

Assessment of Select Aesthetic Components

S.J.S. Enterprises Private Limited

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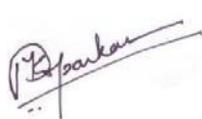



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1 Market sizing and outlook of relevant decorative aesthetics

1.1 Overview of decorative aesthetics

The manufacturers of discretionary consumption products like automobiles and consumer durables strive hard to bring value-for-money products in the market to retain and expand their market shares. While product features and price are key elements, product aesthetics are critical in creating brand value for original equipment manufacturers (OEMs). Consumers give preference to products that are not only value-for-money but also aesthetically superior. Aesthetically superior products hold strong relevance for discretionary consumption products, such as automobiles and consumer durables.

Key consumer discretionary products where decorative aesthetic components are widely used include -

- Two-wheelers
- Passenger vehicles
- Other automobile segments- Three wheelers, Commercial vehicles, Tractors/ Farm equipments
- Large consumer durables: Washing machines, refrigerator, room air conditioners (ACs), television (TV)
- Small consumer durables and electronics: (Fans, Switchgears, Water heaters, Air purifiers, Vacuum cleaners, hand free sanitizer dispensers, Other consumer electricals, mobiles, laptops, desktops, power banks, trimmers etc)
-
- **Kitchen appliances** (Mixers and grinders, Water purifiers, Microwave ovens etc)
- Medical devices and medical electronic devices such as x-ray, CT scan, MRI scan machines, self-care glucometers, BP monitors, oximeter etc

Aesthetics products also find applications across industrial equipments (like ATMs) and Fast Moving Consumer Goods (FMCG) (containers for shampoo bottles, compact, lipsticks etc)

Decorative aesthetic components in consumer discretionary products include logos, stickers, decals, appliques, overlays, chrome plated parts, In-mould labelling (IML)/mould decoration (IMD), In-Mold Electronics (IME) etc. A few components such as appliques, overlays and optical plastics are also deployed for their functional attributes in addition to their role in increasing aesthetic value of a product.

Due to compact nature of products cost of logistics is less critical in aesthetic products as compared to other auto components. This allows aesthetic product manufacturer to set up plant at cheaper locations outside automobile hubs thereby achieving better capital efficiency.

In the report, CRISIL Research has provided an in-depth view on demand for aesthetics, only for the below mentioned components and application segments.

Aesthetic components	Two-wheelers	Passenger vehicles	Consumer durables
Logos	✓	✓	✓
Decals	✓	✓	
Stickers, aluminium badges	✓	✓	✓
In-mould labelling (IML)/mould decoration (IMD)	✓	✓	✓

Optical plastics	✓	✓	
Chrome-plated parts	✓	✓	✓
Appliques	✓	✓	
Overlays			✓

Logos



Logos are the brand and model logos featured on automobiles and consumer durables play a critical role for OEMs to achieve desired brand visibility. OEMs use logos to convey their brand values with customers, and, therefore, regularly explore creative ways of designing logos. Logos are available in varied constructions, ranging from the type of material used with respect to their visual appeal. For example -

- **Metallic badges:** These logos or stickers are designed on aluminium, nickel plates. These badges find applications in automobiles and consumer durables. Few prominent examples include Whirlpool, LG, Dell logos.
- **Domes stickers:** These are printed pressure-sensitive labels that have a thick, dome-shaped clear polyurethane coating. For example, Ford logo is designed as dome sticker.
- **Chrome-plated logos:** Chrome-plated logos are nothing but logos manufactured by chrome plating of injection moulded logos. This is the most widely adopted type of logos in India and used in applications such as Suzuki, Hyundai logo of Maruti Suzuki and Hyundai models, respectively. Similarly Swift, i20 model logos are designed as chrome-plated logos.
- **3D lux logos:** These logos are manufactured by thermoforming composite polymer film and filling them with a filler material. The thermoforming film gives the logo a metal like finish. The technology allows 3D lux logos to be designed in chrome, satin or coloured finishes using various types of polymer materials. 3D lux logos not only provide application flexibility on curved surfaces but also score higher over chrome-plated logos on account of their environment friendliness. 3D lux products are considered to be more environmental friendly as well as premium as compared to chrome plated products. Therefore, several environmentally conscious OEMs, especially the global ones, have started preferring 3D lux technology to comply with environmental norms. For example, a wing logo in Honda Motorcycles, Royal Enfield logos on fuel tank of Royal Enfield bikes are designed in 3D lux technology in the Indian market.

Decal/graphic stickers



Decal stickers are printed on vinyl films for decorative purposes on automobiles, particularly two-wheelers in India. Within two-wheelers, economy and executive segment motorcycles and mostly basic scooters produced in India have decal finishes.

Manufacturers find decal stickers a cost-effective way to decorate and distinguish seemingly similar two-wheeler models. Particularly, in premium motorcycles, OEMs have greater flexibility to deploy suitably designed moulded plastic components as decorative elements along with decals, whereas OEMs use decals as a cost-effective option to decorate affordable segment two-wheelers passenger vehicles and other automobile vehicle segments such as tractors, commercial vehicles. OEMs also use graphic stickers for branding purpose, which generally include technology branding.

Decals can be used on various parts of motorcycles such as fuel tank, side panel, rear panel, engine cover, fairing, fender, tyres, etc. Along with enhancing the visual appeal, decals provide desired durability, abrasive resistance, ultra violet (UV) resistance, adhesive strength to withstand extreme weather conditions in automobile applications. Vehicle OEMs experiment using colours, textures and thicknesses to get desired visual and performance characteristics.

IMD/IML parts



IMD/IML is a process for decorating or labelling injection moulded plastic parts or components during the plastic injection moulding cycle. IMD/IML techniques allow for the integration of decoration/labelling activities in the plastic injection moulding process. IMD/ IML processes produce high quality and visually appealing parts. These processes offer more durable and long-lasting decorations compared to traditional moulding and decorating techniques, such as painted/ printed injection moulded parts.

In the IML process, a plastic film is printed with decorative pattern, formed, cut to size and then inserted in the injection moulding tool. During the injection moulding process, the film becomes an integral part of the injection moulding plastic, giving it a decorative look. While, in the IMD process, the printed pattern on the roller gets transferred on the injection moulded plastic. Unlike in IML, in IMD, the film does not become an integral part of moulded plastic. IMD is generally preferred where large volumes of flat decorated parts are to be made.

As offering differentiated user experience is gaining prominence in automobile and consumer durable applications, OEMs are exploring innovative and better ways of decorating plastic parts in their products. For instance, car manufacturers are deploying dual tone finishes, wood or other special finishes in the vehicle in dashboards, door

trims or centre consoles. These special finishes are manufactured using IMD/ IML processes. Similarly, in refrigerators and washing machines manufacturers are exploring IMD/ IML parts to give better visual appeal to their products. Use of IMD / IML is expected to increase as it is a superior technology to other traditional aesthetic products.

Optical plastics



Passenger vehicles



Two wheelers

Optical plastics are high-quality plastic parts that allow a display to be clearly visible without any distortion and also used to provide mechanical protection to thin-film transistor (TFT) screen without impacting the visibility of underlying display device. Optical plastics are typically made of acrylics/ polycarbonate material, providing desired mechanical strength, along with optical parameters covering transmission, haze and in high end applications, require anti-reflective, anti-glare, anti-finger print properties.

Optical plastics come in varying sizes, depending on varied applications in two-wheelers and passenger vehicles. Currently, OEMs are deploying 6- to 12-inch sized TFT screens across models. Demand for optical plastics are rising driven by following factors

- **Advancement in technology:** Improved data connectivity with the proliferation of 4G technology, increased consumer exposure to smartphone technology, and rising customer expectations for convenience and seamlessness in the vehicle accessibility of smartphone applications is driving growth of in-vehicle infotainment in passenger vehicles.
- **Wider coverage:** Modern infotainment systems allow managing and playing audio content, utilising navigation for driving, hands free call answering, parking assist, social networking, etc. OEMs are increasingly deploying TFT screens in vehicles, providing a convenient user interface for customers.
- **Need for bigger display screens:** Further, not only passenger car models with infotainment screens are increasing in India, but screen sizes are also proliferating, in line with global trends. Most of the popular models are offering 7-10 inch infotainment screens in India across different models. As OEMs are keen on integrating functions, screen sizes are expected to increase further, such as air-conditioning and climate control, seat adjustment and seat heating/cooling, within the same infotainment cluster. Globally, OEMs are keen on deploying 15-inch screens. Demand for optical plastics is slated to increase, driven by a rise in the penetration of the touch-based infotainment system and greater OEM preference for larger screen.

Chrome-plated parts



Door handles



Mirror covers



Head light covers

These are injection moulded parts coated with chrome to make the product visually more appealing. The usage of chrome parts has been increasing rapidly, especially in passenger vehicles, as OEMs are trying to distinguish models and variant by creating visual appeal with such parts. Several parts on the exterior and the interior of the passenger can be chrome-plated. On exterior, vehicle parts, such as bumper inserts, tailgate garnishes, door handles, finger guard, mirror covers, headlight cover, fog lamp cover, tail light covers, chrome windows, front grille, tailgate etc., can be chrome-plated. Similarly, in-vehicle interiors, inner-door handles, HVAC, gear, infotainment areas can be decorated with chrome-plated components. Customers are also spending incrementally on chrome-plated accessories to decorate their cars beyond standard model configurations offered by OEMs. Recognising this trend, OEMs are likely to increase the usage of chrome-plated component content. In addition to passenger vehicles, chrome-plated parts are also finding applications in two-wheelers and consumer durables, such as refrigerators and washing machines. Chrome plated parts are being used in door handles of refrigerators and front load washing machine rings and embellishments for interior trays and racks currently.

Appliques/automobile dials



Two wheeler



Passenger vehicle

The instrument clusters in automobiles is the key source of vehicle information for drivers and immensely adds to the visual appeal of the overall product. These dials have a cluster of gauges, fuel level indicators, engine RPM, speedometers, engine temperature, safety warnings, trip configuration, driving efficiency indicators, etc. This information is critical for drivers and needs to be structured clearly, allowing high readability. Instrument clusters are designed as

- Fully analogue
- Fully digital
- Hybrid (digital + analogue)

Automobile dials find usage only in analogue or hybrid instrument clusters. Automotive dials are designed as high-quality functional, aesthetic plastic plates. Automotive dials are polyester or polycarbonate plates with printed graphics.

These dials are available in following configuration in varied shapes and sizes, as per model requirements

- Two-dimensions (2D) printed
- Three-dimensions (3D) printed

High-quality and precise markings and tell tales requiring use of inks that do not fade over time are key requirements of automobile dials. Compared to 2D dials, 3D dials are manufactured using complex printing techniques along with high pressure thermo forming on plastics materials, such as polycarbonate involving printing of graphics in several passes through the printing machine. Therefore, realisation for an automobile dial manufacturer is greater in 3D dials compared with 2D. OEMs are increasingly preferring 3D dials over 2D, led by enhanced graphical image quality and higher resolution.

Automobile dials find applications in the entire automobile spectrum, including -

- Two-wheelers
- Three-wheelers
- Passenger vehicles
- Commercial vehicles
- Tractors and farm equipments
- Construction equipment

2D dials find applications primarily in two-wheelers, three-wheelers and commercial vehicle models in India. While only select passenger vehicle models currently deploy 3D dials, usage of 3D dials is expected to increase in the future.

Usage trends

- **Passenger vehicles**
 - In Indian market global players such as Hyundai, Kia Motors and M&M have switched to 3D dials from 2D dials in a select model. 3D dials are being deployed across popular models such as i20, i10 Neos, Venue, Creta, Santro, Seltos, Sonet and Scorpio to name a few.
 - Moreover, globally 3D dials are expected to migrate towards digital instrument clusters, driven by the integration of digitised components in vehicles. Digital clusters offer the capability to customise display contents, aiding better interactivity with the user
 - In India, although penetration of 3D dials is much lower currently; enhanced customer demand, better user experience and price affordability of components with pick up in local manufacturing of 3D dials is likely to drive penetration 3D dials in future.
 - Few models have hybrid instrument clusters consisting of both analogue (3D dials) and digital displays. Whereas, ultra-premium segment vehicles, high-end variants of affordable models such as KWID have started featuring fully digital instrument clusters.
 - In future, the instrument cluster and infotainment will be merged, offering a more premium product with a wider range of embedded functionality.

- **Two-wheelers**

- Key models in executive, premium two-wheeler motorcycles and scooters produced in India already deploy hybrid instrument clusters, whereas electric two-wheelers feature fully digital instrument clusters. Popular two-wheeler models such as Hero Passion Pro, Bajaj Pulsar 125, Hero Glamour, Activa 125 already have hybrid instrument clusters. Whereas electric two-wheelers such as Ather 450X, TVS iQube, Bajaj Chetak have fully digital instrument clusters.

Although fully digital instrument clusters which use IMD/ Optical plastics are likely to replace analogue instrument clusters which use printed automobile dials; the shift is expected to be gradual and happen only over the mid- to long-term horizon.

Overlays



Traditional overlay



Capacitive overlay

Overlays are simple and effective solutions for designing aesthetically appealing and durable human-machine interface (HMI).

Overlays find a wide range of applications in consumer durables, consumer electronics, medical devices, industrial control panels, etc. Overlays are laid on control panels having printed circuit boards with buttons. Overlays are designed as tactile or capacitive overlays.

Tactile overlays: When the user presses specific areas on overlays, underlying buttons on printed circuit board assembly (PCBA) get pressed and specific functions are triggered in the device/equipment.

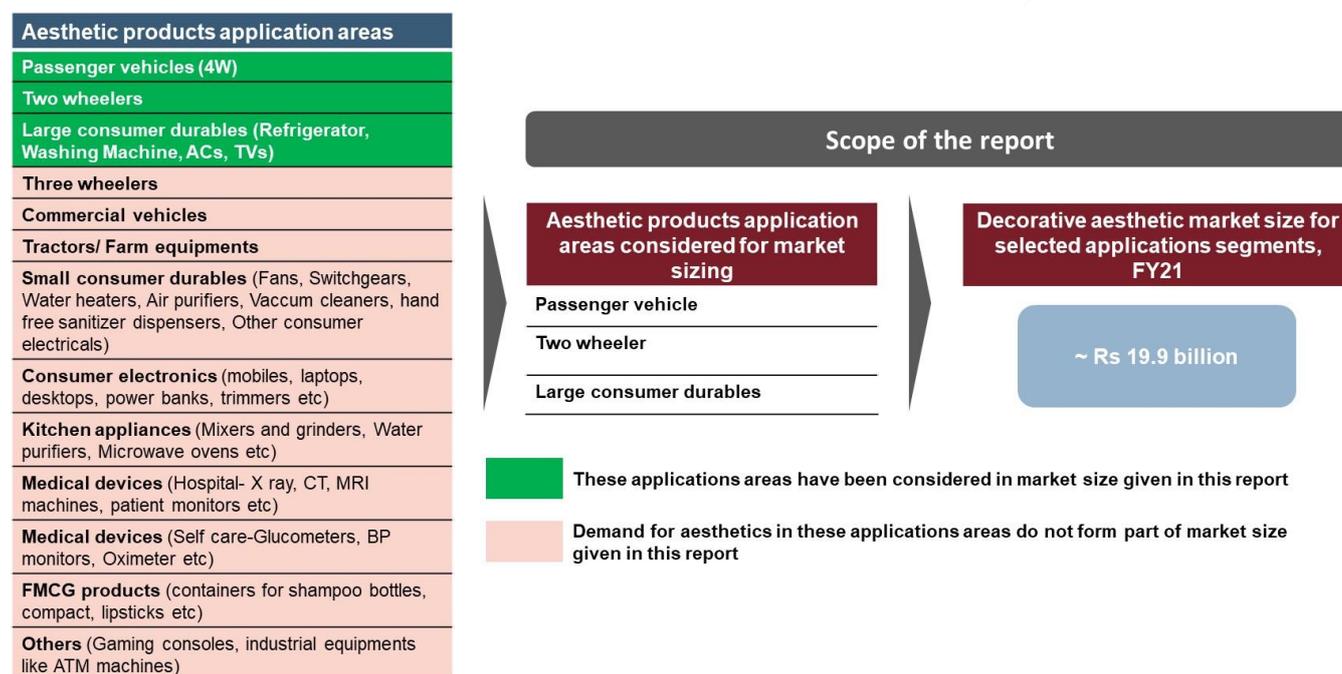
Alternately, the newer generation of consumer durables feature a capacitive touch screen. Such screens allow users to select functions with a finger touch. In tactile touch applications, overlays are designed as printed sheets made of polyvinyl chloride, polyester, polycarbonate, which are then assembled on PCBA. Capacitive overlays are made of plastic materials, such as polyvinyl chloride, polyester, polycarbonate or tempered glass. Capacitive overlays are gaining preference among consumer durables manufacturers due to their technological and aesthetic superiority to tactile overlays. Overlay manufacturers make higher realisation in capacitive overlays compared with tactile overlays. Similarly specialised overlays called food grade overlays find application in the interior of the refrigerator. A food grade overlay make use of non-toxic or food compatible plastics such as PET (polyethylene terephthalate), inks and adhesives for manufacturing of these overlays. Food grade overlays are preferred in applications where overlays are likely to come in close contact with food substances.

Overlays are preferred for their ruggedness and decorative flexibilities. Overlays offer resistance to low impact, spills, moisture, weathering and UV, abrasions and chemical washing.

With advances in technology, these applications are likely to migrate to even more specialised technologies, such as printed electronics or In-mold electronics (IME). Printed electronics are electrical components and devices produced by several printing processes. In printed electronics, electrically conductive inks replace PCBs in low current applications. Due to their superior aesthetic attributes, IME usage is likely to gain traction in consumer durables as well as automobiles.

1.2 Specific decorative aesthetic components demand review and outlook

The overall aesthetics market is very large and aesthetic products find applications across wide range of industries as highlighted below. As a part of this report CRISIL Research has covered opportunity for aesthetics only across 2W, PV and large consumer durables industry. Total demand for aesthetics will therefore be over and above the opportunity assessed by CRISIL Research on account of aesthetics applications which go well beyond 2W, PV and large consumer durables.



Source: CRISIL Research

Many of these other applications are high volume demand generators. Below table depicts volume demand for some these products in India.

Equipment name	Average Annual demand in India (FY18-20) (in million units)
Ceiling fans	61
Mixers and grinders	12-13
Water purifiers	2.2-2.3
Air purifiers	0.2-0.3
Water heaters	3.5-4.0
Microwave ovens/ OTG	1.2-1.4
Vacuum cleaners	0.4-0.45
Video Game Console	0.07-0.09
Digital blood pressure monitors (for self-monitoring)	1-1.2
Digital thermometers	2.7-3
Power banks	30-35

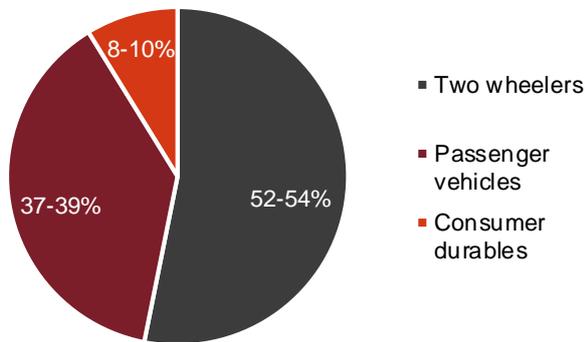
Source: CRISIL Research estimates

Review of decorative aesthetic components demand in fiscal 2021

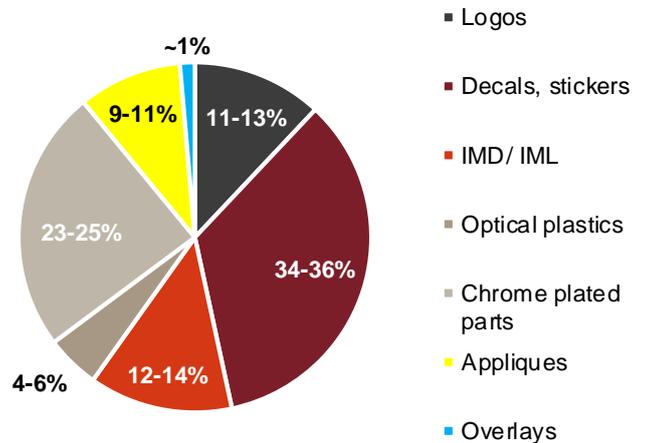
CRISIL Research estimates the size of the decorative aesthetic market in India catering to OEMs at approximately Rs 19.9 billion in fiscal 2021. The demand for decorative aesthetics was approximately Rs 22.6 billion in fiscal 2020. The decorative aesthetics demand in fiscal 2021 declined due to a drop in underlying demand from two wheeler, passenger vehicle and large consumer durables industry. The domestic production for two-wheelers, passenger vehicles and large consumer durables was hit by ~13%, ~10% and ~19%, respectively, in fiscal 2021 due to the pandemic.

Two-wheelers alone accounted for ~52-54% of decorative aesthetic market demand in fiscal 2021, while passenger vehicles and consumer durables formed ~37-39% and ~8-10%, respectively.

Break-up of decorative aesthetic demand by application segment, FY21: ~ Rs 19.9 billion



Break-up of decorative aesthetic demand by aesthetic components, FY21: ~ Rs 19.9 billion



Note: The decorative aesthetics demand of Rs 19.9 billion only includes demand for aesthetics from two wheeler, passenger vehicles, large consumer durables (refrigerators, washing machine, air conditioners and TVs); demand for aesthetics in other applications will be over and above Rs 19.9 billion

Source: SIAM, CRISIL Research

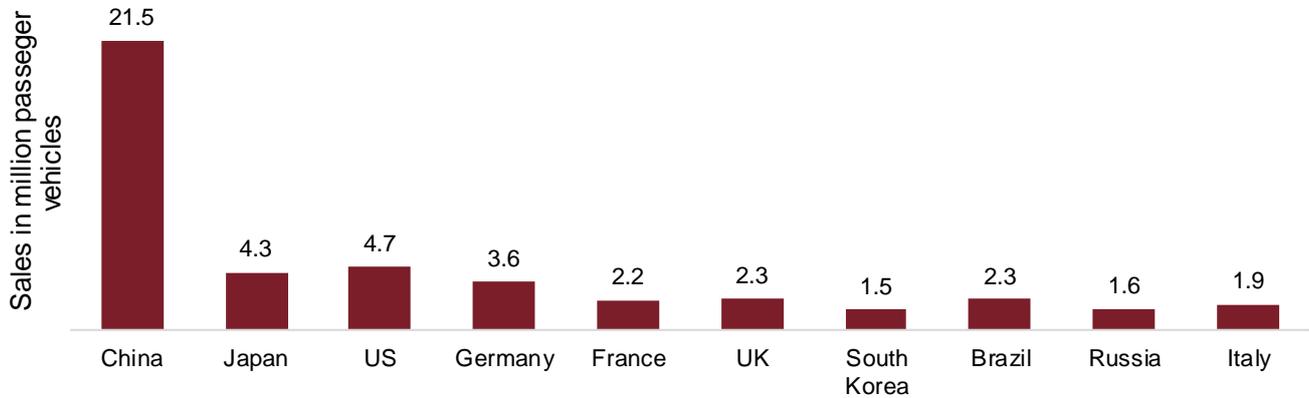
The demand for decorative aesthetic in fiscal 2021 was led by decals, stickers and aluminium badges (forming ~34-36% of demand), followed by chrome-plated parts (~23-25%), IMD/IML (12-14%) and appliques (9-11%).

Decorative aesthetics opportunity in global passenger vehicle industry

CRISIL Research estimates opportunity for decorative aesthetics across major passenger vehicle markets such as US and EU (EU 26 countries + European Free Trade Association + the United Kingdom) at USD 2.7 billion in calendar year 2019. The future global demand for aesthetics will be driven by rising vehicle sales and incremental

premiumisation opportunities in vehicle aesthetics. US and EU together accounted for 32% of global passenger car sales in 2019.

Top 10 global passenger vehicle markets sales excluding India, CY 2019



Source: OICA

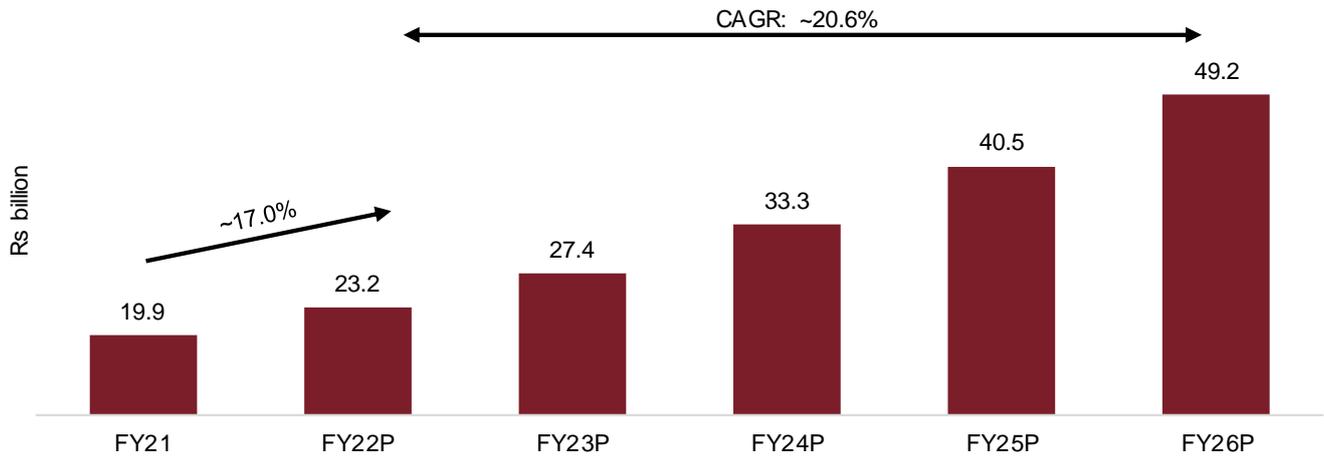
Demand outlook for decorative aesthetic components over fiscals 2021-2026

The aesthetics component industry in India generated Rs 19.9 billion in revenue in fiscal 2021 and the industry is projected to grow at a ~20% CAGR to reach approximately Rs 49.2 billion by fiscal 2026. The demand for aesthetic components is expected to recuperate sharply by ~17% in fiscal 2022, as the demand and production of two-wheelers, passenger vehicles and consumer durables recover from the pandemic shock.

Global aesthetic component industry in US and EU (Inclusive of UK) generated USD 2.7 billion in calendar year 2019 from passenger vehicle segment. Global aesthetic component industry growth is expected to be driven by growing premiumisation and rise in adoption of electric vehicles over next 5 years.

Automotive sales and production are cyclical and are sensitive to changes in general economic conditions and other factors beyond the control of automobile OEM or component suppliers such as consumer demand, consumer confidence, inflation, employment and disposable income levels, credit availability, interest rate levels, demographic trends, technological changes, increasing environmental, health and safety regulations, changes in government policies, political instability, fuel prices, product mix shifts favoring other types of vehicles, disruptions in the automotive supply chain, labor relations and general industry conditions, any of which may negatively affect the demand for vehicles and, as a result, products and services.

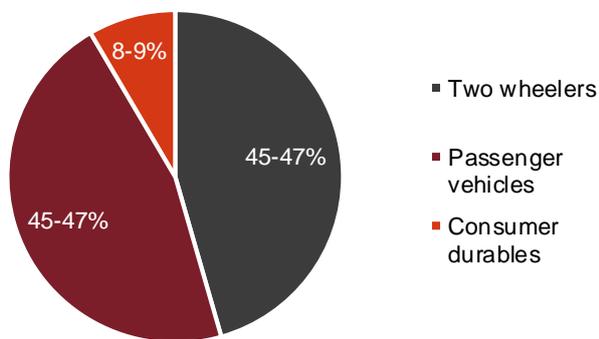
Decorative aesthetic market in India (Rs billion), fiscals 2021-2026



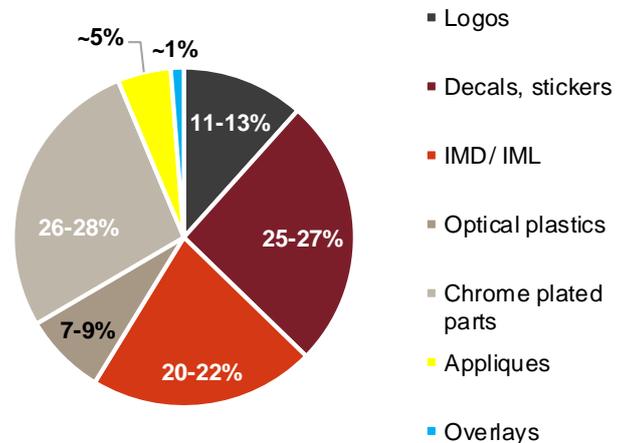
P: Projected
Source: SIAM, CRISIL Research

Two-wheelers and passenger vehicles will continue to dominate the demand accounting for ~45-47% of the decorative aesthetic market each in fiscal 2026 whereas consumer durables will contribute ~8-9% to the overall demand. Demand for decorative aesthetics is expected to grow fastest in passenger vehicles at ~25% CAGR, followed by 19% and 16% CAGR in consumer durables and two wheelers respectively during fiscal 2021-26 period.

Breakup of decorative aesthetic demand by application segment, FY26P: ~ Rs 49.2 billion



Breakup of decorative aesthetic demand by aesthetic components, FY26P: ~ Rs 49.2 billion



P: Projected
Source: SIAM, CRISIL Research

Aesthetic products	Aesthetic market CAGR (FY21-26)
Logos	19%
Decals, stickers	13%

IMD/ IML	32%
Optical plastics	31%
Chrome plated parts	23%
Appliques (2W+PV)/ Appliques (PV)	6%/14%
Overlays	17%
Total	20%

The demand for decorative aesthetic in fiscal 2026 will be led by decals, stickers and aluminium badges accounting for ~25-27%, followed by IMD/IML (~20-22%), chrome-plated parts (26-28%) and optical plastics (7-9%). IMD/IML and optical plastic are expected to be the fastest growing aesthetic component categories with market share gain in overall aesthetic demand over the stipulated period.

Key trends and growth drivers:

Superior demand for decorative aesthetics will be driven by the following factors

1. Growth in the underlying application segments:

India is one of the fastest growing market for passenger vehicles and consumer durables in the world. CRISIL Research projects two-wheelers and passenger vehicle production to grow at 10-12% CAGR each, over fiscals 2021-26. Even the demand for consumer durables is expected to grow at a 10-12% CAGR over the same period. India is one of the fastest-growing markets in the world for passenger vehicle, two-wheeler and consumer durables. Demand for passenger vehicles is expected to be aided by low current penetration, rising disposable income, increment and improvement in road connectivity. Whereas demand for two-wheelers is also expected to be aided by rising disposable income, increment and improvement in road connectivity. Production of passenger vehicles and two-wheelers will be aided by the emergence of India as an export hub to developed as well as developing economies. Whereas, the demand for consumer durables will be driven by low current penetration, especially in case of room ACs, washing machines, rising disposable income and improvement in the standard of living, rising urbanisation and nuclearisation of families.

In addition, India has emerged as manufacturing hub for key global OEMs which are increasingly considering to cater to their global customer base with passenger vehicles manufactured in India. Indian passenger vehicle exports which accounted for ~13% of domestic passenger vehicle production in fiscal 2021, are projected to grow at 11-13% CAGR between Fiscals 2021 and 2026. Similarly, aesthetic product suppliers are expected to gain from export potential of other automobile segments such as two wheelers, three wheelers, tractors, and commercial vehicle as well as consumer appliances in future.

2. Shift towards premium products/variants

Consumers are increasingly preferring premium, aesthetically superior and technology savvy products, driven by rising disposable income and exposure to developed markets. Consumers are emotionally attached with discretionary products, such as passenger vehicles, two-wheelers, where such products often symbolise their lifestyle. Therefore, consumers are increasingly willing to pay for aesthetically superior and differentiated products. Consumer preference is shifting towards bigger cars. Demand for small cars have declined from ~63% in 2015 to ~53% in 2021. In addition, the demand for mid- and top- variants of passenger vehicle models has seen a gradual increase over years. CRISIL Research further expects the contribution of mid plus top variant to increase 5-10% in the small car segment, followed by 15% in the large car and UV (Utility vehicles) segment by 2026.

Segment	FY21 (mid + top variant)	FY26 (mid + top variant)
Small	30-40%	40-50%
Large	70-75%	85-90%
UV	50-55%	65-70%

Note: UV: Utility vehicles

Notably, manufacturers of automobiles and consumer durables are not only trying to add features but also trying to increase the aesthetic value of their products.

3. Increasing penetration of superior aesthetic products across product categories

The value content of the decorative aesthetic across the applications with increasing penetration and intensity of superior aesthetics across two wheelers, passenger vehicles and consumer durables.

For instance, the penetration of optical plastics, chrome-plated parts, IML/IMD parts is currently limited to specific variants across select models across passenger vehicles.

Below are a few examples of increasing penetration and rising intensity.

- a. **Optical plastics:** Currently penetration of touch based navigation system is limited in India. Only premium models or higher variants of certain models feature touch navigation system. For instance in Swift only ZXi and ZXi+ variants feature a 7 inch touch screen, whereas LXi and VXi have traditional audio interface. In the near future, OEMs are likely to make touch screens as a standard offering across majority models in mid and top variants with improvement in technology, internet connectivity and increasing customer preference for such features. With increasing penetration of touch based navigation systems, demand for optical plastics will get a proportionate demand fillip. The increasing penetration of optical plastics will therefore provide boost to revenues of aesthetic product manufacturers
- b. **Chrome plated parts-** Over the last few years customers have shown a keen interest in decorating their vehicles with accessories bought from car dealers or aftermarket part dealers. Among these, chrome plated accessories such as door handles, mirrors, head light covers, front grill, fog lamp covers etc are popular among customers. Vehicle manufacturers have also understood this behaviour or preference and accordingly have started including these chrome plated accessories as standard fitment in certain model variants. The intensity of chrome plated accessories has gone up from mere inclusion of chrome plated inner door handles to front grill, trunk lid liner, head light/ tail light cover, outer door handles etc over the years. The trend of increasing chrome plated part intensity in a OEM manufactured vehicle is likely to continue. As a result demand for chrome plated parts from OEMs is likely to grow rapidly in future.
 - i. Molded gear knobs trims in Ford Eco Sport in vehicles sold in 2015 have been replaced with chrome plated gear knobs in vehicles sold in 2021

Even in consumer durables like refrigerators and washing machines OEMs have started incorporating chrome plated parts such as door handles in case of refrigerators and door rings in case of washing machines as decorative components.

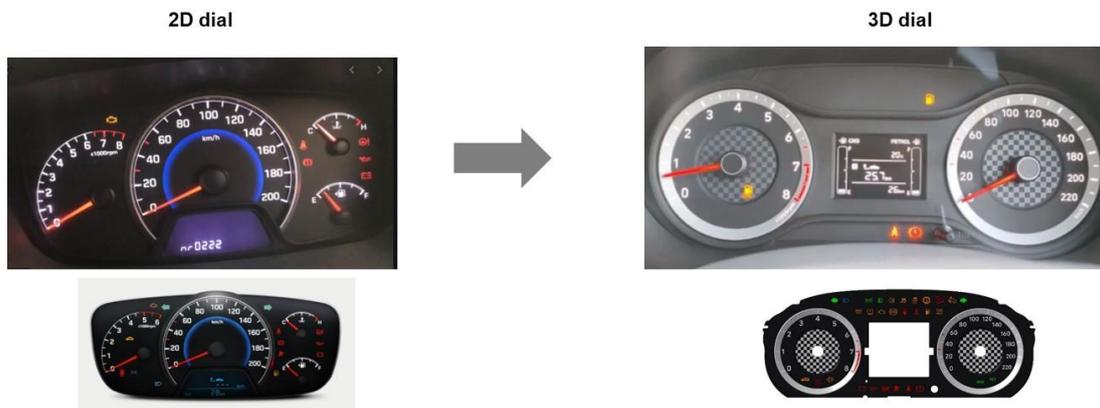
4. Technology shift towards higher costing newer aesthetic products

Advancement in technology is resulting in use of newer and higher value aesthetic components in end industries and consequently increased realisations for aesthetic product manufacturers. Technologically superior aesthetic products are also gaining preference among vehicle or equipment manufacturers as it is not only helping them

differentiate their product offerings from their competition but also create freshness in their offering. Even customers are showing appreciation for these aesthetically enhanced products.

Below are a few examples of impact of advancement in technology on decorative aesthetics market opportunity

- a. **Shift from 2D to 3D appliques/ dials-** 3D dials are visually and aesthetically superior dials. These are incrementally being deployed by PV manufacturers even in India. An aesthetic component manufacturer typically makes 2-3x realisation per unit of 3D dial compared to a unit of 2D dial. Following are a few examples of such a technological shift.



- i. Hyundai i10 Neos in 2021 features a speedometer with a 3D dial whereas older generation of Hyundai i10 had speedometers with 2D dials

- b. **Shift from analogue to analogue- digital appliques/ dials-** Popular two wheeler models such as Hero Passion Pro, Bajaj Pulsar 125, Hero Glamour offer analogue- digital dials which cost around 6-8x times of pure analogue dial. Following are a few examples of such a technological shift.

- i. Top variant of Suzuki Access in 2021 comes with fully digital speedometer which make use of optical plastics. In past even the top variant Suzuki Access featured an analogue speedometer where 2D dials were used.



- ii. Top variants of TVS Jupiter and Honda Activa 125 have shifted to digital+ analogue speedometer. Models sold for instance in fiscal 2015 had only 2-D dials.

- c. **Shift from analogue to touch based navigation system in cars-** Shift from analogue to touch based navigation technology has created a new opportunity for deployment of aesthetic products like optical plastics. Depending upon vehicle segments, different sizes of screens are being deployed in vehicles. For instance, compared to a 7 inch screen in Swift, Creta features a 8 or 10 inch touch screen depending upon variant. OEMs are launching model facelifts with larger screen sizes compared to older versions. Therefore in addition to increasing penetration of optical plastics, demand for optical plastic is getting additional fillip due to increasing sizes of touch screens. An aesthetic component manufacturer makes around Rs 350- 500 per optical screen in a passenger vehicle depending upon size of the screen. Following are a few examples of such a technological shift. Optical plastics have opened altogether a new business opportunity for aesthetic product manufacturers. In vehicles with TFT displays with no touch option there is no aesthetic component supply opportunity.

TFT Display with no touch option



TFT Display with touch option (Optical plastics)



- i. In fiscal 2015 even the top variant of Swift featured traditional infotainment system; in fiscal 2021 ZX, ZXi variants of Swift feature 10.78 cm touchscreen infotainment system
- ii. Even in case of Hyundai i10 Grand, models sold in fiscal 2017 featured traditional infotainment system; whereas in fiscal 2021 Sportz, Turbo and Asta variants have 20.25 cm touchscreen infotainment system
- d. **Shift from chrome plated logos to 3D lux logos-** Aesthetic superiority of 3D lux logos is driving global OEMs to shift from chrome plated logos to 3D-lux logo. An aesthetic component manufacturer makes 12-15% more realisation in case of a 3D-lux logo compared to chrome plated logo. Following are a few examples of such a technological shift.
 - i. For Shine motorcycle Honda Motorcycles has shifted from chrome plated logo to a 3D lux logo over the years
- e. **Shift from plain moulded components to IML/ IMD components-** Passenger vehicle OEMs are deploying IML/ IMD dashboards to offer rich feel to their products. Customers are also finding vehicle interiors of such products to be more appealing as the parts have attractive, finer and softer finish. The



Painted dashboard trim

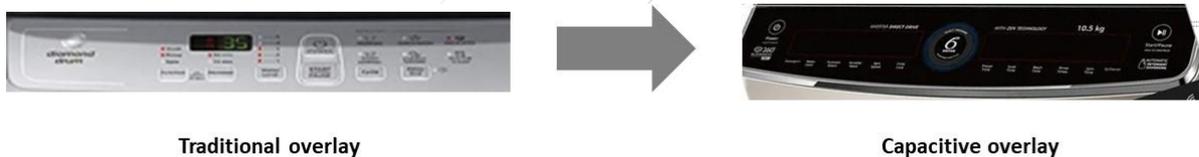


IML dashboard trim



penetration of IML/ IMD dashboards are expected to increase especially in higher variants of models. IML/ IMD dashboards cost around 1.5-1.6x times of non- IML/ IMD dashboard per vehicle depending on vehicle category. Similar trend is visible in consumer durables where manufacturers are shifting to IML/ IMD based components over traditional moulded components for better aesthetics. Following are a few examples of such a technological shift.

- i. Dashboard trims in Ertiga and Ciaz in higher variants have been converted to IML designs from moldings in last 3-4 years
 - ii. Plastic moulded badges in wheels are shifting towards Chrome plated and IML designed badges across OEMs such Toyota, VW and Tata Motors
 - iii. New generation Whirlpool double door refrigerators have started featuring IML decorated parts for superior aesthetic appeal. Such components were not existent in past models
- f. **Shift from traditional overlays to capacitive touch overlays-** Consumers are increasingly showing preference touch interfaces over traditional interfaces due to better convenience and usage experience. Appliance manufacturers are therefore gradually shifting to capacitive overlays in fully automatic washing machines. Decorative aesthetic manufacturer makes 1.8-2x realisation in capacitive overlays compared to traditional overlays



Certain technological developments such as the emergence of heads-up display (HUD) are however likely to impact the demand for decorative aesthetic products, such as appliques, in a longer run. However, considering cost and nascence of technology, HUD is unlikely to have any impact on demand for appliques over the next 5-10 years.

5. Decorative aesthetics in the electric vehicles

Rising EV adoption is likely to benefit decorative aesthetic industry in terms of higher realisations on account of propensity for high value aesthetic component incorporation in EVs compared to internal combustion vehicles.

a. Electrification in two wheeler and passenger vehicle in India

Electric vehicle adoption is likely to pick over fiscal 2021 to fiscal 2026 driven by following factors

- Growing awareness levels and concern regarding environmental issue
- Improvement in charging infrastructure
- Reduction battery prices and resultant improve total cost of ownership parity of electric vehicle
- Entry of main stream vehicle manufacturers and availability of wider product choices to customers

Electric vehicle penetration outlook (penetration is expressed as number of electric vehicles sold as a % of total two wheelers or passenger vehicles sold in domestic market)

Vehicle category	EV penetration	
	FY21	FY26
Two wheelers	~1%	~8%
Passenger vehicles	~0.2%	~4%

Source; CRISIL Research

b. Decorative aesthetics a powertrain technology agnostic industry

Increasing adoption of electric vehicles or cleaner fuels (CNG, Hybrid, LNG) or increasing stringency in emission norms (for example, shift from BS-IV to BS-VI norms) does not have any adverse impact on decorative aesthetic demand across two wheeler or passenger vehicle applications.

c. EV vehicles more evolved in terms of technological adoption compared to ICE vehicles

Global references indicate that EV models typically have better technology and aesthetic design compared to internal combustion engine based vehicles. For instance, EV typically have more connected features, larger and more number of screens compared to ICE vehicles. In India, Tata Nexon EV uses 3D-lux logos as opposed to a chrome plated logo used in Nexon ICE vehicles. Therefore rising EV adoption is likely to benefit decorative aesthetic industry due to adoption of advanced technology .

6. Faster than underlying industry growth

As Indian market is currently under penetrated with respect to aesthetic content in the products in comparison to global counterparts across automobiles and consumer durables, growth of decorative aesthetics market in value terms is expected to surpass volume growth in demand for two wheeler, passenger vehicle and consumer durables over fiscal 2021-26 period. Therefore while demand from two wheeler, passenger vehicle and consumer durable applications is expected to grow at 10-12% CAGR each in volume terms over fiscal 2021-26 period, demand for aesthetics is expected to grow 1.6-1.8x, that is at ~20% CAGR -over the same period. Any decorative aesthetic player having a manufacturing presence in India, therefore stands to benefit by robust underlying demand growth and increasing aesthetic value content across these application segments.

1.3 Competitive scenario

Suppliers of decorative aesthetic are expected to deliver high precision aesthetic products adhering to high quality control norms set by the OEMs managing requirements of higher number of stock keeping units (SKUs). Aesthetics being key focus area for consumers as well as OEMs, decorative aesthetic product suppliers are also expected to partner with OEMs and contribute towards bringing timely innovations in the field of aesthetics. As a result supplier on boarding process in automobile and consumer durable industry is often stringent and time consuming. These factors result into high barriers for entry of new suppliers to OEMs. Certain segments within the aesthetics industry, particularly decals, graphics and logos, are highly commoditized and have low barriers to entry or exit, leading to a market with a very high degree of fragmentation.

Product portfolio coverage and application segment coverage of key players

Company	Decorative aesthetic product coverage										Application segment coverage		
	Traditional aesthetic products						Advance technology products				2W	PV	CD
Particulars	Logos	Decals	Stickers, aluminium badges	Chrome plated parts	2D Dials	Traditional Overlays	3D Dials	Capacitive Overlays	IML/IMD	Optical plastics			
Classic Stripes	✓	✓			✓	✓	✓	✓			✓	✓	✓
Galva Deco Parts	✓			✓							✓	✓	
Kongovi	✓			✓								✓	
Monochem Graphics	✓	✓	✓		✓	✓	*	*			✓	✓	✓
Polyplastics Industries India	✓			✓							✓	✓	
Pragati Industries	✓			✓							✓	✓	
PRS Permacel		✓	✓								✓	✓	
S.J.S. Enterprises	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unique Labels			✓		✓		*	*	✓		✓	✓	

Note: 2W (Two-wheelers), PV (Passenger vehicles), CD (Consumer durables)

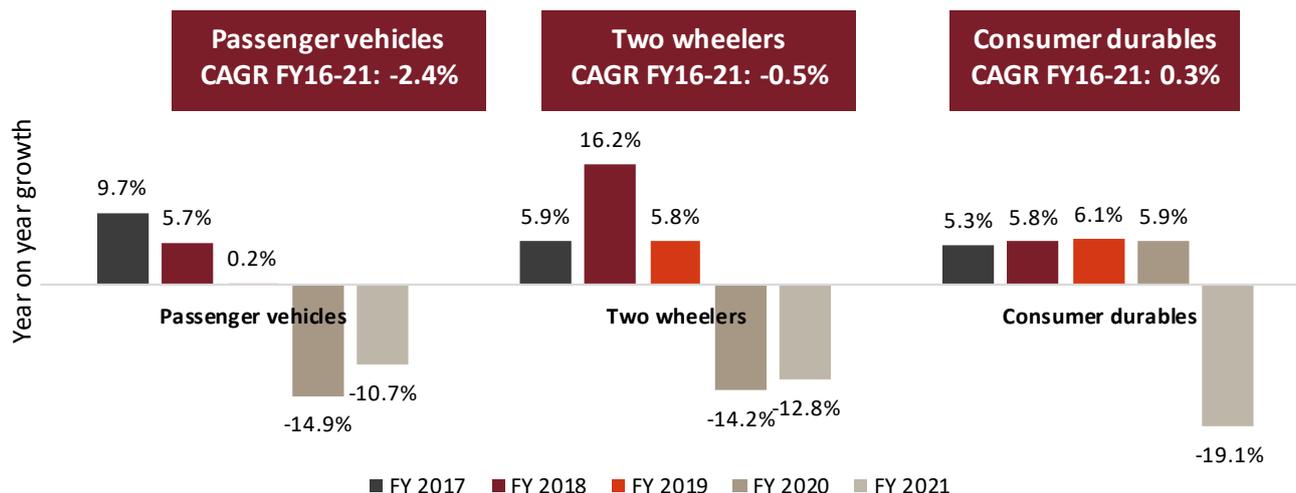
*Monochem Graphics and Unique labels offer dials and overlays however their websites do not clearly specify if these companies also offer 3D dials and capacitive overlays in specific

Source: Company websites

The Indian decorative aesthetics suppliers cater to leading automotive original equipment manufacturers such as Maruti Suzuki, Hyundai, Tata, Mahindra, Hero Motocorp, Honda Motorcycles, Ashok Leyland etc. In addition, decorative aesthetics suppliers also supply to global independent [Tier-1] automotive component suppliers such as Marelli, Visteon, Continental, Pricol, Mindarika, Jay Ushin and Brembo. The industry also serves aesthetic requirements of consumer appliances companies such as Whirlpool, Electrolux, Panasonic, Samsung, LG, Godrej, Carrier, Voltas and Faber.

The Indian decorative aesthetics industry comprises of few players with diversified product portfolio having presence across most of the OEMs however there are several other enterprises which are into manufacturing of one/ limited range of decorative aesthetics and are direct suppliers to OEM/ tier I component manufacturers suggesting the fragmented nature of business.

Polyplastics Industries, Classic Stripes and S.J.S. Enterprises are the top three players in terms of revenue. S.J.S. Enterprises is one of the leading decorative aesthetics supplier with widest product coverage across decorative aesthetics pertaining to major vehicle segments; namely, two-wheelers, passenger vehicles and consumer durables.

Growth across application segments in India (FY16-21)


Note: Figures represent year-on-year production growth for Passenger vehicles, Two wheelers; year-on-year domestic sales growth for consumer durables

Source: SIAM, CRISIL Research

Summary financial indicators for key auto components players

Companies/Particulars	Operating income		Exports (%)	Operating EBITDA margin (%)	PAT margin (%)	ROCE (%)	ROE (%)	Gearing ratio
	(Rs mn)							
	FY20	CAGR FY14-20	FY20	FY20	FY20	FY20	FY20	FY20
Polyplastics Industries India Pvt Ltd	4,504	13.4%	8%	12.2%	4.9%	13.3%	11.8%	0.6
Classic Stripes Pvt Ltd	3,588	1.5%	0%	28.9%	11.8%	26.3%	19.2%	0.5
S.J.S. Enterprises Pvt Ltd	2,155	15.1%	15%	31.9%	18.0%	22.8%	16.5%	0.0
PRS Permacel Pvt Ltd	1,351	8.6%	0%	1.9%	-1.5%	2.7%	-22.1%	3.6
Monochem Graphics Pvt Ltd	1,080	11.1%	0%	24.2%	28.0%#	17.9%	13.2%	0
Galva Deco Parts Pvt Ltd	1,070	23.6%	0%	22.7%	-3.6%	6.1%	-10.0%	2.9
Kongovi Pvt Ltd	969	9.8%	25%	17.2%	7.0%	9.9%	12.1%	1
Average		9.4%		19.2%	8.8%	14.4%	6.1%	1.2

Note: Financials reclassified as per CRISIL

includes non-operating income

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/average of last two years total debt plus tangible net worth

ROE: PAT/ average of last two years tangible net worth

Gearing ratio: Adjusted total debt/ Adjusted tangible networkth

Source: Company reports, MCA, Rating Rationales, company websites, CRISIL Research

1.4 Player profiles

Classic Stripes Private Limited

Classic Stripes (CS) is a flagship company of Astarc Group, offering Surface Augmentation Solutions to Automotive, Consumer Durables & Appliances industries across the globe for over 30 years. Classic Stripes product portfolio includes OEM Decals, Printed Electronics (Thin, Flexible sensing & illumination solutions, touch interfaces), Flexible 3D Badging, Domed Badging, Automotive Instrument Cluster 2D & 3D Dials, Fascia for Consumer Durable Industry and Digital Branding Solutions

Major customers include: Hero Motocorp, Bajaj, Yamaha, TVS, Maruti Suzuki, Tata, Honda Cars, MG Motors, Volvo, Kia Motors, Toyota, Panasonic, Ford, Visteon, Continental etc.

Classic Stripes has 3 states of the art manufacturing facilities within India.

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	3593.5	3791.3	3588.4
EBITDA margin (%)	33%	33%	29%
PAT margin (%)	-6.5%	-2.2%	11.8%
Gearing Ratio	1.0	0.9	0.5
Current ratio	1.7	1.3	1.3
ROCE (%)	1.7%	4.2%	26.3%
ROE (%)	-46.2%	-5.8%	19.2%

Source: CRISIL Research, company filings

Galva Deco Parts Private Limited

For over 3 decades, Galva has a major presence in Plastic Chrome Plating Industry, catering to the leading Passenger Vehicle, Commercial Vehicle, Motorcycle & Scooter, & Tier 1 Automobile industry as well as FMCG manufacture's. Galva provides Technological edge, right from Concept to Design to supplies of Series products through their dedicated R&D facility, World class Tool Room, and cutting-edge In- House Jig manufacturing, Injection Moulding, Automized Plating Technology equipped with an in-house testing lab to meet the stringent international quality standards.

Plating plant I, Plating plant II & Metalising plant is located in Vapi Gujrat, Moulding Plant & Tooling Plant is located in Pune.

Key clients include: Ashok Leyland, Bajaj, Eicher, Force Motors, Ford, Fiat, Hyundai, Kia Motors, Mahindra, Nissan, Renault, Royal Enfield, Samsung, Voltas, Yamaha etc.

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	975.5	804.4	1069.6
EBITDA margin (%)	19.5%	16.1%	22.7%
PAT margin (%)	6.5%	-0.8%	-3.6%
Gearing Ratio	0.9	2.5	2.9

Current ratio	0.9	1.2	1.2
ROCE (%)	22.8%	7.1%	6.1%
ROE (%)	21.0%	-1.7%	-10.0%

Source: CRISIL Research, company filings

Kongovi Electronics Private Limited

Kongovi started operations in 1974. The company is involved in the production of chrome plated automotive plastic components both for interior and exterior applications for the original equipment manufacturers of the passenger car industry. Kongovi Private Limited supplies trims for interior and exterior applications which are used for their aesthetic appeal. The components include grills, logos, garnishes, door handle covers, gear knobs, body mouldings, mirror scalps and fog cover.

Kongovi Private Limited set up a new plant at Kukkanahalli, Bangalore North Taluk, for enhancing the production capacity and consolidating the operations at its earlier three plants. The plant, has been operational since March 2017. The company shifted its manufacturing activities from three of its earlier plants to the new plant in FY2018 and FY2019.

Kongovi Private Limited has an established relationship with its customers and caters to major OEMs, like Toyota, Hyundai, Volkswagen, Ford, Renault and Nissan, mainly through their tier-I auto-component suppliers, with KPL being the sole supplier of certain components.

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	1349.4	1176.9	968.6
EBITDA margin (%)	13.4%	18.5%	17.2%
PAT margin (%)	6.0%	8.1%	7.0%
Gearing Ratio	1.6	1.3	1.0
Current ratio	1.5	1.4	1.6
ROCE (%)	14.4%	15.0%	9.9%
ROE (%)	21.5%	21.1%	12.1%

Source: CRISIL Research, company filings

Monochem Graphics Private Limited

Monochem Graphics group of companies started as a modest business house in the year 1962. Over the years, the business has expanded manifold. Monochem is the name that is associated with top of the line corporations and brands. An enviable reputation to the clients for their brands exclusivity, they look for in their insignias, decals, graphics, advertising material etc.

Monochem graphics has four manufacturing units - three in Delhi, one in Gurgaon, occupying covered area of 2,50,000 sq. ft., manufacturing products with the latest state-of-the-art imported plants to the best quality specifications meeting national and international standards.

Its clientele includes Whirlpool, Godrej, Carrier, Maruti Suzuki, Honda Cars, Nissan, Mahindra, Renault, Honda Motorcycles, Piaggio, Royal Enfield, Ashok Leyland, Swaraj Mazda etc.

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	1334.8	1429.9	1079.7
EBITDA margin (%)	22.8%	25.9%	24.2%
PAT margin (%)	21.8%	23.0%	28.0%
Gearing Ratio	0.0	0.0	0.0
Current ratio	1.2	10.7	15.6
ROCE (%)	17.1%	22.8%	17.9%
ROE (%)	17.5%	16.7%	13.2%

Source: CRISIL Research, company filings

Polyplastics Industries India Private Limited

Polyplastics Group is a focused, dynamic and progressive group providing customers with value added products, services and innovative solutions. The Group has a diversified product range to serve multiple industries, with automotive industry being the main industry served.

The Group business portfolio comprises Emblems (Electroplated, Painted, Gold Plated & Hot stamped), Automotive Plastic moulded components, Wheel Trims & Wheel Covers, Electroplated Bigger Parts (Radiator Grills, Licence Plate Garnish, Hood Strips), Decorative Body side moulding, Assemblies Control Brackets, Dash Board Components, Auto Electricals Assemblies, Door Handle, Ash Trays, Fuse Box Assemblies, Diesel Water Separator & injection molding tools, design engineering.

The company's clientele includes major automobile players like Maruti Suzuki, Honda Cars, Tata Motors, Mahindra, Kia, Honda Motorcycles & Scooters, Hero Motocorp, Suzuki, Royal Enfield among others.

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	5446.2	5602.5	4503.9
EBITDA margin (%)	14.0%	11.8%	12.2%
PAT margin (%)	7.4%	6.0%	4.9%
Gearing Ratio	0.3	0.5	0.6
Current ratio	1.7	1.5	1.5
ROCE (%)	37.3%	24.4%	13.3%
ROE (%)	31.9%	20.7%	11.8%

Source: CRISIL Research, company filings

PRS Permacel Private Limited

With over 62 years of rich experience in serving the Indian industry, PRS Permacel offers customer-specific solutions in the chosen segments of Insulation, Identification, Aesthetic Enhancements, Brand Building and Protection.

In order to provide world-class service to its esteemed customers, in 2010-11 PRS Permacel set up a state-of-the-art, green field manufacturing facility based at Ambarnath in Maharashtra State, which covers a total constructed area of over one hundred thousand square feet. This facility encompasses the entire value chain starting from adhesive manufacturing to adhesive stock & tape coating to printing and finishing operations - all under one roof.

PRS Permacel currently has its head office in Mumbai India, with sales offices and channel partners strategically located, across India.

The company's clientele includes Maruti Suzuki, Tata Motors, Hyundai, Ford, Mahindra, Kia Motors, Honda Cars, Bajaj, Hero Motocorp, Honda Motorcycles & Scooters, Yamaha etc

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	1267.5	1487.7	1350.5
EBITDA margins (%)	4.9%	5.7%	1.9%
PAT margins (%)	1.2%	1.7%	-1.5%
Gearing Ratio	3.2	2.9	3.6
Current ratio	0.9	0.9	0.9
ROCE (%)	11.9%	15.1%	2.7%
ROE (%)	17.0%	24.1%	-22.1%

Source: CRISIL Research, company filings

Sekisui DLGM Molding Pvt Ltd

Sekisui DLGM Molding is a joint venture of Sekisui Chemical Co Ltd, Japanese the Holding Company which holds 51 % equity share and Dipty Lal Judge Mal Pvt Ltd holding the rest 49%. Company manufactures plastic two-wheeler parts such as window front, muffler protector, guide stopper, windscreen, straight screw, cover front, fender rear, inner assembly cover side assembly and for the passenger car segment it makes interior and exterior door handles, centre console, mudguard, window regulator, windshield washer tank, windshield cover and radiator grill. Company has three production facilities located at Greater Noida (Uttar Pradesh), Tapukara (Rajasthan) and Chennai (Tamil Nadu).

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	2,759.4	3,135.6	2,525.3
EBITDA margin (%)	20.7%	21.6%	23.1%
PAT margin (%)	8.8%	10.9%	9.6%
Gearing Ratio	0.7	0.4	0.5
Current ratio	1.2	1.2	1.2
ROCE (%)	17.2%	31.1%	33.3%
ROE (%)	18.4%	30.9%	30.0%

Source: CRISIL Research, company filings

S.J.S. Enterprises Private Limited

SJS is a world class manufacturer of Automotive Dials (automotive dashboard interior), Climate Control Overlays, Exterior Decals (two and four wheelers), Overlays, Badges and Logos for the automotive, electronics and appliance industries. Company acquired chrome plated aesthetic product manufacturer, Exotech Plastics in fiscal 2021.

Located in Bangalore, India, SJS has its' world class facility in 1,00,000 sq ft. of floor area. Company is equipped with state-of-the art equipment and machinery to cater to the increasing global demand.

The company's customers include leading OEMs in both 2-wheeler and 4-wheeler segments such as TVS, Bajaj, Honda Motorcycles & Scooters, Yamaha, Maruti Suzuki, Hyundai, Mahindra, Tata, Honda Cars, Visteon Group among others. The customers also include white good manufacturers like Whirlpool, Carrier, Electrolux, Symphony, Panasonic among others.

SJS enterprises claims to offer widest range products in India delivering more than 122 Mn parts, 6330 SKU's annually to 70 customer locations through a well-established supply chain.

Key financial indicators

Ratios	FY18	FY19	FY20
Operating income (Rs million)	2,252.6	2,369.1	2,154.6
EBITDA margin (%)	32.6%	27.5%	31.9%
PAT margin (%)	21.0%	15.4%	18.0%
Gearing Ratio	0.1	0.1	0.0
Current ratio	2.5	2.8	4.1
ROCE (%)	44.5%	24.3%	22.8%
ROE (%)	30.9%	18.6%	16.5%

Source: CRISIL Research, company filings

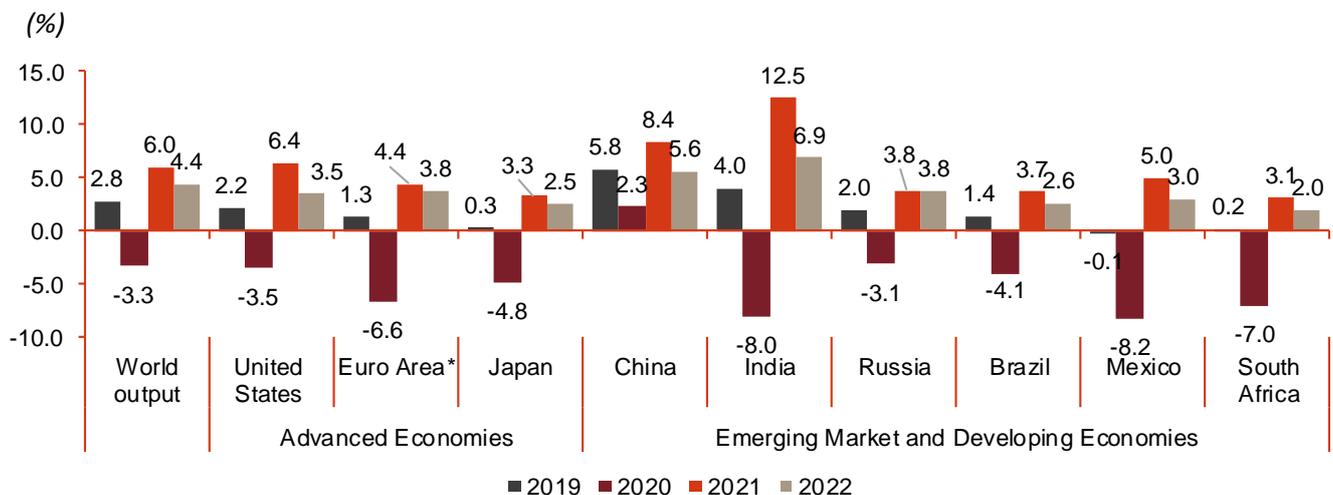
2 Global macroeconomic overview

The global economy is gradually getting back on its feet, since the Covid-19 pandemic hit over a year ago. But the resurgence of Covid-19 cases in some countries has prompted authorities to re-impose lockdowns to contain its spread. Nevertheless, multiple vaccine approvals in December, commencement of vaccination in some countries, and better-than-expected data on economic activity from various parts of the world have resulted in the International Monetary Fund (IMF) raising its estimates of world economic growth yet again, in its April 2021 update of the World Economic Outlook.

The optimism also stems from better-than-expected gross domestic product (GDP) data from countries such as Australia, India, Japan, Korea, New Zealand, Turkey, the United States (US), and euro area members, in the third quarter of 2020. For instance, GDP forecast for US, Euro Area and EU area has been increased by IMF by 130 basis points (bps), 30 bps and 30 bps respectively in April 2021 economic outlook compared to January 2021 outlook. IMF's global economic growth estimate for calendar year 2020 stands at -3.5%, while that for 2021 is better at 5.5% and for 2022, at 4.2%. The IMF expects the vaccination and containment efforts to strengthen recovery in contact-intensive sectors, further improving momentum of economic activity. In fact, the US has been able to fully vaccinate 39.3% of its population as on 25th of May 2021 and government is targeting to vaccinate at least 70% of its population with one dose by the beginning of July 2021. Inoculation agenda across the globe is likely to result into revival in social and economic activities giving desired boost to global consumption demand. However, progress is expected to be staggered, as some countries, especially the developed ones are getting their vaccination programmes off the ground faster will see earlier recoveries compared to the developing countries. Developing economies also have large spending needs and provide high liquidity support relative to GDP compared with other economies, due to higher debt levels and borrowing costs.

Finally, additional policy measures announced at the end of 2020 — notably in the US and Japan — are expected to provide further support in 2021 and 2022 to the global economy. These developments indicate a stronger starting point for the global outlook in these years than that envisaged in the previous forecast.

IMF estimates of GDP growth for key economies



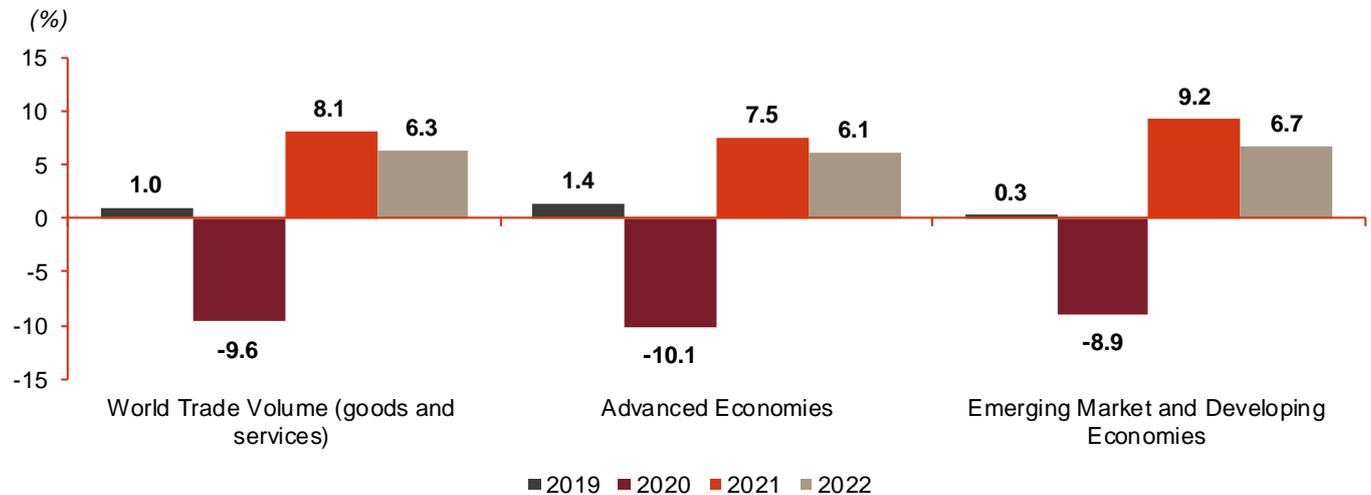
Note: *Euro area includes Germany, France, Italy, Spain; Note: Above data is for calendar years

Source: IMF, CRISIL Research

However, the IMF also raises a few lingering concerns that could derail the momentum seen in recent data points: surging infections for new variants of the virus and renewed lockdowns, logistical problems with vaccine distribution and uncertainty about vaccine uptake. High-frequency data from some economies suggest that the pace of recovery has slowed down in the fourth quarter of calendar year 2020. With recovery in demand and vaccine availability, oil prices are expected to rise in 2021, albeit average levels will remain below 2019. Non-oil commodity prices are also expected to increase, with those of metals projected to show strong appreciation in 2021. Nevertheless, even with anticipated recovery, IMF does not expect output gaps to close until after 2022. Consistent with negative output gaps, it also forecasts subdued inflation during 2021 and 2022 in both, advanced and emerging economies in comparison with their historical averages.

The IMF has also revised its global trade growth estimates to -9.6% for 2020. It sees a more pronounced decline in activity in certain sectors due to social distancing norms, which, however, have a much smaller intensity than manufacturing. Trade restrictions are playing a smaller role in the significant downturn. In 2021, trade growth is expected to rebound over 8% due to the low base effect, and then moderate to ~6.3% in 2022. IMF expects advanced economies to see a sharper decline in trade activity in 2020, and similarly, for growth in 2021 to be higher for emerging and developing markets.

IMF estimates of world trade growth



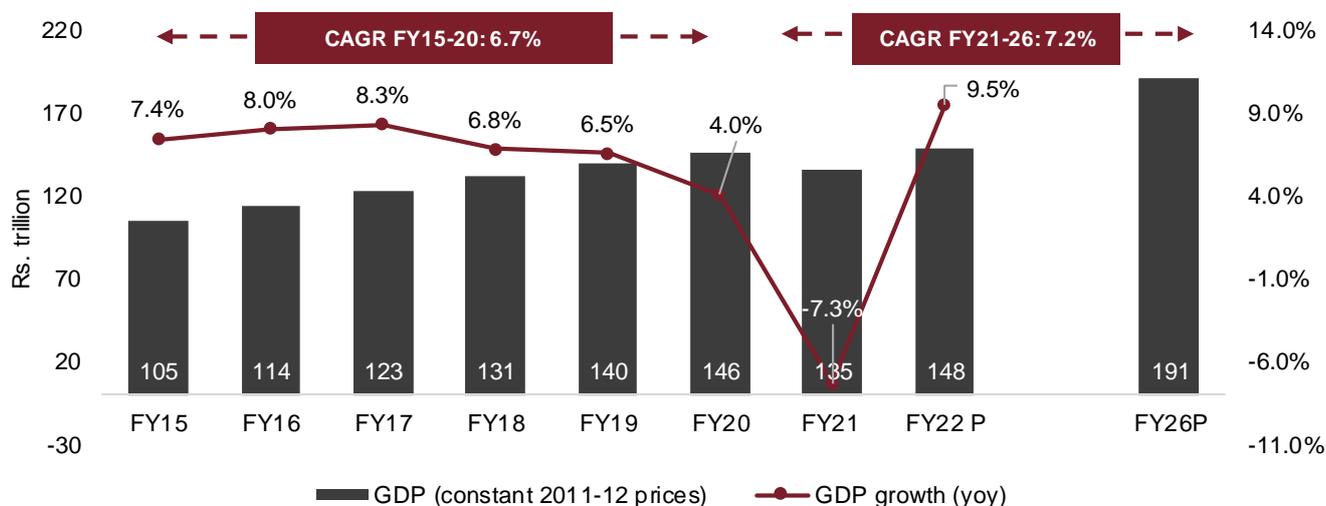
Note: Above data is for calendar years

Source: IMF, CRISIL Research

3 India macroeconomic overview

Indian economy recorded a robust 6.7% CAGR over fiscal 2015 to 2020 period driven by rising consumer aspirations, rapid urbanization, government's focus on infrastructure investment and growth of domestic manufacturing sector even as the economic growth declined by 7.3% due global pandemic. The economic growth was supported by benign crude oil prices, softer interest rates and lower current account deficit. Indian government also undertook key reforms and initiatives such as implementation goods and services tax, Insolvency and Bankruptcy Code (IBC), make in India program, financial inclusion initiatives, gradual opening of sectors such as retail, e-commerce, defense, railways, and insurance for foreign direct investments (FDI). FDI into India grew from 45.1 bln USD in fiscal 2015 to 81.7 bln USD in fiscal 2021. Growth over fiscal 2015 to 2020 was however impacted due to demonetisation, NBFC crisis, GST implementation and slower global economic growth. Over fiscal 2015 to 2020 India's economic growth was led by services followed by industrial sector.

GDP growth review and outlook



Note: E - Estimated and P - Projected

Source: National Statistics Office (NSO), IMF, CRISIL Research estimates

Fiscal 2020 was volatile for the global economy. The first three quarters were ensnared by trade protectionist policies and disputes among major trading partners, volatile commodity and energy prices, and economic uncertainty arising from the Brexit. Hopes for broad-based recovery in the fourth quarter were dashed by the Covid-19 pandemic, which has infected more than 174 million people in more than 220 countries (as of June 7, 2021) and counting, leading to considerable human suffering and economic disruption.

Growing restrictions on the movement of people and lockdowns in the affected countries led to demand, supply and liquidity shocks, that resulted in major financial losses and bankruptcies of several players in different industries. India saw one of the world's most stringent lockdowns from March 2020. As lockdowns were gradually lifted, economic activity saw a revival in second half of fiscal 2021. After a steep contraction in the first half of this fiscal, owing to the rising number of Covid-19 cases, GDP growth is estimated to have moved into positive territory towards the end of the fiscal. Supported by normal and largely well-distributed monsoon, and healthy sowing and ground-water situation agricultural GDP is estimated to have grown by 3% on-year. On contrary, manufacturing and services GDP shrunk on account of restrictions in activity and people movement especially during first of the fiscal.

India was showing some signs of recovery following a slew of fiscal/monetary measures before the pandemic stuck. These measures are however expected to support India's economic recovery in fiscal 2022. CRISIL foresees GDP growth rebounding to 9.5% in fiscal 2022 over a low base of fiscal 2021 supported by government's vaccination drive, focus on infrastructure spends, global economic recovery and rising consumer confidence.

Macroeconomic outlook for fiscal 2022

Macro variables	FY20	FY21	FY22P	Rationale for outlook
GDP (% , y-o-y)	4.0%	-7.3%	9.5%	<p>The budget's focus on pushing capex despite a tight fiscal situation provides optimism and creates conditions for higher growth. Given that the focus is on an investment-push rather than consumption, the full-impact of these spends on growth will be seen in the near term via multiplier effects and over time through enhancement of productive capacity.</p> <p>Growth in fiscal 2022 will mainly be driven by a very weak base and some rub-off from rising global growth-tide effect, control of the covid-19 case spread, and the vaccinations rollout that will boost confidence and support stronger recovery</p> <p>Second Covid wave and limited availability of vaccination in India however could potentially derail promising recovery as governments are likely to respond with series of localised lockdown as a measure to control the pandemic outbreak. Subdued economic activity is likely to also further dampen consumption sentiments hurting the economic recovery. In such a scenario, there could be a considerable downside risk to base economic forecast.</p>
Consumer price index-linked (CPI) inflation (% , y-o-y)	4.8%	6.2%	5.3%	High food prices in some categories and rising commodity prices suggest inflationary pressures would ease only gradually. The demand push from the budget could also keep core inflation sticky.
10-year government security yield (% , March-end)	6.2%	6.2%	6.5%	Gross market borrowing, which jumped to a record high of Rupees 12.8 trillion in FY 21, will only slightly moderate to Rupees 12.06 trillion in FY 22. Supply pressures will have a bearing on yields once the RBI starts unwinding its ultra-accommodative stance.
CAD/GDP (%)	-0.9%	1.8%	-1.2%	While export recovery has been uneven and depends on the covid-19 trajectory in major economies, imports are expected to see consistent recovery on account of continued improvement in domestic demand. Rising crude oil prices will also fuel import growth.
Rs/\$ (March, average)	74.4	74.0	75.0	Rising crude prices and recovery in import demand will put downward pressure on the rupee.

Note: P- Projected

Source: Reserve Bank of India (RBI), NSO, CRISIL Research

Risks to growth

Below par monsoons: Domestically, one major risk could be sub-normal monsoon this calendar year. The past two years have seen good rains and chances that they are normal this year too are uncertain because only once in the past 20 years has India seen more than two consecutive normal monsoon years. A monsoon failure can directly shave up to ~50 basis points (bps) off from the fiscal 2022 GDP growth forecast.

Covid-19 cases increasing: India seemed to have got Covid-19 cases under control, with the number of cases declining post September 2020. However, since the end of February 2021, India has witnessed 2nd wave of Covid-19 with the surge in infection cases, leading to state governments taking steps to control the spread including imposing curfews and localised lockdowns resulting in loss of economic output. During the 2nd wave of Covid-19, total daily active cases had crossed 400 thousand mark for the first time in the first week of May. During last week of Aug 2021, daily active cases have dropped around 40 thousand cases. Growth outlook for the fiscal 2022 will further see a downward pressure if India faces further waves of Covid-19 during the fiscal. In case the spread of Covid-19 increases drastically like in the 2nd wave and the concerned authorities put in place more stringent measures to control the same, it can have a debilitating impact on economic activity and thereby growth going forward. Availability of vaccine and pace of vaccination will be a key monitorable; issues pertaining to availability of vaccine is likely to hinder and delay economic recovery.

Geopolitical developments: External developments, most importantly the US-China trade war, have proved to significantly impact global GDP growth as well as export earnings and capital flows to emerging markets such as India. While there is some respite with the signing of Phase 1 of the US-China trade deal, several issues remain unresolved. Any re-escalation of tensions could again work adversely. Geopolitical developments in the Middle East could also disrupt crude oil supply and prices, likely hurting a wide range of domestic macroeconomic parameters, including current account deficit, inflation and GDP growth.

Persistent stress in financial sector: This has been one of the major drags on GDP growth this fiscal. Gross Non-Performing Assets (GNPA) have risen by 60 bps over fiscal 2020, to 8.8% in fiscal 2021. GNPA's are further expected to inch up by 170 bps in fiscal 2022 driven by delinquencies in MSME and retail segments. Liquidity issues faced by NBFCs and risk aversion hampered credit growth as well as transmission of monetary policy easing. Easing of constraints in the financial system – a key monitorable – is critical for pick-up in growth.

3.1 GDP to recover over the medium term

CRISIL Research expects GDP to grow at ~9.5% in fiscal 2022 and at an average of 6.6% between fiscals 2023 and 2026. India to emerge as one of fastest growing major economy across the globe. This growth will be supported by the following factors:

- Focus on investments rather than consumption push enhancing the productive capacity of the economy. In fiscal 2022 the government is set focus on capital expenditure at time when revenue realisation is likely to remain weak.
- Union Budget 2021-22 has also laid out clear focus on mid-term growth trajectory. The government has set the fiscal glide path to 4.5% in fiscal 2026 from 6.8% in fiscal 2022. This underscores government's continued focus on expenditure over mid-term.
- Reforms undertaken over the past few years such as:
 - The production linked incentive (PLI) scheme which aims to incentivise local manufacturing by giving volume-linked incentives to manufacturers in specified sectors
 - Steep cut in corporate tax announced by government in fiscal 2021 is expected to attract more investments into the country and boost domestic manufacturing sector output over mid to long term
 - Key structural reforms such as implementation of Goods and Services Tax (GST) and Insolvency and Bankruptcy Code (IBC) will begin to show its impact over the longer term
 - Reform measures aimed at enhancing financial inclusion like Pradhan Mantri Jan Dhan Yojana will broaden the base of the banking ecosystem, leading to higher lending and investment
 - Government initiatives like Digital India Initiative will aid digitalisation in the country. This will improve the efficiency in the economy leading to faster growth.

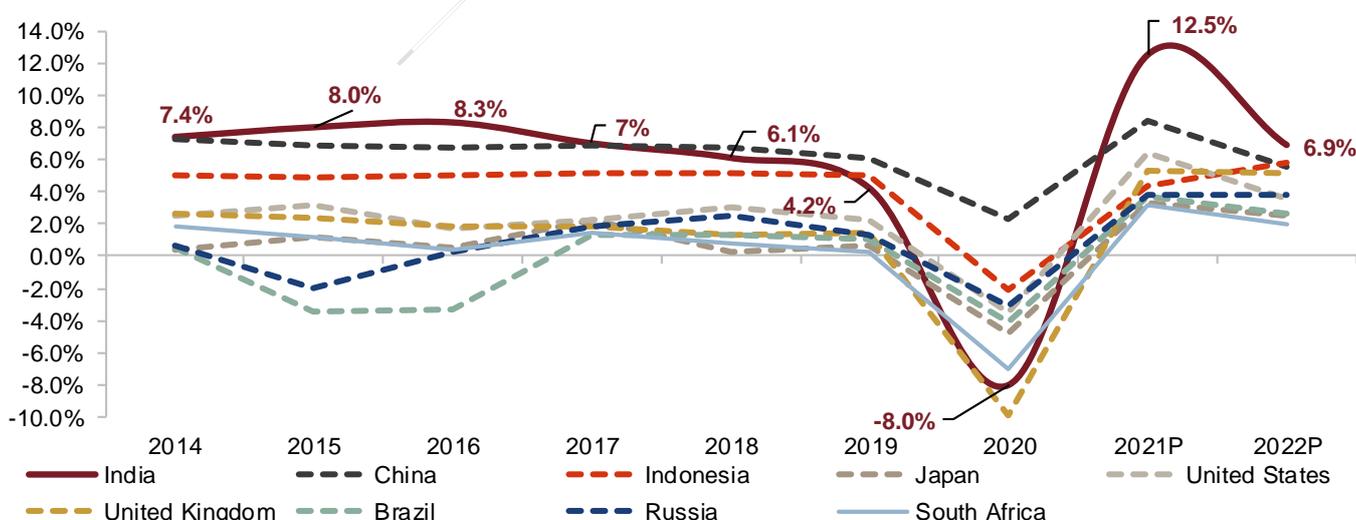
- Raft of reform measures by the government along with a more expansionary stance of monetary policy leading to a steady pick-up in consumption demand
- Policies aimed towards greater formalisation of the economy are bound to lead to an acceleration in per capita income growth
- The total length of Nation Highways in India has grown from ~97.8 thousand km in fiscal 2015 to ~136.4 thousand km in fiscal 2021. Under National Infrastructure Pipeline, investments in roads and highways sector are likely continue at robust pace in near future. These initiatives are likely to strengthen supply chain as well as reduce transit time and logistics costs for the manufacturing sector.

3.2 India’s GDP will still grow faster than the world’s

India was one of the fastest-growing economies in the world with annual growth of around 6.7% between 2014 and 2019. Over the past four fiscals, India’s macroeconomic situation has gradually strengthened: the twin deficits (current account and fiscal) have been narrowing and the growth-inflation mix has improved, and durably so. Both fiscal and monetary policies are more prudent, focusing on raising the quality and not just the rate of growth. The government has adopted an inflation-targeting framework that provides an institutional mechanism for inflation control, while modernising central banking. Fiscal policy has managed to stay mildly growth-focused, while managing a gradual reduction in the deficit. The upshot is that India’s macroeconomic variables are a lot more stable, and with sufficiently large reserves, the economy is resilient to any global disruptions today, than it was during the Taper Tantrum of 2013.

Rapid urbanisation, rising consumer aspirations and increasing digitisation, coupled with government support in the form of reforms and policies, are expected to support long term growth. As per IMF’s forecasts India (as per World Economic Outlook – January 2021 update) is likely to emerge as the fastest growing countries among major global economies over 2021 and 2022 period.

India is one of the fastest-growing major economies (GDP growth, % on-year)



Note: GDP growth is based on constant prices, P: Projected; above data is for calendar years

Source: IMF (World Economic Outlook – January 2021 update), CRISIL Research

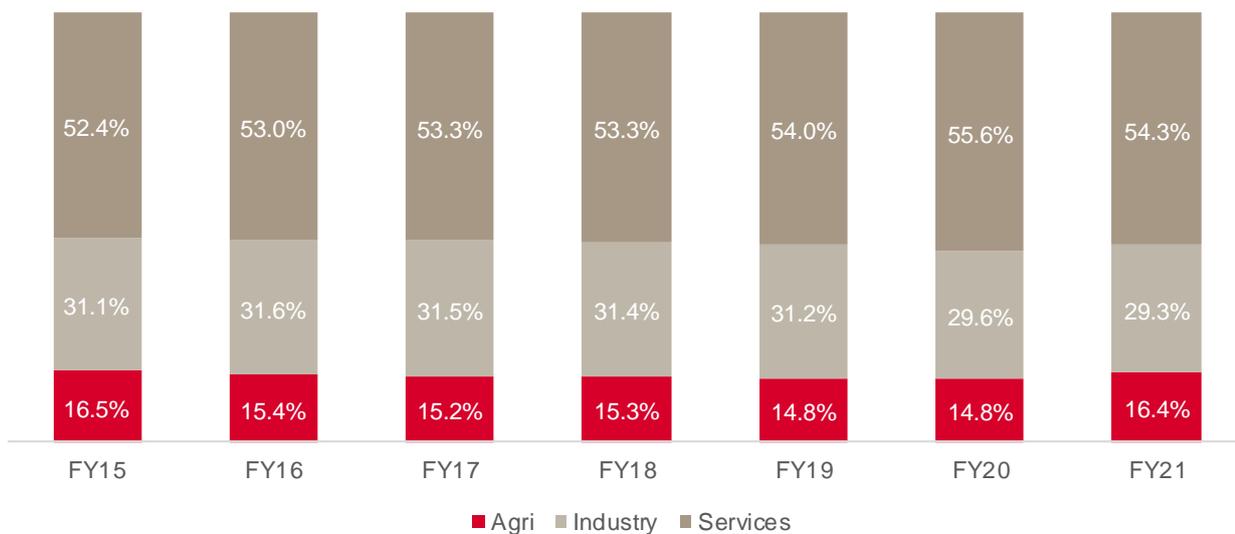
3.3 Contribution of various sectors to India’s GDP

Services sector alone contributes ~54.3% of India’s GDP. Over the fiscal 2015 to 2021 period services sector expanded at 4.9% CAGR increasing its share in overall GDP by from ~52% in fiscal 2015 to ~54% in fiscal 2021.

Industrial sector which is the second largest contributor had ~29% share in GDP, the sector grew at 3.2% CAGR over fiscal 2015 to 2021. Manufacturing on other hand which contributed ~55.7% industrial sector and ~17% overall GDP output grew at 3.8% CAGR over the review period increasing its share in the industrial GDP to ~57.7% in fiscal 2021. Before the overall economic activity slowed down in fiscal 2020 and 2021, growth in India’s manufacturing sector output was supported by Government’s make in India initiative, rising domestic consumption and implementation of GST. The government initiatives improved India’s ranking in World Bank’s ease of doing business ranking by from 142 in 2014 to 63 in 2021.

The government is further aiming to increase share of manufacturing in overall GDP to 25% by fiscal 2025. Relaxation in FDI policy by government, Production-linked Incentive (PLI) schemes and China plus one strategy is likely to support India in increasing share of manufacturing in economic output.

Share of sector in GVA at constant prices



Source: RBI; CRISIL Research

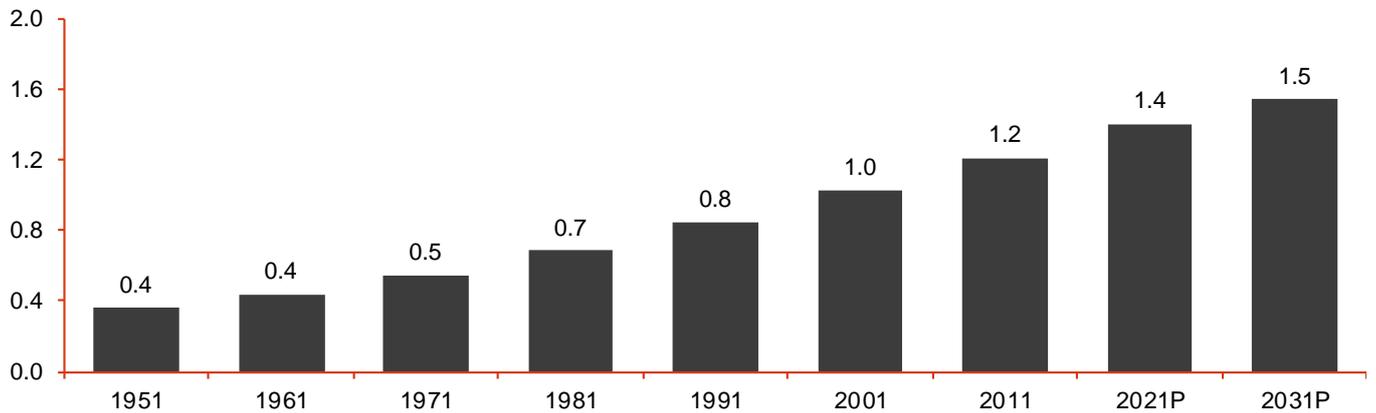
3.4 Key macroeconomic trends and long-term growth drivers

India has the world’s second largest population

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.

India's population growth trajectory

(In billion)



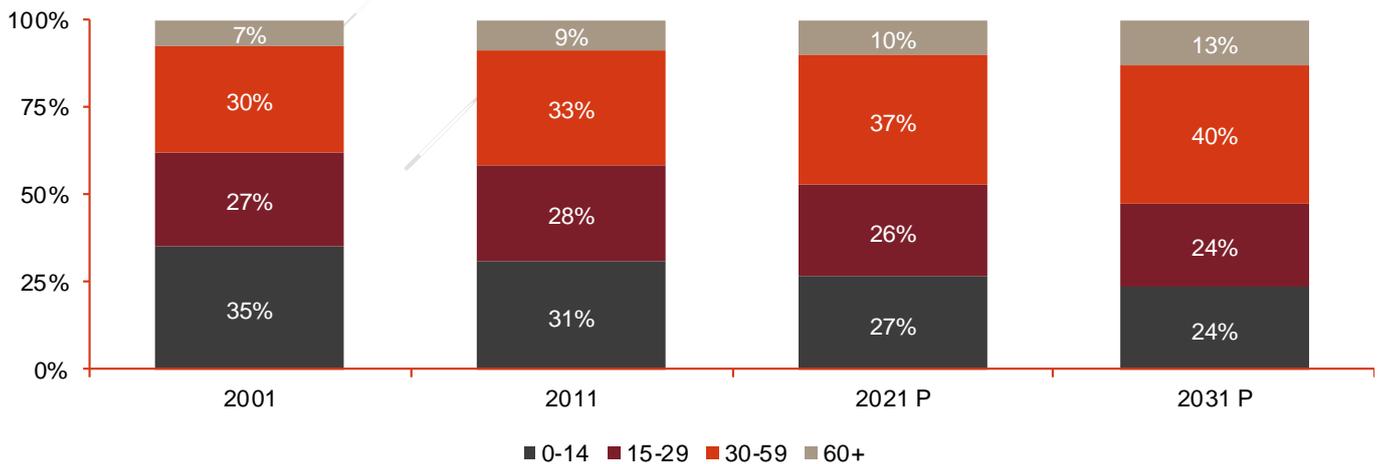
Note: P: Projected; Above data is for calendar years

Source: United Nations Department of Economic and Social Affairs, CRISIL Research

Favourable demographics

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-2020, of which, CRISIL Research estimates, 63% of them would be between 15 and 59 years. In comparison, the US, China and Brazil had 74%, 62% and 78%, respectively, of their population below the age of 60.

India's demographic dividend



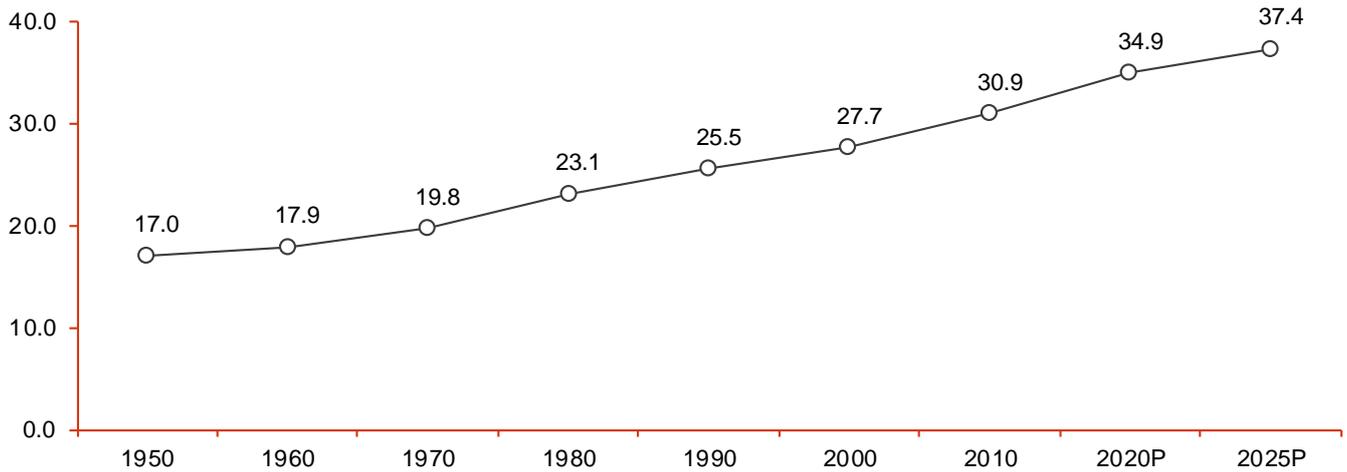
Note: E: Estimated; Above data is for calendar years

Source: United Nations Department of Economic and Social affairs, CRISIL Research

Urbanisation

Urbanisation is one of India's most important economic growth drivers, as it will drive substantial investments in infrastructure development, which, in turn, is expected to lead to job creation, development of modern consumer services and increased ability to mobilise savings. India's urban population has been rising consistently over decades. In 1950, it was 17% of total population. As per the World Urbanization Prospects: The 2018 Revision by the United Nations (UN), it was estimated at ~34%. This is expected to reach ~37% by 2025.

Urban population (% of total population)



Note: P – projected; Above data is for calendar years

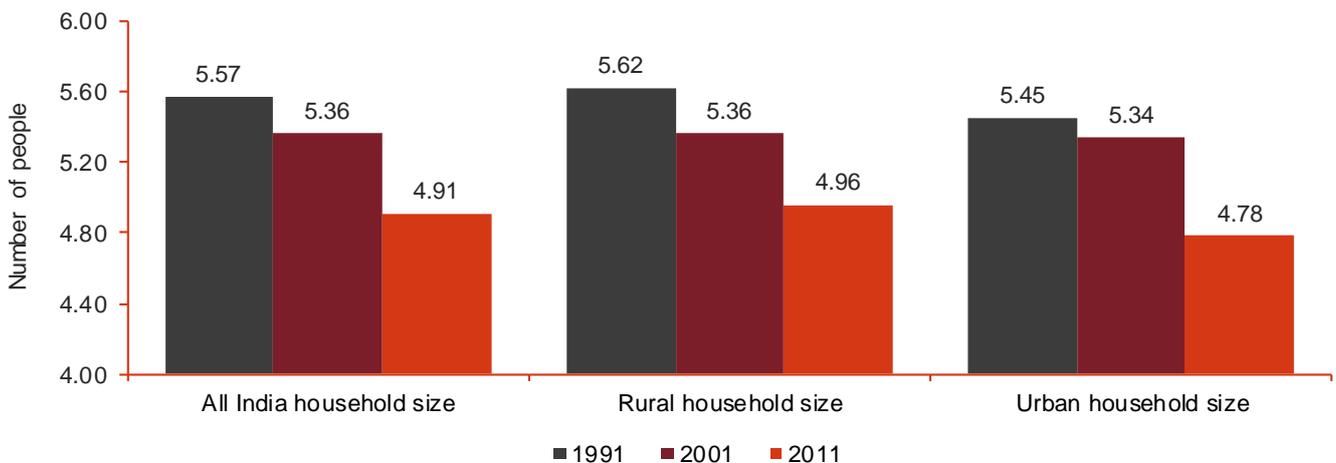
Source: Census 2011, World Urbanization Prospects: The 2018 Revision (UN)

Factors, such as urbanisation and favourable demographics, are likely to manifest in higher growth in per-capita income and increased propensity to spend on discretionary items, including household appliances, mobiles & personal computers.

Increasing nuclearisation

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.

Decline in size of households to drive overall growth in consumption



Source: Census 2011, CRISIL Research

Investments in smart cities will lead to better urban infrastructure

The government approved a budget of Rs 480 billion for the development of 100 smart cities over five years, beginning fiscal 2017. The focus is on adequate and clean water supply, sanitation, solid waste management,

efficient transportation, affordable housing for the poor, power supply, robust IT connectivity, e-governance, safety and security of citizens, health, and education.

The selected cities are due to receive a Central government assistance of Rs 2 billion in the first year, Rs 1 billion in each of the next four years, along with a matching contribution from the respective state.

The state and central government funds will only meet a part of the cost. The rest is planned to be raised through user fees, municipal bonds, existing central/state schemes such as AMRUT, and public-private partnerships (PPPs).

Based on the overall plans for the first 90 cities, investments are expected to be construction-intensive, as segments such as housing, roads and highways, non-residential development, and sewage systems will constitute a considerable portion of the total investments.

The smart cities project is also expected to drive job creation in urban pockets, thereby accelerating urbanisation.

Increasing per-capita GDP

Per-capita income is estimated to have declined by 4.1% in fiscal 2021, compared with 6.7% in the preceding fiscal. However, it is estimated to improve with GDP growth and sustained low inflation. This will be an enabler for domestic consumption. As per IMF estimates, India's per-capita income (at constant prices) is expected to grow at 6.7% CAGR between fiscals 2020 and 2025.

Per capita income	Level in FY21 (INR- '000)^		Growth at constant prices (%)								
	Current prices	Constant prices	FY14	FY15	FY16	FY17	FY18	FY19	FY20^	FY21^	FY25 E
	146	100	4.6	6.2	6.7	6.8	5.7	5.8	6.7	-4.1	6.7*

Note: (*) - 5-year CAGR growth (FY20-FY25), as per IMF estimates of October 2020, (^) – provisional estimates by MoSPI, May 2020

Source: MoSPI, IMF, CRISIL Research

3.5 Key structural reforms: Long-term positives for the Indian economy

1. Production-linked incentive (PLI) scheme

The government has budgeted ~Rs 2,000 billion 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 billion)*	
Automobiles	Advance chemistry cell (ACC) battery	181	751
	Automobiles and auto components	570	
Electronics	Mobile manufacturing and specified electronic components	410	522

	Electronic/technology products	50	
	White goods (ACs & LED)	62	
Pharma and medical equipment	Critical key starting materials/drug intermediaries and active pharmaceutical ingredients	69	254
	Manufacturing of medical devices.	34	
	Pharmaceuticals drugs	150	
Telecom	Telecom & networking products	122	122
Food	Food products	109	109
Textile	Textile products: man-made fibre (MMF) and technical textiles	107	107
Steel	Speciality steel	63	63
Energy	High efficiency solar PV modules	45	45
Total			1973

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

Source: Government websites, CRISIL Research

Under the PLI scheme for the automotive sector, the government has planned four sub-schemes, viz., global sourcing scheme, vehicle champion scheme, component champion scheme, and production-linked Incentive scheme. Further, the government has laid out a stringent eligibility criteria in terms of minimum turnover, export revenue and investments in fixed assets, in order to ensure that implementation of the scheme offers desired results. Auto original equipment manufacturers (OEMs) need to showcase a minimum turnover of Rs 100 billion, minimum exports of Rs 10 billion and minimum investment in fixed asset of Rs 35 billion in order to be eligible for this scheme. Auto component manufacturers need to showcase minimum turnover of Rs 10 billion, minimum exports of Rs 2 billion and minimum investment in fixed asset of Rs 3.5 billion.

Under the PLI scheme for the electronics sector, government has identified mobile and electronic components as two target segments. For each of these segments government has outlined incremental investment criteria and incremental sales criteria for applicants to avail incentives in the range of 4-6% over the five year period. PLI scheme for electronic components include following list of components

- SMT components
- Discrete semiconductor devices including transistors, diodes, thyristors, etc.
- Passive components including resistors, capacitors, etc. for electronic applications
- Printed Circuit Boards (PCB), PCB laminates, prepregs, photopolymer films, PCB printing inks
- Sensors, transducers, actuators, crystals for electronic applications
- System in Package (SIP)
- Micro / Nano-electronic components such as Micro Electromechanical Systems (MEMS) and Nano Electromechanical Systems (NEMS)
- Assembly, Testing, Marketing and Packaging (ATMP) units

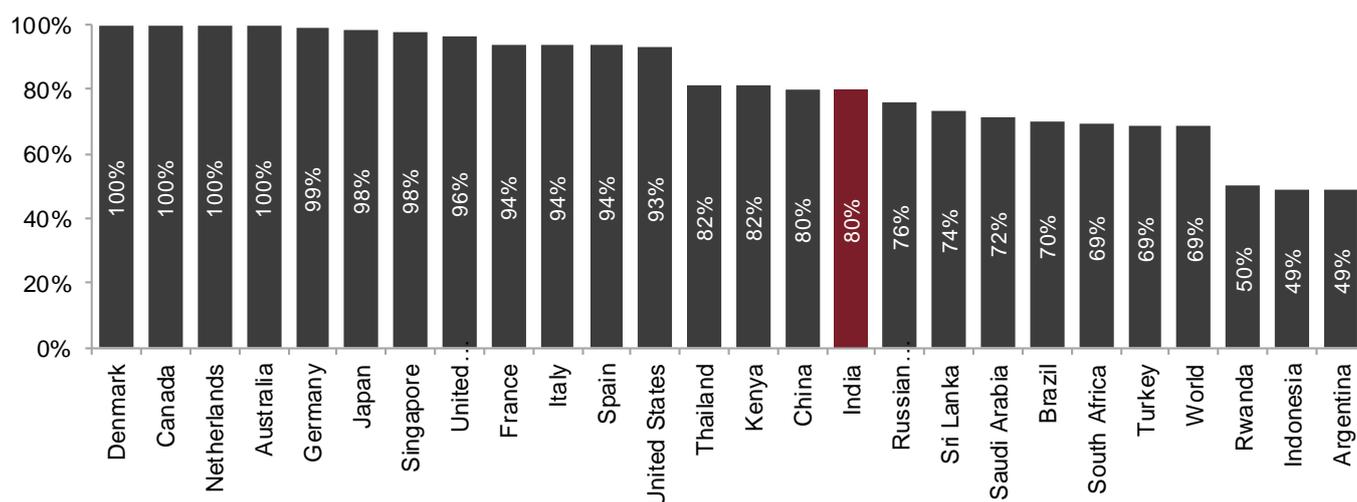
PLI scheme for the white goods sector has been earmarked for ACs and LED lights. Under the scheme government has allocated an outlay of Rs 62.4 billion over fiscal 2022 to 29 period. The scheme will cover entities engaged in manufacturing of components of ACs (such as copper tubes, aluminium foil and compressors) and LED lights (like LED chip packaging, resistors, ICs, and fuses). Government shall extend an incentive of 4-6 per cent on incremental sales of goods manufactured in India for companies that meet incremental investment and sales criteria.

2. Financial inclusion

According to the World Bank’s Global Findex Database 2017, the global average of adult population with an account (with a bank, financial institution, or mobile money provider) was ~69% in 2016. India’s financial inclusion has improved significantly in the past three years, with the adult population with bank accounts rising from 53% in 2013 (as per Global Findex Database 2014) to 80% in 2016. Concentrated efforts by the government to promote financial inclusion and the proliferation of supporting institutions have driven this improvement. That said, the rise in the number of bank accounts has not translated into a corresponding increase in the number of transactions and fruitful use of those accounts.

As per the Global Findex Database 2017, ~50% of the world’s unbanked adults are in India, Bangladesh, China, Indonesia, Mexico, Nigeria, and Pakistan. Of the world’s total unbanked adults (~1.7 billion), 415 million are from just two countries – India (11% or 190 million) and China (13% or 225 million), because of their huge populations.

Adult population with a bank account (%): India vs other countries (2016)



Note: 1. Global Findex data for India excludes north-eastern states, remote islands, and select districts. 2. Account penetration is for the population of 15 years and above

Source: World Bank - The Global Findex Database 2017, CRISIL Research

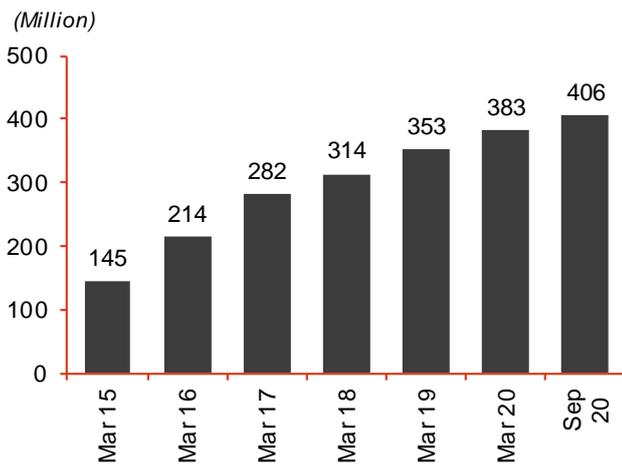
The government launched the Pradhan Mantri Jan Dhan Yojana (PMJDY) and Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) schemes in 2014 and 2015, respectively, to promote financial inclusion. Under PMJDY, the government aims to ensure that every household in India has a bank account and affordable access to financial services such as savings and deposit accounts, remittance, credit, insurance, and pension. PMJJBY is a one-year life insurance scheme that offers a life cover of Rs 0.2 million at a premium of Rs 330 per annum per member, which can be renewed every year. The government has also launched the Pradhan Mantri Suraksha Bima Yojana (PMSBY) scheme – an accident insurance policy that offers an accidental death and full disability cover of Rs 0.2

million at a premium of Rs 12 annually. According to the government, more than 100 million people have registered for these social security schemes.

PMJDY focuses on household coverage unlike the earlier schemes that focused on coverage of villages. It aims at extending banking facilities to all within a reasonable distance in each sub-service area (consisting of 1,000-1,500 households) across India.

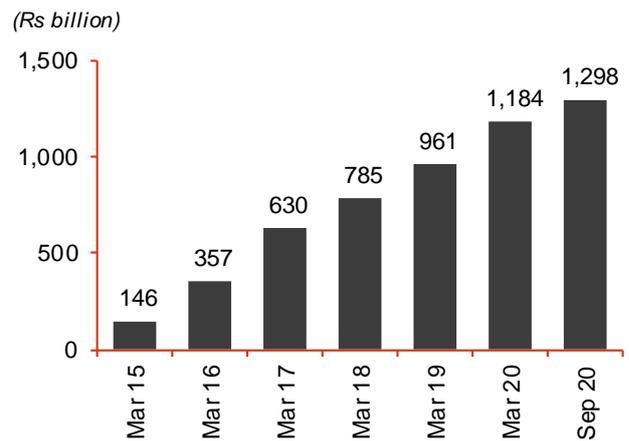
As on December 16, 2020, 415 million PMJDY accounts had been opened, of which 65% were in rural and semi-urban areas, with total deposits of Rs 1,317 billion.

Number of PMJDY accounts



Note: Data updated up to September 9, 2020
Source: PMJDY, CRISIL Research

Total balance in PMJDY accounts

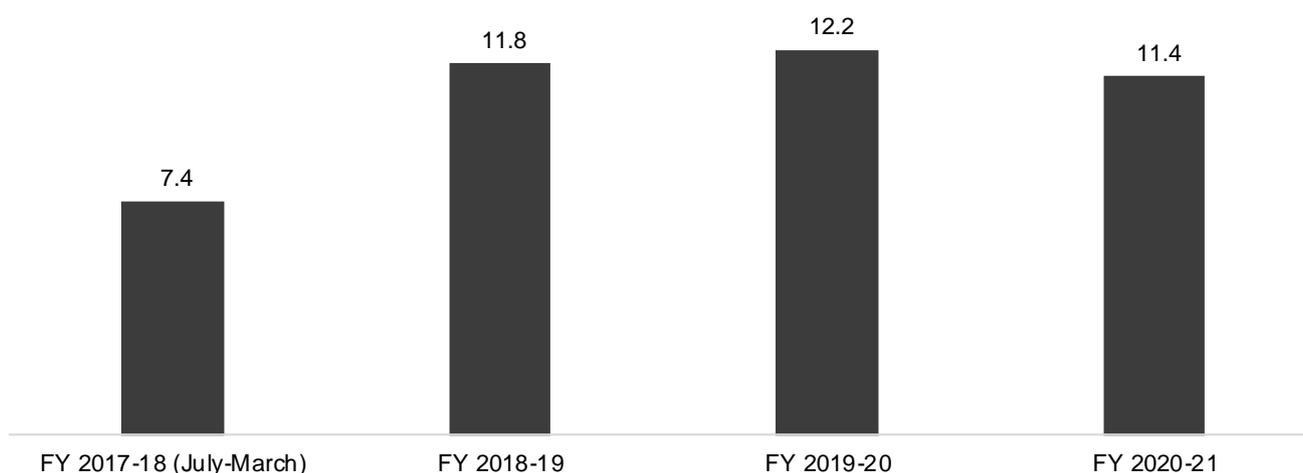


Note: Data updated up to September 9, 2020
Source: PMJDY, CRISIL Research

3. GST implementation

Introduced on July 1, 2017, GST is an indirect tax regime that has subsumed multiple cascading taxes levied by the central and state governments. Its implementation has spawned structural changes in the supply chain and logistics network in the country. The crux of the GST mechanism is input-tax credit, which ensures that more players in the supply chain come under the tax ambit. As supply from only registered taxpayers will get input-tax credit, businesses and stakeholders will insist on registration of their suppliers and traders, leading to an increase in the share of organised participants. The GST regime has been stabilising fast, and is expected to bring more transparency and increase formalisation, eventually leading to higher economic growth.

GST collection (Rs trillion)



Source: Goods and Services Tax Network

GST collection grew 3.8% in fiscal 2020 over fiscal 2019. It hit the Rs 1-trillion mark for the first time in April 2018 and averaged Rs 1.01 trillion in fiscal 2020. GST collection slumped as the country went into a complete lockdown in the latter half of March 2020. It has seen a sharp recovery in recent months; monthly GST collection touched Rs 1.23 trillion in March 2021 – the highest since its implementation.

4. Thrust on affordable housing

The residential real estate segment saw two policy changes – the Real Estate (Regulation and Development) Act (RERA) and GST – which had a direct impact on the sector's demand-supply dynamics. Consequently, new launches dropped sharply, with developers focussing on completing ongoing projects. The sector had been battling weak demand over the past couple of years. As developers focussed on middle-income and premium segments, several projects turned unaffordable for most consumers. However, government initiatives have prompted developers to explore affordable housing as a new area. Going ahead, about half of the incremental supply to be added to the urban stock is expected to be via affordable housing. Additionally, formalisation of the industry is likely to bring in more transparency, leading to an increase in consumer demand.

The government has provided a major relief to the real estate sector by extending the timeline of RERA projects by six months. Furthermore, it has extended the deadline to avail of an additional Rs 150,000 interest deduction on home loans to March 31, 2021, for first-time homebuyers in the affordable housing segment. CRISIL expects residential construction to log a 6-7% CAGR in value terms over fiscals 2020-24, compared with -1.5% in the past five years, driven by the Pradhan Mantri Awas Yojana (PMAY) scheme.

PMAY-Urban (PMAY-U) was launched in 2015 with a target of building 12 million houses in urban areas across the country over 2015-2022. As on September 21, 2020 the progress made under PMAY-U was as follows:

Houses sanctioned	11.35 million
Houses grounded for construction	8.79 million
Houses completed	5.08 million
Total investment	Rs 7,500 billion
Central assistance released	Rs 1,850 billion

Source: Ministry of Housing and Urban Affairs (MOHUA), CRISIL Research

5. Insolvency Bankruptcy Code (IBC)

IBC is a reform that will structurally strengthen the identification and resolution of insolvency in India. It enhances the credit enforcement structure and offers certainty on the time frame for insolvency resolution. The code attempts to simplify legal processes, preserve value for creditors, and provide them with a greater certainty of outcome. With this reform, the RBI has sent a strong signal to borrowers to adhere to credit discipline and encouraged banks to break resolution deadlocks by introducing definite timelines. IBC will boost investor confidence in the Indian financial market. Internationally, the recovery rate has improved significantly after the implementation of bankruptcy reforms, as evident from the table below:

Country	Year of bankruptcy reform	Before reforms		Five years after reforms	
		Recovery rate (%)	Time (years)	Recovery rate (%)	Time (years)
Brazil	2005	0.2	10.0	17.0	4.0
Russia	2009	28.2	3.8	42.8	2.0
China	2007	31.5	2.4	36.1	1.7
India	2016	26.0	4.3	43*	1.6*

*As of 2019

Source: World Bank, CRISIL Research

The RBI introduced a revised framework for restructuring of stressed assets on February 12, 2018, scrapping all existing restructuring measures – Corporate Debt Restructuring (CDR), Special Drawing Rights (SDR), etc. Based on the new guidelines, even a one-day default triggered the resolution process, and it was mandatory to establish a resolution plan (RP) within 180 days from the date of default. If the RP was not implemented, or the performance post the implementation of the RP remained unsatisfactory, the asset was to be referred to the National Company Law Tribunal (NCLT) to be resolved through sale or liquidation. However, the Supreme Court, on April 3, 2019, scrapped the circular citing the legislations to be beyond the purview of the RBI's powers. Multiple players with stressed assets in industries such as power, steel, infrastructure, and textiles believed the old circular (February 12) was stringent and did not provide the borrowers enough time to resolve their payment dues.

On June 7, 2019, the RBI released its updated framework for resolution of stressed assets upon default by a borrower having an aggregate exposure of

- Rs 20 billion and above (applicable from June 7, 2019) or
- Rs 15 billion and above, but less than Rs 20 billion (applicable from January 1, 2020), and
- Less than Rs 15 billion (date to be announced)

The lenders would have time to monitor the asset for 30 days and come up with an RP. Post the 30-day review, they will have to implement the RP within 180 days. However, if the RP is still not implemented, lenders have the choice to resolve the asset either through the IBC framework or based on their own discretion.

In the erstwhile framework, lenders had to provide for the defaulting exposure, according to the existing non-performing asset (NPA) provisioning norms. The exposure invited 50% provisioning once it was referred to IBC for resolution. However, in the new framework, the RBI mandates a provision of ~20% (in addition to what was already provided for the respective account) once the exposure goes beyond 210 days (including a 30-day review, and a 180-day period for the RP) without the RP implementation. Along with this, once the exposure crosses 365 days without any RP implementation, further provisions of ~15% (i.e., a total additional provision of 35%) are mandated on such exposures.

The RBI has also incorporated provision write-backs in the new circular. Provisions can be written back when the RP is implemented. Where the resolution is pursued under IBC, 50% of the additional provision can be written back once the exposure is referred to IBC courts for resolution, and the remaining additional provision may be reversed upon admission of the borrower in the insolvency resolution process under IBC.

The enactment of IBC has shifted the balance of power from the debtor to the creditor. As many as 3,911 corporate insolvency resolution processes (CIRPs) commenced between December 1, 2016 and June 30, 2020. Among these, 380 were closed on appeal or review or settled, 218 were withdrawn, 955 ended in orders for liquidation, and 250 ended in approval of RPs. Also, until 2015, it usually took 4.3 years on average to resolve an insolvency case in India. This reduced to 1.6 years in 2019 after IBC came into effect, and the period is expected to fall further.

6. Reduction in corporate tax rates

On September 20, 2019, the finance minister announced the Taxation Laws (Amendment) Ordinance, 2019 to make certain amendments in the Income Tax Act, 1961, to provide all domestic companies an option to pay income tax at the rate of 22%, provided that they will not avail of any exemption/incentive. The effective tax rate for these companies will be 25.17%, inclusive of surcharge and cess. Also, such companies will not be required to pay minimum alternate tax (MAT).

Companies that do not opt for the concessional tax regime and avail of the tax exemption/incentive will continue to pay tax at the pre-amended rate. However, these companies can opt for a concessional tax regime after expiry of their tax holiday/exemption period. After exercising the option, they will be liable to pay tax at the rate of 22%. Once exercised, the option cannot be withdrawn. Further, to provide relief to companies that continue to avail of exemptions, MAT has been reduced to 15% from 18.5%.

In addition, to stabilise the flow of funds in the capital market, a provision was introduced to not apply additional surcharge as per the Finance Act, 2019 on capital gains from sale of equity shares in a company or units of equity-oriented funds or business trusts liable for securities transaction tax, in the hands of an individual, a Hindu undivided family (HUF), an association of persons (AOP), a body of individuals (BOI), and an artificial judicial person (AJP). The enhanced surcharge will also not apply to capital gains on sale of any security, including derivatives, in the hands of foreign portfolio investors. Also, to provide relief to listed companies that have announced share buybacks before July 5, 2019, tax on the buyback of shares will not be charged as per these latest amendments.

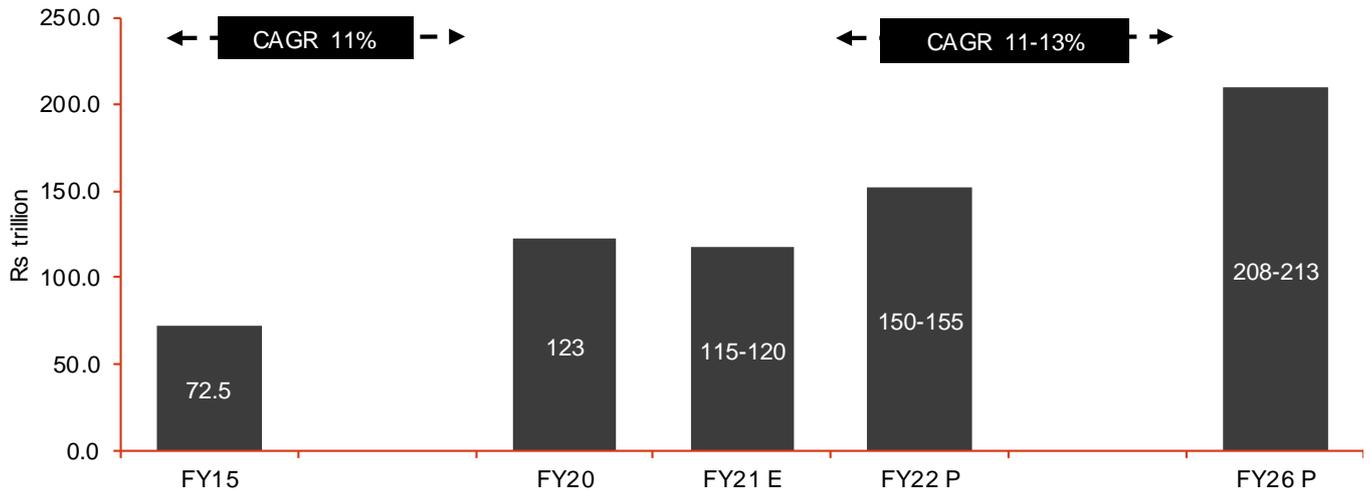
The recent amendments have the potential to boost the capital base of financial institutions and revive growth in the financial services sector, which has been weighed down by high NPAs, increasing defaults, and liquidity concerns. They could also revive the private capex cycle, leading to credit growth in the economy.

7. Increased private consumption

Nominal private final consumption expenditure (PFCE) logged an 11% CAGR over fiscals 2015-20, driven by an increase in disposable income, improvement in rural spending, and a cut in key policy rates. PFCE growth, on the other hand, was impacted by demonetisation and the initial disruption caused by GST implementation.

In fiscal 2021, PFCE is estimated to drop 3-5% to Rs 115-120 trillion because of the pandemic-led economic uncertainty, salary reductions, job cuts, and lockdowns during the first half of the year, which impacted consumer sentiment and overall consumption.

PFCE growth in India



Note: Data pertains to PFCE in nominal terms

P: Projected

Source: Central Statistics Office, CRISIL Research

PFCE is projected to increase at an 11-13% CAGR over fiscals 2021-26, riding on a low base of fiscal 2021. Expected improvement in the economic scenario, estimated rise in income, consumerism, favourable demographics (urbanisation, increasing young and working population, changing lifestyles, and growing health awareness), rising education, and the government’s focus on manufacturing, infrastructure, skill development, and employment creation will drive consumption.

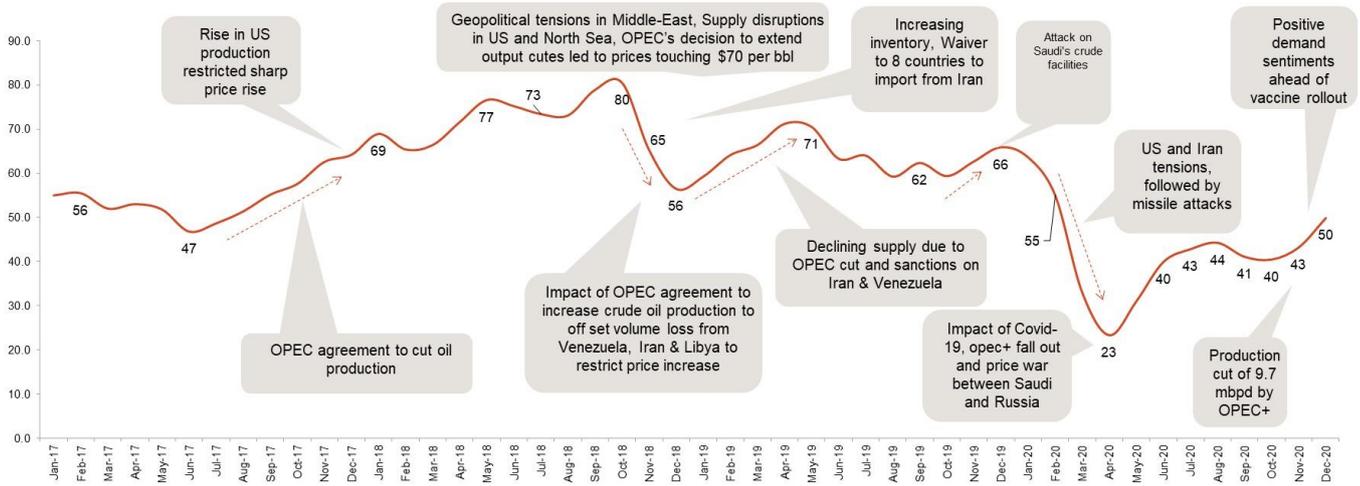
3.6 Crude prices

Prices to remain elevated through 2021; to stabilize in ~\$40-45 range till 2025

Crude oil prices declined nearly 35% on-year to \$42.3 per barrel in calendar year 2020, given the global oil demand contraction on account of Covid-19. The oil demand loss was substantial in Q2 of 2020. Thereafter, although global demand continued to contract, the momentum of decline reduced.

Come 2021, oil prices are expected to increase to \$58-63 per barrel primarily on account of significant production cuts by OPEC+ supported by recovery in demand. Also, prices are expected to remain elevated in Q1 due to continued production cuts by OPEC+ as well as production loss in US due to deep freeze in Texas. However, with gradual easing of supply, we expected prices to soften in Q2.

Crude oil prices trend (\$/barrel)



Source: Industry, CRISIL Research

Prices are expected to be ~\$40-45 per barrel in the next 4-5 years as oil demand would remain sluggish on account of declining global economic growth and fuel diversification. As all producing nations have heavily invested in the upstream sector, any long-term pact to manage oil supply would not be feasible for longer duration.

Moreover, competition from alternative technologies is expected to play a pivotal role in energy dynamics and significantly impact crude oil demand from the road transport segment. This is especially in the Organisation for Economic Cooperation and Development (OECD) and a few non-OECD countries such as China and India, given the aggressive government push. In the long run, demand is expected to see slower growth considering consumption from road transport would remain sensitive to electric vehicle expansion. This would be further impacted by global economic conditions and trade war among major economies.

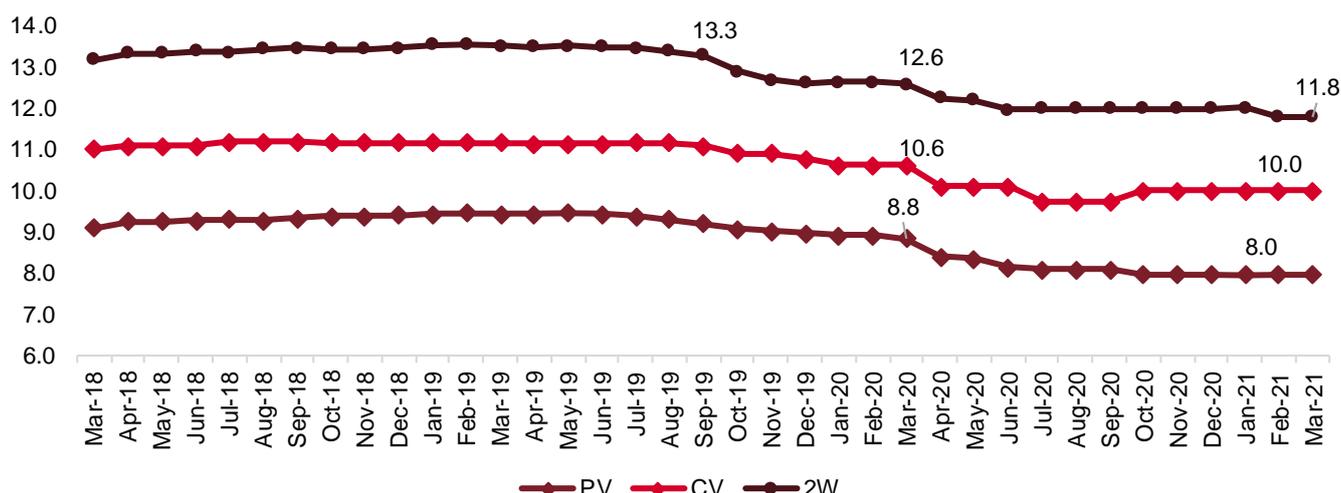
3.7 Auto finance

Rates on a downtrend

Overall, yields in the auto finance segment have been declining over the past 2-3 years, led by softening of retail inflation and a reduction in G-Sec yields. With the implementation of the 'marginal cost of funds based lending rate' (MCLR) regime from April 1, 2016, auto finance rates have also remained subdued, as banks have been forced to pass on interest rate benefits to end-consumers. This has helped to bring the yields down by 100-130 bps since fiscal 2015.

After a continued drop in repo rates since fiscal 2020, auto finance rates are on a downward trend. In fiscal 2021, passenger and commercial vehicle (PV and CV) finance rates have softened significantly amid the pandemic, while two-wheeler financing rates have dropped by a lesser extent, given the relatively humble credit profile of the customers. In fiscal 2022, some uptick from a low base of fiscal 2021 is expected.

Average auto finance rates offered by banks (%)



Source: Industry, CRISIL Research

Gradual economic revival to drive disbursements in fiscal 2022

Auto finance disbursement show better than expected revival in later half of fiscal 2021. Most sub- segments have witnessed underlying asset sales recovering to pre covid levels. Two-wheelers and small cars segments gained on account of pent up demand and increasing preference for personal mobility as lockdown were lifted. On the commercial vehicle front, while MHCV and buses sales remain tepid, LHCV sales have been improving.

In fiscal 2022, a gradual improvement in consumer confidence amid expectations of a faster economic growth will revive vehicle sales. In addition to this, consumer preference for own vehicle for personal mobility supported by lower financing costs and new model launches likely to support underlying demand for passenger vehicles resulting in ~25-30% in passenger vehicle loan disbursements. Recent surge in covid cases however may pose challenges in terms of demand slowdown and aggravation in supply chain challenges for the OEMs.

In case of CVs, disbursement demand is expected to pickup in fiscal 2022 as economic recovery will lead to an increase in private consumption and freight demand. As collections improve amidst demand revival, risk averseness among lenders is also likely to decline as replacement demand picks up. New commercial vehicle loan disbursements are projected to grow by 38-43% in fiscal 2022.

Disbursements in 2W segment are expected to increase by 18-23% supported by underlying asset sales Demand for expected pick up by ~12% due to dissipating impact of COVID-19 with availability of vaccine thereby improving urban income sentiments and buoyant rural sentiments owing to expected normal monsoons in CY21.

Growth in auto finance disbursement

Segment	FY18	FY19	FY20P	FY21P	FY22P
PV - new	17%	9%	-9%	-15%	25-30%
CV - new	37%	22%	-36%	-28%	38-43%
Tw o-w heelers	31%	17%	-2%	-10%	18-23%

Source: Industry, CRISIL Research

3.8 Budget highlights in automotive sector

Key budget proposal

- Scrappage policy: Vehicles to undergo fitness tests – passenger vehicles (PVs) that are over 20 years old and commercial vehicles (CVs) that are over 15 years old
- Import duty on specific auto components increased from 7.5%/10% to 15%
- Infrastructure push with an increase in outlay of ~10% vs RE fiscal 2021 under the Ministry of Road Transport & Highways
- Agriculture infrastructure cess of Rs 2.5/litre on petrol and Rs 4/litre on diesel. However, the rise in cess to be offset by reduction in 'special additional' and 'additional' excise duties
- Removal of anti-dumping duty/ countervailing duty (ADD/CVD) and reduction in customs duty on steel
- Rs 180 billion scheme to support augmentation of public bus transport services through public-private partnership model to enable private players to finance, acquire, operate and maintain over 20,000 buses
- Customs duty on carbon black (tyre raw material) increased from 5% to 7.5%, but reduced on caprolactam (used to manufacture nylon tyre cord fabric, a tyre raw material) from 7.5% to 5%

Parameter	BE 2021 (Rs billion)	RE 2021 (Rs billion)	BE 2022 (Rs billion)
FAME	6.93	3.18	7.57

Note: FAME- Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicle

Source: CRISIL Research

Impact of budget on automotive sector

- 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, incentives of over Rs 1 lakh would be needed for a medium commercial vehicle (MCV, 18.5-tonne truck) in addition to the scrap value, for transporters to scrap their 15-year and older MCV (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 for select auto components is in line with the sharper focus on localisation and the recently introduced Production-Linked Incentive scheme. Given that average localisation for automobile OEMs is ~90%, only those with lower localisation, especially the 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
- Lower ADD/CVD on steel to reduce metal prices, leading to lower input costs for automobile OEMs
- Considering average state transport undertaking purchases (including hire purchases) over the past five years at ~10,500 units, a Rs 180 billion 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

- Change in customs duty on tyre raw materials to lead to a net increase in tyre input cost. This is expected to be passed through

3.9 Budget highlights in electronics and consumer durable sector

Key budget proposal

- Custom duty on mobile components raised to 2.5% from nil
- Custom duty on Printed Circuit Board Assembly (PCBA) of charger or adapter increased to 15% from 10%
- Custom duty on compressors used in air-conditioning and refrigerating equipment increased to 15% from 12.5%
- Custom duty on inputs and parts of LED lights or fixtures including LED lamps raised to 10% from 5%

Impact of budget on electronics and consumer durable sector

Increased custom duty on mobile components, Printed Circuit Board Assembly, compressors used in air-conditioning and refrigerating equipment, inputs and parts of LED lights or fixtures to promote local manufacturing of consumer, electronics and key components in India over mid to long term.

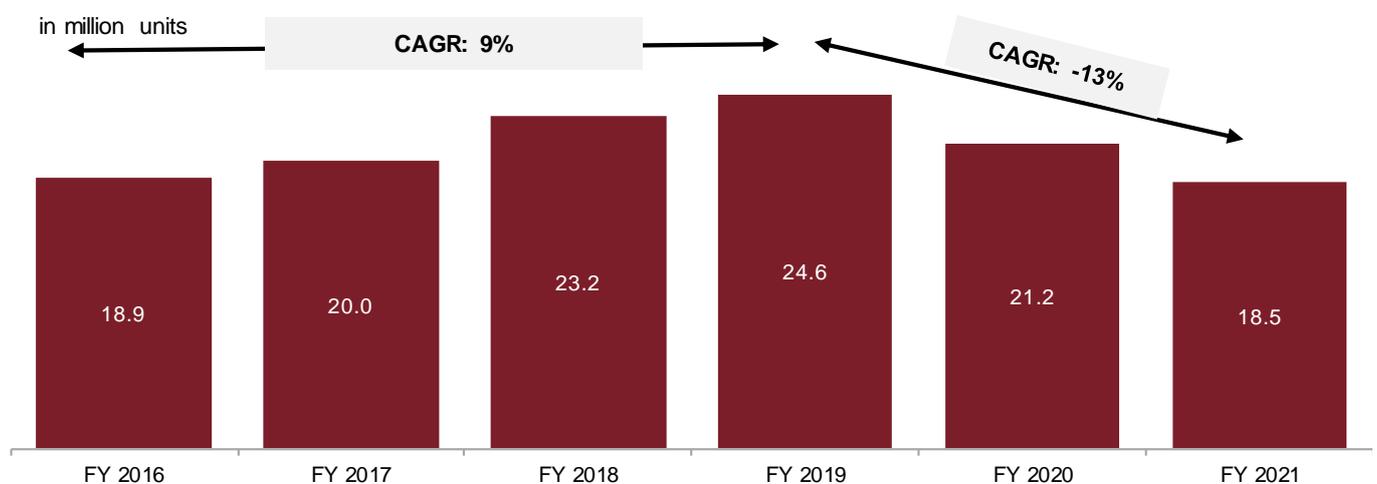
4 Review and outlook of Indian two-wheeler industry

4.1 Indian two-wheeler industry review (fiscals 2016 - 2021)

Production volume

India is one of the largest producer of two-wheeler vehicles globally. The two wheelers segment also dominates the Indian automobile industry accounting for ~80% of industry output in volume terms. The domestic two-wheeler production, remained flat between fiscals 2016 and 2021, with a large part of the subdued performance because of lower output in fiscal 2020, owing to transition to Bharat Stage (BS)-VI norms, and challenges heaped by the Covid-19 pandemic in fiscal 2021. However, during fiscals 2016 to 2019, the industry posted a growth of 9% CAGR, propelled by good monsoons, favourable economic situation, and rising exports.

Two-wheeler production volume development



Source: Society of Indian Automobile Manufacturers (SIAM), Society of Manufacturers of Electric Vehicles (SMEV), CRISIL Research

Year-wise, the reasons for the industry's performance were:

- **In fiscal 2017**, good monsoon and favourable economic environment were affected by demonetisation, which impacted wholesale as well as retail demand for two-wheelers. As a result, sales growth was restricted to ~7% on-year. Also, exports declined ~6% on-year, as falling crude oil prices affected crude oil exporting economies, and there were persistent issues with regard to availability of dollar-denominated currency in key African markets
- **In fiscal 2018**, domestic sales as well as exports accelerated. The rise in domestic sales was due to an improving rural economy, supported by two consecutive years of normal monsoons. During the year, domestic demand raised ~15% on-year over a low base. Exports jumped 20% on-year, as economies of African countries revived. Supporting exports were manufacturers expanding into new geographies and stabilisation of Latin American currencies. Growth was spearheaded by Honda Motorcycle and Scooter India (HMSI), with the original equipment manufacturer (OEM) increasing capacity at its Gujarat plant. Manufacturers also catered to scooter-oriented markets of Southeast Asia

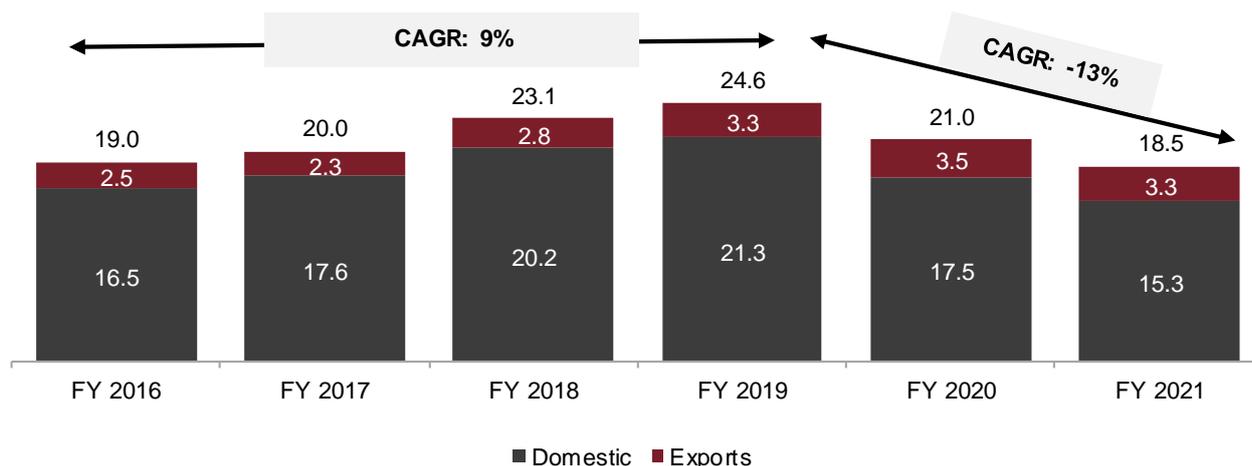
- **In fiscal 2019**, declining private demand, safety norms requiring anti-lock braking systems/ combined braking systems and hike in insurance prices led to an overall slowdown in the industry's pace of growth. Domestic sales improved by 5% on-year. In contrast, exports accelerated 17% on-year, owing to strong demand from African markets, primarily Nigeria and Uganda. The efforts of OEMs to diversify into more promising geographies helped exports
- **In fiscal 2020**, because of inventory adjustment on account of BS-VI migration, domestic sales plunged 18% on-year. Exports, though, provided some support, posting a healthy growth of 7% on-year
- **In fiscal 2021**, Domestic sales volume declined further by 13% on-year, as nationwide and local lockdowns were imposed to contain the spread of Covid-19 and the subsequent toll on economic activity has affected the income of the average two-wheeler buyer. Exports however witnessed lesser decline of 7% on-year, as African regions, where most of India's two-wheelers are exported, have been relatively less affected by the pandemic

Domestic sales vis-à-vis exports

The Indian two-wheeler industry is primarily domestic-skewed, with domestic sales accounting for ~86% share of overall two-wheeler sales in the past five years. However, over the years, manufacturers, such as TVS Motor Company and HMSI, have been expanding their geographical footprint. Also, joint ventures with global brands, such as KTM, BMW and Husqvarna, and catering to the global demand of these brands from India, have given an additional thrust to two-wheeler exports.

Two-wheeler domestic sales and exports

in million units



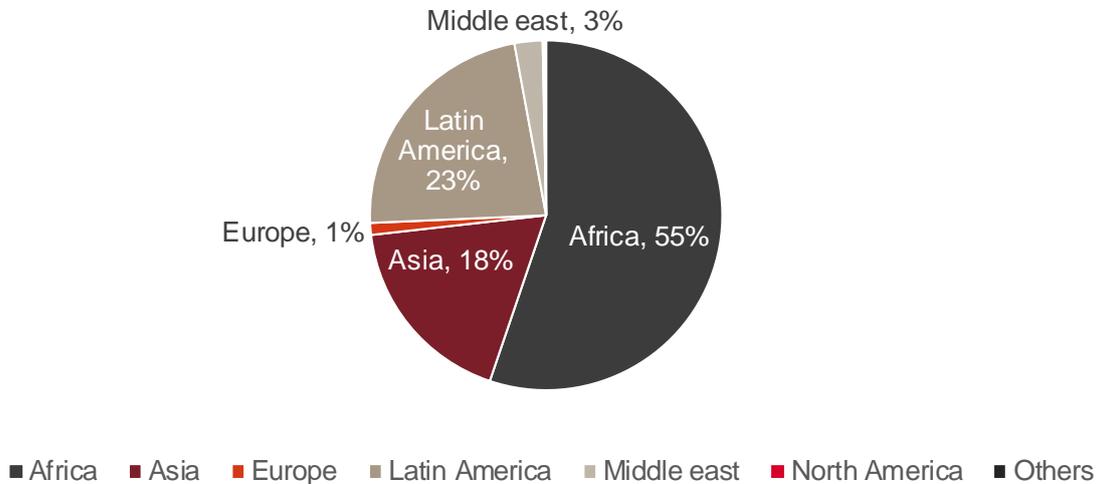
Source: SIAM, SMEV, CRISIL Research

Geography-wise export footprint

Indian two-wheelers are primarily exported to crude oil exporting developing countries, primarily in Africa and Latin America - contributed ~78% of India's exports in fiscal 2021. Hence, crude oil prices and currency fluctuation have an impact on India's two-wheeler exports. Asia also occupies a large share in the export basket. Major importing countries in the region are Bangladesh, Nepal, and Sri Lanka. However, in the case of Sri Lanka, ban of non-essential imports by the country in CY 2020, 2021 shrunk the share in the Asian export pie. The share of Africa and

Latin America improved in fiscal 2021 because of people preferring two-wheeler as a personal mode of commute due to social distancing and better crude oil prices also supported incomes of people.

Share of key export destinations (fiscal 2021)



Source: Directorate General of Foreign Trade, CRISIL Research

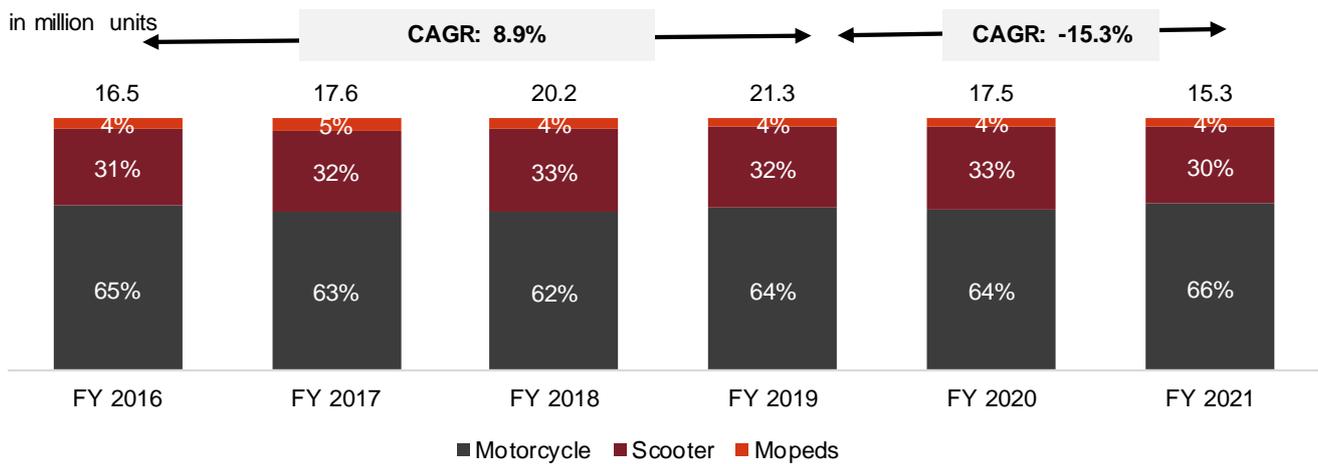
Among the manufacturers, Bajaj Auto posted its highest-ever export number in December 2020, with a two-wheeler count of 209,942, mainly driven by African nations. Also, TVS entered into an agreement with Honduras-based Motomundo SA, a local distributor in start of 2020, for sales and service as part of plans to expand its presence in Central America. The company plans to consolidate its export business across Africa and Latin America as well. Royal Enfield said that it will commence local assembly of motorcycles in Argentina, in partnership with Grupo Simpa.

Domestic- and export-wise motorcycle, scooter and moped sales

Motorcycles dominated the domestic two-wheeler space, with ~66% market share in fiscal 2021. Over 2016 to 2020, though, the share of scooters had risen from 31% to 33%. The expanding share was because of strong demand, following new model launches (including variants with higher engine power), aggressive marketing strategies, such as gender-based positioning, increasing usage of scooters by working women in urban areas (due to convenience), and growing preference for scooters as a second vehicle by households.

However, in fiscal 2021, because of urban regions facing stricter lockdown, sales of scooters declined. In fact, the lockdowns are expected to have a greater impact on scooter sales vis-à-vis motorcycles. Hence, sales of motorcycles, scooters, and mopeds, which posted CAGRs of 8%, 10%, and 7%, respectively, from fiscals 2016 to 2019, declined at CAGRs of 1%, 2%, and 3%, respectively over fiscals 2016 to 2021.

Segment-wise domestic two-wheeler share

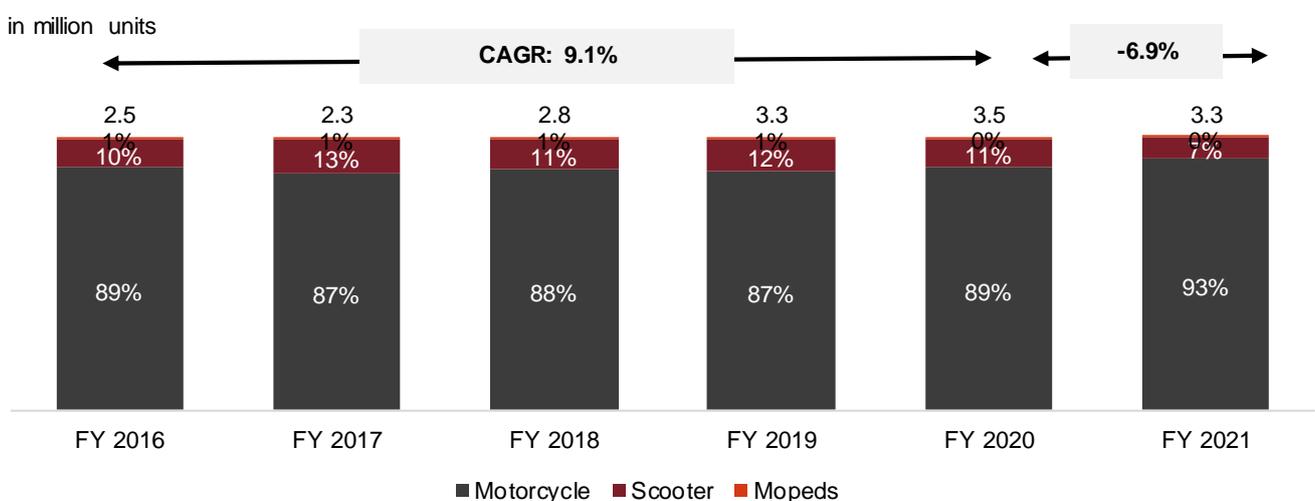


Source: SIAM, SMEV, CRISIL Research

In the case of mopeds, South India dominates the sales basket, with TVS being the sole manufacturer of mopeds in India. Small businessmen, shopkeepers, and farmers in rural and semi-urban areas are key customers of mopeds. Sales declined 28% on-year in fiscal 2020 owing to weak rural sentiment. Also, because of the BS-VI transition, the price of a moped increased 8-10%. In fiscal 2021, though, reverse migration forced by the pandemic is expected see sales clock a growth of 4-6% on-year over a low base.

In exports as well, motorcycles have the dominant share. These are largely exported to African and Latin American countries. Exports of premium motorcycles are also gaining traction, mainly to developed regions, such as the EU. Scooter exports are mainly exported to Asian countries.

Segment-wise export two-wheeler sales

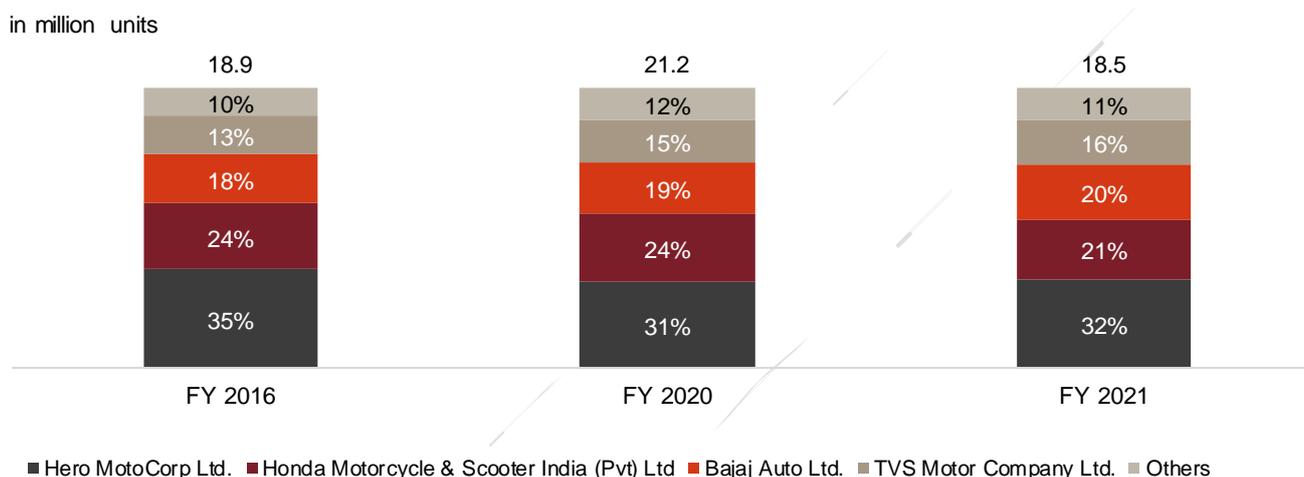


Source: SIAM, SMEV, CRISIL Research

Production split by OEMs

Competition in the two-wheeler industry has intensified across all segments over the past few years, owing to factors such as capacity additions, expansion of dealership network and model launches at competitive price points. Players such as Honda, TVS and Royal Enfield have been steadily gaining market share, heightening competitive intensity over the past few years. The trend is expected to continue, with the premium motorbikes and 125 cc scooters segments tipped to witness most of the action in the upcoming few years.

Market share development



Note: Others include India Yamaha Motor Pvt. Ltd., Royal Enfield Motors, Suzuki Motorcycle India Pvt. Ltd., Piaggio Vehicles Pvt Ltd, Harley-Davidson (H-D Motor Company India Pvt. Ltd), India Kawasaki Motors Private Ltd, Triumph Motorcycles (India) Pvt Ltd., Mahindra & Mahindra Ltd.

Source: SIAM, SMEV, CRISIL Research

Hero MotoCorp, Honda Motorcycles & Scooter, TVS Motor, Bajaj Auto together accounted for ~89% of domestic sales.

Top 10 OEMs by production volume

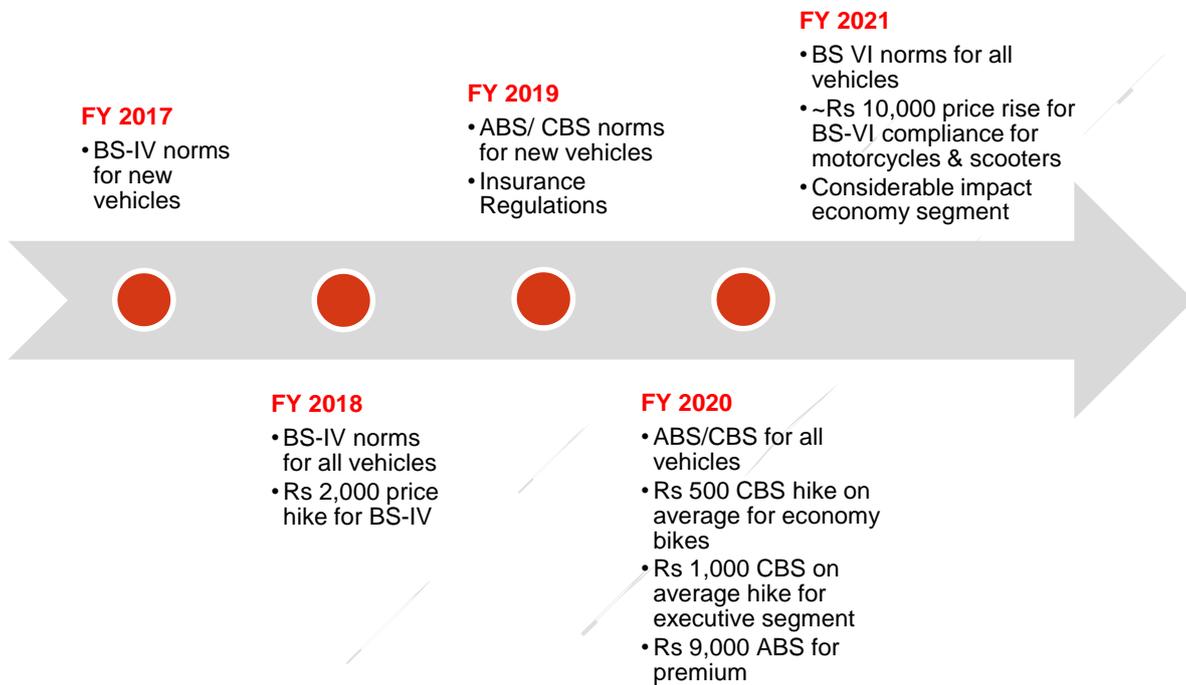
2W OEM	FY 2021 (Production in million vehicles)	Share
Hero MotoCorp Ltd.	5.8	32%
Honda Motorcycle & Scooter India Pvt. Ltd	3.9	21%
Bajaj Auto Ltd.	3.6	20%
TVS Motor Company Ltd.	2.9	16%
India Yamaha Motor Pvt. Ltd.	0.7	4%
Royal Enfield Motors	0.6	3%
Suzuki Motorcycle India Pvt. Ltd.	0.6	3%
Piaggio Vehicles Pvt Ltd	0.1	0%
Harley-Davidson (H-D Motor Company India Pvt. Ltd)	0.0	0%
India Kawasaki Motors Private Ltd	0.0	0%
Others	0.0	0%

Source: SIAM, CRISIL Research

Key domestic regulations

The Indian government has been taking aggressive steps to converge emission standards with global norms. In February 2016, it decided to skip BS-V norms and directly mandate BS-VI norms. Compliance with the latest emission standards requires improvement mainly in the exhaust system, thereby increasing the prices of the two-wheeler.

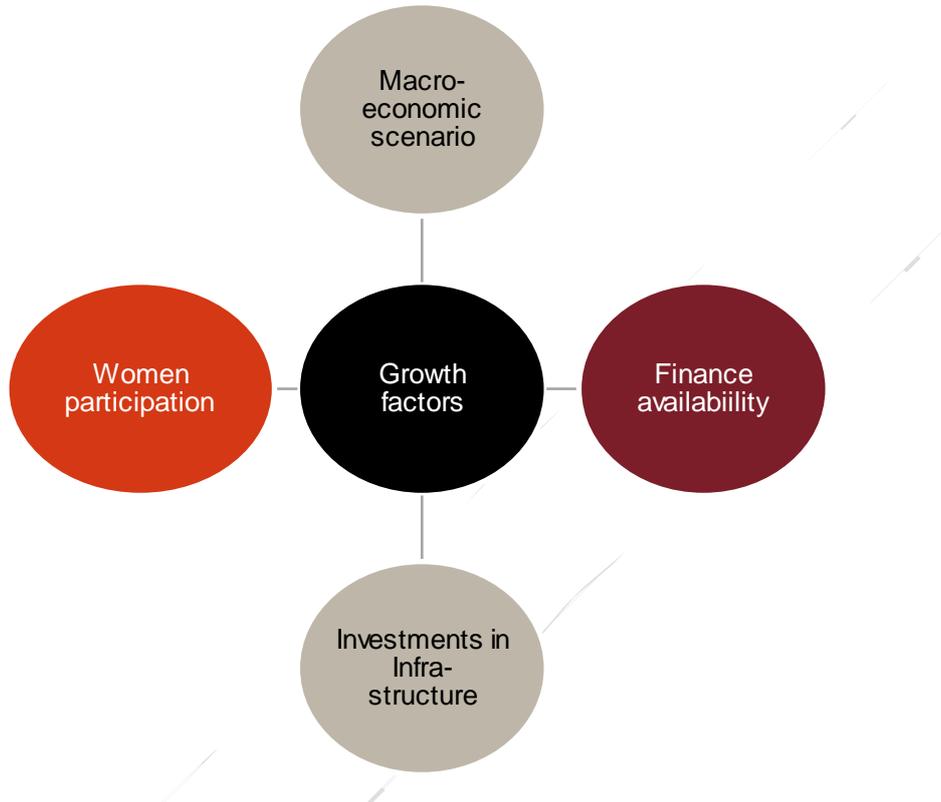
Regulatory timeline and its impact on prices



Source: Industry, CRISIL Research

Key macroeconomic drivers for domestic sales

Key growth factors



Macroeconomic scenario

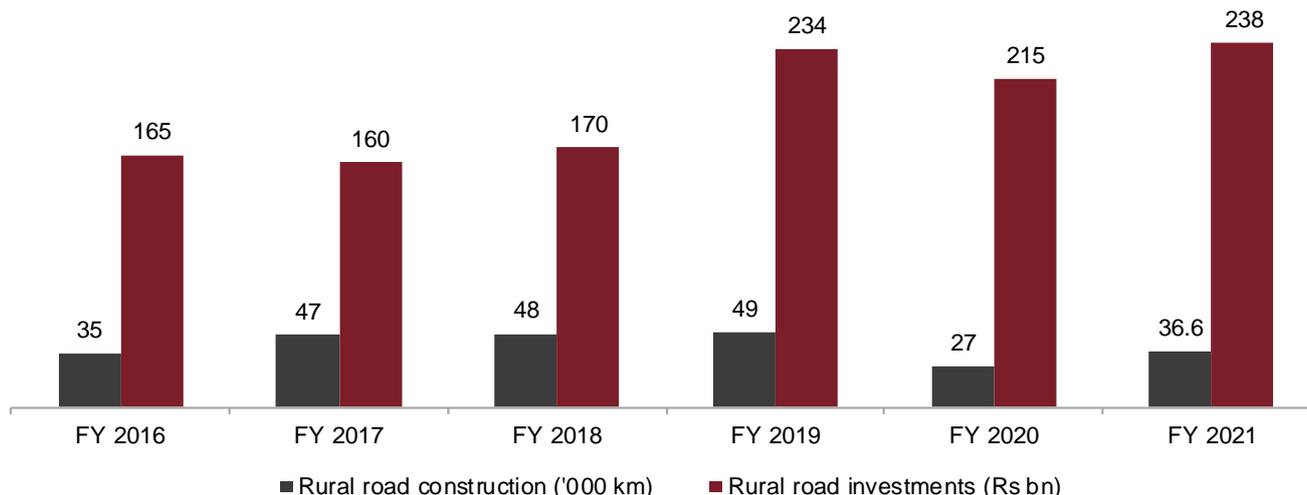
Macroeconomic factors primarily determine disposable income and affordability of customers. When gross domestic product (GDP) recorded growth of over 7%, two-wheeler sales also registered healthy growth. However, demonetisation, implementation of the Goods and Services Tax, and the pandemic have buffeted the two-wheeler industry. Also, primary demand drivers for the two-wheeler industry are improving affordability and lower cost of ownership.

Investment in infrastructure

Rural infrastructure also has a pronounced impact on rural incomes and, in turn, two-wheeler sales. Under the Pradhan Mantri Gram Sadak Yojana (PMGSY), launched in 2000, the government aims to build all-weather roads in rural India. The scheme involves construction/ upgradation of over 800,000 km of rural roads. Of these, 662,680 km have been completed, as of March 2020. However, the pace of rural road construction slowed in fiscal 2020, 2021 - construction at ~27,000 km in fiscal 2020, ~36,600 km in fiscal 2021 vis-à-vis ~49,000 km in fiscal 2019.

Nevertheless, the government has increased allocation to PMGSY to Rs 195 billion in Union Budget 2021-22. However, it must be noted that allocation of Rs 190 billion for fiscal 2020 was reduced ~26% to Rs 140.7 billion. To be sure, execution of PMGSY projects has reduced, after peaking in fiscal 2019.

PMGSY investments



E: Expected

Source: Online Management, Monitoring & Accounting System, CRISIL Research

Improvement of rural infrastructure impacts demand in two ways:

- Directly, by generating employment in the rural economy during the construction of roads, thereby acting as a wage and income multiplier
- Indirectly, by enabling mobility and accessibility

Finance availability

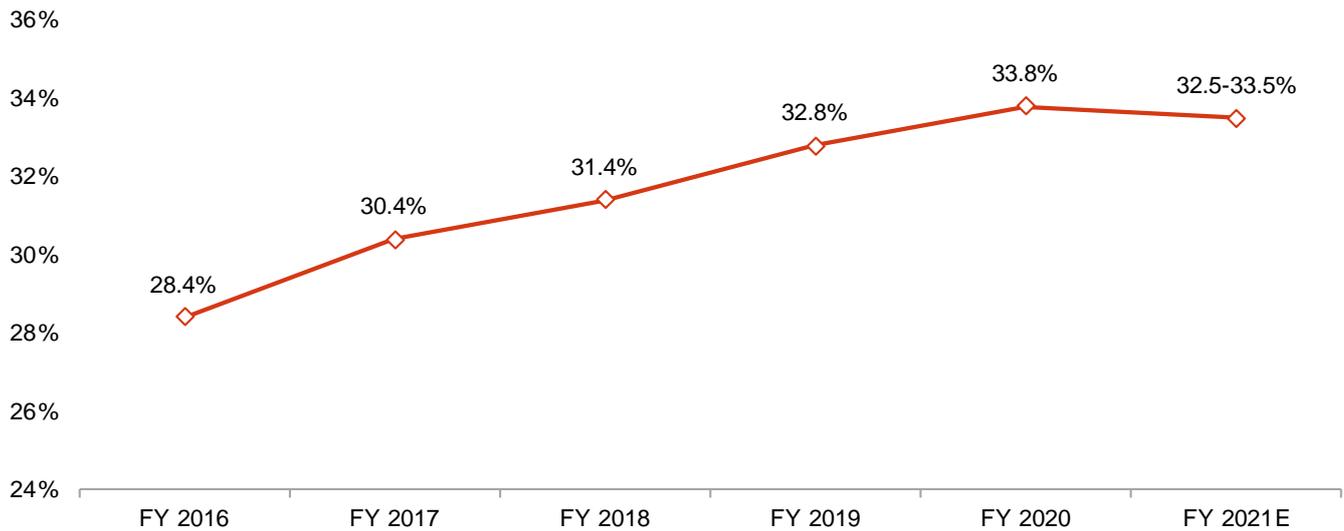
Finance penetration is lower in two-wheeler segment compared with other automotive segments, given the industry's smaller ticket sizes, relatively lower income profile of customers, high default rates, and difficulty in repossessing vehicles.

Stringent credit norms and credit information through the Credit Information Bureau (India) Ltd (CIBIL) have helped players widen their customer base. Moreover, the entry of non-banking financial companies (NBFCs) targeting markets exited by banks, and captive NBFCs (operated by two-wheeler manufacturers) largely focusing on non-metros, have raised competition in the industry.

In fiscal 2020, financiers offered several schemes and promotions (low down payment, attractive EMI options, zero processing fees, etc.) to attract customers for small ticket-sized purchases.

NBFCs are likely to remain cash-strapped in fiscal 2021 due to Covid-19-led disruptions; banks have also adopted a cautious lending approach. Nevertheless, captive NBFCs are aggressively trying to seize rural markets to aid sales. Notably, rural markets are witnessing more cash purchases of two-wheelers currently due to cash availability led by better crop output. Therefore, finance penetration for two-wheelers is expected to dip marginally in the near term.

Two-wheeler finance penetration, FY16-FY21E



Source: CRISIL Researchs

Women participation

The rising women workforce (a sharp rise in the past decade) has improved the overall household income, boosting two-wheeler sales. CRISIL Research estimates, 35-40% of typical urban two-wheeler sales are due to women participation.

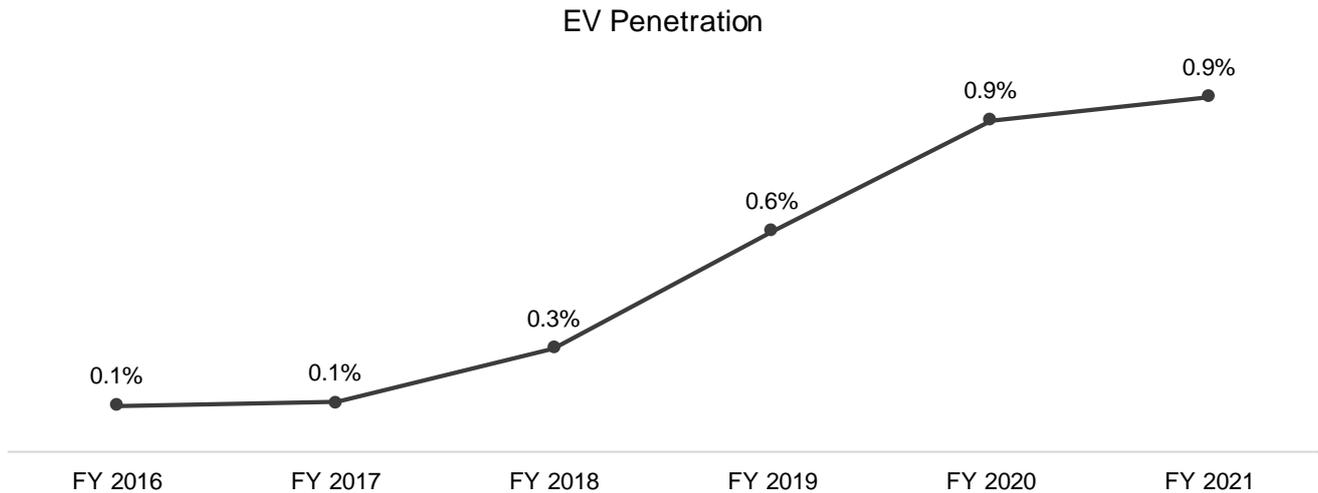
Indian two-wheeler export drivers

India primarily exports two-wheelers to crude oil driven economies, such as Nigeria and the Middle East. Rising crude oil prices boosted these economies, and in turn, India’s two-wheeler exports to these countries.

Motorcycles are used as taxis in Northern African regions. Although lockdowns in India led to logistical bottleneck and a temporary blip, motorcycle exports in these regions continued with a decent pace due to relatively low impact of Covid-19 in these regions.

Hero MotoCorp, the largest two-wheeler manufacturer globally, has six manufacturing facilities in India, and one each in Colombia and Bangladesh, catering to Latin and Central American markets. Similarly, TVS Motor has set up one of its manufacturing units in Indonesia.

Electric vehicle penetration



Source: SIAM, SMEV, CRISIL Research

India is a signatory to the Paris Agreement under the United Nations Framework Convention on Climate Change. The country is also part of the EV30@30 campaign, targeting a 30% sales share for EVs by 2030.

The country is one of the largest two-wheeler markets by volumes globally. Two-wheelers also comprise a sizeable 75% of India's total automobiles. Thus, the electric revolution needs to have impactful actions in the two-wheeler segment.

Initially, lead acid battery scooters were launched, which gave average speed below 25km per hour. With the innovation on the battery side, lithium-ion battery scooters gained traction, as they provided an average speed of 40-50 km per hour. However, due to the high cost of lithium-ion batteries, along with inadequate charging infrastructure, the penetration of electric two-wheelers (ETWs) is still below 1%.

Electric motorcycle still at an infant stage

Various government measures, including faster adoption and manufacturing of hybrid and electric (FAME-II) policy launched in 2015, could not provide the required boost to electric mobility in India.

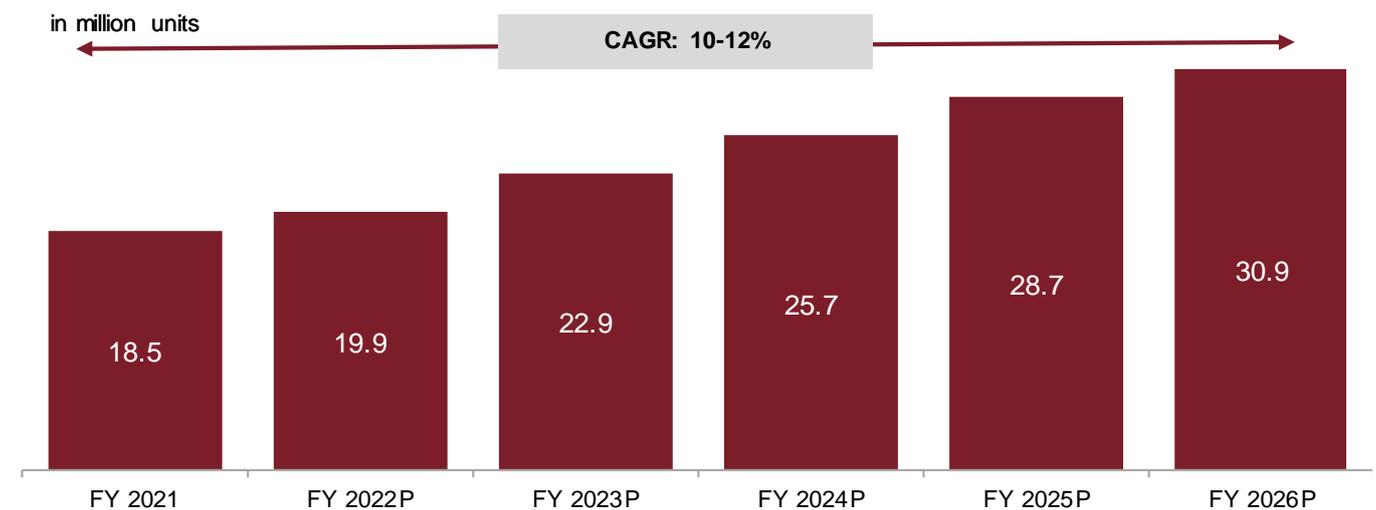
Penetration of electric motorcycles is also currently low on account of lack of availability of established electric models in affordable or premium segments. Factors, such as higher cost of ownership, unavailability of easy finance, lack of proper charging infrastructure in urban as well as rural areas, etc., are key constraints for adoption of electric motorcycles in the affordable motorcycle segment. On the contrary, even a premium motorcycle user is hesitant to shift to electric motorcycle due to behavioural preference to ICE motorcycles over EVs, lack of availability of high performance electric motorcycles at comparable price points to ICE, insufficient range profile of existing products and lack of charging infrastructure outside city limits.

4.2 Outlook on Indian two-wheelers industry (fiscals 2021 – 2026P)

Production volume outlook

India is one of the largest manufacturers of two-wheeler market in the world. Overall domestic two-wheeler production is expected to grow at a robust pace of 10-12% CAGR over fiscal 2022-21 to reach ~31 million units by Fiscal 2026. Even the domestic sales and export are also estimated to grow at 11-13% and 9-10% CAGR respectively during this period. However sharp surge in Covid cases during the 2nd wave and subsequently need for the state and central governments to impose localised or extensive lockdown to control spread of pandemic may have an impact on supply chains as well as sales. In such a case, overall industry production is also likely to get impacted over short term.

Two-wheeler production volume outlook



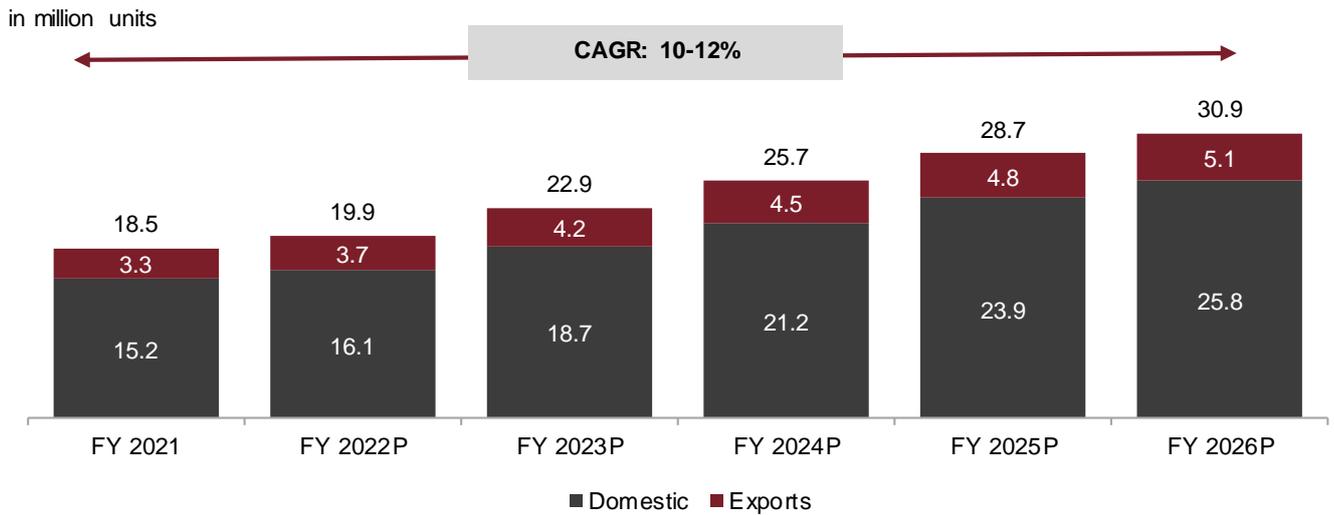
Source: SIAM, SMEV, CRISIL Research

Split by domestic sales and exports

Domestic sales (80-85% of total production) is estimated to grow at a 10-12% CAGR over the five-year period, after declining 18% on-year in fiscal 2020 and 13% in fiscal 2021. Exports are estimated to grow at a healthy 9-10% CAGR.

Higher GDP growth and lower inflation would boost domestic sales, led by better affordability with a rise in disposable incomes. Rising income will be further aided by better rural connectivity and rising women workforce in urban and rural areas. The under-penetrated rural market is likely to be the key growth segment for the two-wheeler industry. Preference to personal mobility on account Covid pandemic will also support demand over short to midterm till the time reliable solution to Covid pandemic becomes widely available.

Two-wheeler domestic and exports outlook



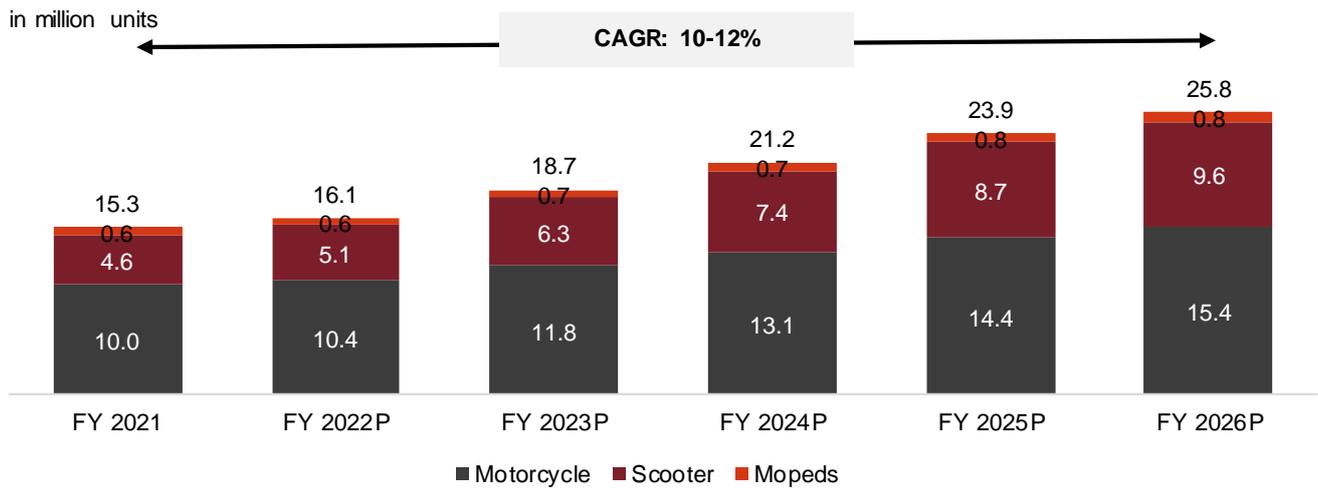
Source: SIAM, SMEV, CRISIL Research

CRISIL Research expects two-wheeler exports from India to grow at a CAGR of 9-10% over fiscals 2021- 2026 compared with 5% between fiscals 2016-2021. While expanding geographical footprints and extensive product portfolios would drive growth, crude oil prices and currency fluctuations in export markets will remain key monitorables. The revival in the African economy is expected to lift exports in the long term. Moreover, government initiatives to make India an exports hub, along with policies, such as production-linked incentive (PLI), provide further impetus to two-wheeler exports. However sharp surge in Covid cases in the 2nd wave and subsequently need for the state and central governments to impose localised or extensive lockdown to control spread of pandemic may have an impact on supply chains as well as sales. Even in case of export OEM sales are likely to come under pressure in case of a worsening of Covid situation in key export markets.

Split by motorcycles, scooters and mopeds

CRISIL Research expect scooters to grow at the fastest pace of 15-17% over fiscals 2022-2026, followed by motorcycles at 8-10%, and mopeds at 5-7%. Within motorcycles, CRISIL Research expects premium motorcycles to grow at a faster pace due to expectations of rising affordability and preference for high-tech features. Demand for premium motorcycles is expected to grow at ~14% CAGR over fiscal 2021 to 2026 period compared to overall ~9% CAGR growth in demand for motorcycles.

Two-wheeler segment-wise domestic sales outlook



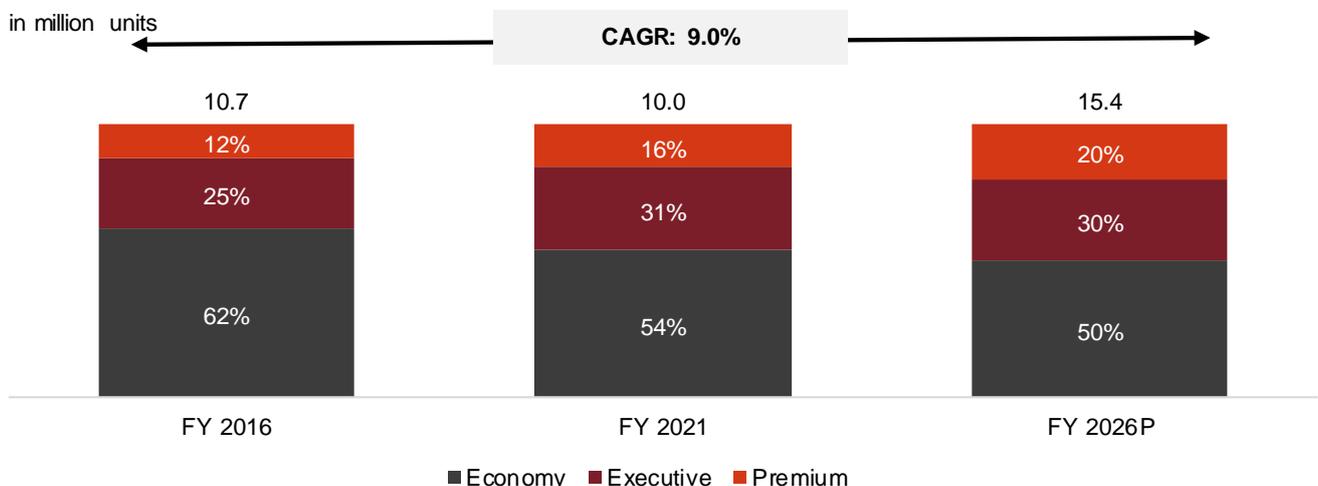
Source: SIAM, SMEV, CRISIL Research

Improving rural productivity, diversification towards horticultural crops, government income support schemes and structural government measures, such as PM-KISAN, eNAM, Pradhan Mantri Fasal Bima Yojna, will aid rural income in the long run. Here, the motorcycle segment stands to be a primary beneficiary.

Scooters are expected to witness higher penetration in the under-penetrated rural market (already have an urban market share of ~65-70%) driven by participation of women in work force, preferred as a family commute option, suitable for carrying loads in e-commerce applications.. The consumer preference shifting towards higher 'cc' scooters (125cc) would also aid demand, led by the ramp-up in road construction over the last few years.

Mopeds, which account for 4-5% of domestic two-wheeler sales, are expected to grow at a modest pace in the long run. A shift in consumer preference towards other vehicle segments will act as a key monitorable in moped sales growth.

Segment-wise breakup of domestic motorcycle sales



Note: Economy - Engine capacity < 110 cc; Executive – Engine capacity - 110-150 cc; Premium - Engine capacity > 150 cc
Source: SIAM, SMEV, CRISIL Research

Growing preference for premium motorcycles is likely to continue even in future supported by rising affordability. Accordingly share of premium motorcycles is expected to further rise to 20% by fiscal 2026 from 16% in fiscal

2021. Demand for premium motorcycles is expected to grow at ~14% CAGR over fiscal 2021 to 2026 period compared to overall ~9% CAGR growth in demand for motorcycles.

Growth drivers for domestic sales

- Likely **improvement in macroeconomic factors** after subdued growth earlier this financial year. CRISIL Research expects GDP to grow at a 7.0% CAGR between fiscal 2021 and fiscal 2026. Inflation, on the other hand, is expected to remain soft to moderate. Higher GDP growth and lower inflation would boost domestic sales, led by better affordability with a rise in disposable incomes.
- The rural market is still under-penetrated, and higher penetration in semi-urban and rural markets would also steer growth in two-wheeler sales.
- Finance penetration levels likely to rise in the long term, with continued focus of banks and NBFCs on semi-rural and rural areas.
- Rural infrastructure growth has a pronounced impact on rural incomes, in turn, boosting domestic sales. Strong investments under infrastructure schemes will further boost rural infrastructure, with multiplier effects.
- The use of two-wheeler (mainly electric) in last-mile delivery by e-commerce players/food chains would also drive two-wheeler demand.

Growth drivers for exports

CRISIL Research expects continued growth momentum in exports to Latin America in the long term, owing to better economic growth. Exports would also be driven by the expected improvement in African economies, with a pick-up in non-oil sectors (such as, services) and an intact long-term outlook on crude. Thus, the exports share of Latin America and Africa would improve faster than other regions.

- Other key developments undertaken by OEMs to boost exports:
- BMW Motorrad is developing India as an export hub in a joint venture with TVS
- Bajaj has started exporting KTM motorcycles to Europe and Indonesia
- Hero has entered Argentina and is exploring expansion in Brazil and Mexico
- TVS is set to start exporting to Central America
- Honda has announced its intention to develop India as an export hub

Impact of regulatory changes on domestic two-wheeler sales

FAME-II

Launched in April 2019, the FAME-II policy was issued to drive ETW sales and curb pollution, targeting sales of 1 million high-speed ETWs by the end of fiscal 2022. Under the scheme, only advanced batteries and registered vehicles are incentivised, with a greater emphasis on providing affordable and environment-friendly public transportation options. Therefore, the scheme is mainly applicable to vehicles used for public transport or those registered for commercial purposes in the e-3W, e-4W and e-bus segments. However, privately owned registered e-2Ws are also covered under the scheme as a mass segment.

The scheme excludes lead-acid battery-powered two-wheelers. Additionally, as per the eligibility criteria, e-scooters ought to have a minimum range of 80 km per charge and a minimum top speed of 40 kmph, along with riders on energy consumption efficiency, minimum acceleration and a higher number of charging cycles. This precludes more than 90% of the remaining lithium-ion battery-driven models from the subsidy.

Earlier (in FAME-I), the incentive for lithium-ion battery-based two-wheelers stood at Rs 17,000 or Rs 22,000, based on the fuel savings potential, irrespective of the battery size. FAME-II has linked the demand incentive to the size of the battery, with the government providing Rs 10,000 per kWh of battery used per two-wheeler. As the average size of a lithium-ion battery in electric scooters sold during FAME-I was ~1.5kWh (average subsidy of Rs~15,000 per vehicle), it reduced the average subsidy per vehicle by Rs 2,000 to Rs 7,000.

Further, to receive a subsidy under phase II, ETWs are required to source 50% of the components locally. The department of heavy industries in September 2020 extended the deadline for the localisation of several components under its phased manufacturing programme (PMP) for EVs from October 1, 2020 to April 1, 2021.

The government has announced an investment of about Rs 100 billion in three years for FAME II subsidy. Phase II of the subsidy scheme has stricter localisation norms and is aimed at promoting domestic manufacturing of EVs and components.

Estimated penetration of electric two- wheelers by FY26

TCO Analysis

In a base scenario, for comparing TCO of EVs with that of ICE vehicles, CRISIL Research has considered battery prices dropping to \$150 per kWh by fiscal 2026. Petrol price is assumed to remain at Rs 83.69 per litre, with no further increase over current prices. EV resale value as a proportion of initial cost (~35%) has been assumed to remain at the same level in fiscal 2026 as in fiscal 2021, which will probably improve over a period with better product availability in the market. Therefore, alternative scenarios developed will only show an upside for EVs. Continuation of FAME subsidies until fiscal 2026 is the only major assumption made in favour of 2W EVs.

TCO for scooters in 2021 for 4-year ownership

Annual running	8,000 km	10,000 km	12,000 km
ICE-equivalent 2W EV	18% higher cost than ICE	7% higher cost than ICE	1% lower cost than ICE

TCO for scooters in 2026 for 4-year ownership

Annual running	8,000 km	10,000 km	12,000 km
ICE-equivalent 2W EV	7% higher cost than ICE	1% lower cost than ICE	8% lower cost than ICE

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

In personal use case, average annual running of 7,000–9,000 km is observed for 2W's in India. As evident from the tables above, at annual running of 12,000-km, TCO of high performance e2W's is 1% lower than that of ICE in fiscal 2021. The lack of parity for e2W's is due to 70% higher acquisition cost. A majority of the 2Ws in urban markets are financed; hence, a 70% cost differential for an e2W acts a deterrent for EV adoption. However, as annual running increases, EV becomes more cost-effective than ICE. This is one of the major reasons for the proliferation of many ride-sharing businesses having 2W EVs at their core, such as Bounce and Vogo.

In fiscal 2026, with subsidies keeping the acquisition cost in control, e2W will be able to achieve parity with ICE equivalent scooters at around 9,000-10,000 km thus paving way for rapid adoption.

A sequential increase in petrol prices, impending BS VI part B emission norms (due for implementation in fiscal 2023), constant electrical energy cost (due to an increase of renewable energy in the country's power mix), and improving customer trust in electrification will lead to faster adoption of EVs.

Government intervention in regulations and policies

The Government of India, through various ministries, has formulated policies for the development of the EV sector in India. The Ministry of Power has revised guidelines for the distribution and sale of power. The following table lists some of the policies and their expected outcomes:

Policy	Policy details	Expected outcome
Reduction in the GST rate for EVs and chargers	-From 12% to 5% for EVs, and 18% to 5% for chargers, effective from August 1, 2019	-EV acquisition cost came down. Fast-charging infrastructure cost also reduced
Union Budget 2019-20	-Income tax deduction of Rs 1.5 lakh on EV loans	-TCO decreased, especially for salaried professionals
Warranty condition for eligibility of vehicle under FAME II (May 15, 2019)	-Warranty condition revised to 3 years subject to 20,000 km; earlier warranty on vehicles was provided for one year only	-Customer perception of low quality of EVs will change
FAME II subsidy (March 22, 2019) valid till FY22	-1 million e2W to be given subsidy at Rs. 10,000 / kWh or 20% of ex-factory price (limited to Rs 1.5 lakh)	- e2W acquisition cost came down, with subsidy ranging up to 20% of ex-factory price for current models
State EV policies	-8 states have finalised their EV policies and 8 others have draft policies -Policy entails supply and demand-side incentives	-Maharashtra and Delhi are offering incentives, further decreasing acquisition cost -Demand-side incentives include reduced tariff for EV charging, rebates on road tax, interest-free loans for auto component manufacturer, and cost split for skill development Supply-side incentives include interest subvention on investments made and stamp duty exemption
PMP norms (April 29, 2019)	-Increase in import duty on EV auto component parts from 10% to 15% from April 2021	-OEMs not meeting localisation norms will not be eligible for the demand incentives -Moreover, the cost of importing parts is also set to increase from April 2021, if a sustainable and cost-effective domestic alternative is not found -This will increase acquisition cost of e2W -CRISIL Research's recent interactions with e2W OEMs suggest vehicle control units, battery packs, and lithium-ion cells are still being considered for substitution
EV charging ecosystem	-16 state policies in final and draft stages offer incentives for setting up charging stations	-Under FAME I, the government had sanctioned 520 chargers

Policy	Policy details	Expected outcome
	<ul style="list-style-type: none"> - As per the Ministry of Power’s notification issued on December 14, 2018, resale or commercial activity in electricity has been allowed for utilities/ service providers providing public charging infrastructure -OMC (Oil marketing companies) retail pumps will be given priority for installation of public EV charging stations -Nine cities with a population of 4 million and above are the focus of phase I of the EV charging policy -There must be at least one charging station in a grid of 3 km x 3 km in cities 	<ul style="list-style-type: none"> -Under FAME II, the government has sanctioned 2,636 charging stations across 62 cities -Fast and accessible charging will help reduce range anxiety and drive faster adoption of e2W

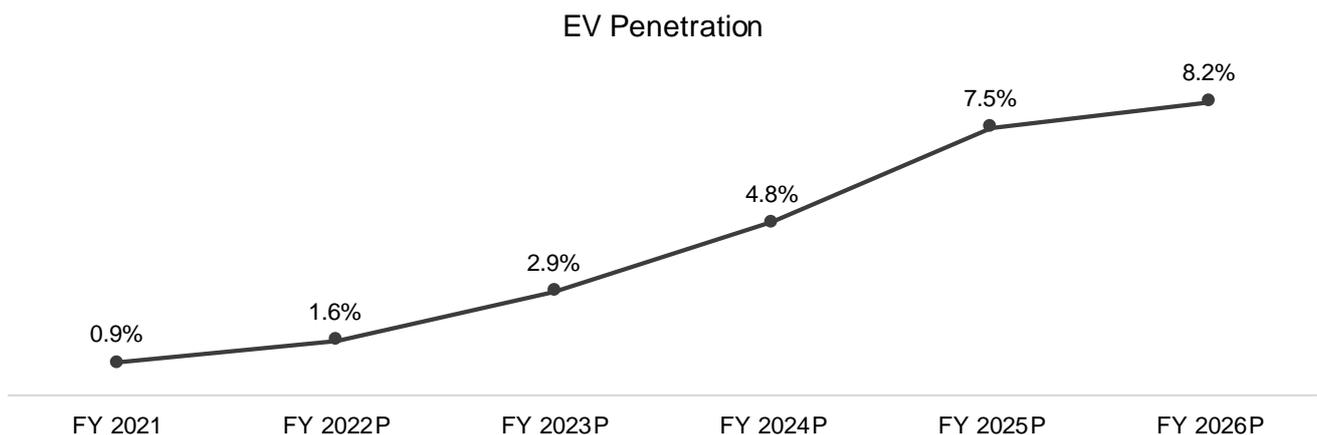
Source: SMEV, FAME, DHI, and CRISIL Research

Regulators play an important role in driving faster adoption of EVs. The FAME II scheme has an outlay of Rs 100 billion, with a major proportion dedicated to demand incentives; Rs 10 billion is earmarked for the development of charging infrastructure. Demand-side incentives under the FAME scheme will last until fiscal 2022, and state EV policies (mostly of five-year tenure) will last until fiscal 2023. Continuation of policies after fiscal 2023 will play an important role in driving adoption of hybrid and EVs. Execution of the schemes will also be a key factor considering that only Rs 4.4 billion of the Rs 8.93 billion allocated to FAME I has been utilised. All the policies and regulations focus on decreasing the acquisition cost and building capabilities through the PMP scheme and the recently announced production-linked incentive (PLI) scheme.

Growing awareness regarding environmental issues

Alarming levels of air pollution among metro cities in India and actions taken by the local governments is resulting in increased awareness levels among masses especially the youth regarding environmental issues and advantages of electrical vehicles in addressing some of these issues. Growing awareness levels and concern regarding environmental issues is therefore likely to be one of the drivers for electrification in India.

Two-wheeler EV penetration outlook, FY21-26P



Source: SIAM, SMEV, CRISIL Research

CRISIL Research estimates e-2W penetration to reach ~8% by fiscal 2026 from ~1% currently. Range anxiety (fear of running out of charge mid journey) is a key concern for EV buyers due to scarce availability of public charging infrastructure.

CRISIL Research expects this issue to ease in the long term, aiding EV penetration in India. A bulk of migration towards EVs from the scooter segment, which contributed ~32% of two-wheeler sales is expected to happen in fiscal 2020. Notably, scooters have a higher urban penetration of around 65-70% compared to motorcycles that are largely rural demand driven. Major OEMs are already in the process of developing in-house EVs or acquiring stakes in existing EV start-ups to diversify their offerings. For instance, Bajaj and TVS recently launched their electric scooters range.

5 Review and outlook on Indonesian, Thailand and Vietnamese two wheeler industry

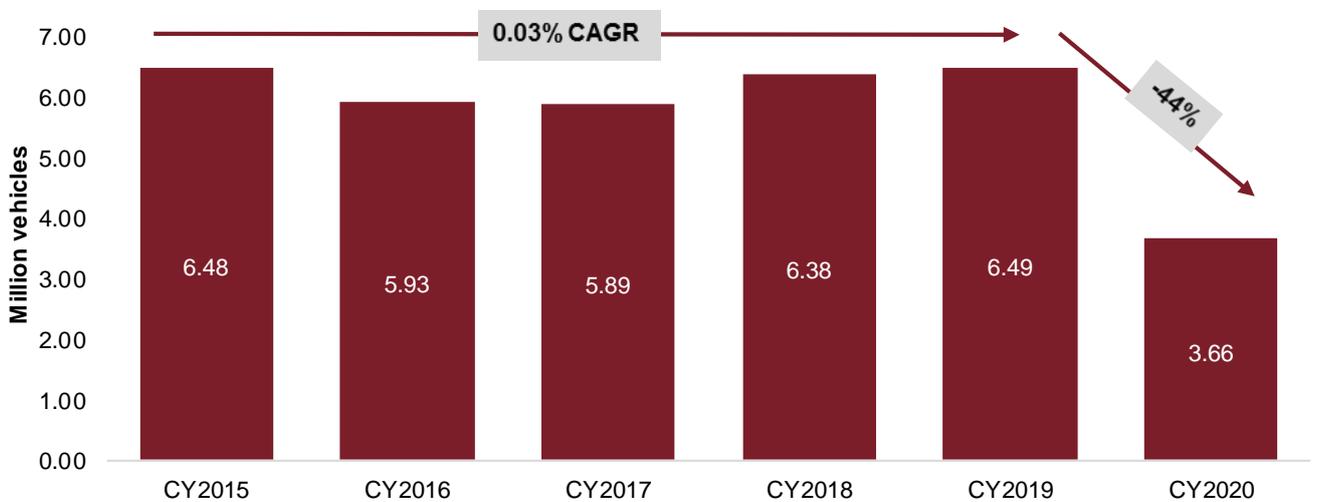
5.1 Review of Indonesian, Thailand and Vietnamese two-wheeler industry (CY2015–2020)

Indonesian domestic sales review (CY2015–2020) and key growth drivers

The Indonesian two-wheeler market is the largest among the Association of Southeast Asian Nations (ASEAN) countries and is the third-largest in the world, following India and China with a high household penetration of more than 80%.

Between calendar years (CY) 2015 and CY2019, the country witnessed a compounded annual growth rate (CAGR) of 0.03% in domestic motorcycle sales. In CY2020, sales declined 44% on-year mainly due to the pandemic.

Two-wheeler domestic sales development in Indonesia — CY2015–2020



Source: Indonesian Motorcycle Industry Association (AIS), CRISIL Research

Motorcycles are the most common form of ground transportation in Indonesia, of which light-weight scooters (<150cc) are the most preferred segment. Japanese brands such as Honda, Yamaha, Kawasaki and Suzuki dominate the competitive landscape; Honda and Yamaha together hold a lion's share of the market (~90%). Other popular brands include TVS, KTM-Bajaj and Harley Davidson.

An increase in fuel prices and production costs, sluggish economy and persistently low commodity prices led to weak purchasing power, resulting in a sharp decline in sales of 18% in CY2015 and 8% in CY2016. However, the low inflation rate and lower central bank rates improved the purchasing power and affordability of vehicle loans, consequently reviving growth in CY2018 and CY2019. However, the pandemic wreaked havoc on the economy, causing a steep decline of 44% in sales in CY2020, which was the steepest fall compared to other major Southeast Asian two-wheeler markets such as Thailand and Vietnam.

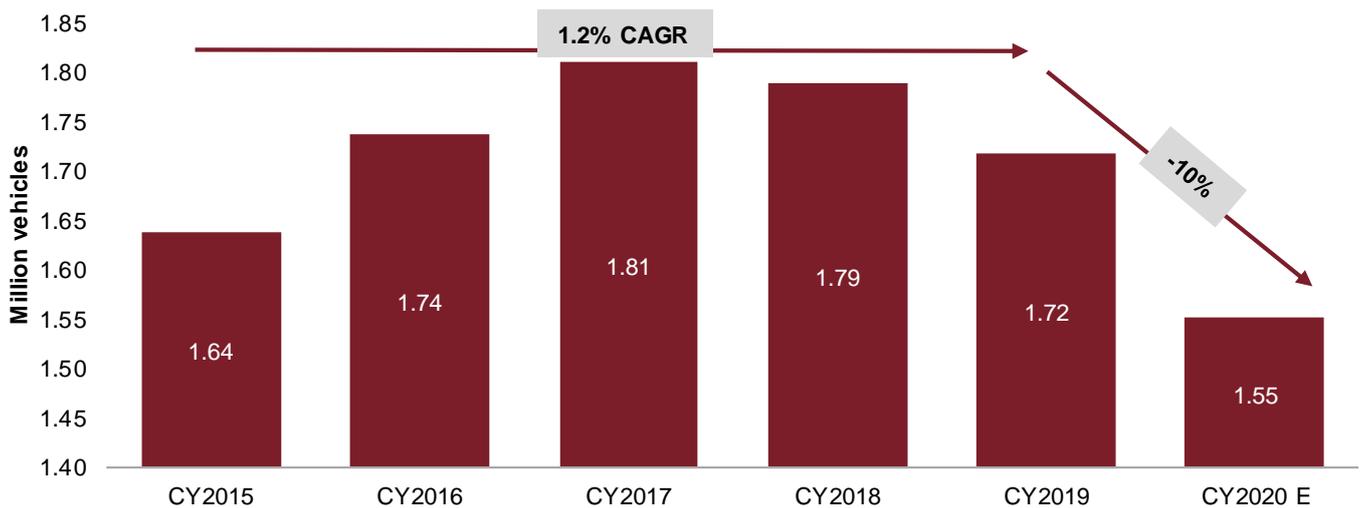
Thailand domestic sales review (CY2015–2020) and key growth drivers

Thailand is the fifth-largest producer of motorcycles following China, India, Indonesia and Vietnam. More than 80% of the production is for the domestic market, which already has a high household penetration of over 80%.

Consumers, who are predominantly manual labourers and agricultural workers, mostly prefer family-motorcycles with automatic or semi-automatic gears, which mostly have 100-125cc engines.

Domestic sales between CY2015 and CY2019 increased at a CAGR of 1.2% and declined 10% on-year in CY2020.

Two-wheeler domestic sales development in Thailand — CY2015–2020



Note: E — Estimated

Source: Thai Automotive Industry Association, CRISIL Research

Two-wheeler sales started recovering in CY2015 after demand sharply fell 15% in CY2014, amid the political turmoil and payment delays to farmers under the rice-pledging scheme and was on an upward trend until CY2017 with a compounded annual rate of 5.1%. The growth was supported by the recovery from drought and consequent rise in the purchasing power of the rural economy due to higher yield and prices of agricultural commodities. Despite the revival in growth momentum, sales were still short of the peak of 2.13 million units achieved during CY2012.

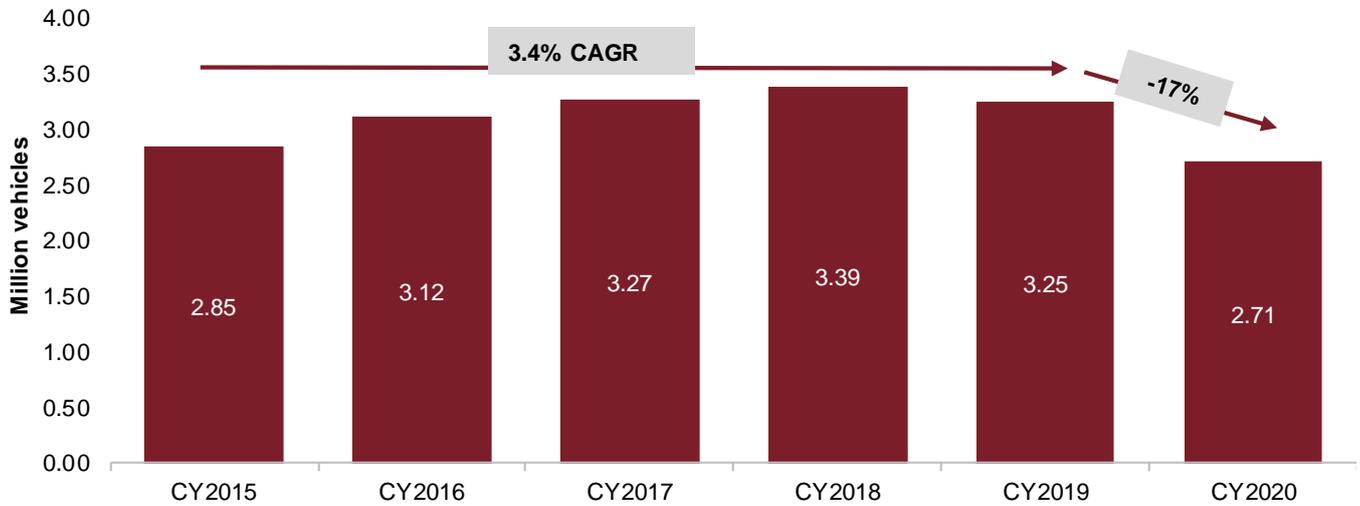
However, the purchasing power declined in CY2018 owing to falling agricultural commodity prices and persistent high levels of household debt. A severe drought in CY2020, which is claimed to be the worst in 40 years, adversely impacted the sales further exacerbated by the pandemic. The credit support provided by the government in CY2019 to assist motorcycle taxi drivers could do little to assuage the decline in two-wheeler sales.

Overall, two-wheeler domestic sales declined during CY2018–2020 at a compounded annual rate of 6.8%. Thailand shifted to a new CO₂ emission-based excise tax regime from January 2020, wherein vehicles with higher CO₂ emission are being taxed at a higher rate, whereas electric vehicles (EVs) have been made tax-exempt from 01 January 2020 to 31 December 2022. In particular, the sales of premium bikes (with greater than 400 cc engines) have been impacted compared to mass segment bikes due to higher excise duty.

Vietnam domestic sales review (CY2015–2020) and key growth drivers

Domestic motorcycle sales in Vietnam increased at a CAGR of 3.4% between CY2015 and CY2019, and declined 17% on-year in CY2020.

Two-wheeler domestic sales development in Vietnam — CY2015–2020



Source: Vietnam Association of Motorcycle Manufacturers (VAMM), CRISIL Research

Vietnam is one of the highest motorcycle consumers in the world with a household penetration of ~85%. The strong growth in urban population and poor public transport systems led to the rapid expansion of private vehicles, especially two-wheelers, causing major congestion issues in key urban cities such as Hanoi and Ho Chi Minh. The government increased the registration cost in the past to discourage motorcycle purchase to address congestion issues. Even in the future, the government is working on a proposal to restrict motorcycles in Hanoi and Ho Chi Minh, two of the biggest cities in Vietnam by CY2030 to reduce vehicle population.

Domestic sales rose at a CAGR of 5.9% during CY2015–18, reaching a record high in CY2018 due to strong economic growth and rising disposable incomes. A decline in CY2019 has been owing to high market saturation and rising proportion of two-wheeler users upgrading to entry segment cars with a sustained rise in disposable incomes. A sharp decline in CY2020 was due to the Covid-19 pandemic, but two-wheeler sales continue to stay impacted due to market saturation and a shift to entry-level cars.

5.2 Outlook on the Indonesian, Thailand and Vietnamese two-wheeler industry (CY2021–2025)

Indonesia

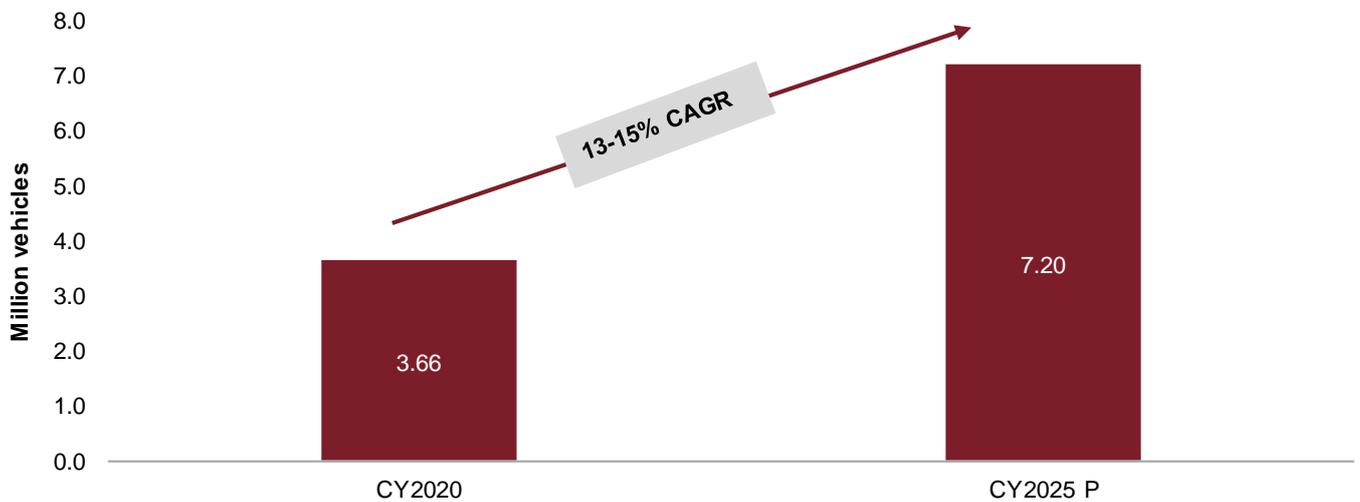
The Indonesian economy is expected to recover sharply by 6.1% in CY2021, after declining 1.5% in CY2020. Over the mid-term, the economy is likely to post a 5.1% growth over CY2022–2025, according to an IMF forecast.

CRISIL Research expects two-wheeler sales to bounce back sharply by 45% in CY2021, as income sentiments are likely to improve with a rise in global commodity prices. Two-wheeler sales are likely to reach the CY2019 level in CY2023. Two-wheeler sales are likely to register 7–9% growth over CY2021–CY2025, driven by rising disposable

incomes, easy availability of finance, need for cheaper personal mobility options and increasing number of women joining the workforce.

The Indonesian government has set a road map to achieve 2.1 million two-wheeler EV sales by CY2025. However, a higher acquisition cost of two-wheelers and lack of a clear EV road map are likely to result in slower electrification with EV penetration reaching only 10–15% of the total sales by CY2025.

Two-wheeler domestic sales outlook for Indonesia — CY2020–2025



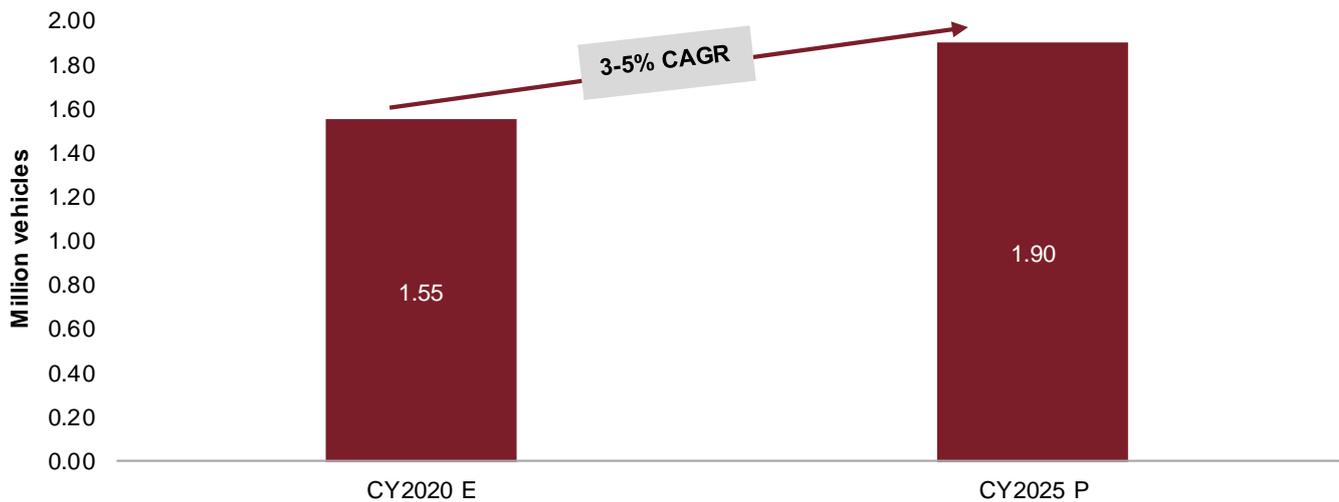
Source: Indonesian Motorcycle Industry Association (AISI), CRISIL Research

Thailand

Thailand’s GDP is expected to recover by 4% in CY2021, after declining 7% in CY2020. Over the mid-term, the economy is expected to post a 4.1% growth over CY2022–2025, according to an IMF forecast. Accordingly, Thailand’s domestic two-wheeler sales are expected to recover to 1.68 million from a low base of 1.55 million as the vaccine becomes widely available. Sustained recovery in the economic scenario, stable political scenario, rising popularity motorcycle taxis and better farm prices are likely to support domestic sales until CY2025.

The exchange discounts, tax incentives and other initiatives by the government to encourage EV adoption and make Thailand an EV production hub by CY2025 are expected to boost domestic electric motorcycles sales at a CAGR of about 20–25% during CY2020–CY2025.

Two-wheeler domestic sales outlook for Thailand — CY2020–CY2025



Note: E — Estimated

Source: Thai Automotive Industry Association, CRISIL Research

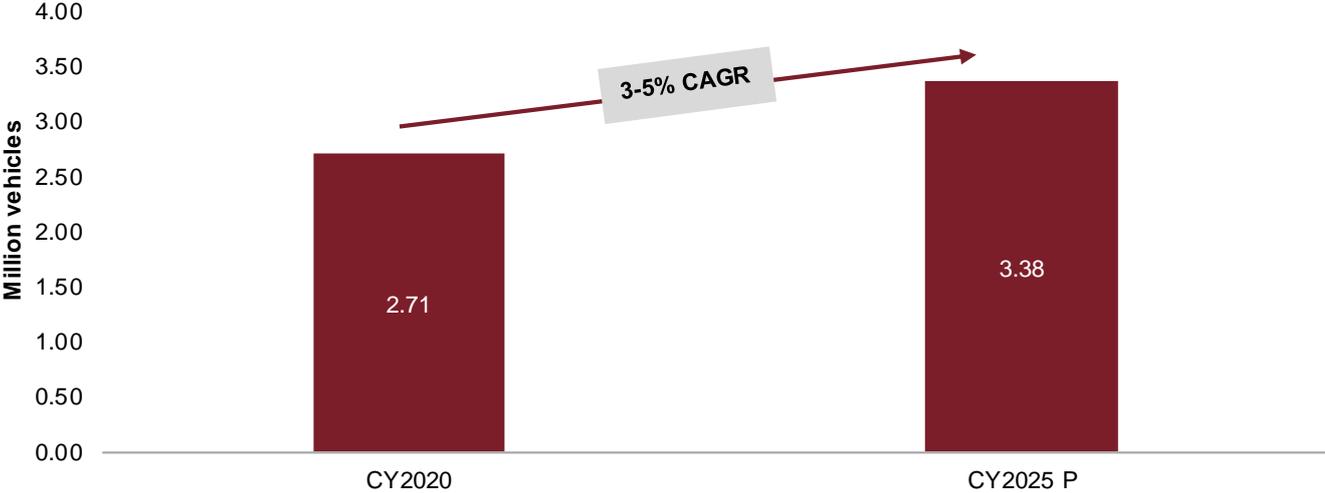
Vietnam

Vietnam experienced a minimal impact due to Covid-19, as its economy grew 1.6% in CY2020. The country was among the very few economies that witnessed economic expansion in CY2020. Vietnam’s economy is expected to rise 6.7% in CY2021 on a low base of CY2020, according to an IMF forecast. Economic growth is likely to further pick up in CY2022 and CY2023, as the Vietnam export sector is likely to improve, driven by global supply realignment. The economy is expected to increase at a CAGR of 6.9% over CY2022–2025, according to an IMF forecast.

Despite a better economic scenario, the growth in domestic sales of two-wheelers is likely to be tepid. Growth in two-wheelers will be tempered by the high penetration of two-wheelers among households and the government’s plan to promote public transportation and restrict motorcycles to resolve road congestion issues across key metro cities. As a result, two-wheeler sales are likely to expand 15% in CY2021 on a low base of CY2020; vehicle sales are likely to increase at a CAGR of only 1–3% over CY2022–CY2025.

With the entry of local players such as VinFast, e-motorcycles are expected to form a significant proportion of the two-wheelers sold in CY2025.

Two-wheeler domestic sales outlook for Vietnam — CY2020–2025



Source: Vietnam Association of Motorcycle Manufacturers (VAMM), CRISIL Research

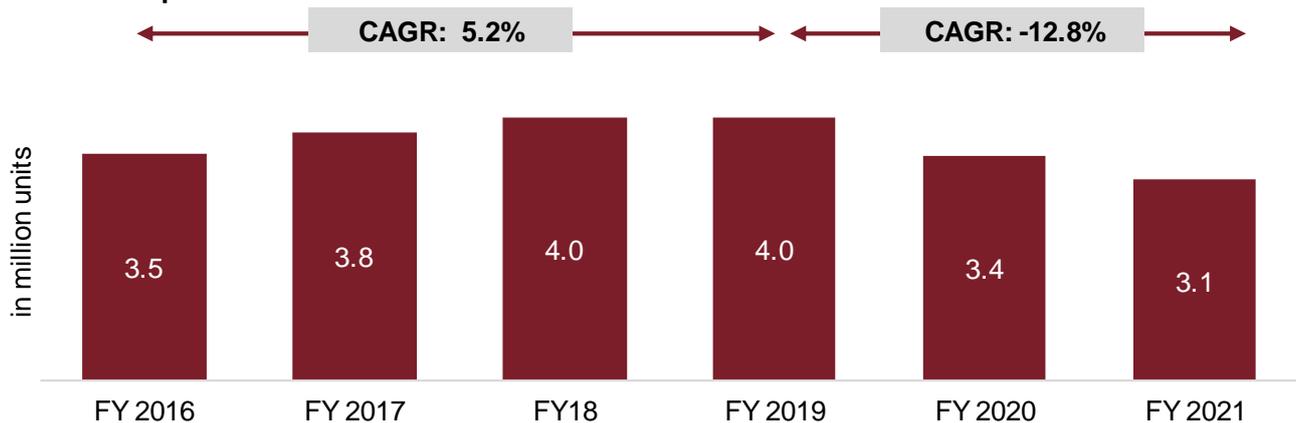
6 Review of and outlook on the Indian passenger vehicle industry

6.1 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



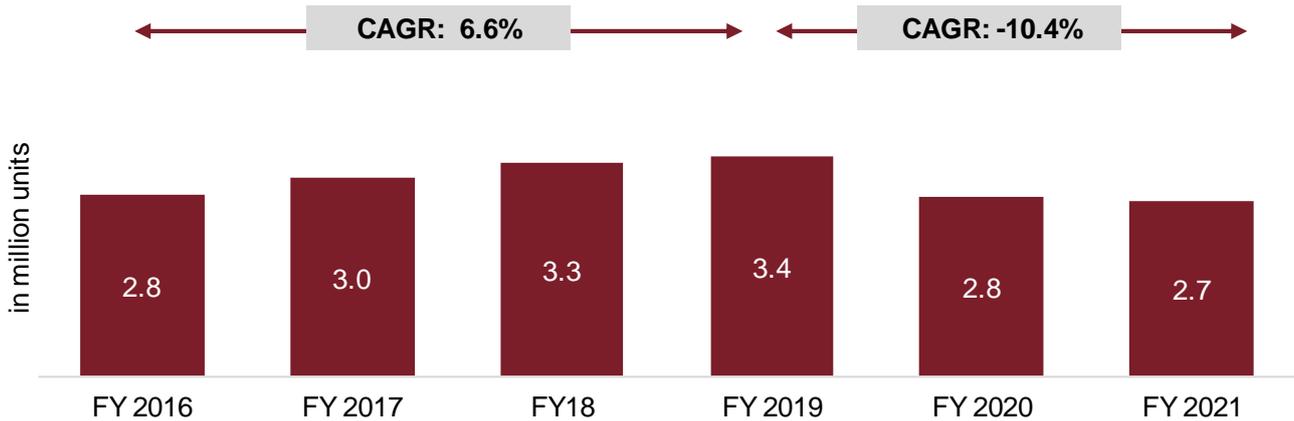
Source: SIAM- Society of Indian Automobile Manufacturers, CRISIL Research

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 ~41%.

Review of PV sales

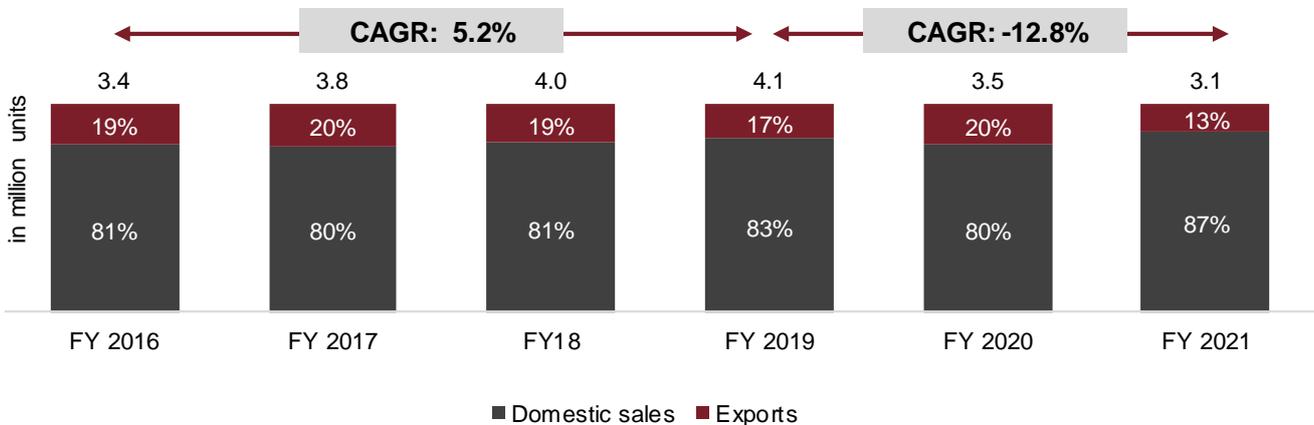


Source: SIAM- Society of Indian Automobile Manufacturers, CRISIL Research

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, 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 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 ~41% due to the pandemic, supply constraints, and higher focus of OEMs on the domestic market.

Split of industry production volume by PV segments

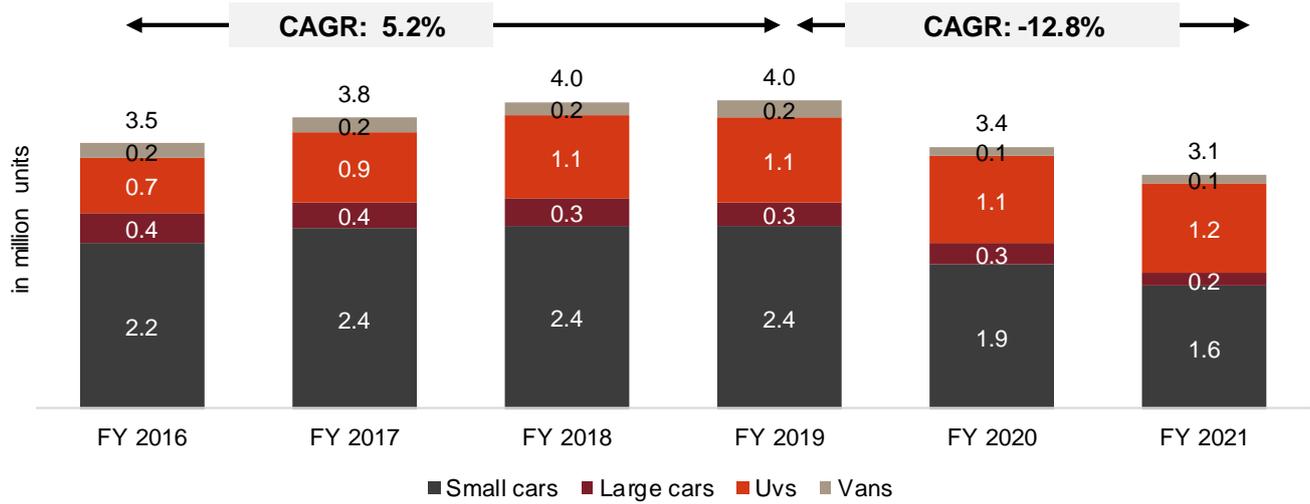
Small cars have a major share in total PV domestic volumes, as their lower ticket size makes them affordable to the average Indian consumer and ideal for first-time car buyers. The UV segment, which traditionally appealed to customers who valued larger seating capacity and ability to drive on rough rural 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 model 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) 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 have 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 by vehicle segments

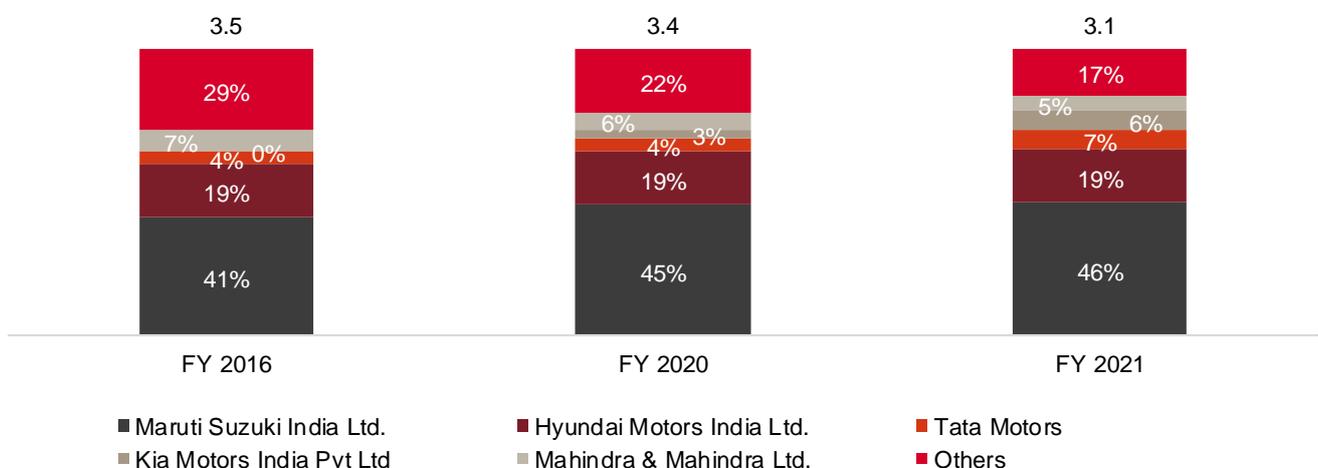


Source: SIAM, CRISIL Research

Production split by OEMs

Competition in the passenger vehicle has intensified with the entry of Kia Motors, MG Motors. Maruti Suzuki, Hyundai Motors, Tata Motors, Kia Motors and Mahindra & Mahindra together accounted for 83% of production in fiscal 2021. Market leader further consolidated its position in the market with expansion of dealership network and launch of several flagship products in UVs, premium compact and MPV segment. Kia Motors aggressive entry in premium utility segment set the benchmark for the industry. The manufacturer firmed its position as top 5 manufacturer in India within 2 years of its entry in India. The competition especially in compact and premium UVs is heating up with several new launches across OEMs.

Production market share development



Note: Others include Renault, Ford India Ltd, Honda Cars India Ltd, Toyota Kirloskar Motor Ltd, Nissan Motor India Pvt. Ltd., Volkswagen, MG Motor India Pvt Ltd, General Motors India Ltd., Skoda Auto India Pvt. Ltd, Fiat India Ltd., Force Motors Ltd, International Cars & Motors Ltd.,

Source: SIAM, CRISIL Research

Top 10 OEMs by production volume

PV OEMs	FY 2021 (Production in million vehicles)	Share
Maruti Suzuki India Ltd.	1.4	46%
Hyundai Motors India Ltd.	0.6	19%
Tata Motors	0.2	7%
Kia Motors India Pvt Ltd	0.2	6%
Mahindra & Mahindra Ltd.	0.2	5%
Renault	0.1	3%
Ford India Ltd.	0.1	3%
Honda Cars India Ltd.	0.1	3%
Toyota Kirloskar Motor Ltd.	0.1	2%
Nissan Motor India Pvt. Ltd.	0.1	2%
Others	0.1	5%
Total production volume	3.1	100%

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 subdued economic sentiments, 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

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	<ul style="list-style-type: none"> ▪ Exhaust Gas Recirculation ▪ Selective Catalytic Reduction ▪ 3 way catalyst ▪ Lean NOx Trap
HC- Hydrocarbons	<ul style="list-style-type: none"> ▪ Secondary Air Injection ▪ 3 way catalyst ▪ Diesel Oxidation Catalyst ▪ Purge Control Valve ▪ Canister
PM- Particulate matter	<ul style="list-style-type: none"> ▪ 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 is 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

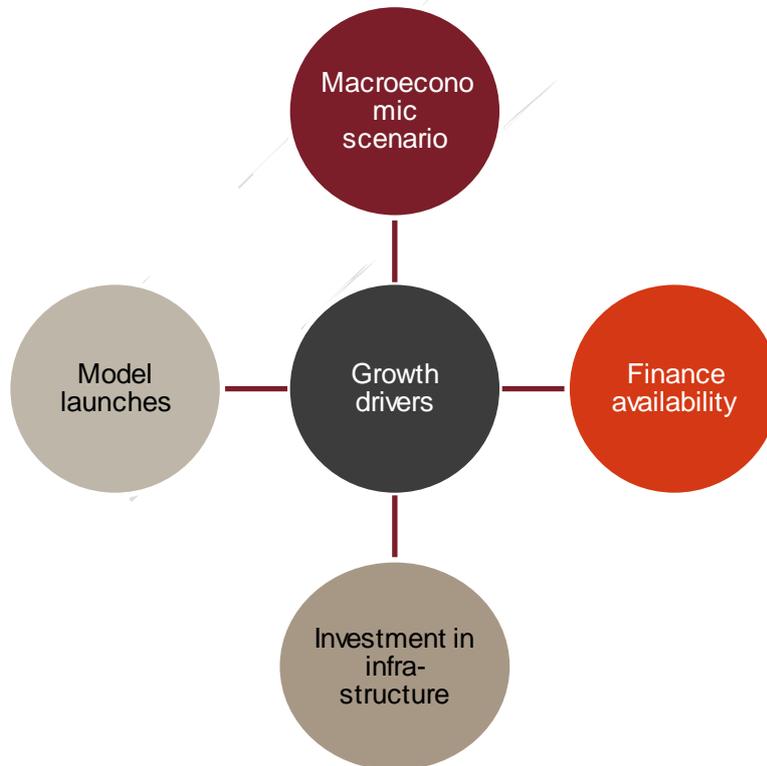
MEIS scheme to be replaced by RoDTEP

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 rates for which are being formulated.

Historical growth drivers for domestic PV sales

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



Macroeconomic scenario

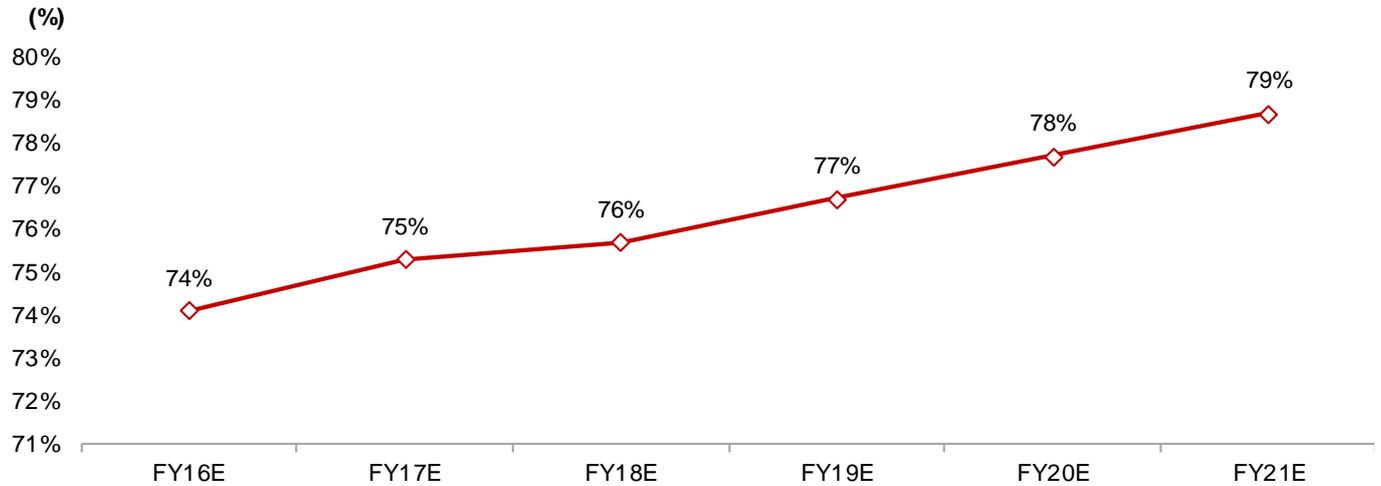
Growth in real GDP has a direct bearing on the affordability of PV buyers. Between fiscals 2016 and 2019, India recorded modest GDP growth. During the same period, the PV industry recorded positive growth. In fiscal 2020, as the economy weakened amid the pandemic, consumer sentiments remained subdued, impacting sales. However, the fear of contracting the virus has turned people towards personal mobility, aiding PV sales.

Finance availability

Given the higher ticket sizes in PV segment, finance penetration is higher in this 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

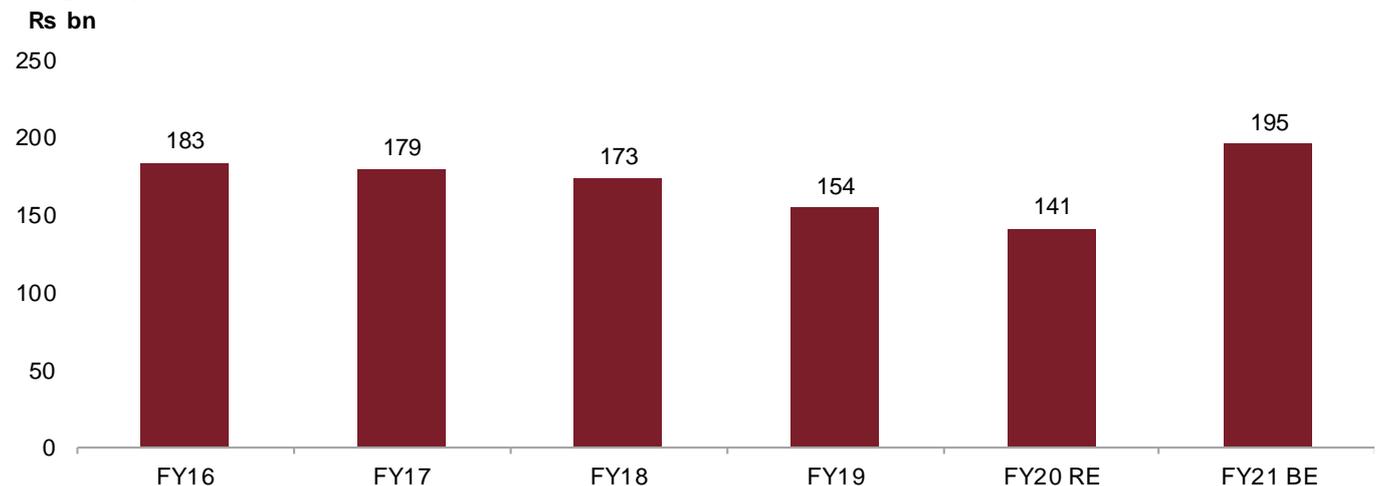
Source: CRISIL Research

Investments in infrastructure

Rural infrastructure has a pronounced impact on rural incomes and, in turn, on PV sales. Under the Pradhan Mantri Gram Sadak Yojana (PMGSY) launched in 2000, the government aims to build all-weather roads in rural India. The scheme involves the construction/upgrade of over 800,000 km of rural roads. Execution under the PMGSY reached an all-time high of 48,746 km in fiscal 2018, which was marginally higher than fiscal 2017 and considerably higher than earlier fiscals. In fiscal 2019, the scheme achieved 85-90% of its target.

The budgetary allocation to the PMGSY has been maintained at Rs 190 billion in the past three budgets, including fiscal 2020. The expenditure in fiscal 2019 exceeded the allocated budget.

Budgetary allocation to PMGSY, fiscals 2016 to 2021



Note: RE: Revised estimated, BE- Budgeted estimate

Source: National Rural Roads Development Agency, CRISIL Research

The favourable impact of improving rural infrastructure on demand works in two ways:

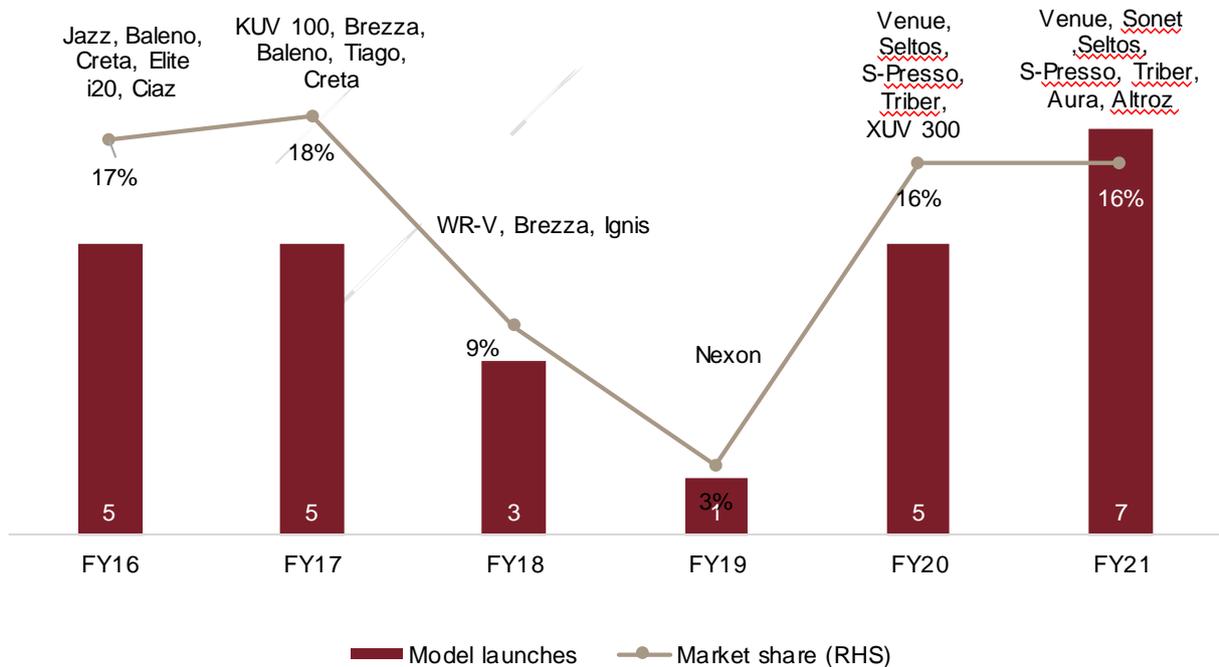
- Directly – By generating employment, wages, and as an income multiplier in the rural economy during the construction of roads
- Indirectly – By enabling mobility and accessibility through connectivity

Model launches

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

Historical growth drivers for Indian PV exports

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.

However, the pandemic has severely impacted exports across the globe in the current fiscal. Also, a second wave, as seen in some countries, will continue to affect demand.

Current penetration of Electric PVs

Current EV penetration in passenger vehicle category is miniscule (0.16% as on fiscal 2021) due to unavailability of affordable electric cars and charging stations leading to range anxiety. However, fiscal 2021 saw robust sales of e-Nexon. This has further bolstered confidence of the industry on viability of electric PVs and encouraged manufacturers to develop economical Electric PV's in the future.

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

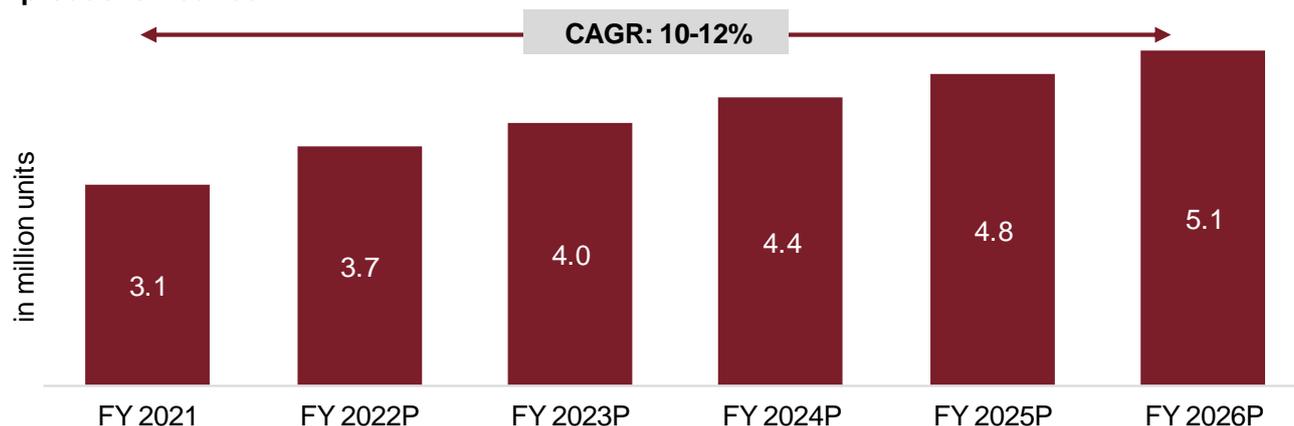
SOURCE: CRISIL Research

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

Production outlook (fiscals 2021 - 2026P)

CRISIL Research estimates overall PV production to grow at a robust pace of 10-12% CAGR from fiscal 2021 to 2026, and reach ~5.1 million units by fiscal 2026. However sharp surge in Covid cases in the 2nd wave and subsequently 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. In such a case, overall industry production is also likely to get impacted over short term.

PV production outlook



Note: P - Projected

Source: SIAM, CRISIL Research

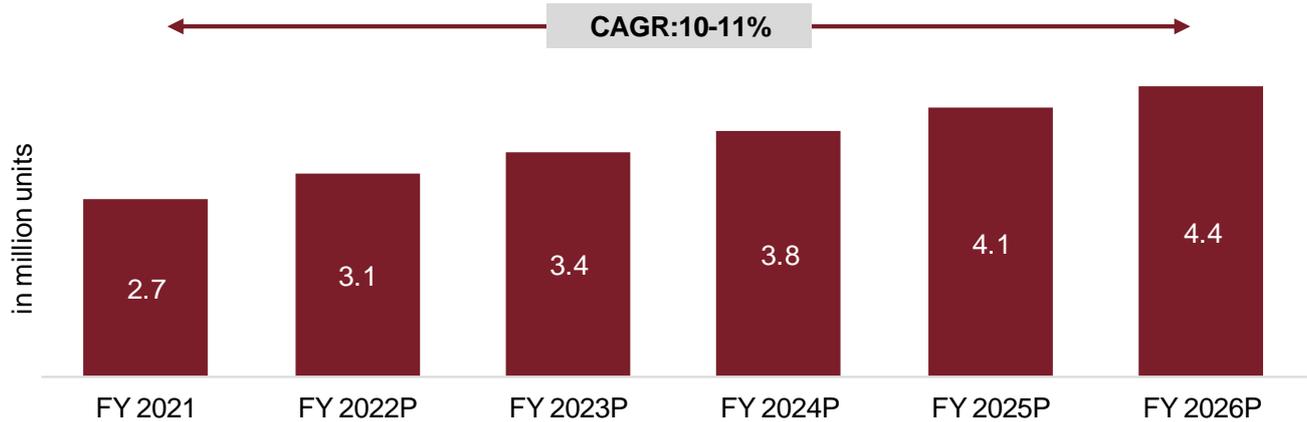
After a consecutive drop in production in fiscals 2020 and 2021, PV production is expected to increase at a robust pace over the next five fiscals because of a spurt in domestic as well as exports demand. Domestic demand will be driven by an expansion in the addressable market, fast-paced infrastructure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

The long-term outlook remains bright with regard to exports as efforts to penetrate newer geographies bear fruit and schemes such as PLI that 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 10-11% 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 cases and ensuing need for lockdowns are likely to dampen demand sentiments as well as pose supply chain challenges for the OEMs. Over short to mid-term covid induced demand for personal mobility is likely 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



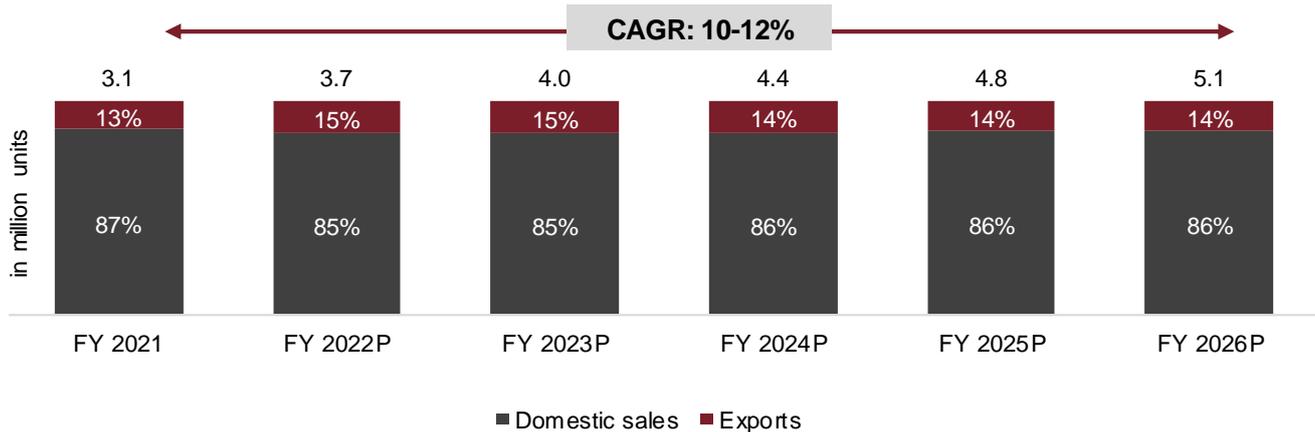
Note: P - Projected

Source: SIAM, CRISIL Research

Split by domestic and export sales

Domestic sales, which is formed ~87% of total production in fiscal 2021, is also estimated to grow at 10-11% 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.

PV industry: Domestic and export sales



Note: P - Projected

Source: SIAM, CRISIL Research

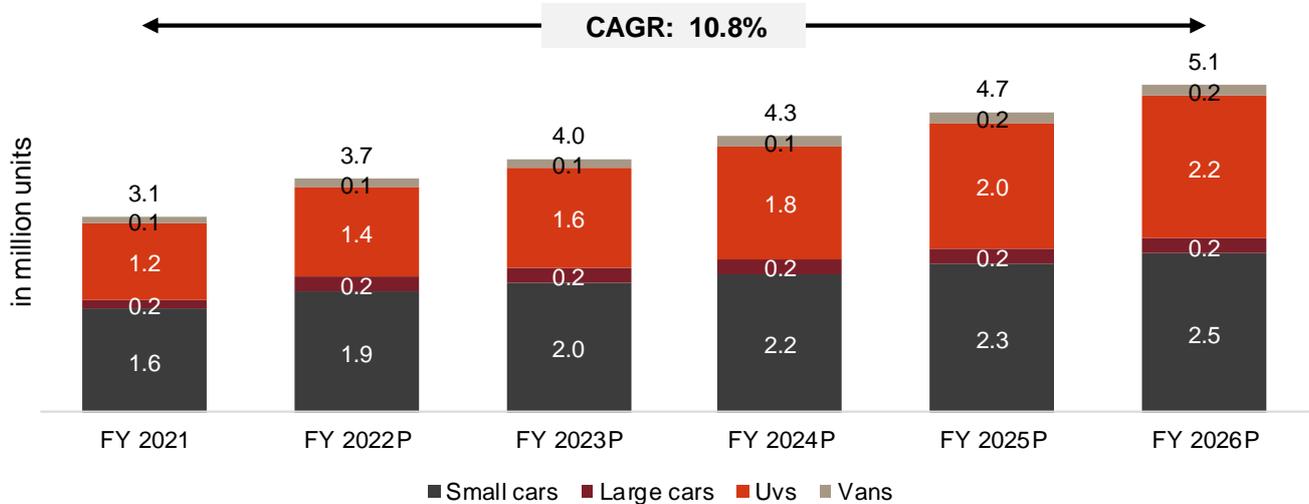
Split by passenger vehicle segments

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 13-14% from fiscal 2021 and fiscal 2026 on a low base of fiscal 2021. Small cars and vans to grow at a CAGR of 8-10% and large cars to grow at a stable rate of 7-9% 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

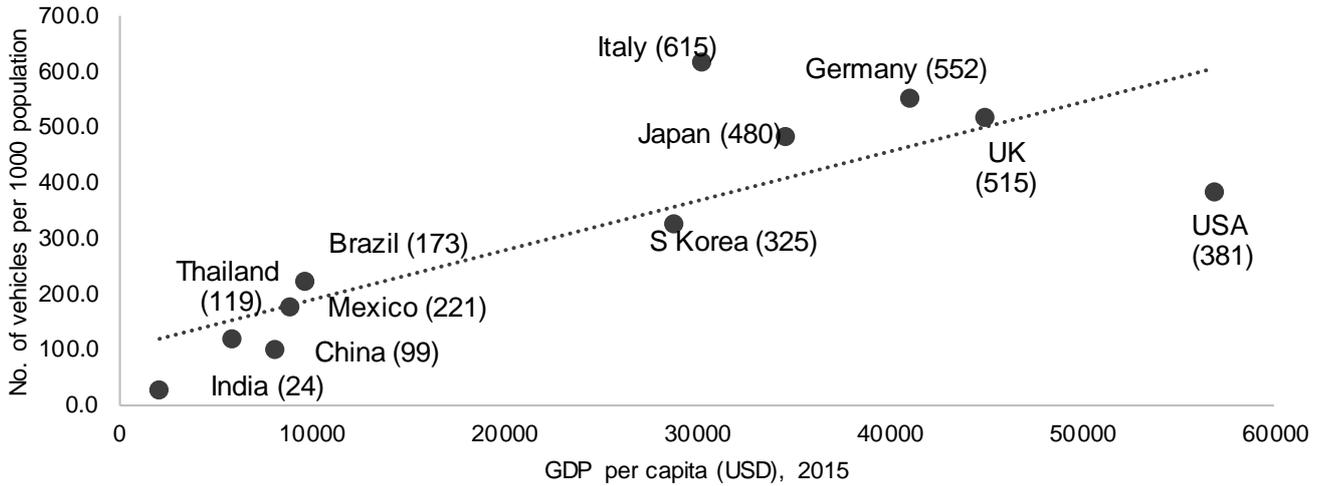
Key trends and growth drivers

Future growth drivers for the domestic market

- Underpenetrated market huge potential for cars & UVs

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 have 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

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

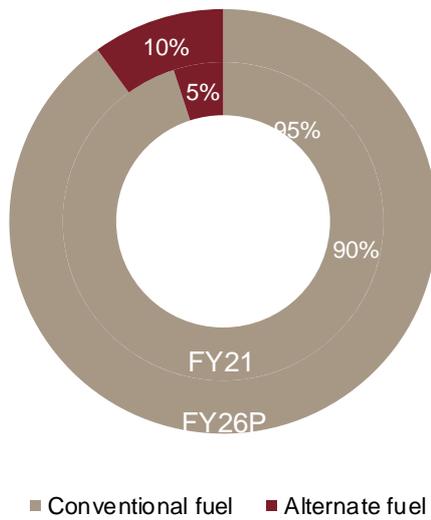
Impact of corporate average fuel efficiency (CAFE) norms

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 CO₂ emissions through CAFE regulations.

These regulations were first implemented on April 1, 2017 with the introduction of BS-IV emission norms. It was decided 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.

Change in fuel mix



Note: P – Projected

Source: Industry, CRISIL Research

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. We expect 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, we expect 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.

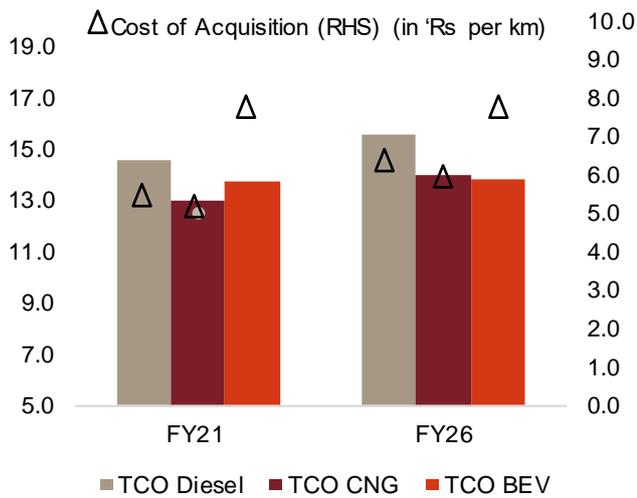
Electric PVs to contribute to ~4% of domestic sales by fiscal 2026

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.

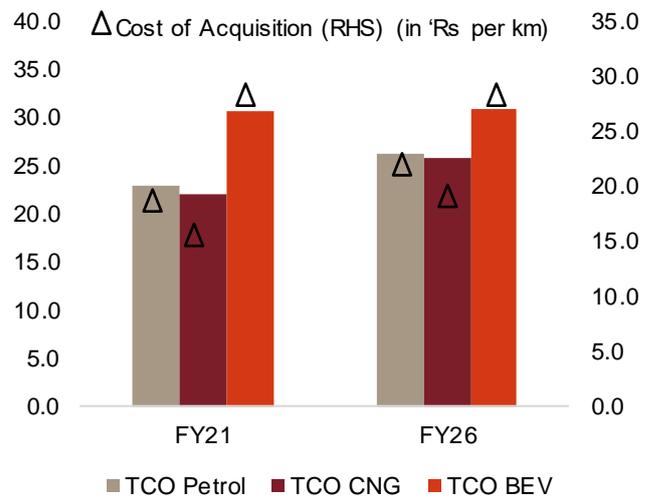
In case of commercial application like cab aggregators, Total Cost of Acquisition (COA) for EVs almost 50% higher for diesel and CNG vehicle. However due to heavy running of the vehicles the Total Cost of Ownership (TCO) of EVs for cab aggregators is lower for EVs compared with diesel alternatives by ~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.

Currently, charging infrastructure, range anxiety and lack of large OEM presence is hindering EV adoption. The taxi segment accounts for 10-15% of sales within passenger cars, and within the taxi segment, cab aggregators 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).

TCO and COA of EVs for cab aggregators lower due to higher running



TCO and COA of EVs for personal use remain a challenge



Note: 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%) 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.

7 Review and outlook on the European passenger vehicle industry

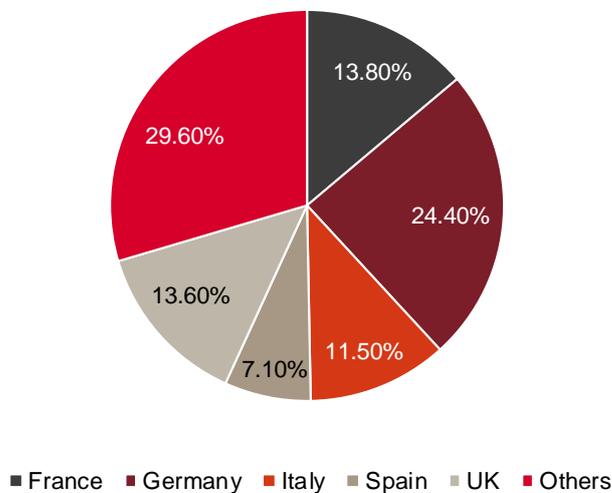
7.1 Review of the passenger vehicle industry (CY2015-2020)

Historic domestic sales development

Europe

Germany, France, Italy, Spain, and the UK accounted for 70% of the total passenger vehicle (PV) sales in Europe in calendar year (CY) 2020, with sales contracting 23.3% due to the Covid-19 pandemic. Containment measures such as full-scale lockdowns had an unprecedented impact on car registrations throughout the year. Markets started recovering only in the second half.

Contribution of key European countries to passenger vehicle sales in CY2020



Source – European Automobile Manufacturer’s Association (ACEA), Organisation Internationale des Constructeurs d’Automobiles (OICA), CRISIL Research

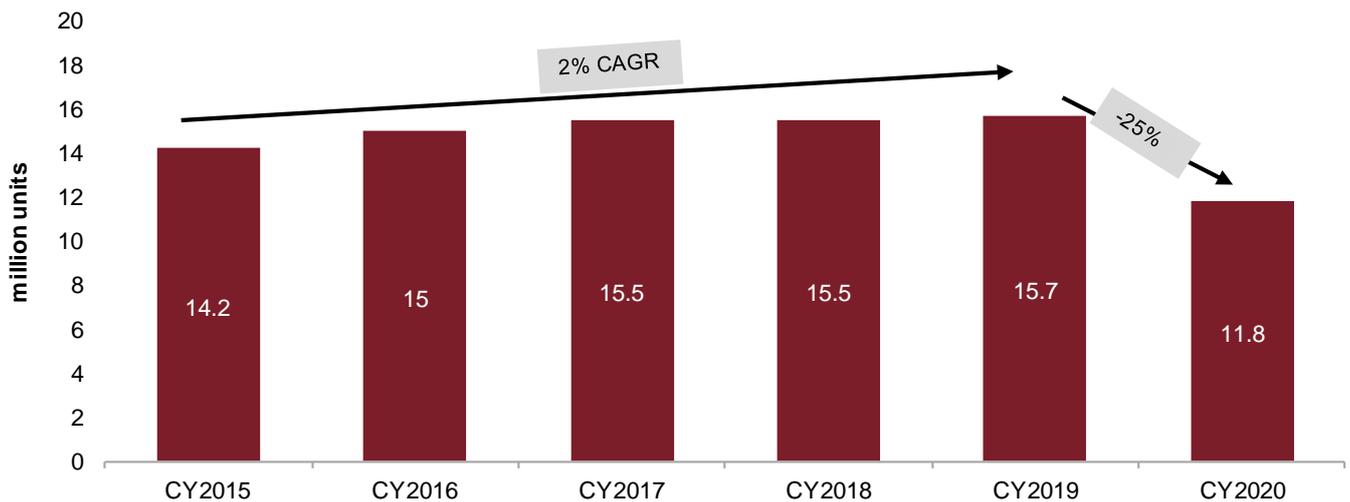
New registrations saw the biggest drop, falling more than 3 million units in 2020 with a double-digit decline in all markets throughout 2020. Among the biggest markets, Spain posted the sharpest drop at 32.3%, followed by the United Kingdom (UK) at 29.4%, Italy at 27.3%, France at 25.5%, and Germany at 19.1%. The stimulus provided by European governments to the automotive sector prevented a steeper fall in sales.

Before the pandemic, the European market was posting a steady 2.5% compound annual growth rate (CAGR), inching closer to pre-2007 global financial crisis levels. France grew at 3.7% CAGR with the Emmanuel Macron government’s policy buoying market confidence and expectations while Italy grew at 5% CAGR with a modest economic recovery and easier access to credit. Spain expanded 3.6% overall and posted consistent growth between 2012 and 2018 backed by a rebound after the economic crisis. Robust private consumption, a decreasing unemployment rate and government schemes supported fleet renewal and electric models aided growth.

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. New emission norms also helped sales in December 2019, resulting in 0.4% on-year sales growth in 2019.

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.

Passenger vehicle sales in Europe (CY2015-20)



NOTE – Includes EU 26 countries + European Free Trade Association + the United Kingdom

Source – OICA, ACEA, CRISIL Research

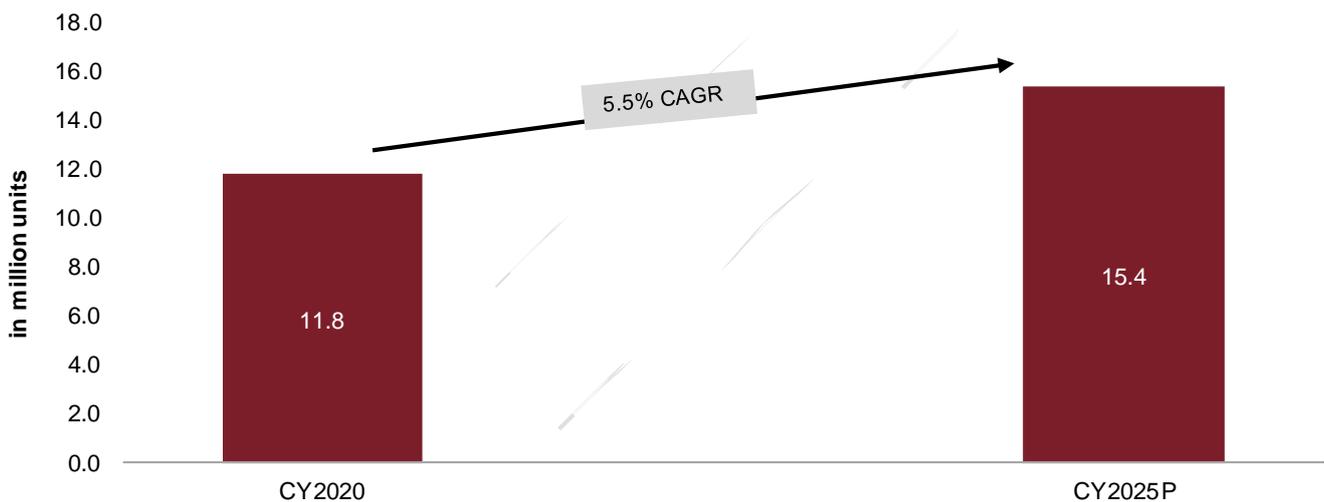
Except Norway and Lithuania, every other country recorded a double-digit sales decline in 2020. Bulgaria, Croatia, Estonia, Portugal, the UK, France, and Greece performed worse than the overall EU market.

7.2 Outlook on the European passenger vehicle industry

Outlook on domestic sales (CY2020-2025)

Europe is projected to grow at ~15% in CY2021 on account of availability of vaccines and a low base not only in 2020, but also in 2019 when it grew by just 0.3%. After 2021, the recovery will be gradual and linked to economic growth in the EU and better global trade. Overall, the European market is expected to grow at 5-6% CAGR over CY2020-25 period. However, the UK strain of Covid-19 and supply chain issues on account of Brexit will be among key monitorables for the PV industry’s growth.

PV domestic sales outlook in Europe*, CY2020-25



NOTE – *Includes EU 26 countries + European Free Trade Association + the United Kingdom

Source - OICA, ACEA, CRISIL Research

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. Review of and outlook on the Indian passenger vehicle industry.

8 Review and outlook on the North American passenger vehicle industry

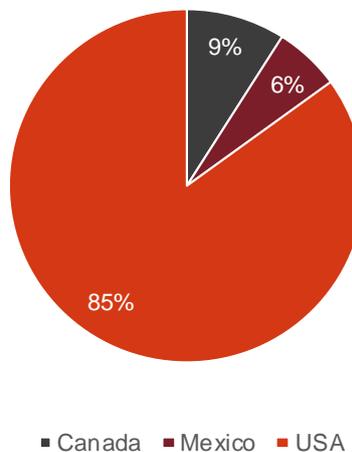
8.1 Review of the passenger vehicle industry (CY2015-2020)

Historic domestic sales

North America

The US and Canada are mature markets where passenger vehicle (PV) ownership is common (821 vehicles per 1000 people in the US, 646 vehicles per 1000 in Canada) and replacement demand drives the bulk of new car purchases. Mexico, however, is still a developing market where a car remains a luxury for many (294 vehicles per 1000 people). Overall, PV sales remained flattish with a decline observed in 2019. Between 2015 and 2019, PV sales in North America declined at a CAGR of -0.5%. Performance was subdued across all markets but Mexico particularly has seen a steep decline compared to marginal declines of USA & Canada. Car sales declined in all 3 countries as consumer shift towards SUVs continued.

Contribution of countries to PV sales in North America in CY2020

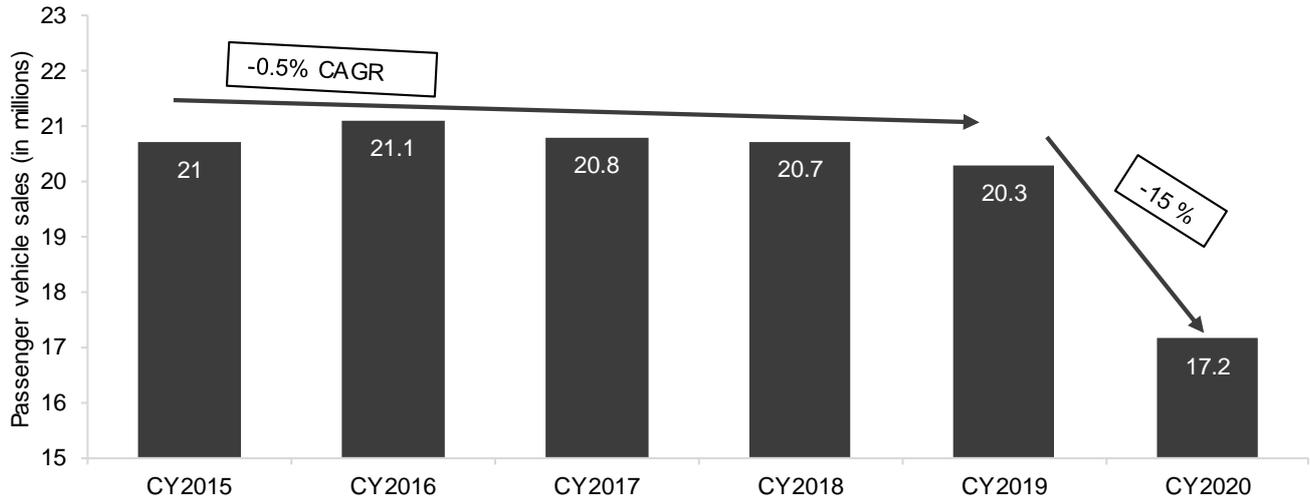


Source – Bureau of Transportation (USA), Statistics Canada, Inegi (Mexico), CRISIL Research

The US is the biggest market, accounting for roughly 85% of overall PV sales in 2020, while Mexico and Canada accounted for the remaining 15%.

Post global financial crisis of 2007-2008, North American markets started recovering and auto sector boosted industry confidence as the sector underwent gradual recovery. With a steady growth y-o-y, automotive sector posted its highest aggregate sales numbers in 2016 in the US (17.5 million) and Mexico (1.6 million), and in 2017 in Canada (2 million), backed by booming economies and low interest rates.

PV sales in North America (CY2015-20)



NOTE – Includes car and lighttruck sales for Canada, Mexico, the US; lighttruck includes SUVs, pickup trucks, minivans

Source – Bureau of Transportation (USA), Statistics Canada, Inegi (Mexico), CRISIL Research

The PV market declined 15% on-year in 2020, largely due to the impact of the Covid-19 pandemic. PV sales declined by 14% in the US and 20% in Canada, while Mexico was hardest hit with a 28% sales decline in the year. In the US and Canada, relatively high interest rates, slower vehicle replacement cycles, booming used vehicle markets and changing millennial attitudes towards vehicle ownership contributed to markets slowing post 2018. In Mexico, slow GDP growth and the uncertainty around President Obrador’s policies led to a deterioration in the domestic economic environment which had an impact on the sector overall and a contraction was seen in auto sales 2017 onwards.

Declining car sales as SUVs gain prominence



NOTE – Light truck segment includes cars, SUVs, pickup trucks, minivans

Source – Bureau of Transportation (USA), Statistics Canada, Inegi (Mexico), CRISIL Research

In the last decade, cars have lost significant ground. Inter-segment shift towards SUVs and pickup trucks redistributed the market share tilting it towards light trucks. This shift has been driven by a number of factors, including the better suitability of SUVs to North American geography, their greater appeal to millennial customers, and improved fuel economy. In the US, the average age of a car buyer went up by 7 years to 53, between 2000

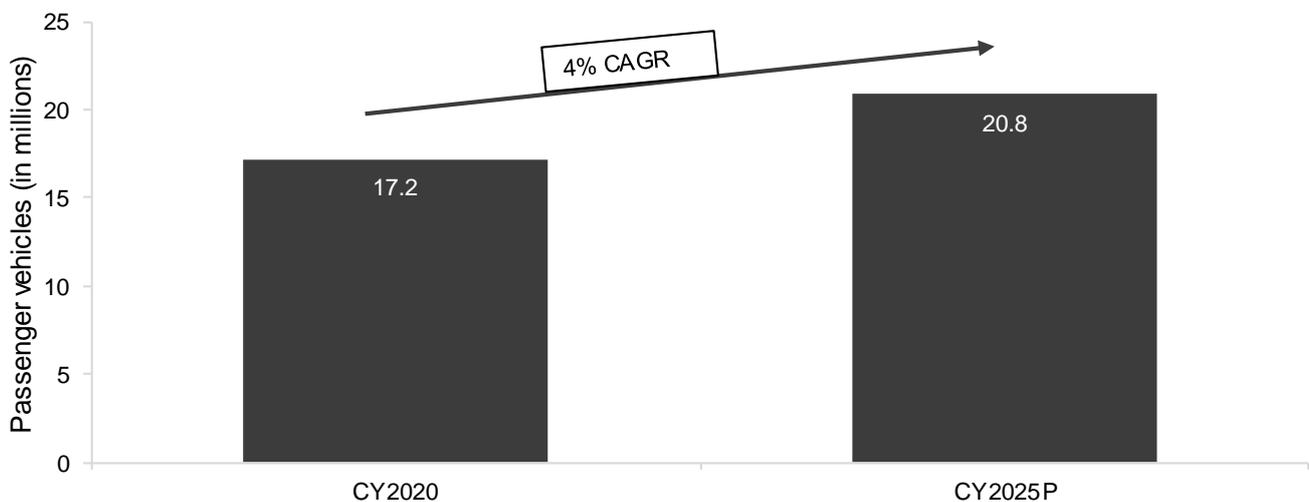
and 2015, as younger Americans waited longer to buy a car – a phenomenon also demonstrated by the increasing acceptance of ride hailing services and a downswing in driver registrations. A higher vehicle replacement cycle created a dent in car demand.

Pickup trucks too have been looking up. Better fuel economy than SUVs, increased disposable incomes and dropping unemployment rates have all contributed to their phenomenal growth (market has doubled in the last decade). In the US and Canada, pickup trucks are popular as customers increasingly look for a combination of utility and comfort. Historical trend of lesser regulations in the segment also aided the growth as there were lesser checks to adhere to.

8.2 Outlook on domestic sales (CY2020-2025)

The US saw a strong rebound in sales after a dismal first half of 2020. A widespread vaccination drive and a \$900 billion coronavirus aid bill will further aid consumer confidence, while interest rates will decline as the economy recovers and unemployment rates, the primary reason that rates didn't soften during the pandemic, fall. In Canada and Mexico, the PV market will grow on a low base and gain traction. In the US and Canada, replacement demand will drive PV demand, while in Mexico, increase in disposable incomes will boost market penetration, increasing domestic PV demand. CRISIL research expects the PV segment to clock 4% CAGR to 20.8 million units in 2025.

PV domestic sales outlook in North America, CY2020-25



NOTE – Includes car and light truck sales for the US, Mexico, Canada; light truck includes SUVs, pickup trucks, minivans

Source - Bureau of Transportation (USA), Statistics Canada, Inegi (Mexico), CRISIL Research

Mexico City will ban diesel cars by 2025. Canada and the US have roadmaps in place to phase out fossil-fuel powered vehicles. Demand for electric vehicles is expected rise in North America on account of conducive government policies and better charging infrastructure. While Canada offers a rebate of \$5000 on buying a clean energy vehicle, the US offers tax credit of up to \$7500. Mexico, too, is providing incentives at regional and federal levels.

In terms of industry challenges, the US-Mexico-Canada-Agreement for free trade will hinder growth as it takes protectionist measures for North American economies, raising production costs for manufacturers. Rising consumer debt could also derail industry sentiment while driverless cars pose another challenge.

9 Review and outlook of the consumer durables industry

Consumer durables (or electronic home appliances) are defined as products/ appliances that have a certain utility and/or entertainment value, lengthier life (typically more than three years) and require replacement after a few years. These appliances are of two types – large and small. While large appliances (which account for 80% of the consumer durables market in India) include products such as colour televisions (CTV), refrigerators, washing machines (WMs) and room air conditioners (RACs), small appliances include geysers, kitchen appliances and personal use electronic products. CRISIL Research in below section has outlined large consumer durables market which comprises of CTV, refrigerators, WMs and RACs

CRISIL Research estimates the size of India's large consumer durables industry at ~ Rs 800 billion as of fiscal 2020. The industry recorded ~8% CAGR in the past five fiscals backed by increasing disposable incomes, nuclearisation of households, lower penetration, widening product base, competitive pricing, lowering replacement cycles, etc.

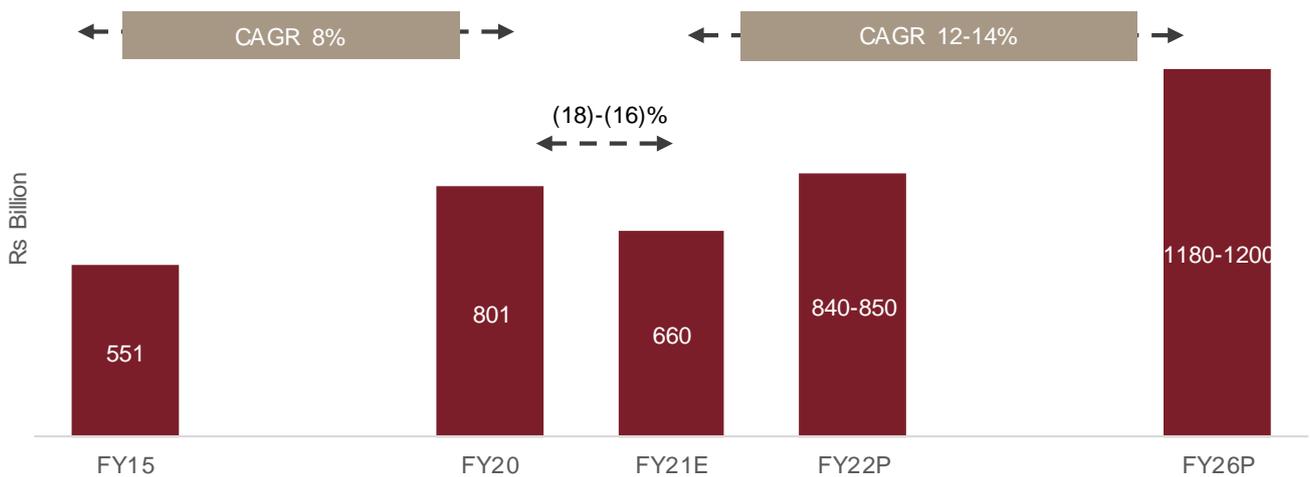
Fiscal 2021 was an aberration in the consumer durables growth story. The year began with a country-wide lockdown with all physical stores and online ones completely halting operations for nearly two months.

The festival season provided the real boost to the industry. The pent-up demand and increased requirement accelerated the demand for household appliances in the third quarter. Footfall across B&M stores got a boost. Most of the stores could reach 70-80% of their pre-pandemic business in the third quarter. As large appliances are primarily bought from B&M stores, the increased footfall improved demand for consumer durables. The trend continued in the fourth quarter as well. Further, heatwave in India during January and February boosted RAC sales.

Despite the increased traction in the second half of the year, the significant decline in the first and second quarters impacted overall industry sales for fiscal 2021. CRISIL Research estimates the industry to have shrunk by ~16-18% on year to Rs ~665 billion in the fiscal.

However, going ahead, demand is expected to bounce back with the likely improvement in economy. CRISIL Research expects healthy growth in demand for household appliances in the long term, in tandem with sustained economic recovery. Growth will be driven by better affordability, shorter replacement cycles, ownership of multiple units (in case of CTVs) and lower penetration levels (in case of RACs and WMs). On a lower base of fiscal 2021, the market size of the large appliances industry is expected to log 12-14% CAGR during fiscals 2021-2026.

Large household appliances market size over fiscals 2015-2026P



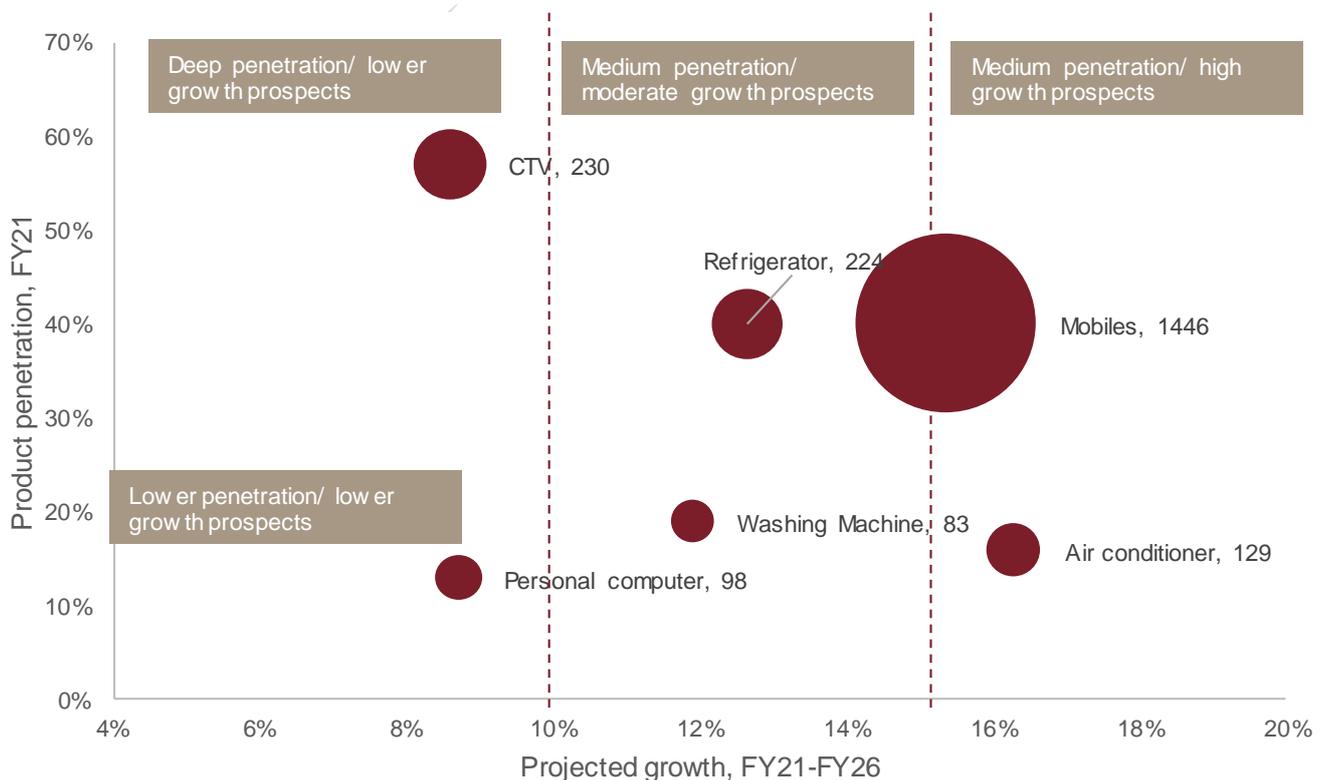
E: Estimated, P: Projected

Source: CRISIL Research

Consumer durable penetration in India

India lags global average in consumer durable penetration. Household penetration of consumer durables in India remains lower than that of many other developed as well as developing nations. Only 16% households in India own an RAC compared with above 60% in China, Japan and the United States. For WMs, penetration in India is ~18% as against global average of >50%. Even in the case of TVs, the most penetrated product, India's level is around 56% compared with >95% for Brazil, another developing nation.

Market size, penetration and five-year growth potential of consumer durable segments (fiscal 2021)



Note: The size of a bubble indicates the size of the industry, while the value near the bubble chart indicates the product market size in ₹ billion in fiscal 2021

Penetration of a consumer durable product = Total number of the product (say TV) sold in a. country / total number of large households

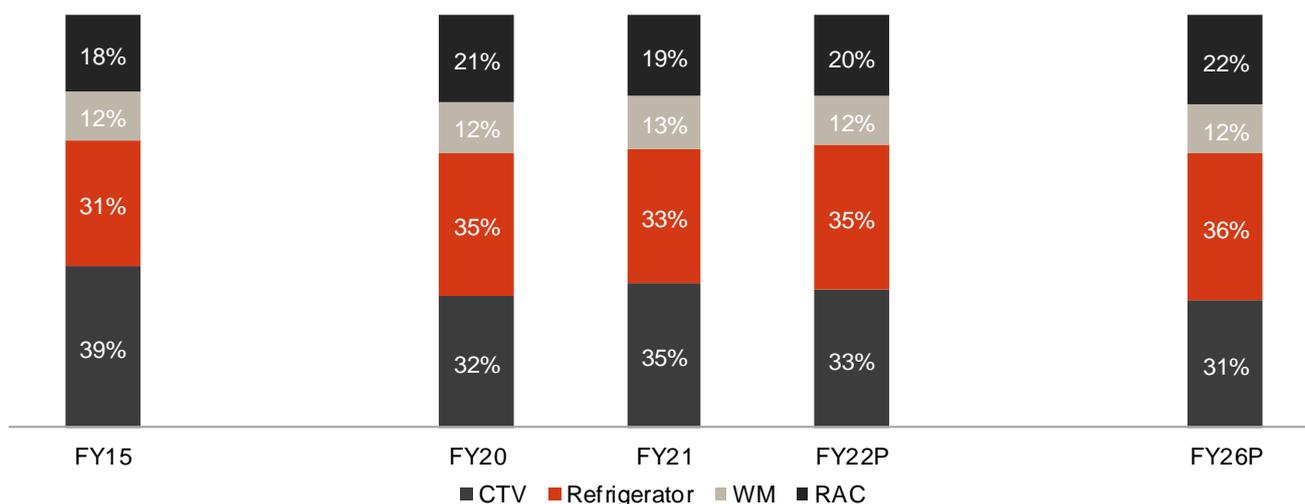
Source: Industry, CRISIL Research

Segmental growth trends

Over fiscals 2015-2020, highly penetrated CTV segment logged the lowest CAGR of 3.5%, while RACs and WMs, with low penetration, clocked ~10% CAGR. In fiscal 2021, the RAC segment is expected to be most affected, followed by the refrigerator segment. The TV segment is expected to be the least impacted demand increased during the lockdown. Increased need for hygiene is expected to support WMs. Demand for other hygiene related electronics such as air purifiers have gained traction over the last 5 years due to deterioration in air quality across top cities in India. Covid pandemic is expected to further support increasing penetration of air purifiers in future.

Going ahead, on a low base of fiscal 2021, the least penetrated RAC segment is expected to grow the fastest, logging 16-18% CAGR over fiscals 2021-2026. The CTV and refrigerator segments are expected to register a relatively slower 12-15% CAGR. Despite lower penetration, WMs, being a tier-I/-II city phenomenon, are expected to grow at a slightly muted 10-12% CAGR from a relatively higher base of fiscal 2021.

Product-wise segmentation (by value)



E: Estimated, P: Projected

Source: CRISIL Research

Key demand drivers for consumer durables in India

The low penetration of consumer durables suggests higher scope for market growth in the future. Following are the key growth drivers for India’s consumer durables industry:

- **Changing demographics** - Increase in the number of nuclear families, rising urbanization and growing rural connectivity
- **Rising per-capita income** - Improving affordability, growth in rural income and multiple ownerships of consumer

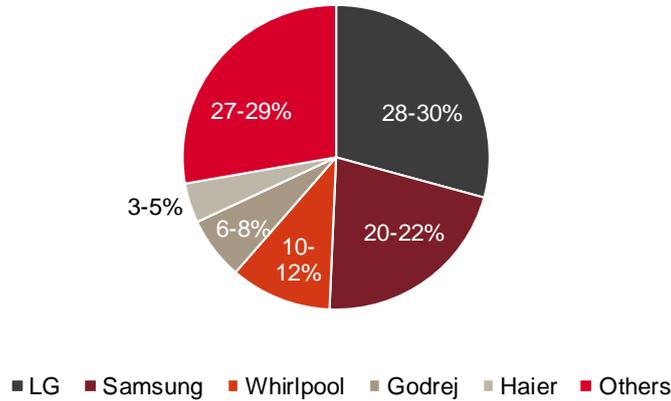
products

- **Improving power situation** - Improving rural electrification will boost demand for consumer durables
- **Changing lifestyles and perception of products** – Changing consumer perception about the utility of products (such as ACs) as utilities rather than luxury items, rising cost of household labour, increase in the number of working women and better water supply in semi-urban cities have pushed up growth of washing machine sales. The trend is expected to continue.
- **Growth of multiple sales channels** - Growth of e-commerce, large organised retailers and omni-sales channels managed by large organised retailers have increased retailers' reach and visibility.
- **Increasing product range and options** – A wide variety of choices at different affordable price points have attracted first-time buyers. This also helps gain repeat customers. A significant share of customers of B&M retail shops are repeat customers unlike online retail, where repeat customers' proportion is relatively lower.
- **Technological advancement** – Advance in technology is not only attracting new buyers but also shortening of holding cycle of consumer durables among existing customers. With the availability of advanced resolution technologies like HDR, 4K, OLED, increased penetration of OTT (Over-the-top) platforms and larger screens at affordable price ranges are driving customers to replace their existing devices to get better viewing experience. Technological advancements such as smart home appliances and Internet of Things (IoT) enabled devices are already influencing the western market considerably. They are likely to promulgate a shift in the industry dynamics in the mid to long term even in India, led by increasing access to high-speed internet and rising popularity of OTT platforms.
- **Multiple financing options** – Easy and flexible financing options have increased buyers' affordability. Easy availability of finance at 0% interest has been a major driver of the consumer durables industry growth in the past few years. While EMI loans have always been available through banks, overall finance penetration remained low until the entry of NBFCs, due to the absence of EMI finance option at points of sale (retail shops), slower processing time, high interest rates and processing fees.

LG, Samsung, Whirlpool dominate the large household appliances market

Large household appliances competitive landscape

Large household appliances market, fiscal 2020: Rs 801 billion



LG leads large household appliances demand with 28-30% share in value terms, followed by Samsung (20-22%) and Whirlpool (10-12%). Other leading brands in large household appliances include Voltas, Blue Star, IFB, Sony, Daikin and Hitachi.

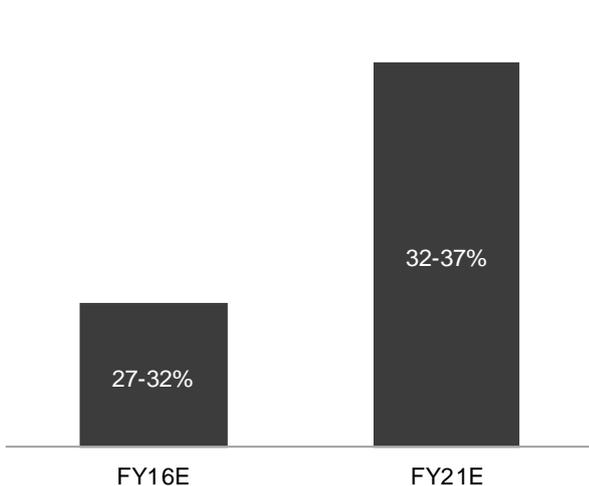
Finance penetration expanded further

Consumer durable loans are seeing increased popularity and acceptance. The entry of NBFCs in the consumer durables segment has deepened the penetration of financing options.

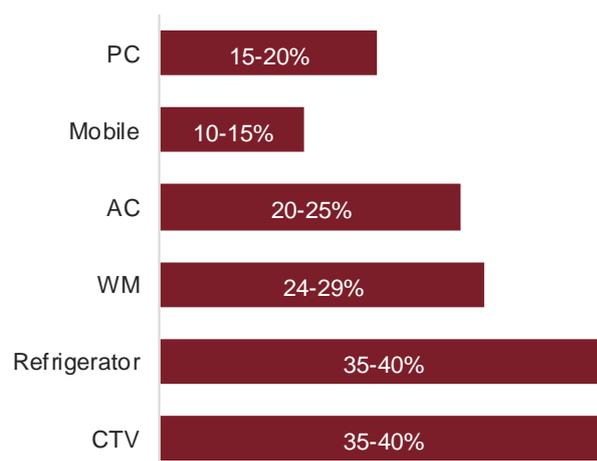
Finance penetration within the consumer durables industry has increased from ~27% in fiscal 2015 to 32-37% in fiscal 2021. Finance penetration is relatively higher in the CTV and refrigerator segments than RACs and WMs, which are more popular with relatively affluent class with limited financing requirement. Paper finance penetration is low in mobile phones and PCs given higher interest rates. Most customers opt for credit cards instead of paper finance to buy these devices.

Going ahead, CRISIL Research expects finance penetration in the consumer durables segment to expand further with higher aspirations, finance availability and entry of new players in the segment.

Industry finance penetration



Segmental penetration



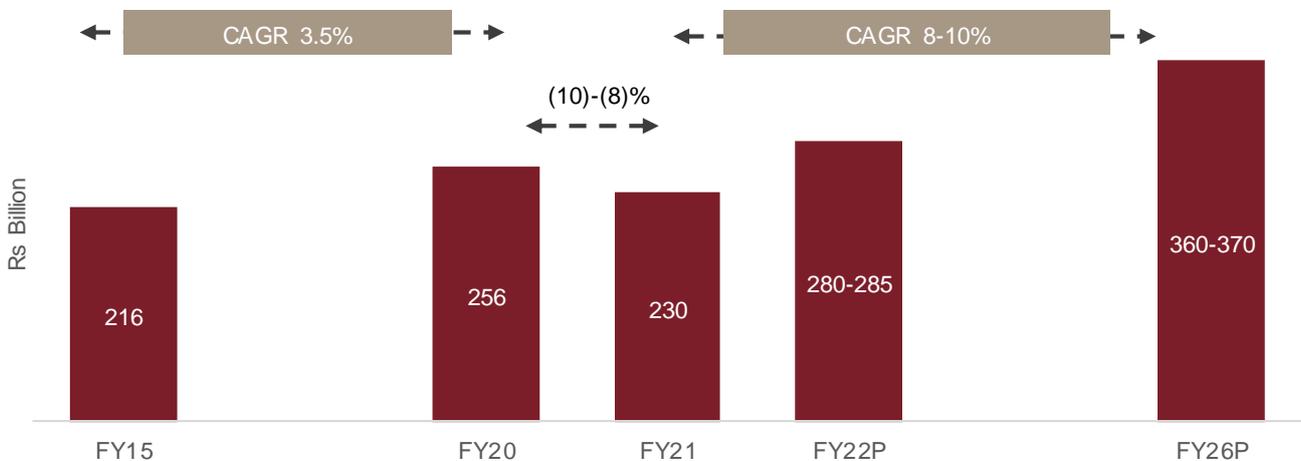
Source: Industry, CRISIL Research

9.1 CTV

Demand slowdown following Covid-19 impacted TV sales in fiscal 2021. Lockdown during the first quarter impacted sales significantly. However, with education going online, there was an increased demand for CTVs to meet the needs of online classes for children. Further, people increasingly prefer consumption of OTT content on large screen. Also, with films releasing on streaming services and aversion to visit multiplexes for fear of infection, demand for CTVs has increased after the lockdown. Festival season also fared well for the segment.

However, the significant decline experienced during the first quarter is expected to weigh on overall demand. CRISIL Research estimates the segment to have contracted by 8-10% in fiscal 2021 by value. The segment is expected to witness ~20% growth in fiscal 2022 on account of a low base, full year of store operations, higher discretionary spending and waning impact of the pandemic.

Market size of CTV segment over fiscals 2015-2026

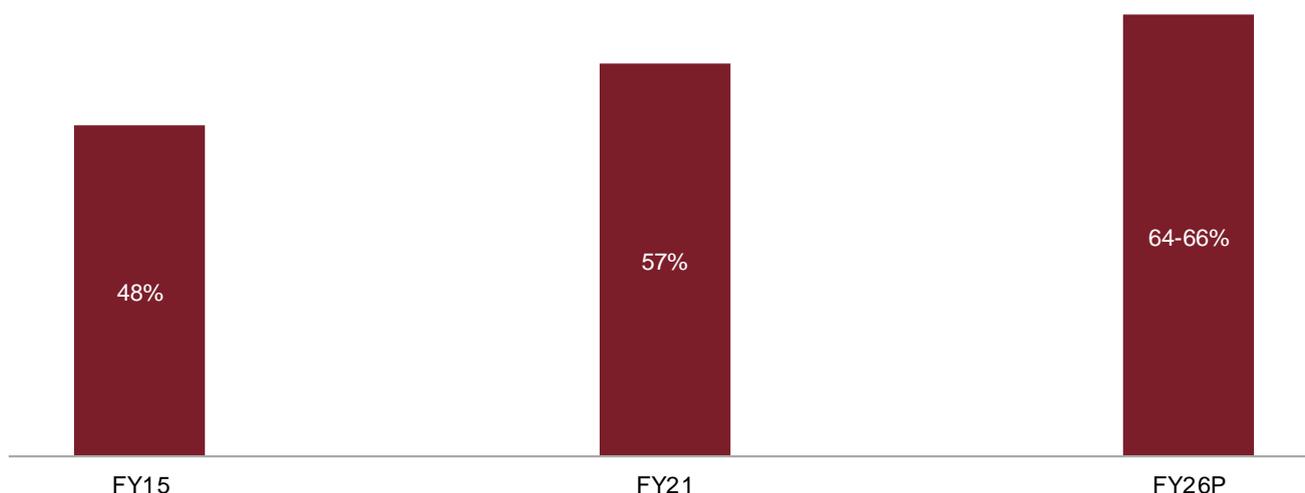


E: Estimated, P: Projected
Source: CRISIL Research

CRISIL Research expects the CTV segment (which consists of panel TVs alone fiscal 2019 onwards) to log a CAGR of 8-10% during fiscals 2021-2026. The higher growth will be mainly on account of low base of fiscal 2021 when the industry is estimated to de-grow 8-10%.

After fiscal 2021, shorter replacement cycles and ownership of multiple units are some of factors that will drive growth in panel TVs. As consumers continue to replace their CTVs with panel TVs, the replacement cycle is expected to shorten to five-six years in fiscal 2026 from six-seven years estimated in fiscal 2020. The replacement demand is likely to come from highly penetrated urban markets. Urban penetration for CTVs in fiscal 2020 is estimated at 88% (compared with 79% in fiscal 2015), the highest among all appliances.

CTV overall household penetration



E: Estimated, P: Projected

Source: CRISIL Research

Primary or fresh demand, which includes purchases by first-time buyers and multiple purchases by existing customers, will be driven by falling prices of panel TVs. The rural market is likely to drive first-time purchases. Rural penetration of CTVs is estimated at about 36-37% in fiscal 2021 compared with 27% in fiscal 2015.

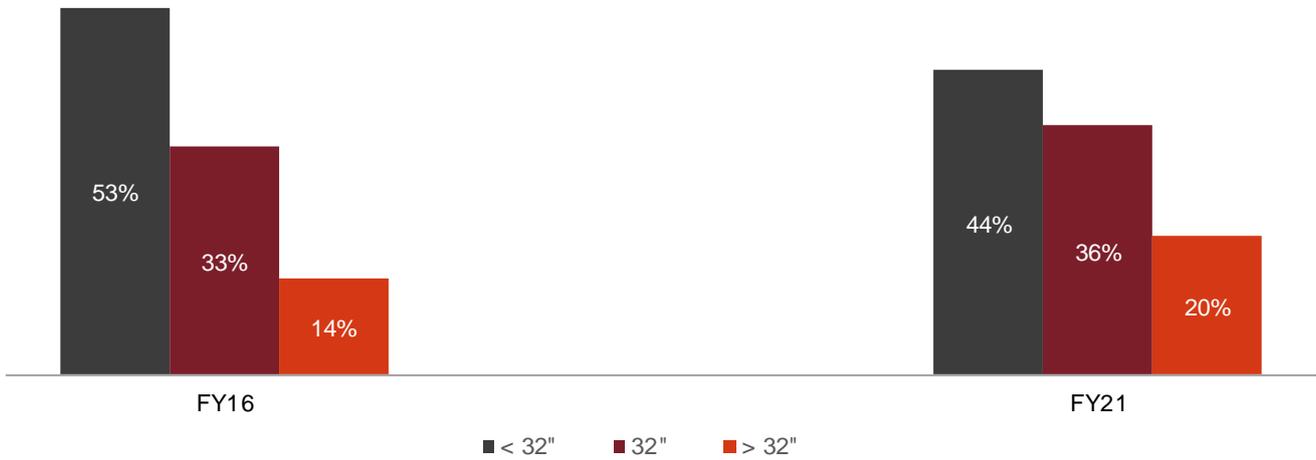
Demand for larger panel TVs on the rise

In July 2018, the government cut goods and services tax (GST) rate on TV sets of screen size less than 26 inches from 28% to 18%, which boosted their demand in fiscal 2019. The impact of tax cut was not significant, as 26-inch TVs account for less than 15% of the market in value terms.

In fiscal 2019, manufacturers cut price of 32-inch panel TVs due to a fall in cost of panels, a key input. Demand for this size came mostly from rural areas, due to reduction in price and narrowing price differential between the 32-inch segment and that of lower sizes. Further, with declining panel TV price, customers' preference shifted towards larger panel TVs. Many players stopped manufacturing 24-inch panel TVs.

The trend is expected to continue with prices of larger panels falling, resulting in the shift of consumer preference to larger panel TVs. The pandemic boosted demand for larger panel CTVs as customers aspired for a better viewing experience during the lockdown when they could not enjoy the big screen theatre experience. CRISIL Research expects the share of TVs with 32-inch and above size to rise and that of below 32-inch to decline by fiscal 2026. Globally, too, new-generation 10.5 fab capacities are expected to get added, majorly catering to large panel TVs.

Panel TV product mix (in terms of volume)

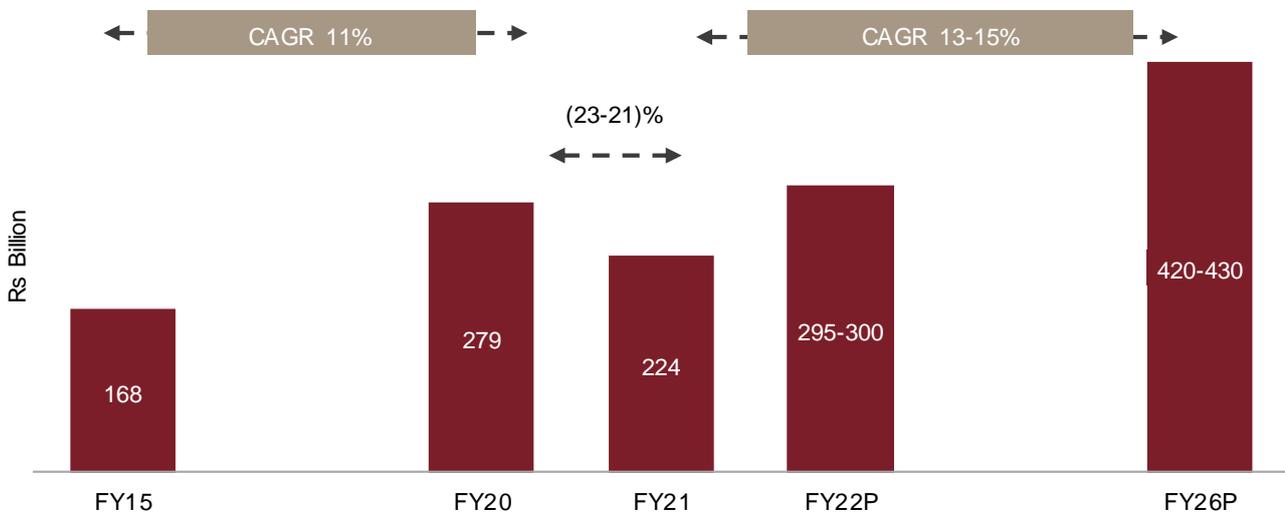


Source: CRISIL Research

9.2 Refrigerators

The refrigerator industry is estimated to have clocked 4.9% CAGR from fiscal 2015 to reach Rs 224 billion in fiscal 2021. Rising household income, growth in the number of nuclear families, and relatively lower penetration (compared with colour televisions in the consumer durables industry) drove demand for refrigerators during this period. Industry volumes grew at ~8% CAGR.

Market size trend for refrigerators (value terms)



E: Estimated, P: Projected

Source: CRISIL Research

There was double-digit growth in refrigerator demand during the first quarter of fiscal 2020 owing to high summer temperatures. Absence of BEE (Bureau of Energy Efficiency) revisions and lower raw material prices kept product prices stable during the fiscal.

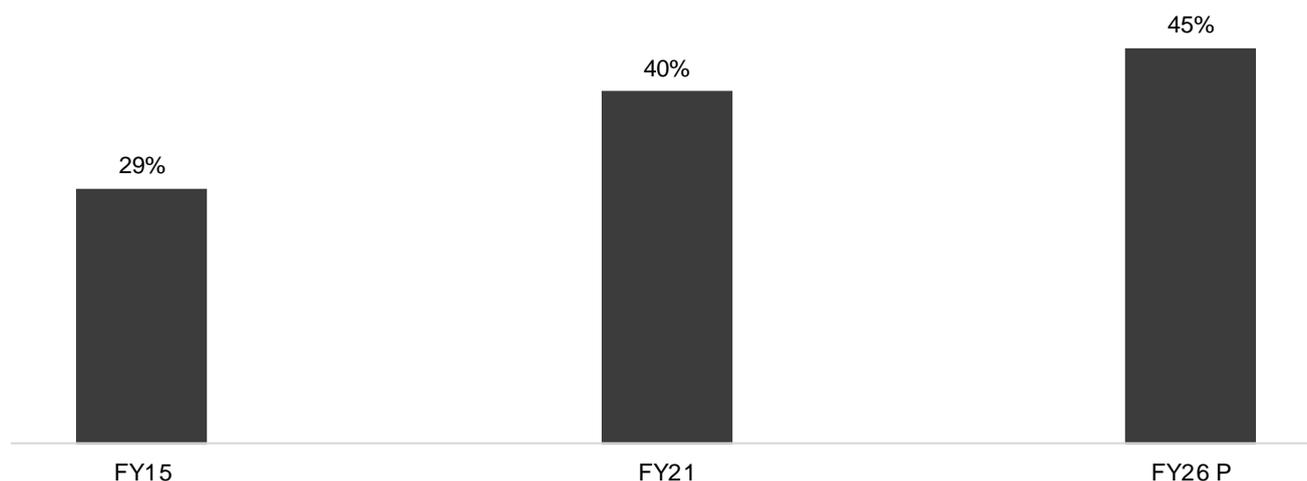
With BEE revisions on January 1, 2020, product prices rose, impacting demand to some extent in fiscal 2021. Further, demand slowdown amid the Covid-19 pandemic also impacted sales.

The lockdown in the first quarter, the most productive for cooling products such as refrigerators and ACs, is expected to have affected sales. Thus, the significant decline in the first quarter will weigh heavily on full-year sales. CRISIL Research estimates the refrigerator segment to have shrunk by 21-23% in fiscal 2021. However, as people are working from home, they opted for higher-capacity refrigerators to reduce visits to the market.

A low base, full year of store operations, higher discretionary spending, no rating revision, and waning impact of the pandemic will help demand grow ~35% in fiscal 2022.

Going ahead, better affordability due to rising income and moderate price hikes (2-3%), along with relatively lower penetration, rising household income, improving living standards, implementation of the 7th Pay Commission recommendations, increased government spending in the rural sector, growing real estate sector, easy financing, and the increasing number of nuclear families will be among the factors driving long-term demand for refrigerators. By fiscal 2026, CRISIL Research expects the market to reach ~Rs 425 billion.

Refrigerator overall household penetration



Source: CRISIL Research

Refrigerator household penetration is estimated at ~40% in India in fiscal 2021. While the segment fares relatively better than room air-conditioners (RACs) and washing machines, it still significantly lags the colour TV segment.

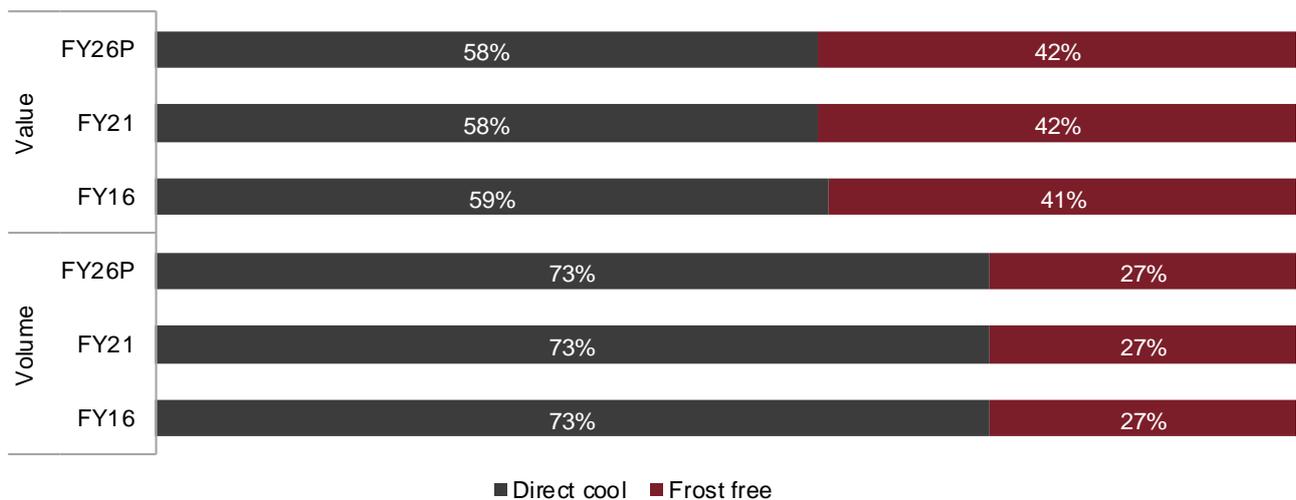
Penetration in the rural market was much lower at ~16% compared with urban areas, where it was estimated at ~79% in fiscal 2021. Unlike the RAC and washing machine segments, growth in the refrigerator segment is expected to be driven by higher demand from both urban and rural areas. With consumers perceiving the refrigerator as a necessity rather than a luxury, and power supply conditions improving in Tier 2 and 3 cities, sales growth is expected to be faster. Penetration in rural and urban areas is estimated to reach ~25% and ~83%, respectively, by fiscal 2026.

Insignificant change in the segmental mix

The DC (direct cool) segment caters to price-sensitive consumers in semi-urban and rural areas, while demand for FF (frost-free) refrigerators remains largely urban-centric.

Among most household appliances, there is a rapid growth in products with the latest technology, compared with those with older technology. For instance, in the AC segment, there has been a significant shift from window ACs to split ACs, and this is expected to continue over the next five years. Within the split AC segment too, inverter technology is gaining significant traction. However, refrigerators are an exception. Both the segments, i.e., DC and FF, are expected to record healthy growth in the long term post fiscal 2021 in their respective target markets. As a result, CRISIL Research does not expect a significant shift in the share towards the FF segment. Growth in this segment is likely to be driven by both first-time sales as well as replacement demand, largely in urban areas.

Segmental value and volume mix

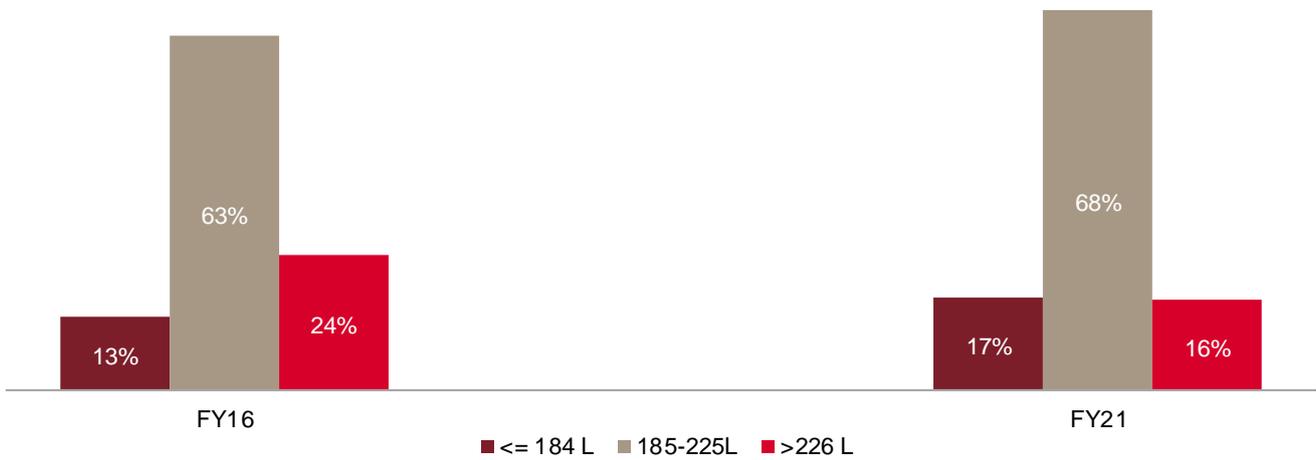


P: Projected

Source: CRISIL Research

In both refrigerator segments, consumer preference is shifting towards high-capacity models, which offer more storage space. In the DC segment, the share of the 184-litre or less segment plunged. LG and Samsung stopped production in the segment and increased production in the higher-capacity segment (185-225 litre) from fiscal 2014. The share of the 185-225 litre segment is estimated to have increased from 63% in fiscal 2015 to 68% in fiscal 2021.

DC product mix (volume terms)

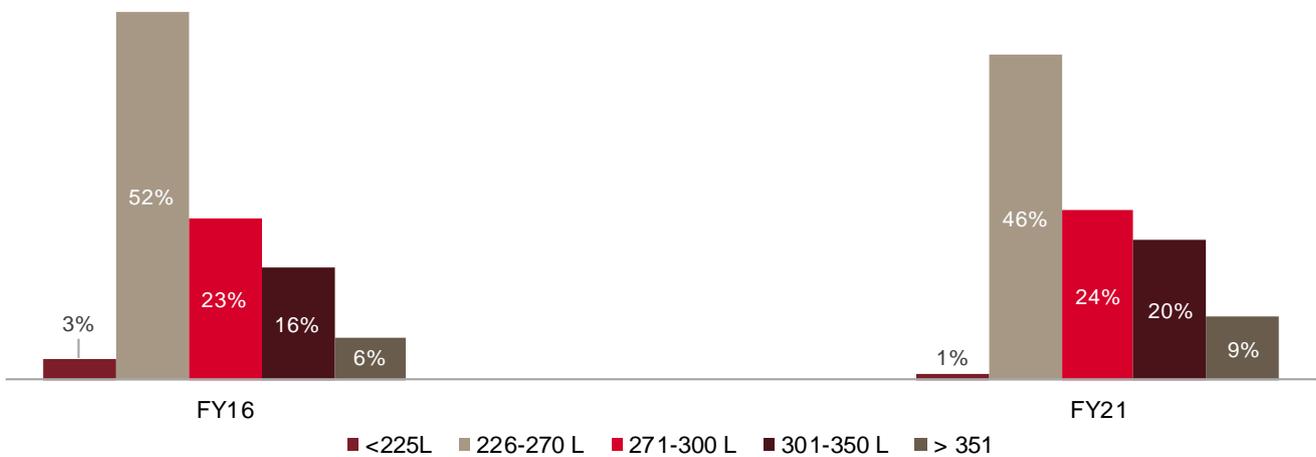


Source: CRISIL Research

While the change in product mix in the FF segment is not as sharp as in the DC segment, the trend is similar. The share of both the entry-level segment (225 litre or less) and the sub-270 litre segment is declining in favour of high-capacity models. In the FF segment, consumers are favouring large-capacity (350 litre and above, priced at Rs 35,000 and above) refrigerators. The 226-270 litre segment is estimated as the dominant category in the FF segment in fiscal 2021.

During the lockdown in fiscal 2021, the need for larger storage increased as consumers looked to minimise market trips. As a result demand shift was seen towards the higher capacity models.

FF product mix (volume terms)



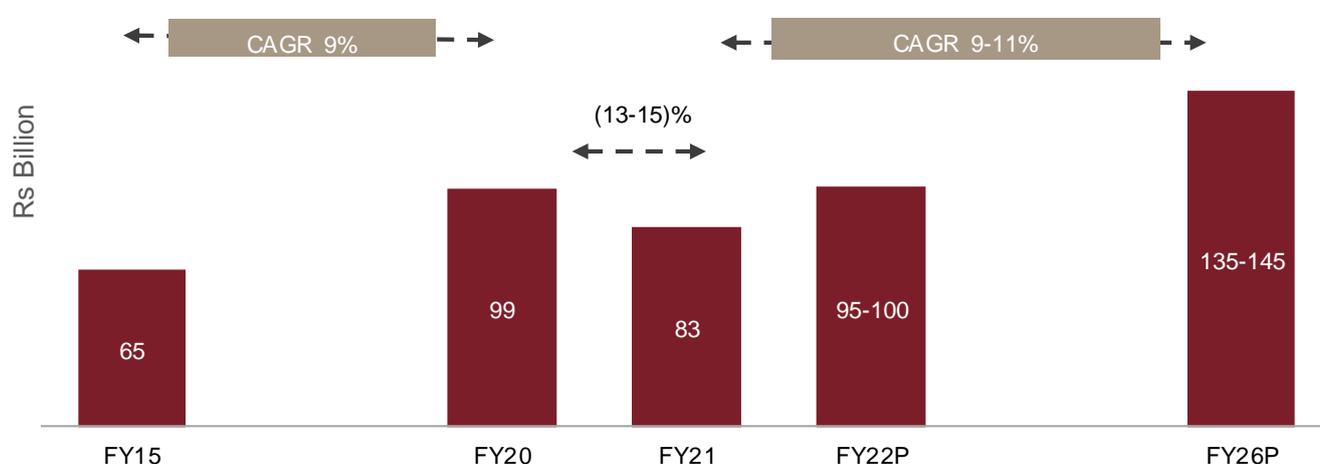
Source: CRISIL Research

9.3 Washing machines

During fiscals 2015-20, demand for washing machines grew at 9% CAGR, led by an increase in discretionary spending, expanding electrification and increasing hygiene awareness. Washing machines, being discretionary in nature, faced purchase deferment in fiscal 2020 amid the slowdown in economic growth. The segment grew in low single digits during the first half. After a slower first half, players increased their promotional offers and provided various financing schemes which drove demand in the second half. The industry grew ~6% in fiscal 2020.

In fiscal 2021, lockdown during the first quarter impacted sales significantly, by more than 50%. However, with social distancing being a norm, and availability of household help being an issue, washing machines gained some traction in the second quarter. Further, due to the pandemic, people have become more conscious about hygiene; washing clothes at higher temperature is known to kill germs. Hence, players have introduced high temperature wash options, earlier available only in high-end fully automatic washing machines, in semi-automatic models too. Thus, there was some pent-up demand once the lockdown got over. With social distancing in place, sales through the online channel gained precedence. CRISIL Research estimates the washing machines segment to have registered a decline of 13-15% in value terms in fiscal 2021.

Market size trend for washing machines



P: Projected

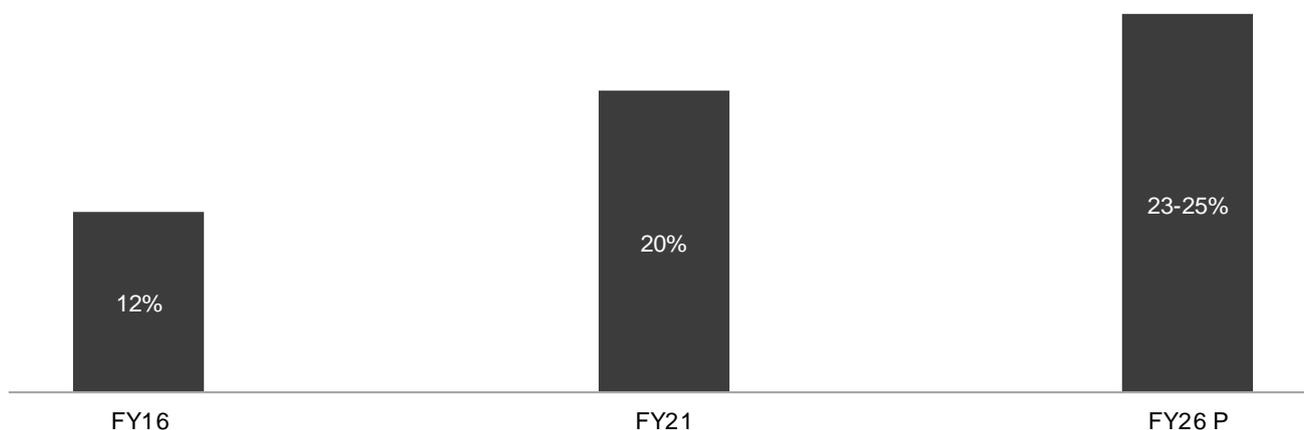
Source: CRISIL Research

The segment is expected to grow 15-20% in fiscal 2022 on account of a low base, full year of store operations, higher discretionary spending, and waning impact of the pandemic.

Over the low base of fiscal 2021, CRISIL Research expects long-term demand to increase at 9-11% CAGR over the next five years, backed by a rise in household incomes, increasing number of nuclear families and urbanisation, growing manpower cost in urban areas, new building layouts, deepening trend of working women, and improving perception in an under-penetrated market. Long-term growth will also be fueled by the Seventh Pay Commission hikes, easy financing options, greater affordability, and replacement demand. The latter comprises one-third of sales, with the average replacement cycle of washing machines being 8-9 years.

Among household appliances, the penetration level of washing machines is low in India, lagging far behind colour TVs and refrigerators. Penetration level in India is estimated at ~18% of total households in fiscal 2020.

Overall household penetration of washing machines



P: Projected

Source: CRISIL Research

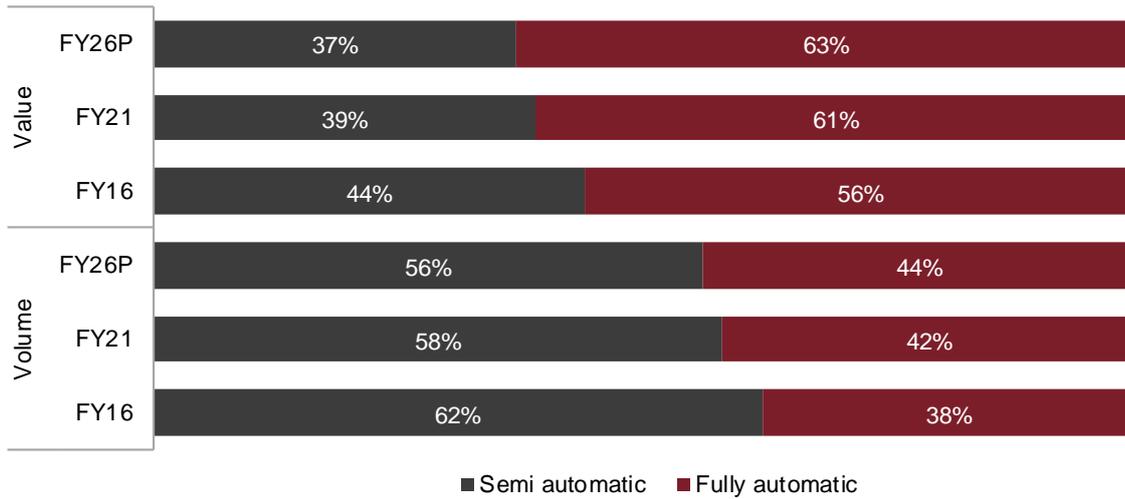
Urban markets, where washing machines are estimated to have penetrated ~42% of households in fiscal 2021, account for the bulk of sales. In contrast, rural markets remain significantly under-penetrated, estimated at just ~6% due to lower electrification, consumer perception that washing machines do not clean the collars and cuffs of shirts, and easy availability of household help at cheap rates. However, with increase in government initiatives for rural electrification, rising awareness regarding the utility of washing machines, slower rise in prices, and increasing disposable income, demand is estimated to grow in rural markets too. Further, as access to domestic help becomes dearer (in urban and semi-urban markets), penetration will increase in the urban markets. Urban penetration is estimated to reach ~46% and rural penetration ~8% by fiscal 2026.

Fully automatic segment to expand its presence

In urban areas, consumers prefer fully automatic machines despite higher prices since they are easier to operate and need minimal manual intervention. Consequently, the share (in volume terms) of fully automatic machines in total washing machine sales is expected to increase to 44% in fiscal 2026 from 42% estimated in fiscal 2021.

The semi-automatic segment is expected to witness steady demand from semi-urban areas, where buyers are more price-sensitive. The huge price differential between semi-automatic and fully automatic machines will help boost sales in the former segment. Another factor boosting semi-automatic sales is that fully automatic machines require running tap water. As a result, areas facing water shortage are likely to opt for semi-automatic machines. In value terms, the share of the semi-automatic segment in overall sales is likely to dip by 2 percentage points to 37% in fiscal 2026 due to lower realisations and slower growth rate compared with the fully automatic machines.

Segmental value and volume mix

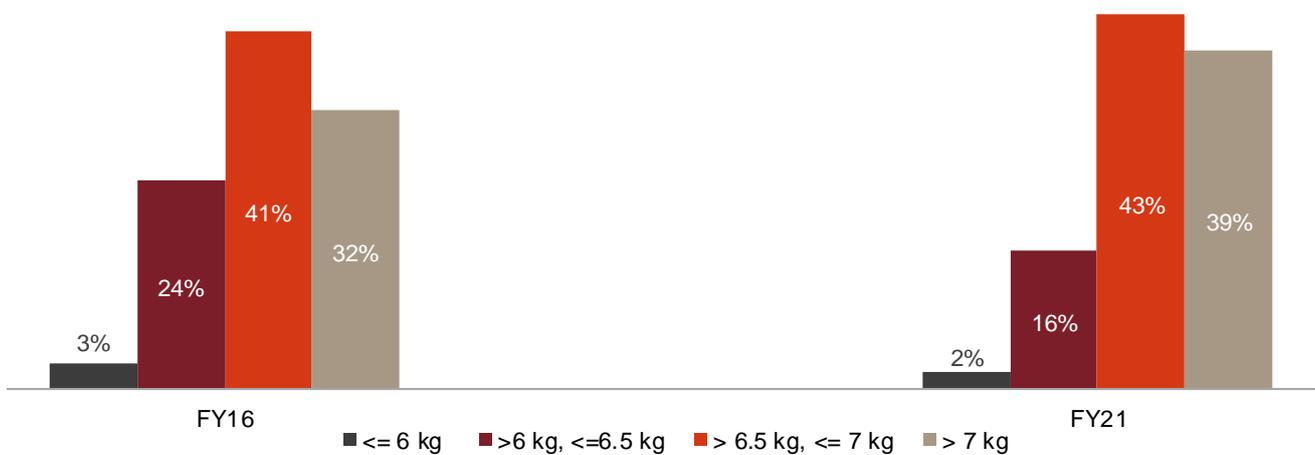


P: Projected
Source: CRISIL Research

In both segments, consumer preference is moving towards high-capacity models. This can be seen from the product mix in the chart below. The share of high-capacity segments (above 6.5 kg) is estimated to have risen by 3 percentage points to 81% over last 2 years since players focus on promoting many models in this segment.

In fiscal 2021, amid the pandemic, there was an increased need for higher-capacity washing machines given the heightened hygiene concerns. The precautionary requirement to wash all clothes after returning from a public place boosted the need for such machines. This is expected to fast-track the consumer shift towards higher-capacity models.

Washing machines product mix (volume terms)



Source: CRISIL Research

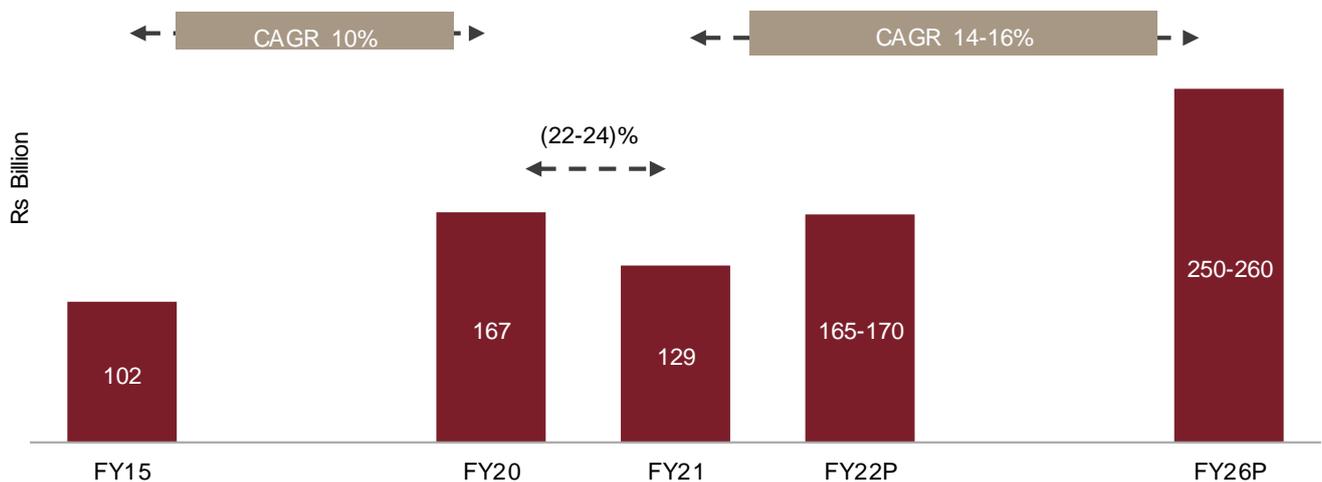
9.4 Room ACs

The segment is characterised by high volatility in demand which gets impacted by slight changes in prices and weather conditions. During the past five years, the RAC segment expanded at 10% CAGR. RAC sales witnessed slower growth during fiscals 2016-19, estimated at ~9% CAGR, due to events such as demonetisation, hikes in product prices because of rise in raw material prices, and BEE revisions. After flattish growth in fiscal 2019, there was double-digit growth in RACs during the fiscal 2020 despite the slowdown, given high summer temperatures, stable product prices and pent-up demand of the previous fiscal. Thus, the segment grew 13-14% in fiscal 2020.

In fiscal 2021, CRISIL Research estimates Covid pandemic and ensuing restriction to have impacted RAC sales by 22-24%. The segment is expected to grow ~30% in fiscal 2022 on account of a low base, full year of store operations, higher discretionary spending, no BEE revisions, and waning impact of the pandemic.

In the long term, the segment is expected to expand at 14-16% CAGR to reach Rs 250-260 billion with likely improvement in the economic scenario, moderate inflation, and easy financing. Catalysts such as marginal product price hikes, expanding distribution and improving affordability are expected to guide long-term sales. Rising household incomes, the growing real estate sector, low interest rates, salary hikes following the Seventh Pay Commission recommendations, etc., are also prodding sales.

Market size trend for the RAC segment

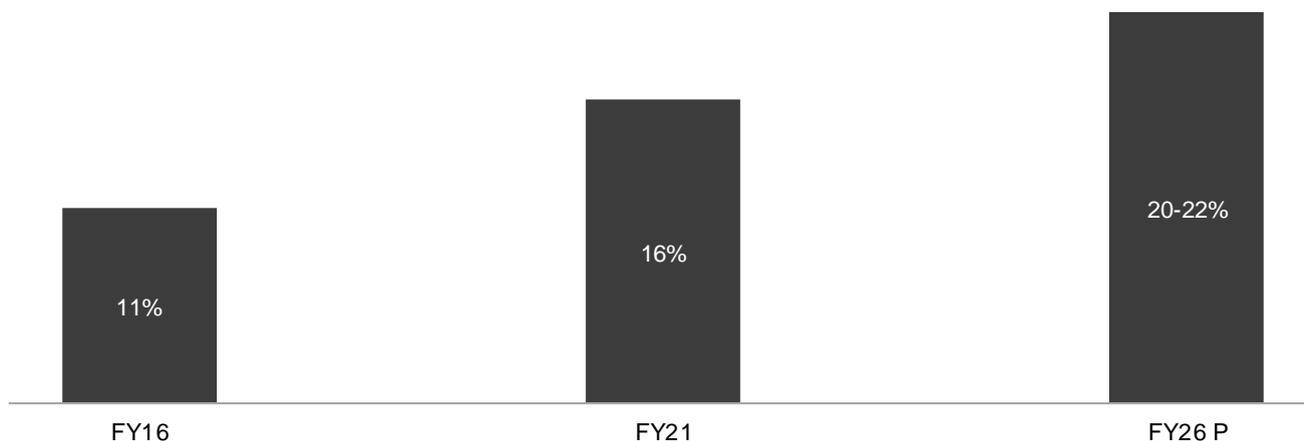


P: Projected

Source: CRISIL Research

However, unlike refrigerators, demand will largely be driven by urban areas and Tier 1, 2 and 3 cities as consumers in rural areas will be reluctant to buy RACs. Thus, penetration in urban markets is expected to rise to ~42% by fiscal 2026 and a mere 9% in rural areas, compared with 30% in urban markets and a mere 6% in rural areas (estimated) in fiscal 2021.

RAC overall household penetration



P: Projected

Source: CRISIL Research

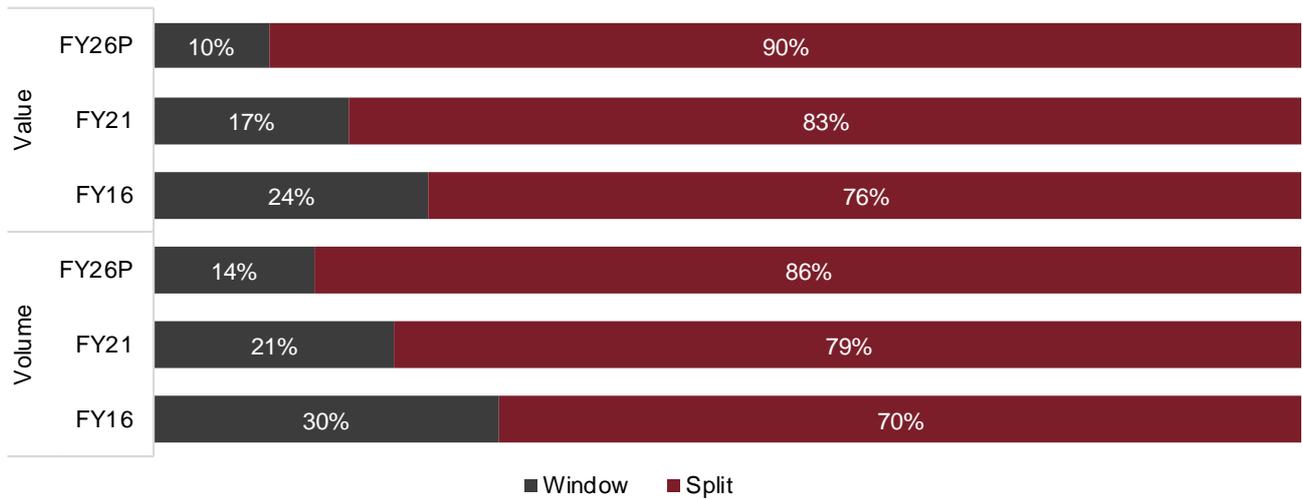
Share of window ACs in total sales to contract further

Within RACs, the split AC segment is forecast to clock 18-20% CAGR (in volume terms) between fiscals 2021 and 2026, while the window AC segment is expected to grow by 4-5% CAGR. Consequently, the share of split ACs in overall sales is likely to reach 86% in volume terms and 90% in value terms by fiscal 2026 against 80% and 83%, respectively, in fiscal 2021. Split ACs will continue to outpace window ACs, mainly due to declining prices, high consumer preference, and changing building infrastructure, with AC provision in new buildings typically made for installation of split ACs.

However, the window AC market will sustain for the next 4-5 years, albeit its share will shrink further.

Manufacturers such as Samsung have stopped making window ACs while Blue Star, Carrier Midea, Daikin, Voltas, and Whirlpool have cut down production due to shift in consumer preference to split ACs, little room for innovation offered by windows ACs, and narrowing price gap between split and windows ACs. On the other hand, some manufacturers such as Daikin have announced investments in the window AC segment to target markets in Tier 3 and 4 cities.

Split ACs to account for ~90% of RAC market by fiscal 2026



P: Projected
Source: CRISIL Research

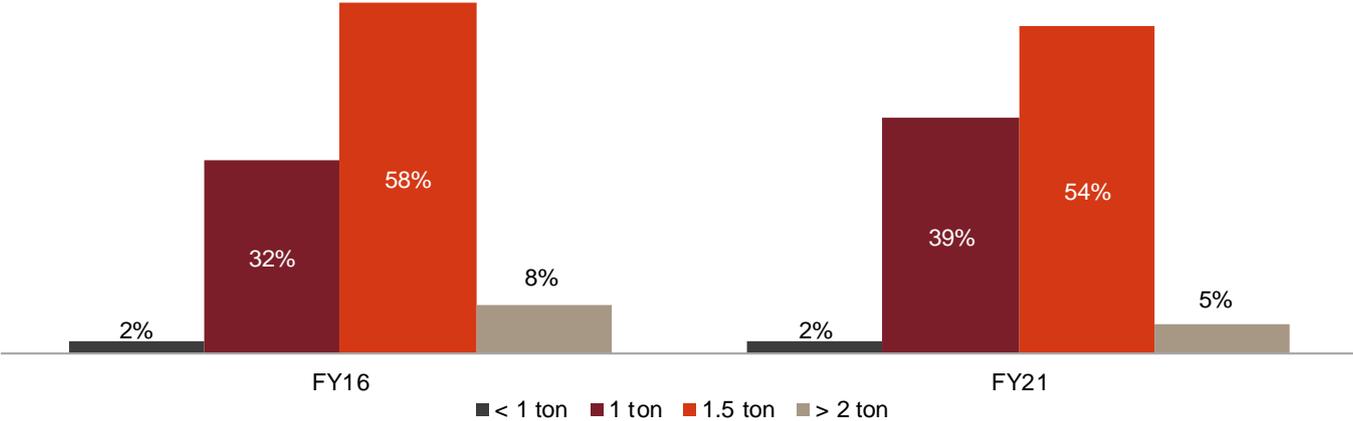
Rising prices, smaller room sizes drive preference for smaller-capacity models

Consumers are known to prefer higher-capacity models across most household appliances. The RAC segment is an exception, where the higher-capacity 1.5-tonne segment is declining in favour of the one-tonne segment. Shrinking room sizes is one reason why people prefer low-capacity ACs. The share of the one-tonne segment is estimated to have grown to 39% in fiscal 2021 from 32% in fiscal 2015.

Growing consumer awareness regarding energy efficient devices is also resulting in increasing customer preference for ACs with higher energy efficiency ratings. Consumer durables with higher energy rating typically have higher ticket size compared to a same product with lower energy rating.

During fiscal 2021, the complete summer demand season was lost due to the lockdown. The RAC segment started picking up from December 2020 amid the rising temperatures. There was no noteworthy change in customer preferences due to Covid-19 for the RAC segment.

RAC product mix (volume terms)



Source: CRISIL Research

10 Indian fan industry's review and outlook

10.1 Introduction to fans

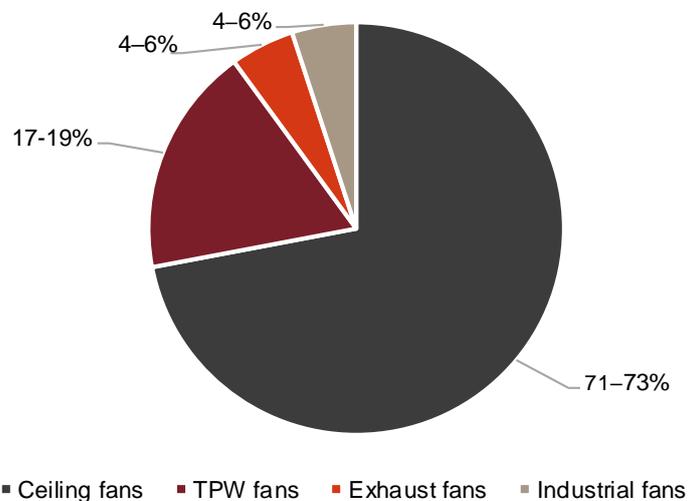
Ceiling fans account for the lion's share in the Indian electric fan industry

Based on the product type, the electric fan industry in India can be broadly classified into the following categories:

- Ceiling fans
- Table, pedestal and wall (TPW) fans
- Exhaust fans — typically used in kitchens and bathrooms
- Industrial fans

Segment-wise breakup of fan industry, as of fiscal 2021 (%)

Total domestic fan demand, FY 2021- ~56 million units



Source: Indian Fan Manufacturers Association (IFMA), industry estimates, CRISIL Research

Ceiling, TPW and exhaust fans are typically low-duty fans, mostly used in residential and office spaces, while industrial fans include air circulators and heavy-duty exhaust fans, typically used in factories, warehouses and places of public transport such as railway stations, airports and bus depots.

Ceiling fans can be further classified based on price range into the following categories:

- Economy (priced up to Rs 1,500)
- Standard (priced between Rs 1,500 and Rs 4,000)
- Premium fans (priced above Rs 4,000)

The absence of a technological barrier to entry, given the standardised nature of the product, led to several players, organised and unorganised, operating in the industry. However, according to industry estimates, rising disposable incomes and changing preferences regarding aesthetics caused a gradual shift in demand from economy products to the mass premium and premium category products, especially in urban areas.

10.2 Fan industry size

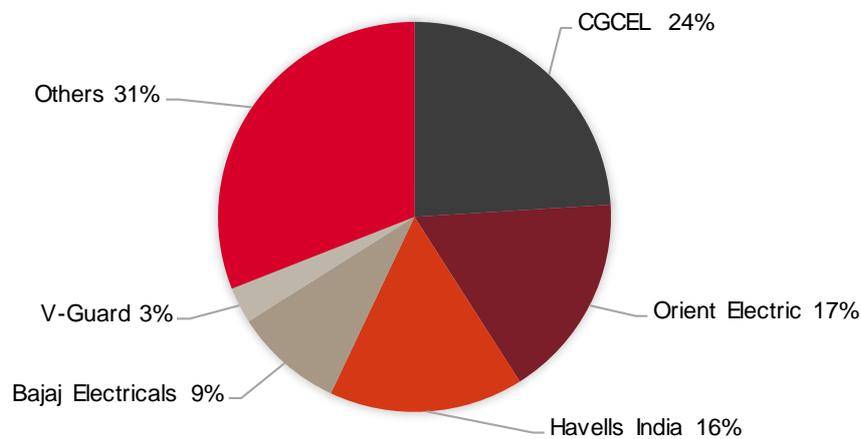
Consumers paying a premium for ceiling fans

CRISIL Research estimates the size of the electric fan industry at 56 million units, as of fiscal 2021, which increased at a CAGR of ~2% over the past five years. In the case of ceiling fans, while overall volumes have been impacted due to the slowdown in the real estate sector over the past few years, growth has been driven by an increasing preference for the premium product category, including decorative, energy-efficient and custom-made fans. The TPW fan segment, which typically enjoys a higher demand from rural areas compared with urban areas because of its portable nature, as it eliminates the need for multiple fans, has also seen growth as availability of electricity has improved owing to various government initiatives; this has led to increased demand for consumer appliances, including fans. The Covid-19 situation led to a sharp drop in sales during the imposed lockdown. However, the ceiling fan segment, in particular, has seen a sharp recovery during the festive season. Due to restrictions on manufacturing, people movement to the organised sector gained share from unorganised players.

Bajaj Electricals, Crompton Greaves Consumer Electricals (CGCEL), Havells India, Orient Electric and V-Guard Industries are some players in the organised sector.

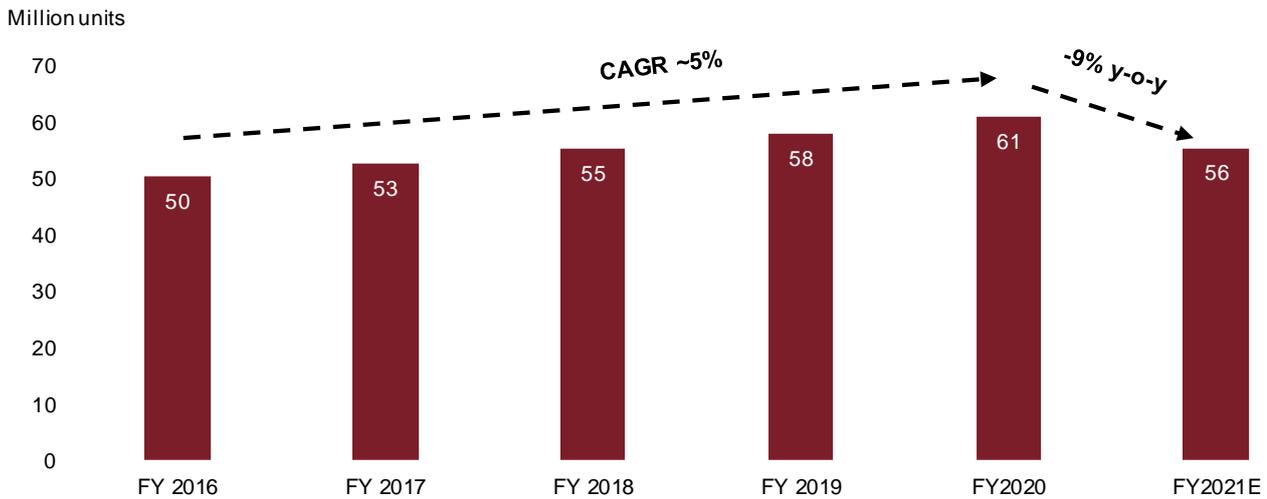
Competitive scenario, as of fiscal 2021

TOTAL DOMESTIC FAN DEMAND, FY 2021- ~56 MILLION UNITS



Source: CRISIL Research, Company annual reports

Domestic industry size of fan industry (million units)



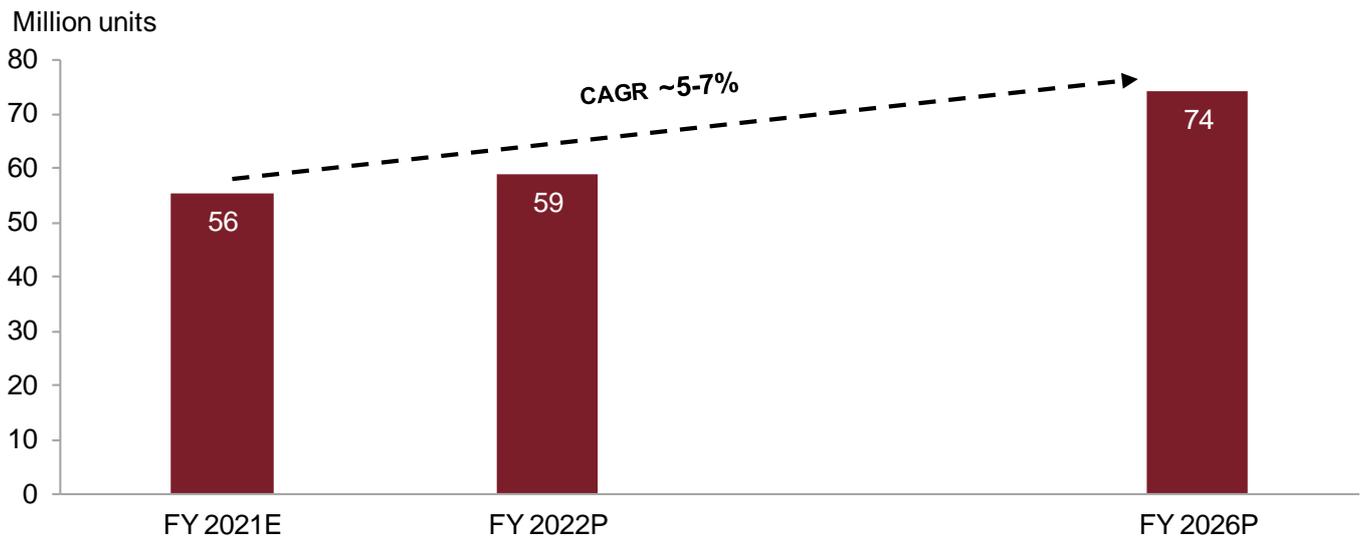
E: estimates

Source: IFMA, industry estimates, CRISIL Research

Improving economic factors and changing consumer preferences to fuel growth

CRISIL Research expects factors such as government initiatives to improve power availability, government push for affordable housing, rising disposable incomes, changing consumer preferences and an overall positive macroeconomic scenario to drive growth in the domestic electric fan industry in the medium to long term. Given that the product category is fairly established, growth momentum is expected to be moderate in the medium to long term. While government initiatives such as increasing availability of power (especially in rural areas) and adoption of energy-efficient fans at subsidised prices are expected to drive volume sales in rural areas, changing consumer preferences related to aesthetics, technology and energy-efficiency are expected to improve demand for fans, especially in the premium-priced category. Replacement demand, which is typically prevalent in urban areas and is largely a function of increasing disposable incomes and trends in home improvement, is also expected to provide moderate impetus to the electric fan industry in the medium to long term. Also, the premium fan segment is expected to increase at a higher CAGR of 12–14% from fiscal 2021 to fiscal 2026, led by rising aspirations and income levels of middle class households. The demand for premium fans with better aesthetics has been on a rise over the past 3–5 years with increasing consumer preferences towards enhanced and appealing interiors. This will also improve the sector's realisations. Consequently, CRISIL Research estimates the Indian electric fan industry to improve by a CAGR of ~5–7% to 74 million units by fiscal 2026.

Domestic industry size of fan industry (million units)



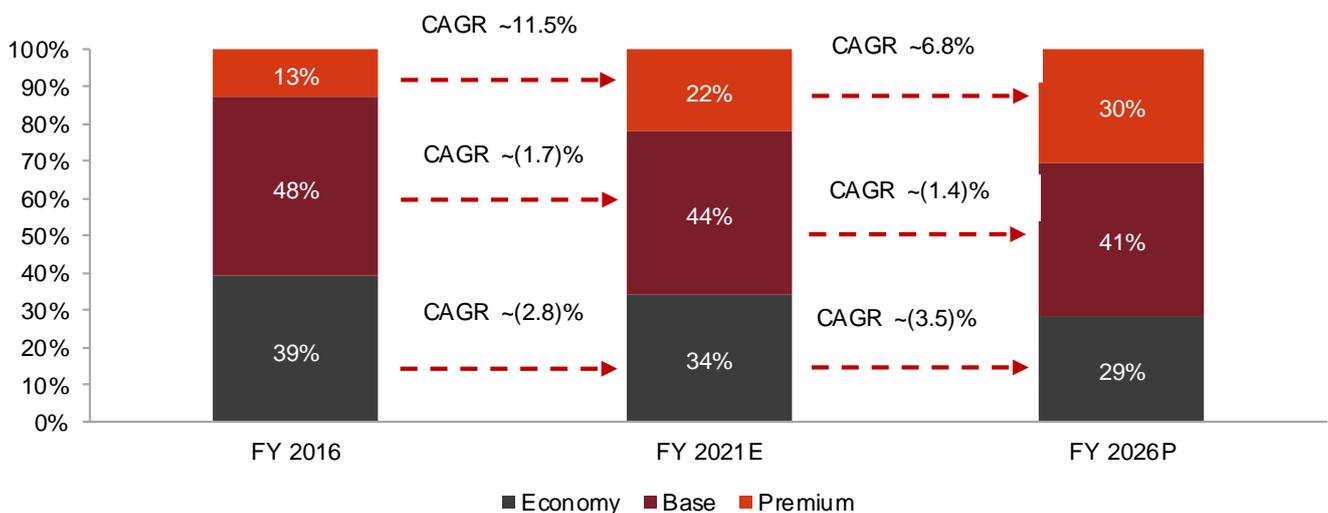
Note: P — projected

Source: IFMA, industry estimates, CRISIL Research

Premium ceiling fan segment to gain market share

In terms of the product category, ceiling fans occupy the maximum share of 71–73%, as of fiscal 2021. The category has seen growth largely owing to the real estate sector, particularly the residential segment. Given its substantial base, volume growth in the next 5–6 years is expected to be minimal. However, within the segment, there has been a perceptible shift from the economy to premium category, according to industry estimates. Factors such as rising disposable incomes, changing consumer preferences and higher availability of electricity across the country provided a demand impetus for players to improve on aspects such as design, efficiency and technology, even in the case of the standardised product category such as electric fans.

Segment-wise share of ceiling fans (%)



P: projected

Source: IFMA, industry estimates, CRISIL Research

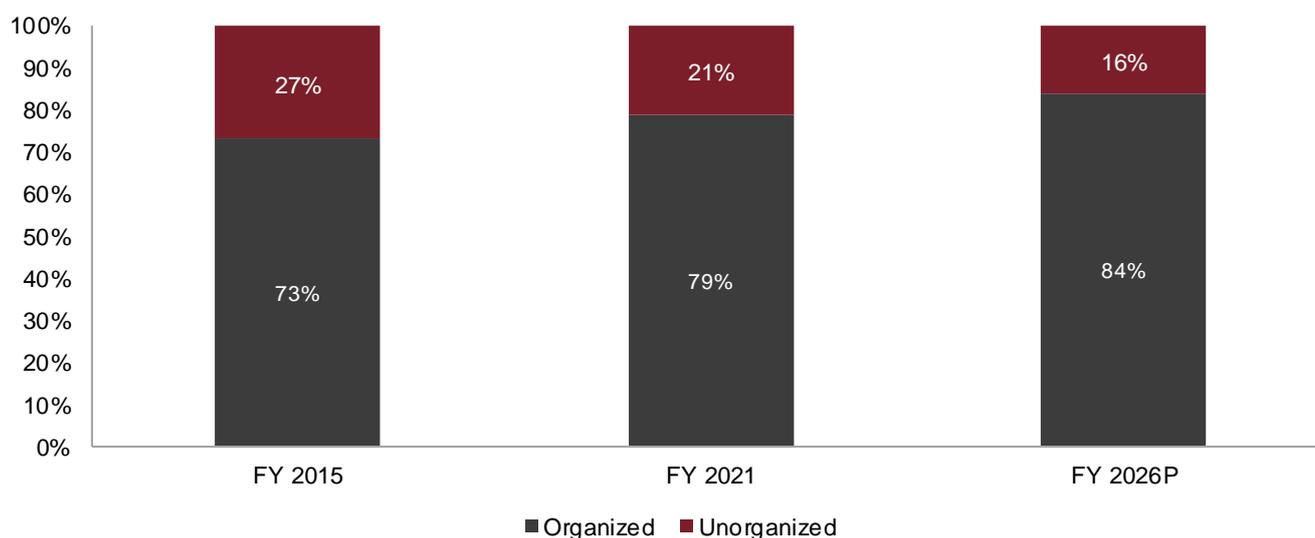
10.3 Competitive scenario

Organised segment to gain due to changing preferences and entry of new players

As a product category, electric fan production is fairly standardised, which led to numerous players, both organised and unorganised, operating in the industry. As in the case of other consumer appliances, preference for branded and quality products led to organised players gaining market share over the years. The share of organised players also increased over the years, as players in consumer appliances started to diversify their product offerings and enter into the electric fan category as well. Consequently, the share of the organised segment stands at ~79%, as of fiscal 2021. Since manufacturing technology is fairly standardised, outsourcing of production to smaller players is prevalent in the industry. According to industry estimates, given the cost benefits offered by outsourcing production, the trend is expected to continue in the medium to long term.

The organised segment is expected to gain further, albeit marginally due to the implementation of GST; it is likely to reach ~84% by fiscal 2026. GST is expected to bring down the price gap between organised and unorganised players, and impact availability of products at a pan-India level. Moreover, as Indian consumers become more conscious of brands and aesthetics, the preference for branded players over the unbranded ones is expected to increase in the medium to long term. The unorganised segment is expected to cater largely to those consumers where the price and availability of products remain a constraint.

Share of organised versus unorganised players (%)



Note: P: projected

Source: IFMA, industry estimates, CRISIL Research

10.4 Key growth drivers

Energy-efficiency programmes extended to fans

Energy Efficiency Services Limited (EESL)-financed procurement and incentivisation programmes for energy-efficient products are being extended to fans to push the energy-conservation agenda. Under the National Energy Efficient Fans Programme (NEEFP), launched across India, 50 watt (W) fans are provided by EESL at Rs 1,150 per unit on upfront payment, or at a total of Rs 1,200, if taken on equated monthly instalments (EMI). The EMI is adjusted against the electricity bills of consumers.

Super-Efficient Equipment Programme (SEEP) is a programme designed by the Bureau of Energy Efficiency (BEE) to accelerate the shift towards super-efficient appliances by providing a financial stimulus innovatively at critical point/s of intervention. Under this programme, ceiling fans have been identified as the first appliance to be adopted. SEEP for ceiling fans aims at about 50% higher efficiency than the average of fans currently available in the market; these fans will be pushed in markets by providing a time-bound incentive to fan manufacturers to produce super-efficient (SE) fans and sell them at a discounted price. SEEP aims to push adoption of super-efficient 35W ceiling fans as against the current average ceiling fan sold in the Indian market with about a rating of 70W.

The above-mentioned government initiatives are expected to drive demand for electric fans, especially the energy-efficient ones in the medium to long term.

Introduction of value-added products

Major fan manufacturers are adopting technology to provide a value-add to even standardised consumer products such as electric fans. This has led to the introduction of silent fans, dust-free fans, fans with remote brushless direct current (BLDC) motors and others. The next phase of value-add is in the form of fans with temperature or proximity sensors, those controlled by Wi-Fi or mobile apps and more. While such value-added products enjoy a limited demand currently due to premium prices, their demand is expected to pick up in line with the increase in disposable incomes and changing consumer preferences, especially among consumers belonging to the younger age-bracket.

Replacement demand in line with changing trends in home improvement, especially in urban areas

Replacement demand, which involves the replacement of electric fans in line with design-centric changes as a part of the home improvement process, is beginning to account for a significant share of urban demand. Rising disposable income and evolving preferences of the urban population are shortening the home improvement cycle, which is expected to boost replacement demand, especially in the premium and economy fan segments. The super-premium segment is reporting growing traction from consumers looking for luxury and aesthetics, even though it currently constitutes a negligible share of the electric fan industry.

Rise in rural penetration

The government is pushing increased electrification in rural areas with schemes such as Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA), and Ujwal DISCOM Assurance Yojana (UDAY). This is expected to act as a catalyst for increasing the rural penetration of the electric fan industry. Demand from rural geographies is expected to be largely in the economy and base segments of ceiling fans and the TPW segment due to their portable nature.

10.5 Key risks/challenges

Growth of substitute products such as air coolers and air conditioners

Air coolers and air conditioners, which are substitutes to fans, have an aspirational value for consumers. Demand for these products is growing, especially in urban housing and office spaces. Since air coolers and air conditioners have become more affordable as compared to fans, consumers are likely to opt for these alternatives, as growing disposable income influences their preferences for luxury.

11 Review and outlook of Indian switchgear industry

11.1 Introduction to switchgears

Revival on the cards for the technology-heavy switchgear industry

A switchgear is an apparatus used for switching, controlling, and protecting electrical circuits and equipment. In addition to performing the functions of a switch, switchgears have to perform the functions of metering and regulating the various parameters of electrical power system.

A switchgear is made up of the following primary components:

- Switching and interrupting devices – used for turning the power on or off
- Control devices – used to check and/or regulate the flow of electric current
- Metering devices – used to measure the flow of electric current
- Protective devices – used to prevent the interruption of power service and prevent or limit damage to equipment

Switchgears can be classified on the basis of the voltage level

- Low voltage (LV) switchgear – voltage below 3KV
- Medium voltage (MV) switchgear – between 3KV and 36KV
- High voltage (HV) switchgear – voltage above 36KV

Residential applications mostly use LV switchgears, and thus constitute a substantial part of the switchgear industry. LV switchgears include,

- Miniature circuit breaker (MCB) – a small trip-switch operated by an overload, used to protect an electric circuit, particularly in a domestic circuit, as an alternative to a fuse
- Residual current device – a device that monitors residual current and instantly breaks an electric circuit if it rises to a preset level, broadly classified into earth leakage circuit breaker (ELCB) and residual current circuit breaker (RCCB)
- Distribution board (DB) – a component of an electricity supply system that divides an electrical power feed into subsidiary circuits, while providing a protective fuse or circuit breaker for each circuit in a common enclosure with a main switch
- Air circuit breaker (ACB) – circuit protection devices with air as the insulating medium, used for high ampere ratings
- Moulded case circuit breaker (MCCB) – circuit protection devices with current carrying components, mechanisms, and trip circuits enclosed within a moulded case of insulating material
- Changeover switch – used to move a circuit from one set of connections to another
- Relay – an electrical switch used to control a circuit by a low-power signal or many circuits by one signal, includes thermal overload and protection relays
- Contactor – a type of relay that can handle high power required to directly drive an electric motor

The LV switchgear market is largely driven by residential and commercial real estate development, along with industrial and power utilities development.

MV/HV switchgears include transformers, air-insulated switchgear (AIS), gas-insulated switchgear (GIS), circuit breakers (gas and vacuum), surge arresters, disconnectors, ring main units, instrument transformers, voltage regulators, capacitors and reactors. MV/HV switchgear market largely serves the industrial and power utilities segment.

The switchgear industry is heavy on technical expertise and transmission & distribution, which has allowed large players to consolidate their share over time. The industry is set to witness a revival through growing demand and government initiatives, after a lull caused by industry and infrastructure slowdown.

11.2 Switchgear industry size

Segment witnessed moderate demand due to a slowdown in real estate and industrial capex

The LV switchgear industry derives its demand primarily from the residential and industrial sector, with MCBs, DBs, and RCCBs being the most common products. The residential sector experienced a slowdown because of multiple factors such as falling demand, demonetisation, and the implementation of the Real Estate Regulatory Authority (RERA) under the Real Estate (Regulation and Development) Act, 2016. A slowdown in the industrial sector with respect to capacity addition also constricted growth in the domestic LV switchgears segment in the past.

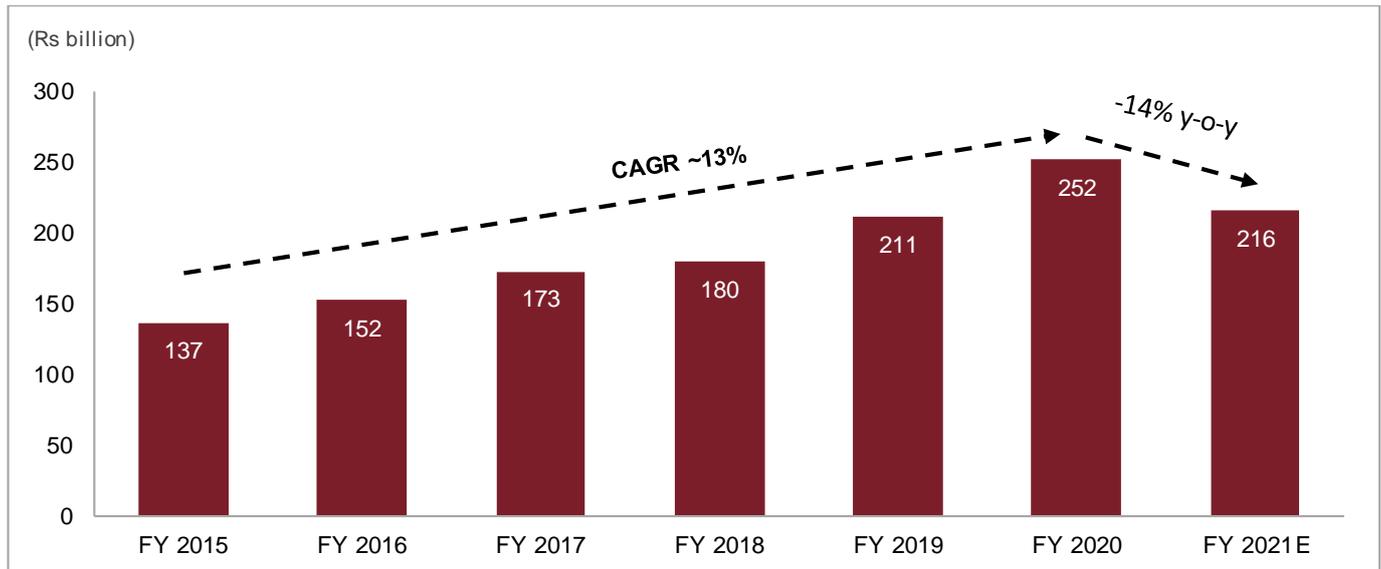
The MV/HV segment is driven by industries and power utilities, with the products being mainly used in power distribution stations and sub-stations having heavy voltage requirements. The segment saw muted growth for the past five years, as power distribution companies (discoms) were faced with issues such as financial stress and closure of unviable power plants.

CRISIL Research estimates the switchgear industry at Rs 216 billion in fiscal 2021, having grown ~8% between fiscals 2015 and 2021.

Covid-19 did have an impact on the LV and MV market, especially on the projects side. On the domestic front, 60% of the switchgear business is contributed by projects, and in the industrial segment with LV and MV projects account for over 80% of the business. Because of the pandemic, most of the residential, commercial, and industrial projects were on hold and negatively impacted the demand in the first half of fiscal 2021. However, initiatives taken in the real estate sector by various state governments like the reduction in stamp duty have aided real estate demand in the third and fourth quarters of fiscal 2021. This, in turn, has helped in the recovery of LV switchgear market in fiscal 2021. The residential sector is expected to register strong growth over the coming years on the back of increasing construction of housing units across the country. Moreover, to fulfil the housing demand, the government is planning to construct over 20 million new housing units in urban areas and around 40 million houses in rural areas by 2022 as per the initiative, Housing for All by 2022. This initiative could further accelerate the demand for switchgears in the country. Because of the pandemic, most commercial and industrial projects are currently on hold and this will continue until the markets are not stabilised and revamped. The majority of the industrial projects are being deferred to 2022, thereby impacting the MV/HV switchgear industry in fiscal 2021.

ABB India, Havells India, Legrand India, Schneider Electric India, and Siemens India are some of the players in the organised sector.

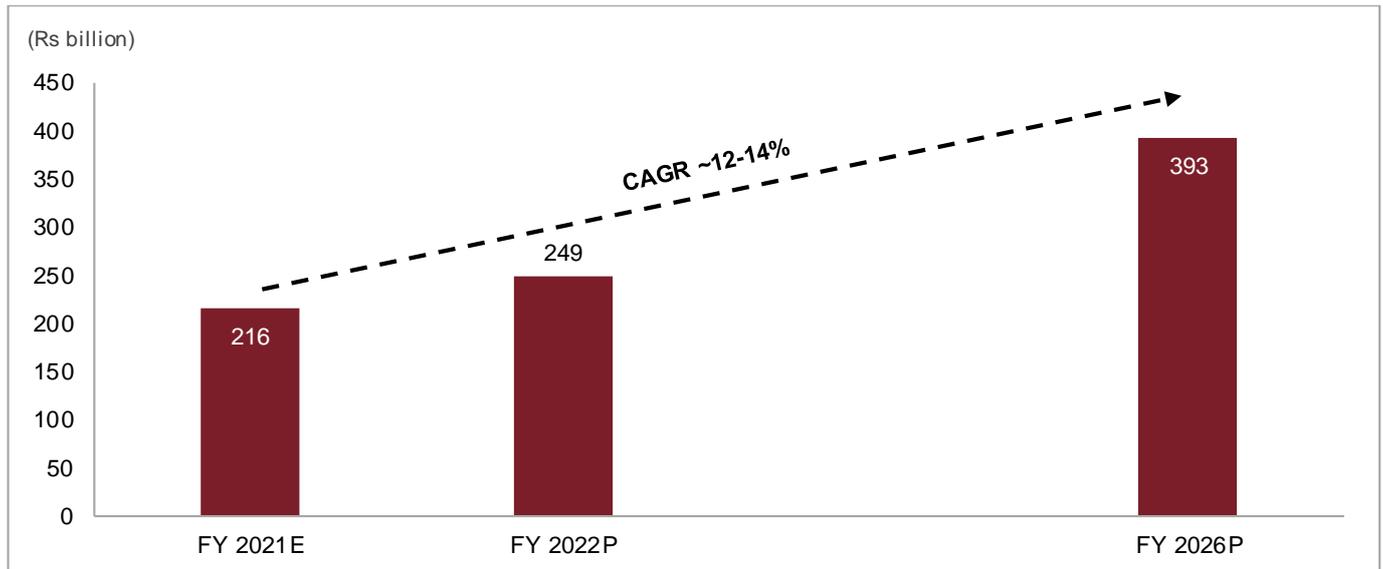
Size of the domestic switchgear industry FY2015-FY2021E (Rs billion)



Consumption demand and electrification to drive growth in the medium term

The LV switchgear industry is expected to accelerate, backed largely by the government's push for infrastructure development. Industrial capex is expected to improve led by an anticipated capacity expansion, whereas the residential sector is expected to pick up with the government's push for affordable housing. Widening of the transportation network through railways and metro is expected to further aid demand for LV switchgears.

Rising electrification rate along with government focus on providing adequate power infrastructure for citizens with schemes such as UDAY (Ujwal DISCOM Assurance Yojana), IPDS (Integrated Power Development Scheme), DDUGJY (Deen Dayal Upadhyaya Gram Jyoti Yojana), and Power for All will likely propel growth of the switchgear market in the near future. Further, initiatives such as Make in India and Smart Cities Mission will help in expanding the T&D networks, augmenting growth of the switchgear market in India. Consequently, CRISIL Research expects the Indian switchgear industry to grow at a CAGR of 8-10% and reach Rs 393 billion in fiscal 2026. Increasing foreign direct investment in the power sector and booming infrastructural development especially in the energy sector are the key factors driving the switchgear market in India. Moreover, increasing infrastructural advancement, including smart cities, and the rising number of solar power plants will bode well for the demand for switchgears during the forecast period. LV switchgears acquired the largest revenue share in the Indian switchgear market on account of high usage in verticals such as residential and commercial sectors, and power utilities. Furthermore, due to rural electrification and rapidly growing power transmission infrastructure, LV switchgears are likely to register robust growth in the years to come. MV and HV switchgears are also expected to register decent growth during the forecast period due to the expanding commercial sector and large-scale investment by the government in power utility projects. The government of India has planned to increase the transmission lines from 4,14,858 circuit km to 4,78,132 circuit km by 2022, which will expand the usage of switchgears in the power utilities segment in upcoming years.

Size of the domestic switchgear industry FY2021E-FY2026P (Rs billion)


Note: P: Projected

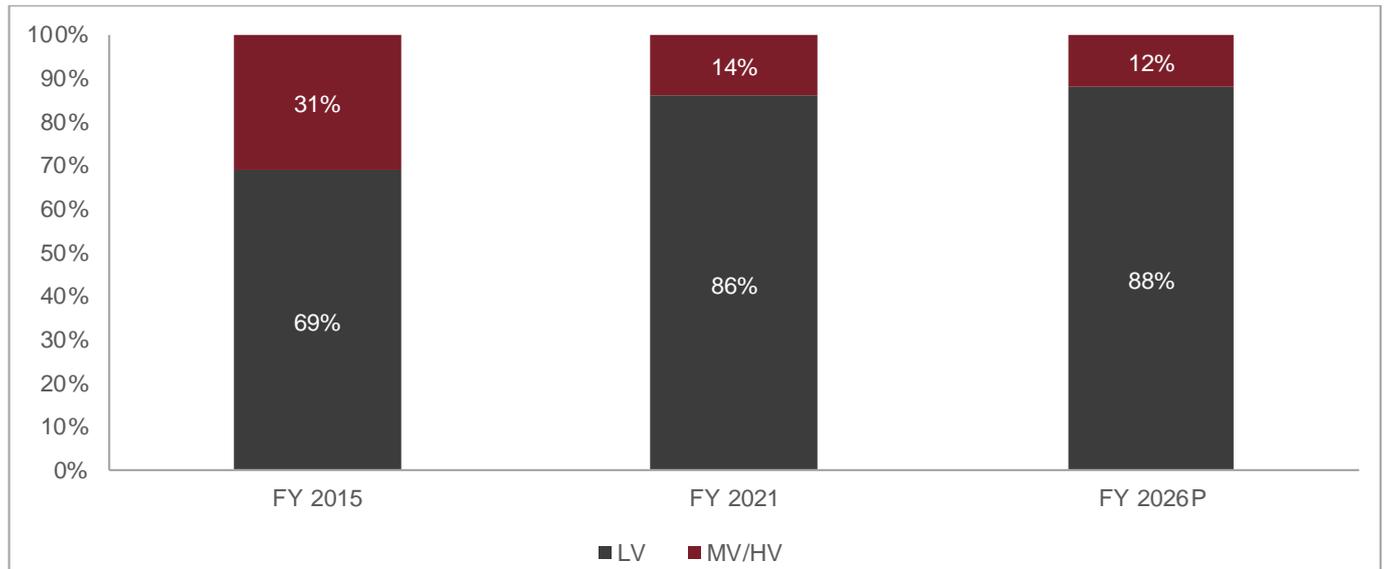
Source: IEEMA, industry estimates, CRISIL Research

LV switchgear set to outgrow MV/HV switchgear

The LV switchgears segment continues to account for a majority share in the overall domestic switchgears industry, with demand driven by residential and commercial real estate as well as industrial capex. On the other hand, the share of the MV/HV segment has witnessed a marginal decline on account of sluggish growth in the power sector due to financial stress.

Although the power sector is expected to witness a revival, thanks to government initiatives, the share of the MV/HV switchgear segment is expected to remain range-bound in the medium to long term. The LV switchgears segment is expected to retain its majority share, because of rapidly growing demand in the real estate sector and industrial capex.

Segment-wise share of switchgear industry (%)



Note: P: Projected

Source: IEEMA, industry estimates, CRISIL Research

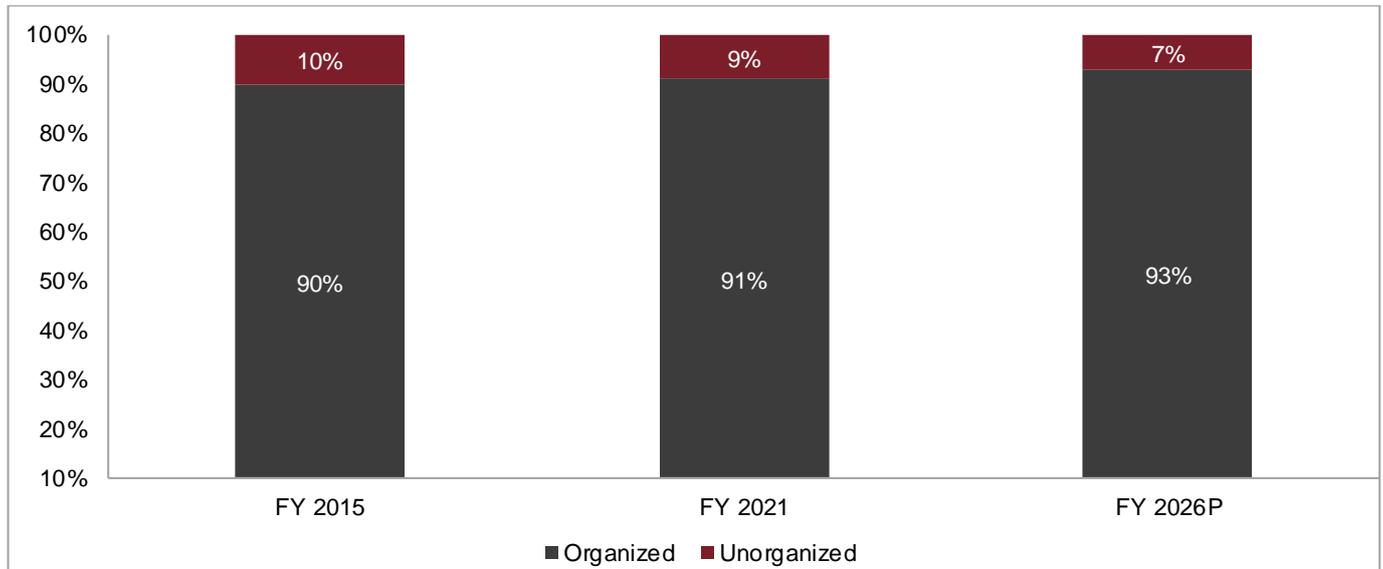
Significant technology requirements leave little room for unorganised players

Our industry interactions indicate that the LV and MV/HV switchgear industry is largely organised, with significant technology requirements acting as deterrents to the entry of smaller unorganised players. The technology-intensive nature of the product has resulted in large corporates, both domestic and global, dominating the industry. Most large players have in-house manufacturing capacities. The product profile of the unorganised market participants is typically restricted to low technology-intensive products such as switching devices and distribution boards. Also, equipment from 6.6KV to 11KV is increasingly being manufactured by small scale units as there is minimal technology/capex required at this level and most of these units merely assemble components sourced from countries like China.

The Central Electricity Authority (CEA) has laid out stringent technical standards for construction of electrical plants and electrical lines, taking into account environmental hazards caused by electrical equipment and components. Compliance with these standards requires heavy investments, which has rendered smaller players unviable. As a result, investments in technical compliance by large domestic players and MNCs have resulted in the organised sector cornering a lion's share of the industry.

The organised segment is expected to gain further due to the implementation of GST and reach ~93% by fiscal 2026. GST is expected to bring down the price gap between organised and unorganised players, and also impact the availability of products at a pan-India level, leading to industry consolidation.

Share of organised vs unorganised players (%)



Note: P: Projected

Source: IEEMA, industry estimates, CRISIL Research

11.3 Key growth drivers

Increasing consumer preference for safe, and smart products

As consumer awareness increases, the demand for safer and smarter products is expected to increase, which will likely drive the demand for branded products from organised players.

Increased use of modular devices

New construction in the real estate sector is expected to employ an increasing proportion of modular devices, thus leading to customisation of the switchgear assembly to suit the requirements of the construction.

Improving electrification

The government is pushing power demand by expanding electrification through initiatives such as SAUBHAGYA and DDUGJY, which are expected to boost the demand for household electrical products. Higher power usage in residential and industrial applications is expected to drive demand for the switchgear industry in the medium to long term.

12 European consumer durables industry

The consumer durables market, comprising televisions (TV), washing machines, refrigerators and air conditioners (AC), is mostly replacement-driven. It has remained largely stable over calendar years 2014-19 (CY14-19) amid healthy economic conditions, with many European countries recovering from the global financial crisis on a sustained basis.

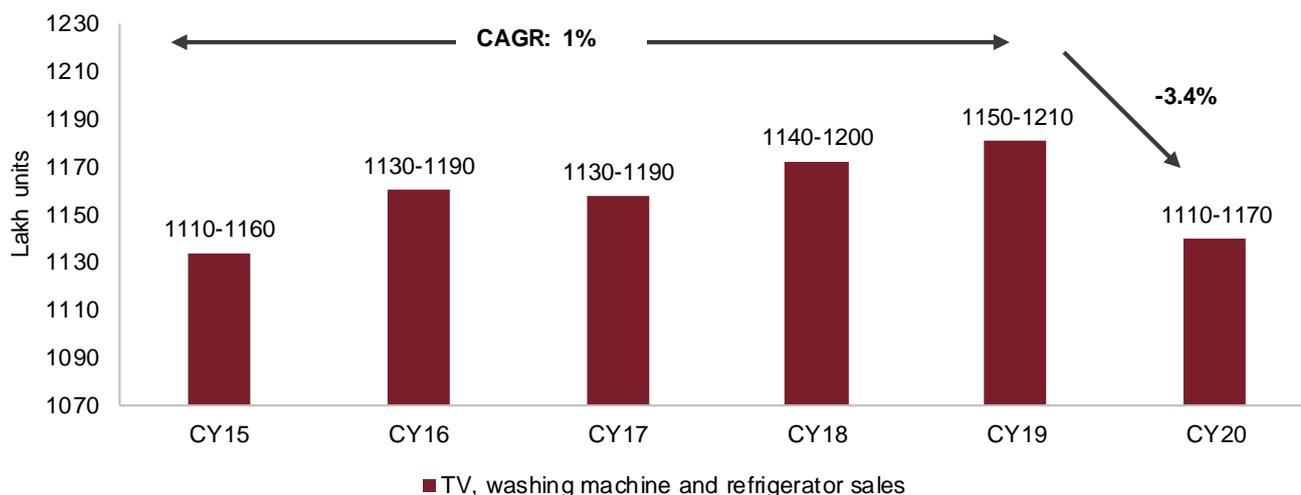
Significant lifestyle changes and preferences in western Europe, which is a highly fragmented market with varying consumer needs across different countries, and rising household penetration in eastern Europe sustained demand. While TV sales remained stable during CY15-19, washing machines and refrigerator sales increased at a compound annual growth rate (CAGR) of around 2% over CY15-19. Household penetration of ACs increased from 22-27% to 27-32% over the same period.

The market is moderately concentrated, with dominant players such as Samsung Group, Electrolux, Haier, LG, Robert Bosch and Whirlpool.

Numerous manufacturers, brands and retailers, coupled with varying consumer behaviour patterns, characterise the European market. The increasing shift in consumer preference towards smart TVs because of the rising popularity of over-the-top (OTT) streaming platforms and increasing access to high-speed internet has boosted TV demand. Moreover, the growing demand for innovative, advanced and multifunctional products has influenced purchase decisions in other segments. Apart from functionality, a product's aesthetic appeal has an impact on consumer preference, especially for built-in appliances, and is an important factor of differentiation. Developed markets like Germany have reached maturity in terms of usage of a key consumer durables like refrigerators, washing machine, TVs. In such markets, consumers are look much beyond basic functionality of the equipment. Consumer are increasingly looking for devices which have better usage experience, aesthetic appeal, touch and feel attributes. Appliances companies are including touch functionality, chrome plated designs, visually appealing surfaces and other such design strategies to lure customers.

TV sales declined in CY20 amid Covid-19 because of the pandemic-induced economic uncertainty and job losses, which led to a slowdown in consumption. Of the total sales of TV, washing machines and refrigerators, TV contributed to a significant 43-45%. Washing machines and refrigerator accounted for around 28-30% and 26-28% of the European consumer durables industry in CY20, respectively. The shift towards online education and increased TV viewership during lockdown resulted in only a 1% on-year decline in TV sales in CY20 compared with other segments, which declined around 5-7%.

Historical domestic sales development (CY15–20)



Source: CRISIL Research

Key trends and growth drivers

Demand for consumer durables is expected to improve in the near term, with consumption recovering from levels amid the pandemic-induced slowdown in CY20. Increased sales through e-commerce is also expected to have a positive impact. In the long term, changing lifestyles and rising disposable income are likely to influence demand.

Demand is expected to be characterised by increasing awareness and preference for energy efficient appliances, spurred by stringent regulations such as the EU's minimum energy efficiency and mandatory energy labelling requirements. European legislations focussing on energy labelling has made washing machines and dishwashers more water and energy-efficient and hence more economical compared with older models.

Rising temperature and humidity levels in Europe, the increasing frequency of heatwaves, and low household penetration of ACs in the European market are expected to significantly increase AC sales in the medium term.

13 North American consumer durables industry

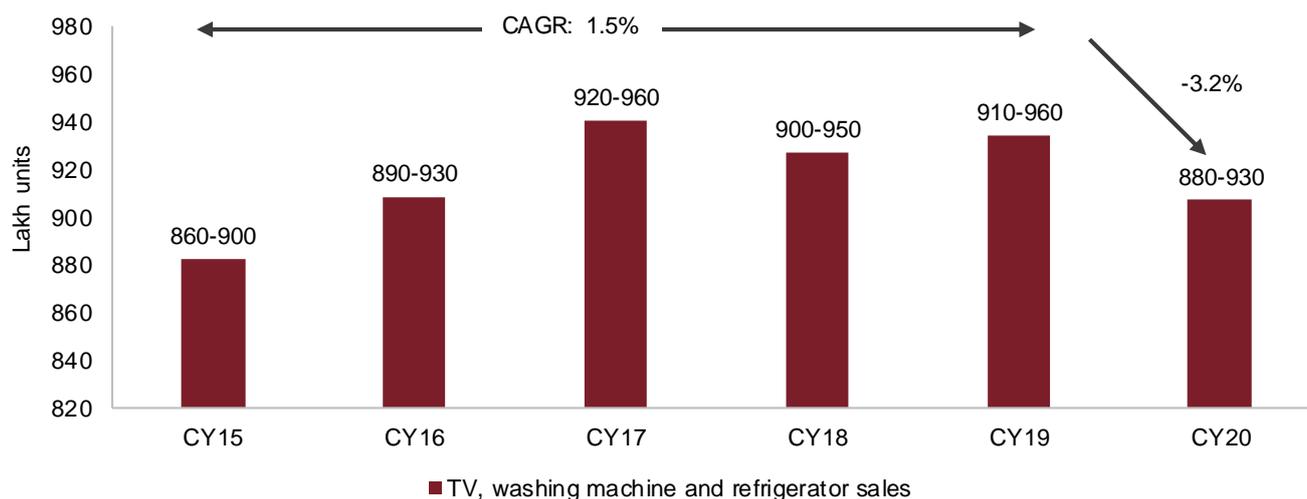
The North American consumer durables industry (the US, Canada and Mexico) is characterised by high household penetration in the US and Canada, dominated by replacement products in all segments, such as TV, washing machines, refrigerators and AC, and a growing market in Mexico, which has low household penetration.

The major North American industry players include Whirlpool, Frigidaire, GE Appliances, Haier, Bosch, Samsung, LG, Panasonic and Electrolux.

Demand remained stable with a moderate CAGR of around 1-2% during CY14-19 across all segments. Household penetration of AC in the US and Canada is also higher compared with the European market and increased from 86-91% and 55-60% in CY15 to 91-96% and 62-67% in CY19, respectively. In Mexico, AC penetration increased from 10-15% to 15-20% over the same period.

Mexico, which is home to well-known appliance manufacturers, such as Whirlpool, Electrolux, LG and Mabe, saw a particularly large impact on demand because of Covid-19, led by the predominant presence of an informal economy and a less robust social security system. In CY20, TV, which had a substantial 51-53% share in the total sales (TV, washing machines and refrigerators), fell 2-4%, with a higher decline in the US and Canada than in Mexico, while washing machines and refrigerators, which contributed 22-24% and 24-26% to sales, respectively, hardly declined in the US and Canada but fell by around 5-8% in Mexico.

Historical domestic sales development (CY15–20)



Source: CRISIL Research

Key trends and growth drivers

Increasing working population, rising disposable income and improved standard of living are expected to drive North American consumer durable growth in the near future.

Given the market's replacement nature, with functionality being almost similar, the variety in colour, shape, design, after-sales service and credit facilities will considerably influence consumer purchase decision.

The expansion of public and private infrastructure, the National Infrastructure Plan in Mexico and urbanisation-fuelled lifestyle changes are expected to impact the North American consumer durables industry significantly.

Technological advancements such as smart home appliances and Internet of Things (IoT) enabled devices are already influencing the market considerably. They are likely to promulgate a shift in the industry dynamics in the near term, led by increasing access to high-speed internet and rising popularity of OTT platforms in the North American and European regions.



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