigation, buildings, ports and airports is expected to drive demand for tools used at construction sites.
- The National Infrastructure Pipeline to be executed between fiscal 2019 and 2025 is expected to keep infrastructure sector demand healthy over the next 4-5 years.
- Construction investments in India are expected to clock 6-8% CAGR between fiscals 2022 and 2026 led by a 7-9% growth in the infrastructure segment and a 6-8% rise in building construction.
- Some key initiatives introduced by the Central government are: Introduction of schemes, such as Pradhan Mantri Awas Yojana (PMAY), Swacch Bharat Abhiyan and Smart Cities Mission; Streamlining of existing schemes, e.g., Atal Mission for Rejuvenation and Urban Transformation (AMRUT), clubbing four major irrigation schemes under Pradhan Mantri Krishi Sinchai Yojana (PMKSY); Introduction of HAM (hybrid annuity model) in road construction.
- The total budgetary allocation on capital expenditure in infrastructure for FY2021-22 saw a 20% rise over the revised estimates for FY 2020-21 to Rs 5.64 lakh crore with roads and railways being the biggest beneficiaries.
- The Central government's focus on roads, urban infrastructure and railways will boost infrastructure investments. Conversely, spending on industrial projects is expected to be low as investments in auto-related sectors, metals and oil and gas are expected to be flat amid declining demand and capex commissioned and completed to meet regulatory requirements.
- Investments in building construction are expected to grow 6-8%. The majority growth is expected to come from urban affordable housing, which currently constitutes ~25% of the incremental urban addition and is expected to grow at a high pace.

- Within the infrastructure space, road projects will be a critical investment driver from fiscals 2022-26. The National Infrastructure plan outlined by the Government entails an investment of Rs 111 lakh crore over fiscals 2020-25 and will drive infrastructure investments.

Electronics

- The government's focus on making India a manufacturing hub will play a vital role in driving demand for tools such as screwdrivers, tweezers, wire strippers and pliers.
- The National Policy on Electronics aims to promote domestic manufacturing and reach a turnover of USD 400 billion by 2025 (from USD 59 billion in fiscal 2018). The PLI scheme for electronics manufacturing, which will be applicable till fiscal 2026, will further support demand for tools.
- Indian Electronics Manufacturing Service (EMS) Industry is expected to grow 6.5x from $23.5 bn in 2020 to reach $152 bn by 2025

Automotive

- Hand tools and power tools find application in automobile manufacturing as well as after-sales service. Commonly used tools in the auto industry are wrenches, ratchets, jacks, screwdrivers, compressors, hammers, drills and air pumps.
- The growth in the automobile sector is expected to remain healthy due to higher domestic consumption on account of rising incomes, increasing affordability and urbanisation, while exports will be driven by the lower cost of manufacturing.
- The auto components sector is another major consumer of hand tools and power tools. A thriving automobile sector augurs well for the growth of the auto ancillary sector.
- The government has recently introduced the PLI scheme for the auto and auto component sector with an outlay of Rs 25938 crore to boost domestic manufacturing.
- The passenger vehicle production is expected to witness 7-9% growth between fiscal 2021 and 2026. Demand is expected to pick up bolstered by moderate macroeconomic growth, increasing disposable income and shift towards personal mobility. Other factors that would aid demand are increasing urbanization, government support, and improved availability of finance.
- Commercial vehicle production is expected to grow by 12-14% in the next 5 years (over a low base of fiscal 2021) on account of improvement in infrastructure expenditure and lower penetration in light commercial vehicles. Demand is expected to increase during the period with medium & heavy commercial vehicle leading the growth in the upcoming five years. The growth can be attributed to an improvement in industrial activity, rising replacement volume and government's thrust on rural transportation.
- Two-wheeler production is expected to grow by a modest 9-11% CAGR between fiscal 2021 and 2026. There has been good recovery in demand post second wave and lockdown restrictions. In the medium term, demand is likely to be supported by rising farm incomes and improving rural infrastructure, especially as the government continues to invest in developing rural roadways. Adoption of electrification in this segment is expected to be quite rapid post fiscal 2021.
- Tractor production is expected to increase by a muted 0-2% CAGR in the next five years owing to high base. The government's aim to double farm income via initiatives such as e-NAM (National Agriculture Market), direct price support, farm loan waivers, expansion of crop insurance coverage, MSP price support and improvement in land productivity via soil health cards is expected to boost tractor demand.
- OEM demand which is the largest contributor to auto component revenue is pegged to grow at a healthy pace over the next 5 years. Auto component market size to grow at 13-15% CAGR between fiscals 2021 and 2026 to

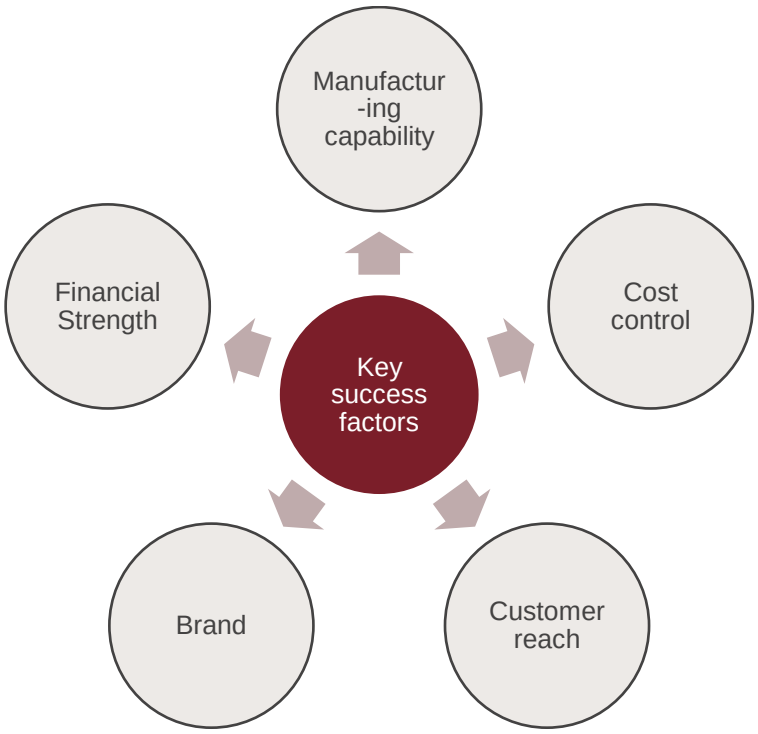
~Rs 5,832 billion on the back of robust production growth across asset classes in the medium term (on a low base) and also aided by realization growth via OEM price increases.

- The auto component replacement market is projected to grow at 7-9% CAGR between fiscal 2021 and 2026. This is due to increased OEM demand between fiscals 2017 and 2019 along with two to three years of replacement cycle.
- As per the production linked incentive scheme, the government has earmarked Rs 44,000 crore towards the auto and auto components industry.

Other growth drivers

- All-in-one or multi-purpose tools are gaining popularity among users due to their convenience and ease of use.
- Rising disposable incomes, coupled with the do-it-yourself trend, has led to an increasing number of households purchasing tools through traditional channels as well as online channels. There is an opportunity for players to tap the D2C route to boost sales.

3.4 Key success and risk factors



Manufacturing capability: Expertise in manufacturing technology and R&D to meet customer requirements (both domestic and exports) is essential for players to thrive in this segment. Importers/OEMs tend to thoroughly evaluate the company's production facilities before engaging in supply agreements. Hence, it is important determinant of export growth potential for contract manufacturers (white or private labels).

Cost control: With increasing competition from new players (including regional players), incumbents need to control costs across the value chain, viz. procurement, manufacturing, supply chain, marketing, administrative, etc. This is important for players to compete effectively in the market.

Financial strength: The pandemic and subsequent lockdown has resulted in adding further stress to small players. However, companies with better financial strength are better placed for future growth and seizing on market opportunities.

Customer reach: The extent of the player's distribution reach in Indian and export markets plays a key role in ensuring the availability of the products at the point of sale. Having an extensive distribution reach makes cross-selling of related products possible, thereby driving topline growth.

Brand: Brand plays a vital role in communicating the product characteristics to influence customers' buying decisions as well as the ability to cross sell adjacent products. Some of the key determinants of brand success are superior product and service quality, continuous R&D and innovative product offerings, strong understanding of customer needs, marketing/brand promotion activities, and a unique value proposition. Given the large number of players in the tools and hardware industry, a strong brand presence enables a company to differentiate its products in the market, provides a certain degree of pricing flexibility, and relatively easier access to newer market.

4 Global steel files and tools industry

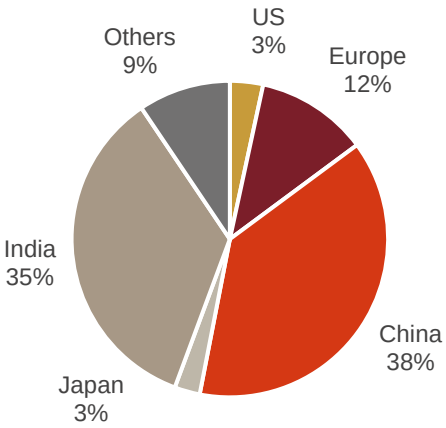
4.1 Files market assessment

Overview

A file is a tool that is used to remove fine amounts of material from a work piece. It is predominantly used in metalworking, woodworking, and similar trade tasks in engineering, automotive, construction, defense, jewelry, watchmaking, agriculture, carpentry, fabrication, masonry, and forestry. Approximately 210 lac dozen files were produced globally in 2020, with Asian countries being the major producers and Western countries the major consumers.

205-210
lac dozen units
CY20 production

Production by region (by volume, 2020)



CY16-20 CAGR

The US	: 1%
Europe	: 2-3%
China	: 4-5%
Japan	: 2-3%
India	: 3-4%

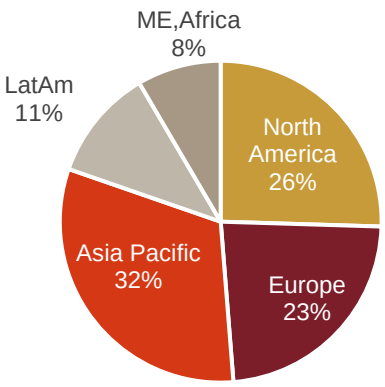
Source: Maia Research

Asian countries like China, India and Japan together account for more than 75% of total steel files produced as the enjoy relative cost advantages, robust manufacturing ecosystems, domestic industry demand and availability of raw materials. Some leading Asian manufacturers are JK Files, Hebei Quangong Steel File, Nanhe Ruixin Steel file Co., and Guowu Steel File.

JK Files is a leading player in the global files industry, with one of the largest manufacturing capacities in the world.

205-210
lac dozen units
CY20 demand

Market size by region (by volume, 2020)

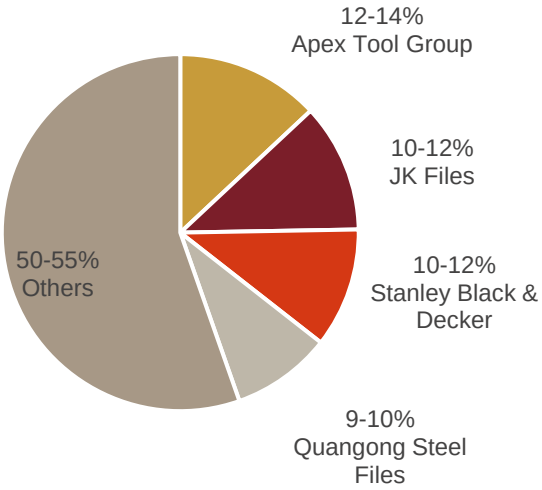


CY16-20 CAGR

North America	: 3-4%
Europe	: 2-3%
Asia Pacific	: 4-5%
South America	: 4-5%
ME & Africa	: 4-5%

Source: Maia Research

Global brand market share (Sales voume, 2020)



Source: Maia Research

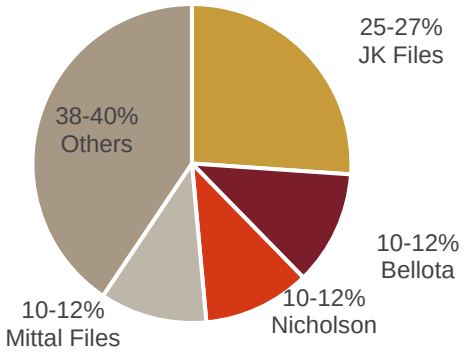
North America and Europe account for close to 60% of global consumption, with industrial applications, general purpose applications in households, and precision manufacturing driving demand.

The top four players accounted for nearly 50% of the global sales with the leading brands – Apex Tool Group, JK Files & Engineering Ltd and Stanley Black & Decker Inc. having a market share of ~12% each.

These brands are able to maintain a high market share owing to their global presence, superior manufacturing capabilities and wide variety of products catering to the needs to various industries.

JK Files with 10-12% volume share is the second largest supplier globally in 2020 with a strong presence in Asia, Africa and LatAm regions. It is the largest brand in the African market with a market share of 50-55% by volume in 2020.

Player wise capacity (Volume, CY 2020)



Source: Industry

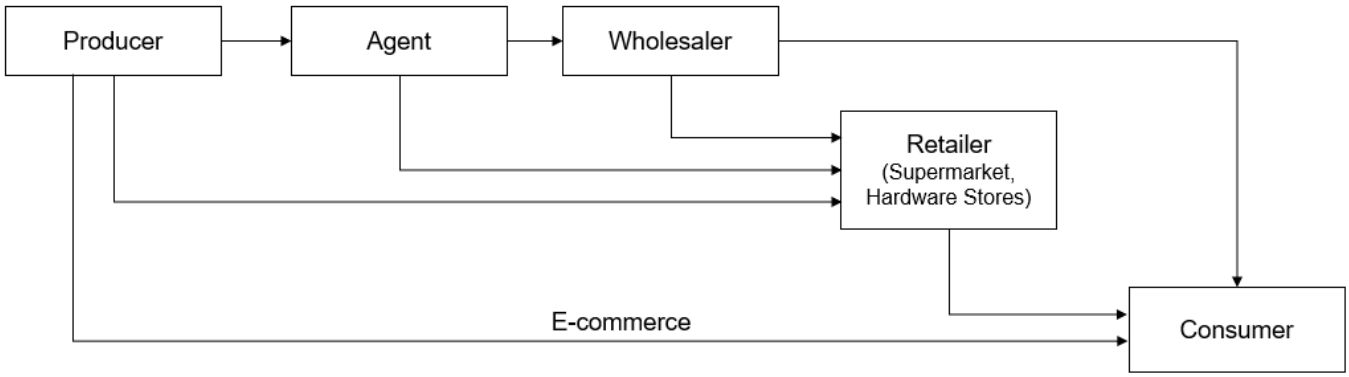
As per industry estimates, the current global installed steel files manufacturing capacity is ~270 lac dozen units.

Based on installed capacity, JK Files & Engineering Ltd has the largest installed manufacturing capacity with 25-27% global capacity.

The other leading manufacturers of steel files are Bellota, Nicholson (Apex Tool Group), Mittal Files and Tools Private Ltd, etc.

Given the nature of files manufacturing, large manufacturers are able to derive economies of scale, resulting in better unit economics of production.

Industry structure



Globally, the industry structure for files can be classified into two types, based on the type of economy.

Developed economies

- In developed economies like the US and Europe, large corporations such as the Apex Tool Group, and Stanley Black & Decker Inc. procure files from their own plants or from third-party manufacturers.
- These companies tend to be highly focused on R&D, given the mature nature of customers in these markets and the use of files in engineering and other specialized applications
- Another differentiating characteristic of these markets are their well-developed, modern trade channels (such as Lowe's and Home Depot); these are important channel partners for manufacturers who often sell products under their own labels.

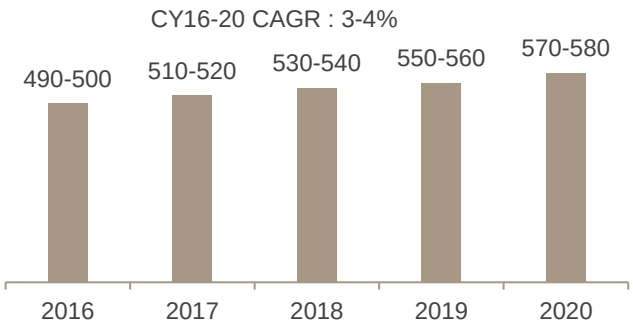
Developing economies

- In developing economies such as Africa, Asia and LatAm, markets tend to be fairly fragmented with several domestic and global players.
- These regions account for 40-45% of total global demand, with distributors/ dealers driving sales in these markets. Agriculture is a key industry in these economies and files are widely used to sharpen agricultural equipment.

Demand review

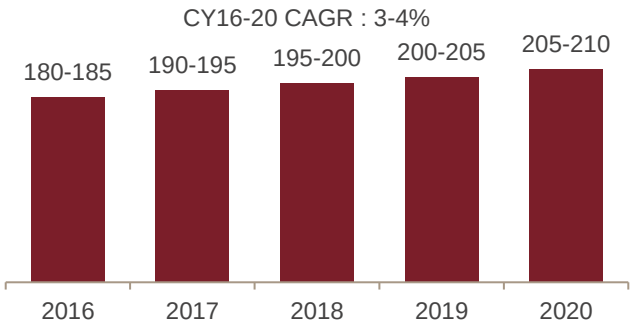
Files consumption clocked 3-4% CAGR over the last 3-4 years, owing to the steady demand from the developed economies, particularly the industrialized regions of EU and healthy growth in construction activity (both residential and industrial) in these regions and booming infrastructure spending in the Asia Pacific region, particularly China and India.

Global files market Size (USD million)



Source: Maia Research

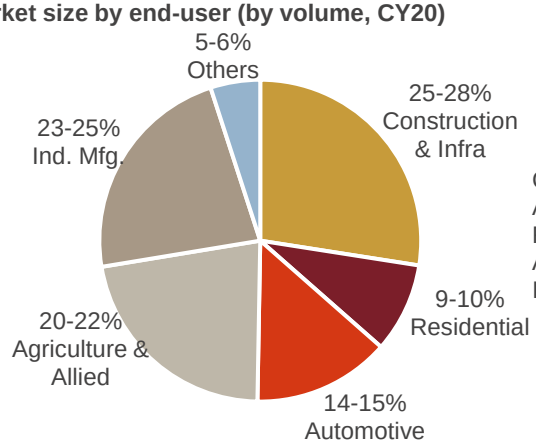
Global files market Size (lac dozen units)



Source: Maia Research

Market size by end-user (by volume, CY20)

205-210
lac dozen units
CY20 demand



CY16-20 CAGR

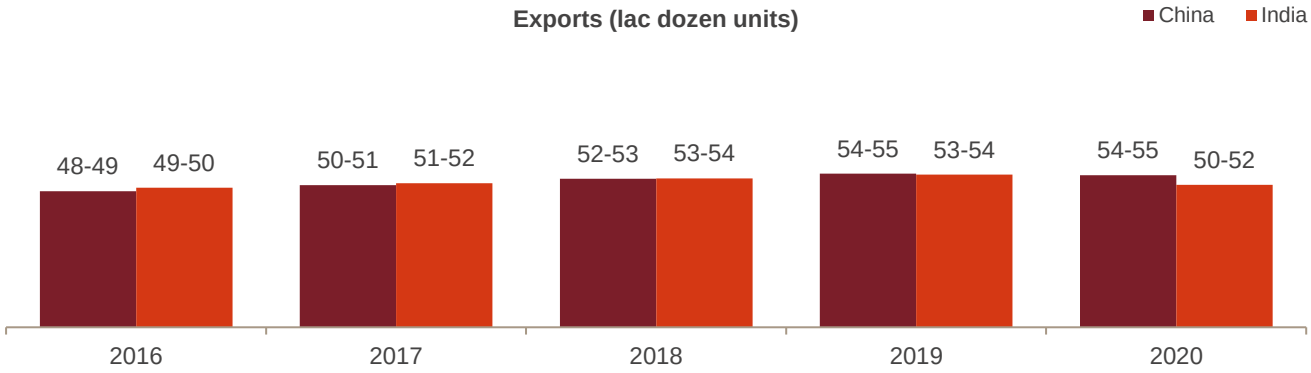
Construction	: 4-5%
Automotive	: 1-2%
Residential	: 3-4%
Agriculture	: 2-3%
Industrial mfg	: 1-2%

Source: Maia Research
Others includes small scale industries, retail uses, educational institutions, etc.

The construction and residential sectors, which account for ~40% of total demand, clocked a healthy ~4% CAGR over the last 3-4 years, owing to the high degree of global spending on infrastructure and growth in building construction activity. While engineering files is growing at a rapid pace and are mainly consumed in the industrially developed economies of North America, Europe, Japan, and China; the demand for agricultural files is mainly from Asia, Africa and LatAm and has sustained growth albeit at a slower pace.

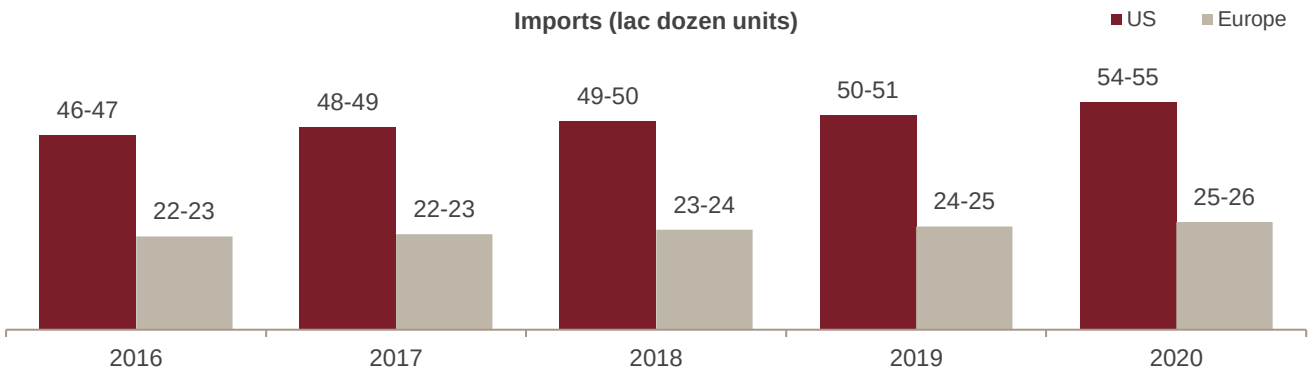
Trade

Exports: China and India are the two major global exporters of files, with both countries clocking ~4% CAGR between 2016 to 2019. While India has a good presence in the African and LatAm markets, China has a good presence in the North American and European markets.



Source: Maia Research

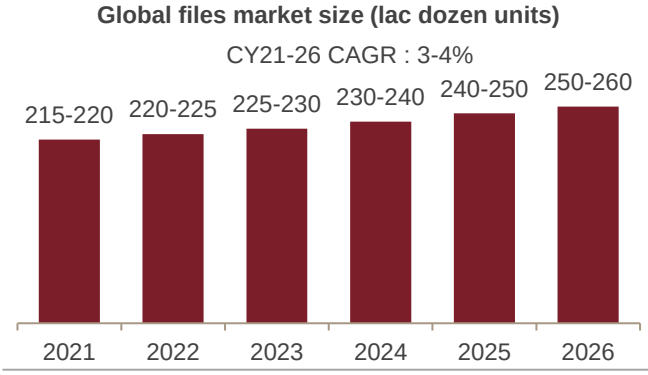
Imports: In the European and North American markets, high cost of manufacturing has resulted in key global files manufacturing players outsourcing to low-cost manufacturing players in India. Economic advantages arising from lower manpower and manufacturing costs in Asia have led to the US and Europe increasing sourcing from this region, with imports clocking 3.5-4% CAGR between 2016 to 2020.

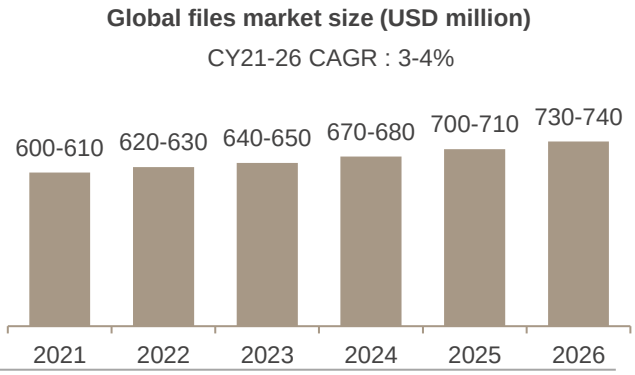


Source: Maia Research

Demand outlook

The global files industry is expected to clock 3-4% CAGR over the next 5 years, owing to healthy growth in the construction and infrastructure industry in most countries such as the proposed USD 1.2 trillion infrastructure spending in the US and accelerating investments in China, higher global manufacturing output in key sectors such as automotive, oil and gas, capital goods, etc. and improved product features of files for engineering applications.





Source: Maia Research

Key growth drivers

- Key geographies
  - Growth in the files market is driven by downstream demand. Better product quality and greater affordability will be key growth drivers.
  - Europe and North America have good manufacturing bases and are leaders in the automotive and aerospace manufacturing markets. The Asia-Pacific region has a vast market and numerous downstream enterprises engaged in manufacturing. The demand for files in Latin America and Africa is relatively low, due to the relative underdevelopment of its industrial sector and is majorly for agricultural files.
- Key industries
  - The global construction industry is expected to clock 4-5% CAGR over the next 3-5 years (CY2020-CY2025), after recovering from the impact of the global pandemic. While residential construction will drive short-term recovery, infrastructure spending is expected to drive growth over the long term. The global construction market is expected to reach USD 15.2 trillion by 2030 from USD 10.7 trillion in 2020.
  - The auto industry is expected to clock 4-5% CAGR over the next 5 years (CY2020- CY2026), owing to growth in personal incomes, increasing affordability, greater adoption of electric vehicles, etc. Europe leads the global automotive industry, mainly due to the strong presence of major automakers, and is expected to drive global growth.
  - Agriculture and allied sectors is a key consumer of steel files for sharpening of tools by agriculturists engaged in producing palm oil, sugarcane, coffee, rubber, etc. and provides significant potential for growth. Asia, Africa and LatAm have historically been agriculture driven economies and will continue to be key markets for steel files.
- Product characteristics
  - Cutting tools and power tool accessories have relatively higher frequency of tool change requirements under normal operating conditions. Although companies are focusing on improving the tool life, the high replacement requirements will drive demand for these tools.
  - Multi-function or all-in-one tool packages that can meet the diversified needs of customers are gaining traction among users due to the convenience of ‘purchase-and-use’.
  - Leading players are focusing on ergonomic file design, including lightening the product, strengthening the grip of the damping handle, and improving hand comfort.

4.2 Other tools market assessment

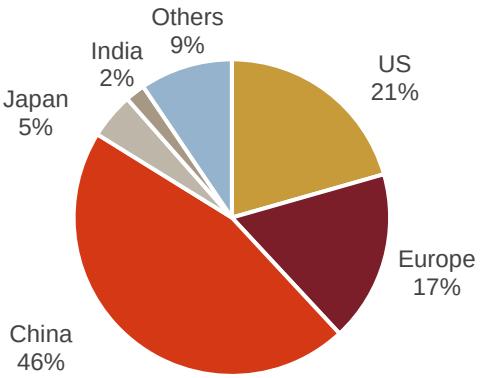
Drills market assessment

Overview

Drill bits are generally classified as Twist Drill, Counterbore, Countersink, Flat Bottom Boring and Specialty. Twist drill bits are the most common type of drill bit and are used for everyday drilling in all types of material. Drill bits may be made from carbon steel, high speed steel, cobalt steel, tool steel or solid carbide. In 2020, approximately 1200 million pieces of drill bits were produced and consumed globally. China, the US and Europe accounted for ~80% of the production. North America and Europe made up for close to 70% of the global consumption of drill bits due to the highly developed industrial ecosystem in these countries, high consumer awareness of machine tooling, DIY application of drill machines in households, etc.

Production by region (by volume, 2020)

1150-1200
million units
2020 production



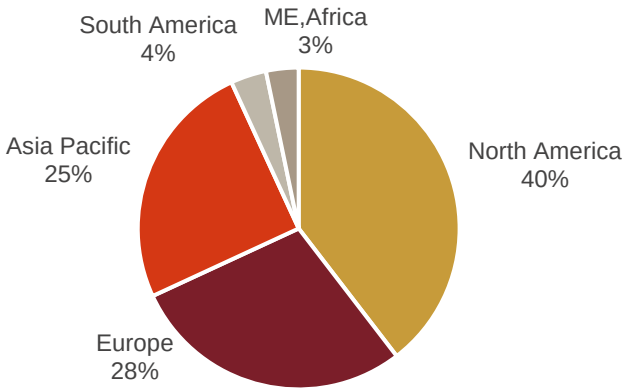
CY16-20 CAGR

The US	: 1-2%
Europe	: 2-3%
China	: 5-6%
Japan	: 1-2%
India	: 4-5%

Source: Maia Research
Others includes small scale industries, retail users, educational institutes, etc.

Market size by region (by volume, 2020)

1150-1200
million units
2020 demand



CY16-20 CAGR

North America	: 2-3%
Europe	: 2-3%
Asia Pacific	: 4-5%
South America	: 2-3%
ME & Africa	: 4-5%

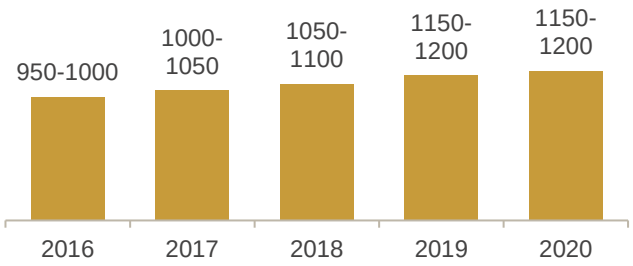
Source: Maia Research

Demand review

The global hand tools market logged a healthy 4-5% CAGR over 2016-2020 due to growing construction and infrastructure investments globally, strong demand from industries like aerospace and electronics, increasing applications of drilling in the do-it-yourself segment due to urbanization, etc.

Global drills market Size (million units)

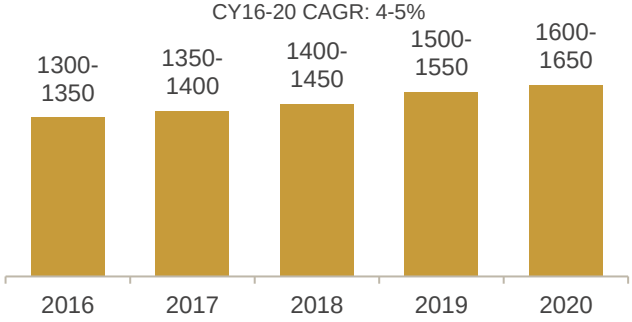
CY16-20 CAGR: 4-5%

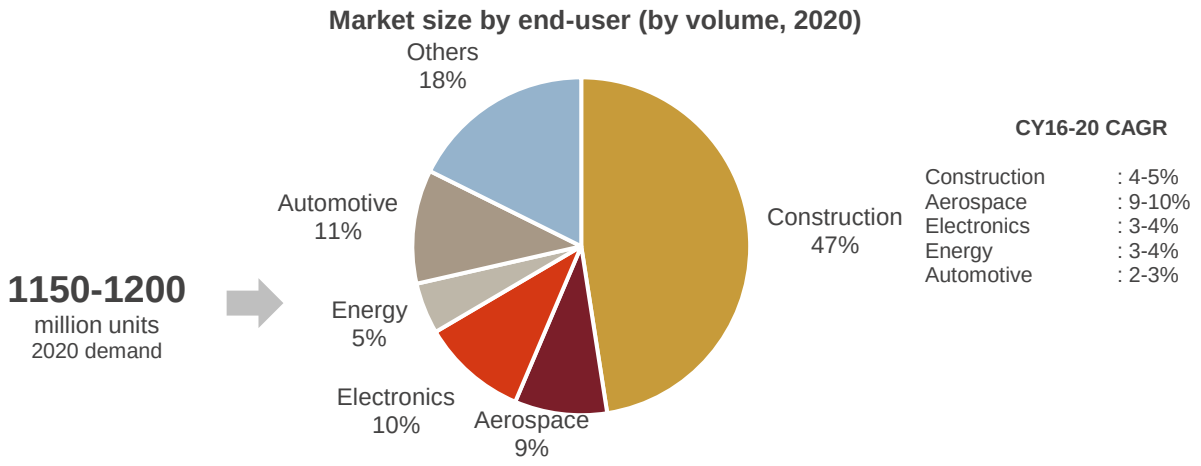


Source: Maia Research

Global drills market Size (USD million)

CY16-20 CAGR: 4-5%

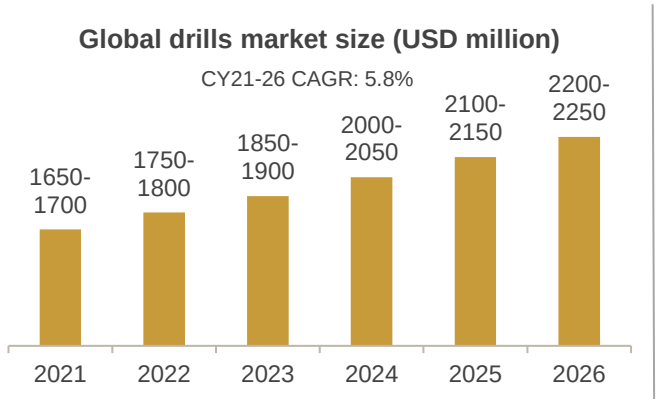


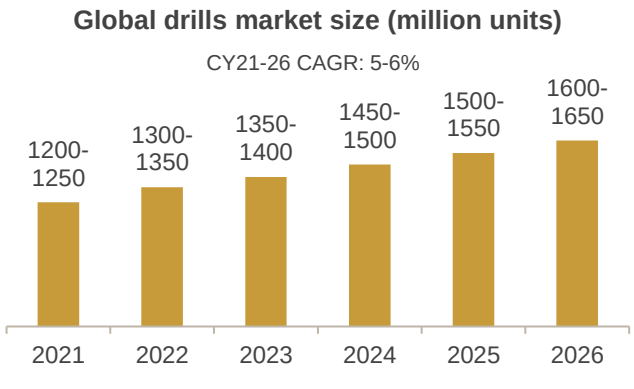


Source: Maia Research
Others includes small scale industries, retail users, educational institutes, etc.

Demand outlook

The global drills industry is expected to clock a healthy 5-6% CAGR over the next five years as nations ramp up infrastructure development, urbanisation increases, DIY trend catches up among households, and online channels penetrate deeper. The Asia-Pacific region is expected to log a higher growth rate due to rapid industrialisation and surging construction activities in the countries such as India, China, Australia, and Japan.





Source: Maia Research

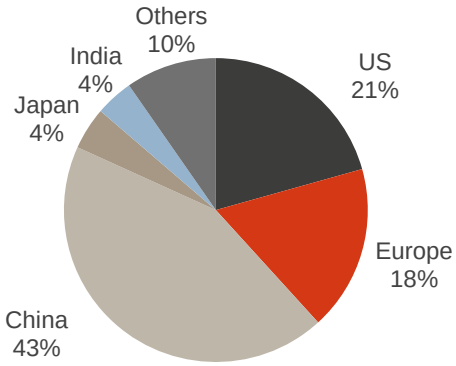
Hand tools market assessment

Overview

A hand tool is any tool that is powered by hand rather than a motor. Examples include wrenches, pliers, files, screwdrivers & nut drivers, hammers, saws, and knives & blades. In 2020 approximately 4,000 million pieces of hand tools were produced and consumed globally. China, the US and Europe accounted for ~80% of the production. North America and Europe made up for close to 60% of the global consumption of these tools due to the highly developed industrial ecosystem in these countries, demand from retail users, high cost of labour, easy availability of global brands, etc.

Production by region (by volume, 2020)

4,000–4,100
million units
CY20 production



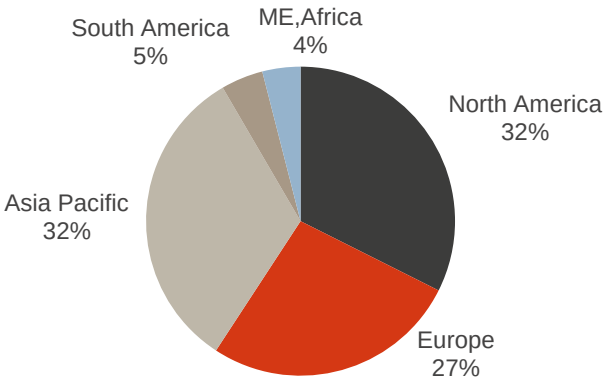
CY16-20 CAGR

The US	: ~0%
Europe	: ~0%
China	: 3-4%
Japan	: 1-2%
India	: 4-5%

Source: Maia Research

Market size by region (by volume, 2020)

4,000–4,100
million units
CY20 demand

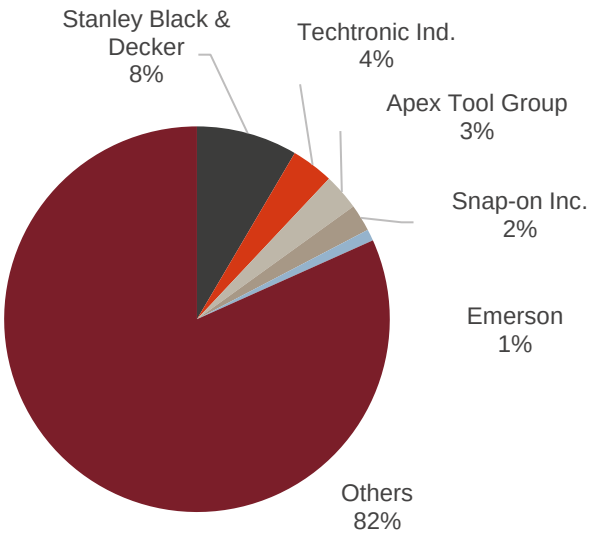


CY16-20 CAGR

North America	: 1-2%
Europe	: 1-2%
Asia Pacific	: 2-3%
South America	: 1-2%
ME & Africa	: 2-3%

Source: Maia Research

Brand market share (Sales volume, 2020)



A large number of small manufacturers are engaged in hand tool manufacturing due to their simple design, low production cost and easy availability of raw materials. Some of the key brands globally are Stanley Black & Decker Inc., Techtronic Industries, Apex Tool Group, Snap-on Inc., etc.

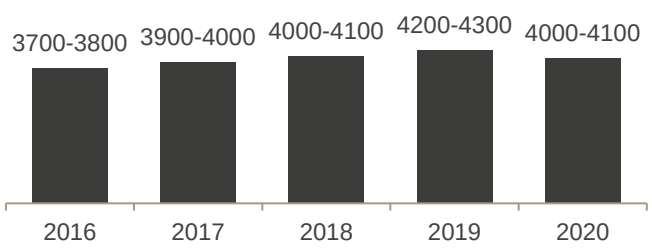
Source: Maia Research

Demand review

The global hand tools market logged a 1-2% CAGR over 2016-2020 due to muted demand from industries, replacement with power tools, limited improvement in their features, etc.

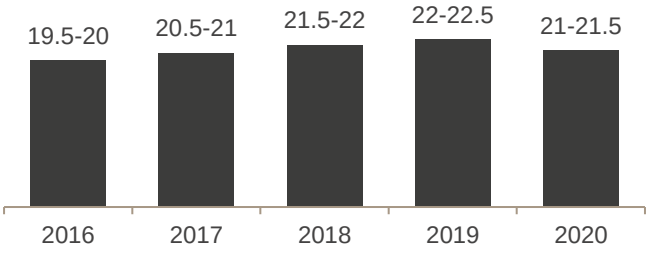
Global hand tools market Size (million units)

CY16-20 CAGR: 1-2%
CY16-19 CAGR : 4-5%



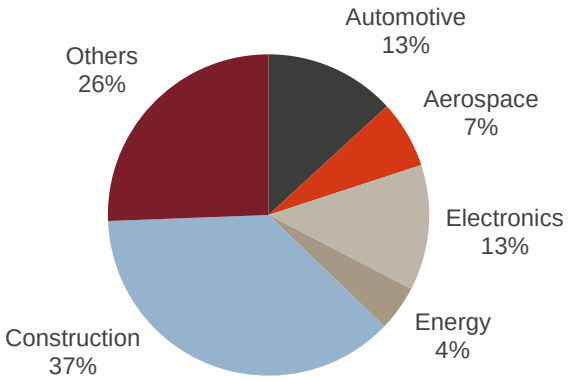
Global hand tools market Size (USD billion)

CY16-20 CAGR: 1-2%
CY16-19 CAGR : 4-5%



Market size by end-user (by volume, 2020)

4,000–4,100
million units
CY20 demand



CY16-20 CAGR

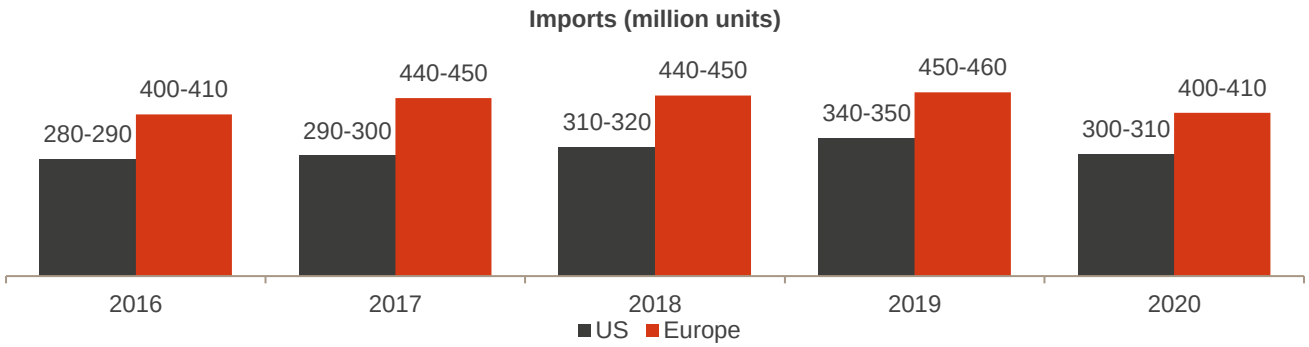
Automotive	: 1-2%
Aerospace	: 3-4%
Electronics	: 1-2%
Energy	: 1-2%
Construction	: 2-3%

Source: Maia Research
Others includes small scale industries, retail users, educational institutes, etc.

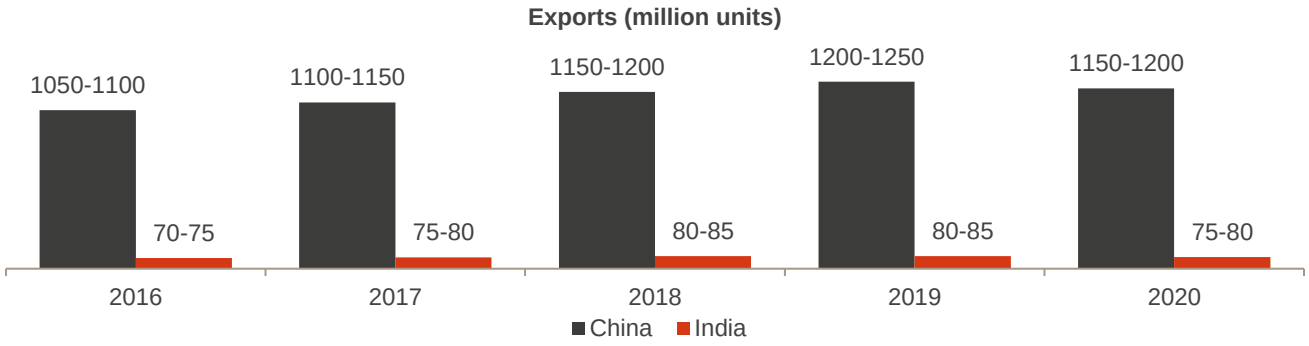
Trade

China is the major manufacturing hub of tools and hardware. Many major global manufacturers have set up factories in China as cheap cost of labor and materials there help them produce cheaper hand tools at high productivity. The country's hand tool sector is dominated by smaller manufacturers who are focussed on meeting the Middle Eastern, Latin American, African, and Asian demand.

India is not a key player in the global hand tools industry as the sector here is dominated by small manufacturers catering to the domestic market.



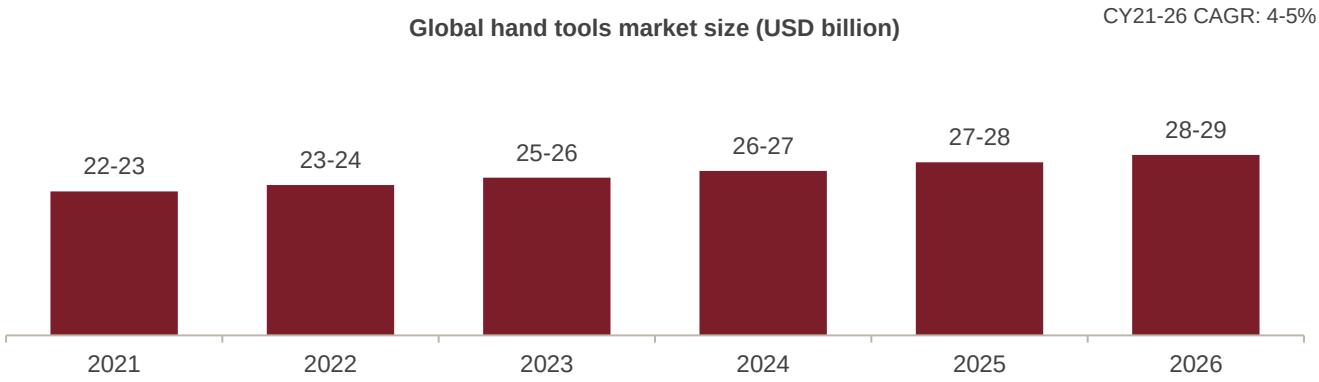
Source: Maia Research



Source: Maia Research

Demand outlook

The global hand tool industry is expected to clock a healthy 4-5% CAGR over the next five years as nations ramp up infrastructure development, urbanisation increases, DIY trend catches up among households, online channels penetrate deeper, and features of hand tools improve. The Asia-Pacific region is expected to log a higher growth rate due to rapid industrialisation and surging construction activities in the countries such as India, China, Australia, and Japan.



Source: Maia Research

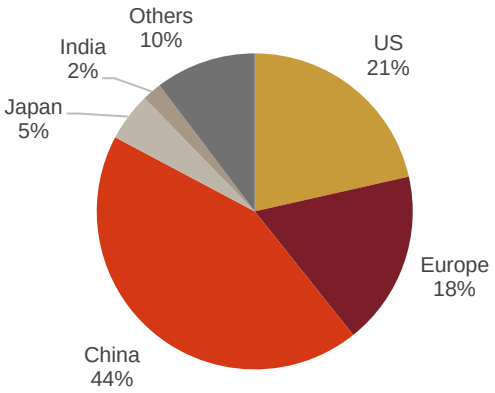
Power tools market assessment

Overview

A power tool machine is any handheld or removable mechanised tool that uses a small-capacity motor or electromagnet to drive the working head through a transmission mechanism. In 2020, global production of power tools stood at approximately 280 million pieces, with the US, Europe and China accounting for ~80% of it. North America and Europe make up for more than 60% of the total global consumption due to the highly developed industrial ecosystem (manufacturing, automotive, aerospace, electronics, etc.), high cost of labour, demand from retail users for DIY tasks, etc.

Production by region (by volume, 2020)

280–290
million units
CY20 production

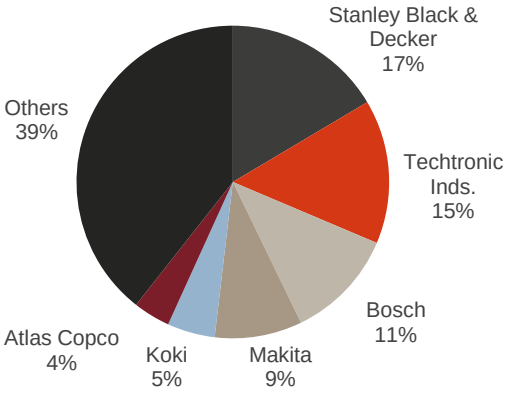


CY16-20 CAGR

The US	: 3-4%
Europe	: 3-4%
China	: 7-8%
Japan	: 4-5%
India	: 4-5%

Source: Maia ReseSource: Maia Research

Brand market share (Sales volume, CY2020)

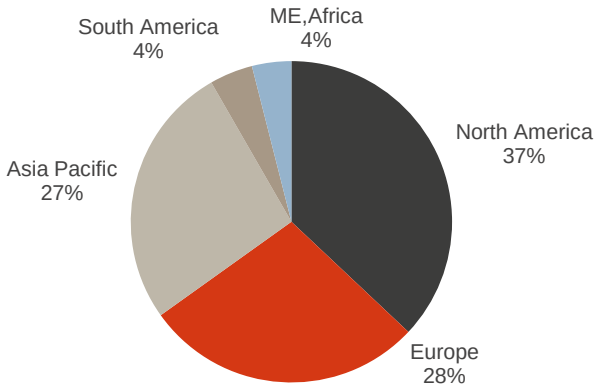


Source: Maia Research

The power tools industry is well developed in the US and European countries (mainly Germany) due to the complex manufacturing process, continuous R&D requirements and presence of key industries such as automotive, aerospace, and electronics. Although China is a manufacturing hub of power tools, the leading brands in the market are Stanley Black & Decker Inc., Techtronic Industries, Robert Bosch Tool Corporation, Makita Corporation, Koki Holdings Co., etc. due to the superior quality of their products.

Market size by region (by volume, 2020)

280–290
million units
CY20 demand



CY16-20 CAGR

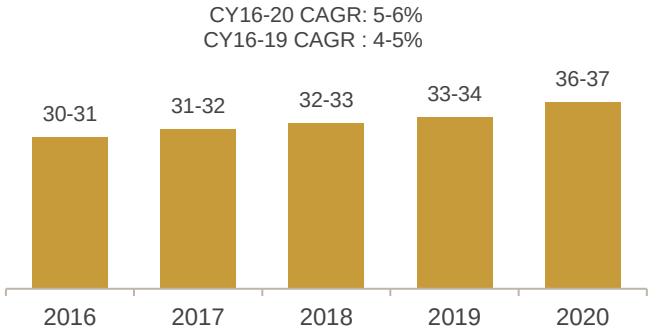
North America	: 3-4%
Europe	: 4-5%
Asia Pacific	: 6-7%
South America	: 5-6%
ME & Africa	: 5-6%

Source: Maia Research

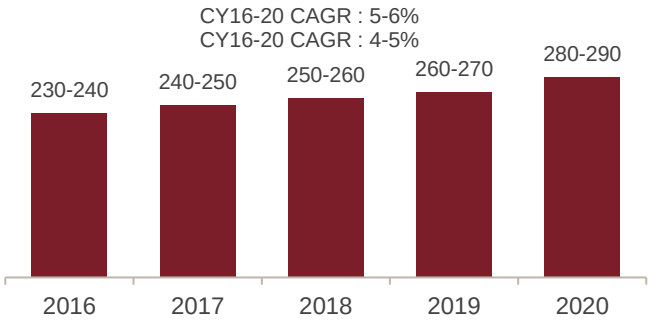
Demand review

Power tools demand clocked an impressive CAGR of 5-6% over fiscals 2017-2021 due to increasing adoption of portable power tools, availability of multi-purpose tools for various applications, growth in global construction and manufacturing industries, etc.

Global power tools market size (USD billion)

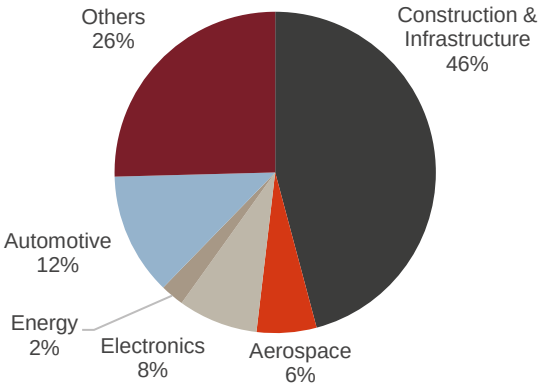


Global power tools market size (million units)



Market size by end-user (by volume, 2020)

280–290
million units
CY20 demand

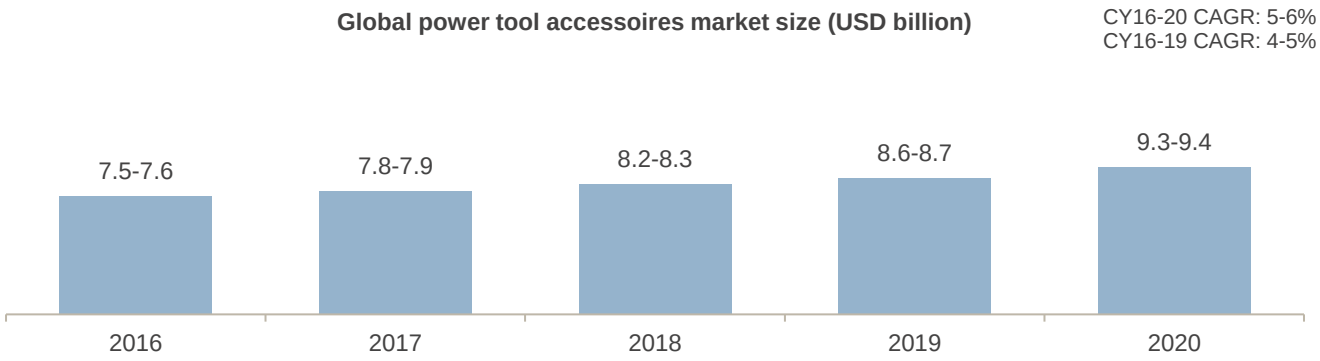


CY16-20 CAGR

Construction & Infra	: 5%
Aerospace	: 3.7%
Electronics	: 5.5%
Energy	: 4%
Automotive	: 4%

Source: Maia Research
Others includes small scale industries, retail users, educational institutes, etc.

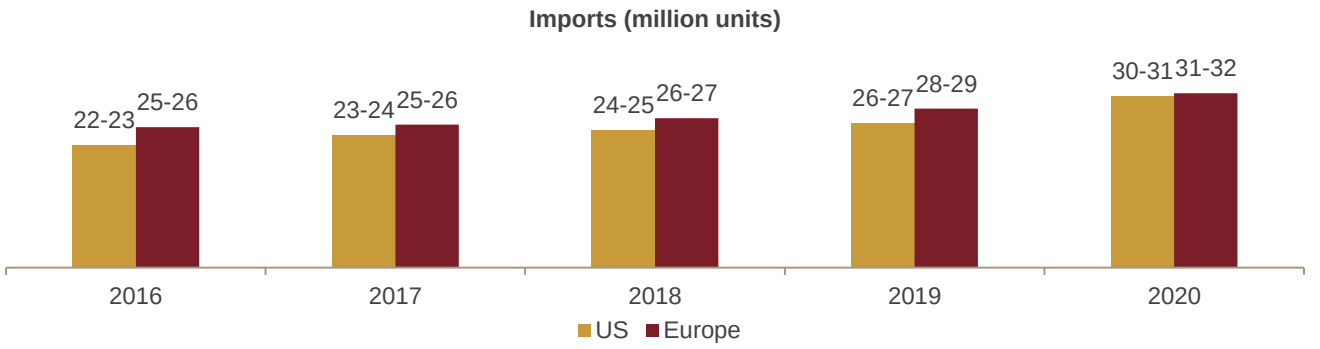
Power tools accessories are additional fittings that are used in various engine-driven power, electric and pneumatic power devices. The power tool accessories market clocked 5-6% CAGR over the last 4-5 years owing to higher penetration of power tools, better product features, rising share of online and modern trade channels, etc.



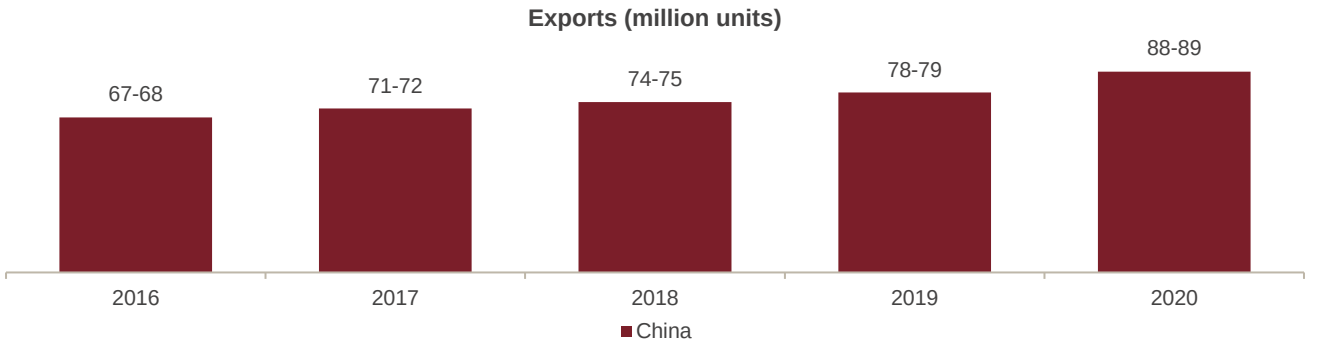
Source: Maia Research

Trade

China is a leading manufacturer of power tools with many key brands operating factories in the country to cater to their global demand. Owing to the significant cost advantages and abundant availability of raw materials, the country's power tools exports have logged a CAGR of 6-7% over the past three-four years as global demand increased. The US and Europe, which together account for ~60% of the global demand rely on imports (mainly from China) to meet roughly one-third of their domestic demand.



Source: Maia Research

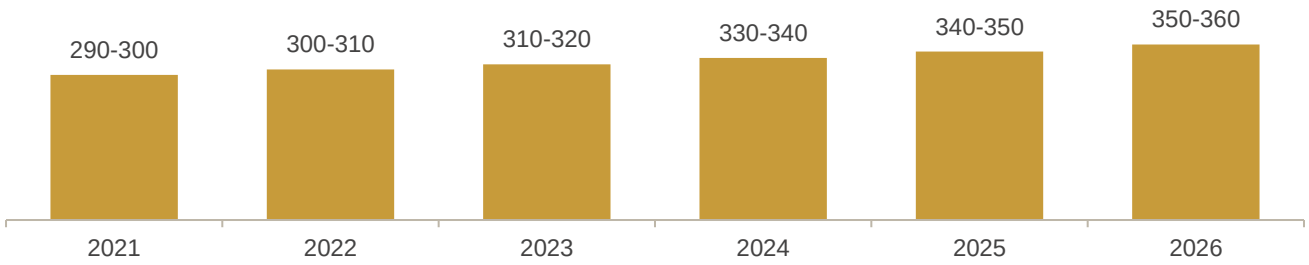


Source: Maia Research

Demand outlook

Global demand for hand tools is expected to clock 3.5-4.0% CAGR over the next five years owing to healthy demand from the infrastructure and construction segment, increasing penetration of power tools in the retail segment through online channels, development of easy to use and multi-functional power tools, increasing affordability and replacement of hand tools with power tools.

Global power tools market size (million units) CY21-26 CAGR: 3.8%



Source: Maia Research

Key growth drivers for tools industry

- The US, Europe and Asia-Pacific will drive growth in tools consumption due to improving manufacturing activity as macroeconomic revives, investments in infrastructure (such as roads, railways, residential and industrial construction) rise and use of compact tools in households for DIY applications surge.
- The Asia-Pacific is expected to grow at a higher rate on account of faster recovery from the Covid-19-induced slowdown, high share of government investments in public infrastructure, focus on the manufacturing sector and relatively lower penetration of hand tools and power tools in industrial applications.
- The professional end-user segments, such as industries in automobile, aerospace, electronics, mining, and shipbuilding, are expected to drive demand for tools going forward. They have a high growth potential and are dependent on a variety of hand tools, power tools and cutting tools in various operations such as bolting, crimping, soldering, grinding, drilling, precision welding, etc.
- Within hand tools, there is a growing propensity towards multi-purpose tools while portable, compact power tools are expected to drive growth in the power tools.
- In addition to traditional sales channels, online platforms are also gaining traction owing to benefits such as door-to-door delivery of products, online display of an extensive variety of products and brands to choose from, competitive and transparent pricing.

5 Company overview

5.1 About JK Files

Company overview

Raymond Ltd. is a diversified and market-leading conglomerate with interests in textile & apparel sectors as well as presence across diverse segments such as real estate, FMCG, and engineering in domestic and international markets. Raymond Group has a rich history of over 95 years. The group's long and successful track-record has enabled it to establish itself as the number one player in the worsted suiting fabrics segment in India. Raymond Group is amongst the leading men's tailored suit manufacturers in the world and also one of the leading players in the branded apparel menswear segment.

The group's strong leadership position is supported by one of the largest exclusive retail networks in the branded lifestyle space. Raymond Group is known for its state-of-the-art manufacturing facilities which are strategically located across India and carry out seamless integration with the supply chain network to create world-class products. The Group's portfolio includes the most trusted & iconic homegrown brands that are being continuously enhanced with customer centricity at the core.

The Raymond Group ventured into the engineering business in early 1949. The engineering segment comprises the manufacturing of steel files, cutting tools, and the marketing of hand tools, power tools machines, power tools accessories, cutting oils, etc. While JK Superdrive is the company's umbrella brand and is synonymous with files in India due to its strong brand recall, JK Sunflower, JK Eye, JK Three Files, JK Two Files, Premium Scissors, JK Sher, JK Uno, JK Two Tusk and MJK are some other well-known brands.

Management team

Ravikant Uppal (Non-executive director and Chairman)	He holds a degree in mechanical engineering from the Indian Institute of Technology, Delhi. He has over 40 years of experience in the engineering and infrastructure sectors and has been a director on the company's board since April 8, 2019.
Balasubramanian Vishwanathan (Managing director)	He holds a degree in mechanical engineering from the University of Delhi and a postgraduate degree in business management from Loyola Institute of Business Administration and also attended the Managers for Leadership Course 1996 arranged by the British Council and Leeds University Management School. He has been associated with Raymond Group as CEO of Ring Plus Aqua Limited for 4 years and is currently serving as the managing director of JK Files. With 35 years of experience in the automotive industry, he has been a director on the company's board since November 9, 2020.
Gautam Hari Singhania (Non-executive director)	He holds a degree in Bachelor of Commerce from the University of Mumbai. With 37 years of experience in the textiles and apparel sector, he has been the Chairman and Managing Director of Raymond Limited for the last 31 years and has been a director of the company's board since 1990.
Vijay Bhatt (Independent director)	He holds a degree in Bachelor of Commerce from the University of Mumbai and is a Fellow Member of the Institute of Chartered Accountants of India. He also holds a degree in Bachelor of Law (Gen.) With 35 years of experience in auditing and assurance, he has worked with Lovelock & Lewes, RSM & Co., SR Batliboi & Co. (Affiliates of E&Y in India), and BSR & Co. in the past. He has been a member of the India board of KPMG and held the post of senior independent director.

Satish Sekhri (Independent director)	He holds a degree in mechanical engineering from Delhi College of Engineering and a degree in business administration from UBS Chandigarh, where he was a gold medalist. With 37 years of industry experience, he has served as the managing director of Bosch Chassis Systems India Limited (formerly known as Kalyani Brakes Limited) while simultaneously serving on the boards of associate companies, periodically, as chairman of Dyna-K Automotive Stampings Limited, chairman of Precision Seals Manufacturing Limited, and as managing director of KBX Motorbike Products Limited. He is also a member of professional bodies such as Automotive Component Manufacturers Association, Mahratta Chamber of Commerce, Industry and Agriculture, CII – Pune Zonal Council and Board of Studies – Symbiosis Institute of Management.
Rashmi Mundada (Independent director)	She holds a degree in chartered accountancy from the Institute of Chartered Accountants of India and is an Associate Member of the ICAI. She also holds a degree in Bachelor of Commerce from Dr. Babasaheb Ambedkar Marathwada University and has passed a post qualifications course in information systems audit and completed the practical training (conducted by the ICAI). With 18 years of experience, in the finance industry she has been a director on the company's board since March 16, 2018.

Products

The company's products include a complete range of files (from rasps and machinist files to precision files such as needle and diamond coated files), cutting tools, hand tools, and power tool machines and accessories. Its products cater to a diverse customer profile, from industrial to retail consumers. Its tools and hardware products cater to end-user industries such as engineering, agriculture, construction, defense, carpentry, fabrication, saw, masonry, forestry, lumber and wood-working, automotive as well as high precision applications such as jewelry and watch-making.

Product	No. of SKUs	Description
Files	3200+	Agri Harvesting: Hoe Mill, Farmer's own & Mill Files-Single cut, Flat Smooth/Light, Flat Handle – Double cut, Big Taper – Single cut, Flat – Double cut Saw Files: Slim Taper & Regular Taper Saw -Single cut, Heavy Taper Saw, Feather Edge & Double Edge Saw, Pit Saw & Chain Saw Engineering Files: Flat/Hand /Knife, Half Round/Round, Square/Three Square, Rasp, Needle File
Cutting Tools	1600+	HSS Drills (Jobber, Stub, Long series, Extra-long series, Taper shank, etc.), HSS Tool bits, Drill Sets, Taps
Hand Tools	500+ (including power tool accessories)	Plier, Screwdriver, Spanner, Hacksaw blade, Hammer, Wrench, Planers, Hex Allen key, Sockets, etc.
Power Tool accessories		Diamond blades, TCT blades, cutting wheels, grinding wheels, Flap disc, Sanding disc, etc.
Power Tools	300+	Rotary hammer, Grinder, Marble cutter, Impact drill, Cut off saw, Chainsaw, Electric planer, Air blower, etc.

Manufacturing capabilities

The company has five plants in India (one in Ratnagiri, Pithampur, Vapi and two in Chiplun) to manufacture files and drills, featuring state-of-the-art equipment and efficient manufacturing processes.

For files manufacturing, the company's large order volumes and decades old relationships with steel mills enables it to source steel of the required quality and strength that is conducive to its product and manufacturing process. Its low-cost manufacturing base gives it access to several markets, in addition to a significant cost advantage.

The company's manufacturing plants feature equipment from leading machinery manufacturers, strengthening its reputation of manufacturing excellence. In order to improve productivity, JK Files designs some of the machines required for production along with use of automated processes (such as robotic hardening). The company's backward integration into HR steel manufacturing gives the company the flexibility to manufacture a wide range of files.

Footprint

India: JK Files is a market leader in the files segment in India, having more than 730 active dealers/distributors covering ~600 towns and catering to ~1.5 lac retail outlets across the country.

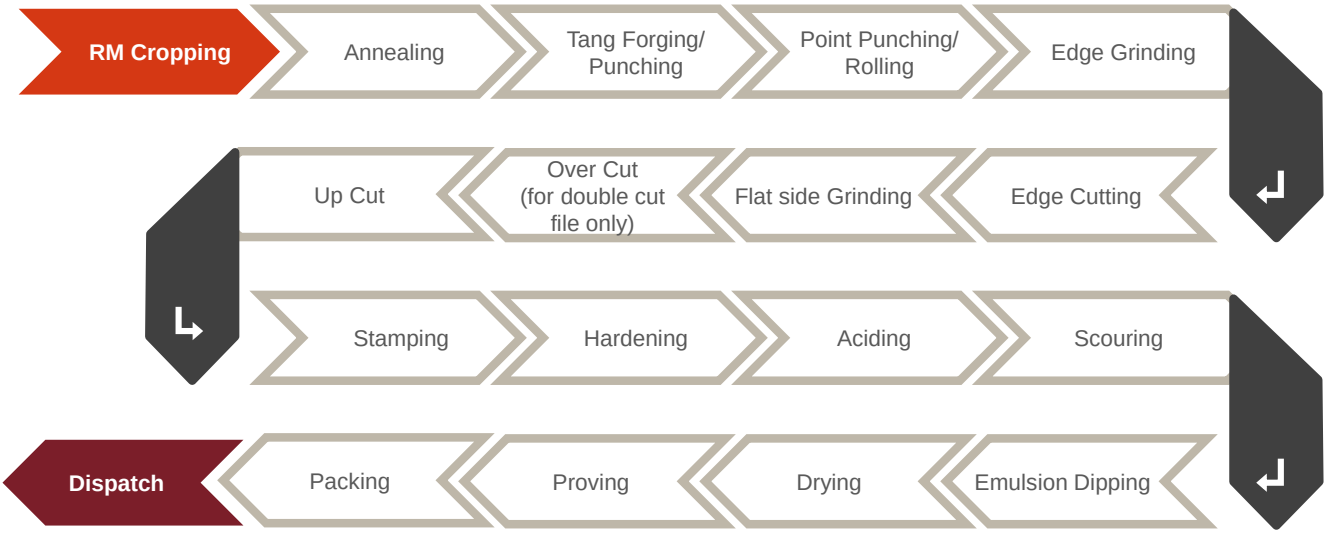
Global: JK Files is one of the leading global files manufacturer and has a presence in Asia, Africa, LATAM, Europe and USA through a mix of its own brands and manufacturing for OEM's (white label). It is a leading brand in Asia and Africa and has a strong presence in the LatAm markets.

Strategic partnerships

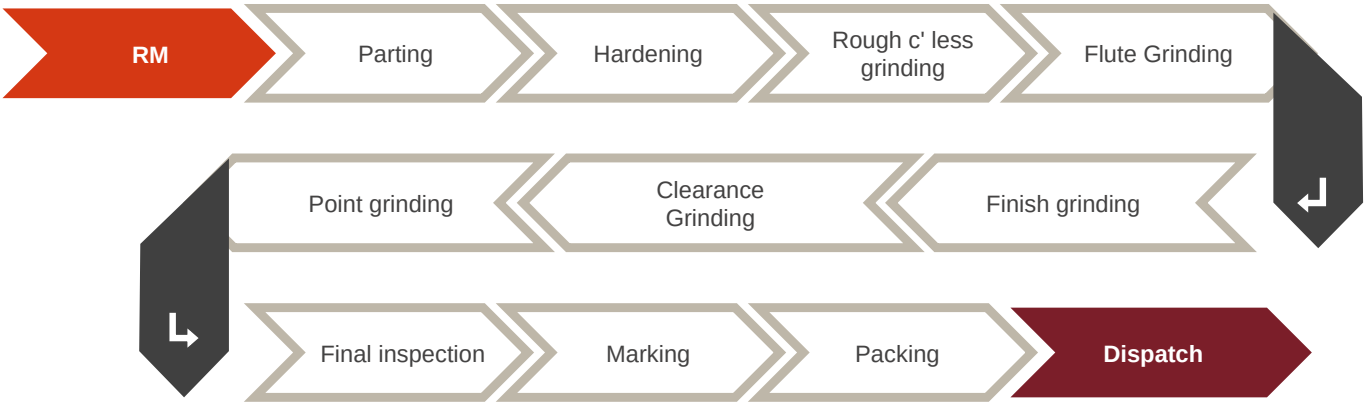
While the company already has strategic alliances with global brands such as Apex Tool Group (USA) and is a preferred supplier of finished/semi-finished files to Bellota (Spain), Bahco (Sweden) and PFERD (USA), it is continuously exploring the possibility of newer alliances to grow its international business.

5.2 Operational overview

File manufacturing process



Drill manufacturing process



Quality accreditations

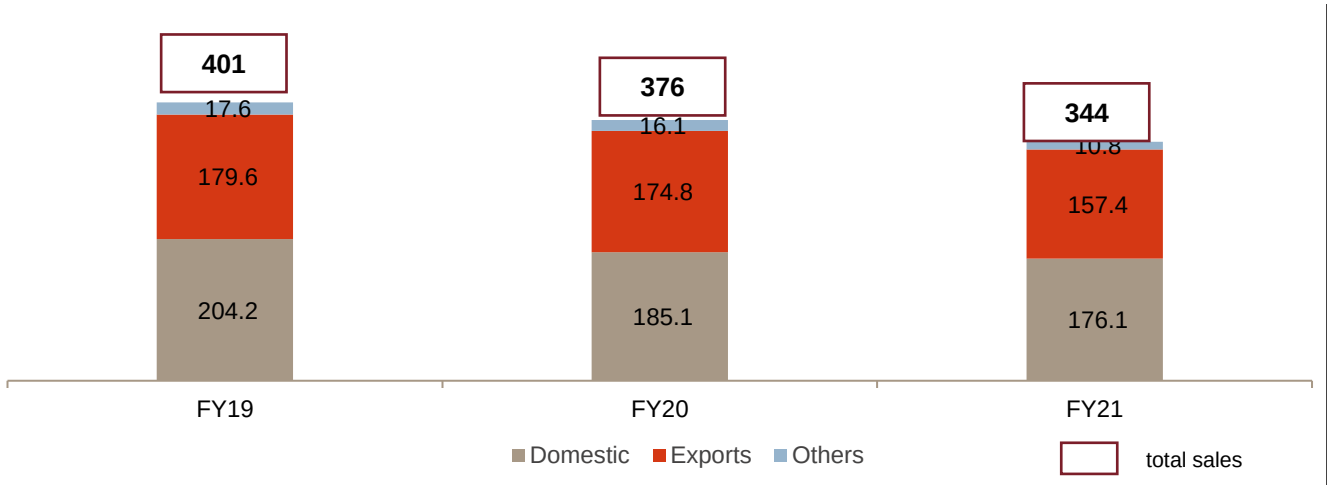
The company's facilities are ISO 9001:2008 and OHSAS 18000 (three out of five facilities) certified by TUV-NORD.

JK Files does manual testing for 100% of the files. This manual intervention of skill set and checking requires special experience and expertise, here JK has an edge over and above the competitors.

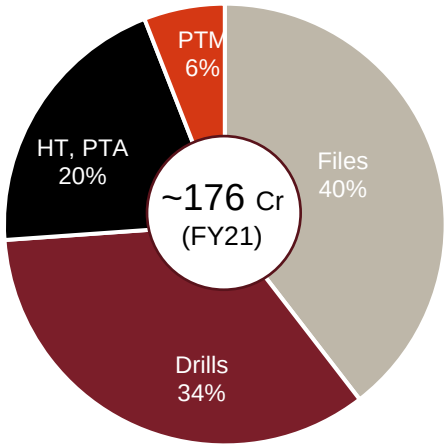
5.3 Sales overview

The company reported sales of Rs 344 Cr in fiscal 2021, as compared to Rs 376 Cr in fiscal 2020.

Revenue in Rs Crore



Source: Company data

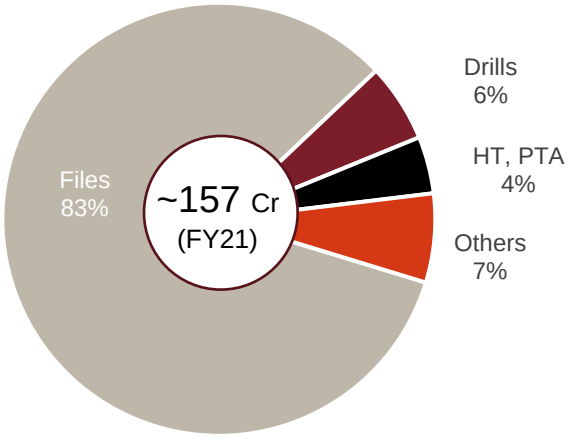


Source: Company data

Domestic sales review

West Bengal, Uttar Pradesh, Delhi and Maharashtra together accounted for more than 50% of total company revenue in fiscal 2021. South India accounted for less than 10% of domestic sales in the same period. While files and drills accounted for 40% and 34% of total revenue, respectively, drills clocked 5% CAGR between fiscals 2017 and 2021.

(HT – hand tools, PTM – power tool machines, PTA – power tool accessories)



Source: Company data

Export sales review

Files accounted for more than 80% of export sales over the last three years. JK Files exports its files for sale under its own brand as well as for private labels of other OEMs. The share of private labels in files exports increased from ~30% in fiscal 2017 to ~50% in fiscal 2021, indicating an increase in the number of partnerships with JK Files as a manufacturing partner.

5.4 SWOT analysis

Strengths:

Files market leader: In fiscal 2021, JK Files is the market leader in the files segment in India with market share of 64-66% (by sales volume). It is the only manufacturers of files such as car body files, bent body files, galvanizing files, stair case rasp, rice file, contact file, etc. in India

Dealer network: The company's vast network of more than 730 active dealers/ distributors reaching 600+ towns across India through ~1.5 lac retail outlets enables it to reach customers across the country.

Brand equity: Owing to its over 70 year history, the company enjoys significant customer loyalty and brand equity in the Indian market and certain international markets such as Africa. All products in India and Africa are sold under the JK Files brand and it enjoys a pricing premium of upto 40% in files. Also, the company features in the qualified vendors list of many industrial buyers.

Range of product mix: JK Files has a wide range of products including steel files, drills, power tools, hand tools and power tool accessories. The company boasts of 3200+ SKUs in files and 1600+ SKUs in drills.

Strong relationships with steel mills: The company being a large buyer of steel for decades, enjoys significant advantages over smaller players in terms of direct sourcing from mills and customization of products to meet the company's specific requirements.

Pan India presence in drills: It is one of the leading players in the drills segment with a market share of 8-10% in value terms in fiscal 2021. Owing to its strong distribution network of more than 730 active dealers/ distributors spread across ~600 towns in India, the company is able to ensure pan India availability of drills.

Financial strength: The company has a strong track record of financial performance with healthy EBITDA margins and ROCE.

Weaknesses:

Manufacturing of hand tools and power tools: While the company has leveraged its manufacturing expertise in files to become a leading player, it doesn't have similar capabilities in the other product segments and depends on outsourced manufacturing.

Limited presence in the US: A majority of the company's exports are to Africa, LatAm and Asia. The company has a limited presence in the US through its partnership with Apex.

Untapped modern trade channels: Hand tools and power tools are retailed extensively through the modern trade channel in the developed markets. The company doesn't have a strong foothold in these channels and will have to develop relationships with retailers/distributors to grow in these markets.

Opportunities:

International growth: As a pioneer in the Indian files industry, JK Files has globally-recognised manufacturing capabilities and significant cost advantages that can be leveraged in its international expansion. Its partnerships with leading global players such as Apex Tool Group validates its manufacturing capabilities in the files segment. The trend of increasing white label manufacturing is an opportunity for JK Files to grow its global business. Since, global players have a stringent process for selecting contract manufacturers, JK Files has an advantage due to its demonstrated capabilities. On the other hand, the strong presence of the brand in Asian and African markets will aid its growth in these markets on the back of increasing demand from the agriculture sector in these regions

Product portfolio expansion: The company's strong pan-India dealer network and the strength of the JK brand provides it with an opportunity to leverage synergies in its product portfolio and customer profile to grow its business in other related products.

Online and modern trade channels: Currently, dealer sales is the primary operating model in the T&H segment in India. With the rising penetration of e-commerce and modern trade in India, there is an opportunity for the company to build a strong presence across these channels to drive sales growth. In the developed economies, modern trade and e-commerce are well established sales channels for hand tools and power tools, having a significant share of the market. While the company hasn't tapped into these channels yet, these channels present the company with a significant opportunity given the size of these markets and the higher profitability in these markets.

Threats:

Competitors offering low-cost products: The files segment is witnessing increased competition from competitors offering lower-priced products at quality levels that meet customer expectations. Although these competitors continue to remain small in scale and size, they have been growing by competing on price and dealer margins. This puts pressure on the company's revenue growth as well as margins.

Fragmented market structure: While the files market is dominated by the top 3-4 players, other product segments such as drills, power tools and accessories, and hand tools have many players operating across different sub-product segments leading to high competition intensity and low supplier power.

Chinese imports: While the files segment has negligible import dependence, the other segments face competition from competitively priced Chinese products.

Market risks: The company has a significant share of exports in its revenue mix, which exposes it to foreign exchange/currency risks. Steel is the primary raw material in manufacturing of tools and hardware, and global steel prices tend to impact the company's business operations.

Raw material prices: Fluctuations in raw material prices such as iron ore and coal can put pressure on the overall operating margins as the company may not be able to pass on the price increases to consumers.

5.5 Competitive assessment of players

Peer comparison by key operational parameters

Although files and drills are the key products of JK Files, its product portfolio spans across the spectrum of tools and hardware making it a one stop solution for the customer's tooling needs.

Company name	Files	Hand Tools	Cutting Tools	Power Tools	PTA
JK Files & Engineering Ltd	✓	✓	✓	✓	✓
Gardex India Private Ltd	✓	✓			
Mittal Files & Tools Private Ltd	✓				
Bahco	✓	✓		✓	
Apex Tool Group	✓	✓		✓	
UMV	✓				
PFERD	✓			✓	✓
Bellota	✓	✓			
Birla Precision Technologies Ltd	✓		✓		
Forbes & Company Ltd			✓		

Dormer Tools India Private Ltd (Miranda Tools)			✓		
Addison & Co. Ltd			✓		
Taparia Tools Ltd	✓	✓			
Hindustan Everest Tools Ltd		✓			
Venus Industrial Corporation		✓			
Ambika Overseas Ltd.		✓			

Company wise products:

Company name	Product portfolio
Gardex India Private Ltd	Files Wood cutting tools, Bars, Striking tools, Horseshoe nails, Digging tools, Picks and mattocks, Hammers, Slashers
Mittal Files & Tools Private Ltd	Files: Saw, machinist, rasp, special purpose Drills
Bahco	Files Power saws, wrenches, torque tools, power tool accessories, power tools, air tools, pliers, handsaws, hacksaws, wood chisels, forestry tools, hammers, bandsaw
Apex Tool Group	Files Ratchets, wrenches, impact sockets, pliers, hammers, punches, chisels, hex keys, screwdrivers, pry bars, torque wrenches, air motors, nutrunners & screwdrivers, pulse tools, impact wrenches, grinders, sanders and polishers, drills, riveting, spot facing, soldering iron & guns, etc.
UMV	Files, Rasps Forestry products, Rifflers, Beading tools, Power solutions, Gravers
PFERD	Files Carbide burs and bi-metal hole saws, Grinding and finishing products, Power tools, Cut off wheels and grinding wheels, etc.
Bellota	Files: Mechanical files, Needle files, rasps
Birla Precision Technologies Ltd	Files Drills, Taps, reamers, milling cutters, grooving tools Automotive and industrial castings, Tool and work holding devices
Forbes & Company Ltd	Drills, Milling tools, Taps
Dormer Tools India Private Ltd (Miranda Tools)	Drills deburring tools, miller, reamer
Addison & Co. Ltd	Drills, Taps, reamers, end mills, cutters
Taparia Tools Ltd	Spanners, pliers, screwdriver, torque wrench, hammers, cutters, hacksaw blades, etc.
Hindustan Everest Tools Ltd	Hand tools
Venus Industrial Corporation	Spanners, wrenches, pliers, automotive tools, wood working tools, hammers and striking tools, etc.
Ambika Overseas Ltd.	Spanners, wrenches, pliers, chisels, hammers, wood working tools, hacksaw, automotive tools, etc.

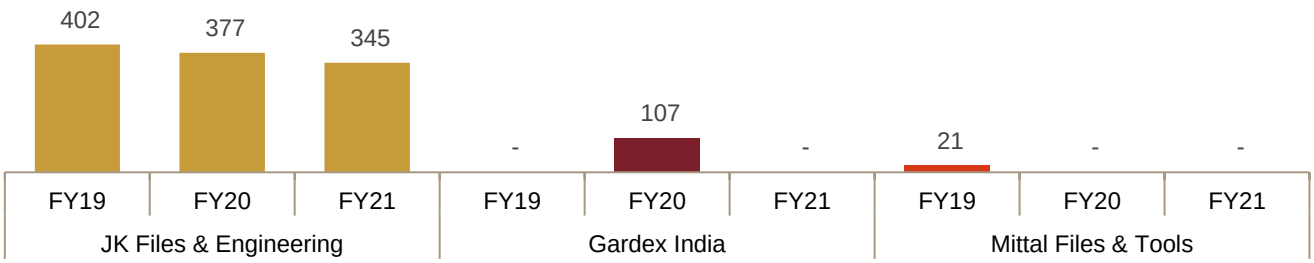
Source: Company website

Financial Profile

Files: JK Files, Mittal Files and Gardex are the key players in India. JK Files, the leading player in the files segment in India and has a revenue of ~Rs 350 Cr and is able to maintain a high ROCE (~30%) on account of its superior gross margins and higher realizations. JK Files has improved its gearing ratio from ~1 in FY19 to ~0.1 in FY21. Low gearing coupled with healthy profitability has led to an overall improvement in the interest coverage ratio for JK Files.

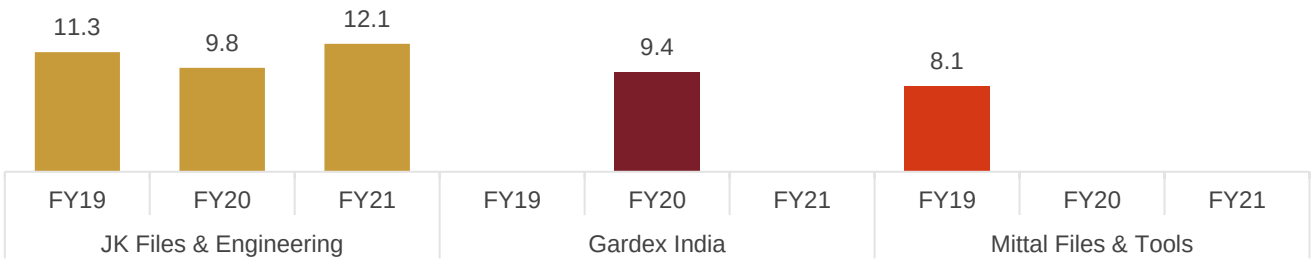
(Data for Gardex India is unavailable for fiscal 2019 and 2021, whereas financial data for Mittal Files & Tools is unavailable for fiscal 2020 and 2021)

Revenue in Rs Cr



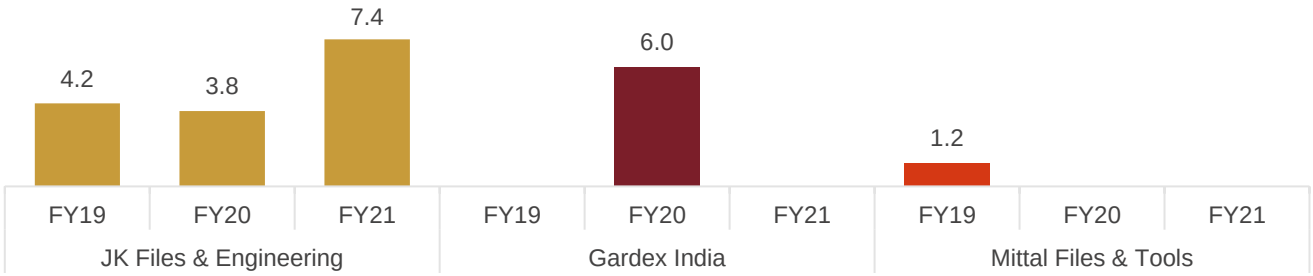
Source: Company data (public documents)

Operating Margins in %



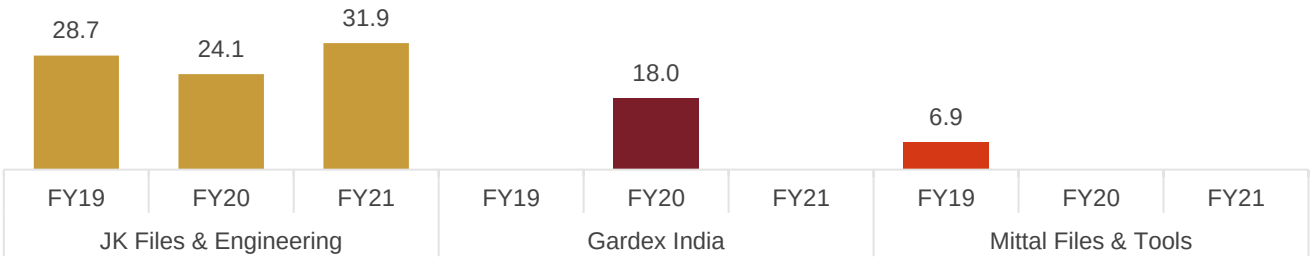
Source: Company data (public documents)

PAT margin in %



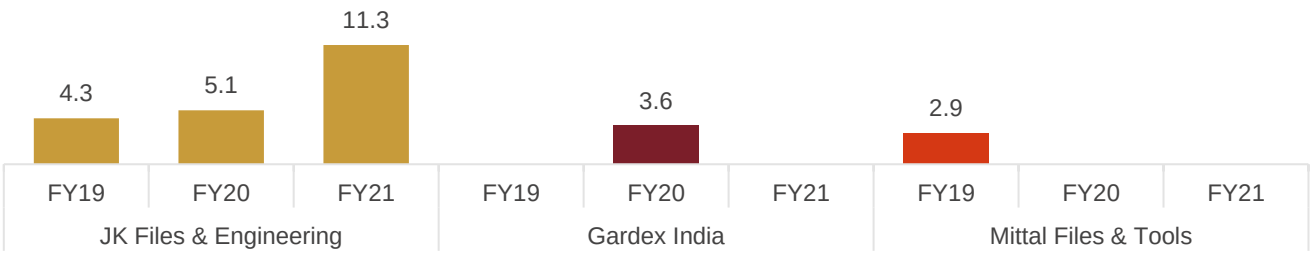
Source: Company data (public documents)

ROCE in %



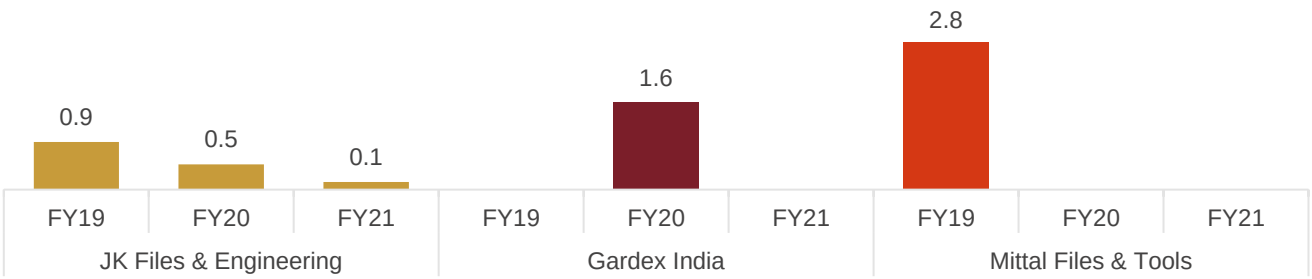
Source: Company data (public documents)

Interest coverage (times)



Source: Company data (public documents)

Gearing ratio

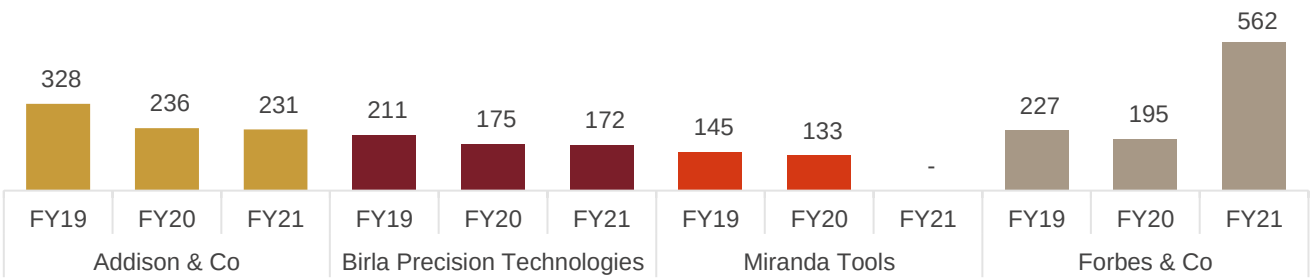


Source: Company data (public documents)

Drills: Addison & Co., Birla Precision Technologies, Miranda Tools (Dormer Tools) and Forbes & Co. (Totem) are the key players in India. Addison & Co. has industry leading EBITDA margins of 10-12% and a ROCE of ~10%.

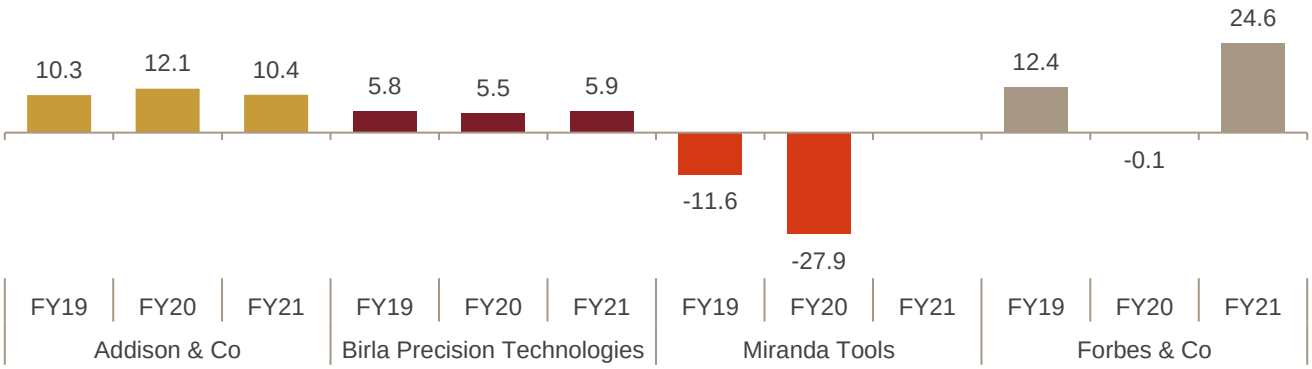
(Data for Miranda Tools is unavailable for fiscal 2021)

Revenue in Rs Cr



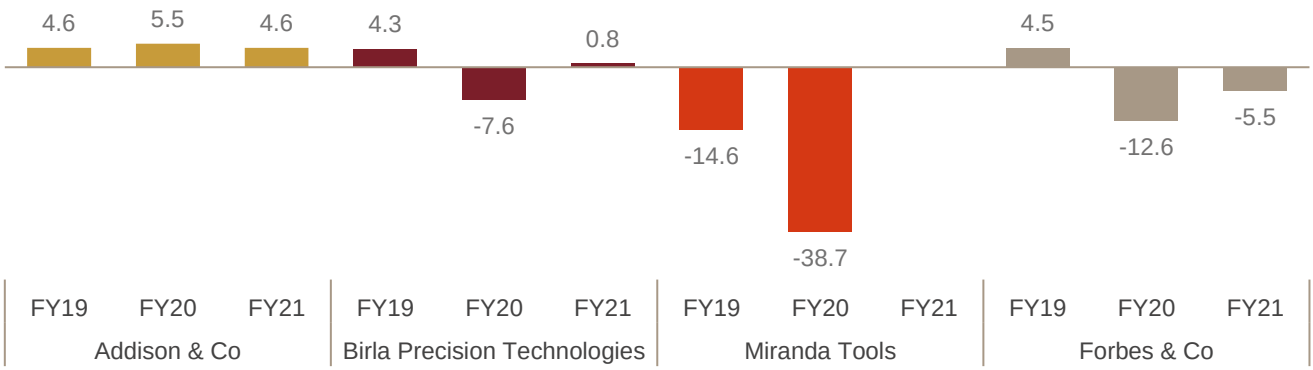
Source: Company data (public documents)
Forbes & Co. reported revenue of Rs 386 Cr from real estate contracts in fiscal 2021

Operating margins in %



Source: Company data (public documents)

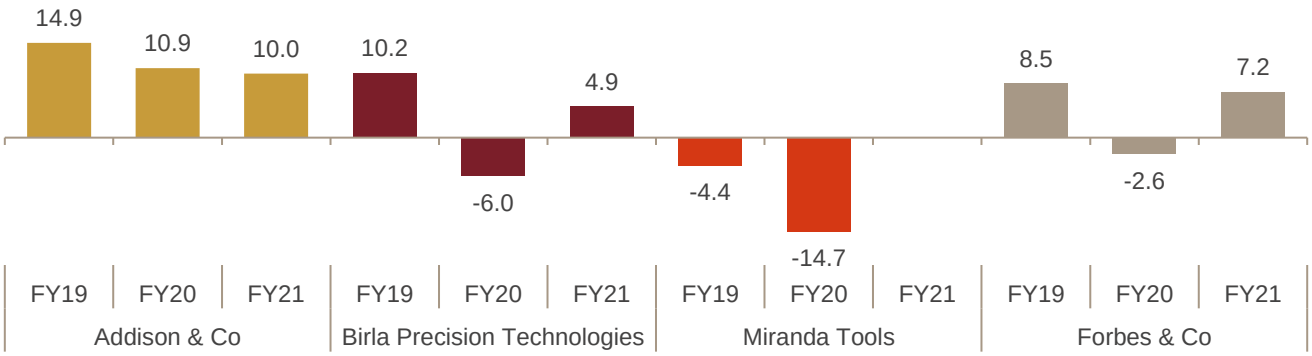
PAT margin in %



Source: Company data (public documents)

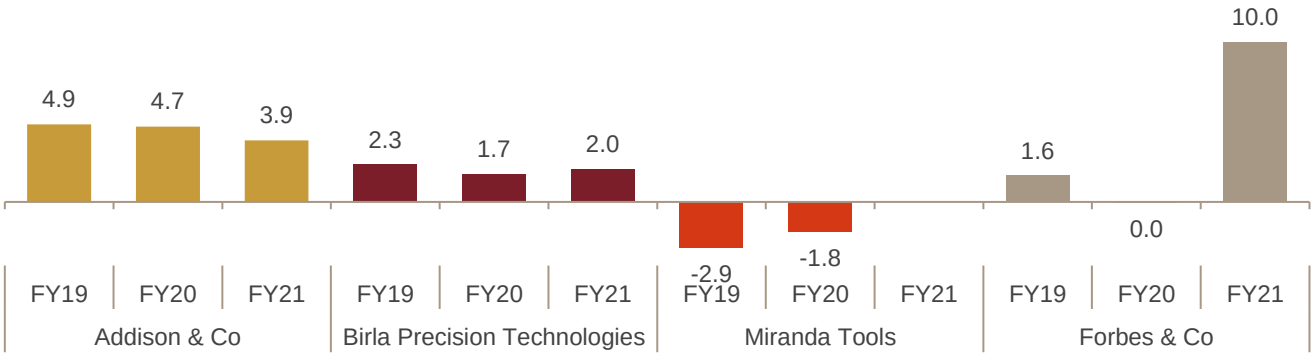
Forbes and Co. reported exceptional items (expenses) of Rs 114.3 Cr and deferred tax of Rs 40.1 Cr in fiscal 2021

ROCE in %



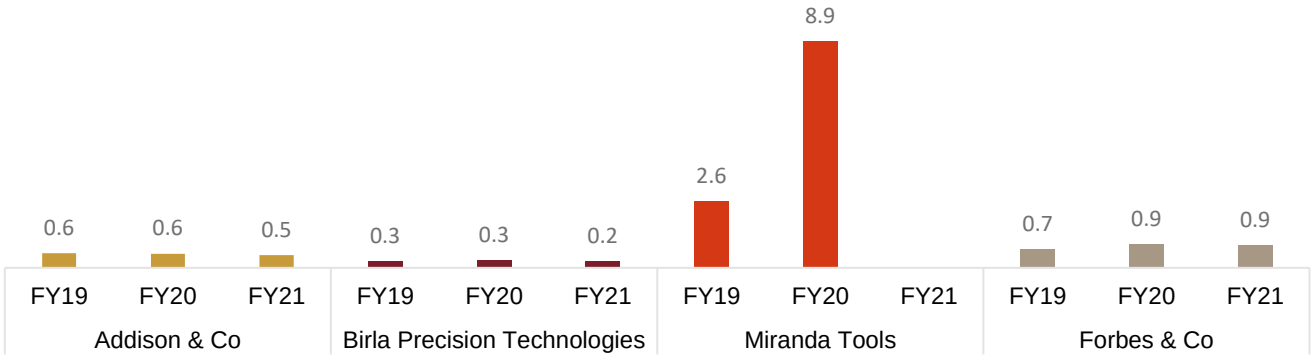
Source: Company data (public documents)

Interest Coverage (times)



Source: Company data (public documents)

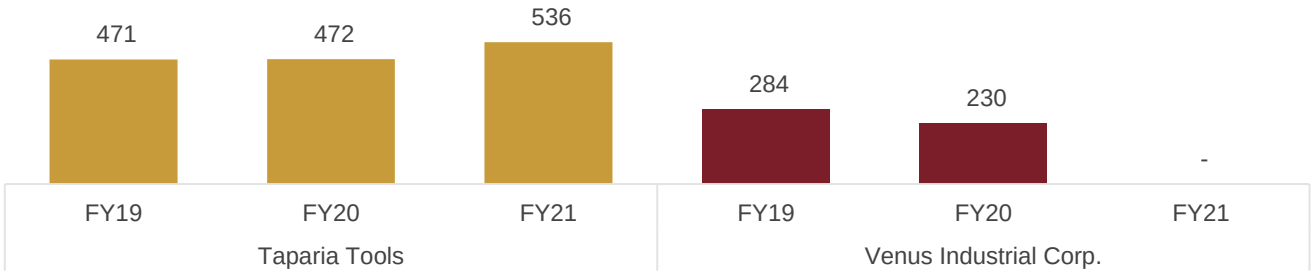
Gearing ratio



Source: Company data (public documents)

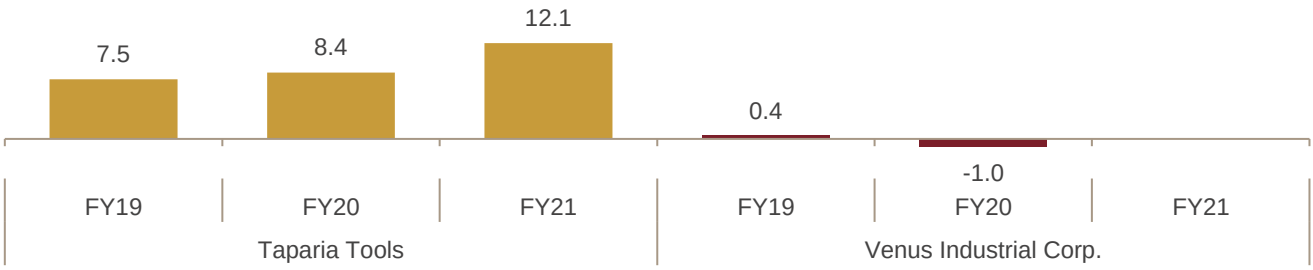
Hand tools: Taparia Tools Ltd., Venus Industrial Corporation, Hindustan Everest Tools are the key players in hand tools. Taparia Tools Ltd. is the largest player in the organized domestic hand tools market with sales of ~Rs 500-550 Cr. Being a debt free company and having healthy EBITDA margins of 10-12%, it has a ROCE of ~30%.

Revenue in Rs Cr



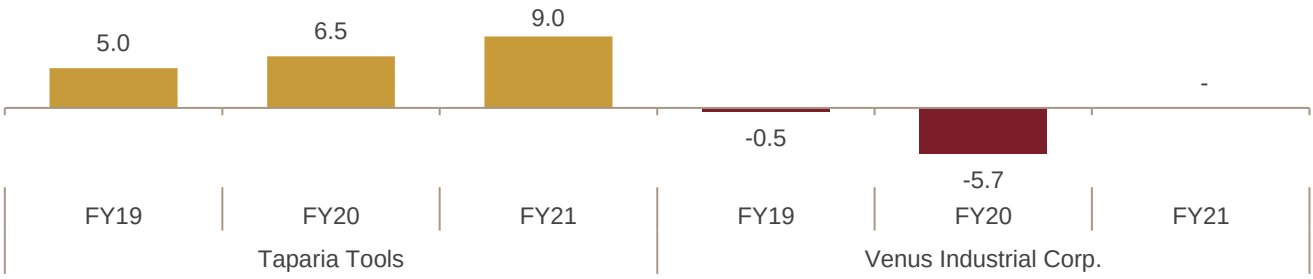
Source: Company data (public documents)

Operating margin in %



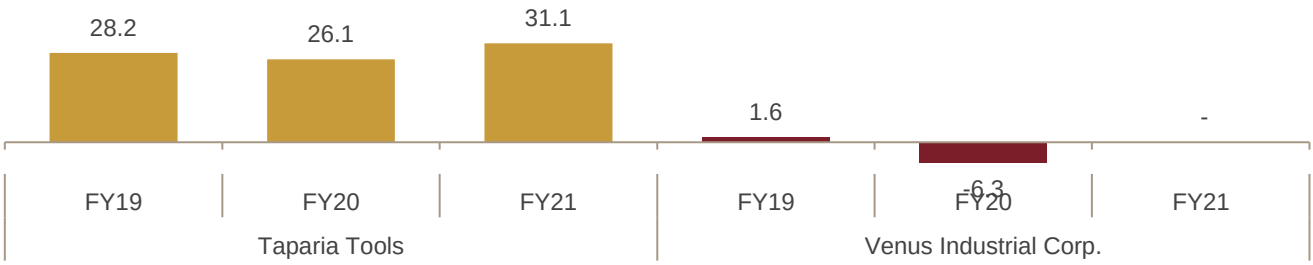
Source: Company data (public documents)

PAT margin in %



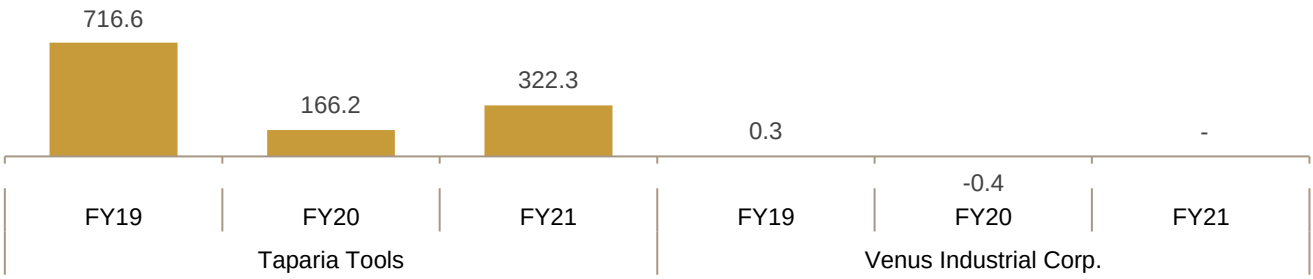
Source: Company data (public documents)

ROCE in %



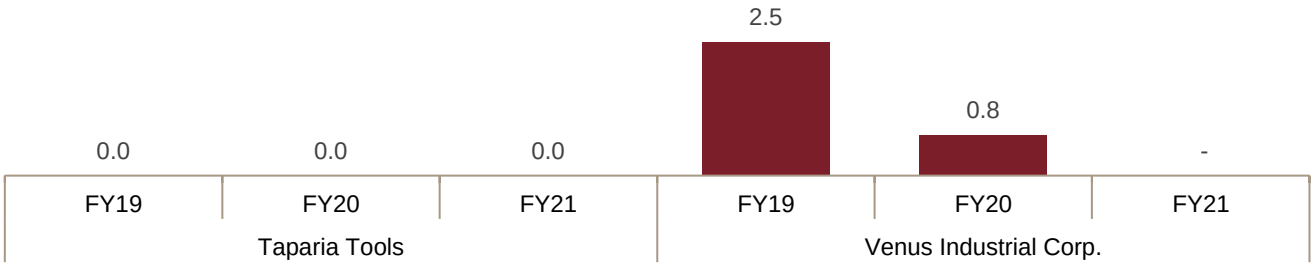
Source: Company data (public documents)

Interest coverage (times)



Source: Company data (public documents)

Gearing ratio

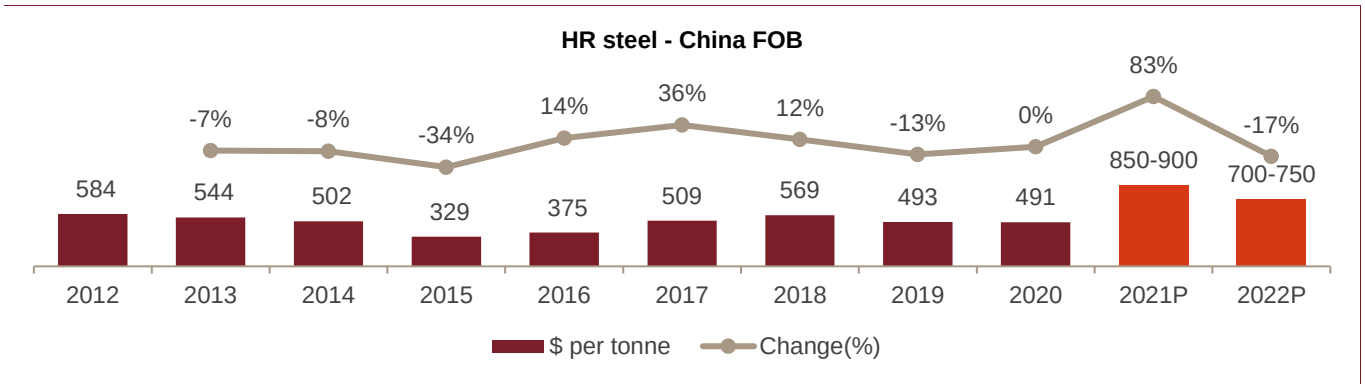


Source: Company data (public documents)

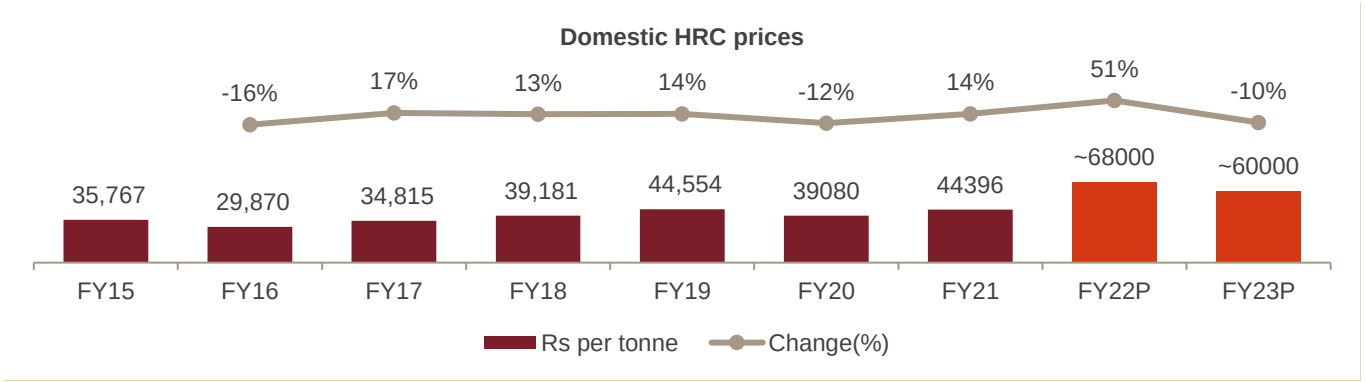
5.6 Raw material impact assessment

Review and outlook of steel prices

- Steel prices soared in 2021 on the back of strong recovery in the global market, production cuts in China, and high infrastructure spending
- While prices will correct further, they will continue to be above the average of the past couple of years owing to a green cycle in play in China (which is focusing on curbing pollution) and therefore average at $700-750 per tonne in 2022
- Domestic steel prices are expected to remain strong despite some correction seen during the second wave due to strong global prices, export potential, and higher coking coal prices. Overall, domestic flat steel prices are expected to go up by 50-52% this fiscal, driven by global market forces, before correcting in fiscal 2023.



Source: CRISIL Research



Note: Domestic prices are pan-India average selling prices (excluding duties)

Source: CRISIL Research

Impact of input prices on tools & hardware industry

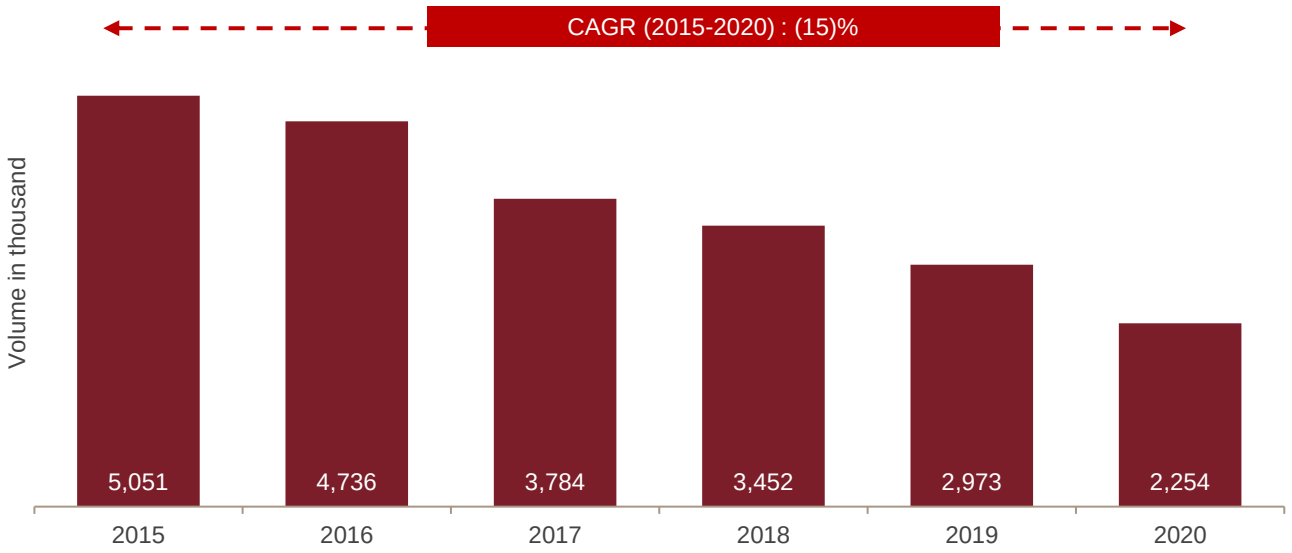
- The tools & hardware (T&H) manufacturing process is highly susceptible to raw material price fluctuations as raw materials account for 40-50% of the total cost. Manpower costs are also significant (15-20% of total cost) given the nature of the production process. Hence, manpower expenses need to be low to improve profitability.
- Given the thin margins in the T&H industry, higher steel prices will force manufacturers to pass on the price increase to their customers. While manufacturers have been able to pass on raw material price increases in the past, the stiff competition in the market may make price hikes difficult, which could hurt the profitability of players in the near term.
- Companies may look to cut costs in other areas such as manpower, overheads, indirect expenses, etc, to soften the impact on profitability

Auto components and engineering products

6 Review and outlook of the North American and European PV industry

6.1 Review of the North American PV industry (2015 - 2020)

Production of passenger vehicle in North America



NOTE: Above numbers excludes SUV

Source: OICA.NET, CRISIL Research

More than 85% of the passenger car production in North America is accounted by USA and remaining by Canada

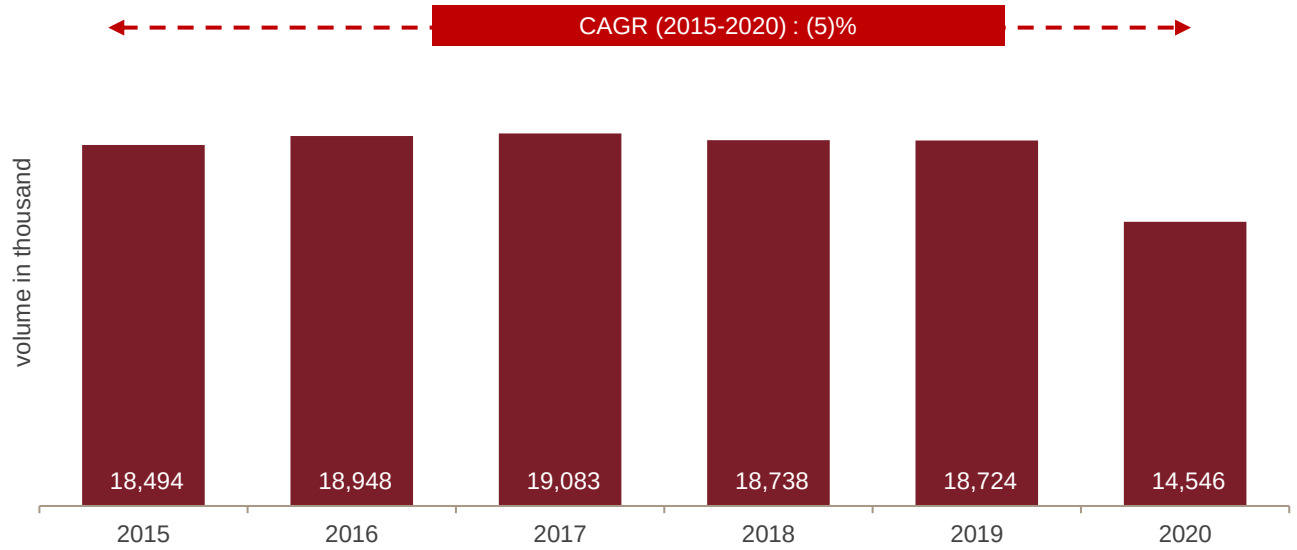
Higher competition due to rise of Chinese car manufacturers has increased pressure on established auto manufacturers. Shift in manufacturing base by several OEMs to other low-cost developing countries such as Mexico and other Asian countries led to a gradual decline in production of passenger vehicle in North America. This has led to PV production declining from 5.1 mn in 2015 to 2.3mn in 2020 i.e. a decline of 15% CAGR between 2015 and 2020.

Moreover, ride hailing services such as Uber Technologies, Inc. and Lyft, Inc. were widely available leading to lower preference for passenger cars. Since, 2016 the sale of cars began falling as vehicles got more expensive. Vehicle affordability declined due to high cost of borrowing due to tightening of the monetary policies on account of high fiscal deficits in USA.

Shift in preference is seen towards larger SUVs and pickup trucks for personal use, this has led to fall in the sale of passenger cars.

6.2 Review of European PV industry (2015 - 2020)

Production of passenger vehicle in Europe



Source: OICA.NET, CRISIL Research

In Europe, Germany & Spain leads the production of passenger cars as on 2020.

Production of passenger vehicle registered decline from 2017 onwards due to various factors such as uncertainty due to Brexit, slowing Chinese economy (European Union accounts for roughly 50% of the global passenger car imports by value by China) and hence the hit on exports of passenger vehicle and trade wars between USA and Europe after Trump took over the USA administration.

Lower consumer sentiments on account of older diesel vehicle being banned in certain areas of Germany in 2018 led to fall in manufacturing of diesel cars. However, new emission norms introduced in 2020 (the emission target of 95g CO2/km for new cars was revised from 130g CO2/km between 2015 and 2019) and incentives to spur electric vehicle (EV) demand, provided a major boost to sales of low emission and clean emission vehicles. Led by policy support for cleaner vehicles and subsidies in the stimulus provided after the onset of the pandemic, the share of hybrid electric vehicles rose to 11.9% of the total passenger car sales across European Union in 2020 from 5.7% in 2019.

The industry declined by 22% yoy in 2020 due to pandemic where Europe was the hotspot of the virus and shutdowns of manufacturing plants led to supply chain disruption.

6.3 Trends and growth drivers

- **In North America-**
  - Production of PVs declined by 24% yoy in 2020 due to pandemic. Many people lost their jobs or business leading to consumers being conscious in spending on discretionary products like a car. However, buying took place where people didn't want to use ride sharing or a public transport to avoid the risk of catching virus. Substantial discounts were also offered to improve sales.
  - Need for personal car to commute is expected to continue. Production of PVs in North America is projected to grow at 6-8% CAGR between 2020 and 2025. Trend towards SUVs, crossovers and pick up vans is expected to continue.
- **In Europe-**

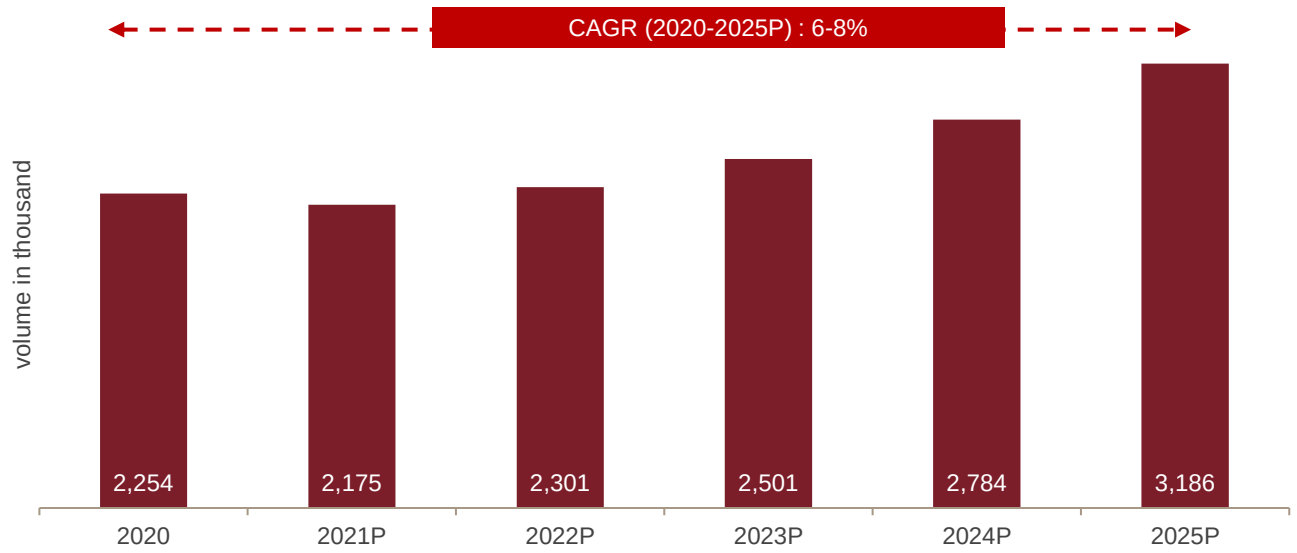
- In 2020, production of PVs fell by 22% yoy on account of pandemic where Europe was a hotspot of the virus leading to closure of manufacturing plants and later disrupting the supply chain.
- Production of PVs in Europe is projected to grow at 7-9% CAGR between 2020 and 2025 on account of low base in 2020. The recovery will be gradual and linked to economic growth in the EU and better global trade. However, the further wave of Covid-19 and supply chain issues will be among key monitorables for the PV industry's growth.

- **Electrification-**
  - The Environmental Protection Agency's recent proposed rule (Aug, 2021) on greenhouse gas emissions from light-duty vehicles is targeting to help the United States meet its goal of reducing nationwide emissions 50% from 2005 levels by 2030. The proposed rule will be applicable for Model Year (MY) 2023 till 2026.
  - New bill proposed by Biden Government adds $4,500 to the current $7,500 tax credit available for a total of $12,500 potentially available to EV buyers. As the bill stands today an EV must be assembled in the US and with union labor. In addition, it must use a US-built battery to qualify for the full $12,500 incentive.
  - In March 2019 in Canada, one of the key highlights of the federal budget was $300 mn pledge to incentivize the citizens to go green. The funding, spread over three years, got an additional $287 mn in 2020 because of the program's enormous popularity and the expectation the fund will be used up before 2022. The program has two tiers: battery-electric, hydrogen fuel cell, and longer-range plug-in hybrid vehicles are eligible for an incentive of $5,000 CAD, while shorter range plug-in hybrid electric vehicles are eligible for an incentive of $2,500 CAD.
  - Norway is leading the EV race in Europe due to its longstanding commitment since the 1990s to promoting EVs. With an original plan to have 100,000 electric vehicles on the road by 2020, Norway exceeded this number in 2018. Indeed, almost 60% of all new cars sold in Norway during March 2019 were entirely electric-powered. Interestingly, the country's incentives program does not include many subsidies for EVs and EV chargers, but instead offers tax cuts and heavy investment in publicly administered EV charging infrastructure
  - CO2 emissions standards in the European Union played a significant role in promoting electric car sales. Major urban centres in Europe are shifting towards low emission vehicles and banning fossil fuel cars to encourage the shift. Paris, Berlin and Madrid have banned diesel vehicles, while London, Rome, Warsaw, Milan, and Oslo have banned both diesel and gasoline vehicles. This will aid PV electrification in key European cities. Electrification will be further aided by governmental support for low emission vehicles and an improvement in EV infrastructure.
  - From 1 July until December 2020, value-added tax (VAT) on EVs fell to 16%, down from 19%. Any privately owned EVs registered until the end of 2020 will have a 10-year tax exemption and EVs with a sales price below €40,000 will qualify for a €9,000 subsidy until December 2021.
  - All EVs in France are subject to a tax exemption from CO2-related taxes. France has subsidies of up to €7,000 for households buying EVs below €45,000 and a scrappage scheme of up to €5,000 for households and €2,500 for individuals.
  - Spain has reduced tax by 75% for EVs in big cities like Madrid and Barcelona, and a scheme which subsidises the purchase of EVs by €4,000-5,000 depending on if a vehicle seven years or older is scrapped.

- Outside the EU, in the UK there is a road and Value Added Tax (VAT) tax exemption for zero-emission vehicles and a €3,000 government grant for vehicles below €50,000. Every country in the EU 27 plus the UK, excluding Lithuania, offers incentives, tax reductions or a combination of both.
- Europe is rapidly becoming a global hotspot for growth in the electric vehicle (EV) market, with incentives introduced by multiple national governments expected to drive growth over the next five years.
- UK has planned to phase out petrol and diesel car sale from 2030 onwards. Spain will phase out from 2040 onwards. There are many other European countries with a defined deadline to phase out sales of diesel or petrol cars.

6.4 Outlook of the North American PV industry (2020 - 2025P)

Production of passenger vehicle in North America



NOTE: Above numbers excludes SUV

Source: OICA.NET, CRISIL Research

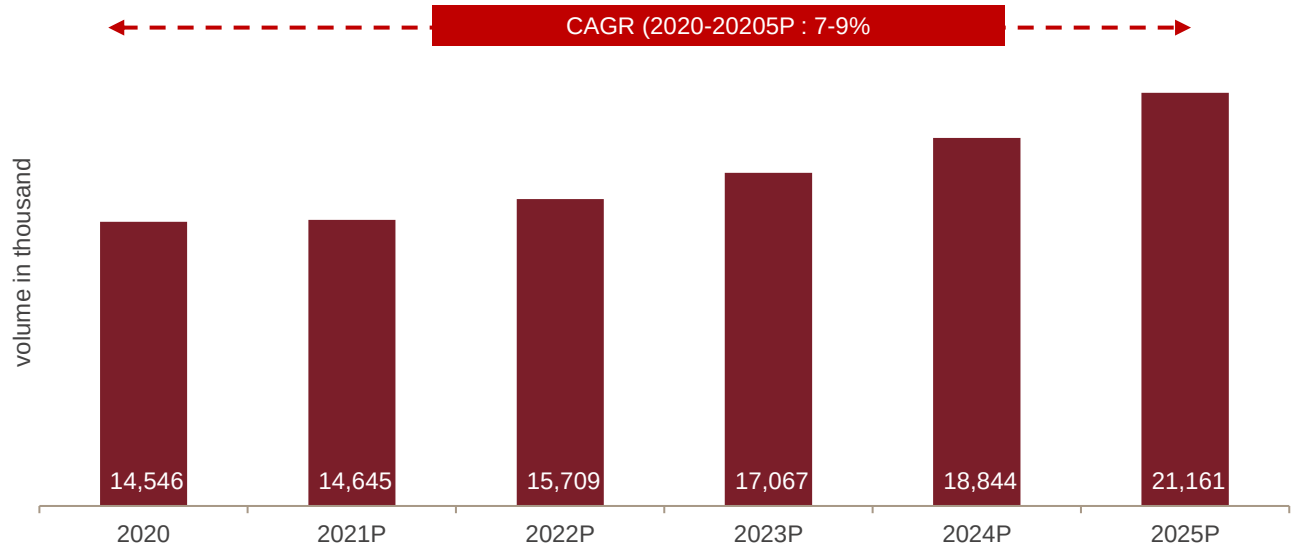
Passenger vehicle production is expected to grow at a CAGR of 6-8% between 2020 and 2025 after declining by 24% yoy in 2020 and expected 4% decline in 2021 owing to the impact of pandemic where demand had plummeted as well as disruption caused to the supply chain.

In next 5 years, majority of the domestic sale is expected to be driven by replacement buyers due to high penetration of passenger cars. Robust GDP growth revival, employment growth, low inflation, continued need for personal mobility, incentives from the Government specially on electric cars will drive the growth of the passenger vehicle industry in North America.

Within passenger vehicle, higher traction is expected towards cross overs, SUVs and pickup trucks as compared to sedans.

6.5 Outlook of the European PV industry (2020 - 2025P)

Production of passenger vehicle in Europe



Source: OICA.NET, CRISIL Research

Passenger vehicle production is expected to grow at a CAGR of 7-9% between 2020 and 2025 after declining by 22% yoy in 2020 due to the impact of pandemic where Europe was one of the hotspots of the virus leading to closure of factories.

Recovery is expected as vaccination pace increased, gradual confidence in economy reviving, however, possibility of new waves of Covid looms over.

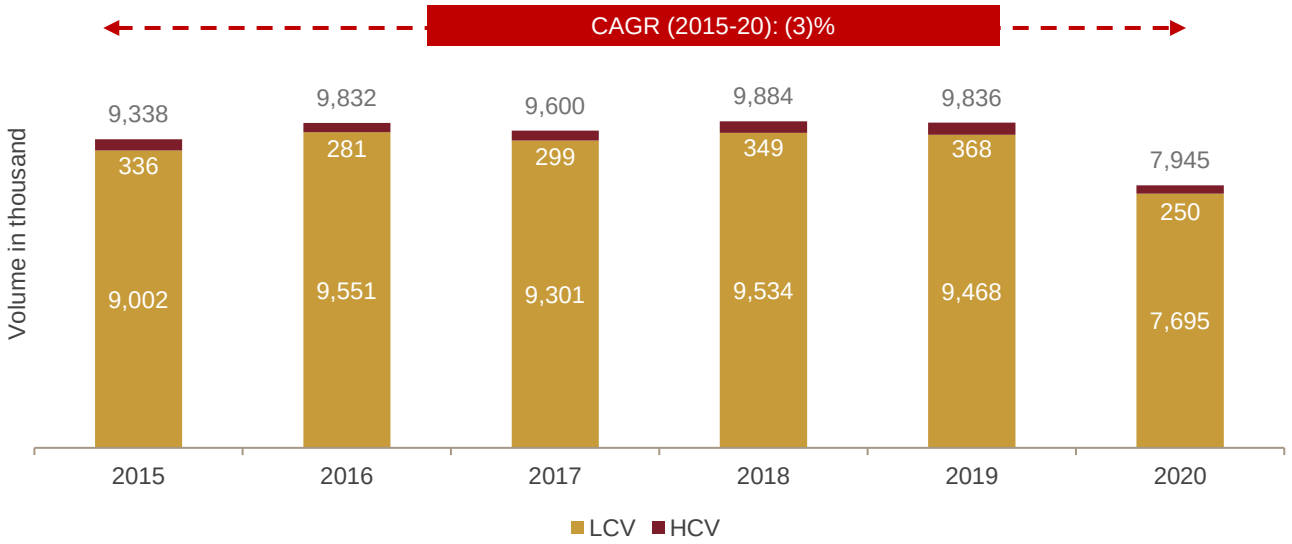
Growth will be driven by replacement buyers from Western Europe and higher first-time buyers will be seen from Eastern Europe in next 5 years. PV exports occupies a substantial share in the production. Healthy global trade will aid the production of PVs in Europe.

Firm stance towards lowering of emission by the European Union will lead to electrification of PVs. This will drive the growth of passenger vehicle production in Europe.

7 Review and outlook on the North American and European CV industry

7.1 Review of the North American CV industry (2015 - 2020)

CV production in North America



NOTE: LCV is Light Commercial Vehicle and HCV is Heavy Commercial Vehicle

Source: OICA.NET, CRISIL Research

North America is the largest producer of CVs across continents. In 2020, the USA contributed over 85% of CV production in North America, and LCVs accounted for ~96% of CV production in North America.

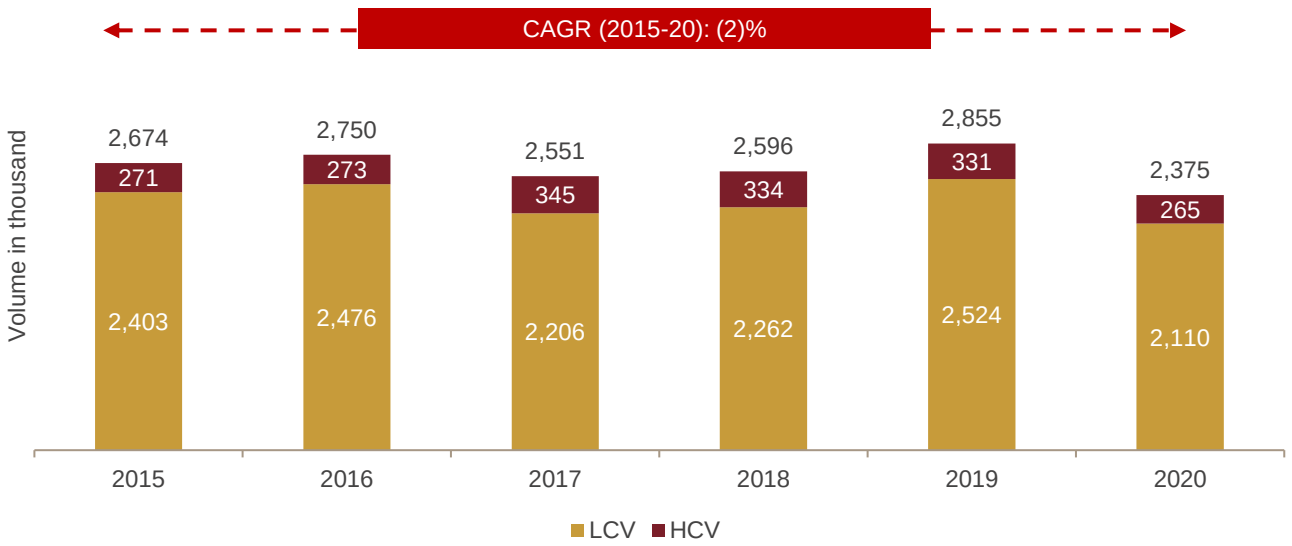
North America's highly unified supply-chain network connects manufacturers and consumers through multiple transportation modes, particularly truck transport, owing to which it has the highest production of CVs. The other modes include rail freight, air and express delivery services, and maritime transport.

The Covid-19 pandemic has led to declining CV sales due to low industrial activity. CV production in North America declined 19% on-year because of an economic slump, combined with a decrease in new orders.

A shift in preference towards larger sport utility vehicles (SUVs) and trucks for personal use has led to an increase in the LCV segment.

7.2 Review of the European CV industry (2015 - 2020)

CV production in Europe



Source: OICA.NET, CRISIL Research

CV production in Europe declined at 2% CAGR between 2015 and 2020, led by a fall of 11% on-year in new sales of LCVs in 2017. However, sales of LCVs are increasing due to rising demand for vans, which are used widely in commercial activities such as construction, postal and courier services, ambulance services, policing and rescue operations, mobile workshops, and passenger transportation.

The pandemic-induced disruption in the automotive value chain has led to a decline in CV production. The pandemic has impacted production in Germany and France, but not as severely as it has in Italy and Spain. CV production in Europe decreased 17% on-year in 2020 owing to shutdown of plants and disruption in the supply chain.

7.3 Trends and growth drivers

- **In North America-**
  - The slump in truck demand seen during pandemic has seen a recovery in this year. Recovery in economy and government stimulus has generated high freight demand in 2021, leading to higher demand of trucks. However, supply constraints such as chip shortage and port congestion has led to low production.
  - In long term, strength in manufacturing, growing retail sales, and a slowly improving housing market are the biggest drivers of the heavy-duty trucks such as class 8 trucks in North America.
  - As long-haul freight has gradually declined, trucking companies are opting for lower class trucks to get their goods delivered. With digitization of the supply chain, there has been a spurt in regionalisation of freight to fulfil orders in shorter times. Earlier, a truckload carrier would wait till the trailer reached its optimal capacity, now there is no time to wait. This is prompting small fleet operators, to opt for lower class trucks.
  - E-commerce activities gaining preference will lead to demand for light-duty trucks.
- **In Europe-**

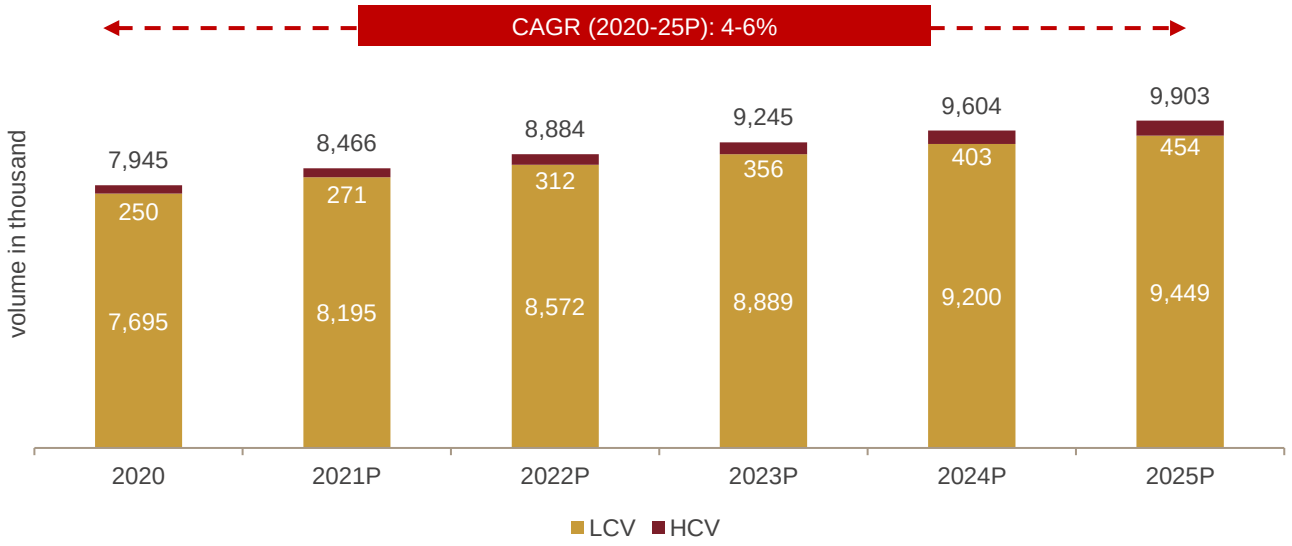
- Trucking industry plays an important role in the European economy with majority of the freight being moved around in the continent via roads. However, few economies such as Germany, the UK, the Netherlands, and Italy; are increasing the modal share of rail in overall freight transportation to 30% by CY2030. This is expected to impact the trucking industry in the long run.
- During pandemic, the trucking sector was affected unevenly by different lockdown measures across countries, but following a shift in consumption from services to goods, general volumes rebounded more quickly than many expected and surging e-commerce led to extra transport activity.
- Increase in ecommerce activities is expected to continue in next 5 years as well.
- The first half of the year 2021 has witnessed a steady improvement in freight prices as well as volumes across the EU, driving an uptick in freight market, which drove a surge in order intake across industry OEMs while operators moved swiftly to renew as well as expand their existing fleets.

- **Electrification-**
  - The Paris Agreement, a legally binding international treaty on climate change, was formed in 2015. Under this, representatives from 196 countries had gathered for United Nations Framework Convention on Climate Change (UNFCCC) in Paris. According to the UNFCCC, the parties agreed to three objectives: limit the average global temperature increase to well below 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial levels, preferably below 1.5 C (2.7 F); build resilience to climate change impacts; and allocate money to these objectives. Each party created its own nationally determined contributions (NDCs) to these goals. Beginning in 2023, the parties will meet every five years to take stock of their progress and plan to ratchet up their NDCs.
  - Global economies and governments are increasingly moving towards cleaner fuel in view of growing concerns regarding environmental issues. Notably, the transportation sector is one of the largest contributors to greenhouse gas (GHG) emissions. Policymakers and OEMs are increasingly moving towards green mobility by developing new technologies such as BEVs, hybrids, etc. and providing subsidies to promote green technology.
  - North America and Europe lead electrification globally.
  - Trucks, especially the heavy-duty ones, are the most polluting vehicles. Hence, a few cities, such as California in the USA, have announced a shift towards relatively clean fuel. Liquefied natural gas could also have a role to play.
  - California passed regulations in June 2020, requiring a majority of heavy-duty trucks sold by 2035 to be zero-emission. The state also has an extensive voucher system to subsidise the cost of purchasing new EVs. Other US states are following California's lead. A total of 15 states signed an agreement in July 2020, targeting all new medium- and heavy-duty vehicles to be zero-emission by 2050.
  - European cities are restricting diesel vehicle access through the implementation of ultra-low emissions zones. Further, government grants, lower running and servicing costs and access to ultra-low emissions zones can make EVs an attractive choice going ahead.
  - In November 2020, the UK became one of Europe's biggest economies to set out its plans for a greener transport future, including a €2bn investment in infrastructure and grants to increase access to zero-emission vehicles. Germany, as part of its €130bn economic recovery plan, is obliging all petrol stations to offer electric charging to satisfy drivers' refuelling anxieties.

– Adoption of electrification in CVs is not as high as in passenger vehicles (PVs) because of high lead distance, coupled with high acquisition cost and unavailability of charging infrastructure. Hence, electrification in both the continents in CV industry is expected to be <2% by 2025.

7.4 Outlook of the North American CV industry (2020 - 2025P)

CV production



Source: OICA.NET, CRISIL Research

CV production in North America is expected to increase at a CAGR of 4-6% during 2020-2025, largely led by growing demand from logistics and e-commerce. However, the ongoing Covid-19 uncertainty and the implications of the United States-Mexico-Canada (USMCA) trade agreement in 2020 remains a key monitorable.

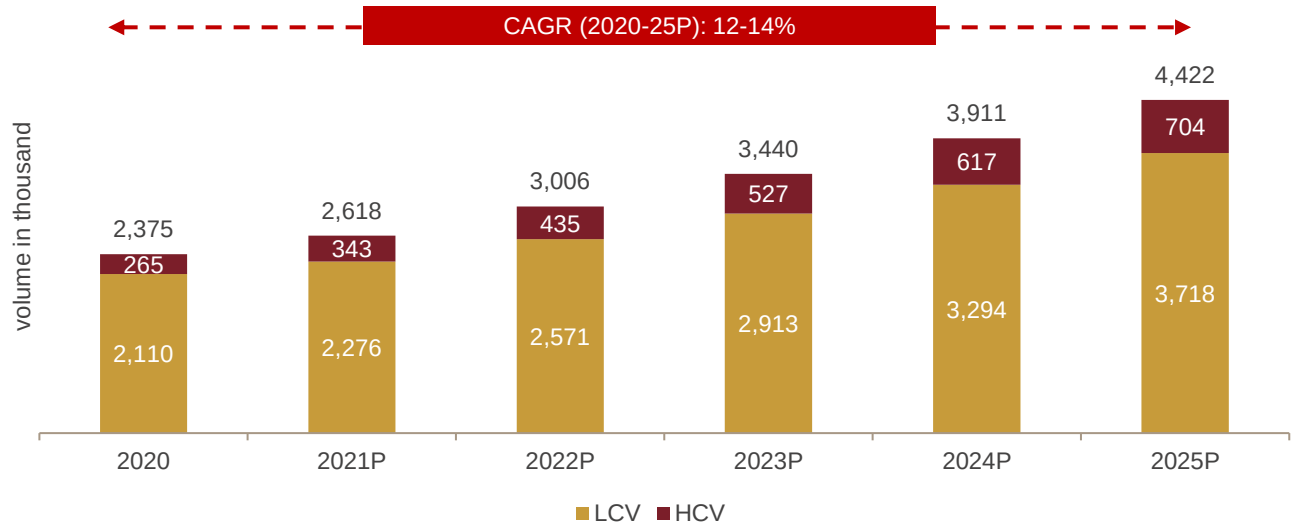
LCV production dropped by 19% yoy in 2020, whereas HCV production dropped by 32% yoy for the same period. HCV saw a sharper drop because of global slowdown in economic activities such as construction, mining, etc.

CV production is expected to grow at a faster pace inline with the higher GDP growth in 2021 and 2022 and then record a moderate post 2023 onwards.

LCV production is expected to register a growth of 3-5% CAGR between 2020 and 2025 whereas HCV to register a growth of 12-14% CAGR for the same period. High growth in HCV is due to expected increase in housing activities and other infrastructure projects aided by the low base of 2020. It is expected to continue occupy a share of 4-6% in the total CV production by 2026.

7.5 Outlook of the European CV industry (2020 - 2025P)

CV production



Source: OICA.NET, CRISIL Research

CV production in Europe is expected to grow at a robust pace of 12-14% CAGR over 2020-2025, largely led by a rise in logistics due to e-commerce and a low base in 2020. Notably, CV production declined 15% YoY in 2020, as Europe was one of the hotspots of the virus, leading to the closure of several factories in 2020.

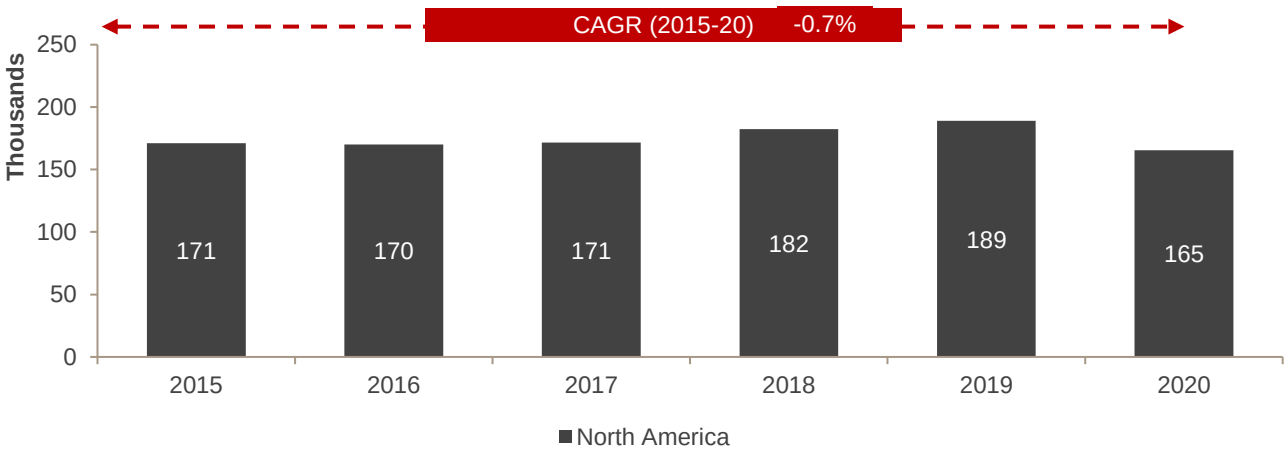
In April 2021, The European Union (EU) has committed to reduce its carbon dioxide (CO_2) emissions by 55% (up from previous target of 40%) by CY2030, compared with CY1990 levels. European countries are taking several measures, such as promotion of clean mobility options; planning of zero/low emission zones especially for urban areas of key EU economies such as Germany, the UK, the Netherlands, and Italy; and increasing the modal share of rail in overall freight transportation to 30% by CY2030 from around 19% in CY2018 within EU. The European Commission (EC) has approved a 70 million euro grant for boosting rail freight in the Netherlands. Several countries have not only committed significant investment in railway but Belgium and Italy are providing subsidies to transport to shift to rail from road. This is likely to weigh on heavy commercial vehicle demand over the long run. However, demand from Eastern Europe is expected to account for a significant portion of the adoption of HD trucks in Europe during the forecast period. Factors such as the increase in manufacturing activities and improvement in road infrastructure are driving the demand for HD trucks in Eastern European countries.

However, growing preference for doorstep delivery is likely to support demand for LCVs in ecommerce applications. The European LCV market is expected to grow 11-13% during the forecast period. Online retail sales and e-commerce have been rising due to the increased penetration of internet connectivity and smartphones, aiding LCV purchases for facilitating the timely delivery of items to buyers.

8 Review and outlook on the North American and European construction equipment (CE) industry

8.1 Review of the North American CE industry (2015 - 2020)

CE market in North America (Units) – Review



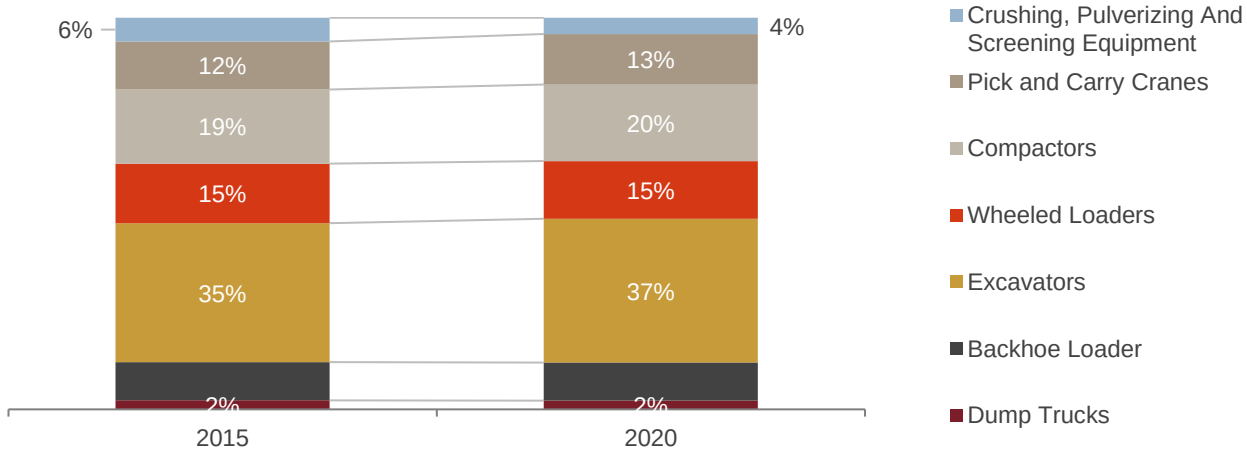
Note: Construction equipment market consists of following equipment: Articulated Dump Truck, Backhoe Loader, Crawler Excavator, Mini Excavator, Rigid Dump Truck, Wheeled Excavator, Wheeled Loader <80 HP, Wheeled Loader >80 HP, Compactors, Pick and Carry Cranes, Crushing, Pulverizing, & Screening Equipment

Source: MarketsandMarkets

In terms of volume, North America accounted for ~12% in global construction equipment (CE) market, in calendar 2020. Over the 2015-2020 period, the CE market (in volume terms) in North America declined by 0.7% CAGR, impacted heavily by a 13% on-year decline observed in 2020, the pandemic impacted year.

As of calendar 2020, Excavators (37%), Compactors (20%) and Wheeled Loaders (15%) were the largest equipment categories, in terms of units.

CE market breakup in North America (Volume) – 2015 vs 2020



Note: Following equipment categories consist of certain sub-categories, Dump trucks (Articulated Dump Truck and Rigid Dump Truck), Excavators (Crawler Excavator, Mini Excavator and Wheeled Excavator) and Wheeled Loaders (Wheeled Loader <80 HP and Wheeled Loader >80 HP)

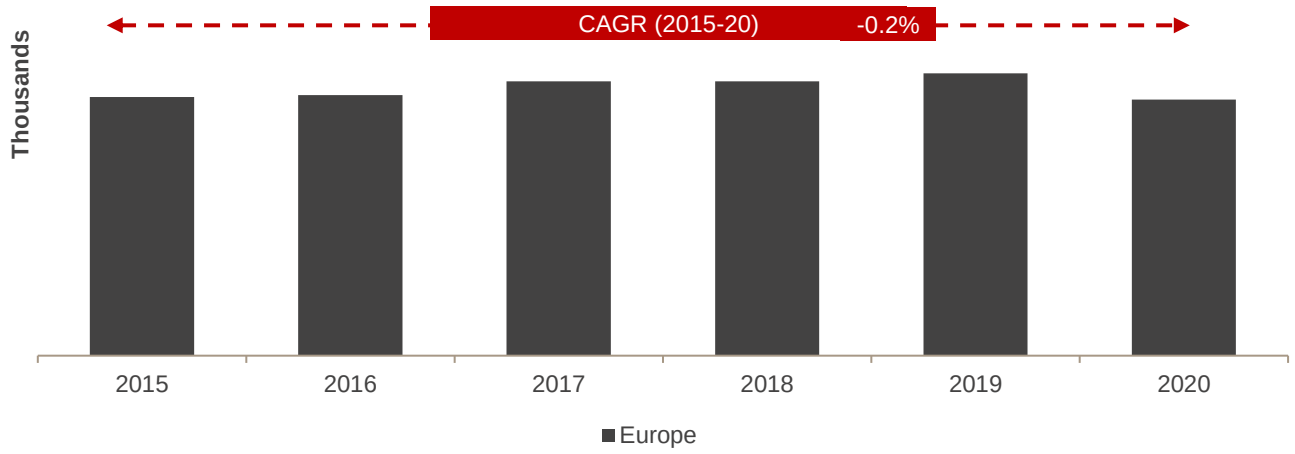
Source: MarketsandMarket

In terms of volume growth, for 2015-2020 period, across equipment categories, Excavators and Pick & Carry Cranes remained flat (0-1% CAGR), Dump Trucks, Backhoe Loaders and Wheeled Loaders declined marginally (0-2% CAGR), while Crushing, Pulverizing & Screening Equipment declined most with ~8% CAGR.

However, during the COVID-19 impacted 2020, Compactors, Pick and Carry Cranes and Crushing, Pulverizing & Screening Equipment declined least (6-10% on year), while other equipment categories declined by more than 15% on year.

8.2 Review of the European CE industry (2015 - 2020)

CE market in Europe (Units) – Review



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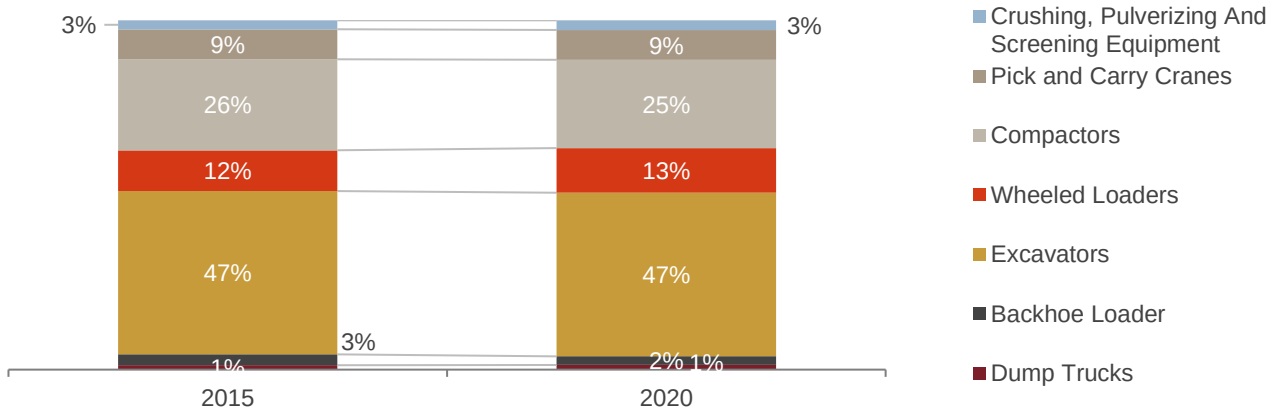
Source: MarketsandMarkets

Europe accounted for ~14%, in volume terms, in global construction equipment (CE) market, in calendar 2020. Over the 2015-2020 period, the CE market (in volume terms) in North America declined by 0.2% CAGR, impacted severely by a 9% on-year decline observed in 2020, the pandemic impacted year.

As of calendar 2020, Excavators (47%), Compactors (25%) and Wheeled Loaders (13%) were the largest equipment categories, in terms of units.

CE market breakup in Europe (Volume) – 2015 vs 2020



Note: Following equipment categories consist of certain sub-categories, Dump trucks (Articulated Dump Truck and Rigid Dump Truck), Excavators (Crawler Excavator, Mini Excavator and Wheeled Excavator) and Wheeled Loaders (Wheeled Loader <80 HP and Wheeled Loader >80 HP)

Source: MarketsandMarkets

8.3 Trends and growth drivers

- **In North America-**
- **United States**
  - The construction industry in the US is expected to grow at a decent rate against federal spending cutbacks. However, low-interest rate loans to procure construction equipment will encourage investments by the construction companies.
  - According to the Associated General Contractors of America (AGC), the construction market is estimated to grow at a rate of 3.7% in August 2020, largely attributed to an increase in residential construction and construction spending. The outbreak of COVID-19 has impacted non-residential construction, and this could impact the demand for construction equipment in the region in the near future.
  - According to the Global Construction Perspectives (GCP), the US construction market is expected to grow faster than China over the next 15 years, at a rate of an average of 5% per annum. The US is estimated to be the largest market for construction equipment in the North American region. The presence of companies such as Caterpillar Inc. and developments undertaken by them drive the market in the country. Companies are adopting strategies such as collaborations, joint ventures, supply contracts, and mergers & acquisitions to strengthen their position, widen product portfolio, and cater to the end-use industries. With the upcoming stringent emission norms for the fuel economy in the country, companies are also focusing on manufacturing fuel-efficient construction equipment for the domestic market.
  - According to the Committee for European Construction Equipment (CECE), the growth of the construction sector in the US is majorly driven by investment in commercial projects. The demand for residential construction activities and major investment in infrastructural projects are expected to drive the demand for crawler excavators and wheeled loaders in the country.
- **Canada**

- Factors such as growing demand for technologically advanced equipment, new mine sites, and geographical proximity to the US market create the opportunity for construction equipment manufacturers. Thus, the construction equipment in Canada is likely to have an increase in demand during the forecast period.

- According to secondary sources, several infrastructure development projects are lined up. USD 5.2 billion is expected to be spent on rebuilding and renovating the Canadian Coast Guard fleet by 2023 and about USD 100 million to restore and modernize the Esquimalt Graving Dock over the next five years; and USD 27 million to support regional ports. The Canada Infrastructure Bank plans to invest USD 139 billion by 2028 under its long-term infrastructure plan. Therefore, such developments are expected to drive construction equipment demand in the country during the forecast period.

- **Mexico**
  - The construction sector contributes 6.8% to the GDP of Mexico. The expansion in construction activities combined with government support is driving the demand for construction equipment such as dump trucks, rigid dump trucks, and motor graders in the region.

  - The Mexican government planned an investment of USD 13 billion for building new runways at the Santa Lucia military airbase and improving Toluca airport. This is likely to create the demand for construction equipment in the country. The government is focused on developing the Maya Train project, a 1,500km planned railroad connecting Cancun and Palenque to other destinations in the Yucatan. Around 3 million square meters of corporate offices are in the pipeline in Mexico City, Guadalajara, Monterrey, Queretaro, and Puebla. Therefore, these projects are expected to be key drivers for the construction equipment in the country during the forecast period.

- **In Europe-**
  - Germany, France, the UK, Italy, Spain, and the Rest of Europe are considered under Europe for market analysis. According to Euroconstruct, the construction industry in countries such as the UK, Ireland, Finland, and Switzerland is estimated to witness a decline in 2020, owing to the COVID-19 pandemic. According to Eurostat, the EU construction industry has witnessed a double-digit decline in April 2020. It has, therefore, hampered the demand for construction equipment in the region.

  - However, investments in infrastructure and residential construction projects are expected to drive the construction equipment market in the region. For example, EuropaCity is a 40-hectare development project in Heidestrasse, Berlin, which is expected to be completed by 2025. The project will cover an area of 199,000 square meters for residential property, 355,000 square meters for offices, and 28,000 square meters for retail premises and restaurants.

  - Some of the major industry players from Europe that hold the maximum share of the construction equipment market are Volvo Construction Equipment, Caterpillar, Komatsu, Liebherr, and Atlas Copco. These companies are involved in the manufacturing of construction equipment in the region.

- **Germany**
  - The demand for compact equipment is significant in the country owing to increased investment and development of residential projects. Compact equipment such as mini excavators is best suited for urban construction projects as they can easily perform required tasks with high efficiency in small areas. Hence, the demand for compact construction equipment is expected to increase in the country during the forecast period.

  - According to the Committee for European Construction Equipment in Germany, the investment in construction projects increased by 0.8% in 2019. The rise in population in major cities and an increase in the number of immigrants also drive construction activities and thereby require construction equipment.

- **France**
  - The construction industry in France is projected to experience positive growth owing to an increase in investments for commercial as well as industrial projects. The government in the country also increased its spending on healthcare facilities by 2.5%, from USD 94.3 billion in 2018 to USD 95.4 billion in 2019. The government announced plans to spend USD 5.7 billion to modernize and digitalize healthcare infrastructure during the period of 2018-2022. Thus, the demand for construction equipment is expected to grow in the country, with increased infrastructural developments.
  - According to CECE, the growth of the real estate in metropolitan areas, big investments in storage buildings, and road/bridge construction programs are the key drivers for the growth of the market for construction equipment in the country. For example, the greater Paris project supports the civil engineering activity in Paris and the region around Paris. The megaproject Le Grand Paris Express started in June 2016 and is expected to be completed by 2030.
- **UK**
  - The construction sector is growing at a significant pace in the UK owing to low-interest rates, funds from banks, and government support for infrastructure development. The construction sector in the country is significant growth in residential and commercial construction projects. Therefore, strong development in these sectors is likely to drive the demand for construction equipment during the forecast period.
  - The residential segment has witnessed significant growth, which is likely to create the demand for construction equipment such as crawler loaders, mini excavators, and RTLT telescopic in the near future.
- **Spain**
  - In Spain, the rising foreign investment in the construction sector is fuelling the demand for construction equipment. The growing demand for residential buildings in Madrid and Barcelona are expected to drive the construction equipment market in the country. Earthmoving equipment is widely used in urban construction activities in the country.
  - The demand for excavators and loaders is expected to increase owing to housing and commercial construction activities in the country.
- **Italy**
  - The maintenance/renovation segment is expected to witness growth in the construction equipment industry. According to the European Commission, investments in public infrastructure is expected to grow during the forecast period. Therefore, investment in infrastructure and renovation is expected to create opportunities for construction equipment manufacturers in the country.
  - The demand for construction equipment is backed by the increase of considerable investments in residential construction projects and renovation work. Investment in the public sector, such as transport, school, and health sector buildings, hydropower projects also drive the construction equipment market.
- **Rest of Europe**
  - Countries such as Finland, Sweden, Poland, and the Netherlands are considered under the Rest of Europe. In Finland, despite the economic slowdown, the construction of public service buildings is

expected to grow. According to the European Commission, construction is the fastest-growing sector in the Netherlands. The growth of the construction industry creates opportunities for construction equipment manufacturers to increase sales, especially for mini excavators and road rollers.

– Large projects such as Schiphol-Amsterdam-Almere roadway worth USD 6.4 billion, expansion of Schiphol Airport, new offices in Amsterdam, and construction of Zalmhaven Tower, and an iconic 215m high residential tower in Rotterdam are underway in the Netherlands. The construction sector is expected to expand moderately due to an increase in domestic demand and continues to perform well, supported by manufacturing capacity and investment.

8.4 Outlook of the North American CE industry (2020 - 2025P)

Delta variant impedes US economic recovery

Supply disruptions and the delta variant are slowing down recovery in the US economy, stated S&P Global in its September report. This is evident in high-frequency data – consumer sentiment has weakened, mobility indicators have levelled off, and hotel occupancy rates are below their corresponding pre-pandemic levels of 2019. S&P believes inflation levelled off in the quarter ending June 2021 and will continue to soften henceforth. The Federal Reserve (Fed) will likely start tapering its quantitative easing (QE) programme in December.

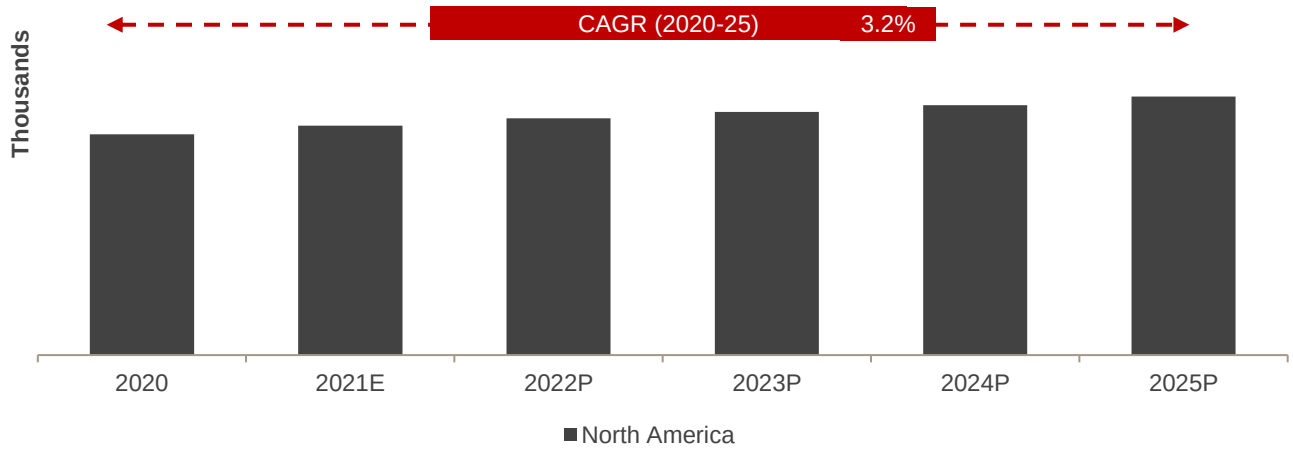
Employment gains are slowing in the US since July. Total non-farm payroll employment rose by 1.94 lakh in September, lower than gains of 3.6 lakh in August, and 10.9 lakh in July. Job gains were primarily in ‘leisure and hospitality’, ‘professional and business services’ and ‘retail trade’, among others, while employment in public education declined over the month. The overall unemployment rate declined 0.4 percentage points (pp) over the previous month to 4.8%.

While slow jobs gains may indicate the delta variant is impeding recovery, job openings survey data suggests demand from employers is very much present. Job openings reached a new high of 10.9 million in July, and weekly Indeed data showed the number of job postings on the site rose 40.5% above pre-pandemic levels, according to S&P Global. Hence, the current slowdown in job gains boils down to supply constraints. With federal pandemic unemployment benefits ending in September, S&P expects the labour shortage to be alleviated.

US Consumer Price Index-linked (CPI) inflation was at 5.4% on-year, slightly higher than 5.3% in August. Sequentially too, inflation climbed 0.4% on-month vs 0.3% in the previous month. Core inflation remained unchanged at 4% on-year. The energy index rose 24.8%, while the food index increased 4.6%.

The US trade deficit increased from $70.3 billion in July to $73.3 billion in August as imports increased more than exports. Exports of goods increased $1.1 billion on-month to $149.7 billion, driven by a rise in industrial supplies and automotive vehicles and parts. Goods imports increased at a faster clip, by $2.7 billion on-month to $239.1 billion, led by consumption of consumer goods (pharmaceutical, toys, games) and industrial supplies.

CE market in North America (Units) – Outlook



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Source: MarketsandMarkets

Against a decline of 0.7% CAGR between 2015 and 2020, CE market is expected to grow by 3.2% for 2020-25 period. Among the equipment categories, Crushing, Pulverizing and Screening Equipment will grow at the highest rate (3.9% CAGR) as against a decline of 7.9% CAGR during 2015-2020 period. Pick and Carry Cranes will post the lowest growth rate (1.2% CAGR), in unit terms.

CE market in North America – Growth across equipment categories

Equipment Categories	Units	
	CAGR (2015–2020	CAGR (2020–2025)
Dump Trucks	-1.4%	3.2%
Backhoe Loader	-0.8%	3.1%
Excavators	0.0%	3.6%
Wheeled Loaders	-1.3%	3.7%
Compactors	-0.1%	3.4%
Pick and Carry Cranes	0.3%	1.2%
Crushing, Pulverizing And Screening Equipment	-7.9%	3.9%

Note:

1. *Colour gradients represent the relative value of the parameter for the equipment category vis-à-vis other equipment categories. Green represents the largest value, and red represents the lowest value*
2. *Following equipment categories consist of certain sub-categories, Dump trucks (Articulated Dump Truck and Rigid Dump Truck), Excavators (Crawler Excavator, Mini Excavator and Wheeled Excavator) and Wheeled Loaders (Wheeled Loader <80 HP and Wheeled Loader >80 HP)*

Source: MarketsandMarkets

8.5 Outlook of the European CE industry (2020 - 2025P)

Euro area recovery on track

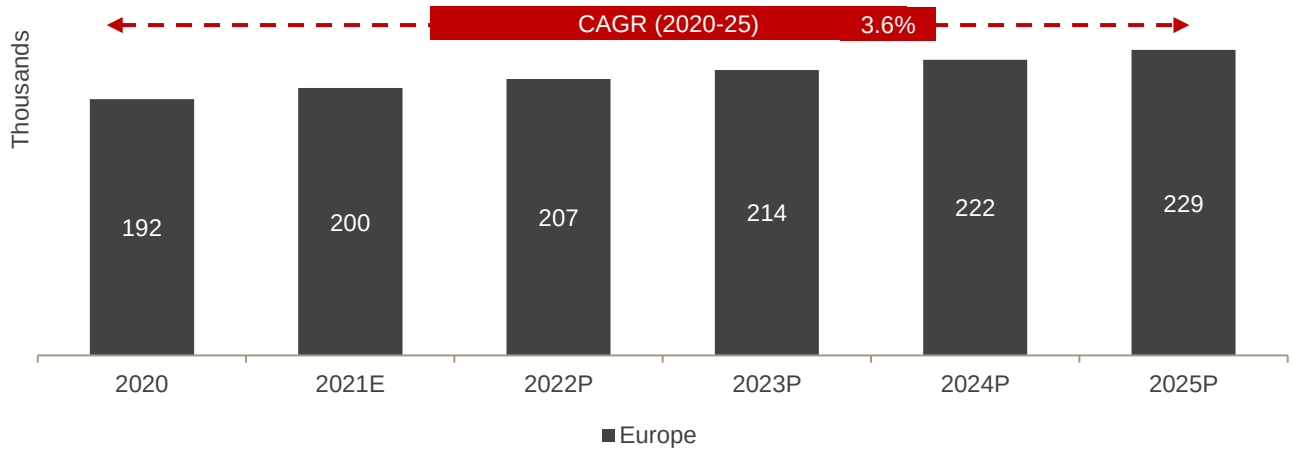
With Europe housing a higher proportion of the vaccinated, consumer confidence in Europe is improving, boosting the region's recovery. In fact, the share of fully vaccinated people nearly doubled in the second quarter of 2021 in the Eurozone to reach 65% by mid-September. Given the sharp rebound so far, S&P Global has revised its growth forecast for the region upwards to 5.1% in 2021 from 4.4% in its June report.

Inflation in the Euro area continued to rise with spiralling energy prices. In September, annual inflation was estimated at 3.4%, up from 3% in August. Inflation rose across all major components, primarily energy (17.4% compared with 15.4% in August) and 'food, alcohol & tobacco' (2.1 vs 2.0%), among others. Prices of non-energy industrial goods rose too, but moderated compared with the previous month (2.1%, compared with 2.7%). S&P states the rise in inflation is still transitory (caused by material shortages and rising commodity prices), and hence should not be a reason for the European Central Bank to tighten its monetary policy.

Europe's unemployment rate is slowly inching down month-by-month, declining to 7.5% in August from 7.6% the previous month. Total unemployment stood at 121.6 lakh in August, lower on-month by 2.6 lakh. Among major member countries, the unemployment rate of Germany, France and Italy remained unchanged at 3.6%, 8%, and 9.3%, respectively. Spain and Greece saw a relatively significant improvement, with unemployment down 0.5pp to 14% in Spain, and a full 1pp to 13.2% in Greece.

Trade surplus in goods narrowed sharply to €4.8 billion in August compared with €14.0 billion in the year-ago period. Exports increased 18.2% on-year to €184.3 billion, while imports increased sharply by 26.6% to €179.5 billion driven by purchases of fuels and lubricants (84.4%, and crude materials (65.4%), due to a rise in energy prices.

CE market in Europe (Units) – Outlook



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Source: MarketsandMarkets

CE market in Europe is expected to grow at 3.6% CAGR during 2020-25, as against -0.2% in previous five years.

Across equipment categories, Dump Trucks will lead in volume terms, while Pick and Carry Crane segment will exhibit lowest growth.

CE market in Europe – Growth across equipment categories

Equipment Categories	Units	
	CAGR (2015–2020)	CAGR (2020–2025)
Dump Trucks	0.9%	6.2%
Backhoe Loader	-4.7%	4.2%
Excavators	-0.2%	3.6%
Wheeled Loaders	1.6%	4.1%
Compactors	-0.8%	3.6%
Pick and Carry Cranes	-0.4%	1.2%
Crushing, Pulverizing And Screening Equipment	1.4%	5.8%

Note:

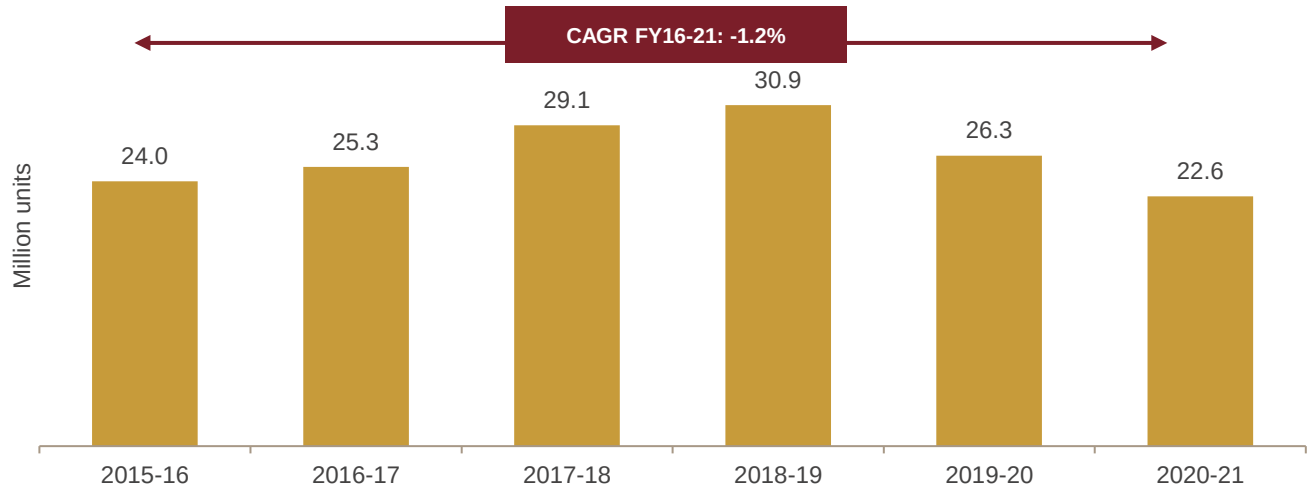
1. *Colour gradients represent the relative value of the parameter for the equipment category vis-à-vis other equipment categories. Green represents the largest value, and red represents the lowest value*
2. *Following equipment categories consist of certain sub-categories, Dump trucks (Articulated Dump Truck and Rigid Dump Truck), Excavators (Crawler Excavator, Mini Excavator and Wheeled Excavator) and Wheeled Loaders (Wheeled Loader <80 HP and Wheeled Loader >80 HP)*

Source: MarketsandMarkets,

9 Overview of Indian automobile industry

Production of automobile in India increased from 24 million units in fiscal 2016 to 31 million units in fiscal 2019, which declined by 15% yoy due to economic slowdown in fiscal 2020, which further declined by 14% yoy owing to pandemic in fiscal 2021. Production of two-wheeler dominates the industry, which occupies a share of 81%, followed by passenger vehicle at 13%, commercial vehicle and three-wheeler at 3% each as on fiscal 2021.

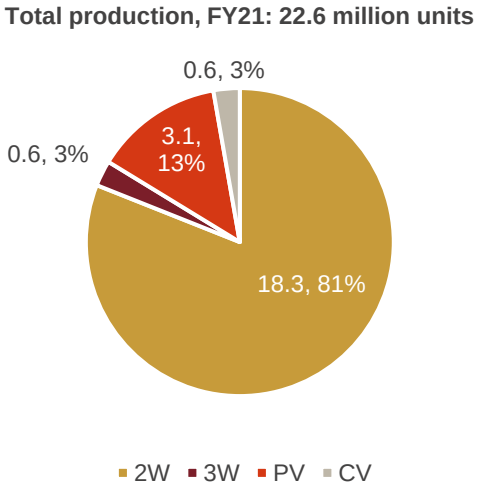
Review of total domestic automobile production



Note: (Automobile includes passenger vehicle, commercial vehicle, two-wheeler and three-wheeler)

Source: SIAM- Society of Indian Automobile Manufacturers, CRISIL Research

Total domestic automobile production split by vehicle segments



Source: SIAM- Society of Indian Automobile Manufacturers, CRISIL Research

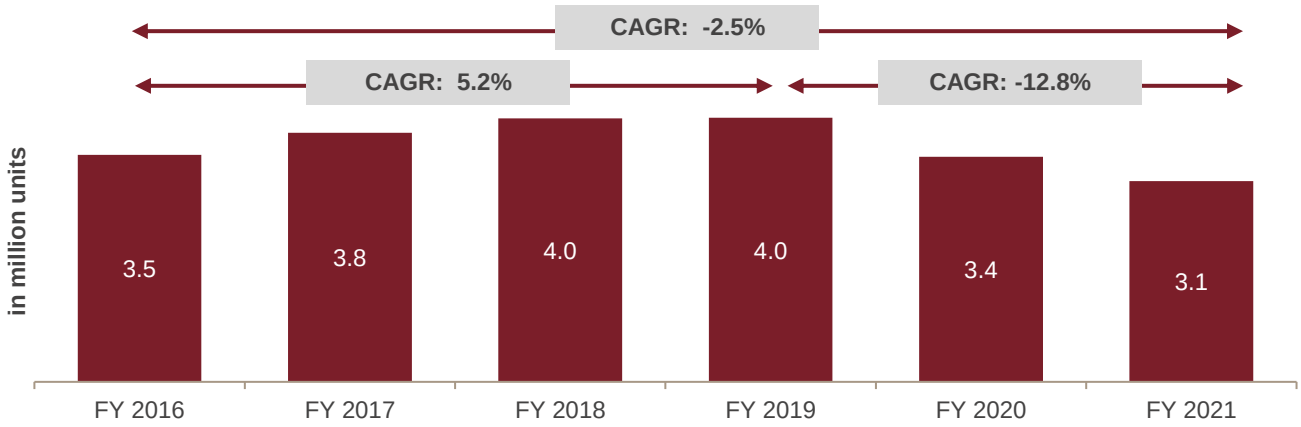
10 Review of and outlook on the Indian passenger vehicle industry

10.1 Review of the Indian passenger vehicle industry (fiscals 2016 – 2021)

Historical production development (fiscals 2016- 2021)

Production of passenger vehicles (PVs) in India recorded a healthy growth of 5.2% CAGR between fiscals 2016 and 2019 due to a spurt in domestic and exports demand. Domestic demand was driven by expansion in the addressable market, development of infrastructure, and stable cost of vehicle ownership, as crude oil prices remained low except in the few months when output was reduced due to sanctions imposed on Iran.

Review of PV production



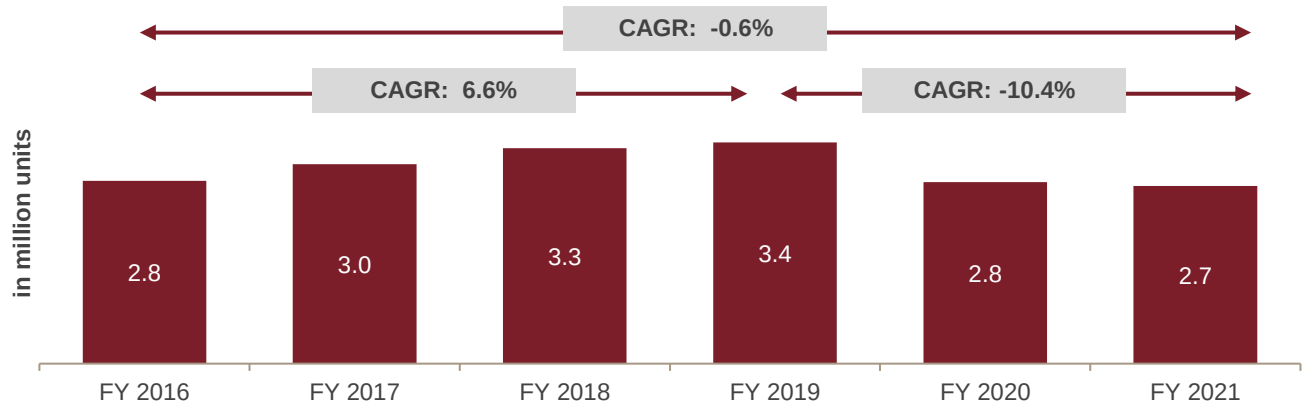
Source: SIAM- Society of Indian Automobile Manufacturers, CRISIL Research

Demonetisation and implementation of the Goods and Services Tax (GST) resulted in the weakening of the economy. Further coupled with emission and safety norms introduced by the government of India resulted in very sluggish growth in the PV industry after fiscal 2018. Production in fiscal 2019 remained flat, with India producing 4.03 million PVs, of which 3.38 million vehicles were sold in the domestic market and 0.68 million were exported.

In fiscal 2020, lower private consumption and inventory adjustment because of a change in emission norms from BS IV to BS VI, liquidity crisis, and the onset of COVID-19 resulted in a decline of 15% in production. Domestic sales fell 18%, whereas exports remained flat.

As COVID-19 spreads through close contact, the use of public transportation and shared mobility services expected to be impacted currently. This has given a boost to personal mobility. Despite real GDP likely to contract 7.5% in fiscal 2021, PV production declined by ~11%— domestic sales declined by ~2% whereas exports declined sharply by 39%.

Review of PV domestic sales

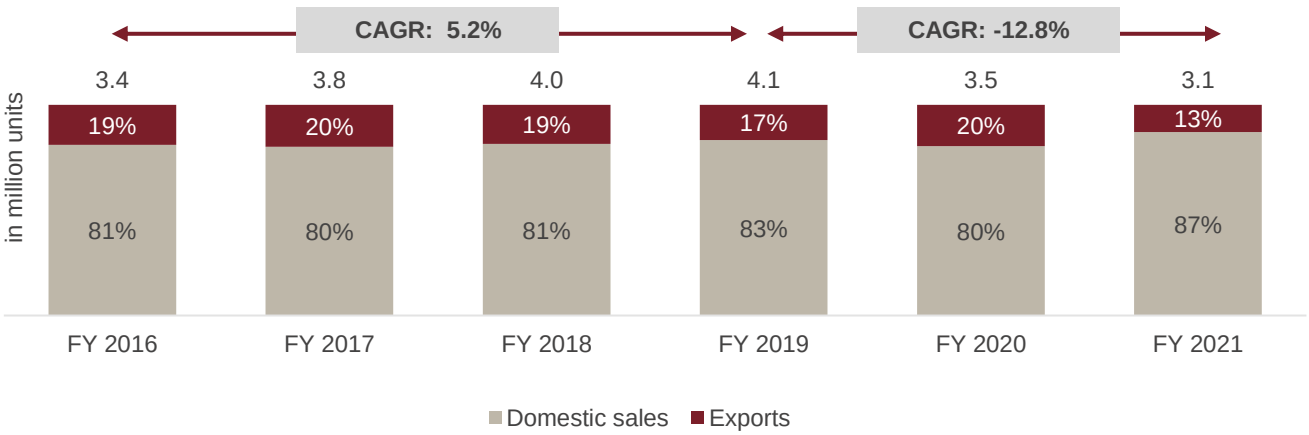


Source: SIAM- Society of Indian Automobile Manufacturers, CRISIL Research

Split by domestic sales and exports

The Indian PV market is focused on the domestic market, with over 85% demand stemming from the domestic market in fiscal 2021. The ratio of exports-to-production for the industry has declined from 19% in fiscal 2016 to 13% in fiscal 2021. This can be attributed to muted exports due to a slowdown in the global automobile industry as well as major OEMs focusing on serving fast-growing domestic markets over foreign markets. In fiscal 2020, this share had gone up to ~20% as OEMs enhance their focus on export markets. Stagnating domestic traction in the past three years has resulted in foreign automobile manufacturers such as Ford India, General Motors (GM), and Volkswagen (VW) increasing their focus on exports, thereby improving utilisation by using spare capacity and boosting revenue. These players are developing India as an export hub, as evidenced by the consistent increase in the proportion of exports to their total production.

PV industry split by domestic sales and exports



Source: SIAM, CRISIL Research

The domestic PV industry grew 6.6% between fiscals 2016 and 2019, led by strong growth in utility vehicles (UVs), which rose 14.9% versus cars, which grew 3.1% during the same period. Improving economic scenario, higher affordability, and new model launches drove demand during this period.

Domestic demand fell 18% on year in fiscal 2020 because of lower consumer sentiments due to slowing down of economy and inventory correction due to a change in emission norms. Moreover, acquisition costs increased due to implementation of safety norms such as mandatory anti-lock braking system (ABS), airbags, etc. and due to change in emission norms. Further, in fiscal 2021, domestic sales is likely to decline 4-6%. The shift towards personal mobility to maintain social distancing has aided PV sales. The pandemic and subsequent lockdown has impacted supply chain; the issue still persists in the system.

PV exports from India remained flat at 1.2% CAGR between fiscals 2016 and 2019, supported by UV exports, which grew at a CAGR of 10.5%, while car exports fell 1.2% during this period.

Due to traction in the domestic market, leading PV OEMs largely catered to domestic demand. Hyundai Motors shifted its export base to Turkey and the Czech Republic in fiscal 2013, thereby reducing its exports from India. Also, industry behemoth Maruti Suzuki's capacity constraints had put pressure on exports growth. In fiscal 2018, teething problems in GST implementation, such as delayed refunds to exporters, leading to a substantial amount of their money being tied up, affected the exports business. Additionally, contraction of the PV market in few developed nations led to a decline in exports post fiscal 2018. In fiscal 2021, exports saw sharp decline of 39% due to the pandemic, supply constraints, and higher focus of OEMs on the domestic market.

Split of industry production volume by PV segments

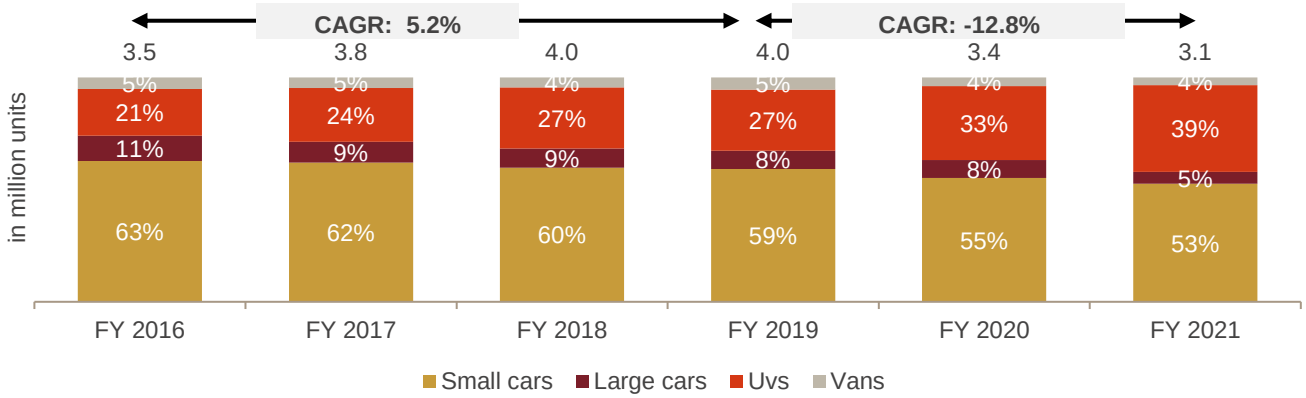
Small cars have a major share in total PV domestic volumes, as their lower ticket size makes them affordable to the average Indian consumer and ideal for first-time car buyers. The UV segment, which traditionally appealed to customers who valued larger seating capacity and ability to drive on rough rural roads, witnessed a major shift in customer preference with the launch of compact UVs. The size of large car segment has gradually shrunk, mainly due to shift in customer preference towards SUV segment, few models launches and availability of high-end technology features in SUV segment as compared to large car segment.

In fiscal 2020, new model launches and entry of new players such as Korea's Kia Motors and China's MG Motors (part of SAIC Motor) further increased the number of players and models and intensified competition mainly in compact UV segment.

Vans segment registered a decline in fiscal 2020 due to heavy pre-buying in fiscal 2019 because of hike in prices on account of various safety and crash test norms as well as exit of *Omni* and declining sales of remaining models. Maruti dominates this segment, with more than 85% market share.

Unlike most developed economies and some developing nations, India's car market is highly underpenetrated. As of fiscal 2020, India had ~24 PVs per 1,000 people. This is significantly lower than both developed nations and even other nations in the BRIC block (Brazil, Russia, and China), based on per-capita GDP. Brazil, Russia and China has 173, 307 and 99 passenger vehicles per 1,000 people respectively in 2015. Thus, the country holds tremendous potential for automobile manufacturers. Also, in the penetration of cars and UVs with per-capita GDP across countries, India still lags behind most countries, and CRISIL Research expects the gap to reduce gradually after a decline in fiscal 2021.

PV production split by vehicle segments



Source: SIAM, CRISIL Research

OEM-wise domestic sales (for fiscal 2021)

Companies	Domestic sales (FY21)
Maruti Suzuki India Ltd.	1,293,840
Hyundai Motors India Ltd.	471,535
Tata Motors Ltd.	224,111
Mahindra & Mahindra Ltd.	157,216
Kia India Pvt. Ltd.	155,286
Toyota Kirloskar Motor Pvt. Ltd.	93,109
Renault India Pvt. Ltd.	92,268
Honda Cars India Ltd.	82,074
Ford India Pvt. Ltd.	48,042
MG Motor India Pvt. Ltd.	35,597
Volkswagen India Pvt. Ltd.	20,455
Nissan Motor India Pvt. Ltd.	18,884
Skoda Auto India Pvt. Ltd.	11,319
Fiat India Automobiles Pvt. Ltd.	6,536
Force Motors Ltd.	737
International Cars & Motors Ltd.	50

Source: SIAM, CRISIL Research

Key historical regulatory/macroeconomic trends and growth drivers for domestic sales and exports

Demonetisation

Demonetisation had little impact on PV sales because dealers resorted to alternate sources of cash such as cheques, cards, and e-wallets to buy vehicles. However, due to the negative overall economic sentiment, the industry recorded flat growth in November and December 2016.

Implementation of GST

There has been no change in GST rates in the budget. Overall, slightly lower GST rates did not lead to a major disruption in the industry.

BS-IV to BS-VI transition

BS emission standards are issued by the government to regulate the output of air pollutants from motor vehicles. In January 2016, the central government decided to skip BS-V and shift directly to BS-VI norms. It fixed the deadline at April 1, 2020 for the introduction of BS-VI emission norms.

BS-VI regulations demand major reduction in PM and NOx levels

Type of Vehicle	Unit	BS IV	BS VI	Change
Diesel				
HC	gm/km	0.3	0.17	**-43%**
NOx	gm/km	0.25	0.08	**-68%**
PM	gm/km	0.025	0.0045	**-82%**
Petrol				
NOx	gm/km	0.08	0.06	**-25%**
PM	gm/km	-	0.0045	**Newly added**

Note: HC, NOx, PM refer to pollutants from vehicle exhaust; HC- Hydrocarbon, NOx- Nitrogen oxides, PM- Particulate matter

BS-VI compliant PV price increased 2-4%. Diesel variants became costlier than other fuel variants. Adding of various devices and systems to reduce emission levels adversely affected prices.

Addition of devices and subsystems in BS-VI compliant vehicle

Pollutant	Devices / Subsystems to be included to reduce the Pollutants
NOX- Nitrous oxide	▪Exhaust Gas Recirculation ▪Selective Catalytic Reduction ▪3 way catalyst ▪Lean NOx Trap
HC- Hydrocarbons	▪Secondary Air Injection ▪3 way catalyst ▪Diesel Oxidation Catalyst ▪Purge Control Valve ▪Canister
PM- Particulate matter	▪Diesel Particulate Filter ▪Gasoline Particulate Filter

Safety norms

As per the Bharat New Vehicle Safety Assessment Programme (BNVSAP), introduced from October 2017, new cars sold in India go through mandatory crash testing and comply with voluntary star ratings based on results.

The car testing protocols under regulations are as follows:

- Frontal offset testing (64 Km p/h proposed)
- Side impact testing

- Pedestrian protection testing
- Rear impact testing

While the full-frontal crash test was already implemented for new car models and LMV of GVW <1500 kg, the test got implemented for all car models from October 1, 2019. As per the rules, the car has to go through tests pertaining to full frontal crash test, 40% overall offset frontal crash test, and test of moving deformable barrier crash perpendicular into a stationary vehicle. A test pertaining to pedestrian body forms being impacted on the hood of the vehicle was implemented from October 1, 2018 for new car models. Points are awarded to the car based on safety features in the car such as ABS, seat-belt reminders, child lock, and electronic stability control (ESC). The government is also considering making ESC and autonomous emergency braking (AEB) mandatory on all models from fiscal 2023.

Other safety system includes a mandatory air bag for the driver. Government proposes mandatory airbags for the front passenger on all the cars. For new models, the front passenger airbag will be mandatory from April 1, 2021, while for models presently being sold in the market it will be mandatory from June 1, 2021 according to the notification issued by the government.

Some other safety measures are as follows:

- Seat-belt reminders
- Alert systems for speeds beyond 80 kmph
- Reverse parking alerts
- Manual override over the central locking system for emergencies

MEIS scheme to be replaced by RoDTEP

The central government has decided to discontinue the MEIS (Merchandise Exports from India Scheme) scheme from January 1, 2021, as it is not compliant with World Trade Organization norms. Exporters will then be reimbursed the duty paid on inputs through the new Remission of Duties or Taxes on Export Products (RoDTEP) scheme, the scheme was notified on Aug 17th 2021. Rates for automobile and auto components range between 0.5-2%.

Current penetration of Electric PVs

Current EV penetration in passenger vehicle category is miniscule (0.16% as on fiscal 2021) due to higher cost of acquisition of EVs, higher cost of ownership as compared ICE vehicles and lack of adequate penetration of charging stations leading to range anxiety. However, fiscal 2021 saw robust sales of e-Nexon.

Electric vehicle models currently available

Company	Model	Ex-showroom Price Range (Rs. Lacs)	Features
Mahindra	E-Verito	9.5-10	21.2 kWh battery with range of 180 km
Mahindra	eKUV 100	8-8.5	15.9 kWH battery with range of 147 km
Tata	Tigor EV	11.5 - 12	16.2 kWh battery with range of 140 km
Tata	Nexon EV	13.5-14.5	30.2 kWh battery with range of 312 km
Hyundai	Kona	23.5 - 24	39.2 kWh battery with range of 452 km
MG	ZS EV	20.5-21	44.5 kWh battery with range of 340 km

Source: CRISIL Research

Historic growth drivers for Indian passenger vehicle exports

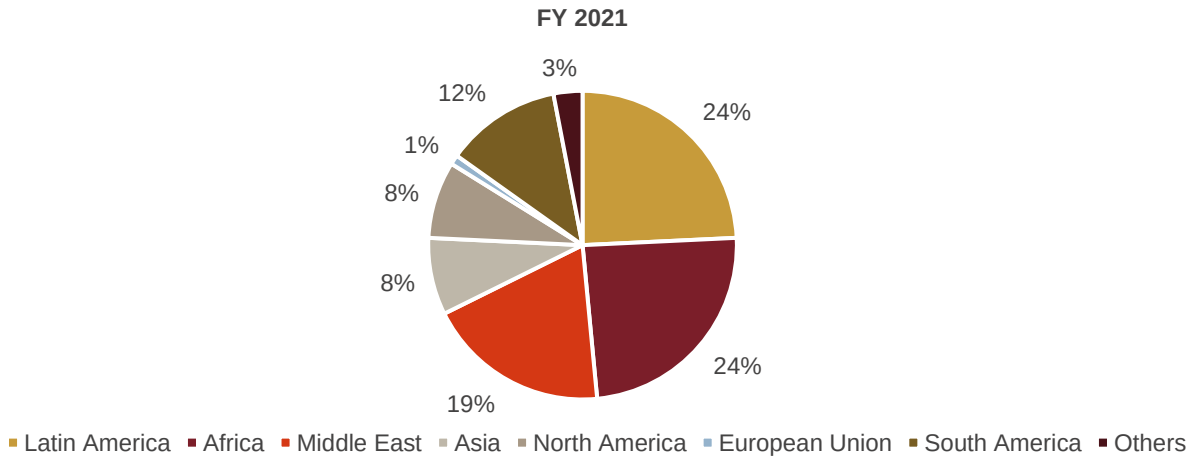
Exports of PV from India to USA, which had almost zero share till fiscal 2018, has ~10% volume share as of fiscal 2020, estimated to be mainly driven by exports of the Ford Ecosport.

PV exports to African and Middle Eastern countries currently account for ~42% of overall exports in fiscal 2020, compared with ~29% in fiscal 2016. The African economy, which is largely dependent on commodities such as chrome, manganese, vanadium, precious metals and crude, to name a few, was hit in 2015 and 2016 when commodity prices crashed. India's exports to Africa declined from 19% in fiscal 2016 to 15% in fiscal 2017.

Exports to South Africa, Italy, the UAE, Saudi Arabia, Peru and Bolivia also witnessed growth in fiscal 2020 with the launch of new models like the Hyundai Venue, Maruti S-Presso, Renault Triber and Kia Seltos.

However, the outbreak of the pandemic has severely impacted exports across the globe leading to exports declining by 39% yoy in fiscal 2021. Moreover, companies focussed on catering domestic market because of increased demand on account of higher preference towards personal mobility compared to public mode of transport and continuing supply constraints.

PV exports from India (fiscal 2021)



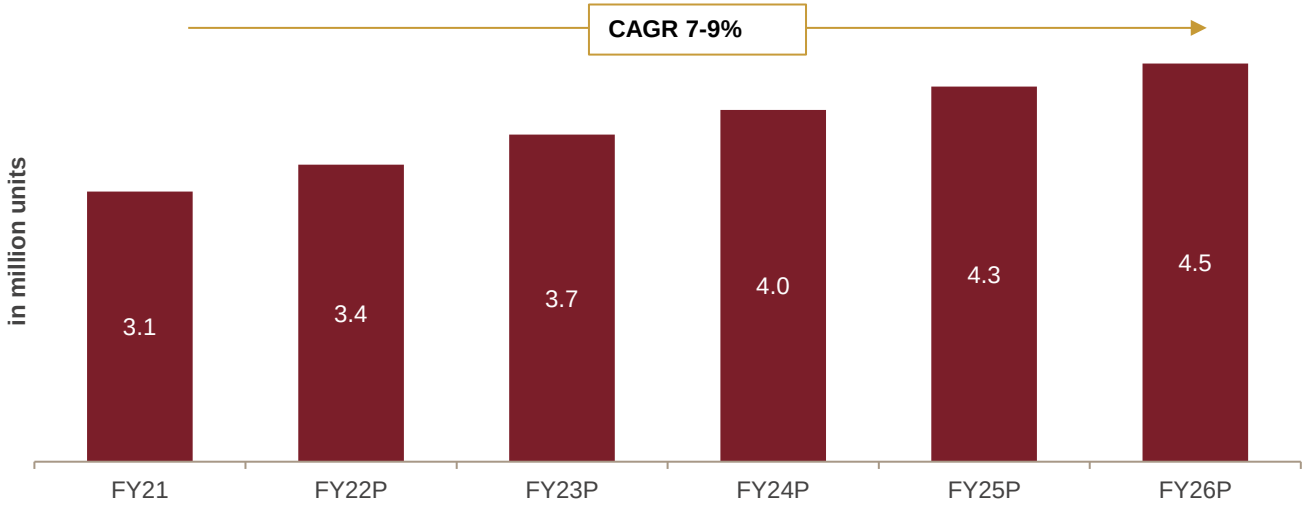
Source: Directorate General of Foreign Trade (DGFT), CRISIL Research

10.2 Outlook on the Indian PV industry (fiscals 2021 - 2026P)

Production outlook (fiscals 2021 - 2026P)

CRISIL Research estimates overall PV production to grow at a 7-9% CAGR from fiscal 2021 to 2026, and reach ~4.5 million units by fiscal 2026. However, risk of subsequent waves of COVID-19 and need for the state and central governments to impose localised or extended lockdown to control spread of pandemic may have an impact on supply chains as well as sales going forward. In such a case, overall industry production is also likely to get adversely affected over the short term.

PV production outlook



Note: P - Projected

Source: SIAM, CRISIL Research

After a consecutive drop in production in fiscals 2020 and 2021, PV production is expected to increase at a robust pace over the next five fiscals because of a spurt in domestic as well as exports demand. Domestic demand will be driven by an expansion in the addressable market, fast-paced infrastructure development and relatively stable cost of vehicle ownership, as crude oil prices are expected to stabilise at lower levels.

However, in fiscal 2022, due to semi-conductor shortage, we expect the production of the passenger vehicle to be impacted. Passenger vehicle sales in first four months of fiscal 2022 is estimated to have recovered faster than our initial projections despite resurgence of COVID-19 on account of new model launches and pent up demand. Malaysia holds a critical link in the global semiconductor supply chain, with many assemblies and testing centres located in the country. With COVID infections in Malaysia reaching ~22,000/day by end of August 2021, from ~1500 cases/day by end of March 2021, lockdown measures in the country are expected to dent the supply of microchips, aggravating the shortage further. This has impacted wholesale volumes in August 2021 and expected to lead to lower production and subsequently, wholesale volumes in September 2021. The chip shortage also coincides with the automobile industry entering the crucial festival period of sales which could impact the volumes in the second half of the fiscal. Although, the semiconductor shortage is likely to remain till the end of fiscal 2022, the situation is likely to improve marginally in the coming 2-3 months once the curbs in Malaysia are lifted.

The long-term outlook remains bright with regard to exports as efforts to penetrate newer geographies bear fruit and schemes such as PLI incentivises players to tap exports. CRISIL forecasts exports to clock 11-13% CAGR between fiscals 2021 and 2026. Rising competition in Europe amid sluggish demand growth, though, will prevent further increase in growth. Moreover, penetration of electric and hybrid vehicles will be a key monitorable.

Domestic sales outlook (fiscals 2021- 2026)

Domestic PV sales are expected to increase by 8-10% CAGR over fiscals 2021 to 2026. The growth is expected to be better (post-fiscal 2021), as consecutive years of double-digit declines would lead to a very low base in fiscal 2021. However sharp rise in COVID-19 cases and 2nd wave of covid has led to disruption in supply chain, leading to supply crunch of fast-moving models, waiting periods have increased for models in high demand. Over short to mid-term COVID-19 induced demand for personal mobility is likely to support PV sales, over mid to long-term, moderate macroeconomic growth, increasing disposable income, relatively stable cost of vehicle ownership, and lower fuel prices are likely to drive demand for passenger vehicles. Other factors that would aid demand are increasing urbanisation, government support to farm incomes, and improved availability of finance. However,

increasing congestion in metro cities and rising popularity of shared mobility services are likely to restrict car sales in the long term.

PV domestic sales outlook

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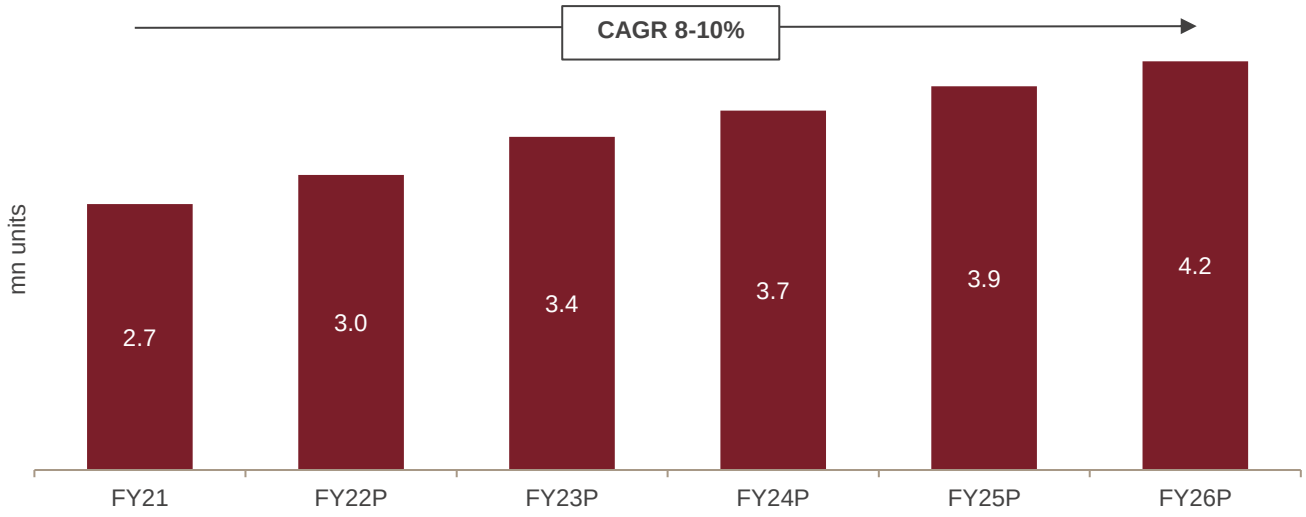


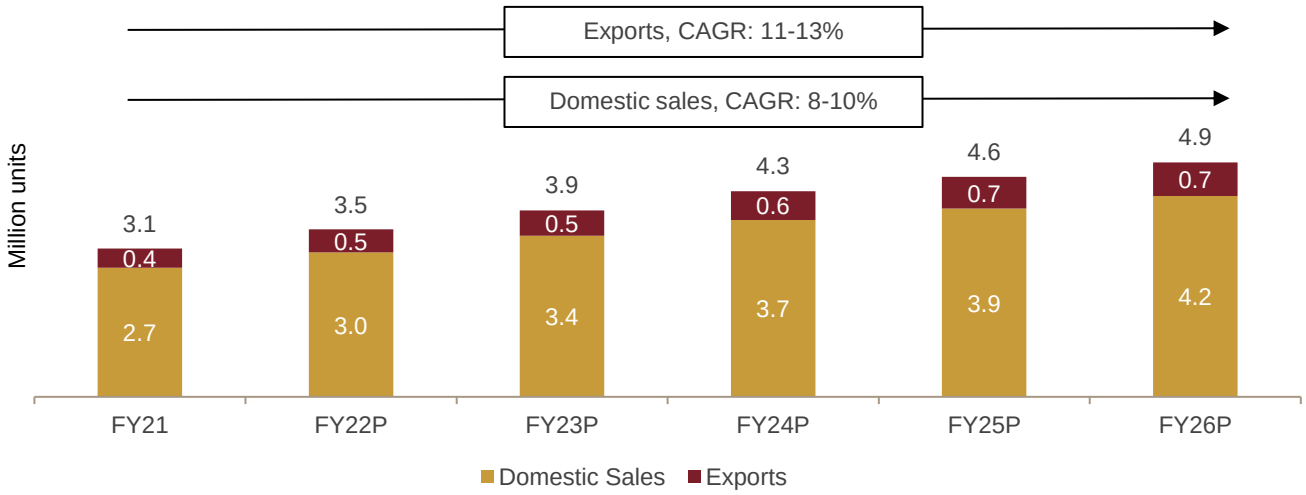
Note: P - Projected

Source: SIAM, CRISIL Research

Split by domestic and export sales

Domestic sales, which is formed ~87% of total production in fiscal 2021, are estimated to grow at 8-10% between fiscals 2021 and 2026. Exports are estimated to grow at by 11-13% CAGR between fiscal 2021 and 2026 on a low base of fiscal 2021. Domestic sales to account ~86% of total sales in fiscal 2026 with export accounting for remaining ~14%.

PV industry: Domestic and export sales share



Note: P - Projected

Source: SIAM, CRISIL Research

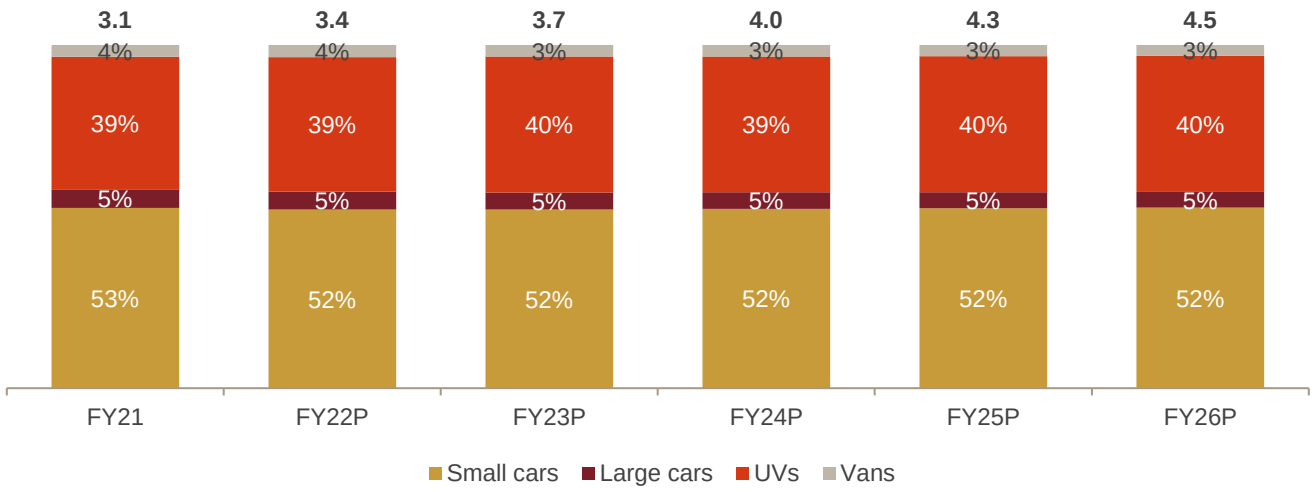
Split by passenger vehicle segments

CRISIL Research projects production of UVs to drive the growth of passenger vehicle industry in long term. UV segment is expected to grow at a CAGR of 8-10% from fiscal 2021 and fiscal 2026 on a low base of fiscal 2021. Small cars and vans to grow at a CAGR of 7-9% and large cars to grow at a stable rate of 3-5% CAGR between fiscal 2021 and 2026.

Growth will be driven by the improving macroeconomic situation, increasing disposable incomes and the relatively stable cost of vehicle ownership owing to steady fuel oil prices.

Other factors aiding demand will be: increased urbanisation, Finance Commission payouts and easy availability of finance. With global automakers flooding India with new models to capitalise on the growth opportunity, buyers will be spoilt for choice. The proportion of replacement demand will rise as car owners opt for newer models due to higher affordability, competitively-priced launches, and easy availability of finance.

PV production outlook by segment



Note: P - Projected

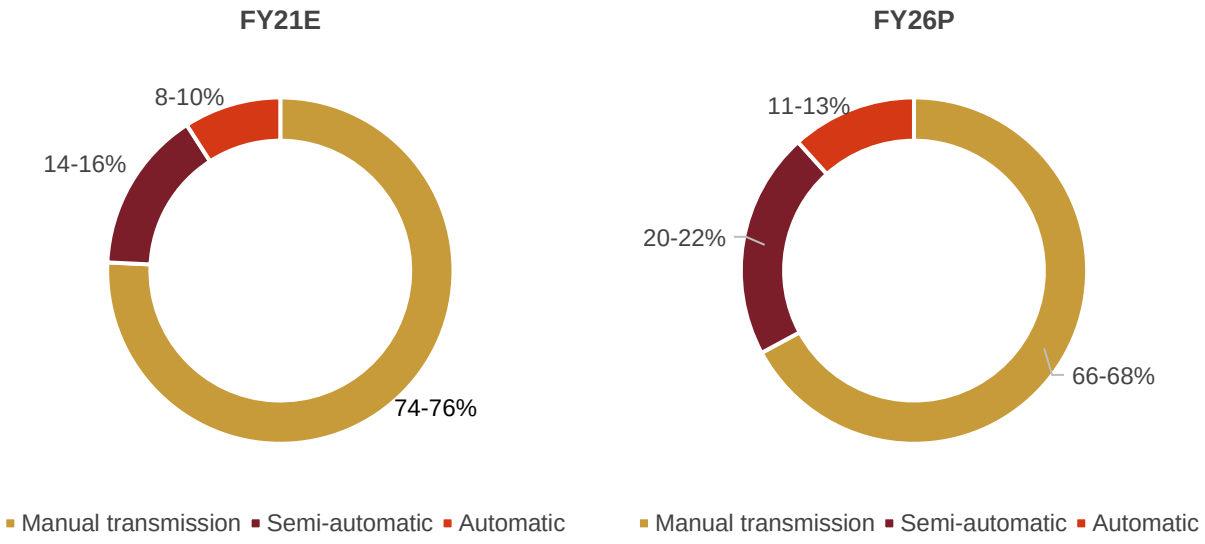
Source: SIAM, CRISIL Research

Split by transmission type

Manual Transmission has been the predominant offering by the OEMs in India for years, keeping in mind the preference of Indian customers for lower-priced options offering durability, low operating cost & maintenance, and most importantly, higher fuel efficiency.

As on fiscal 2021, manual transmission is estimated to occupy 74-76%, followed by semi-automatic and automatic transmission types. The cost of automatic transmission is higher as compared to manual transmission, additionally, the fuel efficiency is also lower, leading to higher share of manual transmission. Manual transmission penetration is higher in SUV as compared to cars.

Due to worsening traffic conditions, longer commutes mainly in cities and availability of better technology, semi-automatic or fully automatic cars are increasingly being preferred. In fiscal 2026, CRISIL Research expects the share of semi-automatic to increase by 5-7% and automatic transmission to increase by 1-3%. Share of semi-automatic is expected to increase at a faster pace as compared to fully automatic due to high cost differential between the two technologies.



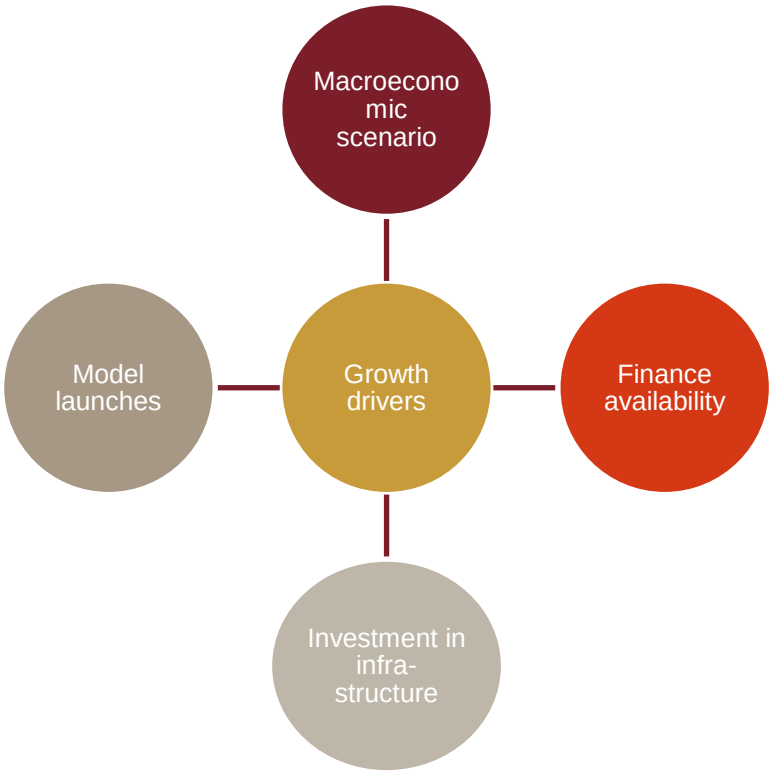
Source: Industry, CRISIL Research

Demand for Automatic in domestic sales is estimated to grow at 14-16% CAGR from fiscal 2021 to 2026. Whereas demand for semi-automatics is projected to grow at 18-19% CAGR during the assessment period.

Key trends and growth drivers

Primary demand drivers for the PV industry include improved affordability, lower cost of ownership, and new model launches.

Key growth drivers for the domestic PV market

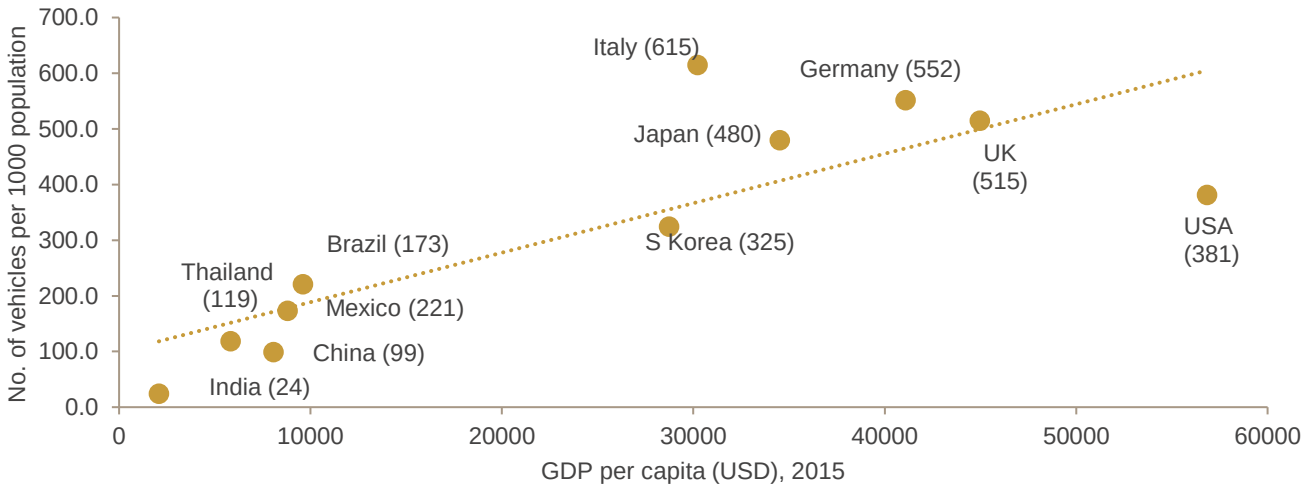


Future growth drivers for the domestic market

- Significant headroom for growth on account of underpenetrated market.

India's car market is highly underpenetrated compared with most developed economies and some developing nations. As of fiscal 2020, India had ~24 passenger vehicles per 1,000 people. This is significantly lower than both developed nations and even other nations in the BRIC block (Brazil, Russia, and China), based on per-capita GDP. Brazil, Russia and China has 173, 307 and 99 passenger vehicles per 1,000 people respectively in 2015. Thus, the country holds tremendous potential for automobile manufacturers. Also, comparing on the basis the penetration of cars and UVs with per-capita GDP across countries, India still lags behind most countries and, as such, CRISIL Research expects the gap to reduce gradually after a decline in fiscal 2021.

Country-wise passenger vehicle penetration



Note: Figures except India, are as of calendar year 2015, Dotted line indicates median; Figures in the bracket indicate passenger vehicles per 1,000 people

Source: OICA, World Bank, CRISIL Research

- Favourable demographic factors
  - As per Census 2011, India's population was ~1.2 billion, and comprised ~246 million households. The population, which grew ~18% over 2001 and 2011, is expected to increase ~11% over 2011 and 2021 to 1.4 billion. It is expected to reach 1.5 billion by 2031.
  - As of 2020, India has one of the largest young population in the world, with a median age of 28 years. About 90% of Indians would still be below the age of 60 years by end-2021, of which, CRISIL Research estimates, 63% would be between 15 and 59 years.
  - Urbanisation is one of India's most important economic growth drivers. Urbanisation rate in India is expected to grow from 34.9% in 2020 to 37.4% in 2025. Urbanisation likely to support income growth which will be supporting for PV sales growth
  - Increasing nuclearisation of families is driving up consumption expenditure. In the recent past, the number of nuclear families, as a percentage of total household population, has increased. The average household size of the country has come down to 4.91 in 2011, from 5.57 in 1991. Nuclearisation of families is likely to continue aiding growth of PV vehicle sales.

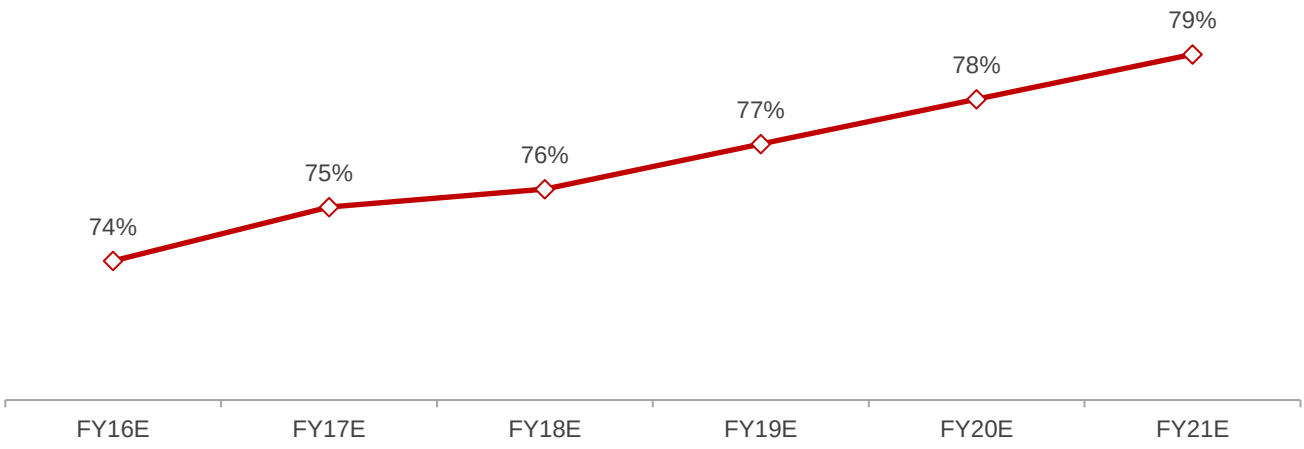
- Expected improvement in macroeconomic factors after subdued growth in fiscal 2020 and a decline in fiscal 2021
  - CRISIL Research expects India's GDP to grow ~6.3% on average, annually, between fiscals 2022 and 2026, after an estimated de-growth of 7.7% in fiscal 2021 due to the pandemic and lockdowns
  - GDP growth will continue to be consumption-led, assuming normal monsoons, softer interest rates and inflation, and implementation of Pay Commission hikes by states, which will push up purchasing power
- Anticipated improvement in rural demand
  - Rise in finance penetration in the long term, as banks and NBFCs continue to focus on semi-rural and rural areas, will contribute to this
  - Rural infrastructure growth is expected to have a pronounced impact on rural incomes. Strong investments under infrastructure schemes will further boost rural infrastructure, with multiplier effects
- Improvement in finance availability

  Given the industry's higher ticket sizes and better credit profile of end customers, finance penetration is higher in the PV industry compared with other automobile segments. CRISIL Research estimates finance penetration levels to reach 79% in fiscal 2021 from 74% in fiscal 2016.

  Stringent credit norms and availability of credit information through the Credit Information Bureau (India) Ltd (CIBIL) have helped players widen their customer bases. The industry has witnessed strong competition with new players in the form of non-banking financial companies (NBFCs) targeting those markets that banks exited, and captive NBFCs (operated by two-wheeler manufacturers) largely focusing on non-metros.

PV finance penetration – Fiscals 2016 to 2021

(%)



Note: E – Estimated; Note: Finance penetration indicates number of vehicles financed per 100 two wheelers sold in India

Source: CRISIL Research

- The penetration is expected to deepen going forward as:
  - More customers come under the formal financial services fold
  - Banks increase their focus on the retail segments

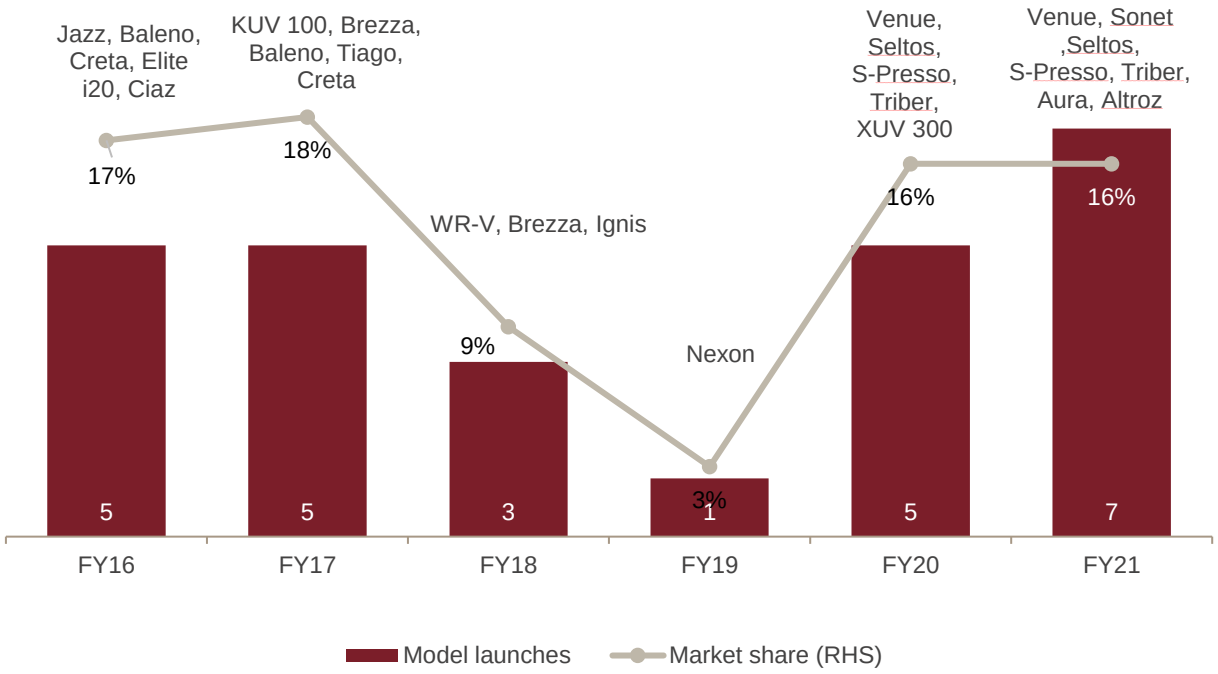
  - Banks start waving off processing fee and pre-payment charges (especially during festival seasons) which will make financing option more lucrative for customers

- Enhanced product offering
  - New models launched by manufacturers
  - Increase in offerings because of new entrants such as Kia Motors, MG Motors, etc.

    Apart from rising sales of existing models, sales of new models have supported overall industry growth in the past few years. Majority of the models are in the UV segment leading to its growth.

    New models launched in fiscal 2019 contributed to a mere ~3% of domestic sales that fiscal. However, they gained significant traction in fiscal 2020, leading to ~16% market share. Though launches planned in the first half of fiscal 2021 were deferred due to the pandemic, those within the small car segment, such as S-Presso, Altroz and Aura are expected to gain market share this fiscal. Upcoming models such as Nissan Magnite, Renault HBC and Tata HBX are also expected to gain traction.

Share of newly launched models in total passenger vehicle sales



Note: A vehicle is considered a new launch for a year and a half past its launch. A new launch winning at least 1% share in fiscal year is considered a major launch

Source: SIAM, CRISIL Research

- Cars on subscription
  - Cars have always been an aspirational purchase for Indian consumers. However, new startup business models based on 'cars on subscription' are gaining traction because of convenience, low upfront costs as well as involvement of young, dynamic population in the customer base, which prefers an asset-light lifestyle.
  - In the case of fixed-cost subscription, the consumer pays a periodic sum of money for the use of a vehicle for the subscribed period. Subscriptions can be for any length of time and can be cancelled at any point of time. It also allows the customer to upgrade or change cars after the subscription period. Associated costs

of the car, such as insurance, taxes, service and maintenance, repairs and roadside assistance, are borne by the subscription provider. This reduces the burden of down-payment for the consumer, along with the additional costs associated with car ownership.

  - The subscription-based car ownership increases the affordability of consumers substantially.
  - Subscribing for a vehicle entails a lower initial cost compared with buying a new car, which requires a hefty down-payment. Thus, it can have a positive impact on the industry and increase the penetration of cars in the country.
  - However, considering the fact that ~40-50% customers are first-time car buyers, the aspirational value of ownership can hinder the success of the subscription-based model.
  - Currently, retail leasing is still in a nascent stage in India and, thus, remains a key monitorable in the long term for impact on the industry

- Future growth drivers for the exports market

  While predominantly a small car exporter, India has strongly emerged as an exporter of mid-size sedans and UVs with a growing acceptance of vehicles manufactured in India. The share of cars segment reduced from 82% in fiscal 2016 to 65-70% in fiscal 2021 as a percentage of overall exports. Consequently, the share of UVs increased from 18% to 30-35%.

  Latin America occupies the highest proportion in PV exports from India, followed by Africa. Indian OEMs have diversified their exports by exploring newer geographies. New markets like Saudi Arabia, the UAE and South Africa have shown significant demand growth. The US, which had nil share till fiscal 2018, garnered ~10% volume share as of fiscal 2020, mainly driven by export of the Ford Ecosport. Exports to South Africa, Italy, the UAE, Saudi Arabia, Peru and Bolivia also witnessed growth in fiscal 2020, with the launch of new models such as the Hyundai Venue, Maruti S-Presso, Renault Triber and Kia Seltos.

  Below factors are likely support growth of PV exports from India

  - Capacity expansion by top players
  - Stable crude oil prices to aid demand from African and Latin American geographies
  - Continued expansion undertaken by players into newer markets
  - Production-linked incentive (PLI) scheme, expected to provide further boost to the exports

Impact of regulatory changes on domestic passenger vehicle sales

Impact of PLI on automotive industry

The government has budgeted ~Rs 1.7 lakh crore as production-linked incentives to local manufacturing units in 13 key sectors. The key sectors likely to benefit from the scheme include: automobiles, pharma, telecom, electronics, food, textiles, steel and energy. By incentivising production, subject to achieving the desired scale, the scheme aims to spawn a handful of globally competitive large-scale manufacturing units in the identified sectors. Furthermore, the government also hopes to reduce India's dependence on raw material imports from China. The scheme is expected to provide a boost to economic growth over the medium term and create more employment opportunities, as many of these sectors are labour-intensive in nature.

Sector	Segment	Budgeted (Rs crore)*	
Automobiles	Advance chemistry cell (ACC) battery	18,100	44,038
	Automobiles and auto components	25,938	
Electronics	Mobile manufacturing and specified electronic components	40,951	52,189
	Electronic/technology products	5,000	
	White goods (ACs & LED)	6,238	
Pharma and medical equipment	Critical key starting materials/drug intermediaries and active pharmaceutical ingredients	6,940	25,360
	Manufacturing of medical devices.	3,420	
	Pharmaceuticals drugs	15,000	
Telecom	Telecom & networking products	12,195	12,195
Food	Food products	10,900	10,900
Textile	Textile products: man-made fibre (MMF) and technical textiles	10,683	10,683
Steel	Speciality steel	6,322	6,322
Energy	High efficiency solar PV modules	4,500	4,500
Total			**1,66,187**

**Approved financial outlay over a five-year period*

Source: Government websites, CRISIL Research

The PLI scheme for the automotive industry intends to promote high-tech green manufacturing such as electric and hydrogen fuel cell vehicles. This scheme excludes conventional petrol, diesel, and CNG segments (Internal Combustion Engine) since these segments have sufficient capacity in India.

The PLI scheme targeting auto parts include the following component schemes:

- Champion Original Equipment Manufacturers (OEM) Scheme: It is a sales value linked plan, applicable to battery electric and hydrogen fuel cell vehicles of all segments.
- Champion Incentive Scheme: It is a sales value linked plan for advanced technology components, complete and semi-knocked down (CKD/SKD) kits, vehicle aggregates of two-wheelers, three-wheelers, passenger vehicles, commercial vehicles and tractors, including automobiles meant for military use and any other advanced automotive technology components prescribed by the Ministry of Heavy Industries – depending upon technical developments.

Impact of corporate average fuel efficiency (CAFE) norms

The Paris Agreement, enforced from November 2016 onwards, and ratified by India, set the objective of limiting the global temperature rise this century well below 2 degree Celsius over pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. The greenhouse gases emissions reduction that would be compatible with this target would require a significant increase in the share of zero or low emission vehicles over the coming years. These regulations, combined with growing environmental and sustainability consciousness of the population, will lead to a major transformation of the global auto industry from internal combustion engine to green mobility technologies (such as hybrid vehicles, BEVs, fuel cell vehicles and alternative-fuel vehicles).

Fuel consumption standards for Indian vehicles came into force in India in April 2017 for petrol, diesel, liquefied petroleum gas (LPG) and compressed natural gas (CNG) passenger vehicles. These standards are based on the CAFE system and targets to bring about improvement in fuel consumption of passenger vehicles by 2022. The policy supports a continuous reduction in CO_2 emissions through CAFE regulations.

These regulations were first implemented on April 1, 2017 with the introduction of BS-IV emission norms. It was decided that the highest permissible carbon footprint would be 130 gm per km till 2022. Thereafter, it would be further reduced to 113 gm per km. This is expected to incentivise the shift towards greener technology such as hybrids and EVs.

Upcoming regulatory changes and safety norms

The Indian PV industry has seen a host of safety and regulatory changes in the past 3-5 years. Implementation of CAFÉ norms will further help in the cleaner fuel emission. CRISIL Research expects other safety features such as electronic stability control (ESC) and autonomous emergency braking (AEB) to be implemented on all cars to reduce road accidents.

When a driver attempts an ‘extreme manoeuvre’ (e.g., one initiated to avoid a crash or due to misjudgement of the severity of a curve), they may lose control if the vehicle responds differently as it nears the limits of road traction than it does during ordinary driving. In order to counter such situations in which loss of control may be imminent; ESC uses automatic braking of individual wheels to adjust the vehicle's heading if it departs from the direction the driver is steering.

AEB is a driver assistance system that relies on a network of radar sensors mounted behind the vehicle's front grille or windshield to gauge the surroundings and monitor basic driving conditions such as speed, acceleration and proximity to obstacles. If the risk of an accident is detected, the system prompts the driver to brake by providing audible and visual warnings. If the driver fails to react in time, then AEB is even capable of braking autonomously to prevent an accident altogether or at least reduce the impact of collision.

Estimated Penetration of Electric PVs by fiscal 2026

Regulatory roadmap key for rise of electric mobility in India

The US and China have seen an acceleration of sales of electric/hybrid cars, as most major global original equipment manufacturers (OEMs) have one or more models in their portfolios in these countries. With more model launches by OEMs, issues of range anxiety being addressed, and declining battery prices, CRISIL Research expects electric vehicle (EV) volume to grow at a faster pace globally.

Currently, in India, the charging infrastructure required for EVs is not in place. With the Indian automobile industry seeing a slew of regulations and norms in the past few years, OEMs are skeptical about investing in EV manufacturing here.

The implementation of the National Electric Mobility Mission Plan, 2020 and other policy initiatives by the government to address infrastructure-related issues are key monitorables for the sector over the next five years. The government has announced Rs 100 billion for Phase 2 of Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME). The policy aims to provide a subsidy of Rs 10,000 per KWh to four wheelers (BEV (battery electric vehicle), PHEV, strong hybrid) for commercial purpose and public transport. It also mandates minimum range to be ~140 km and maximum ex-factory price to be ~Rs 15 lakh. It envisions creation of infrastructure for charging of EVs. CRISIL Research expects initial adoption rate to be high among cab aggregators.

Delhi has announced an EV policy that would provide purchase incentives of up to Rs 1.5 lakh for the first 1,000 electric cars. The benefit would be provided in addition to FAME-2 policy benefits. The Telangana government is

also providing 100% exemption of road tax and registration fee on purchase of the first 5,000 electric cars. The Tamil Nadu government is providing 100% exemption for battery-operated vehicles (BOVs). Such regional push will further enable adoption of EVs. Further individual tax payers are allowed to take a deduction on interest payments up to Rs 1,50,000 towards electric vehicles under Section 80EEB. The benefit is available on EV loans sanctioned over 1st April 2019 till 31st March 2023 period. Such favourable tax laws are expected to encourage electric vehicle adoption for personal mobility.

The government is also considering the establishment of a 40-gigawatt (GW) battery manufacturing plant to boost EVs and renewable energy initiatives. However, for any path-breaking changes to happen in the EV market, OEMs need to make more investments and the government should devise clear policies. Among the challenges, infrastructure shortage needs to be resolved urgently.

Electric PVs to contribute to 4-6% of domestic sales by fiscal 2026

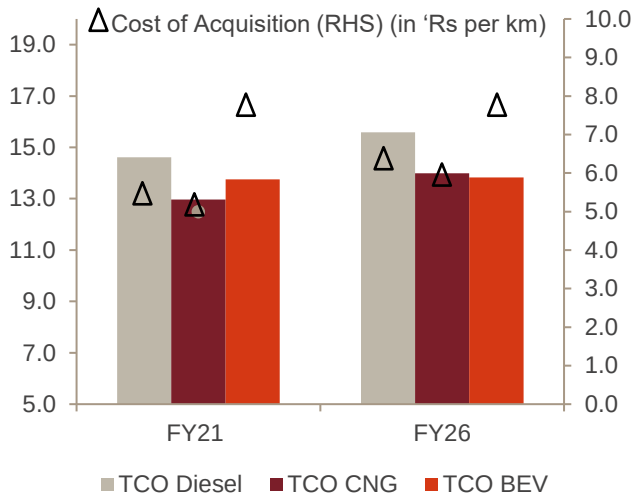
As it stands, FAME-II subsidy is incentivised only towards commercial use. No benefits are provided to personal car owners. Following are the findings of our analysis on the cost of ownership of an electric passenger car versus petrol, diesel and CNG variants for cab aggregators. CRISIL Research has also compared the cost of ownership of an electric passenger car with the petrol variant of a passenger car.

In case of commercial application like cab aggregators, Total Cost of Acquisition (COA) for EVs almost 50% higher for diesel and CNG vehicle. However due to heavy running of the vehicles the Total Cost of Ownership (TCO) of EVs for cab aggregators is lower for EVs compared with diesel alternatives by ~6% and higher by ~6% than CNG alternatives even in fiscal 2021. By fiscal 2026 TCO for EVs is likely to be lower by 11% in with diesel alternatives and marginally lower for CNG alternatives. The lower battery cost is expected to offset the lack of FAME subsidy and will help maintain competitiveness of BEVs against diesel and CNG variants for cab aggregators.

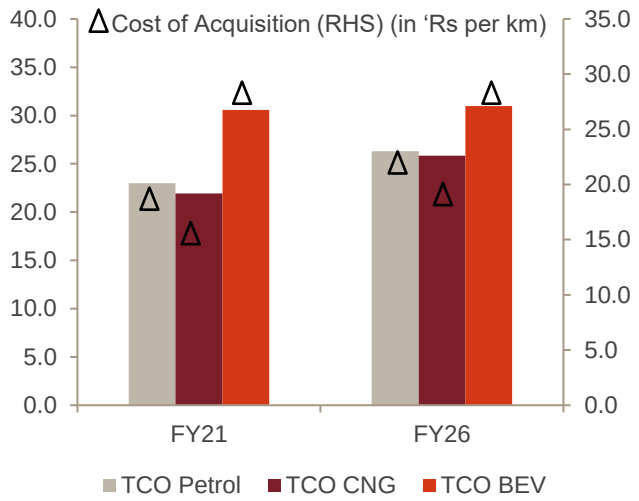
Charging infrastructure, range anxiety and lack of large OEM presence is hindering EV adoption in India. However, battery swapping business model can help in reducing cost of acquisition for buyers, range anxiety, drastically reduces refuelling (charging) time and assuage customer concerns around life of a battery or need for replacement of a battery. However, success of battery swapping also depends on standardization of battery specifications by a central/nodal authority and along with commitment of substantial investments by swapping infrastructure providers for establishment of a dense network of swapping stations across parts of India.

The taxi segment accounts for 10-15% of sales within passenger cars, and within the taxi segment, cab aggregators (accounting for ~40-50% of total sales within the taxi segment) are expected to lead adoption of EVs. This should result in an estimated ~25% adoption of EVs within cab aggregator segment by fiscal 2025 (assuming adequate infrastructure is available by then).

Cab aggregators use case: TCO and COA of EVs is lower due to higher running



Personal use case: High TCO and COA of EVs remain a challenge until fiscal 2026



Note: Total cost of ownership analysis framework takes into consideration down payment/ initial payment, EMI, fuel cost, maintenance cost and battery replacement cost if any over the ownership period adjusted for the resale value TCO is in Rs per km; For cab aggregators, compact sedan has been considered for assessment whereas in personal application hatchback has been considered for evaluation; Holding period of 4 years and 5 years is being considered for cab aggregator and personal use case respectively; annual running of 62,500 km and 12,000 km considered for cab aggregator and personal use case respectively.

Source: Industry, CRISIL Research

TCO and COA of electric personal cars are still higher (~33% and ~78%, respectively) compared with the petrol alternative and higher by (~39% and ~53%, respectively) due to their lower running. Therefore, EVs are currently not a viable use-case. In fiscal 2026 however, the gap is expected stay higher prohibiting EV adoption in personal usage segment. In addition, availability of charging infrastructure and range especially for intercity travels are likely to be key bottlenecks for adoption of EVs in the personal car segment.

Hence, CRISIL Research expects the share of EVs in total passenger car sales to remain low (4-6%) in fiscal 2026. Penetration in fiscal 2021 was ~0.16%. EV penetration can be higher if government adopts stricter policies on OEMs for not meeting CAFÉ norms. The exact quantum of EV penetration in an aggressive case depends on incentives given for adoption and setting up of charging infrastructure. EV penetration will also be propelled by policies adopted by the government for penalising non-adherence to CAFÉ norms. Electrification in PVs is expected to slower on account of limited range of electric vehicles, very higher cost of acquisition for EVs with desired range, lack of total cost of operations (TCO) with ICE vehicles especially for personal applications, limited availability of charging infrastructure, lack of clarity around vehicle performance and resale value among stakeholders.

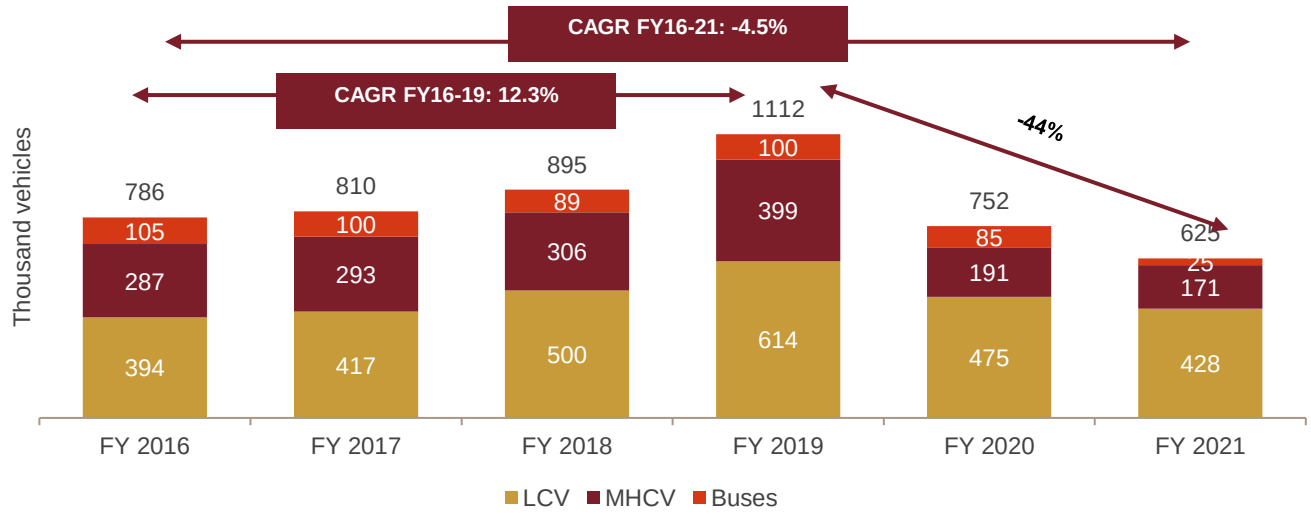
11 Review and outlook on Indian commercial vehicle industry

11.1 Review of Indian commercial vehicle industry (fiscals 2016 – 2021)

Historic production development (fiscals 2016 to 2021)

Production of commercial vehicles (CV) in India registered a decline of 1.1% compound annual growth rate (CAGR) from fiscal 2016-2020. Domestic sales posted marginal growth of CAGR 1.1%, whereas exports declined by CAGR 12.4% between fiscals 2016 and 2020. In fiscal 2021, production decline by ~17% over fiscal 2020 as the COVID-19 pandemic and ensuing lockdown measures by the government posed severe demand as well as supply-side challenges for industry.

CV production by vehicle segments



Note: LCV includes vehicles with Gross Vehicle Weight (GVW) less than or equal to 7.5 tons; M&HCV includes vehicles with GVW greater than 7.5 tons

Source: SIAM and CRISIL Research

Over fiscal 2016-2019, industry production, in fact, grew at CAGR 12%, driven by a pick-up in domestic rural industrial activity growth and the government focus on infrastructure investment post fiscal 2015. A large portion of this production jump was led by robust demand for goods carriers which clocked a CAGR of 14.1%, whereas passenger carrier production declined by CAGR 1.7% over fiscal 2016-2019.

The production drop in fiscal 2020 was on account of inventory correction as the industry transitioned from BS IV to BS VI emission norms and a tepid demand for CVs due to a general slowdown in the economy and slower government infra spending post the general election. In addition, policy changes in Sri Lanka, one of the major industry export markets, proved to be a major blow to industry exports.

Overall CV production declined over fiscal 2016-2021 by 4.5% CAGR; MHCV production declined by CAGR of ~12% and the LCV segment stayed flat in fiscal 2021 over fiscal 2016 production. However, if we look at fiscal 2016-2019, industry production in fact grew at CAGR 12% due to a sharp 15% CAGR growth in LCV segment and 9% growth in M&HCV.

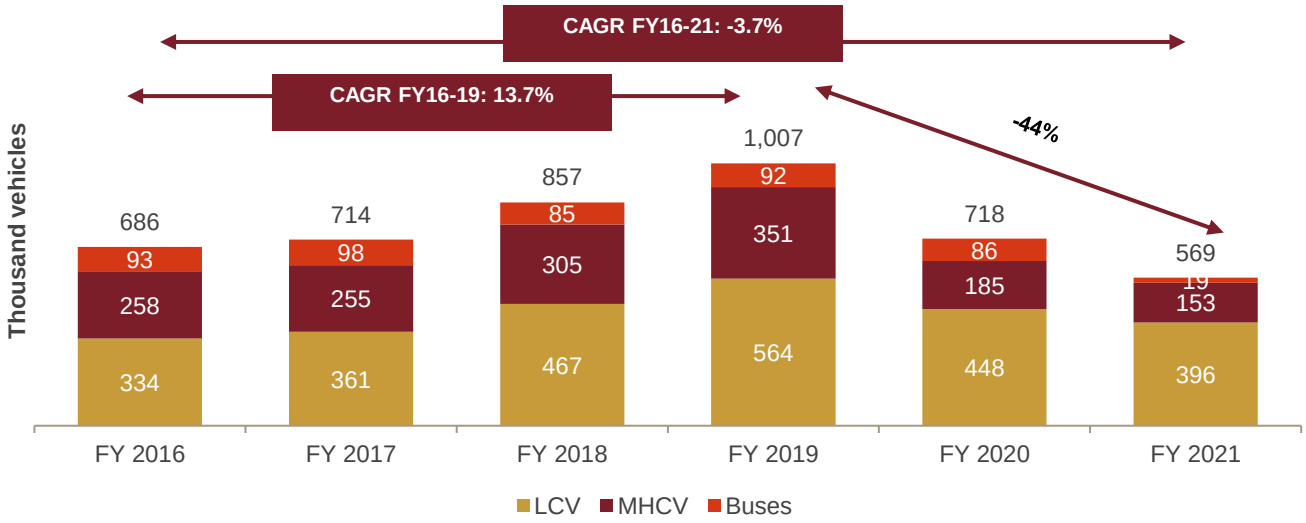
Faster growth in LCV production was on account of strong domestic demand, supported by higher replacement demand over fiscal 2018 to 2020, improved rural sentiments and growing e-commerce penetration. Even during the pandemic, improved rural sentiment and a lesser impact of the pandemic on rural areas resulted in LCVs outperforming M&HCVs.

Over fiscal 2016-2019, MHCV bus production declined by CAGR -5.8%, accentuated by a restriction on sales in Sri Lanka. Even on the domestic front, MHCV bus sales declined by CAGR -3.4% over fiscal 2016-2019.

Split by commercial vehicle category

Between fiscals 2016 and 2020, domestic CV sales logged 1.1% CAGR. In fact, over fiscal 2016-2019, domestic sales clocked a CAGR of 14% on the back of robust 17.2% CAGR sales growth in light commercial vehicle (LCVs) and 9% in medium and heavy commercial vehicles (M&HCVs). Over fiscal 2016-2019, goods vehicles sales clocked a CAGR of 16%, even as bus demand remained flat.

Review of CV segmentwise domestic sales



Note: LCV includes vehicles with Gross Vehicle Weight (GVW) less than or equal to 7.5 tons; M&HCV includes vehicles with GVW greater than 7.5 tons

Source: SIAM and CRISIL Research

In fiscal 2017, CV sales saw a 7% year-on-year rise over April-October. However, after demonetisation (November 2016), a cash crunch in the economy negatively impacted industrial output and slowed sales growth. However, fiscals 2018 and 2019 witnessed strong recovery and a healthy 17-20% growth, supported by the government's focus on road and housing infrastructure development. In fiscal 2020, the industry witnessed a sharp de-growth on a high base due to inventory adjustment on account of the transition to BS-VI.

Normal monsoons from fiscal 2017 to 2019, minimum support price (MSP) support from the government and a pick-up in rural construction activity supported demand from the rural side supporting growth for LCVs. Over fiscal 2016 to 2020, the rise of e-commerce was among the major factors for a pick-up in demand for LCVs and intermediate commercial vehicles (ICVs). If we look at fiscal 2016-2020, goods vehicles sales clocked a CAGR of 7.5% growth in LCV and over fiscal 2016-2019; goods vehicles sales clocked a CAGR of 19% growth. Even during the pandemic, improved rural sentiment and a lesser impact of the pandemic on rural areas resulted in LCVs outperforming M&HCVs.

Over the last five years, the industry weathered major challenges on account of events like demonetisation, NBFC crisis, implementation of axle load norms, changes to insurance norms and the transition to BS VI emission norms. A culmination of multiple factors like the NBFC crisis, the implementation of axle load norms, changes to insurance norms and the transition to BS VI emission norms, particularly post the second of half fiscal 2019, resulted in a dampening of demand for CVs. Over fiscal 2016-2020, goods vehicles sales clocked a CAGR of 8% de-growth in MHCV segment.

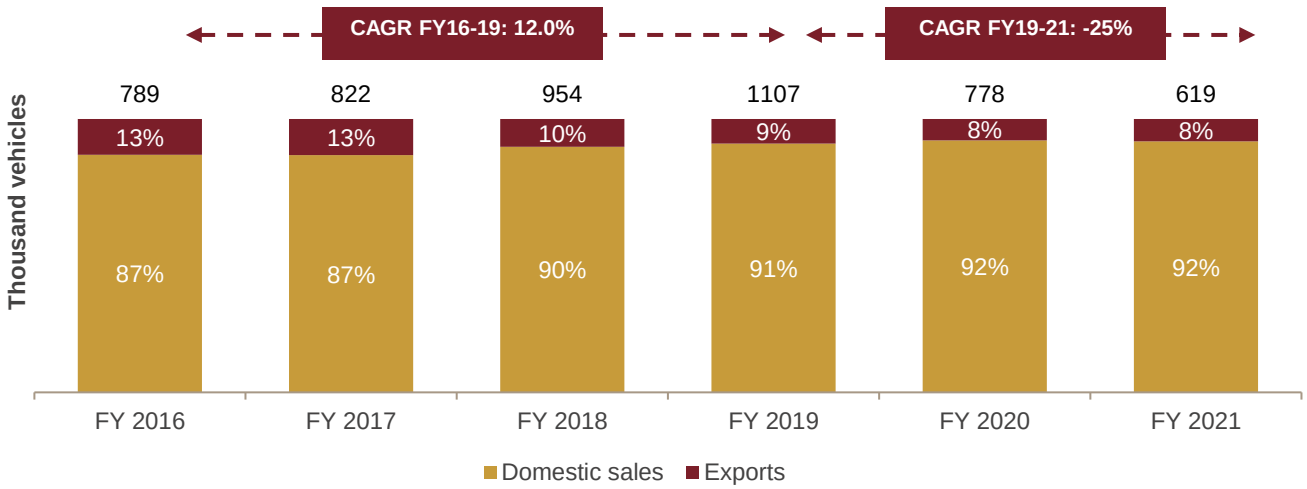
Demand for buses in fiscal 2020 was impacted due to safety regulations (emergency exit doors, fire detection and suppression, escape hatches and emergency lighting) that led to an increase in cost of ownership of ~Rs. 50,000. This was after a price hike of ~Rs. 15,000 due to mandatory installation of vehicle tracking system and panic buttons in January 2019.

After the price rise, demand for buses in fiscal 2020 was also hit by weakening private consumption, hampering demand from tourist bus operators and inter-city travel operators. Weak corporate hiring and production cuts in manufacturing also impacted demand for corporate staff buses. However, schools and route permit buses have shown some resilience in fiscal 2020. Demand from state transport undertakings (STU) ramped up in the second half of fiscal 2020 as STUs look to replace much of their older fleet before the BS-VI price rise.

Recently, the pandemic brought the entire economy to a grinding halt, affecting profitability and sustainability of transporters due to lack of availability of freight demand. The industry is, however, now witnessing a gradual pick-up in quarterly sales as consumption demand and industry activity have started gaining pace.

Split by domestic sales and exports

CV industry split into domestic sales & exports



Source: SIAM and CRISIL Research

The Indian commercial vehicle market is primarily focused on the domestic market, with more than 90% demand from the domestic market in fiscal 2021. Contribution of exports to production, however, declined sharply in fiscal 2018 as demand from domestic market grew at a robust pace. Over fiscals 2019 and 2020, the share of exports continued declined as domestic manufacturers faced challenges in neighbouring Sri Lanka on account of restrictions on financing norms for automobiles and a hike in import duties. The Indian CV industry exports have been largely concentrated in neighbouring countries like Sri Lanka, Nepal and Bangladesh. In fiscal 2021, CV exports are likely to be lower as domestic OEMs will focus on the domestic market amidst supply chain constraints for critical components.

Key historic regulatory/ macroeconomic trends

Axle load norms

The Ministry of Road Transport and Highways had notified new axle load norms for commercial vehicles, which allow for an increase in the load-bearing capacity of trucks. The new axle norms will be applicable to the entire fleet of freight-moving trucks – called the 'population parc'.

New payloads stipulated in MHCVs

(in Tonnes)	MCV		MAV		T-Trailer		
Previous GVW	16	25	31	37	35	40	49
Previous Payload	9	16.5	21	26	23	27	35
Kerb weight	7	8.5	10	11	12	13	14
GVW as per new norm	18.5	28	35	42	39.5	45.5	55
New Payload	11.5	19.5	25	31	27.5	32.5	41
% increase in rated payload	28%	18%	19%	19%	20%	20%	17%

Source: CRISIL Research

Truck demand from bulk goods transporters to remain low due to axle norm in the coming fiscals as well

Although axle norms increased freight carrying capacity of trucks by ~20%, the benefit could only be availed by transporters ferrying bulk goods which constitute 35-40% of truck movement. Movement of bulk goods in billion tonne-kilometers (BTKM) terms via road is expected to fall marginally in fiscal 2020 amidst the ~20% rise in capacity for bulk goods transporters. Therefore, bulk goods transportation via roads would continue to face overcapacity in the coming fiscals hampering new truck purchases.

The only saving grace would be transportation of voluminous non-bulk goods (60-65% of truck movement) which, while being unaffected by axle norm, are impacted by slowing consumption demand in fiscal 2020. Moreover, as some bulk transporters were already overloading near or moderately above the new payload levels, the impact of axle norms for such transporters would be lesser.

Shift from T-Trailers to higher tonnage MAVs: After implementation of the axle norm, the payload of the erstwhile 37T GVW truck would increase to 31T which would be similar to the erstwhile payload of a 40T GVW T-Trailer. Also, erstwhile 49T GVW T-trailer's payload has now increased from 35T to 41T. However, load availability for 41T payload trailer is expected to be lesser than at 35T. Moreover, issues like driver availability and lower maneuverability plague T-Trailers. Because of these reasons, higher tonnage MAVs are likely to be more desirable than T-Trailers.

Emission norms

In February 2016, the government decided to skip the Bharat Stage (BS)-V Emission Standards and move directly to BS-VI norms by April 2020. The stringent BS-VI norms incorporate substantial tightening of nitrogen oxides (NOx) and particulate matter (PM). These emission standards pushed vehicle prices higher, diesel trucks and buses segment witnessed a higher rise in costs due to the significant upgradation of engines and exhaust systems.

According to our estimates, implementation of the BS-VI norms will result in a 12-15% hike in the cost of diesel trucks. Percentage increase in vehicle price for BS VI models over BS IV was more pronounced in LCV trucks and buses. Percentage price increase was relatively lower for tractor trailers and MAVs.

As the BS VI norms were implemented in April 2020, increased vehicle prices, subdued finance availability resulted in sudden increase both initial cost of acquisition and total cost of ownership as the freight scenario remained lacklustre, impacting viability for transporters.

Higher safety measures for buses

Safety regulation regarding vehicle tracking and panic buttons were introduced in January 2019. Later regulations related to fire detection system, escape hatches, emergency lighting, and emergency doors were implemented in April 2019. These regulations resulted in bus prices increasing by Rs 65,000, in addition to regular price increases.

Historic growth drivers for Indian commercial vehicle exports

More than 90% of the commercial vehicle exports are to Asia, Africa and Middle East regions as on fiscal 2021.

In Asia, demand from Bangladesh, Srilanka and Nepal drives the CV exports. Since, all the major markets are developing nations, increase in infrastructure activities has been the major drivers in CV exports from India. Geopolitical issues (border tensions) create challenges in exports. In 2020, when Srilanka banned exports (other than essential commodity), CV exports from India to Srilanka came to a still point. Border closures, foreign currency issues, sanctions on a few countries has led to impaired CV exports in past.

Africa is another major market for CV exports from India. Rise in infrastructure activities, mainly in mines, aids CV exports from India.

During pandemic, CV exports had fallen by 17% yoy in fiscal 2021 led by drop in exports of buses by 52% yoy. Push for infrastructural activities, freight availability of essential commodity cushioned CV exports in fiscal 2021.

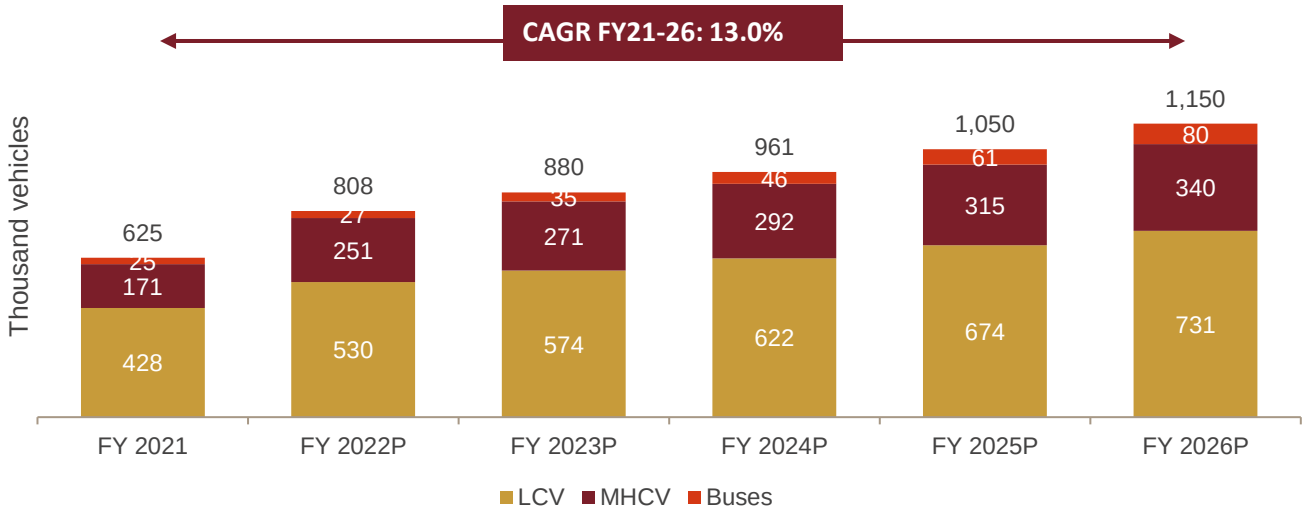
11.2 Outlook of Indian commercial vehicle industry (fiscals 2021 – 2026P)

Production outlook (fiscals 2021 – 2026P)

Production of CVs in India is expected to increase at robust 13.0% CAGR over fiscals 2021 to 2026. MHCV production is expected to grow by CAGR of 16.6% and the LCV segment is expected to show CAGR growth of 11.5% in fiscal 2026 over fiscal 2021 production.

MHCV buses segment in particular is expected to rebound sharply, growing at 35-40% CAGR over fiscals 2021 to 2026. In fiscal 2021, though, the production of buses has sharply declined because of low people mobility due to the pandemic. But fiscal 2022 onwards, production of buses is projected to rise exponentially as sales recover on a low base of fiscal 2021 on account of availability of vaccine. Also, production for goods vehicles is estimated to grow at 12.3% CAGR over fiscal 2021-2026

CV production outlook



Note: LCV includes vehicles with Gross Vehicle Weight (GVW) less than or equal to 7.5 tons; M&HCV includes vehicles with GVW greater than 7.5 tons; P – Projected

Source: SIAM, CRISIL Research

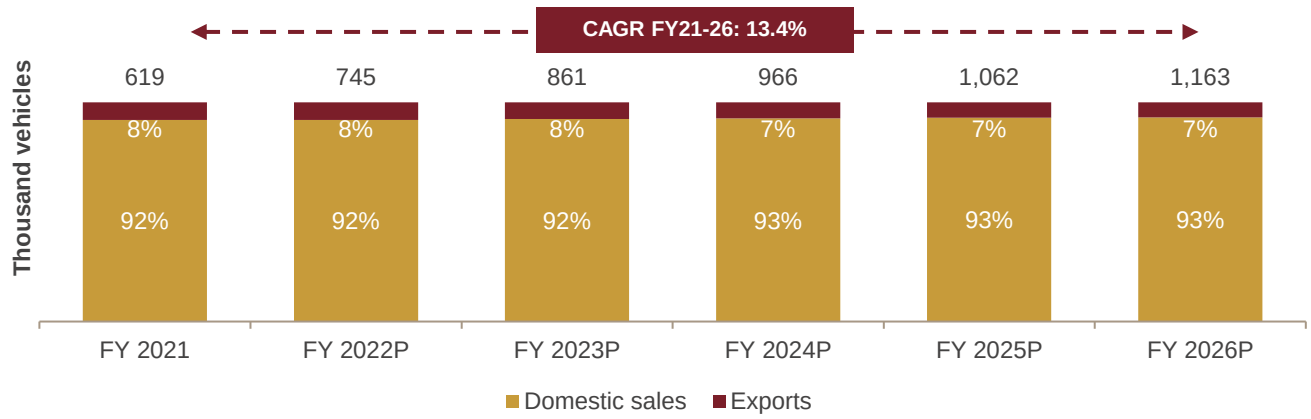
Split by domestic sales and exports

The Indian CV industry is expected to remain domestic-focused, with domestic sales comprising ~93% share of production even in fiscal 2026. However, with exports projected to grow at 10.0% CAGR over fiscals 2021 to 2026, its contribution in overall production is likely to marginally rise over fiscal 2021.

Second wave of COVID-19 outbreak led to lockdown in key affected regions in Q1 of fiscal 2022. This has impacted domestic sales across segments post a healthy Q4 of fiscal 2021. Consequently, LCV, MHCV and bus volumes decline by ~42%, ~63% and ~43% qoq (quarter-on-quarter) in Q1 of fiscal 2022 resulting in ~50% qoq decline in overall CV volumes. Also, with significant share of loans under moratorium amid low fleet utilsation and freight rates, risk-averse financiers to limit wholesale offtake.

The reason for the export trajectory is manufacturers directing their investments into expanding their presence to other Asian countries from neighbouring countries, such as Bangladesh, Nepal, and Sri Lanka, and Africa and the Middle East. Domestic players are also considering setting up of 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 South-East Asia. Consultations with the Sri Lankan government is likely to again gradually open up the market for Indian exports in the near future.

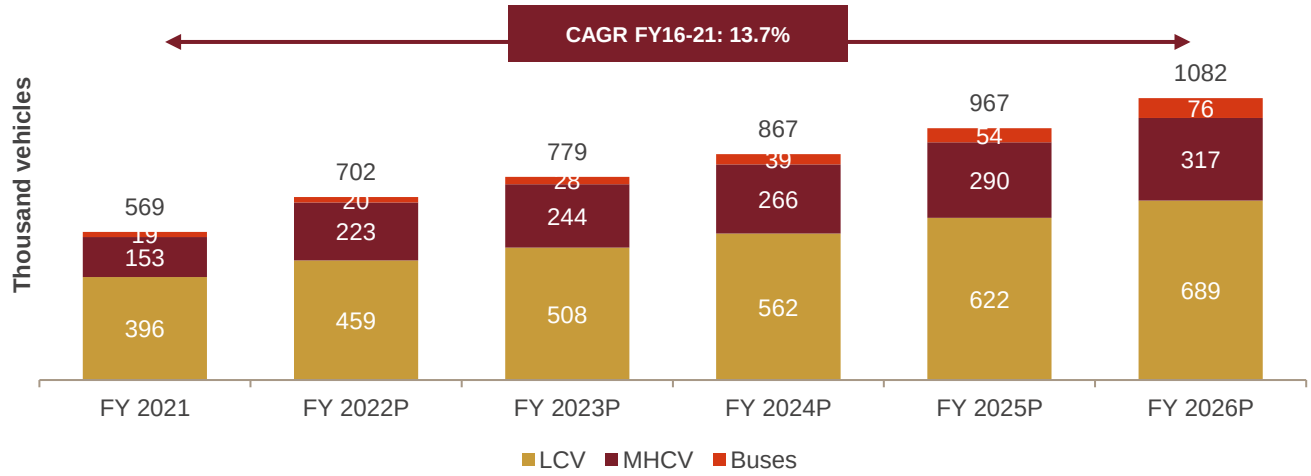
CV industry split into domestic sales and exports



Note: P - Projected

Source: SIAM, CRISIL Research

CV segmentwise domestic sales outlook



Key trends and growth drivers

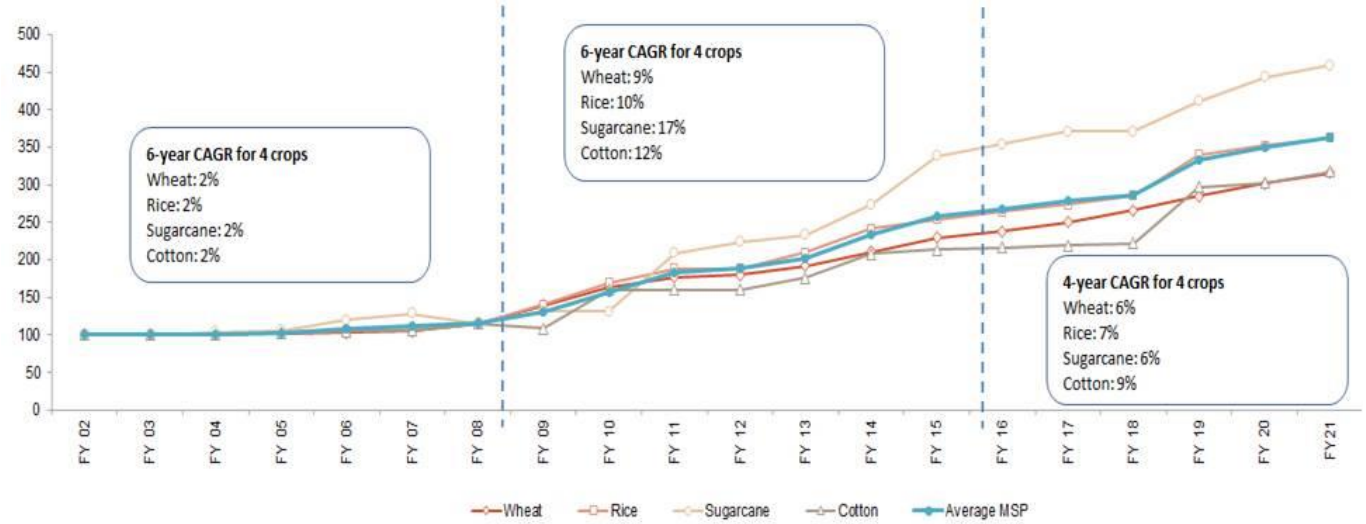
Stable agricultural output

Over fiscal 2021 to 2026, the following structural factors will support 4-6% gross value added (GVA) growth in agriculture.

The government aims to achieve its objective of doubling farm income by 2022 via initiatives such as e-NAM (National Agriculture Market), expansion of crop insurance coverage, direct income support and improvement in land productivity via soil health cards. These measures should improve farmers' crop yields and affordability, and boost average freight utilisation particularly in ICV (Intermediate Commercial Vehicle) and SCV (Small Commercial Vehicle) segments.

Stable hikes in MSP for cash crops have continued in the past, and are looking stable from fiscal 2021 to 2026. This will augment agricultural income, and will lead to new investments in the supply chain.

Hike in MSP



Source: Ministry of Agriculture, CRISIL Research

Fillip in industrial output

The Indian industry's GVA had been growing tepidly, averaging 5% between fiscals 2015 and 2020. After a weak fiscal 2021 due to the pandemic, CRISIL Research expects industrial GVA to bounce back rapidly in fiscal 2022 and later stabilise at around 6.3% CAGR over fiscal 2022-2026, driven by the government's focus on 'Make in India' and growth of consumption, particularly led by growth rural incomes. Moreover, improvement in infrastructure and higher expected corporate expenditure is likely to revitalise the capex cycle going forward, post fiscal 2021.

CRISIL Research expects coal production to expand at ~6% CAGR between fiscals 2019 and 2024, driven by rising demand for electricity and the onset of commercial mining, while iron ore mining will also likely grow at a healthy pace during this period, aiding tipper demand.

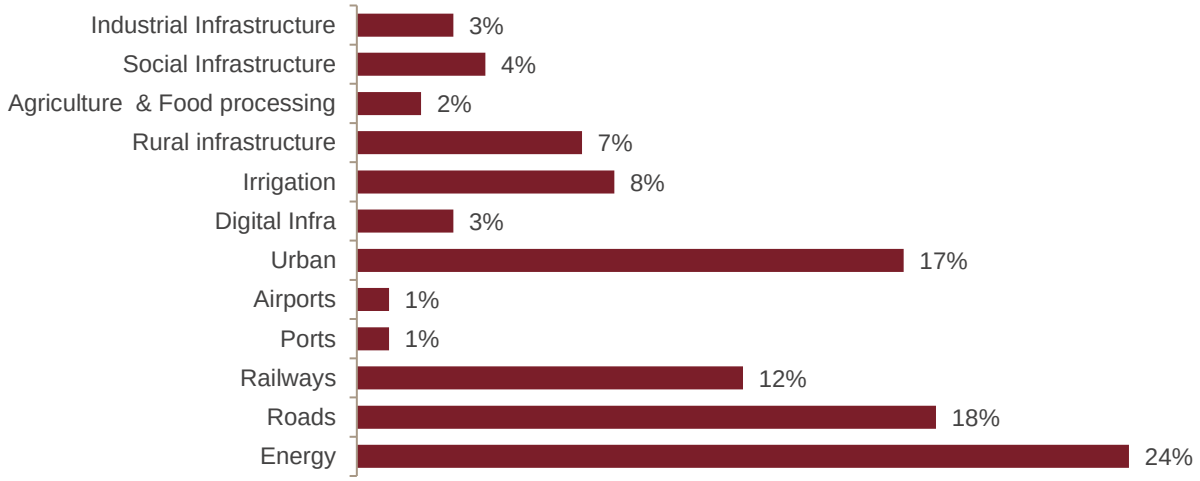
Government’s focus on infrastructure

The National Infrastructure Pipeline (NIP) for fiscal 2019-2025 is a first-of-its-kind, whole-of-government exercise to provide world-class infrastructure to citizens and improve their quality of life.

Infrastructure investment in India from fiscal 2013 to 2019 was Rs 57 trillion. Power, roads and bridges, urban, digital infrastructure and railways together constituted more than 85% of the total infrastructure investment. The centre and states were the major funding sources for sectors such as power and roads and bridges, with moderate participation from the private sector. Digital sector investments were largely driven by the private sector, while investments in the irrigation sector were predominantly made by the state governments.

The total capital expenditure in infrastructure sectors in India during fiscal 2020 to 2025 is projected at Rs 111 trillion. The break-up of the plan is as below:

Sectoral breakup of NIP amounting to Rs 111 trillion



Source: Department of Economic affairs, NIP Volume I

The National Infrastructure plan aims to double infrastructure investment per year from the current average of Rs. 10 trillion per year to Rs 22 trillion per year. Of the total NIP of Rs 111 trillion, Rs 44 trillion (40%) worth of projects are under implementation, Rs 34 trillion (30%) worth of projects are at the conceptualisation stage, and Rs 22 trillion (20%) worth of projects are under development.

Almost 83% of project allocation indirectly benefits the commercial vehicle sector in India, and this push for infrastructure is a major driver of growth.

Scrappage policy

Recent regulations such as the axle norm, bus body code, mandatory anti-lock braking system, speed governors, enforcement of BS-VI norms, and mandatory cabin ventilation system on new commercial vehicles (CVs) have already impacted the industry. We expect the effects of newer fuel-efficiency norms, the proposed BS-VI norms, the truck body code, and the new scrappage policy, to play out in the long run.

The Ministry of Road Transport and Highways, in August 2018, considered incentivising the scrapping of vehicles sold before April 2005 (15 years old). After deliberations on the modalities regarding the implementation of the norm, the government currently aims to promote vehicle scrapping by exempting registration charges for truck purchases made after scrapping older trucks. As the current registration charges are low (below ~ Rs 5,000), the government simultaneously aims to increase renewal of registration for older vehicles (to Rs. 40,000). To make it difficult to hold onto an older truck, trucks older than 15 years are also expected to get a fitness certificate every six month vs. every twelve months currently. However, we believe ~ Rs 40,000 benefit on scrappage of 15 year and older trucks will not be enough to promote the scrapping of such trucks as the current resale value of a 15-year-old truck is higher than the current scrap value and the registration benefit. The move can only aid in scrapping of vehicles which are around 20 years and above since their resale value will be near the scrap value of the truck; the number of such trucks will however be limited to 10,000-20,000.

As seen above, resale value of trucks tends to be above the sum of scrappage value and the registration benefit. Thus, the scrappage norm at the current level of benefits will lead to scrappage of trucks only older than 20 years. Through higher incentives from the government and OEMs, if transporters are able to be incentivised for scrapping of vehicles older than 15 years, we expect 6,00,000- 6,50,000 MHCVs to be available for scrapping. CRISIL estimates that incentive of more than Rs 90,000 for 16T MCV and incentive of more than Rs 1,00,000 would be

needed to scrap for trucks older than 15 years. At a similar quantum of scrappage incentives, additional demand of 1,00,000-1,30,000 can be expected from buses.

Commissioning of DFCs to put brakes on road freight and hence CV sales

The dedicated freight corridors (DFCs) will help the Indian Railways regain lost freight share, by cutting turnaround times between importing and consuming destinations. Not only will the DFC bring about faster freight movement, but it will also allow for faster evacuation of cargo from the ports, thereby improving efficiency. In fact, the DFCs and the associated logistics parks will be able to help industries significantly reduce plant-level inventory as well, thereby enabling savings in working capital. And the shifting of freight to rail will aid the economy by decongesting major highways.

Thus, the roads segment, which has outperformed rail over the past decade, will lose some share once the DFCs are commissioned in fiscal 2023.

Within the CV space, Tractor trailers will be the most vulnerable to competition from the railways, following completion of the eastern and western DFCs. These routes account for more than 20% of pan-India primary freight in billion tonne kilometer (BTKM) terms. Container traffic (~65% share in the western corridor) and bulk commodities (~89% in the eastern corridor), which dominate the freight carried on the two routes, are expected to shift to railways, thus affecting the sales of MHCVs, especially tractor trailers.

End use sector outlook (FY21 - FY26)

Key end use segments and outlook

Sectors	Growth outlook (FY21-26)	Key aspects
Coal	2-2.5%	Growth in coal based power generation Demand from allied sectors such as cement and sponge iron
Steel	6-7%	Building and Construction major demand creator in this segment
Cement	4-5%	Demand will be led by rural housing / affordable housing and commercialization of Tier III/IV cities Infrastructure demand as per NIP, also plays an important factor
Port movement	3-5%	Iron ore exports to support growth, as global demand for steel increases. POL trade (imports) particularly in LPG poised to go up
Road Investment	8-10%	National Infrastructure plan (NIP) to drive investment in infrastructure on roads and highways. CRISIL expects GoI would be able to achieve 80-85% of targeted investments
E Commerce	10-15%	Food, Fashion and Grocery segment to grow at a faster rate as penetration increases. E Retailers will focus on expansion in Tier I/II cities in this period

Source: SIAM, CRISIL Research

MHCV segment to log high growth up to fiscal 2026

Goods MHCV sales are projected to rise 15-17% CAGR from fiscals 2021 to 2026 vis-à-vis ~10% CAGR posted between fiscals 2016 to 2021. The rise in sale will be despite a shift to lower tonnage vehicles due to the axle norm. The tonnage addition will be because of a better product mix, i.e. higher growth in MAV and T-Trailer demand. A note here: The long-term growth forecast is over a low base, with sales skidding ~43% CAGR over fiscals 2019 to 2021 on account of economic slowdown and the pandemic.

Factors driving long-term MHCV sales will be improving industrial activity, steady agricultural output, and the government's focus on infrastructure. However, further volume growth will be limited due to efficiencies achieved post introduction of the GST regime, better road infrastructure, along with commissioning of the DFCs.

LCV sales to grow at modest pace in long run

LCV demand is expected to rise 11-13% CAGR from fiscals 2021 to 2026, owing to higher private consumption, low penetration levels providing headroom for growth, greater availability of redistribution freight, and improved finance availability post fiscal 2021.

Within LCVs, the shift towards pick-ups (which carry higher loads) from sub-one tonne vehicles, though, will curb a sharper increase in sales volume, as fewer trucks will now be required to transport the same quantity. Also, upper-end light commercial vehicles (ULCVs) offer the transporter lower returns, as compared with ICVs, and are most suited for captive use. Entry restriction within city limits on ICV trucks and higher tonnage MHCVs is expected to keep demand from this segment buoyant. However, higher toll on ULCV trucks vis-à-vis pick-ups will limit ULCV trucks' growth.

Bus demand to grow moderately in long run

CRISIL Research projects domestic bus sales to expand at 30-32% CAGR till fiscal 2026 on a very low base of fiscal 2021 due to increasing demand for inter-city/-state travel, aided by better road infrastructure, and higher personal disposable incomes. The unregulated segment, which primarily caters to demand from schools, companies and inter-city travel by private operators, will remain the largest end-user. A large part of the demand will be from replacement of Jawaharlal Nehru National Urban Renewal Mission buses, which were sold during fiscals 2011 and 2012, once funds are released by the Centre and state governments for the purchase of buses. This replacement is expected to gain pace post fiscal 2021, aiding long-term MCV bus growth. However, further expansion in bus sales would be affected by the commissioning of metro rails and monorails in several cities.

Key upcoming regulatory changes

Truck body code to lead to ~5% rise in cost of ownership; norm likely to be postponed

Goods vehicles (>3.5T GVW) manufactured either by a vehicle manufacturer or a body builder on drive-way chassis vehicles had to comply with provisions of AIS-093 (Rev. 1) in two stages - the first level of compliance in October 2018 and the second in October 2019. We believe compliance with this code is expected lead to a cumulative price rise of ~5%. However, we expect implementation of this code to have been differed.

With standardisation in truck body-building, we expect consolidation among truck body builders, as small players may not be able to meet testing requirements. With standardisation, financiers are also expected to be more willing to fund the generally unsupported body building cost. This will reduce the initial down payment for truck purchase, minimising the impact of the 5% rise in cost of ownership.

Fuel efficiency norm likely to be enforced by fiscal 2023

To make heavy-duty trucks and buses more fuel efficient, the Ministry of Petroleum and Natural Gas and the Ministry of Heavy Industries are in talks to notify fuel efficiency norms. We expect the norm to be enforced by fiscal 2023. Based on talks with stakeholders, BS-IV-compliant diesel vehicles of categories M3 and N3, with GVW of 12T and above, will have to comply with these norms. These vehicles are required to meet the 'target diesel fuel consumption' value for a specific set of speeds, which is dependent on the vehicle's GVW, axle configuration, and category.

Electrification in commercial vehicles

Total cost of ownership assessment

A comparison of total cost of ownership of various types of commercial vehicles will provide a view as to how much a vehicle costs to own and operate over the period. Commercial operation of any vehicle will be successful only if

the cost of operating is below the revenue earning. A vehicle with a significantly higher cost of operation will not be viable due to competition from other vehicle categories and varying powertrains.

However, battery swapping helps in reducing cost of ownership in addition to reduction in range anxiety, drastically reducing refuelling (charging) time and assuage customer concerns around life of a battery or need for replacement of a battery. Several states are also supporting battery swapping by offering subsidies for capital investment in battery swapping stations. Success of battery swapping also depends on standardization of battery specifications by a central/nodal authority and along with commitment of substantial investments by swapping infrastructure providers for establishment of a dense network of swapping stations across parts of India. Also, financier community needs to be provided complete awareness about the same to facilitate vehicle financing. Battery stations are also likely to face viability challenges due to lower existing penetration of EVs in India.

In fact an addition to the same is MaaS (Mobility as a Service) in which there are many players that are planning to get into to build the entire ecosystem and this will also help reasonable EV penetration in the commercial EV segment.

TCO over 4-year period at FY21 and FY26 prices for various sub-segments:

- LCV (2T GVW)
- ICV (11T GVW)
- MCV bus (16T GVW)
- HCV (40T GVW)

LCV

In the current scenario, CNG comes across as the cheapest alternative powertrain due to the prohibitively high initial cost of electric LCVs.

In case of LCVs (at Mumbai prices), operating cost of an EV is ~50% less than that of a comparable diesel vehicle. Even in the eighth year both electric and diesel versions are unlikely to break even for FY26 prices. At FY26 prices, electric vehicles are expected break even with diesel only in the 12th year of operation.

However, with respect to CNG the difference in operating costs of an electric vehicle is <30%, due to which the break-even period of an electric vehicle with respect to a comparable CNG vehicle is relatively higher at <15 years.

With respect to cost of ownership, while EVs may be able to match the cost of diesel LCVs by FY32, they will still be considerably costlier than CNG LCVs. This when looked at in conjunction with the focus of the government on improving the natural gas grid in India, is expected to keep the overall adoption levels of EVs in LCVs at 4-6% even by FY26

FY22				FY26			
TCO period (years)	**4**	**6**	**8**	**TCO period (years)**	**4**	**6**	**8**
Diesel	4.7	4.1	3.3	**Diesel**	5.1	4.5	4.3
CNG	3.4	2.9	2.8	**CNG**	3.7	3.2	3.1
Electric	7.3	5.2	4.8	**Electric**	6.5	4.6	4.2

Note: Numbers denote total cost of ownership in Rs per km, TCO period units in years

ICV

In case of electric intermediate commercial vehicles (ICVs) both initial cost and operating cost (including battery replacement) are prohibitively high as of now. By fiscal 2026, the cost difference between diesel and electric ICVs is expected to remain high with electric ICV costing more and CNG versions will be relatively cheaper to own compared to electric versions

Some short haul applications are likely to move to CNG (if CNG fuel cost remains low) to take advantage of the cost benefit. CNG ICVs have lower operating cost in comparison to diesel and also electric vehicles.

Thus, the substantially low cost of ownership of CNG vehicles could limit the penetration of the electric powertrains in the ICV segment to near negligible levels.

FY22				FY26			
TCO period (years)	**4**	**6**	**8**	**TCO period (years)**	**4**	**6**	**8**
Diesel	16.1	14.5	13.7	**Diesel**	17.0	15.3	14.4
CNG	9.9	8.8	8.4	**CNG**	10.6	9.4	8.2
Electric	25.7	22.8	21.2	**Electric**	24.7	22.1	20.8

Note: Numbers denote total cost of ownership in Rs per km, TCO period units in years

MCV

Cost of ownership of an electric bus is ~1.5X that of a standard diesel bus, primarily due to high purchase cost. Owning CNG buses is Rs 13-14 million cheaper than electric ones. While this cost gap would reduce going forward, electric buses are still expected to need capital of Rs 10-12 million by fiscal 2026.

In the bus segment, owing to the excessively high battery cost, there is 4-5X difference in the initial purchase cost between a diesel/CNG and an electric bus

As a result of this high differential, the breakeven period is more than 20 years between electric and diesel powertrains despite a 30-35% lower operating cost for electric vehicles.

And thus, due to this high differential, we expect that capital subsidy would still be needed to make electric buses viable compared to conventional buses by FY26, which in turn may limit its penetration largely to the public transport (STU-State transport undertaking) segment.

FY22				FY26			
TCO period (years)	**8**	**10**	**12**	**TCO period (years)**	**8**	**10**	**12**
Diesel	26.0	24.8	23.4	**Diesel**	28.0	27.0	25.5
CNG	17.2	16.6	15.8	**CNG**	19.6	18.9	18.0
Electric	33.5	32.9	31.0	**Electric**	33.6	33.1	31.3

Note: Numbers denote total cost of ownership in Rs per km, TCO period units in years

HCV

Due to higher battery cost, initial cost of an electric truck can be 5-6 times higher than a diesel one. As a result of this, there is a differential of Rs. >10 million in ownership cost between diesel and electric trucks at present.

As the lead distances and GVW (gross vehicle weight) of heavy commercial vehicles (HCVs) are fairly higher than ICVs and MCVs, they require a large battery. This makes electric HCVs prohibitively pricey.

In addition to excessively high battery costs, the incremental weight of these batteries further decreases the payload capacity of HCVs. Due to these factors, adoption of EVs in the HCV segment is expected to be fairly low over the next five years.

Although the total cost of ownership gap of electric trucks with diesel trucks is expected to reduce substantially by fiscal 2026, prohibitively high initial costs and relatively higher cost of ownership due need to replace batteries are expected to hinder adoption of EVs in HCV at negligible levels even by FY26. Higher leads and lack of availability of charging infrastructure on highways is also likely to hinder adoption in freight carriers.

FY22				FY26			
TCO period (years)	**4**	**6**	**8**	**TCO period (years)**	**4**	**6**	**8**
Diesel	38.2	34.8	22.7	**Diesel**	41.4	37.6	35.4
LNG	32.2	28.7	27.3	**LNG**	34.5	30.9	29.3
Electric	38.1	34.7	32.7	**Electric**	36.7	34.2	33.6

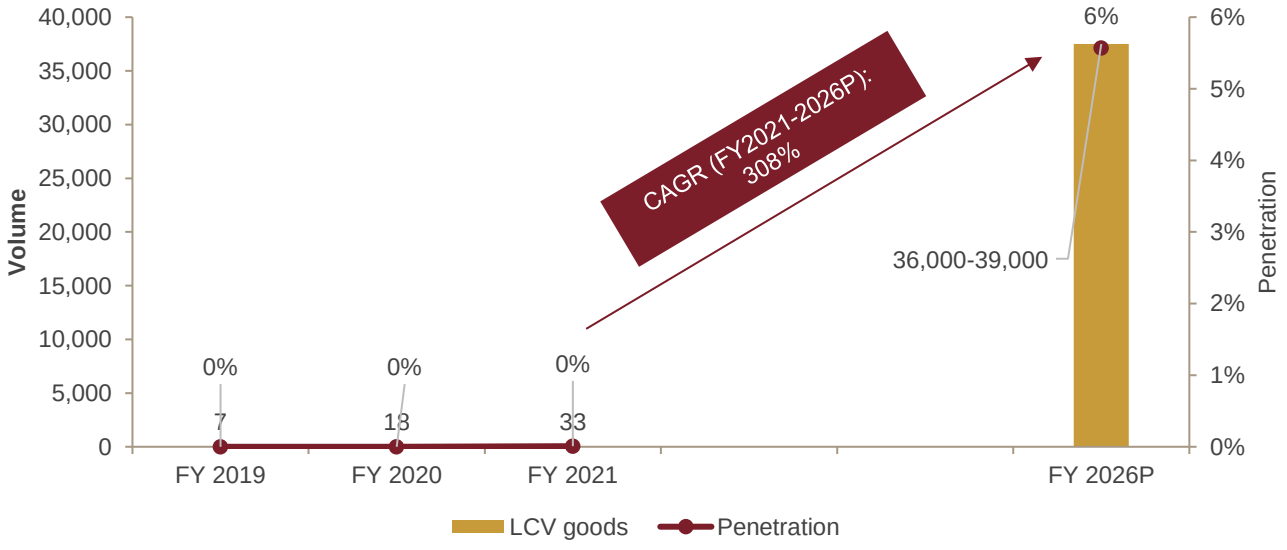
Note: Numbers denote total cost of ownership in Rs per km, TCO period units in years

Electrification outlook in commercial vehicle

Electrification in LCV goods vehicles

Currently, most EVs used in the commercial segment as goods carries are three-wheelers. However, as the cost differential between electric and diesel vehicles start reducing, we expect new models to be launched, which will drive sales in the segment as the third-mile logistics and local distribution of goods are well suited applications for electric vehicles.

EV LCV goods domestic sales outlook



Source: CRISIL Research

Consequently, EV sales in the LCV goods segment can rise to 36,000-39,000 vehicles by fiscal 2026 which would be about 6% of the total light commercial goods vehicle market as CNG offers better total cost of ownership in the near future and be preferred over electric variants.

Electrification in HCV goods vehicles

EV adoption in the HCV segment is expected to be negligible in the near future as operational profile makes them prohibitively expensive. Range of electric vehicles is likely to be an issue as HCVs ply over longer distances. Also,

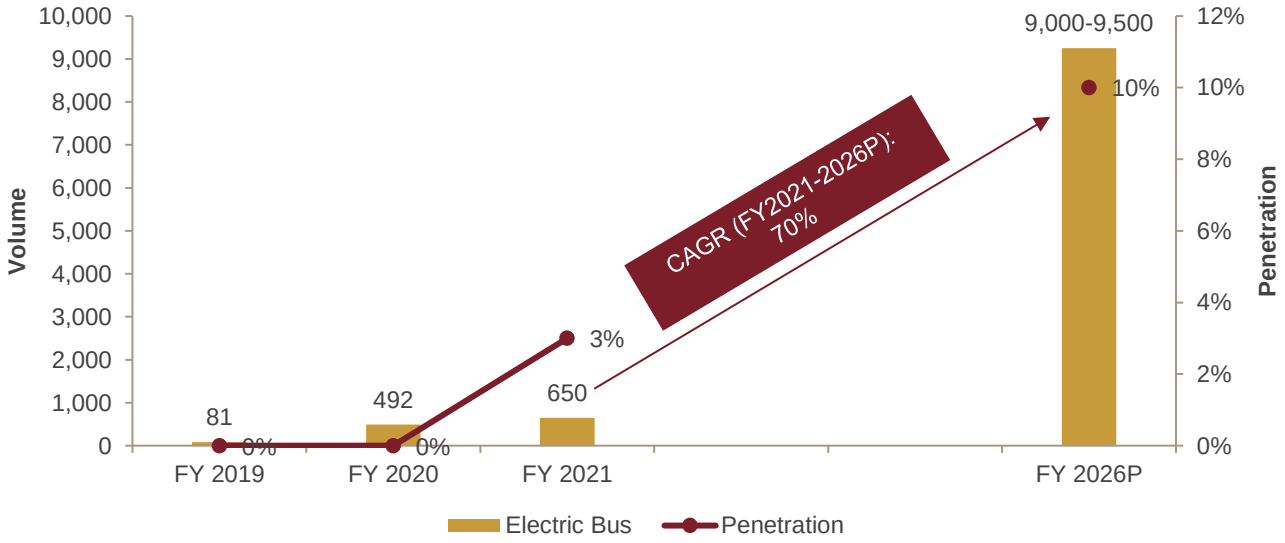
the current charging infrastructure is not suitable for larger batteries of HCVs, which will render electric adoption unviable for some time.

Electrification in Passenger vehicles (buses)

Due to the government support through FAME and focus on quicker adoption of EVs in public transport, there has been significant increase in electric bus sales in the last couple of years. Operational profile of buses with fixed routes and regular stops make them suitable for charging at pre-determined intervals and specific locations. However, the electric bus sale is unlikely to meet the target in fiscal 2022 due to the COVID-19 pandemic and hence we expect the subsidy amount to get carried over to coming years. CRISIL Research expects FAME subsidies to get extended for buses to FY24 due to o the current unutilized subsidy due to demand shocks from the pandemic.

CRISIL expects the Electric buses Industry to reach levels of about 10% or so of the overall Electric bus Industry, and reach volumes of about 9,000 to 9,500 buses by fiscal 2026.

EV buses domestic sales outlook

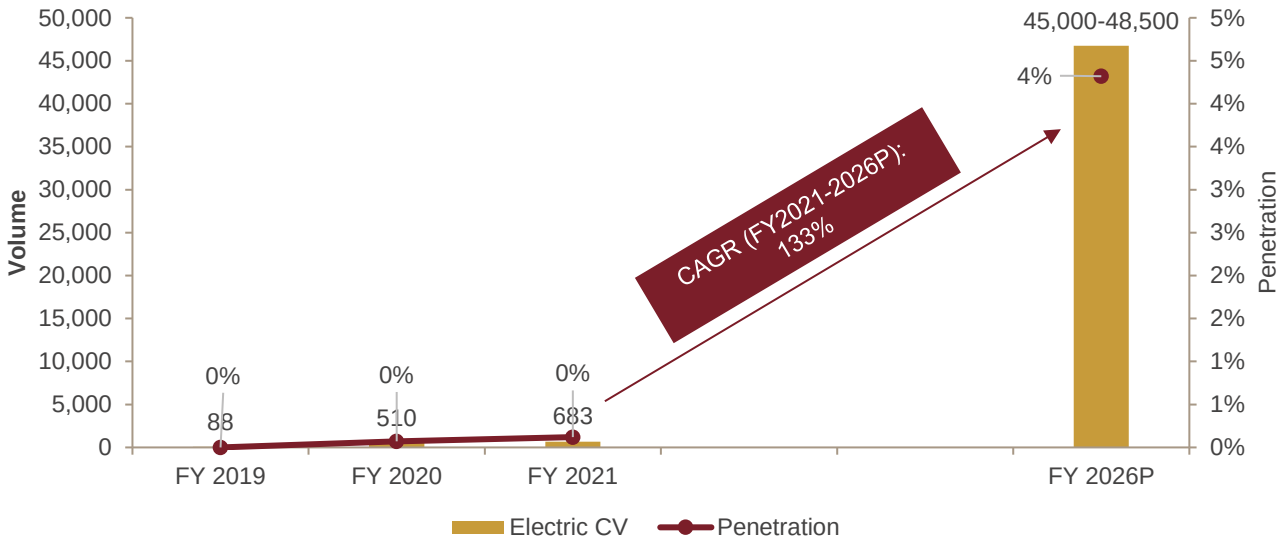


Source: CRISIL Research

There could be some minor penetration in ICVs going forward; however with respect to MCVs and MAVs we expect the dominance of diesel fuel to continue with LNG making some inroads.

Electrification in overall commercial vehicles

Electrification in overall commercial vehicle segment is expected to reach ~4% by fiscal 2026 driven by electrification in LCVs and buses.



Source: CRISIL Research

12 Review and outlook of India’s construction equipment industry

The construction industry accounted for 7% of India's gross domestic product (GDP) in fiscal 2021. The industry provides huge employment opportunities because it constantly requires skilled and unskilled labourers. Moreover, growth in construction is positive for sectors such as steel and cement, which are key raw materials.

The Covid-19 pandemic, the subsequent lockdown, and its financial fallout have impacted construction activities. The building construction and industrial sectors have been impacted the most. The outbreak of Covid-19, the subsequent lockdown and its financial fallout impacted construction spending across construction sub-sectors in fiscal 2021 with building & construction and industrial sectors expected to be the most impacted. CRISIL Research estimates a 16-20% drop in construction investments for FY21 returning to FY17 levels.

The Construction sector is projected recording a 25-30% recovery in fiscal 2022, from a low base in fiscal 2021, led by a recovery of investments in construction of buildings to pre-Covid levels by deferred completions and steady growth in infrastructure with healthy rise in central and state capex.

CRISIL research expects spends in the construction sector to register a CAGR of 6-8% over fiscals 2022 to 2026 to ~55-58 lakh crore as against spends of 38 lakh crore with a CAGR of 6% registered over fiscals 2016 to 2020, driven by the infrastructure segment.

12.1 Size of India’s construction equipment industry (fiscals 2019E - 2021E)

Construction equipment can be broadly categorised as earthmoving and mining, material handling, road building, concreting, and material processing equipment. Earthmoving and mining equipment (EME) constitutes a major share of the construction equipment industry.

EME comprises backhoe loaders, excavators, wheeled loaders, skid steer loaders, etc. In the construction sector, EME is mainly used for infrastructure and industrial construction, including roads, hydropower projects, irrigation, industrial construction, mining, agriculture, waste management, and logging.

Material handling equipment (MHE) is used for storage and movement of bulk and non-bulk goods within a particular premise. It comprises pick and carry cranes, forklifts, etc. Road building equipment is used in various phases of road construction, and includes bulldozers, diggers, and scrapers. Concreting equipment is used to mix and transport concrete, and includes pumps and transit mixers. Material processing equipment includes crushers and compressors.

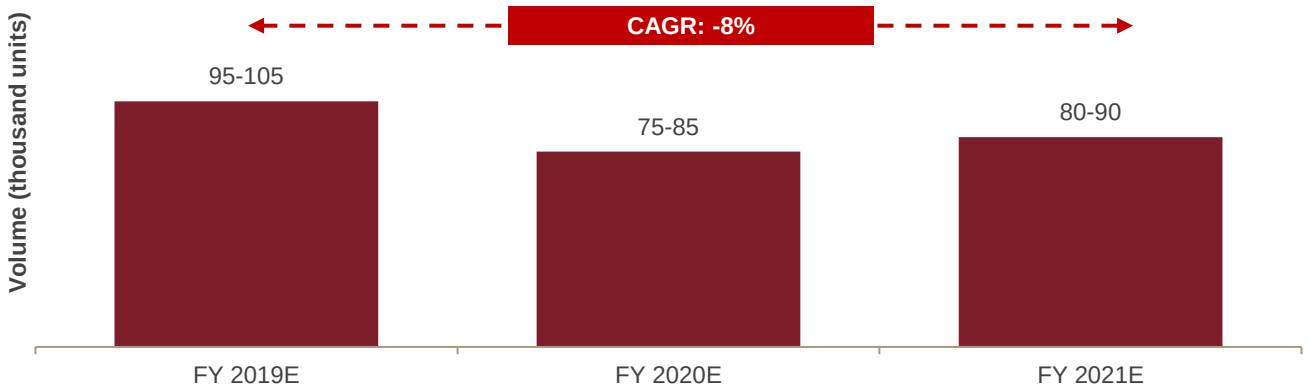
Review of India’s construction equipment industry (fiscals 2019E-21E)

The government’s focus on infrastructure development and a broad-based macroeconomic push backed by the pursuit of a favourable policy regime had been favourable to the construction equipment industry. However, in fiscal 2019, the industry saw pressure from slow awarding of road projects, delays in payments to contractors, continued land acquisition issues, and overall tightness in the financing environment (led to reduced fresh buying of equipment).

Following the formation of a stable government in fiscal 2019, the industry was expected to revive. However, despite the increased capital outlay for roads, railways, and metro projects, the industry was impacted in fiscal 2020 by continued slowdown in projects awarded, delays in payments to contractors, changes in the awarding model for road projects, and economic uncertainty. In fiscal 2021, the industry was impacted further by a pandemic-

induced economic slowdown and as funds were mainly diverted towards public health, public welfare, and social obligation. Overcoming the slump caused by the pandemic in the first half, the construction equipment industry grew ~35% in the second half of the year, averaging a growth rate of ~9% in terms of overall sales in fiscal 2021.

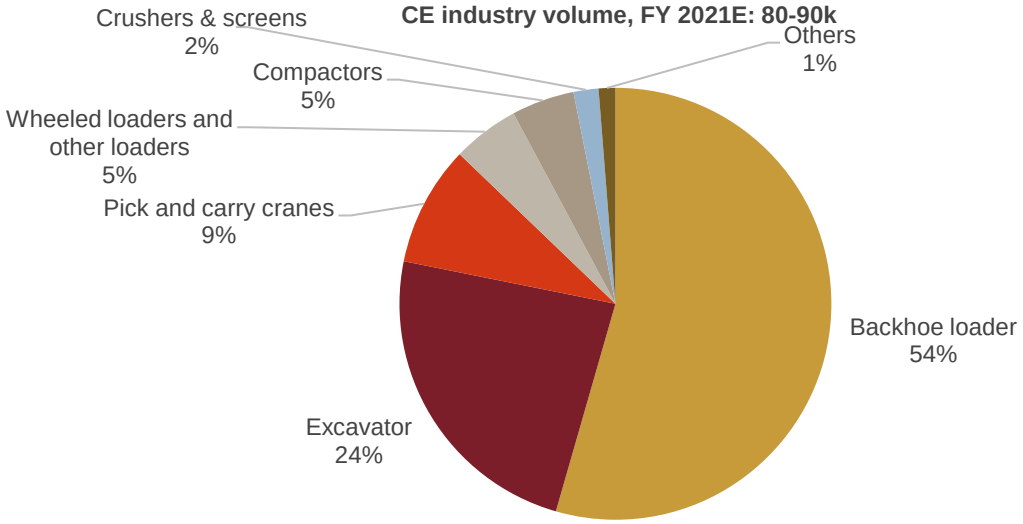
Review of domestic sales of India's construction equipment industry (fiscals 2019E-21E)



Note: E – estimates; construction equipment for our analysis includes backhoe loaders, excavators, wheeled and other loaders, pick and carry cranes, compactors, motor graders, crushers and screeners, and pavers.

Source: Industry, CRISIL Research

Equipment-wise break-up (fiscal 2021E)



Note: E – estimates

Source: Industry, CRISIL Research

Backhoe loaders and excavators constitute more than 75% of the construction equipment industry. The share of backhoe loaders has improved in the last three years.

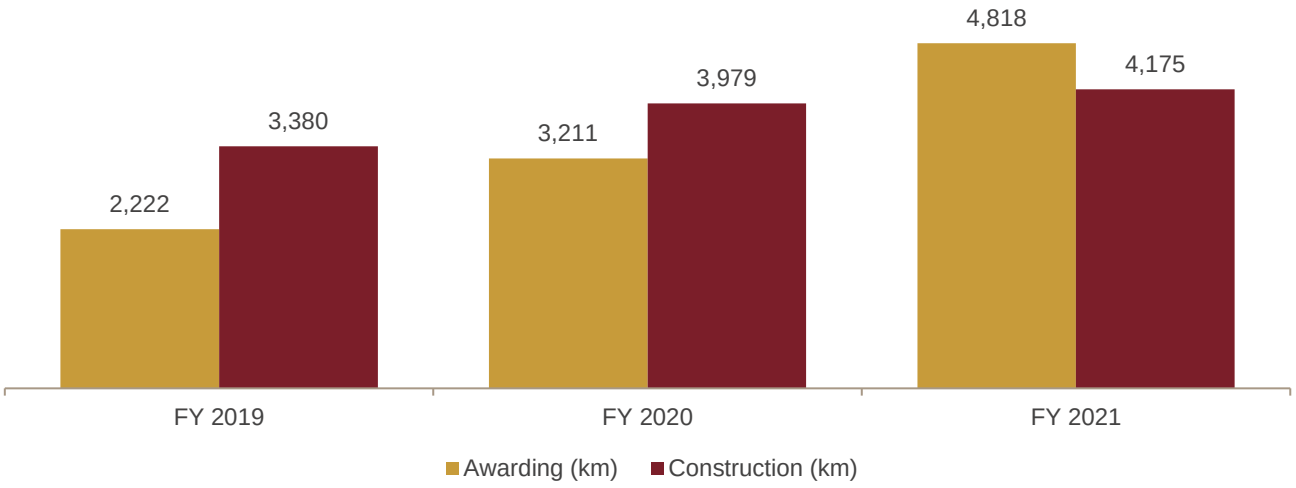
12.2 Key historical growth drivers

- **Investments in construction activities**
  - Cumulatively, the construction industry witnessed investments of Rs 25,000 billion over fiscals 2019-21

- Approximately 59% of these investments were in infrastructure projects such as roads, railways, power projects, irrigation, and urban infrastructure (e.g. smart cities). The major investments within the infrastructure sector were in road construction (~54%)
- Building construction, which includes construction of residential, commercial, healthcare, and educational properties, accounted for ~36% of construction investments between fiscals 2019 and 2021
- Industrial is the third avenue for construction investments, which here include capex undertaken by industries such as automobile, steel, and oil and gas

- **Construction under National Highway Authority of India (NHAI)**

Project awarding and execution under NHAI-



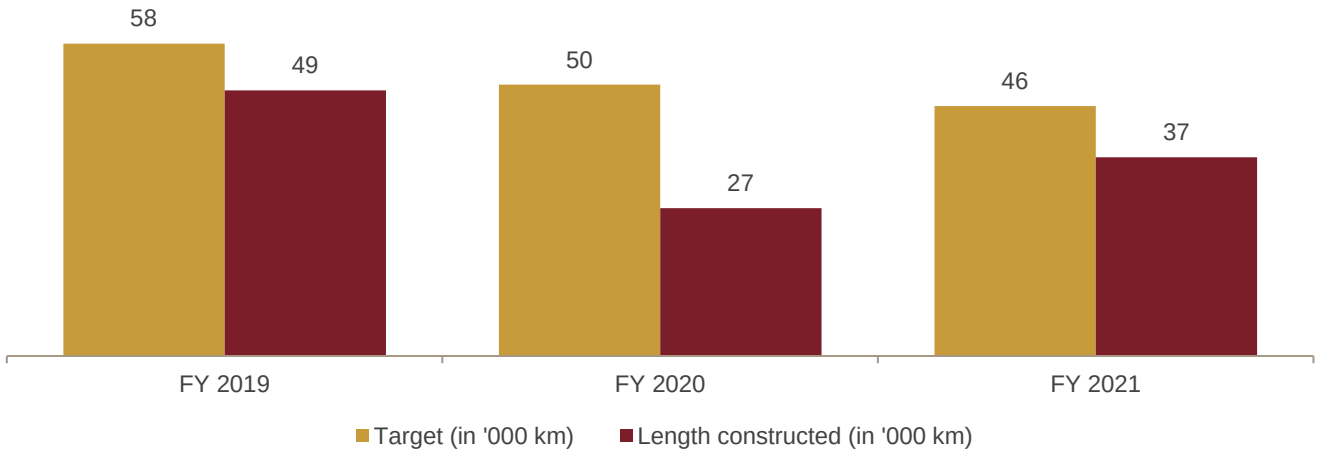
Source: CRISIL Research, NHAI

- Awarding of national highway projects by the NHAI was at an all-time high of 7,397 km in fiscal 2018, on account of a huge pipeline of projects under Bharatmala
- However, due to land acquisition issues, most of these projects were stuck. Hence, in fiscal 2019, the NHAI awarded only 2,222 km to clear backlog of the stuck projects and focus on execution
- To address these land acquisition related issues, the government brought reforms in project awarding practices, wherein awarding of national highway projects would be done only after 80-90% of the required land is in the government's possession. In fiscal 2020, just before the start of pandemic-induced lockdowns, the NHAI executed construction of 3,979 km of national highway
- Amid the pandemic, to revive the sector, the NHAI increased awarding in fiscal 2021, leading to awarding of 4,818 km in fiscal 2021. Construction, which was slower during the lockdowns and monsoons, picked up pace from the third quarter of fiscal 2021 leading to construction of 4,175 km of road in fiscal 2021.
- NHAI projects saw increasing focus on four-laning and six-laning of existing single- or two-lane highways during the last three years. The national agency also undertook construction of several expressway projects during the period. Four-lane and six-lane highways as well as expressways typically require higher capital and have greater construction intensity

- **Construction under Pradhan Mantri Gram Sadak Yojana (PMGSY)**

– PMGSY is a programme focused on enhancing rural road connectivity. It aims to connect all identified rural habitations by constructing all-weather roads. The programme also undertakes upgradation of existing rural roads. PMGSY is a 100% government-funded programme

Review of roads constructed under PMGSY



Source: CRISIL Research, Ministry of Rural Development

– From fiscal 2016 to fiscal 2019, rural road construction surged under PMGSY. Under the PMGSY-III scheme, announced in the Union Budget 2019-20, it was proposed to consolidate 125,000 km of road length in states over fiscals 2021-25. The road construction target under PMGSY-III is, therefore, significantly lower than the 218,000 km constructed under the umbrella scheme between fiscals 2015 and 2019

– In line with PMGSY-III, the annual rural road construction target declined over the last two years from the highs seen in fiscals 2018 and 2019. However, even with reduced construction, the target execution pace plunged in fiscal 2020 on account of an economic slowdown and reallocation of funds

– The pandemic slowed the execution pace in the first quarter of fiscal 2021. However, from the second quarter of fiscal 2021, PMGSY activities gathered pace and ~37,000 km of roads were constructed under the scheme during the year as the government focused on rural employment generation to support rural incomes in the pandemic year

- **Airport** investments are a positive for construction players, as around 60% of the funds are channelled into construction activities. As per CRISIL estimates, estimated investments of Rs 360-400 billion from fiscals 2017-21 were directed towards development of airport infrastructure.
- To make the nation drought-proof, investments in **irrigation** activities have been healthy. In fiscal 2016, the government converged irrigation schemes under the Pradhan Mantri Krishi Sinchayee Yojana to expand the area under cultivation. The key schemes converged were Accelerated Irrigation Benefits Programme, Integrated Watershed Management Programme, On Farm Water Management, and Per Drop More Crop
- Other avenues for construction are ports, power plants, railways, warehousing, etc.

The government announced steps to aid the construction sector during the pandemic:

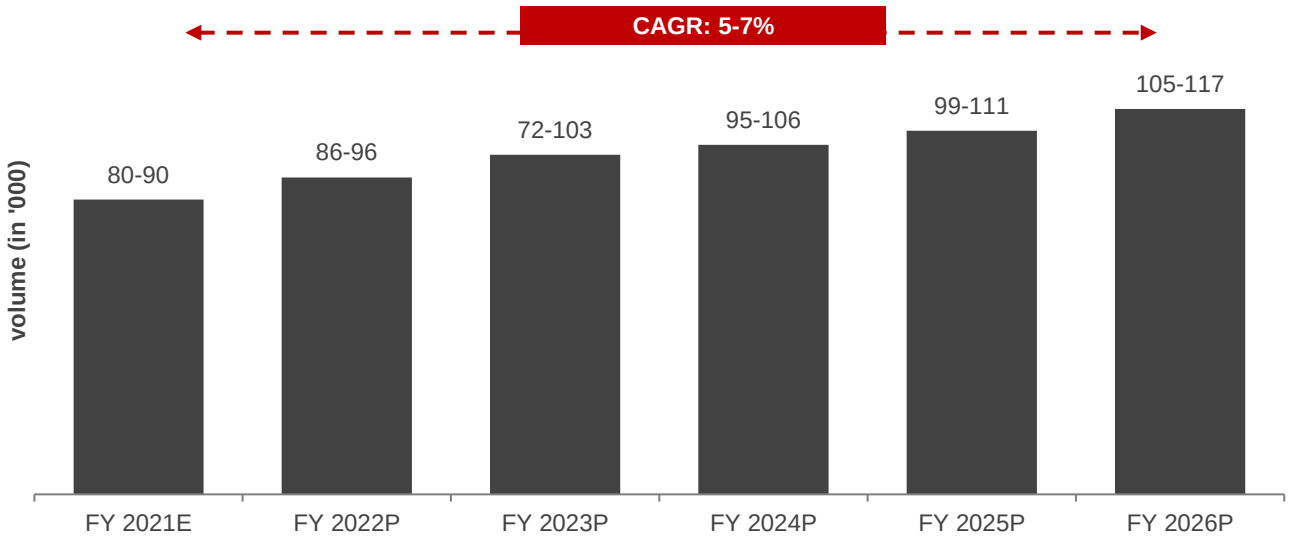
- Three- to six-month extensions for completion of infrastructure projects

- Real Estate Regulatory Authority (RERA) granted six-to nine-month extensions for real estate project completion
- Release of retention money in proportion of work done, and no further deduction of retention money for three to six months from contractors
- Monthly payments based on work completed instead of milestone-based payments
- Performance security on contracts reduced to 3% from 5-10%

12.3 Outlook on construction equipment industry (fiscals 2021E - 2026P)

Construction equipment (CE) volumes are projected to rise 6-9% on year in the second wave pandemic impacted fiscal and on a high base of emission norms led pre-buying witnessed in fiscal 2021. The uptick in volumes would be led by rising infrastructure capex, expected increase in real estate projects and mining output. However, the sharp rise in input costs and implementation of emission norms would push up prices impacting offtake. Demand is expected to remain strong before moderating in fiscal 2024 and 2025 pre-and post-the general elections in 2024. The industry is expected to record a growth of 5-7% CAGR between fiscal 2021 and 2026.

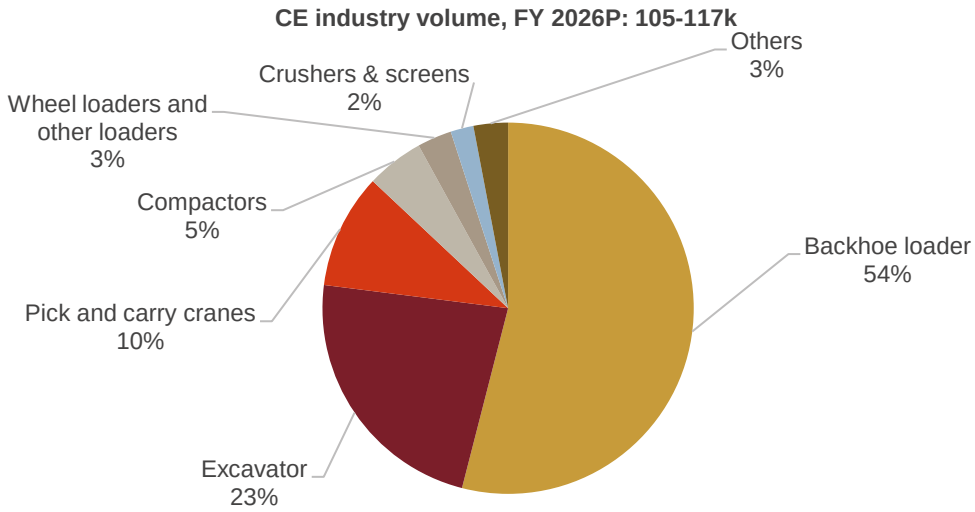
Outlook on domestic sales of India's construction equipment industry (fiscals 2021E-26P)



Source: Industry, CRISIL Research

Demand for construction equipment will largely be supported by robust infrastructure spend over fiscals 2021-26. The share of infrastructure projects is expected to increase to 60-65% in the next five years (fiscals 2021-26), as against 50-55% in the past five years because of muted investments in building construction and industrials. The central government's focus on roads, urban infrastructure, and railways will boost infrastructure investments. CRISIL Research also expects metro rail, water supply and sanitation, and railway projects to garner larger shares.

Equipment-wise sales break-up (fiscal 2026P)



Source: Industry, CRISIL Research

Almost all types of equipment will witness growth, but the market will continue to be dominated by popular products such as backhoe loaders, excavators, pick and carry cranes, and wheeled loaders. Backhoe loaders and pick and carry cranes, which account for a major share due to their functional versatility, are expected to do well.

12.4 Key growth drivers

CRISIL Research has outlined the key growth drivers and trends across the major construction segments.

- **Road construction**
  - The government's focus on infrastructure, investment through the National Infrastructure Pipeline (NIP), and Bharatmala will continue to drive growth in the road sector
  - Under the NIP programme, capex of Rs 20.33 lakh crore will be incurred in the road sector in the next four to five years
  - Awarding in fiscal 2022 with awards to be in the range of 4400-4800 kms and in fiscal 20233-26 at 4000-4500 km per year, as developers will be able to free up capital through stake sales supported by the strong pipeline of projects under Bharatmala and the NIP.
- **Investment in rural roads**
  - Rural road construction (in kms) was almost half in fiscal 2020 at ~27,000 kms construction, as compared with ~49,000 kms in the previous year. Fiscal 2021, saw construction of ~37,000 kms. Similar pace is expected in fiscal 2022 as well.
  - The road length to be constructed under PMGSY-III is significantly lower than the 218,000 km constructed under the umbrella scheme between fiscals 2015 and 2019. CRISIL Research expects investments in rural roads to slow down by ~10% over the next five years, due to lower targets
- **Urban infrastructure**

  - The government is focusing on water supply, metro projects, and smart cities under flagship schemes such as Atal Mission for Rejuvenation and Urban Transformation and the Smart Cities Mission to drive construction activities

- **Airport infrastructure**
  - CRISIL Research expects investments of Rs 650-750 billion in airport infrastructure from fiscals 2022-26, compared with estimated investments of Rs 360-400 billion from fiscals 2017-21
  - Bulk of these investments are in brownfield capacity expansion projects for airports such as Delhi, Bengaluru, Chennai and Hyderabad
  - Airports at Jewar (Noida International Airport), Bhogapuram and at Navi Mumbai are expected to commence construction in fiscal 2022

- **Port infrastructure**
  - Post deferrment of capex plans (to the extent of 50-60%) by players due to the COVID-19 pandemic and uncertainty in future traffic growth, CRISIL Research expect investments to bounce back in fiscal 2022 in the sector. CRISIL Research expects investments worth Rs 600 billion in the port sector from fiscal 2022-26.
  - POL (petroleum, oil and lubricants) occupies a highest share in terms of investment. In case of POL, investments in LNG, especially by Mumbai Port Trust and Dhamra, are expected to drive investments.
  - After LNG, the investment intensity is higher for container terminals owing to the level of mechanisation required to handle the boxes.

- **Irrigation**
  - After a logjam in the past years and post a blip in FY21 due to the pandemic, investment is expected to improve in the long term due to the lower penetration of Irrigation in the country. Investment spends of ~Rs. ~4 lakh crore over fiscal 2022-26 compared to ~Rs. 3.1 lakh crore investment over the fiscal 2016-20.

- **Warehousing**
  - Construction investments in the warehousing (agricultural and industrial) and cold-storage (single- and multi-commodity) sectors are projected to touch Rs 40,000-45,000 crore over fiscals 2022-26 on expectations of increased demand.

- **Railways**

  In the Union Budget 2021-22, the Finance Minister announced the National Rail Plan for India to create a future-ready railway system by 2030. The following are the highlights:

  - Rs 1.1 lakh crore allocations for the Indian Railways to boost infrastructure; of this, Rs 1.07 lakh crore to be for capex
  - Considering economic and environmental concerns, by December 2023, 100% of all broad gauge to be electrified
  - Two new technologies – metro lite and metro neo – to provide metro services at much less cost with the same experience and convenience in Tier II and III cities and peripheral areas
  - Work to begin soon on Phase II of Kochi Metro Railway, which would be 11.5 km long and cost Rs 1,957.05 crore

– Continued investment focus on Kochi, Nagpur, Nashik, and Chennai metro rail projects to ensure completion of phases, and investment in the Bengaluru suburban railway network to bring relief to urban transport challenges in the IT and R&D hub of the country

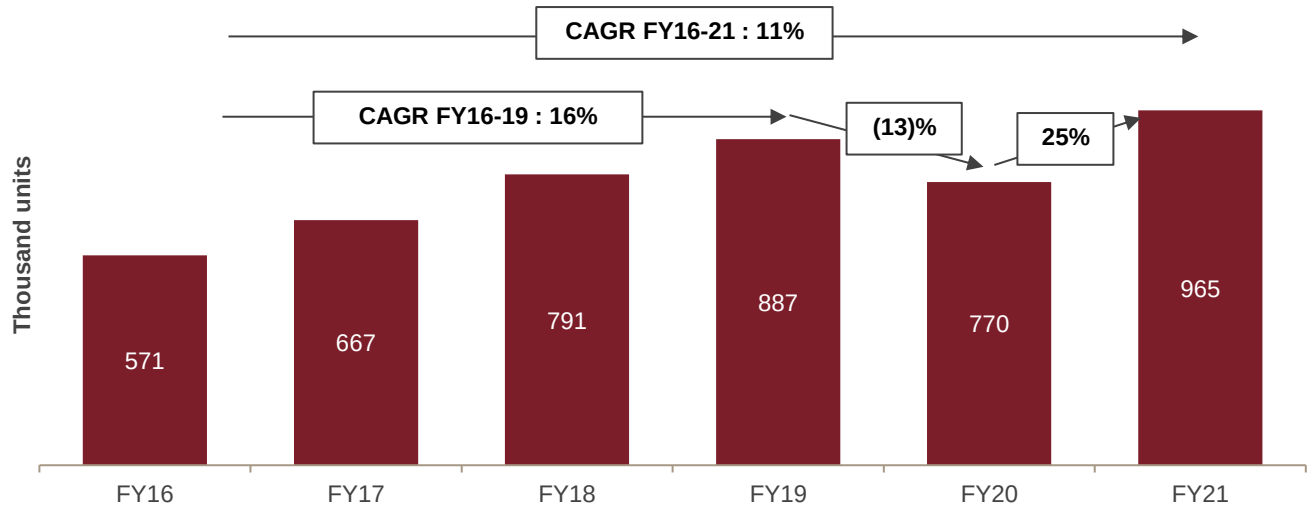
13 Review and outlook of the Indian tractor industry

13.1 Review of the Indian tractor industry (fiscal 2016 - 2021)

Historic domestic tractor production and sales

Tractor production grew at a CAGR of 16% over fiscals 2016 to 2019. It declined by 13% on-year in fiscal 2020, owing to uneven rainfall distribution leading to crop failure, covid-19-induced restrictions and increased raw material costs. While, domestic production capacity grew by ~30,000 units in fiscal 2020. Resultantly, capacity utilisation declined to 58-60% in fiscal 2020. Tractor production bounced back 25% in fiscal 2021.

Tractor production (FY 2016-21)

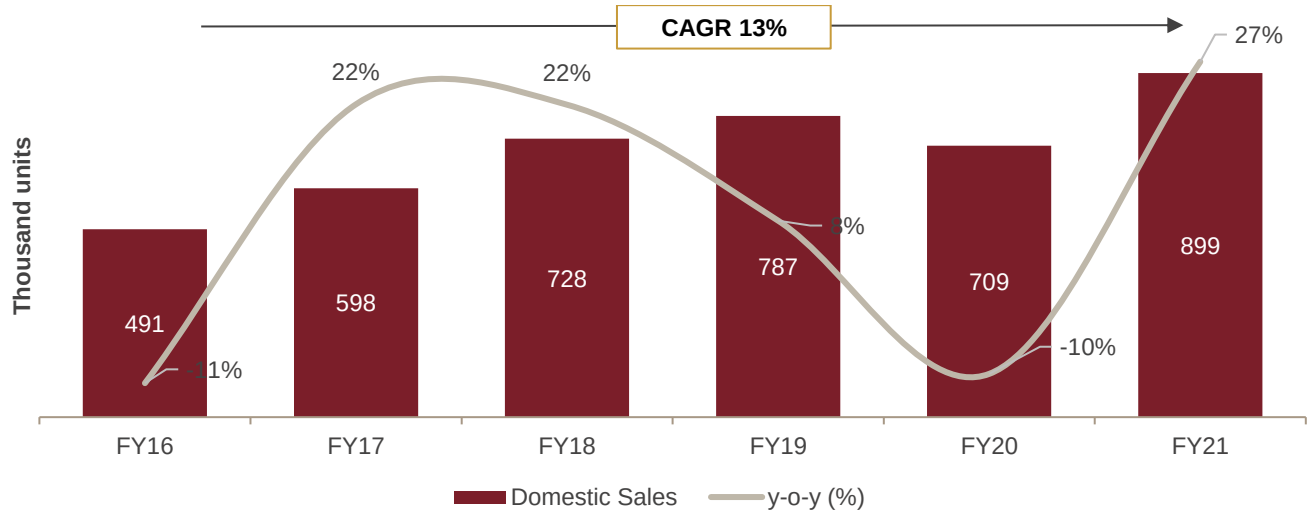


Source: Tractor Manufacturers Association (TMA)

Domestic tractor demand rose 27% in fiscal 2021 due to a higher focus on rural development (allocation to rural development budget increased by 59% last fiscal) and government support through income support schemes. Further, greater replacement demand, positive farm sentiments on account of better crop profitability, better procurement of field crops and oilseeds, and higher mechanisation requirement for some regions amid reverse migration, boosted domestic demand.

A large part of domestic sales is driven by replacement demand. Typical replacement demand for a tractor is around 6 to 9 years, with most tractors replaced within 7-8 years. Of the overall domestic demand for tractors, replacement demand accounts for 50-60%. In states with higher tractor demand, the replacement demand accounts for about 70-80% of the total sales. On the contrary, states where farmer incomes are comparatively less, possess a lower replacement cycle (higher age tractors) than the industry average. We estimate replacement demand to be higher in fiscal 2022 on account of the preponement in the purchase by farmers, despite slightly lower volumes up for replacement. In fiscal 2021, new demand is estimated to have outpaced the replacement demand. Further, preponement in replacement demand due to positive farmer sentiment is also estimated to have pushed sales.

Domestic tractor sales (FY 2016-21)



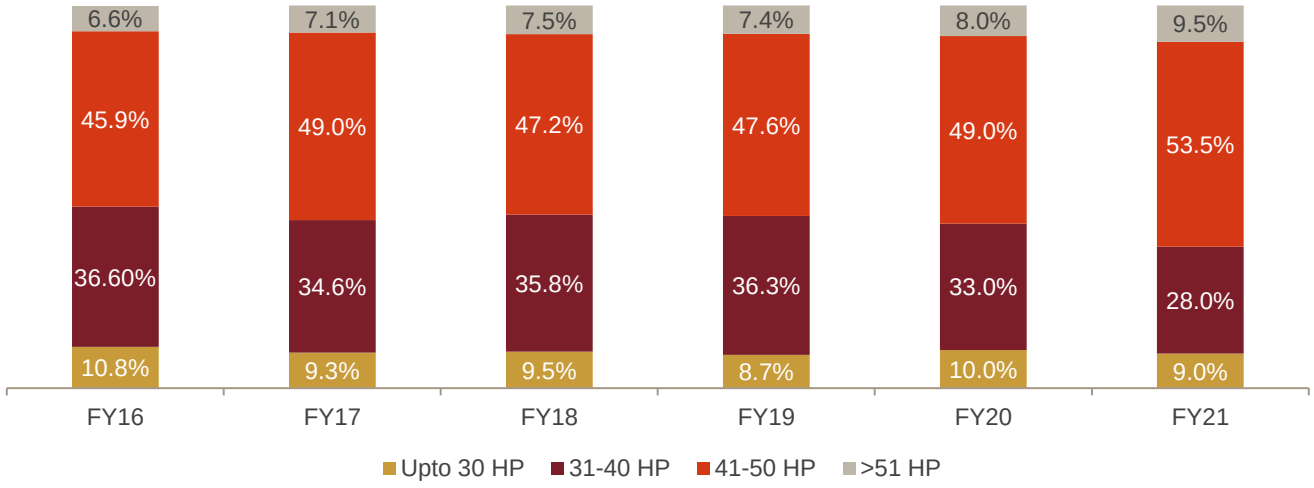
Source: TMA

Apart from their primary application in agriculture operations, tractors are used to haul bricks, sand, and farm produce. During poor crop years and in months with no agricultural activity, renting out tractors for commercial purposes provides an alternate source of income to farmers. Some tractors are designed specifically for haulage operations and are used exclusively for commercial activities. Based on our industry interactions, tractors are also used as an alternative to pickups for haulage purposes.

Rural road construction activities picked up post the first quarter of fiscal 2021, further boosting the commercial demand. Illegal sand mining activities, a key segment for commercial tractor demand, ramped up in the second half of fiscal 2021. These activities are expected to continue for states such as Bihar, Jharkhand and Uttar Pradesh, providing stimulus to the commercial demand. Trucks, which are now utilised due to higher freight demand, will not be available. Thus, increasing the need of tractors. Commercial demand for tractors roughly accounts for 20-25% of the overall tractor demand.

The completion rate under the Pradhan Mantri Awas Yojana-Gramin (PMAY-G) also witnessed momentum from the second quarter of fiscal 2021, but mostly for eastern states and Rajasthan. Overall, construction under PMAY-G has been higher compared to the last fiscal. However, lower budget allocation under PMAY-G will impact the pace of construction in fiscal 2022.

Segment-wise tractor demand (FY 2016-21)



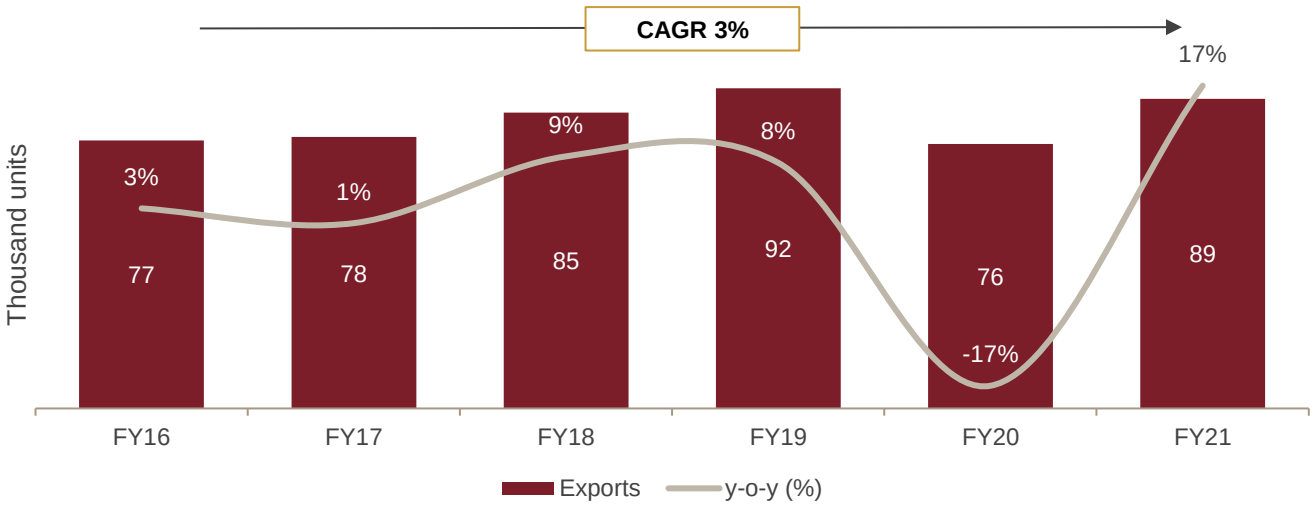
Source: TMA

The 41-50 hp segment maintained its dominant share over fiscals 2017-2021, led by multiple applications in agriculture and haulage. Bulk of the available implements are also better-suited for 41-50 hp tractors. The move towards 51 hp and above has been gradual over the last few years, as these are less amenable to multi-purpose applications, unlike the 41-50 hp tractors. Moreover, there is a considerable ~Rs 100,000 price differential between a 40 hp tractor and a 55-60 hp tractor.

However, in FY21, there was a sudden shift towards higher hp tractors, mainly due to increased usage of implements that required higher hp tractors and increased affordability of farmers due to government support. Further, lack of any other investment opportunities, in the absence of social events amid the pandemic, boosted preference for higher hp tractors.

Tractors in the sub-20 hp category are utilised for target-specific applications, such as orchard farming and inter-cultivation. Due to economic and functional considerations, these tractors found favour among farmers with 0.8-2.0 hectares of land.

Review of tractor exports (FY 2016-21)



Source: TMA

Tractor exports in fiscal 2021 improved 16% despite supply constraints for most of the year, on account of robust demand from major importers such as Europe and Latin America and players such as Escorts developing strategic partnerships.

Many OEMs launched a series of tractors for exports as well. Exports, accounting for about 10% of the overall tractor sales, are estimated to rise 25-30% on-year in fiscal 2022, after growing 16% in fiscal 2021. Demand for Indian tractors has been higher in the US, Tanzania and other Asian countries. Exports locked 90% growth on-year from April to August, over a low base last year amid COVID-19.

In fiscal 2021, exports to the US declined 2% on-year (in value terms), while exports to Europe improved ~10% on account of high farm profitability. Further, exports to Asian countries (such as Nepal) improved 4%. However, tractor exports more than doubled for less impacted Sri Lanka, constituting ~4% in the Indian exports basket.

>51 hp segment dominates tractor exports

Escorts Ltd. is rapidly expanding distribution in new economies. The company increased its exports capacity in FY20 through a joint venture with Kubota, and estimates further growth through this in the coming years. John Deere and New Holland are using India as a base to export to North America and Europe, which primarily use high-horsepower tractors. ITL's growing exports have also contributed to a shift towards the higher horsepower segment. International Tractors Limited (ITL), which manufactures higher and lower horsepower tractors, is expanding its overseas footprint by launching tractors in the 90-120 hp range for developed markets.

ITL tops tractor exports from India

ITL and Escorts have been focusing on growing exports to insulate themselves from the cyclic domestic market demand. Market shares of John Deere and ITL increased from 15% and 16% in fiscal 2017 to 18% and 25% in fiscal 2021, respectively. Further, Escorts has reduced exports from its Poland factory and has started exporting from India. Mahindra is a dominant player in exports to the US and Asian nations.

Key demand drivers for the tractor industry

Irrigation intensity and monsoons: Irrigation plays a vital role in determining the demand for tractors. A farmer will prefer to invest in costlier assets (such as tractors) only after being assured about receiving farming essentials, such as water supply. The irrigation spends, which increased significantly in the last two decades, have aided both irrigation and cropping intensity, leading to higher and stable farm incomes. Irrigation intensity is expected to improve further over the medium term, supporting tractor sales.

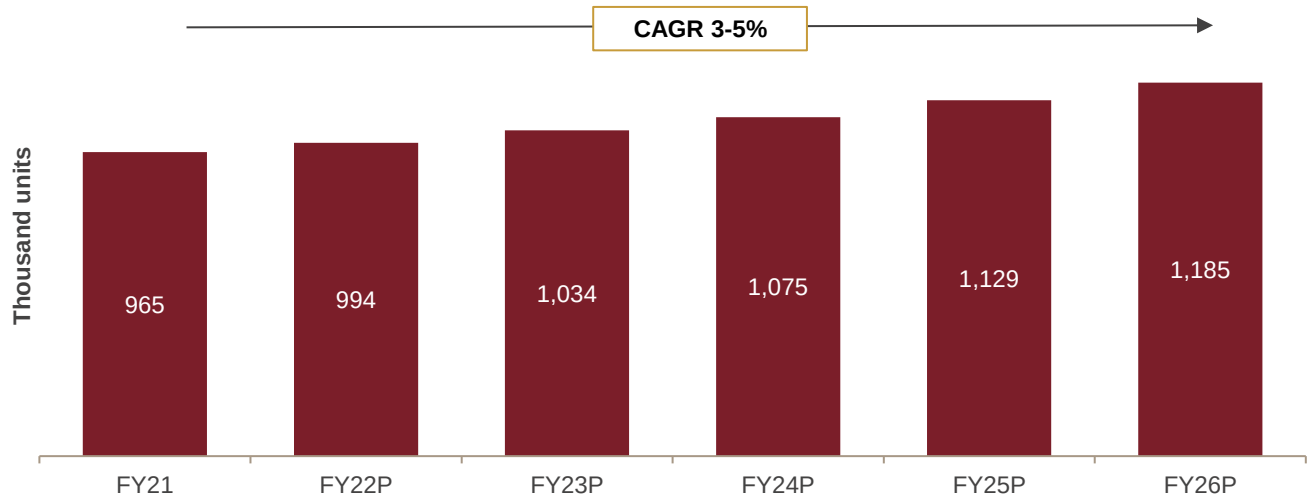
Credit availability: In India, around 70-75% of tractors purchased are on credit, making credit availability a key demand driver for the industry. Hence, any major changes in financing norms directly impact the demand for tractors. Agricultural credit usage in farm mechanisation has been growing steadily, enhancing farmers' ability to buy tractors. Over the last decade, the cumulative share of public sector, co-operative, and regional rural banks has come down from about 75% to 15-20%, with NBFCs accounting for about 50-55%.

MSPs of food grains: The government has been consistently increasing MSPs of major crops, such as wheat, rice, sugar cane and cotton, starting fiscal 2007. This has reduced volatility in farm incomes, notwithstanding some fluctuations in agricultural production arising from the deviation in rainfall. However, fiscal 2015 onwards, the hike in MSPs has been modest, compared with a CAGR of 10-15% in previous seasons. This moderate hike in MSPs impacted farm incomes over fiscals 2015-2016, as it was over and above a drop in crop output during those years. In fiscal 2019, the MSP hike was around 15-20% on-year. This, coupled with good crop output, resulted in higher farm income across all major regions. However, in fiscal 2020, MSPs of Rabi and Kharif crops grew only 3-6%. In fiscal 2021, the MSP hike was better at around 4-8% on-year. This, coupled with good crop output, resulted in higher farm income across all major regions.

13.2 Outlook on Indian tractor industry (fiscals 2021 – 2026P)

Production volumes of tractors are expected to grow by 2-4% on-year in fiscal 2022, while increasing at 3-5% CAGR over fiscals 2016-2021, owing to a high base of fiscal 2021. The government's aim to double farm income via several initiatives is expected to boost tractor demand. These initiatives include e-NAM (National Agriculture Market), direct price support, farm loan waivers, expansion of crop insurance coverage, MSP support and improvement in land productivity via soil health cards.

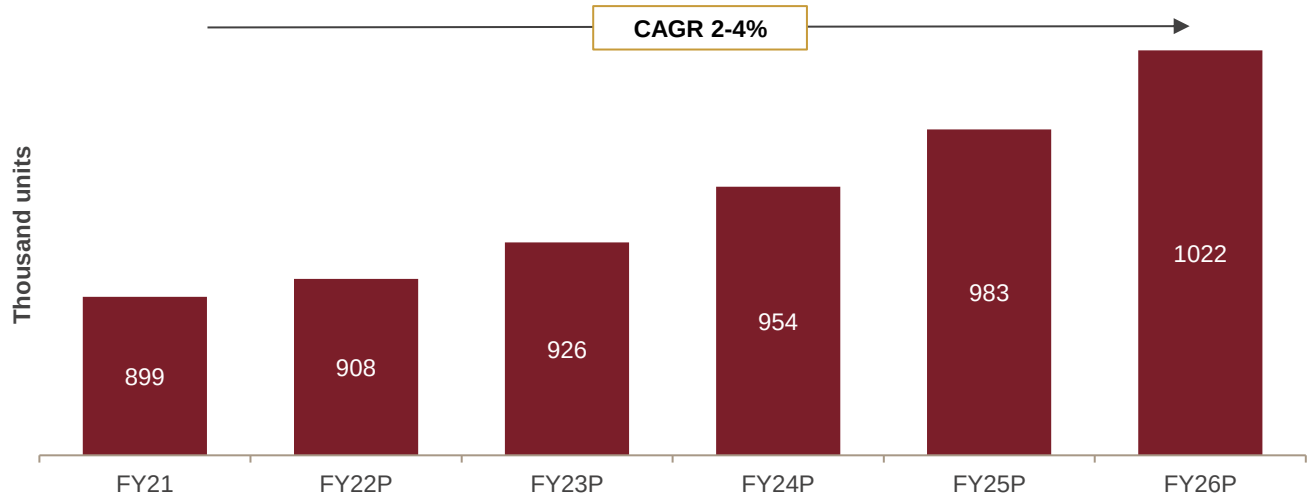
Outlook on domestic tractor production (FY 2021-26P)



Source: TMA, CRISIL Research

CRISIL Research projects domestic tractor sales to expand at a 2-4% CAGR over fiscals 2021-2026, after factoring in one to two years of below normal monsoon, along with a 10% decline in investment in Pradhan Mantri Gram Sadak Yojana (PMGSY) over the next five years, due to low commercial demand.

Outlook on domestic tractor sales (FY 2021-26P)

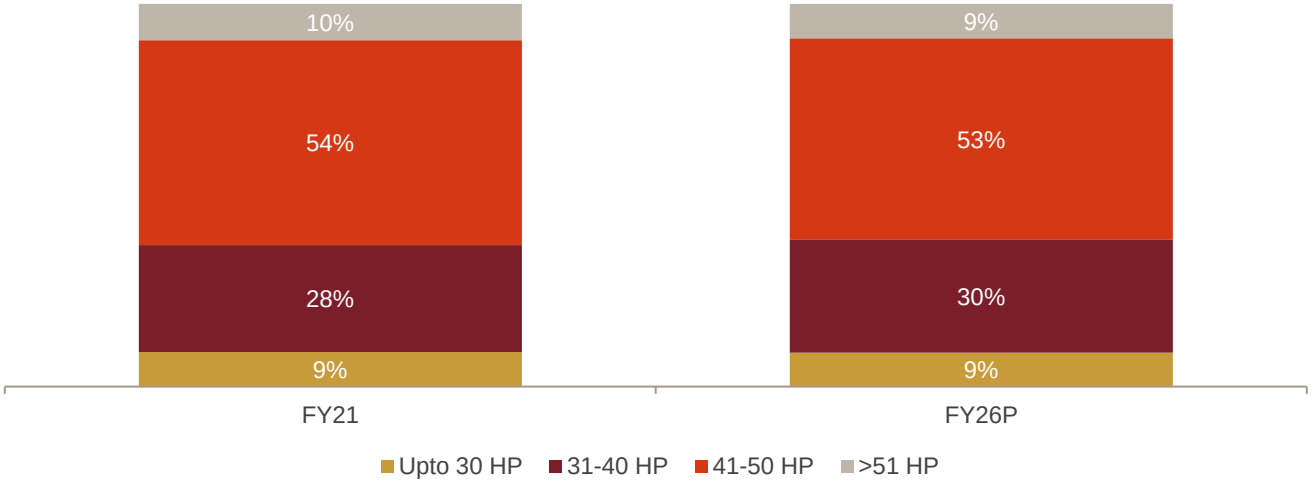


Source: TMA, CRISIL Research

Given the cyclicality, it takes 4-5 quarters for the tractor industry to recover from a downturn. Thus, considering the impact of poor monsoon between fiscals 2022-2026, the industry could take 4-5 quarters to recover. The domestic sales is expected to grow 0-3% in FY22. Our long-term assessment suggests that the tractor industry will grow at a

CAGR of 2-4% over the period of FY 2021-26. The growth will be supported by low tractor penetration in India (three tractors per 100-hectare area), the government's focus on improving farm incomes through various schemes, promoting farm mechanisation, and improving rural infrastructure.

Outlook on segment-wise domestic tractor demand (FY 2021-26P)

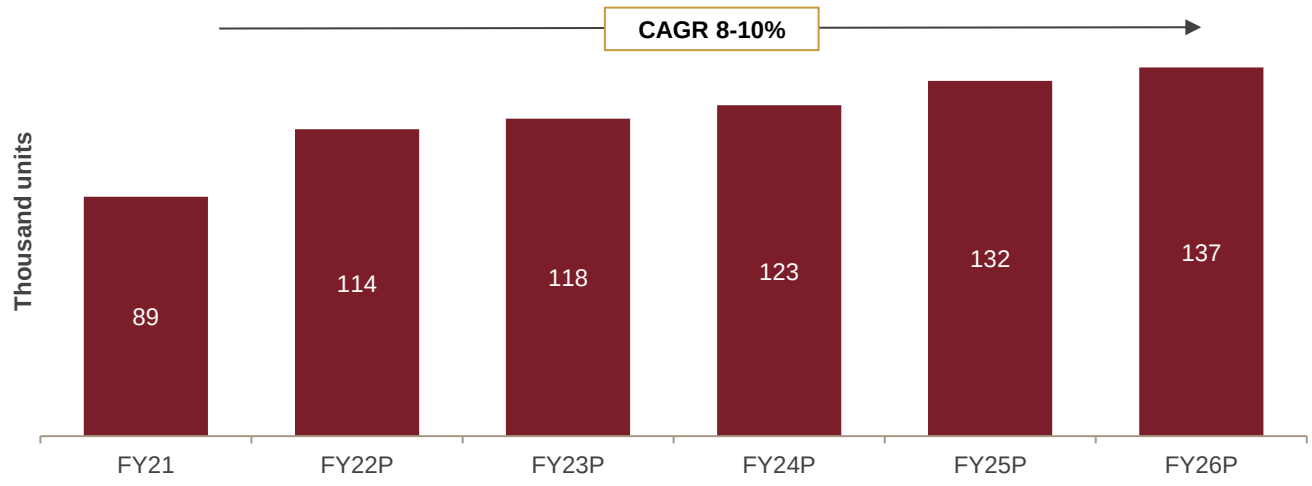


Source: TMA, CRISIL Research

We expect farmers to upgrade from 31-40 hp to 41-50 hp tractors over the next five years, realising the benefits of mechanisation and higher productivity from increased usage of implements, along with tractors. Further, the growing trend of collaborative farming, increasing commercial usage, and higher irrigation intensity will boost the usage of higher hp tractors. However, in case of a decline in farm incomes on weak monsoons, farmers could shift towards lower hp tractors (below 40 hp). Nevertheless, we expect a more gradual movement towards 51 hp and above tractors, as they are less amenable to multipurpose applications (like the 41-50 hp), and the price gap is big (at least 10-15% between a 50 hp and a 55-60 hp tractor, as emission norms change at 50 hp).

The market for 70-75 hp tractors is niche and is evolving in India. These tractors are used mainly for farming along with implements, while 41-50 hp tractors can also be used for haulage and commercial activities, such as sand mining. This increases the viability of 41-50 hp tractors, as these can be used for at least 700 hours a year.

Outlook on tractor exports (FY 2021-26P)



Source: TMA, CRISIL Research

Tractor exports are expected to grow at a moderate CAGR of 8-10% between fiscal 2021 and fiscal 2026, with Africa and Asia remaining the focal regions for long-term exports. Also, with India emerging as an export hub for relatively small tractors (30-75 horsepower or hp), and increasing focus on international markets with the launch of 90-120 hp tractors, we expect sustainable exports growth over the next five years.

Key growth drivers for the tractor industry (fiscals 2022-2026P)

- The government's objective of doubling farm income by 2022 through direct income support and improvement in land productivity via soil health cards should improve farmers' crop yields and affordability and boost tractor penetration
- The government's renewed thrust on enhancing irrigation intensity and making the nation more drought-proof is expected to support agriculture growth and increase mechanisation. Irrigation investments are expected to increase at a CAGR of 4-6% over fiscals 2020-2025
- Custom-hiring centres are being promoted through government incentives. The trend is catching up in Karnataka, Madhya Pradesh, Andhra Pradesh, Telangana, and Orissa, encouraging farmers to lease tractors. States, such as Karnataka, Madhya Pradesh, Andhra Pradesh and Punjab, are promoting such hiring centres through training, demonstrations and financial incentives
- Tractor rental services made available on mobile applications by manufacturers, such as Jfarm by Tractors and Farm Equipment Limited (TAFE) and Trringo by Mahindra, to prop up demand for tractors in the long term. Global companies such as Hello Tractors, in association with Aeris, a California-based technology company, is planning to launch a pay-as-you-use tractor service for Indian farmers
- Rising cost of farm labour due to employment schemes, such as Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA)
- Increasing substitution of non-mechanised modes of farming, such as animal labour
- Growing commercial use of tractors (including transport of farm produce, haulage and personal transport applications, and transport of materials for road construction and other infrastructure projects)
- Credit availability and affordable finance rates, increasing budgetary allocation towards the rural sector, and government support for farm mechanisation encourage growth

Regulations and government schemes

- Micro Irrigation Fund with a corpus of Rs 5,000 crore has been created under NABARD and is planned to double
- "Operation Greens" which intends to connect Farmer Producers Organizations (FPOs), agri-logistics and processing facilities to address price fluctuations in potato, tomato and onion with an allocated sum of Rs 500 crore
- Target for Agricultural credit has been increased to Rs 16.5 trillion from Rs 15 trillion
- The allocation to the Rural Infrastructure Development Fund increased from Rs 30,000 crore to Rs 40,000 crore
- During the year, the government launched SWAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas) scheme. Under this, a record of rights is being given to property owners in villages. About 1.80 lakh property-owners in 1,241 villages have been provided cards, and the Finance Minister proposed during fiscals 2021-2022 to extend this to cover all states/union territories

- TREM IV norms were postponed to October 2021 from October 2020 amid the pandemic and has been pushed further to April 2022. The norms would be exclusively applicable to more than 50HP tractors, contributing only ~10% to the overall tractor sales (as of fiscal 2021). Thus, we expect limited impact on the tractor industry. Although major technological changes are available with OEMs, the pass through of the technology-related incremental cost (~10-12%) could be a challenge, given the price sensitive nature of the farming community.

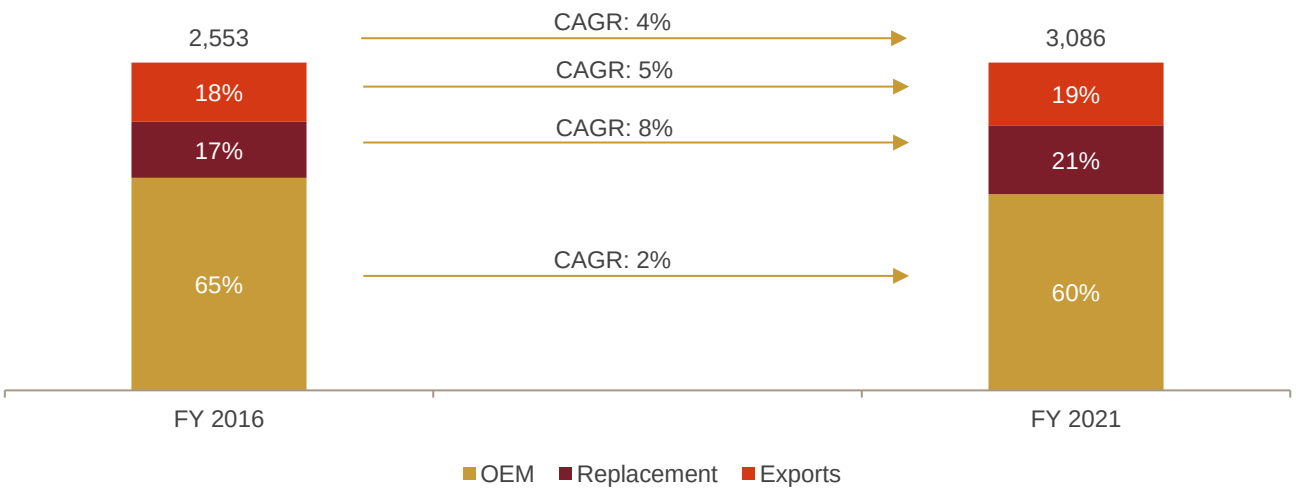
14 Review and outlook for the Indian auto component sector

14.1 Indian auto component sector by value (fiscals 2016 – 2021)

14.1.1 Auto component industry by OEM, export, and aftermarket in value terms

Auto component production (which includes sale to OEMs, exports, and replacement market) increased at a CAGR of ~4% over fiscals 2016-21, from Rs 2,553 billion to Rs 3,086 billion.

Auto component production split by OEM, aftermarket, and export



Source: CRISIL Research

Almost two-thirds of automotive components produced were consumed by OEMs in fiscal 2016, and the remaining one-third were equally shared between aftermarket and exports. However, by fiscal 2021, OEM share have dropped to 60% as demand for vehicle segments such as 2W, 3W, PV, and CV has been tepid since the second half of fiscal 2019 due to economic slowdown and pandemic.

Comparatively, demand from replacement and export has remained resilient. As a result, their shares have increased in fiscal 2021.

Domestic auto component production revenue has declined by ~6% in fiscal 2021 yoy due to subdued demand across all automobile asset classes (barring tractors) amid continued weakness in the economy and lower demand from the replacement market owing to lower movement of vehicles.

On the export front, with the spread of Covid-19 in key export destinations, demand was impacted until August 2020, with exports declining 36% on-year during April-August 2020. However, green shoots were visible in export demand from September 2020 onwards. The recovery was led by an increase in demand from Europe and Asia (primarily Germany and Italy). In fiscal 2021, exports recorded a degrowth of 8% yoy.

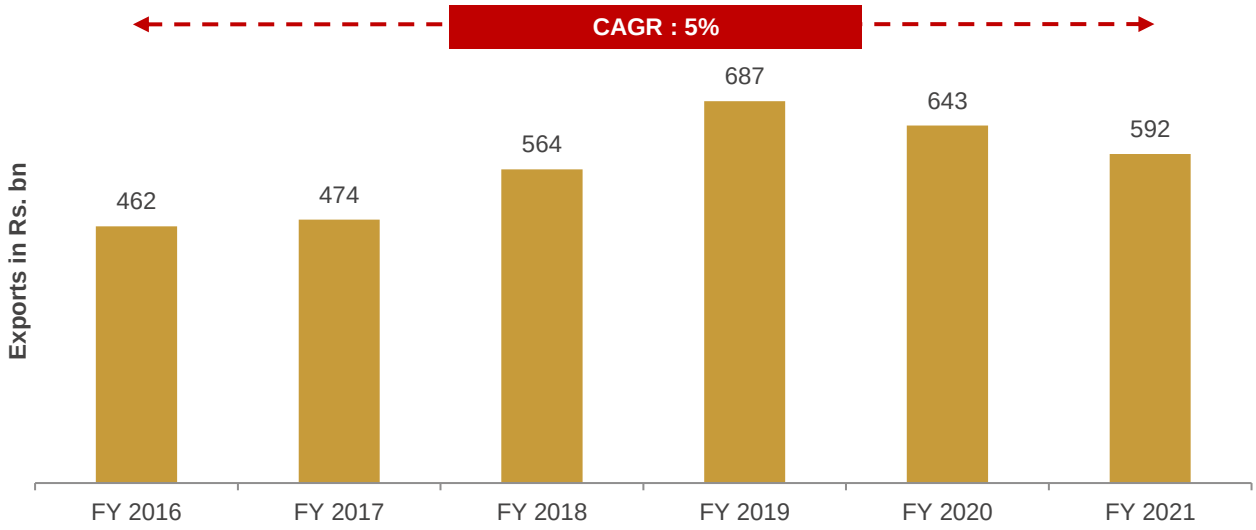
For the replacement market, demand weakened for the first time in over a decade owing to lower movement of vehicles because of nation-wide lockdowns, followed by state-wide lockdowns until August 2020. Recovery in replacement market was seen from festive season of 2020. In fiscal 2021, replacement demand is estimated to have declined by ~7% yoy. Despite of slow growth in fiscal 2020 and a decline in fiscal 2021, replacement market registered a CAGR of 8% between fiscal 2016 and 2021, where growth recorded is 13% between fiscal 2016 to 2020 followed by a decline of 7% yoy in fiscal 2021 owing to pandemic.

However, the higher component intensity due to the BS-VI norm also led to higher average realisation.

Auto component exports by value over fiscals 2016-2021

Exports increased at a CAGR of 14% over fiscals 2016-19, in line with improvement in global automobile sales. However, global economic slowdown and increasing trade tensions led to a 6% decline in exports in fiscal 2020. Due to pandemic, global automobile production declined leading to export of auto component declining by 8% yoy in fiscal 2021.

Auto component export development (Rs billion), fiscals 2016-21



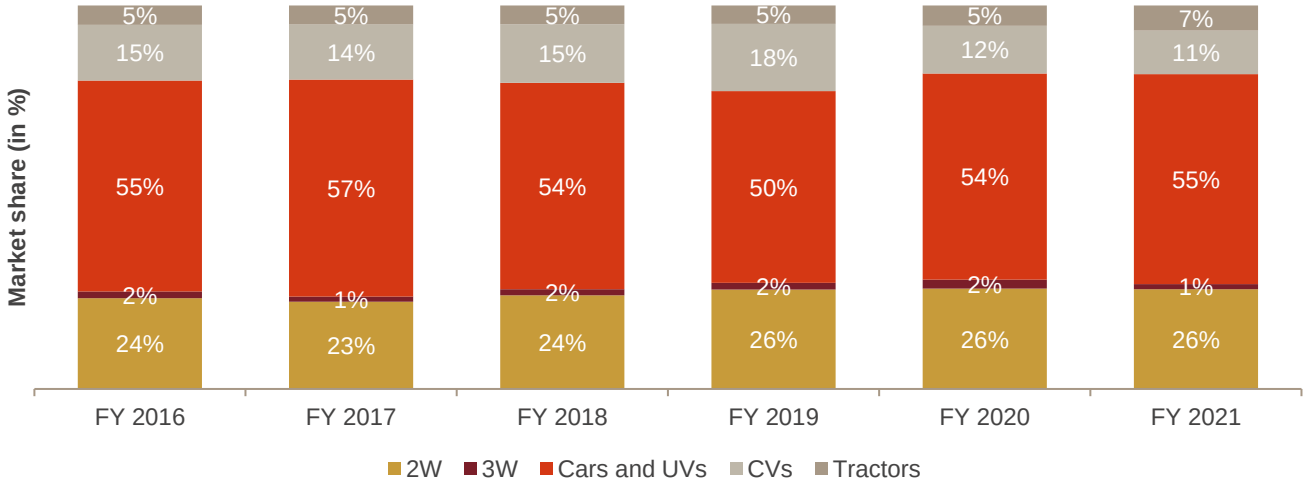
Source: Directorate General of Foreign Trade, CRISIL Research

India exports auto components mainly to North America and Europe (together account for over 50% of exports). The USA accounts for over 80% of the demand from North America. Exports declined in fiscal 2020.The EU faced economic slowdown and political uncertainty led by Brexit. India even exports to Asian market, about 20% of exports is to these geographies.

14.1.2 OEM auto component industry split by vehicle categories in value terms

The proportion of manufacturing activity outsourced to auto component makers is the highest for cars and utility vehicles, explaining this segment's prominence.

Auto component production split by vehicle categories (split in value terms)



Source: CRISIL Research

In fiscal 2021, auto component demand from the OEM segment have declined by 6% yoy.

PV production declined by ~11% yoy in fiscal 2021. Domestic wholesale volume declined in the initial months of fiscal 2021 because of subdued consumer sentiment in the first quarter due to the pandemic. However, domestic sales picked up later owing to the shifting consumer preference from public transportation and shared mobility services to personal mobility. With daily activities resuming to normalcy slowly after lifting of lockdown, an increasing number of people have opted for PVs, either a used vehicle or a new purchase. Exports also declined significantly due to subdued global automobile demand and trade restrictions in the wake of the Covid-19 pandemic.

2W production declined by ~13% in fiscal 2021. Domestic wholesale volume declined by 13% on-year because of weak private consumption, higher cost of ownership after the BS-VI transition, and a hit on income. As the industry transitioned from BS-IV to BS-VI emission norms from April 2020, 2Ws have witnessed a price rise of 10-15% across models.

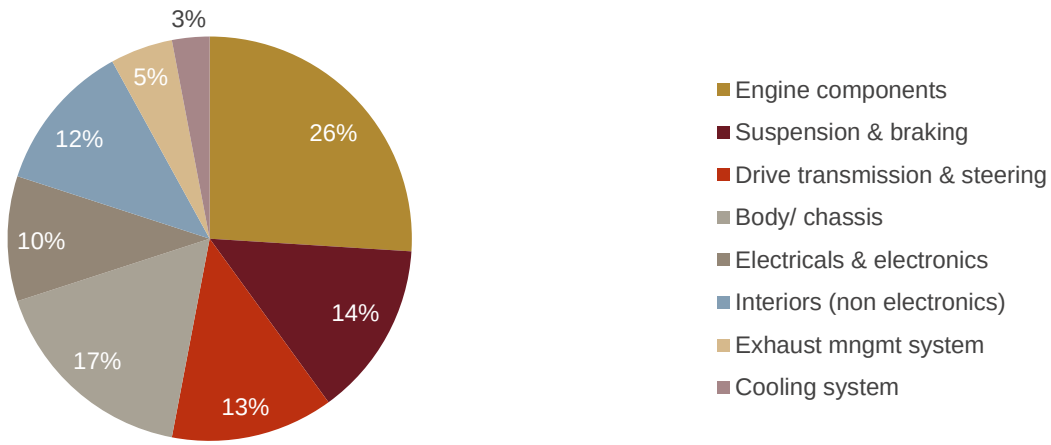
Lower fleet utilisation for transporters due to continued weak freight demand, high acquisition cost with a 10-15% price hike due to BS-VI norms, and lower discounts despite dealer inventory build-up had a bearing on CV sales in fiscal 2021. Transporter profitability has been hit, causing some small fleet operators to surrender their trucks to financiers. This, in turn, led financiers, especially NBFCs, risk-averse to lend to truckers in fiscal 2021. Resultantly, the segment's production declined by ~17% yoy.

Tractor production recorded a healthy growth of ~28% in fiscal 2021, driven by better demand for tractors owing to positive farm sentiment, higher government procurement of food grains, and normal and well-distributed monsoon.

Realisation of components have increased on account of vehicle price hikes due to the BS-VI transition and also due to increase in commodity prices in 2020.

14.1.3 Split by major auto component categories in value terms

Segment-wise production break-up in fiscal 2021



Source: Automotive Component Manufacturers Association (ACMA), CRISIL Research

The Indian auto component industry can be broadly classified into organised and unorganised sectors. The organised sector caters to the demand for high-value precision instruments such as engine parts, and the unorganised sector to the aftermarket with low-value products such as switches.

Component-wise market shares have remained stable over the past few years.

Over the years, the industry has developed the capability to manufacture the entire range of auto components required for vehicles engine parts, which constitute 26% of production, mainly comprising pistons, engine valves, carburetors, fuel injection systems, camshafts, and crankshafts.

The suspension and braking segment includes components such as brakes, brake linings, leaf springs, and shock absorbers, which account for ~14% of the domestic auto component market.

Drive transmission parts, which constitute 13% of total production, include axle assembly, steering parts, and clutch assembly. The steering system industry is technology- and capital-intensive in nature, which acts as an entry barrier especially for smaller players and the unorganised segment. Power steering is increasingly becoming popular as it reduces driving efforts; hence, players are shifting their product mix towards power steering from manual steering. Manufacturing axles, another critical auto component, is also a capital- and technology-intensive business. Designing axles to meet the exact engine specifications is a key success factor for axle manufacturers. Braking system is not technology-intensive.

The body and chassis segment is fragmented and dominated by the unorganised sector since it is not technology- or capital-intensive in nature.

Electrical and electronics is one of the most dynamic segments because of constant evolution of technology. New cars have increasingly higher proportion of electrical parts.

Exhaust management and cooling systems form rest of the pie. The exhaust management system has gained more prominence due to stricter emission norms such as BS-VI.

Critical components, such as engine parts, drive transmission and steering, and electricals, are technologically more complex compared to other auto component parts.

Engine & engine parts	Suspension & braking parts	Drive transmission & steering parts	Body and chassis	Electrical & electronics parts	Interiors (non-electronics)	Exhaust management and cooling systems
Piston and piston parts	Suspension parts	Steering system	Sheet metal parts	Starter motors	Seating system	Exhaust pipes
Fuel injection equipment and carburettors	Braking parts	Axle assembly	Fuel tanks	Generators	Mirrors	Mufflers
Powertrain components (cylinder heads, cylinder blocks)		Clutch assembly	Plastic-moulded components	Alternators	Plastic-moulded components	Catalytic convertors
Engine cooling systems		Wheel and wheel rims	Rubber components	Magnetos	Rubber components	Radiators
Other powertrain components			Locks	Distributors and regulators		Cooling fans
Engine bearings and valves			Ball and roller bearings			
Exhaust systems						
Gaskets, liners, and filters						
Other engine parts such as flywheel, ring gears, etc.						

Source: CRISIL Research

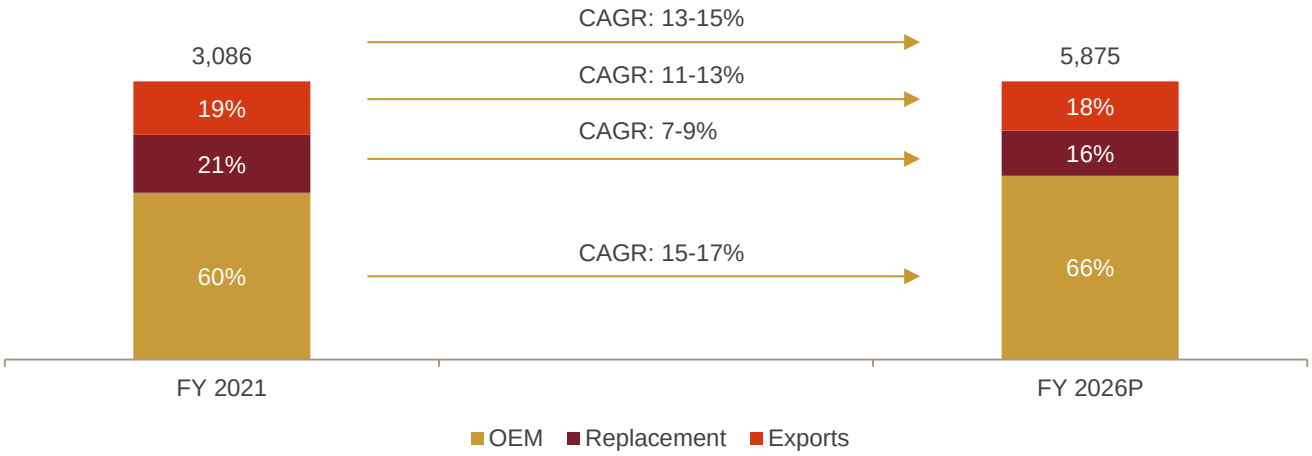
14.1.4 Growth drivers

- The Indian auto component industry started with car manufacturers outsourcing their work to other smaller players, generally in the vicinity of plants. The industry developed eventually. Initially, outsourcing of car parts was done, as auto component players gained sophistication in processes, started using better technology, auto component industry evolved.
- Previously, the industry had a low base and was highly fragmented because of the presence of a few OEMs across vehicle segments. The domestic auto component industry largely consists of small and medium-sized enterprises. The industry has over 800 organised players (ACMA members) and ~6,000 unorganised ones. In terms of revenue, however, the organised segment dominates the industry. ACMA members account for 85% of the overall industry turnover (source: ACMA).
- Global automobile manufacturers see India as a manufacturing hub for auto components and are rapidly ramping up the value of components they source from India due to cost competitiveness in terms of labour and raw material. India is known to have an established manufacturing base. Components of fine quality are now manufactured in India (used as original components in vehicles manufactured by Mercedes, IVECO, and Daewoo, among others).

14.2 Outlook of Indian auto component sector in value terms (fiscals 2021 - 2026P)

14.2.1 Auto component industry by OEM, export, and aftermarket in value terms

Auto component production split by OEM, aftermarket, and export



P: Projected

Source: CRISIL Research

Due to low base of fiscal 2021, in fiscal 2022, auto component production is expected to grow at 20-22% yoy, mainly driven by demand from OEM and exports.

CRISIL Research expects the auto component industry's revenue to be led by OEM demand, which is expected to log a CAGR of 13-15% over fiscals 2021-26, to reach Rs 5,875 billion. Production growth and higher outsourcing to auto component players by OEMs will drive OEM demand.

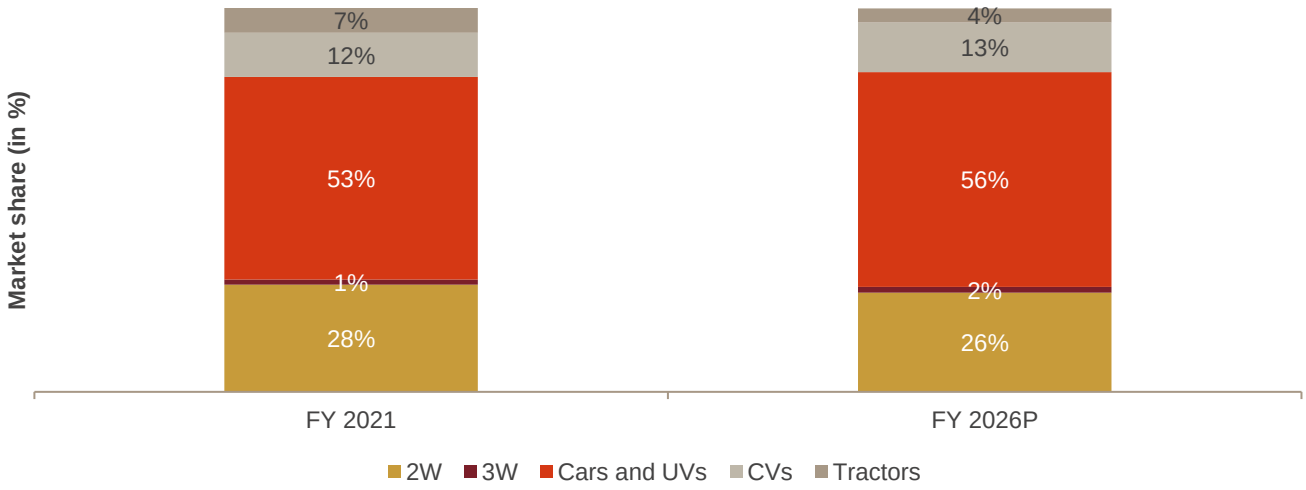
Share of auto component players is expected to increase in the future because of their growing technological spend. CRISIL Research expects localisation by certain OEMs to increase further, supporting growth in domestic OEM offtake.

Exports are expected to increase at a robust CAGR of 11-13% over fiscals 2021-26, driven by schemes such as Production-Linked Incentive (PLI) scheme. We expect exports to benefit in the long term from Indian safety and emission norms approximating global standards, and domestic companies gaining technological capabilities through joint ventures.

Replacement demand is expected to remain stable and grow at a 7-9% CAGR over fiscals 2021-26. Expectation of robust new vehicle sales will be offset by manufacturing of improved components with a better life cycle. Therefore, the requirement to replace a component due to wear and tear will decline.

14.2.2 OEM auto component industry split by vehicle categories in value terms

Estimated auto component industry share by vehicle categories



P: Projected

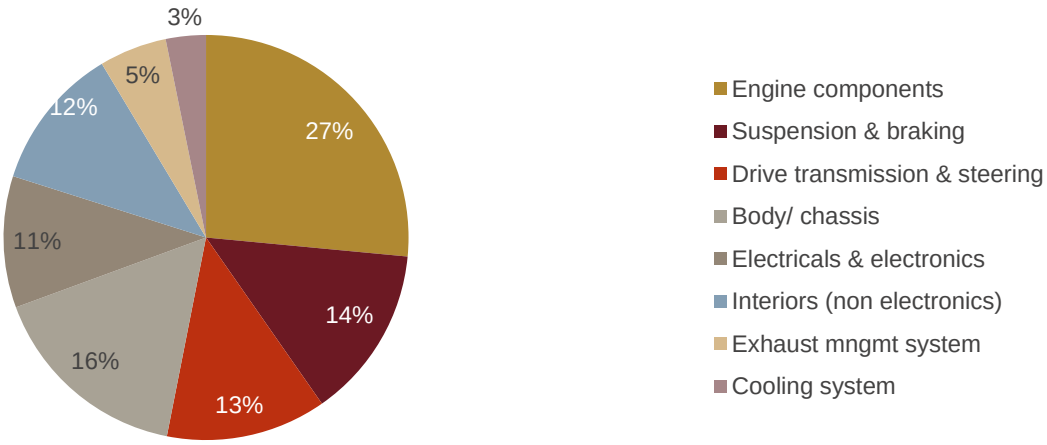
Source: CRISIL Research

Share of each vehicle segment is expected to remain structurally constant. With the drive for the Make in India movement, India's dependence on imports is expected to gradually reduce.

Moreover, OEMs are beginning to prefer localised products. The trucking industry is expected to gradually shift towards organised auto component players owing to regulatory changes (with respect to engines) and the Goods and Services Tax (GST).

14.2.3 Split by major auto component categories in value terms

Segment-wise production break-up in fiscal 2026P



Source: CRISIL Research

Upcoming emission norms BS-VI B is expected to drive up the share of engine components however, because of EV penetration across vehicle segments, we expect the increase in share to be minimal. As more sensors, micro controllers will be required in a vehicle, the share of electricals and electronics is also expected to increase.

14.2.4 Growth drivers

Demand-side factors

- Vehicle production across segments is likely to recover on a low base in fiscal 2021, supported by customer preference for personal mobility options due to social distancing, vaccine availability, government focus on capital expenditure, and the resultant pickup in the economy.
- CRISIL Research expects almost all vehicle segments to log robust production growth over fiscals 2021-26. 2W, 3W, PV, CV and tractor production is projected to grow at 9-11%, 12-14%, 7-9%, 12-14%, and 0-2% CAGR, respectively, over the forecast period.
- Key macroeconomic trends are also likely to aid demand for 2W, 3W, and PVs over the medium to long term. CRISIL Research expects urbanisation to reach 37-38% by fiscal 2026 from ~35% in fiscal 2021. India's per capita income is also projected to log a 6-7% CAGR over fiscals 2021-26. Growing urbanisation and rising per capita income are likely to drive premiumisation across vehicle segments.
- As of fiscal 2020, India's population is among the youngest in the world, with a median age of 28 years. About 90% of Indians will still be below the age of 60 by CY 2020. CRISIL Research forecasts that ~64% of them will be between 15 and 59 years by 2031.
- Infrastructure improvements are expected to aid in automobile demand generation on account of employment generation, and improved accessibility and mobility.

Supply-side factors

- The Indian automobile ancillary sector is transforming itself from a low-volume, highly fragmented sector into a competitive industry, backed by competitive strengths and investments in research and development, resulting in technological improvements.
- The Indian automotive industry is characterised by strong competition among increasingly quality-conscious manufacturers. The large, highly skilled but low-cost manufacturing base makes partnering linkages with overseas players attractive. These strengths, coupled with India's well-established strengths in IT/software, make India an emerging player in this sector.
- The industry has been continuously upping 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. While major economies such as China, Malaysia, Thailand, India, and Indonesia saw an increase in exports to west, China gained a greater prominence as an export hub among Asian economies. However, as the Covid-19 pandemic hit the globe, global supply chains got severely impacted due to high dependence on China for several raw materials and intermediates, including auto components. Therefore, as global economies revive from the pandemic shock, global OEMs and Tier 1 auto component suppliers are increasingly focussing on diversifying their supplier base to de-risk their supply chains. With supply-chain realignment, several countries (including India) are likely to emerge as global outsourcing hubs in the coming years.
- Many domestic manufacturers have successfully entered into strategic alliances/collaborations, while others are actively formulating their plans. Many of the world's leading Tier 1 suppliers have set up manufacturing

facilities in India, including Bosch, Delphi, Visteon, and Denso. Additionally, some suppliers already meet global technical and quality standards at the Tier 1 level. Some of India's leading original equipment suppliers (OES) include TACO, Bharat Forge, Sundaram Clayton, and Sundaram Brake Linings.

- 2W automakers are introducing new models more frequently than before. This will also help drive the growth of the auto component industry since the process of manufacturing and designing will change, and component manufacturers can demand higher prices.

Policy support

Impact of BS-VI emission norms on auto component industry

Implementation of the BS-VI regulation has helped the auto component industry in terms of increased average realisation for components supplied.

Other upcoming emission norms line BS VI-B, real-time driving emissions is expected to drive up the realisation of the auto components, mainly engine and exhaust system.

Rise of electric mobility in India

The Government of India and state governments, through various ministries, have formulated several policies for the development of the EV sector in India.

- Reduction in the GST rate for EVs and charger
- Income tax deduction of Rs 1.5 lakh on EV loans
- Announcement of FAME-II subsidy for 2Ws, 3Ws, commercial PVs, and buses. Under FAME-II, the central government has also sanctioned 2,636 charging stations across 62 cities.
- Announcement of increase in subsidy under FAME-II in June 2021-
  - Increase in the benefit offered from Rs 10,000 per kWh to Rs 15,000 per kWh.
  - The maximum subsidy cap is also increased to 40% of the e-two-wheeler cost compared to 20% earlier while the scheme is extended till March 31, 2024, from the earlier end date of March 31, 2022.
- Announcement of the Phased Manufacturing Plan (PMP) to discourage imports and encourage localisation, in order to reduce the cost of electric components such as traction motors, traction motor controllers, battery packs, and battery management systems in India
- Various states have announced their specific EV policies offering incentives such as reduced rates for EV charging, rebates on road tax, interest-free loans for auto component manufacturers, and cost split for skill development

While these steps will certainly support development of the EV ecosystem in India, CRISIL Research believes EV adoption will be slow and gradual. Pace of electrification will also differ across vehicle segments. 3Ws and 2Ws are likely to lead electrification and achieve penetration levels of ~18% and 10% (penetration level in electric-two-wheeler can see an upside of 20%), respectively, by fiscal 2026. PV electrification is expected to reach 4-6% by fiscal 2026. The automotive component industry is unlikely to be highly impacted by EV adoption in the near term. EV adoption is likely to limited due to unavailability of adequate charging infrastructure and higher cost of acquisition of electric vehicles, apprehensions regarding life of key components such battery, range anxiety, resale value etc.

However, the shift to EVs offers a competitive advantage to auto component manufacturers having know-how of EV components.

Production-Linked Incentive scheme

The government has budgeted ~Rs 1.7 lakh crore as production-linked incentives to local manufacturing companies in 13 key sectors. The key sectors likely to benefit from the scheme include: automobiles, pharma, telecom, electronics, food, textiles, steel and energy. By incentivising production, subject to achieving the desired scale, the scheme aims to spawn a handful of globally competitive large-scale manufacturing units in the identified sectors. Furthermore, the government also hopes to reduce India's dependence on raw material imports from China. The scheme is expected to provide a boost to economic growth over the medium term and create more employment opportunities, as many of these sectors are labour-intensive in nature.

Sector	Segment	Budgeted (Rs crore)*	
Automobile	Advance chemistry cell (ACC) battery	18,100	44,038
	Automobiles and auto components	25,938	

**Approved financial outlay over a 5-year period*

Source: Government websites, CRISIL Research

The PLI scheme for the automotive industry intends to promote high-tech green manufacturing such as electric and hydrogen fuel cell vehicles. This scheme excludes conventional petrol, diesel, and CNG segments (Internal Combustion Engine) since these segments have sufficient capacity in India.

The PLI scheme targeting auto parts include the following component schemes:

- Champion Original Equipment Manufacturers (OEM) Scheme: It is a sales value linked plan, applicable to electric battery and hydrogen fuel cell vehicles of all segments.
- Champion Incentive Scheme: It is a sales value linked plan for advanced technology components, complete and semi-knocked down (CKD/SKD) kits, vehicle aggregates of two-wheelers, three-wheelers, passenger vehicles, commercial vehicles and tractors, including automobiles meant for military use and any other advanced automotive technology components prescribed by the Ministry of Heavy Industries – depending upon technical developments.

Impact of budget on the automotive sector

Key budget proposals

- Scrappage policy: vehicles to undergo fitness tests – PVs that are over 20 years old and CVs that are over 15 years old
- Import duty on specific auto components increased to 15% from 7.5%/10%
- Infrastructure push with an increase in outlay of ~10% vs fiscal 2021RE under the Ministry of Road Transport and Highways
- Rs 18,000-crore scheme to support augmentation of public bus transport services through a public-private partnership model to enable private players to finance, acquire, operate, and maintain over 20,000 buses

Budget impact

- PVs over 20 years old are quite limited in the population, while more incentives would be needed to promote scrapping of CVs over 15 years. For example, an incentive of over Rs 1 lakh would be needed for a medium CV (MCV, 18.5-tonne truck) in addition to the scrap value, for transporters to scrap their 15-year and older MCVs (MCVs have a high share in 15-year and older population). Without an incentive, we do not see the scheme providing impetus to CV sales.

- The higher import duty on select auto components is in line with the sharper focus on localisation. Given that average localisation for automobile OEMs is ~90%, only those with lower localisation, especially large-car and high-end SUV makers (representing <15% of PV sales), are expected to see cost escalation.
- CV demand, especially for tippers, will get some support from construction-led infrastructure push in sectors such as roads and urban infrastructure.
- Considering average state transport undertaking purchases (including hire purchases) over the past five years at ~10,500 units, a Rs 18,000-crore outlay to acquire and operate over 20,000 buses should support bus demand. It is important to understand the modalities of the scheme and the duration over which the procurement will be spread.

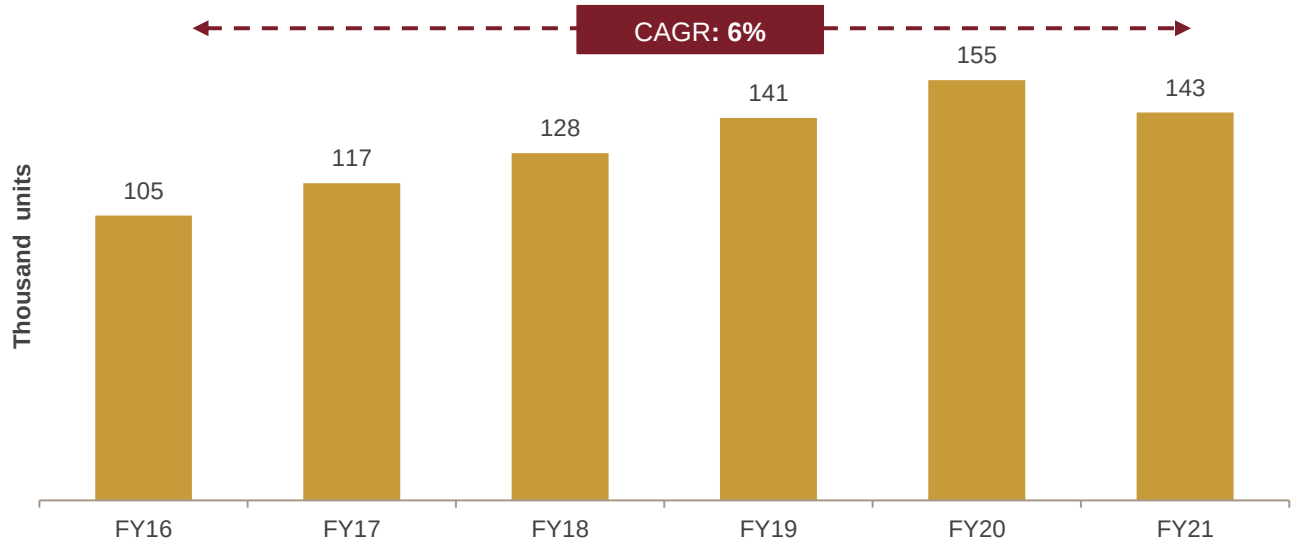
15 Review and outlook for the Indian genset industry

15.1 Review of the Indian genset industry (fiscal 2016 – 2021)

15.1.1 Historical production development (fiscal 2016 – 2021)

Indian genset production clocked remarkable growth of 10% CAGR between fiscals 2016 and 2020, however it declined by 8% yoy in fiscal 2021 due to pandemic. The high demand for power back up driven by government thrust on Infrastructure development such as metro rail, highway construction, rapid urbanization led to this growth. Government's 'Make in India' campaign to promote local manufacturing further aided the increasing demand for power backup. The other sectors like real estate, telecommunication, airport, marine, ports, construction and industrial sectors have also shown positive growth and it further accelerated domestic demand for generators.

Review of genset production (FY2016-21)



Source: Industry, CRISIL Research

Domestic demand for generators were driven by various industries such as infrastructure, real estate, telecommunication, healthcare, etc. Gensets are used in infra projects at construction stage as prime power source whereas gensets are used as a standby in several infra projects such as airports, ports, railways post operationalisation in case of power failure. Gensets are also used as standby power in case of data centers, hospitals, and commercial real estate projects. Factors which impacted generator demand in fiscal 2016-21 are as follows:

- National Infrastructure Projects such as in railway, road, irrigation, development of urban infrastructure and ports have driven the growth for genset industry.
- Investment for national highway increased from INR 405 billion in fiscal 2016 to INR 1,601 billion in fiscal 2021. Highway construction pace improved from 1,886 km in fiscal 2016 to 4,175 km in fiscal 2021 (increase of 5% yoy as compared to fiscal 2020) despite pandemic. This aided the demand for gensets.
- Investment in airport infrastructure mainly under UDAN (Ude Desh ka Aam Naagrik) scheme, led to demand for power generators. Since its inception, over 780 valid routes were allotted to the shortlisted airlines out of which only 359 regional connectivity routes are operational now.

- High demand for data centers due to digitization and roll out of higher speed, more reliable and faster 5G network expansion as well as IoT (internet of thing) infrastructure offers growth prospects for power generator market.
- Government's significant emphasis on key segments like data center, healthcare, infrastructure and commercial reality bounced back the demand for generator post Covid-19.

15.1.2 Impact of Pandemic

Nationwide lockdown and shut down of manufacturing plants and commercial complexes to stop the virus from spreading resulted in slowdown of genset industry. Construction activities got stopped due to labourers heading back home. Even the Indian Railways suspended its passenger services, which has further led to a reduced demand for genset and the generator market contracting by ~8% yoy in fiscal 2021.

On constant currency term manufacturing sector, declined by ~7% during FY21 owing to weakness in domestic and global demand due to Covid-19, temporary closure of production units during the lockdown and supply constraints. Sectors like health, pharma, technology (e-commerce, FinTech, EdTech, etc.) and telecom have shown growth potential during the pandemic and are likely to witness increased investment and robust growth in the future too.

End user market such as infrastructure and commercial buildings fared comparatively better but the overall demand remained subdued. Banking sector and data centres continued to drive demand for genset. The segment received further support from Government impetus to rural sector.

15.2 Classification of genset on the basis of power rating and key end user industry

The power provided by the generator sets is measured in kVA ratings. Larger the electricity requirement of the application, larger is the kVA rating of the generator needed to provide the backup.

On the basis of power rating capacity, genset are classified into major three segment –

- Low kVA segment: less than 125kVA
- Medium kVA segment:125kVA -750kVA
- High kVA segment: 750kVA and above

Segment wise key end user Industries-

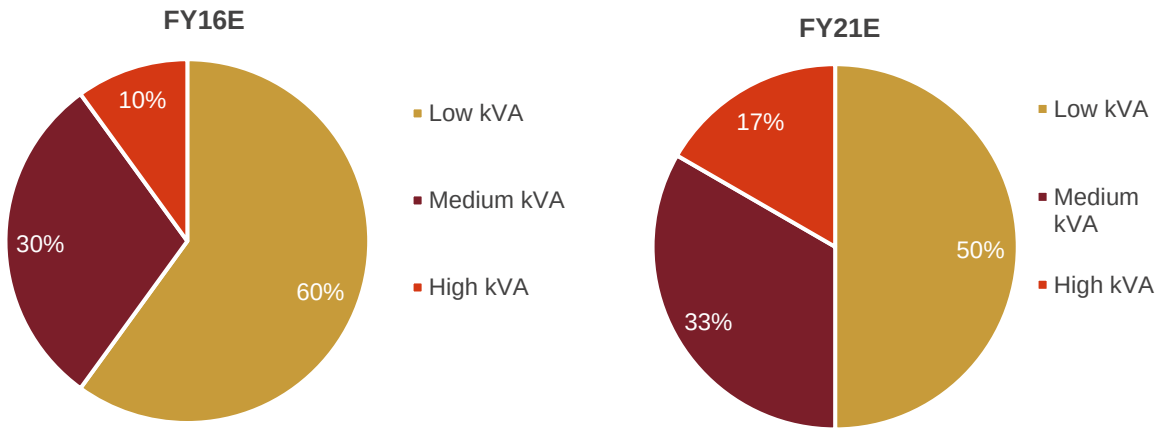
Power rating KVA	Key end user
Low kVA segment	Telecom
	Retail (Petrol pump, malls, stores)
	Hospitality
	Small restaurant
	Small Industries
	Commercial complex (shopping mall, corporate offices, etc.)
Medium kVA segment	Manufacturing
	Healthcare/hospitals
	Residential reality

Power rating KVA	Key end user
	Agriculture
	Aquaculture/poultry farm
	Large industries (Marine, mining and ports, construction)
	Infrastructure (Metro, rail, road)
	Real estate (residential/commercial)
	Healthcare
	IT/ITES
	Hospitality
High kVA segment	Large industries (Automobile, Iron/ steel, textile, cement etc.)
	IT/ITES/BFSI/E-commerce
	Real estate

Source: Genset manufacturers, industry interaction, CRISIL Research analysis

Another key differentiator of the power generation application as per usage are - prime power and standby power application. 10-15% of demand is for prime power whereas 85 to 90 % used as power back up. The running hours of power generation application are coming down significantly due to the government's efforts, especially in urban and developed metro cities, to bring down the power deficit. Power generation customers have focused more on reliability which means the generator set should be available to start generating backup power whenever the customer needs it.

15.2.1 Split by kVA power rating (fiscals 2016 – 2021E)



E - Estimates

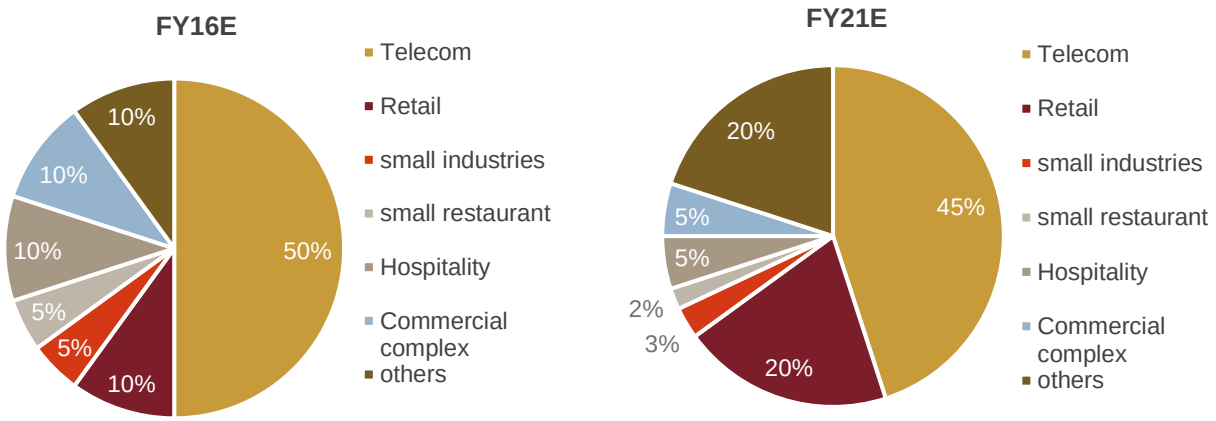
Source: Industry, CRISIL Research

Major demand comes from <125 kVA, which holds major account almost 60%, The pie got reduced to 50% due to increased availability of power, genset gradually being used for standby applications only. The usage life of genset is 10 to 15 years (for prime power usage), however if genset is used for standby application then it can last for 20 years with the support of timely services.

Share of medium and high segment improved, demand supported by growth in Infrastructure, IT /ITES, BFSI (Banking, financial Services and Insurance), data center capacity and digitization of economy.

Healthcare played a major role for increasing its share in medium kVA segment as increased in demand from hospitals, covid-19 center, vaccination centers and continuation of road construction despite pandemic.

Low kVA segment - by key end user application



Note: Estimated, Others include industries such as Agriculture, Irrigation, Aquaculture/ poultry farm etc.

Source: Industry, CRISIL Research

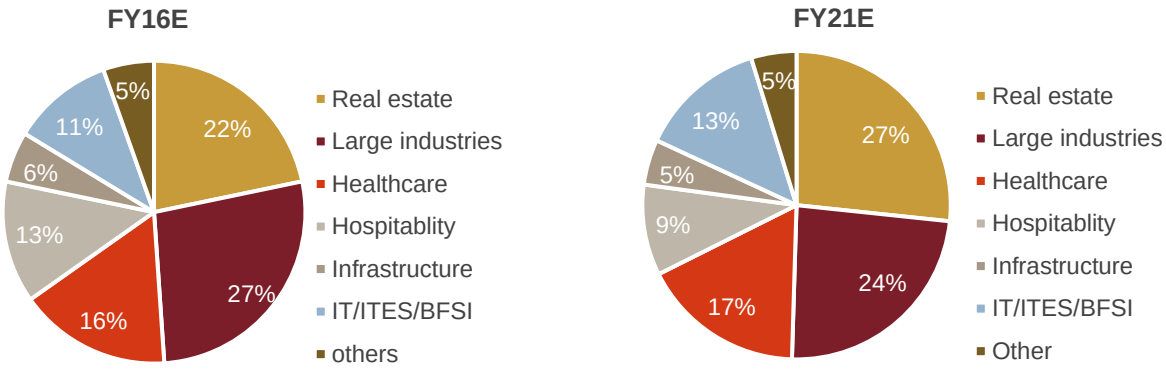
According to CRISIL Research, product offering for low kVA segment are most widely used by key end use industries such as telecom, retail, etc. Telecom sector accounts for the majority of the share in low kVA segment. The share of genset in telecom sector is high due to high load requirement as genset is used as a prime power, hence due to high utilization it requires replacement every 5 years after installation. This drives demand in low kVA genset segment.

Evolution of technologies such as 3G, 4G and 5G took place and increase in penetration of mobile phones took place in last 5 years. However, consolidation in the telecom service provider industry resulted into exit of some of the key players coupled with merger of Vodafone and Idea led to a reduction of tenancy ratio to 1.48 times to historical level.

There is a significant demand for rental generator as it constitutes 20% market share in low kVA power generator market. The end users for rental generators are basically home buyers, businesses, small construction sites go for low kVA genset on rental basis for uninterrupted power supply.

Key players in this segment are now offering gas powered genset due to environmental issues. These genset helps in reducing pollution, thereby benefiting the entire city. However, currently gas genset have very low penetration level of 2-5%. However, the spare parts used in gas genset are costly and it ultimately increases the price as compared to diesel gensets.

Medium kVA segment - by key end user application



Note: Estimated, Others include industries such as Agriculture, Irrigation, Aquaculture /poultry farm etc.

Source: Industry, CRISIL Research

Government increased focus on infrastructure building in addition to higher GDP growth has spurred manufacturing and private investment, genset industry recorded a growth of 6% CAGR between fiscal 2016 and 2021, majorly driven by higher offtake in medium and high-capacity generators.

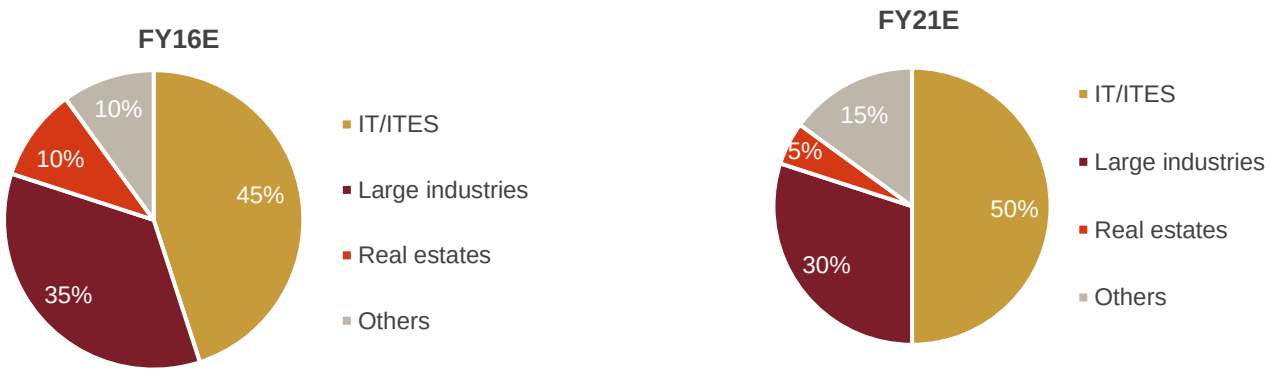
Real estate and large industries sector constitute around 50% of market for medium KVA segment. Demand for genset from healthcare has increased during Covid-19 due to increase in demand for generators from hospitals, Covid centers and vaccination centers.

Infrastructure sector also shown positive growth post pandemic as construction, activities resumed in second quarter of fiscal 2021 due to ongoing road construction and metro rail projects.

End user segments such as infrastructure and commercial buildings fared comparatively better but the overall demand remained subdued. Banking sector and data centres continued to drive demand for gensets.

Airport infrastructure investments are estimated to be INR 36,000 crore to 40,000 crores between fiscal 2017and 2021, led by a combination of green field and brown field projects.

High kVA segment - by key end user application



Note: Estimated, Other includes big infrastructure and residential projects with airport gated communities etc.

Source: Industry, CRISIL Research

Demand for high power kVA gensets are driven by data centres, large industries like railways, metro rail, industrial /manufacturing companies, IT /ITES (including Banks and financial institutes, ecommerce, data centres) and real estate. Large industry and ITES combined constitute 70-80% market share.

Data centre market in India has grown at a faster pace in last two to three years. Moreover, during pandemic, the work from home concept led to increase in demand for data centres, driving demand for high kVA power gensets.

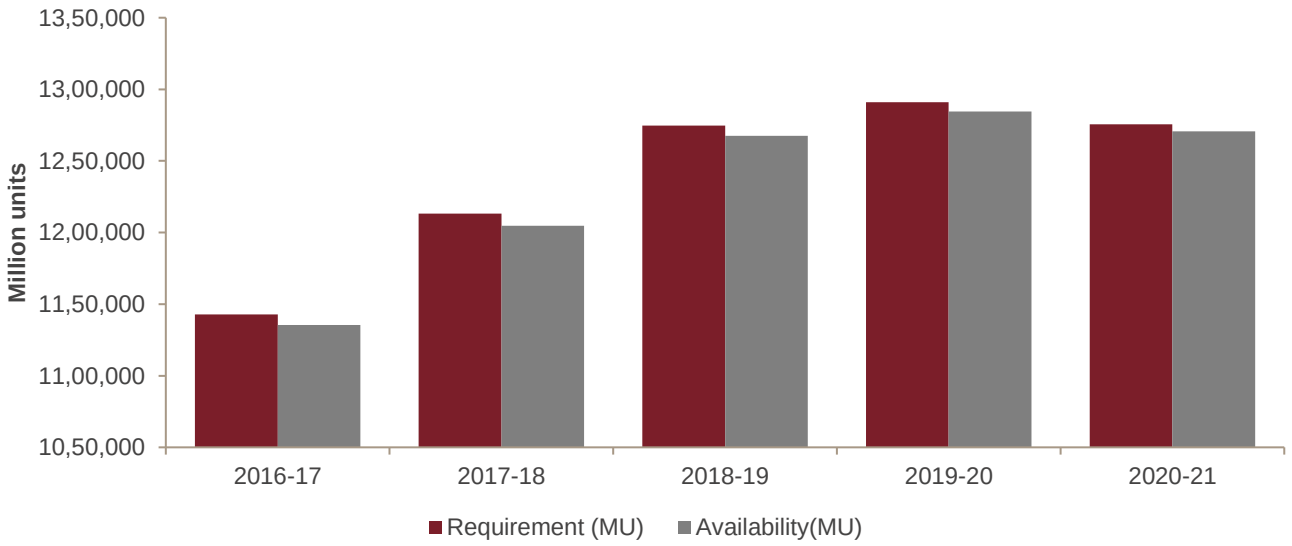
Large capacity industrial generators are also catching up in big infrastructure and residential projects with airports, gated communities, malls, manufacturing units, etc. are key end users and they need genset for uninterrupted power supply for big projects.

15.3 Historic growth drivers and trends

Continued power deficit drive demand for power generator

The overall power deficit of the country is expected to continue its declining trend, intensifying the shift in generator set usage towards a standby pattern. However, there was a sustained demand for power back up due to rapid urbanization, infrastructure and industrial development and Make in India Initiative to boost domestic manufacturing, the demand outlook for backup power continue to be optimistic.

Power requirement outpaces its availability



Note: Million Units (unit of energy)

Source: Central Electricity Authority (CEA), CRISIL Research

The power deficit in India has been hovering in the range of 0-1% levels. Reduction in power deficit leads to genset being used for standby applications.

Stable government and focus on investments in infrastructure, remains key driver for construction sector

High focus on infrastructure by the current government has aided the growth of genset. The adequate infrastructure in the form of road and railway transport system, ports, power, airport and their efficient working is also needed for integration of the Indian economy with other economies of the world.

Spending on construction activity is driven by major sectors like railways which constitute the highest capex amount INR 316 thousand crore followed by industrial construction 250 thousand crore between fiscal 2016-21. Followed by other industries such as power, oil and gas, etc.

Equipment used in construction work such as air compressors, hand drills, chain saws, battery chargers, electric welders etc. requires motive power, which is supplied by large capacity generators. At times the construction process is executed overnight which requires sufficient lighting and a lot of administrative tasks requiring computers which are also powered by these generators. Hence, driving the growth from these sectors.

Positive growth in Real estate accelerated demand for generators

Real estate sector comprises four sub sector housing, retail, hospitality and commercial. The growth of this sector is well complemented by the growth in the corporate environment and the demand for office space as well as urban and semi-urban accommodations. Healthy growth noticed from commercial real estate as the demand for office spaces and commercial establishment continue to increase with ease of conducting business improving.

Demonetisation, implementation of Real Estate Regulatory Authority (RERA) impacted the construction activities. The Covid-19 pandemic impacted the industry significantly. shortage of manpower in first quarter of fiscal 2021 due to migration of labour halted the production activity which ultimately impacted the genset demand as well.

Emission Norms for genset

All gensets undergo significant tests and certifications by manufacturing companies and central agencies. The emissions from the engine are kept in check, through guidelines set by the Central Pollution Control Board (CPCB) in collaboration with the Ministry of Environment and Forests. All manufacturers of genset require to possess a Type Approval certificate for each product and a COP (Conformity of Product) certificate for each series of product.

The CPCB norms has laid down emission regulations for genset as it emits oxides of nitrogen, carbon monoxide and particular matter which affects the quality of air and up to certain extent make it difficult for people to breath therefor government imposed strict norms on emission.

The CPCB-II norms, which came into effect on April 1, 2014, have tightened emission limits for diesel genset (DG sets) of up to 800 kW. The maximum permissible sound pressure level for genset with a rated capacity of up to 800 kW was set at 75 dB(A) at a distance of 1 metre from the enclosure surface. The noise norms came into effect on January 1, 2017.

CPCB-II norms for emission /smoke limit for genset

Power of Motor	Emission Limit in g/kW-hr (NOx+HC / CO / PM)	Smoke Limit (light absorption coefficient m-1)
Up to 19 kW	<= 7.5 / <= 3.5 / <= 0.3	<= 0.7
> 19 kW up to 75 kW	<= 4.7 / <= 3.5 / <= 0.3	<= 0.7
> 75 kW up to 800 kW	<= 4.0 / <= 3.5 / <= 0.2	<= 0.7

Note: CO- Carbon Monoxide, HC- Hydrocarbon, NOx- Nitrous Oxide, PM- Particulate Matter

Source: Central Pollution Control Board (CPCB), CRISIL Research

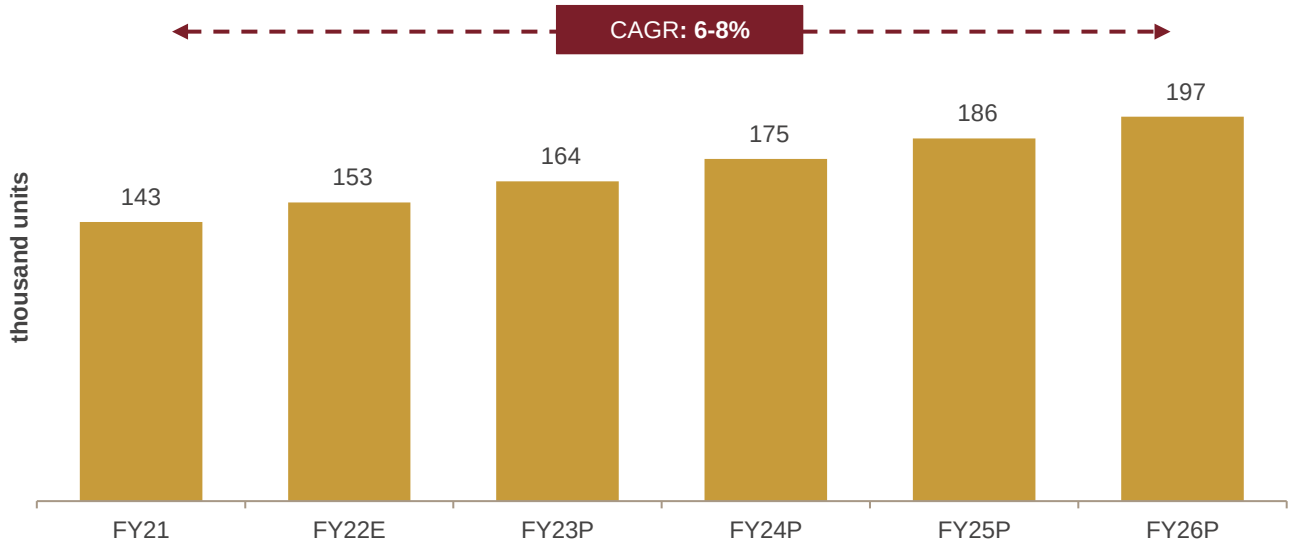
Genset are a massive source of emissions in the form of CO2, sulphur dioxide and particulate material that are not only detrimental to the environment, but also to our health. The hybridization of genset is one of the main focus of the industry. The principle is two-fold, first the load curve is stabilized, and secondly, the genset is automatically switched off and the consumers are powered by the on-board batteries. Both of these features amount to massive emission saving, as well as bonus cost savings for the genset operation.

15.4 Outlook on Indian genset industry (fiscal 2021 - 2026P)

15.4.1 Production outlook Fiscal 2021 - 2026P

CRISIL Research projects production of genset will see moderate growth of 6-8% CAGR during the fiscal 2021 to 2026 on a low base of fiscal 2021 due to pandemic. In fiscal 2021, the overall genset industry witness a slowdown owing to the ongoing to the pandemic. lower industry growth, hospitality sector majorly affected due to travel restriction, decline in telecom majorly in the first half of fiscal 2021 impacted the industry's growth. The market revival observed from fourth quarter of fiscal 2021 has set a momentum and industry is expected to have growth in fiscal 2022 over the fiscal 2021.

15.4.2 Demand outlook for genset for Fiscal 2021 – 2026P



Note: P - Projected

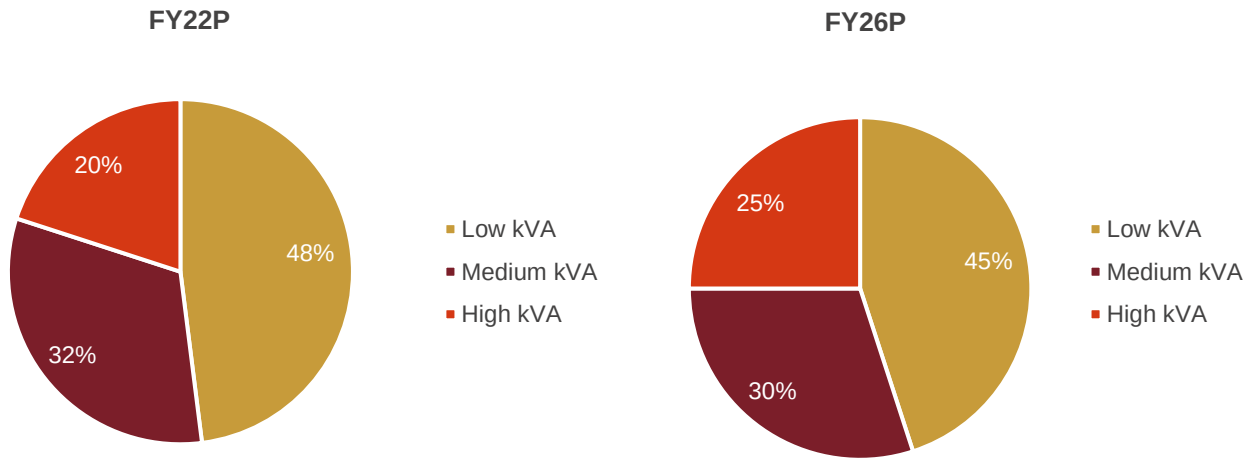
Source: Industry, CRISIL Research

Major factors for growth outlook in Fiscal 2022-26

- The power genset market shows promising growth opportunity from fiscal 2022-26. The market will remain positive as growth in housing, industrial and infrastructure will drive the demand for genset.
- Total budgetary allocation on capital expenditure in infrastructure for FY2021-22 saw a 20% rise over revised estimates for FY2021-22 to INR 5.64 lakh crore with roads and railways being the biggest beneficiaries.
- Real estate is one of the major key end user of genset, investment in building construction show optical jump in fiscal 2022, would still below pre covid levels. Investment are seen at ~INR 16.5 lakh crore to 17 lakh crores in fiscal 2022-26 as compared to ~INR15.8 lakh crore in fiscal 2016-2020. 50-60% recovery on a low base is projected for fiscal 2022 primarily differed capex from fiscal 2021 and affordable housing, returning the sector to pre-covid level of fiscal 2020.
- CRISIL research estimates construction investment to grow at 6-8%CAGR between fiscal 2022 and 2026. Covid-19 impacted construction investment by16-20% yoy for fiscal 2021 with sharp rebound of 25-30% recovery seen in FY22.

- The investment in railway would be led by dedicated freight corridor, network decongestion and the bullet train project. Central budgetary allocations to railways grew by 33% in fiscal 2022 over fiscal 2021 revised estimates with the rise much higher than 16% CAGR in investment over the preceding 5 years.
- Infrastructure development activity such as doubling of road construction, building metro rail systems and electrification of railways will drive the genset market. Growth in construction industry will also accelerate demand for construction site. Along with infrastructure, there is also significant development of charging station for electric vehicle which can further leads to demand for power genset, as back up for the power continuity, in case of outages.
- The Power genset segment is expected to gain traction as a result of increased spending on infrastructure (NIP pipeline), manufacturing (PLI Scheme), healthcare, data centres and telecom
- As India breached the landmark of 100 crore COVID-19 vaccinations. the pandemic has changed the day-to-day working of the world. After sudden lockdown across countries, when economies were closed and many sectors faced several challenges, the IT sector showed remarkable resilience and the concept work from home gain popularity. The pandemic has acted as a catalyst for digital transformation, adopting newer technologies like cloud, block chain, Artificial Intelligence (AI), machine learning, Internet of Things (IoT) and robotics. These is expected to drive the up the demand for gensets.

15.5 Split by kVA power rating (fiscals 2022P - 2026P)

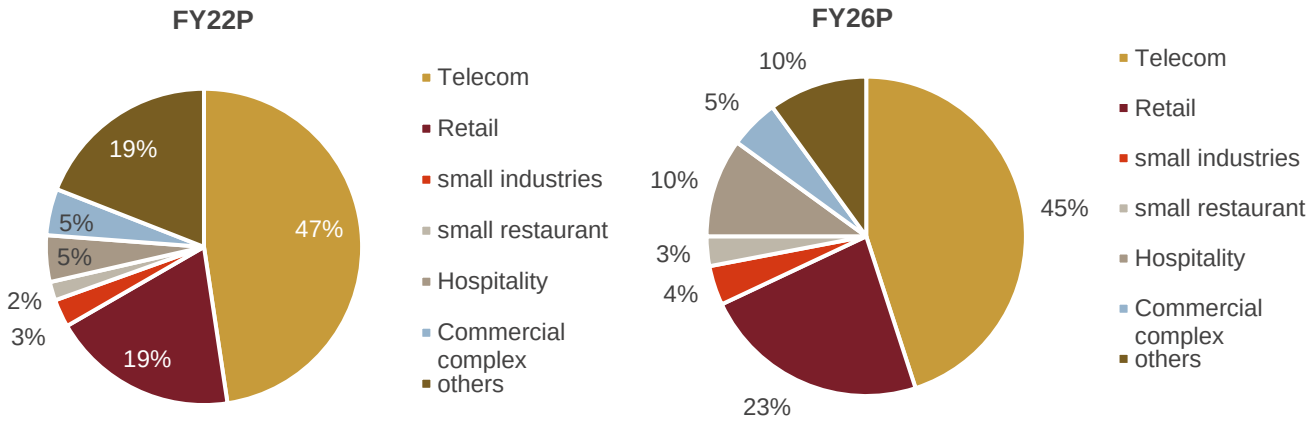


P - Projected

Source: Industry, CRISIL Research

Share of high kVA segment is expected to increase as genset manufacturers are continuously upgrading their technology and diversifying product segment into high kVA power due to government focus on healthcare, infrastructure, construction and real estate activity and these sectors will have sustainable demand for high kva power genset. Availability of power across India is expected to increase gradually, leading to low demand of low kVA genset as a prime power. This will lead to its lower share by fiscal 2026.

Low kVA segment - by key end user application



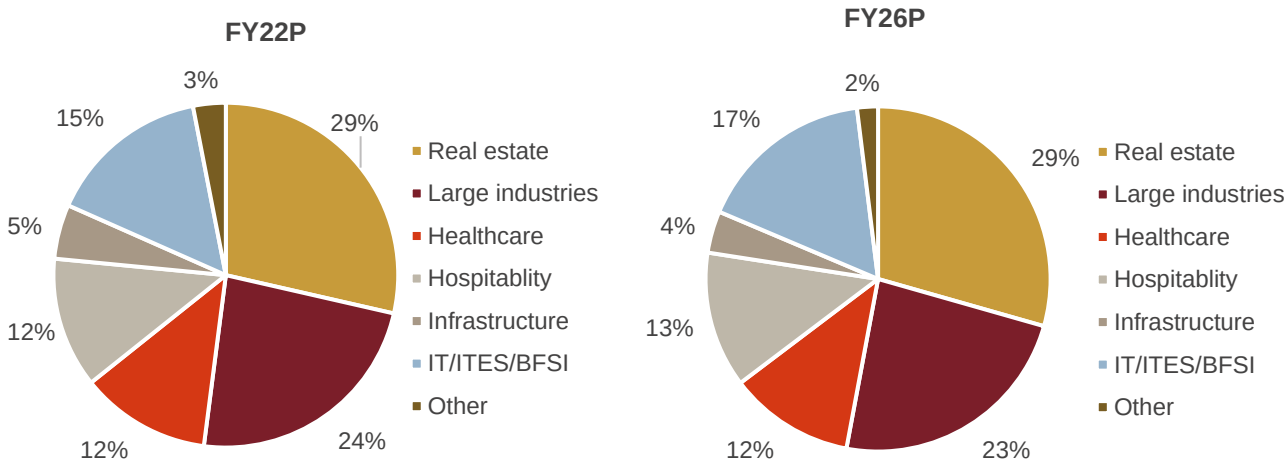
P - Projected

Source: Industry, CRISIL Research

Low kVA segment is expected to be dominated by telecom industry, followed by retail and other industries. Telecom sector share is expected to improve from 45% in fiscal 2021 to 47% in fiscal 2022 due 5G telecom upgradation in India. However, by fiscal 2026, the share is expected to stabilize at 45%.

Share of retail is expected to increase from 19% in fiscal 2022 to 23% in fiscal 2026.

Medium kVA segment - by key end user application



P - Projected

Source: Industry, CRISIL Research

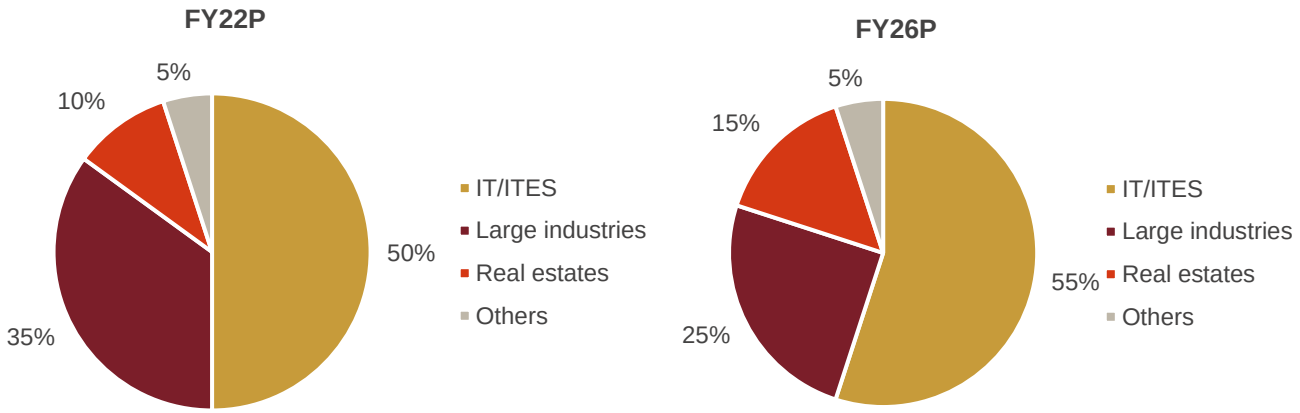
Penetration of IT and financial services is expected to grow leading to increase in its share in medium kVA segment. Share of real estate in this segment is expected to remain stable at 29% by fiscal 2026.

Covid crisis bought opportunity for genset to hospital, Covid centres and vaccine centres. More genset demand drive by hospitals and emergency services. Focus on health in coming years will lead to demand for gensets from healthcare centres.

The NIP program was launched by government with projected Infrastructure Investment of INR 111 lakh crore during the period 2020-25 with more than 60% of infrastructure projects coming from construction-intensive sectors such as roads, railways, irrigation, urban infrastructure, and ports. These would contribute to the long-term growth of construction and earth-moving equipment.

15.5.1 High kVA segment - by key end user application

In FY2022-26 the demand for high power >750kVA will increase by share constitute 20% segment share. Infrastructure, data centers, Mining, construction, Real estate and industry growth will drive the segment towards higher share.



P - Projected

Source: Industry, CRISIL Research

There is increase of servicing and maintenance of genset due to increase in usage. Digitization has also accelerated more demand for IT/ITES service demand will increase and this can further boost the usage of additional power back up.

According to Industry estimates, rural India is driving digital adoption, with a 45% increase in internet users, reaching 200 million from 2018 to reach 290 million in 2019, which is projected to cross the cumulative count (Rural and Urban) of 900 million users by the end of 2025. 5G will revolutionise the way the internet is consumed across India, especially in areas where we do not have Optic Fiber Cable (OFC) deployment. It will increase the use of mobile broadband and help smart factories connect and transact business, as well as enable the development of new-age applications. This will lead to high growth of data across the country and data centers will be required to power the storage and make it available round the clock. huge opportunity for genset.

The NIP program was launched by government with projected Infrastructure Investment of INR 111 lakh crore during the period 2020-25 with more than 60% of infrastructure projects coming from construction-intensive sectors such as roads, railways, irrigation, urban infrastructure, and ports. These would contribute to the long-term growth of construction and earth-moving equipment.

Healthcare, data centres and e-commerce segments have grown during the pandemic and we expect demand from these segments to grow till fiscal 2026. Alongside, sectors like infrastructure and manufacturing are showing recovery and we foresee an increase in investments here. With the recovery shown by the economy, the demand for power has also increased which is expected to translate into a strong growth for the backup power market. In

terms of usage pattern, we think that work from home and digitalization of the economy has led to an increase in dependence on uninterrupted power.

15.6 Key growth drivers and trends

15.6.1 Government strong project pipeline lead to sustainable demand for genset industry

Urban Infrastructure

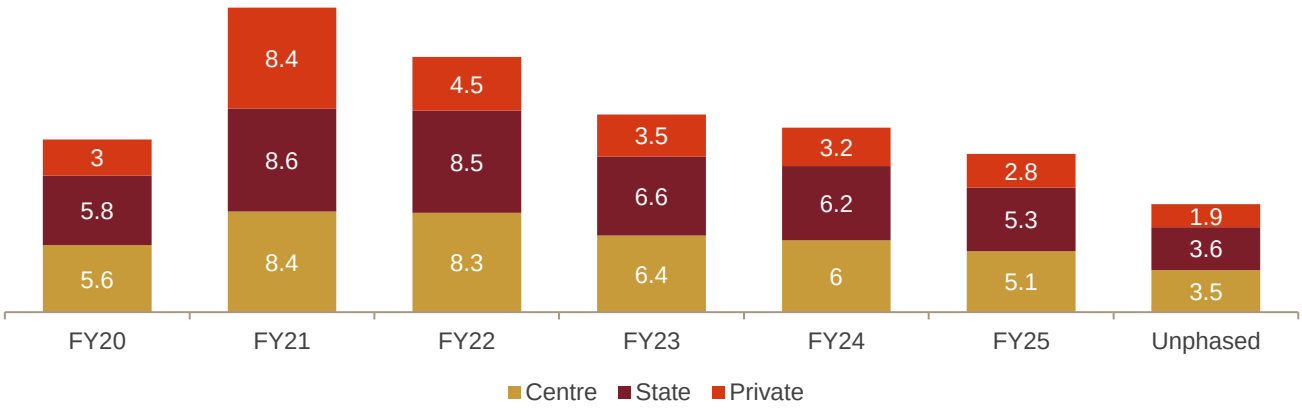
Government is working towards expansion of public transport in urban areas through metro rail networks. Two new technologies i.e., 'MetroLite' and 'MetroNeo' will be deployed to provide metro rail systems at much lesser cost in Tier-2 cities and peripheral areas of Tier-1 cities. Metro Rail projects offers sustainable opportunity for power backup

Metro rail requires uninterrupted power supply. Each station of a metro (such as Chennai metro rail) are currently provided with gensets for uninterrupted power supply.

National infrastructure Pipeline (NIP) for FY20-25

Government of India launched NIP for FY20-25 to facilitate world class Infrastructure projects to be implemented. The NIP was launched with projected Infrastructure Investment of INR 111 lakh crore during the period 2020-25 with more than 60% of infrastructure projects coming from construction-intensive sectors such as roads, railways, irrigation, urban infrastructure, and ports. These would contribute to the long-term growth of construction and earth-moving equipment.

Annual Investment and share of funding (INR lakh crore)



Note: Unphased: This means its spilling over beyond 2025, Since NIP is up to 2025, this part has been clubbed together and is not projected year wise.

Source: GOI, NIP, CRISIL Research

Increasing digitization will drive demand for big data centres

With increasing digitalization of the economy, the data centres industry witnessing robust growth in the era of virtualisation, cloud computing. The pandemic has led to a higher preference for digital services and online transactions, thus promoting digitalisation in many companies which spur the usage of data consumption. The government, private sector and individuals including a large student base started using digital means to operate

their business or profession or for education. As per Telecom Regulatory Authority of India (TRAI), the total number of Internet users in India has risen from 795.18 million at the end of December 2020 to 825.30 million at the end of March 2021.5G technology will fuel industry growth and innovation, harnessing the power of emerging digital technologies, such as IoT, cloud, AI and big data. Increased penetration of data centres due to better regulatory environment. India to emerge as a data centre hub fuelling growth of Fintech, Payment Gateways, e-commerce, over the top (OTT) sector

Railway electrification

With an aim to reduce its carbon footprint and reduce genset consumption, Indian Railways is looking towards electrification of its existing railway routes with targets set until 2022. This is expected to drive the short-term demand for Genset Electric Tower Cars (DETC) for the upcoming couple of years. However, the long-term demand for diesel-powered equipment such as Genset Electric Multiple Units, power cars and DETCs is at risk. Reduced usage of Genset engines/Power cars by Railways due to replacement of Genset Electric Multiple Units as a plan towards railway electrification by 2023.

Telecom sector drives growth opportunity in future FY22-26

Internet users is expected to increase due to work from home and online schooling. Increasing subscriber base and tele-density especially in rural areas will drive the growth.

Government allocated INR 14,200 crore for telecom infrastructure rollout in FY21-22. The finance ministry has allocated INR 9,000 crore to boost telecom connectivity across the country which includes high-speed Optic Fiber cable (OFC) or satellite-based broadband services across the 2.2 lakh village panchayats in the next financial year. The government allocating additional funds for expansion and strengthening of telecom networks in remote and unconnected areas. Improving broadband connectivity in villages will push Digital India Initiative.

Furthermore, demand for telecom services, especially data has seen significant growth. the telecom services industry has been witnessing a steady improvement in its performance led by demand for data services and migration of subscribers from 2G-4G and now 5G. The tower industry is set to explore growth opportunity through active infrastructure sharing apart from partial monetisation of existing tower spaces.

Digital Infrastructure

The significant push to building digital infrastructure and digitisation across both the private and public sector. In addition, the proposed investments in harnessing new technologies such as analytics, artificial intelligence (AI) and machine learning (ML) will further create new opportunities for the sector and act as a catalyst to the industry's efforts of being an intellectual tech hub for global markets.

Marine port development

One of the most ambitious project of Infrastructure 'Sagarmala' projects' which aims to develop new ports, efficient port linked industrialization and coastal community development. More than 574 projects (INR 6.01 Lacs Cr.) have been identified for implementation, during 2015-2035. As of 30-September-2019, a total of 121 projects (INR 30,228 Cr) have been completed and 201 projects (cost: Rs.309, 048 Cr.) are under implementation.

Generator market going through major phase shift

The generators market has changed significantly over the years. Today, customers get multiple fuel option in generators, which are budget-friendly. While conventional generators still has a major share, inverter generators, solar power generators are also catching up, especially in the construction market. The manufacturers have also started providing 24/7 breakdown assistance along with pre- and post-sales service which is making the overall experience effortless.

Other innovations related to the increasing power density of generator sets.” Power density” can be defined as kVA produced per litre of engine capacity. It can generate same amount of power with much smaller engine.

Key trends in power generator which is gaining momentum is environmental friendliness and compliance. Innovative design and energy efficiency improvement generator consumes less fuel than before, as the latest equipment can run for longer and more economically.

Customization and control are also playing important role in future demand, generators can be customized specifically suited to load requirement, thus avoiding wastage and additional cost. Generators can be fitted with Automatic Voltage Regulators (AVR) and Automatic Idle Control for specific use cases such as cold-weather climate. Control systems can offer the ability to remotely start and program the machine, display warnings, for instance, low fuel and other performance issues, in addition to delivering a broad range of analysis data.

Upcoming CPCB Norms IV+ for genset

CPCB IV+ emission norms expected to be implemented in Oct 2022.

Due to CPCB IV+ norms, prices of the genset are expected to increase by 20-40%. It can make high impact on low kVA segment, where key end users are price sensitive and can go for some alternative solution. However, it will not have much impact on high kVA segment in terms of price increase.

The alternative technology for genset engine is Natural Gas. The product with natural gas is even more expensive to meet the same emission standards. Global key players will be lesser impacted due to accessibility to advance technology as compared to local players.

DG set manufacturers are investing in research and development (R&D) to make products that can run on alternative fuels such as biodiesel, biogas and methanol to curb pollution caused by genset combustion. In addition, hybrid genset that can run on a combination of resources such as wind, solar, biomass, small/micro hydro and fossil fuels are being commercialized. These hybrid genset are typically equipped with batteries. With the cost of lithium-ion batteries reducing rapidly, their adoption is expected to increase.

Key regulatory changes

The Delhi Pollution Control Committee (DPCC) has directed all users of genset of 125 kVA and above capacity in the city to install emission control devices on their DG sets by October end 2021.The devices to be installed on DGset must be approved by one of the five CPCB recognized laboratories and cut the pollution by at least 70% of the emission. Such DG sets also have the option to shift to gas-based generator.

Considering environmental issue DG sets are completely banned in residential, commercial and industrial areas of Delhi NCR, exempting only the essential services. This norm comes into strict action to control the worsening quality of air due to genset. It will reduce the number of users of genset and hence will serve the purpose of minimising the damage to environment. Players have started to sell new range of gas genset (CNG or Natural Gas) powered product. The target key end users are telecom, retail, housing societies besides rental segment.

Future technology in Power generation

- Alternative Energy storage solution powered with lithium batteries are expected to enter power generation landscape. Lithium-ion penetration has kick-started in all of these applications, In the Uninterrupted Power Supply (UPS) segment, data centres are the early adopters of Li-ion batteries. Due to the smaller footprint of Li-ion batteries compared to valve regulated lead–acid, the extra space is utilised to accommodate more servers or network infrastructure.

- There is a significant investment going on hydrogen fuel on a global level. Other energy sources like wind and solar technology will not create major impact as a substitute for power back up genset market in long term at least for 10-15 years. So, these types of alternative fuels will not impact the conventional genset market for short to medium term.
- Currently enhancements of non-genset product development capability such as use of alternative fuels are being explored in the country one of them is Bio-waste management and providing hybrid solution to railways.
- Growing trend for construction equipment OEMs moving their drive train technologies to electrified vehicles due to banning genset combustion engines from inner-city zones.

16 Market sizing and outlook of relevant auto component segments

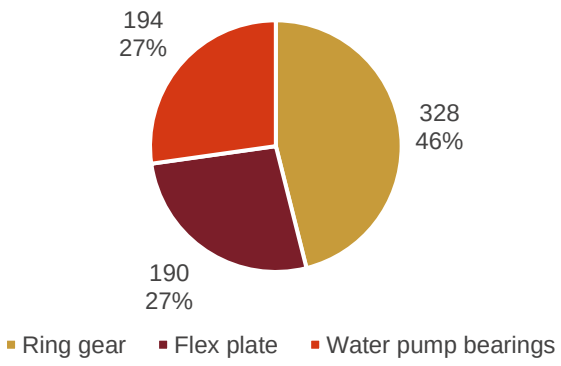
Ring gears, flex plates and water pump bearings are used in various applications such as passenger vehicle, commercial vehicle within automotive segment. Ring gears and water pump bearing also find applications in non-automotive applications such as tractors, marine, construction equipments, etc. Ring Gears, Flex plates and Water pump bearings are precision engineered products involving significant manufacturing value add.

As a part of this report, CRISIL Research has covered domestic market size covering OEM demand for ring gears, flex plates and water pump bearings. Market size of ring gears and water pump bearings includes PV, CV and genset demand. Whereas for flex plates, it includes demand from PV industry. Water pump bearings also have an aftermarket demand across various automotive and non-automotive applications, however the same has not been considered as a part of the report.

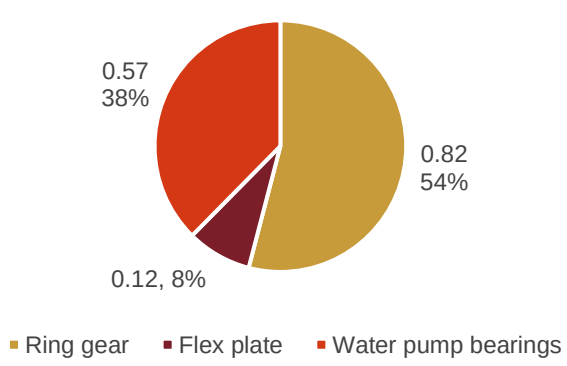
Further as a part of this report, CRISIL Research has also covered global market size covering OEM demand for ring gears, flex plates and water pump bearings in PV and CV segments.

In CY2020, this combined global market of ring gear, flex plates and water pump bearing is estimated at USD 713 million as on CY 2020 which is expected to reach USD 1,052 million by CY 2025 growing at 7-9% CAGR over CY 2020 to CY 2025 period. For India, in fiscal 2021, the combined domestic size of ring gears, flex plates and water pump bearing is estimated at Rs 1.5 billion which is expected to reach Rs 2.9 billion by fiscal 2026 growing at 13-15% CAGR over fiscal 2021 to 2026.

Total global market size, CY 2020: USD 713 million
(OEM demand for PV and CV)



Total India market size, FY 2021: Rs 1.5 billion
(OEM demand for PV, CV and gensets)



16.1 Ring gears

Ring gear also known as a starter ring gear transfers torque from the starter motor to the crankshaft of an engine in order to start the engine. Starter gear is either fitted on the periphery of the flywheel, in case of manual transmission, automated manual transmission and dual clutch transmission. The teeth of the ring gear are driven by a smaller gear (pinion) of the starter motor. The pinion engages the starter ring once in the start of an engine and once the engine is running the pinion withdraws.

Ring gears have diversified applications spanning across automotive & non-automotive applications such as PV, CV, earth moving equipment, industrial and power genset, lawn mower. Ring gears are used in ICE Engine, across both Manual & Automatic Manual Transmissions (semi-automatic transmission).

The realisation of a ring gear is mainly dependent on the size i.e. diameter, weight, raw material used. One ring gear is required per Ignition Combustion Engine (ICE) engine. Ring gear is a part of transmission assembly, hence there won't be a significant impact of emission norms on the product.

16.1.1 Indian ring gears market

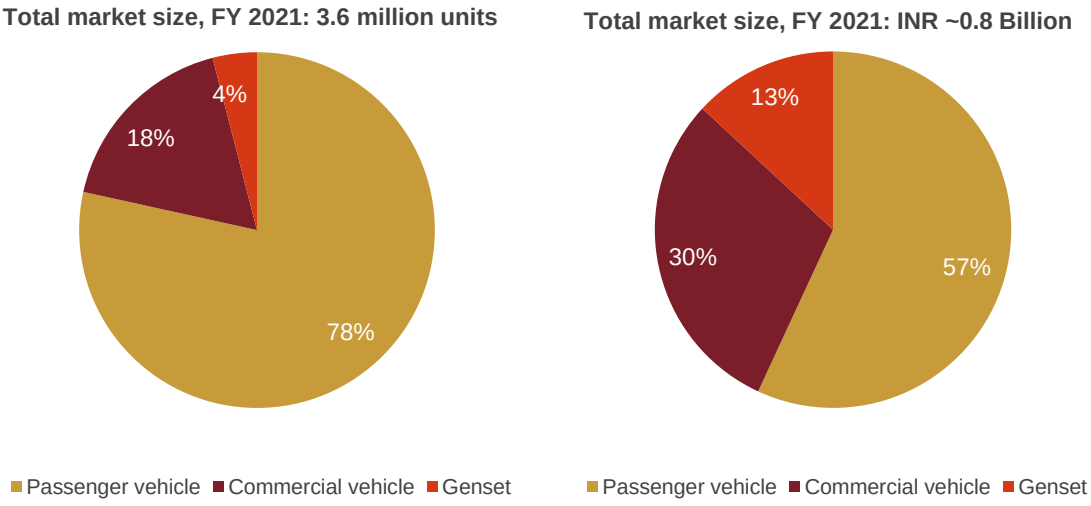
Review, fiscal 2021

Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The below market size, captures demand for ring gears in passenger vehicles, commercial vehicles and genset demand from OEMs.

CRISIL Research estimates the size of the ring gear industry (catering to OEM demand) at 3.6 million units in fiscal 2021. Passenger vehicle industry occupies the highest share of 78%, followed by commercial vehicle industry at 18% and genset at 4%.

Per unit realisation is higher in case of gensets and commercial vehicle as compared to passenger vehicle due to higher weight and dimension requirement. Therefore, the size of the ring gear industry (catering to OEM demand) in value terms is estimated at Rs 0.8 billion in fiscal 2021. Passenger vehicle industry still occupies the highest share of 57%, followed by commercial vehicle industry at 30% and genset at 13%.

Ring gear industry split by application in volume and value terms (OEM demand), fiscal 2021



NOTE: Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand for ring gears across passenger vehicles, commercial vehicles and genset demand from OEMs.

SOURCE: Industry, SIAM, CRISIL Research

Key players

Key players in this industry includes Amalgamation Repco Ltd., ARGL Ltd., Flywheel Ring Gears Pvt. Ltd. and Ring Plus Aqua Ltd. Ring Plus Aqua Ltd. is estimated to occupy highest volume share of 52-56% in domestic PV industry and of 46-50% in domestic CV industry (share represents supply to OEM for domestic production) in fiscal 2021.

OEMs play a vital role in selection of ring gear suppliers through tier I component manufacturers. The validation process for vendor on boarding is stringent and lengthy. Customer requirements with quality, cost and delivery are very specific to individual customers and models. The program pipelines continue multiple years, typically till the vehicle model stays in production. As a result, OEM and tier I players prefer procuring from regular suppliers entering into multiyear contracts which results in customer stickiness and create strong barriers to entry.

Outlook, fiscals 2021- 2026

CRISIL Research estimates overall PV production to grow at a 7-9% CAGR from fiscal 2021 to 2026, and reach ~4.5 million units by fiscal 2026. Over short to mid-term COVID-19 induced demand for personal mobility is likely to support PV sales, over mid to long-term, moderate macroeconomic growth, increasing disposable income, relatively stable cost of vehicle ownership, and lower fuel prices are likely to drive demand for passenger vehicles.

Production of CVs in India is expected to increase at 12-14% CAGR over fiscals 2021 to 2026. MHCV production is expected to grow by CAGR of 16-18% and the LCV segment is expected to show CAGR growth of 11-13% in fiscal 2026 over fiscal 2021 production.

Improving industrial activity, steady agricultural output, rising domestic consumption and the government's focus on infrastructure will drive the growth of MHCVs. However, further volume growth will be limited due to efficiencies achieved post introduction of the GST regime, better road infrastructure, along with commissioning of the DFCs.

LCV growth will be driven by higher private consumption, low penetration levels providing headroom for growth, greater availability of redistribution freight, and improved finance availability post fiscal 2021.

Domestic bus sales is expected to grow at a healthy pace till fiscal 2026 on a very low base of fiscal 2021 due to increasing demand for inter-city/-state travel, aided by better road infrastructure, and higher personal disposable incomes.

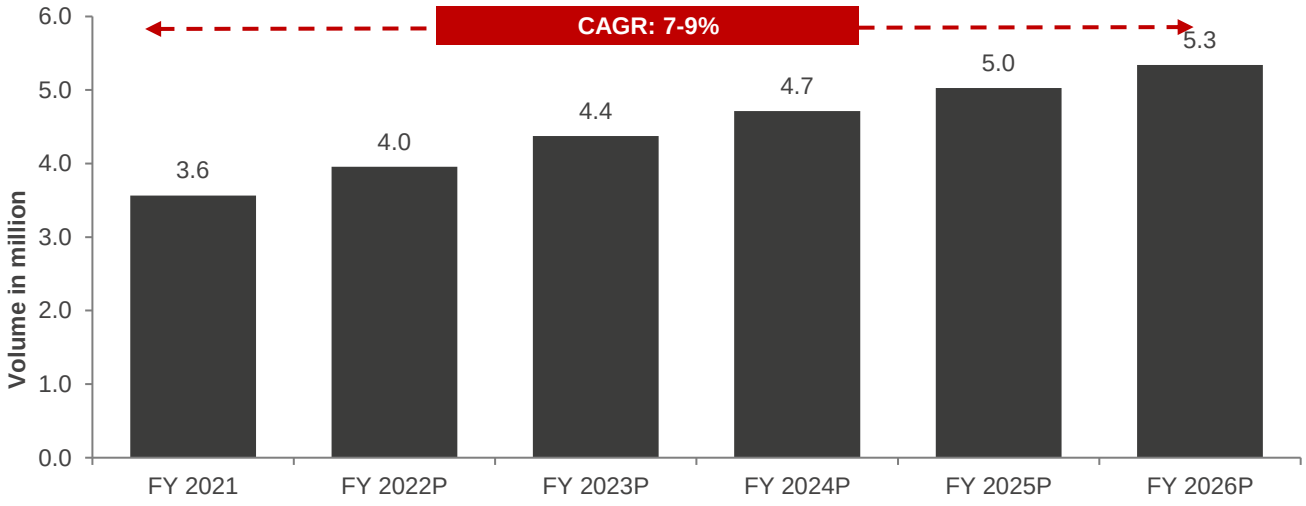
CRISIL Research projects production of genset will see growth of 6-8% CAGR during the fiscal 2021 to 2026 on a low base of fiscal 2021 due to pandemic. Demand for gensets will be seen from end use applications such as housing, industrial, infrastructure. Growth will also be seen from hospitals and data centres.

Shift to automatic transmission where preferred transmission technologies include AT and CVT are likely to impact demand for ring gears. AT and CVT is likely to capture 11-13% share by fiscal 2026 from 8-10% share in fiscal 2021 for PV, it expected to register a CAGR of 14-16% between fiscal 2021 and 2026. Share of AT and CVT in CV is expected to remain miniscule. However, for a player who also has flex plate in its product portfolio, shift to automatic transmission presents additional opportunity even as ring gears are replaced with flex plate. Flex plate command almost 2-3x realization as compared to ring gears

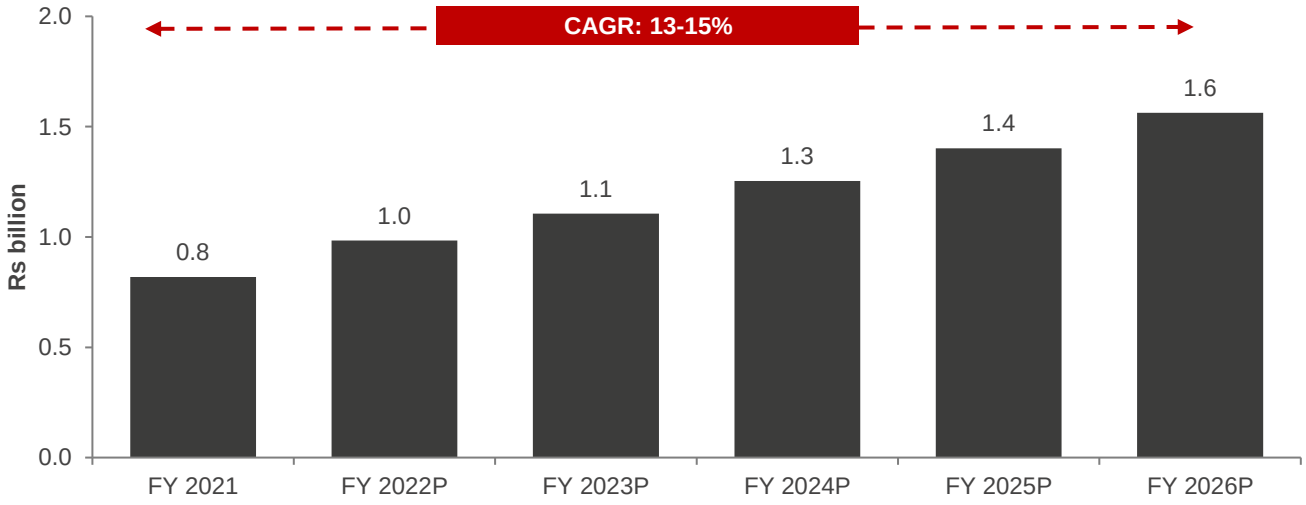
Ring gear demand is expected to get impacted as electric vehicles do not have any application for ring gears. Adoption of electric vehicle is expected to be higher on two-wheeler as compared to passenger or commercial vehicles. Impact of electrification on demand for ring gears will be limited as EV penetration is expected to reach 4-6%, 3-5% in PV and CV respectively by fiscal 2026 in India due to higher cost of acquisition and lack of charging infrastructure is expected to hinder EV adoption in India. Overall impact of ring gear demand is expected to be limited in India due to slower EV adoption.

Therefore, despite rising electrification, demand for ring gears is expected to grow at a CAGR of 7-9% from 3.6 million-unit volume to 5.3 million units. In value terms, industry is expected to grow at a CAGR of 13-15% and be Rs 1.6 billion industry by fiscal 2026. Here, the share of commercial vehicle is expected to grow strong because of the higher volume growth expected on a low base of fiscal 2021.

Indian ring gears market outlook (million units) (fiscal 2021-2026P)

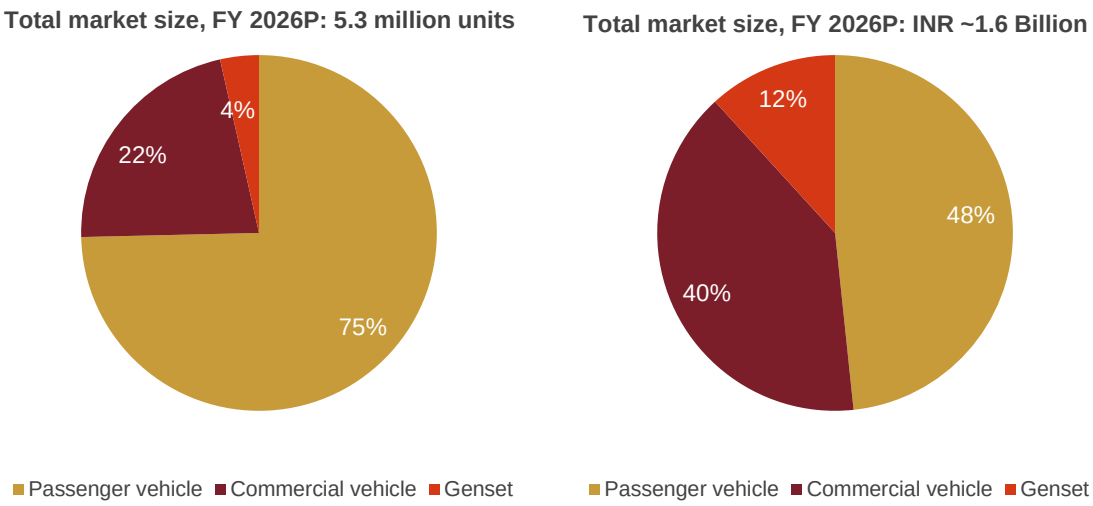


Indian ring gears market outlook (Rs billion) (fiscal 2021-2026P)



SOURCE: Industry, SIAM, CRISIL Research

Ring gear industry split by application in volume and value terms (OEM demand), fiscal 2026



NOTE: Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand for ring gears in passenger vehicles, commercial vehicles and genset demand from OEMs.

SOURCE: Industry, SIAM, CRISIL Research

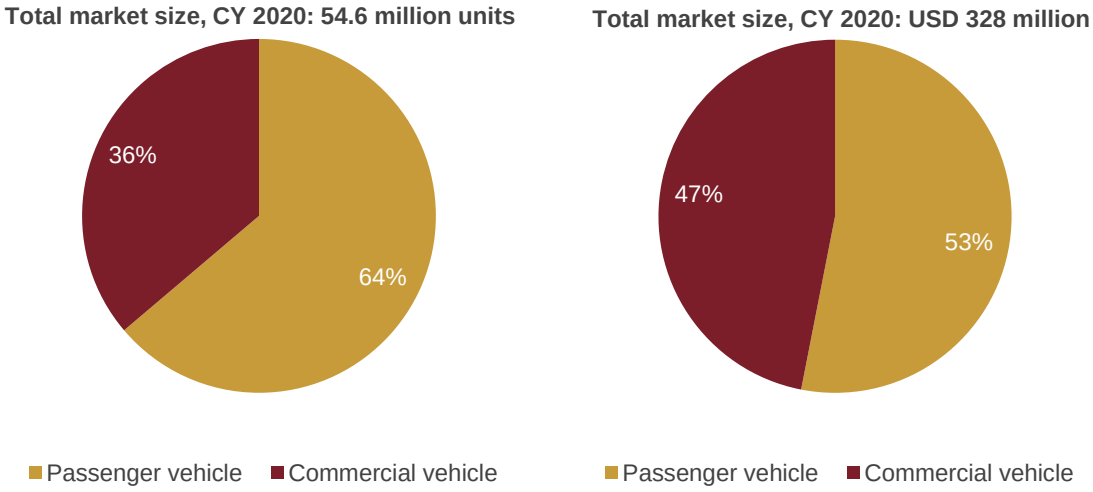
16.1.2 Global ring gears market

Review, fiscal 2021

Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as tractors, marine, construction equipments, etc. Globally the realisation of ring gears is higher as compared to domestic market. The below market size, captures passenger and commercial vehicle from OEM.

CRISIL Research estimates the size of the global ring gear industry (catering to OEM demand) at 54.6 million units and USD 328 million in CY 2020. Volume-wise, passenger vehicle industry occupies 64% share whereas commercial vehicle share is 36% in CY2020. However, due to higher realisation of ring gears in commercial vehicle industry as compared to passenger vehicle industry, passenger vehicle industry occupies 53% share whereas commercial vehicle share is 47% in CY2020 in value terms.

Ring gear market split by vehicle category in volume and value terms (OEM demand), CY 2020



NOTE: Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as tractors, marine, gensets, construction equipments, etc. The below market size, captures demand for ring gears in passenger and commercial vehicles from OEM.

SOURCE: Industry, OICA, CRISIL Research

Key Players

Global players such as Benda-Kogyo Co. Ltd., Dahua Machine Manufacturing Co. Ltd., KLS Ljubno d.o.o and Ring Plus Aqua Ltd. are present in ring gear manufacturing.

Outlook, CY 2020- 2025

Global passenger vehicle industry is expected to grow at a CAGR of 7-9% from 2020 till 2025. Industry growth will be aided by economic revival across nations after seeing a hit in 2020 due to pandemic. Expected increase in personal consumption and current low penetration of the passenger vehicle in developing nations will aid this growth. However, rapid urbanisation and traffic jams in metro cities, growing presence of ride hailing companies, push to public transport infrastructure creation is expected to keep demand for cars in check.

The global CV industry is expected to grow at a 10-12% CAGR over 2020-2025, growth will be led by economic revival across nations, following the recovery from the pandemic. Manufacturing activities are expected to pick up across nations, mainly underdeveloped and developing. Further, a push towards public infrastructure to de-congest roads will drive demand for buses.

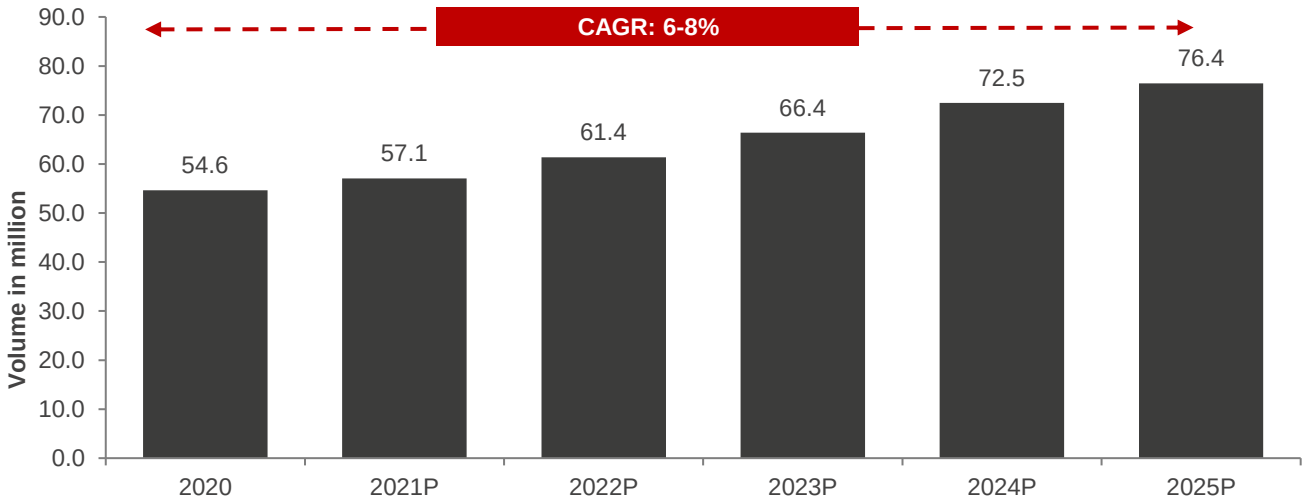
Shift to automatic transmission where preferred transmission technologies include AT and CVT are likely to impact demand for ring gears. AT and CVT is likely to capture 36-38% (increase from 34-36% in fiscal 2021- growing at 6-7% CAGR from CY2020 to 2025), 2-4% (decline from 4-6% share in fiscal 2021 growing at <1% CAGR) share by fiscal 2026 in PV and CV respectively. However, for a player who also has flex plate in its product portfolio, shift to automatic transmission presents additional opportunity even as ring gears are replaced with flex plate. Flex plate command almost 2.5-3x realization as compared to ring gears

Global penetration of electric powertrain (pure electric) in PV industry is expected to reach 13-15% in 2025 from 2-4% in 2020, again led by North America and Europe. The collective target of the EV30@30 signatories to achieve 30% sales share in 2030 for light-duty vehicles, buses and trucks will drive the EV adoption rate. Apart from reduced emissions and low maintenance cost, the other driving force for the fast adoption of EV is the advancements in new EV car models by leading manufacturers.

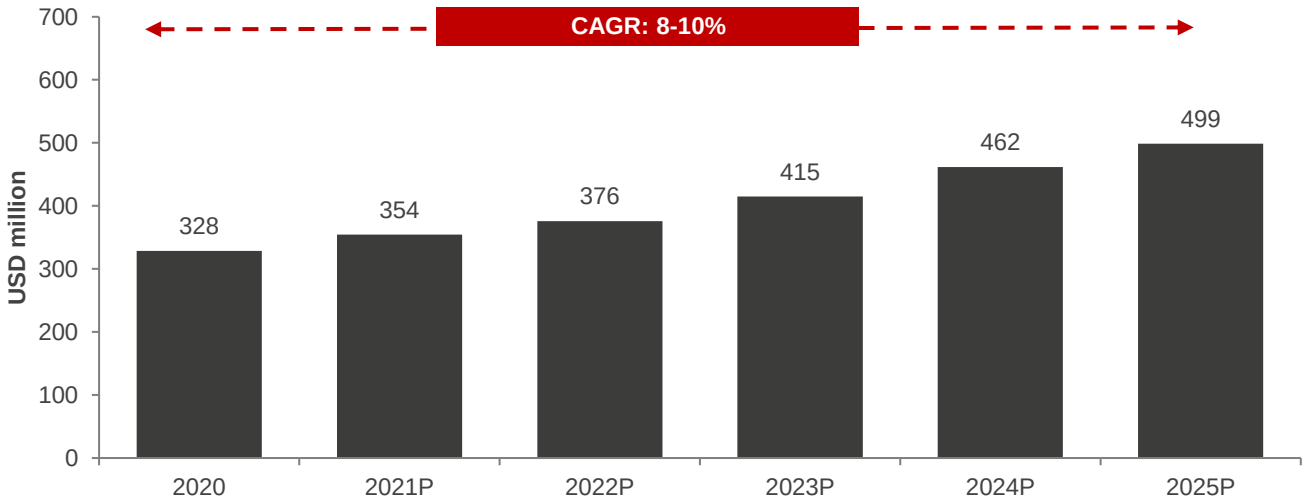
Notably, the transportation sector is one of the largest contributors to greenhouse gas (GHG) emissions. Policymakers and OEMs are increasingly moving towards green mobility by developing new technologies such as BEVs, hybrids, etc. and providing subsidies to promote green technology. However, penetration of electric CV (pure electric) is expected to increase from 2-4% in 2020 to 4-6% by 2025

Despite rising electrification demand for ring gears globally in PV and CV applications is expected to grow from 54.6 million units to 76.4 million units at a CAGR of 6-8% whereas value growth is expected to be 8-10% CAGR between 2020 and 2025 and be USD 499 million industry by CY 2025. The share of commercial vehicle is expected to increase by 2025 due to expected higher volume growth as compared to passenger vehicle.

Global ring gears market outlook (million units) (CY 2020-2025P)



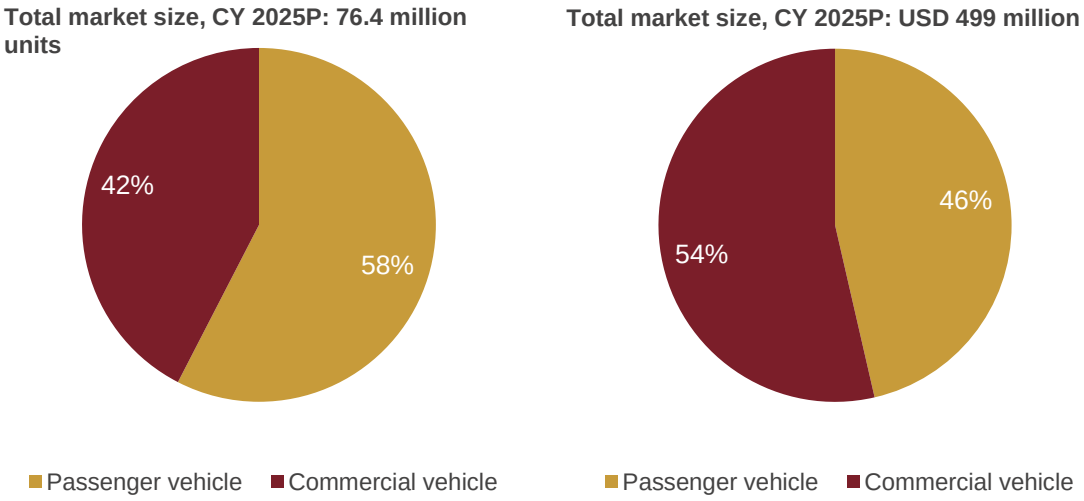
Global ring gears market outlook (USD billion) (CY 2020-2025P)



NOTE: Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as tractors, marine, gensets, construction equipments, etc. The below market size, captures demand for ring gears in passenger and commercial vehicles from OEM.

SOURCE: Industry, OICA, CRISIL Research

Ring gear market split by vehicle category in volume and value terms (OEM demand), CY 2025P



NOTE: Ring gear finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as tractors, marine, gensets, construction equipments, etc. The below market size, captures demand for ring gears in passenger vehicles, commercial vehicles from OEMs.

SOURCE: Industry, OICA, CRISIL Research

16.2 Flex plates

Flex plate is used to connect the output of an engine to the input of a torque converter of an automatic transmission of a vehicle. Flex plate is used in automatic transmission type such as for torque converter and Continuously Variable Transmission (CVT) technology, whereas flywheel is used in manual transmission. Flex plates are generally thinner and lighter than flywheels due to the smooth coupling action of the torque converter and the elimination of the clutch surface.

In fully automatic transmission, driver of a vehicle is not required to change forward gears under normal driving conditions. Whereas, in conventional manual transmission, driver is required to change the gear as well as perform clutch movement in order to change the gears. Various technologies are considered as automatic transmission, such as Automated Manual Transmission (AMT), CVT, Intelligent Manual Transmission (iMT), Dual Clutch Transmission (DCT), Dedicated Hybrid Transmission (DHT) – used in hybrid vehicles, etc.

Automatic transmission is favoured in passenger vehicle due to ease of driving specially in urban regions.

16.2.1 Indian flex plates market

Review, fiscal 2021

In India, automatic transmission is being preferred only in passenger vehicle whereas commercial vehicles remain highly underpenetrated. While automatic manual transmission (AMT) technology dominates automatic transmission sales in India due to its lower cost; torque convertor and CVT technology is being preferred in premium and luxury vehicles like Baleno, City, Verna, Fortuner, Creta, Innova, Thar, Harrier etc as these technology provide superior driving experience as compared to AMT. Penetration of automatic transmission (torque converter and CVT) in passenger vehicle is estimated to be 7-9% as on fiscal 2021. In technology such as either manual transmission or AMT, ring gears will find its application.

Manual transmission dominates Indian Commercial vehicles industry due to affordability and relatively lower issues with respect to availability of drivers as compared to developed markets. Even in future as automatic transmission

picks up in India, Automated Manual Transmission is likely to be technology of choice where flex plate is not required.

Key players

Currently flex plates are largely imported in India. Ring Plus Aqua Ltd. is the sole domestic manufacturer of flex plates in India Ring Plus Aqua Ltd. is estimated to cater to 25-27% of flex plate volume demand for PV domestic production as on fiscal 2021.

Outlook, fiscals 2021- 2026

CRISIL Research estimates overall PV production to grow at a 7-9% CAGR from fiscal 2021 to 2026, and reach ~4.5 million units by fiscal 2026. Over short to mid-term COVID-19 induced demand for personal mobility is likely to support PV sales, over mid to long-term, moderate macroeconomic growth, increasing disposable income, relatively stable cost of vehicle ownership, and lower fuel prices are likely to drive demand for passenger vehicles.

Production of CVs in India is expected to increase at 12-14% CAGR over fiscals 2021 to 2026. MHCV production is expected to grow by CAGR of 16-18% and the LCV segment is expected to show CAGR growth of 11-13% in fiscal 2026 over fiscal 2021 production.

Improving industrial activity, steady agricultural output, and the government's focus on infrastructure will drive the growth of MHCVs. However, further volume growth will be limited due to efficiencies achieved post introduction of the GST regime, better road infrastructure, along with commissioning of the DFCs.

LCV growth will be driven by higher private consumption, low penetration levels providing headroom for growth, greater availability of redistribution freight, and improved finance availability post fiscal 2021.

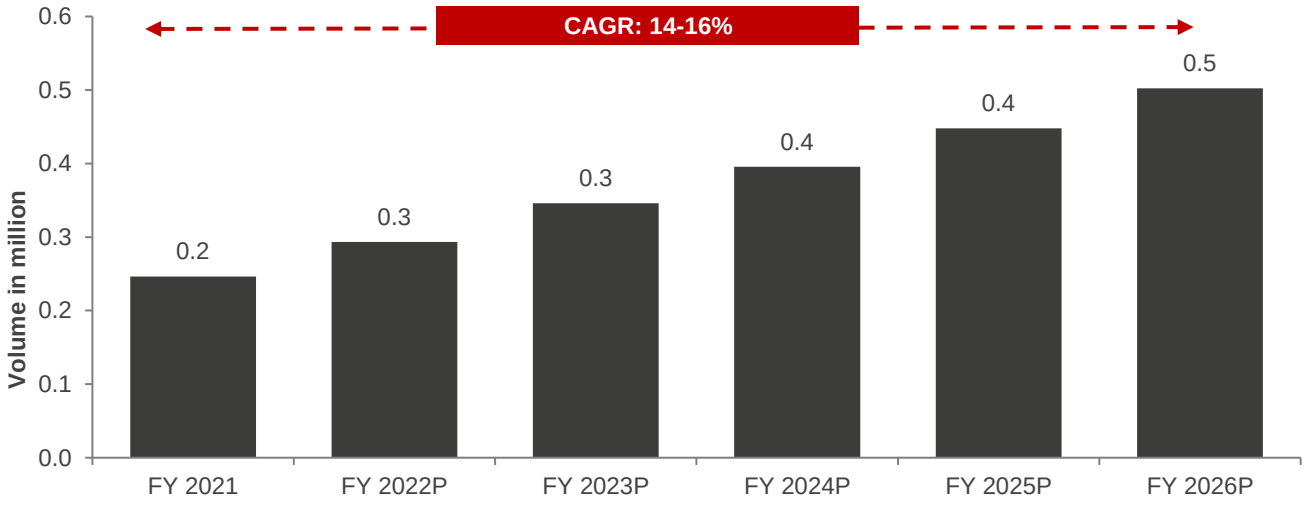
Domestic bus sales is expected to grow at a healthy pace till fiscal 2026 on a very low base of fiscal 2021 due to increasing demand for inter-city/-state travel, aided by better road infrastructure, and higher personal disposable incomes.

Growing affordability, rising traffic congestion in urban areas and need for driving convenience is driving a shift towards automatic transmission vehicles which in turn is expected to drive demand for flex plate. Exports from India to geographies such as Mexico, Europe, etc. is expected to support the demand of flex plates as these markets have higher penetration of automatic transmission vehicles Penetration of automatic transmission and CVT is expected to reach 10-12% by fiscal 2026 from 7-9% in fiscal 2021 growing at 14-16% CAGR over fiscal 2021 to 2026.

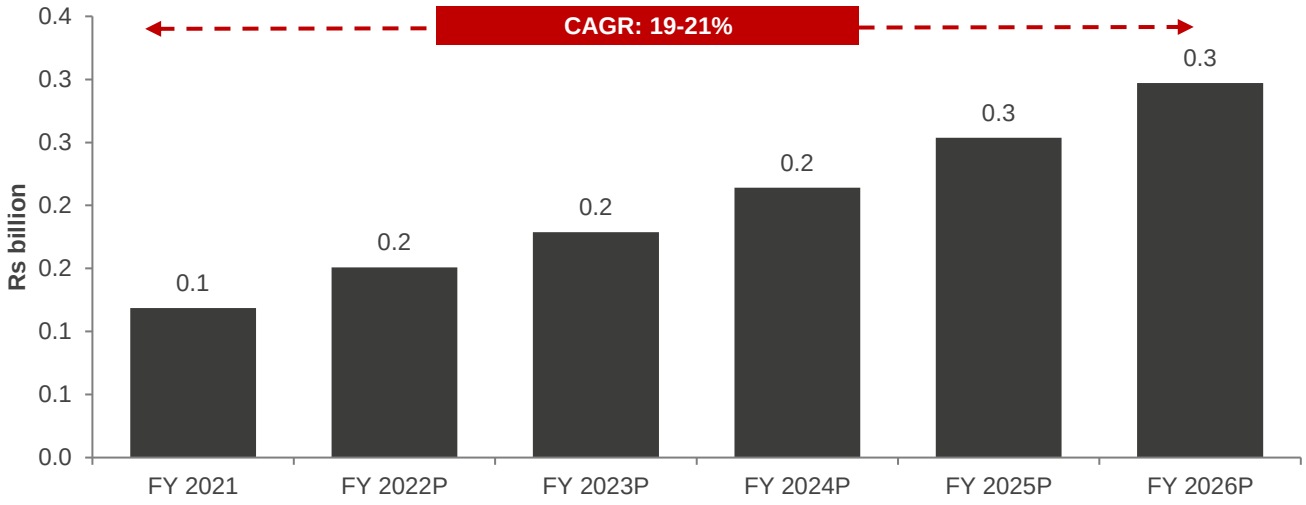
Flex plates demand is expected to get impacted as electric vehicles do not have any application for flex plates. Impact of electrification on demand for flex plates will be limited as EV penetration is expected to reach 4-6%, 3-5% in PV and CV respectively by fiscal 2026 in India due to higher cost of acquisition and lack of charging infrastructure is expected to hinder EV adoption in India. Overall impact on flex plates demand is expected to be limited in India due to slower EV adoption.

Despite rising electrification demand growth for flex plates is expected to be at a pace of 14-16% CAGR between fiscal 2021 and 2026, due to expected rapid increase penetration of automatics in PV particularly, volume is expected to grow from 0.2 million units to 0.5 million units. By value, industry is expected to grow by a robust 19-21% CAGR and be Rs 0.3 billion industry by fiscal 2026.

Indian flex plate market outlook (million units) (fiscal 2021-2026P)



Indian flex plate market outlook (Rs billion) (fiscal 2021-2026P)



SOURCE: Industry, SIAM, CRISIL Research

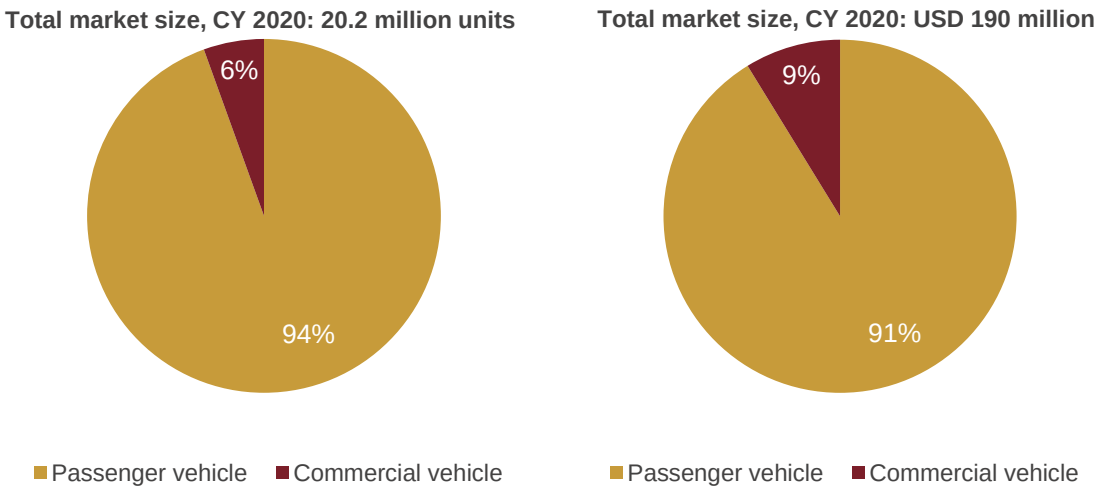
16.2.2 Global flex plate market

Review, fiscal 2021

CRISIL Research estimates the size of the flex plate industry (catering to OEM demand) at 20.2 million units and USD 111 million in CY 2020. Globally, flex plates are required in passenger vehicle as well as commercial vehicles, for CVT and torque converter technology. However, due to high cost and low mileage in torque converter technology, commercial vehicle globally, mainly in developed world (North America and Europe) has moved towards Automated Manual Transmission (AMT), where flex plates are not required. Developing nations such as China, India, Latin American countries, etc. are mainly using manual transmission in commercial vehicle application. In technology such as manual transmission and AMT (semi-automatic transmission), ring gears are used application.

Penetration of automatic (CVT and torque converter) is estimated to be 34-36% for passenger vehicle and 4-6% for commercial vehicle as on CY2020.

Flex plate market split by vehicle category in volume and value terms (OEM demand), CY 2020



SOURCE: Industry, OICA, CRISIL Research

Key players

Key players in this industry include Benda-Kogyo Co. Ltd., Dahua Machine Manufacturing Co. Ltd., Winkelmann Automotive, Magna International Inc., Mulhoff Umformtechnik GmbH, etc.

Outlook, CY 2020- 2025

Global passenger vehicle industry is expected to grow at a CAGR of 7-9% from 2020 till 2025. Global passenger vehicle industry will be aided by economic revival across nations after seeing a hit in 2020 due to pandemic. Expected increase in personal consumption and current low penetration of the passenger vehicle in developing nations will aid this growth. However, rapid urbanisation and traffic jams in metro cities, growing presence of ride hailing companies, push to public transport infrastructure creation is expected to keep demand for cars in check.

The global CV industry is expected to grow at a 10-12% CAGR over 2020-2025, the industry growth will be led by economic revival across nations, following the recovery from the pandemic. Manufacturing activities are expected to pick up across nations, mainly underdeveloped and developing. Further, a push towards public infrastructure to de-congest roads will drive demand for buses.

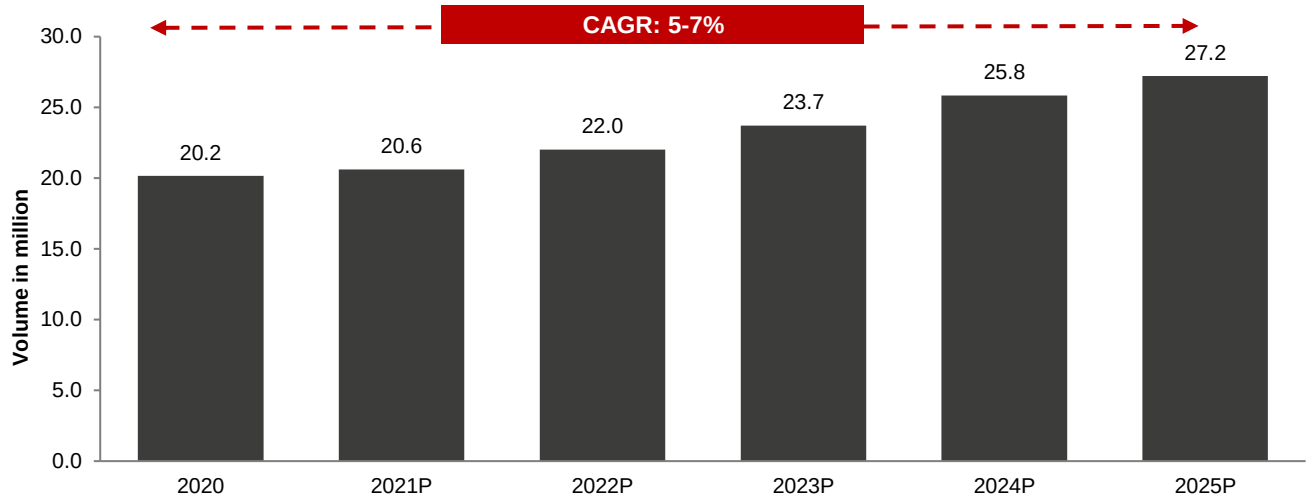
Rise of other technologies such as Dual Clutch Transmission (DCT) is expected to limit gains for AT and CVT in future. Demand for AT and CVT is expected to reach 36-38% by 2025 from 34-36% in 2020 in PV growing at 6-7% CAGR from CY2020 to 2025. Whereas in CVs AMT is expected to continue see dominance. In CVs, penetration of AT and CVT is expected to reduce from 6-7% in 2020 to 2-4% in 2025 growing at <1% CAGR.

Global penetration of electric powertrain (pure electric) in PV industry is expected to reach 13-15% in 2025 from 2-4% in 2020, again led by North America and Europe. The collective target of the EV30@30 signatories to achieve 30% sales share in 2030 for light-duty vehicles, buses and trucks will drive the EV adoption rate. Apart from reduced emissions and low maintenance cost, the other driving force for the fast adoption of EV is the advancements in new EV car models by leading manufacturers.

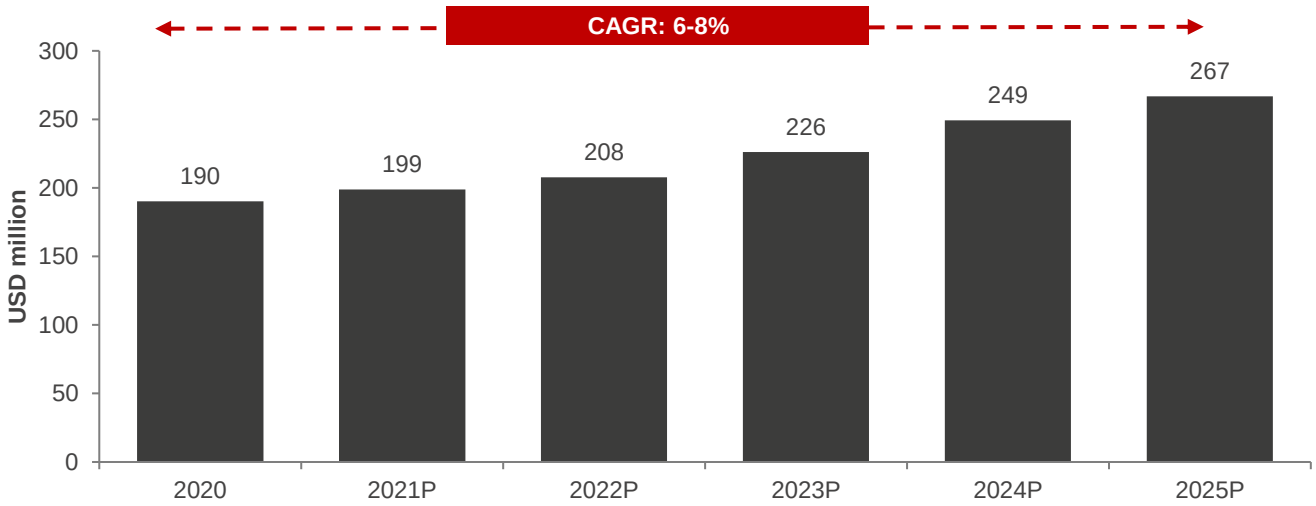
Policymakers and OEMs are increasingly moving towards green mobility by developing new technologies such as BEVs, hybrids, etc. and providing subsidies to promote green technology. However, penetration of electric CV (pure electric) is expected to increase from 2-4% in 2020 to 4-6% by 2025. However, hybrid vehicle will still require flex plates.

Despite rising electrification industry is expected to grow from 20.2 million units to 27.2 million units, growth of 5-7% CAGR between 2020 and 2025. By value, it is expected to grow by 6-8% and be USD 267 million industry by CY 2025. Adoption of automatic (CVT and torque converter) is expected to reduce in commercial vehicle application, leading to decline in share of commercial vehicle in flex plate industry by CY 2025. Global growth is lower as compared to domestic growth, due to current high penetration of automatics which is expected to reduce as the market is shifting towards AMT.

Global flex plate market outlook (million units) (CY 2020-2025P)

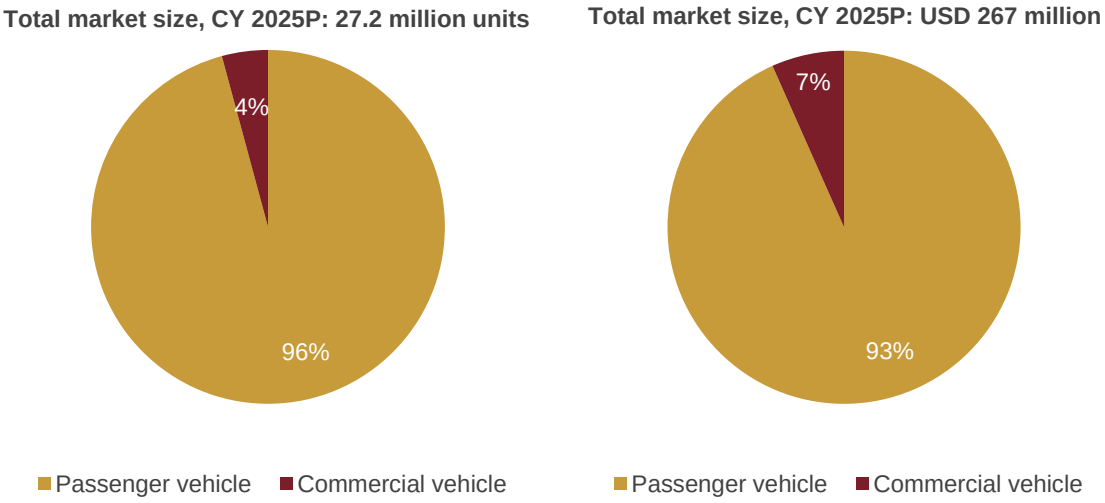


Global flex plate market outlook (USD billion) (CY 2020-2025P)



SOURCE: Industry, OICA, CRISIL Research

Flex plate market split by vehicle category in volume and value terms (OEM demand), CY 2025P



SOURCE: Industry, OICA, CRISIL Research

16.3 Water pump bearings

Water pump bearing is largely used in automotive applications. It is used in a vehicle to keep the temperature of an engine at an optimum level. The pump circulates the fluid when the engine is running. The water pump is vital to the operation of a vehicle engine as it ensures that coolant flows through the cylinder head, radiator, hoses, and cylinder block and maintains the optimum automotive operating temperature; it is usually driven by a belt from a crankshaft pulley or sprocket.

Water pump bearing is used in these pumps. It is used to circulate the coolant in the engine. They are of two types – ball to ball type and ball to roller type. Depending on the design of an engine, either of them is used.

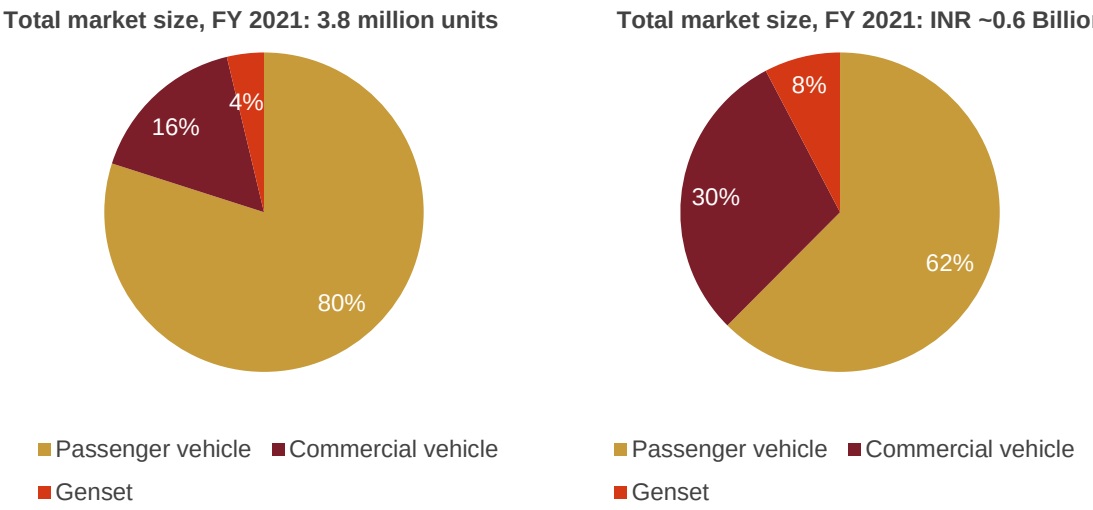
16.3.1 Indian water pump bearing market

Review, fiscal 2021

Water pump bearing finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as tractors, marine, construction equipments, etc. The below market size, captures passenger and commercial vehicle and genset demand from OEM.

CRISIL Research estimates the size of the water pump bearing industry (catering to OEM demand) at 3.8 million units and Rs 0.6 billion in fiscal 2021. In volume terms, passenger vehicle industry occupies the highest share of 80%, followed by commercial vehicle industry at 16% and genset at 4%. However, per unit realisation is higher in case of gensets and commercial vehicle as compared to passenger vehicle due to higher weight and dimension requirement. Resulting in value share of commercial vehicle at 30%, genset at 8% whereas passenger vehicle at 62% in fiscal 2021.

Water pump bearing market split by vehicle category in volume and value terms (OEM demand), fiscal 2021



NOTE: Water pump bearings finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand of water pump bearings in passenger and commercial vehicles and genset demand from the OEMs.

SOURCE: Industry, SIAM, CRISIL Research

Key players

Key players in this industry includes National Engineering Industries Ltd. and Ring Plus Aqua Ltd. Ring Plus Aqua Ltd. is one of the key players of water pump bearing with an estimated market share (volume terms) of 14-18% for domestic PV and CV industry as on fiscal 2021.

Outlook, fiscals 2021- 2026

CRISIL Research estimates overall PV production to grow at a 7-9% CAGR from fiscal 2021 to 2026, and reach ~4.5 million units by fiscal 2026

Over short to mid-term COVID-19 induced demand for personal mobility is likely to support PV sales, over mid to long-term, moderate macroeconomic growth, increasing disposable income, relatively stable cost of vehicle ownership, and lower fuel prices are likely to drive demand for passenger vehicles.

Production of CVs in India is expected to increase at 12-14% CAGR over fiscals 2021 to 2026. MHCV production is expected to grow by CAGR of 16-18% and the LCV segment is expected to show CAGR growth of 11-13% in fiscal 2026 over fiscal 2021 production.

Improving industrial activity, steady agricultural output, and the government's focus on infrastructure will drive the growth of MHCVs. However, further volume growth will be limited due to efficiencies achieved post introduction of the GST regime, better road infrastructure, along with commissioning of the DFCs.

LCV growth will be driven by higher private consumption, low penetration levels providing headroom for growth, greater availability of redistribution freight, and improved finance availability post fiscal 2021.

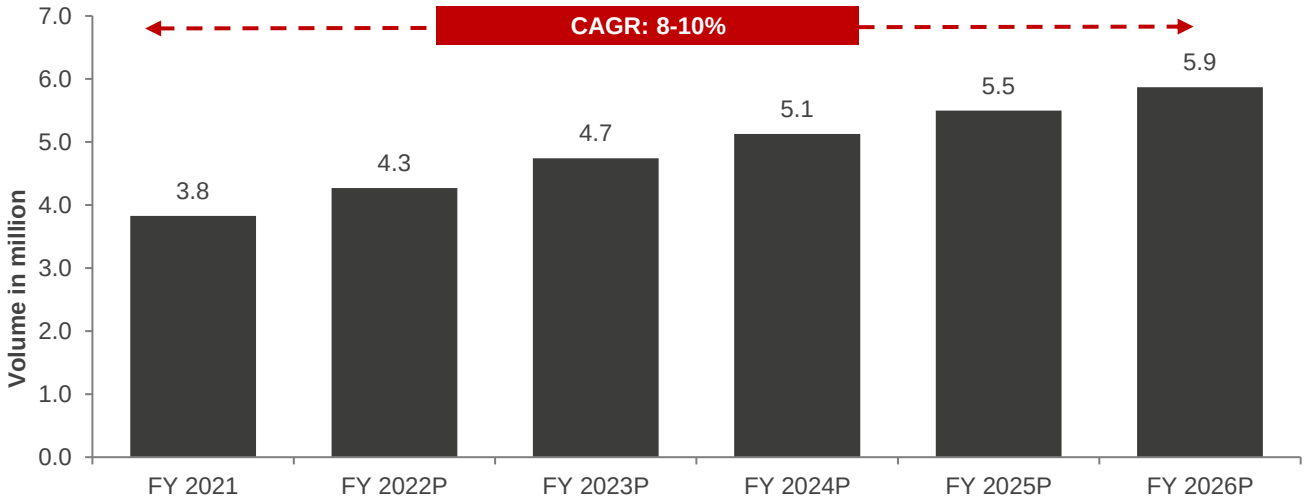
Domestic bus sale is expected to grow at a healthy pace till fiscal 2026 on a very low base of fiscal 2021 due to increasing demand for inter-city/-state travel, aided by better road infrastructure, and higher personal disposable incomes.

CRISIL Research projects production of genset will see moderate growth of 6-8% CAGR during the fiscal 2021 to 2026 on a low base of fiscal 2021 due to pandemic. Demand for gensets will be seen from end use applications such as housing, industrial, infrastructure. Growth will also be seen from hospitals and data centres.

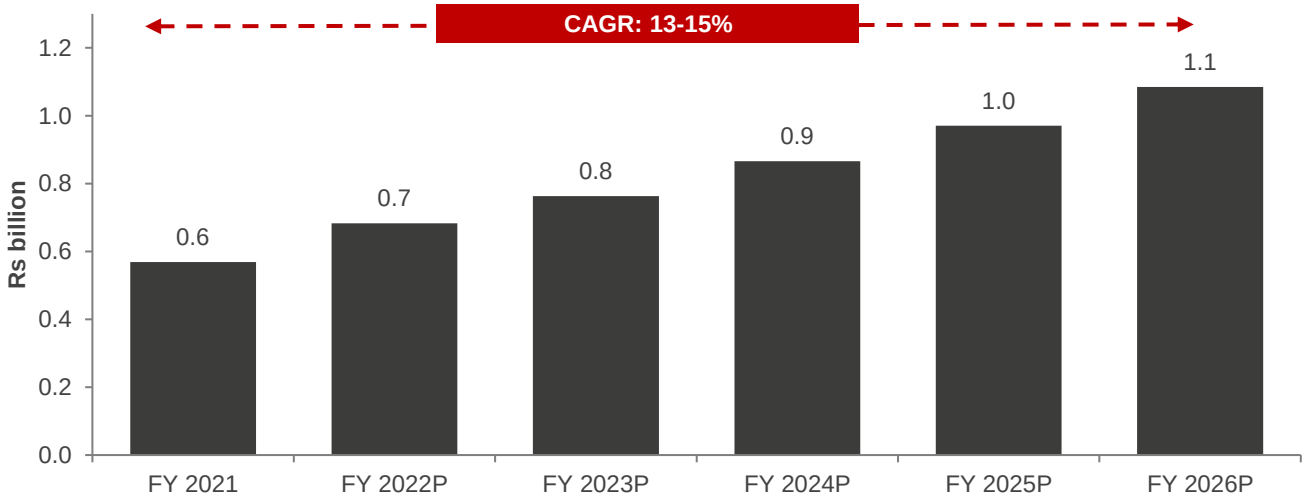
Water pump bearings demand is expected to get impacted as electric vehicles do not have any application for water pump bearing. Impact of electrification on demand for water pump bearings will be limited as EV penetration is expected to reach 4-6%, 3-5% in PV and CV respectively by fiscal 2026 in India due to higher cost of acquisition and lack of charging infrastructure is expected to hinder EV adoption in India. Overall impact on water pump bearings demand is expected to be limited in India due to slower EV adoption.

Therefore, despite the rising electrification industry volume is expected to record a growth of 8-10% CAGR between fiscal 2021 and 2026, from 3.8 million units to 5.9 million units. By value, the industry is expected to grow by 13-15% CAGR between fiscal 2021 and 2026 and be Rs 1.1 billion industry by fiscal 2026. Here, the share of commercial vehicle is expected to increase because of the higher volume growth expected on a low base of fiscal 2021.

Indian water pump bearing market outlook (million units) (fiscal 2021-2026P)



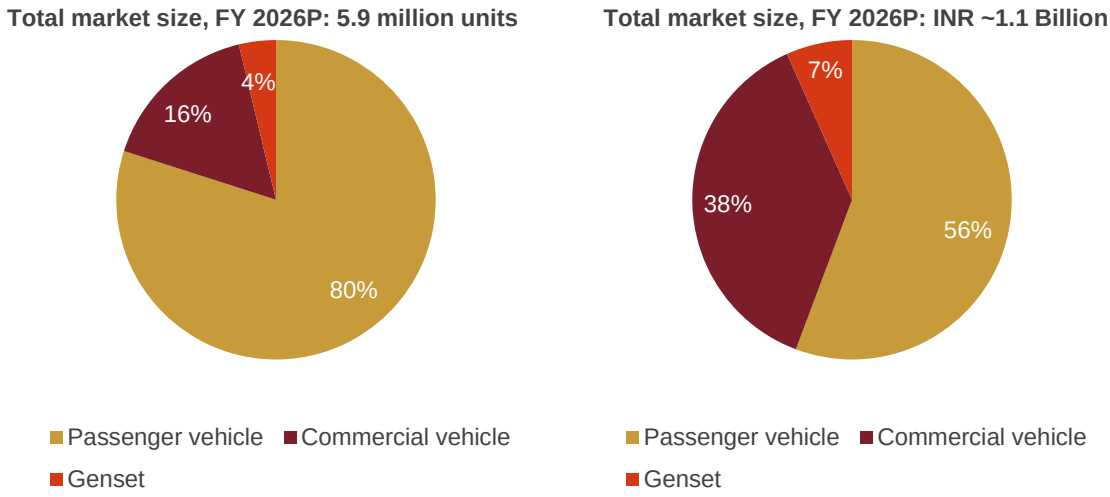
Indian water pump bearing market outlook (Rs billion) (fiscal 2021-2026P)



SOURCE: Industry, SIAM, CRISIL Research

NOTE: Water pump bearings finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand of water pump bearings in passenger and commercial vehicles and genset demand from the OEMs.

Water pump bearing industry split by application in volume and value terms (OEM demand), fiscal 2026



NOTE: Water pump bearings finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand of water pump bearings in passenger and commercial vehicles and genset demand from the OEMs.

SOURCE: Industry, SIAM, CRISIL Research

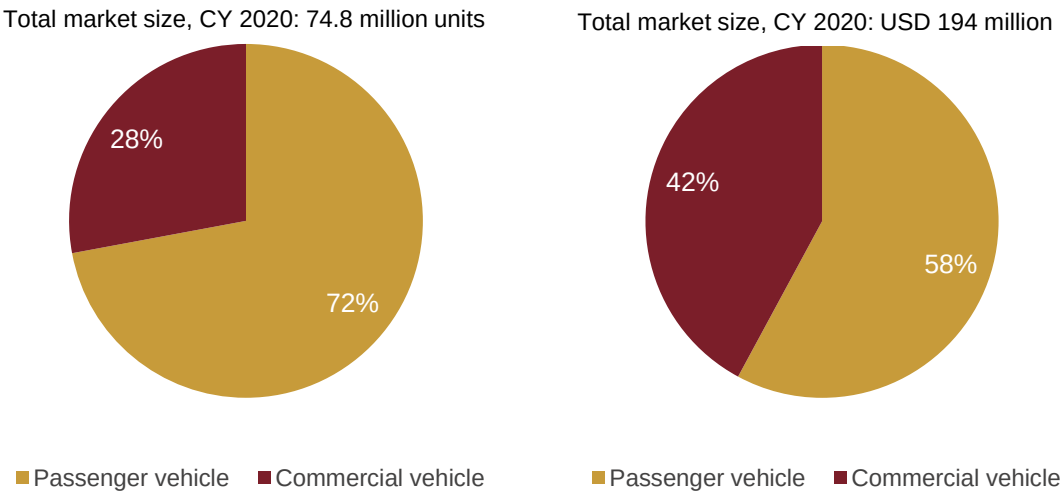
16.3.2 Global water pump bearing market

Review, fiscal 2021

Water pump bearing finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as tractors, marine, construction equipments, etc. The below market size, captures demand for water pump bearings in passenger and commercial vehicles from OEMs.

CRISIL Research estimates the size of the water pump bearing industry (catering to OEM demand) at 74.8 million units and USD 194 million in CY 2020. In volume terms, share of passenger vehicle is higher at 72% as compared to commercial vehicle (28%) in CY2020. However, due to higher realisation of water pump bearings catered to commercial vehicles as compared to passenger vehicles, in value terms, share of passenger vehicle is at 58% as compared to commercial vehicle at 42% in CY2020

Water pump bearing industry split by vehicle category in volume and value terms (OEM demand), CY 2020



NOTE: Water pump bearings finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand of water pump bearings in passenger and commercial vehicles and genset demand from the OEMs.

SOURCE: Industry, OICA, CRISIL Research

Key players

Key players in this industry includes C&U Bearings, Koyo (JTEKT Corporation's bearing brand), NSK Ltd., etc.

Outlook, CY 2020- 2025

Global passenger vehicle industry is expected to grow at a CAGR of 7-9% from 2020 till 2025. Global passenger vehicle industry will be aided by economic revival across nations after seeing a hit in 2020 due to pandemic. Expected increase in personal consumption and current low penetration of the passenger vehicle in developing nations will aid this growth. However, rapid urbanisation and traffic jams in metro cities, growing presence of ride hailing companies, push to public transport infrastructure creation is expected to keep demand for cars in check.

The global CV industry to grow at a 10-12% CAGR over 2020-2025, growth will be led by economic revival across nations, following the recovery from the pandemic. Manufacturing activities are expected to pick up across nations, mainly underdeveloped and developing. Further, a push towards public infrastructure to de-congest roads will drive demand for buses.

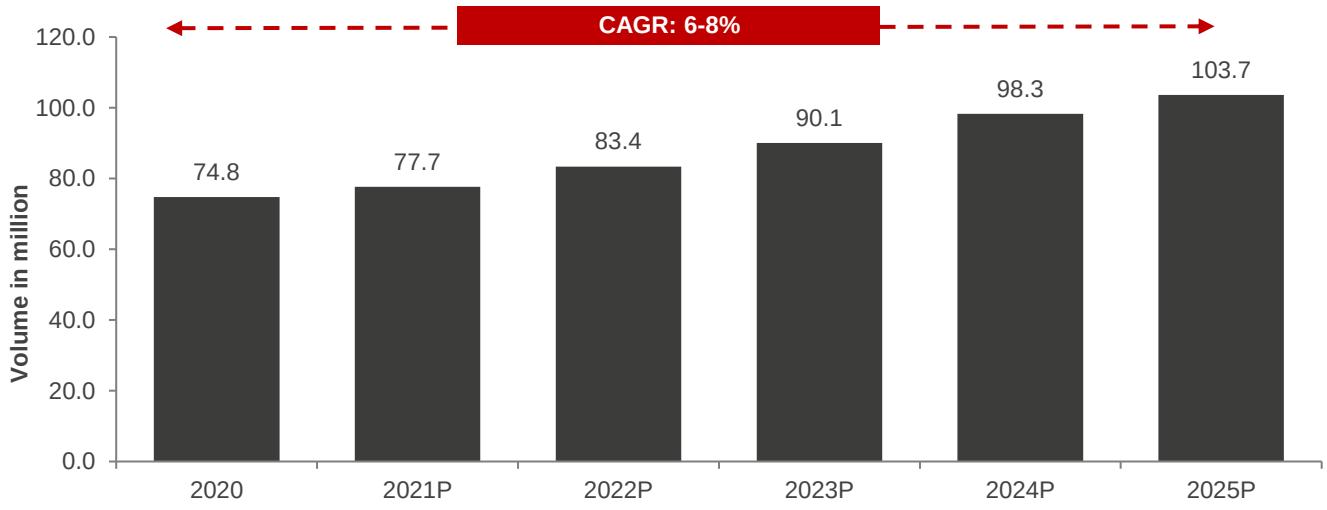
Global penetration of electric powertrain (pure electric) in PV industry is expected to reach 13-15% in 2025 from 2-4% in 2020, again led by North America and Europe. The collective target of the EV30@30 signatories to achieve 30% sales share in 2030 for light-duty vehicles, buses and trucks will drive the EV adoption rate. Apart from reduced emissions and low maintenance cost, the other driving force for the fast adoption of EV is the advancements in new EV car models by leading manufacturers.

Notably, the transportation sector is one of the largest contributors to greenhouse gas (GHG) emissions. Policymakers and OEMs are increasingly moving towards green mobility by developing new technologies such as BEVs, hybrids, etc. and providing subsidies to promote green technology. However, penetration of electric CV (pure electric) is expected to increase from 2-4% in 2020 to 4-6% by 2025.

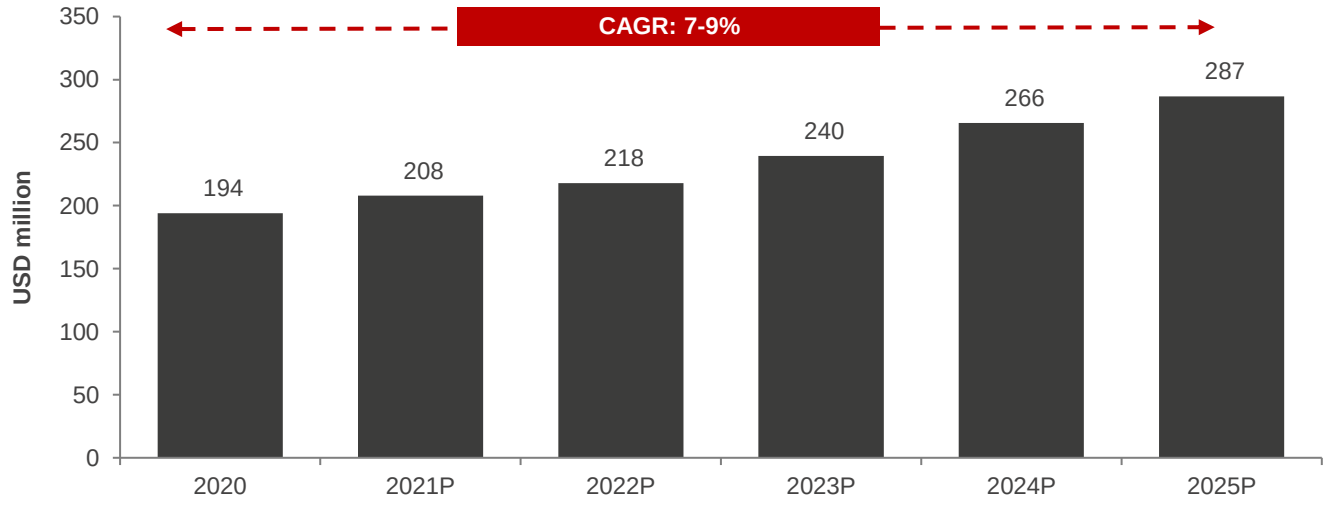
Water pump bearings demand is expected to get impacted as electric vehicles do not have any application for water pump bearing. Therefore, with rising EV penetration demand for water pump bearing is expected to get impacted globally. However, adoption of hybrid vehicle is not expected to have an impact on water pump bearing industry.

Despite rising electrification demand for water pump bearing is expected to record a growth of 6-8% CAGR between fiscal 2021 and 2026, from 74.8 million units to 103.7 million units. By value it is expected to grow by 7-9% CAGR between CY 2020 and 2025 and be USD 287 million industry by CY 2025. The share of commercial vehicle is expected to increase by 2025 due to expected higher volume growth as compared to passenger vehicle.

Global water pump bearing market outlook (million units) (CY 2020-2025P)

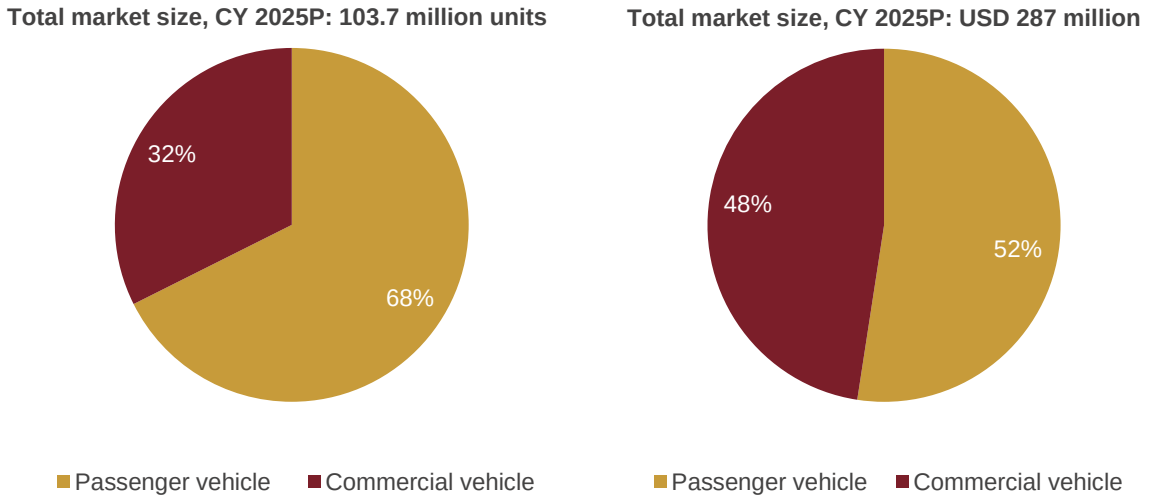


Global water pump bearing market outlook (CY 2020-2025P)



SOURCE: Industry, OICA, CRISIL Research

Water pump bearing industry split by vehicle category in value terms, CY 2025



NOTE: Water pump bearings finds its application in passenger vehicle, commercial vehicle in automotive segment and used in non-automotive applications such as gensets, tractors, marine, construction equipments, etc. The above market size, captures demand of water pump bearings in passenger and commercial vehicles and genset demand from the OEMs.

SOURCE: Industry, OICA, CRISIL Research

16.4 Key player profiles

16.4.1 Domestic players-

Amalgamations Repco Ltd. (AMREP)

It is a part of Amalgamations Group situated at Chennai. Incorporated in the year 1967, with technical and financial collaboration with Repco Limited, Australia, Amalgamations Repco Limited commenced commercial production in the year 1970 of clutch assemblies and components to cater to automotive & tractor vehicle industry besides the After Market. Since 1980 AMREP function on its own. Flywheel Starter Ring Gear operation is started from the year 2004. Subsequently India Piston Repco limited, Kakkalur manufacturing Flywheel Starter Ring Gear merged with Amalgamations Repco Ltd. From 2006.

Product range includes ring gear, inertia ring, inertia ring gear, magneto ring gear, stamped rings, etc. Its products are supplied to passenger vehicle, commercial vehicle and tracts industry.

It has three plants located at Chennai and Kakkalur in Tamil Nadu, Mysore in Karnataka.

Flywheel Ring Gears Pvt. Ltd.

It is a part of Precision Group. Company manufactures ring gears for applications ranging from stationary engines, cars, trucks, buses, tractors, power generators, tillers, racing cars and marine. Company has presence in Indian and Global market.

Its manufacturing facility is located in Nashik, Maharashtra.

National Engineering Industries Ltd.

Company is a part of CK Birla Group. It manufactures bearings such as taper roller bearing, cylindrical roller bearing, spherical roller bearing, water pump bearings, etc. for automotive, industrial and railway applications. Company has presence in Indian and Global market.

It has 5 manufacturing plants located at Jaipur, Newai (Rajasthan), Manesar (Haryana) and Vadodara (Gujarat).

Ring Plus Aqua Ltd. (RPAL)

RPAL is a subsidiary of the Raymond Group. It manufactures high precision products such as ring gears, flex plates and water pump bearings. It has its presence in domestic, exports and aftermarket as well. These products are supplied to applications such as passenger vehicle, commercial vehicles, gensets and other non-auto applications such as marine, construction equipments, etc.

RPAL offers the wide range of Ring Gears in terms of size (from 150mm to 1500mm). The wide range of sizes offered have utility ranging from a small PV engine to marine engines.

It has three plants are located in Nashik, Maharashtra.

Global players-

Benda Kogyo Co., Ltd.

It is a part of Benda Group based in Japan. Company manufactures products such as ring gears, flywheel assemblies, boss rings, inertia rings, etc. It supplies its products to various applications such as automotive, agriculture and construction equipments, etc. It has presence in domestic and global market.

Its plant is located in Hiroshima, Japan.

C&U Bearings

The company is based in china. It manufactures products such as ball bearing, roller bearing and speciality bearing such as water pump bearing. Products find its applications in automotive, off road, pumps and compressor industries, etc.

Dahua Machine Manufacturing Co. Ltd.

Company is based in China. Company manufactures products such as ring gears, flywheel assemblies, crankshaft damper and drum brake. It has presence in domestic and global market.

Company’s headquarters is located in Changchun City. They have production plants in Changchun, Dehui, Wuhu, and Dahua Global office in United States.

KLS Ljubno d.o.o

Company is based in Slovenia, Europe. Company produces rings such as starter ring gears, signal rings and mass rings for engine flywheels. It has presence in domestic and global market.

Its plant is located in Slovenia, Europe.

Koyo (JTEKT Corporation’s bearing brand)

Company is based in Japan. It produces bearings such as deep groove ball bearing, tapered roller bearing, needle roller bearing, water pump bearing, oil seals, etc. Products find its presence in various applications such as automotive, aircraft, machine tools, construction machinery, etc.

Winkelmann Automotive

The company supplies engine and transmission components such as pulley and timing belt, fuel distribution system, vibration dampers, flex plates, etc. It is headquartered in Germany, Europe.

Company manufactures its products in Germany, Poland, Turkey, China and Mexico.

Magna International Inc.

Magna is in range of products such as body exteriors, powertrain and transmission technologies such as flex plates, lighting, seating, etc. It caters to applications such as automotive as well as non-automotive applications such as construction equipments, aircrafts, etc. Globally it is present in North and South America, Europe, Asia and Africa.

Mühlhoff Umformtechnik GmbH

The company is based in Germany. It manufactures components for chassis, powertrain, etc. for automotive application.

NSK Ltd.

NSK manufactures bearings such as ball bearing, roller bearing, water pump bearings, etc., automotive components and precision machinery components such as ball screws, linear guides, etc. Products finds its applications in automotive, aircrafts, construction machinery, etc.

Financial benchmarking of key competition-

Companies/Particulars	Operating income		Operating EBITDA (Rs mn)	PAT (Rs mn)	Operating EBITDA margin (%)	PAT margin (%)	ROCE (%)	ROE (%)	Gearing ratio
	(Rs mn)	CAGR (FY16-FY21)							
Key competitors across ring gears, water pump bearing market									
Amalgamations Repco Ltd (AMREP)	1,592	-3%	88	44	6%	3%	21%	16%	2.5
ARGL Limited	1,261	-14%	355	-480	28%	-38%	6%	-300%	24.8
Flywheel Ring Gears Pvt. Ltd.^	254	6%	13	1	5%	0%	12%	2%	2.4
National Engineering Industries Limited	18,354	1%	3,398	776	19%	4%	5%	3%	0.6
Ring Plus Aqua Ltd (RPAL)	1,973	4%	403	225	20%	11%	19%	15%	0.6
Average		**-1%**			**15%**	**-4%**	**13%**	**-53%**	**5.4**

Note:

Figures at standalone level for fiscal 2021 unless otherwise specified

^ Financials of this company available till FY20

EBITDA – Earnings Before Interest Tax Depreciation and Amortisation, PBT – Profit Before Tax, PAT – Profit After Tax, ROCE – Return on Capital Employed, ROE – Return on Equity

Operating EBITDA: Indicates operating earnings before interest, taxes, depreciation and amortization which takes into consideration only operating income whereas non-operating income is excluded

Operating EBITDA margin: Operating EBITDA / Operating income

PAT margin: PAT/ Operating income

ROCE: PBIT/ total debt plus tangible net worth

ROE: PAT/ tangible net worth

Gearing ratio: Total debt/ Tangible networth

Source: Company Financials, CRISIL Research

About CRISIL Limited

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