



SUBMITTED TO
EPACK DURABLE LTD.
14th December 2023

**INDUSTRY REPORT FOR IPO –
ODM OPPORTUNITIES IN INDIAN ROOM AIR CONDITIONER
AND SMALL DOMESTIC APPLIANCE SEGMENTS**

DISCLAIMER

Given below is the content to be provided to you for your internal use by Frost & Sullivan as part of your subscription to its industry research on the following industry:

“Industry Report for IPO – ODM Opportunities in Indian Room Air Conditioner and Small Domestic Appliance Segments” (the “Report”)

The study has been undertaken through extensive primary and secondary research, which involves discussing the status of the industry with leading market participants and experts, and compiling inputs from publicly available sources, including official publications and research reports. The estimates provided by Frost & Sullivan (India) Private Limited (“Frost & Sullivan”), and its assumptions are based on varying levels of quantitative and qualitative analyses, including industry journals, company reports and information in the public domain.

Frost & Sullivan has prepared the study in an independent and objective manner, and it has taken all reasonable care to ensure its accuracy and completeness. We believe that the study presents a true and fair view of the industry within the limitations of, among others, secondary statistics, and primary research, and it does not purport to be exhaustive. The results that can be or are derived from the findings are based on certain assumptions and parameters/conditions. As such, a blanket, generic use of the derived results or the methodology has not encouraged forecasts, estimates, predictions, and other forward-looking statements contained in the report are inherently uncertain because of changes in factors underlying their assumptions, or events or combinations of events that cannot be reasonably foreseen. Actual results and future events could differ materially from such forecasts, estimates, predictions, or such statements.

In making any decision, the recipient should conduct its own investigation and analysis of all facts and information and the recipient must rely on its own examination. The recipients should not construe any of the contents in the report as advice relating to business, financial, legal, taxation or investment matters and are advised to consult their own business, financial, legal, taxation, and other advisors.

Table of Contents

DISCLAIMER	2
ACRONYMS	6
DEFINITION	7
CHAPTER 1: MACROECONOMIC OVERVIEW - INTRODUCTION TO THE INDIAN ECONOMY	8
1. India macroeconomic overview	8
A. Real Gross Domestic Product (GDP) of India – historical and outlook.....	8
B. Growth in Real GDP – India vs. leading global economies	9
C. Population growth and median age - India vs. leading global economies.....	10
D. Per capita income – India vs. leading global economies.....	12
E. Private Final Consumption Expenditure (PFCE) of India	14
F. Urbanisation - India vs. global economies.....	14
G. Inflation in India – historical and outlook.....	15
H. Growth in Electrification in India.....	16
2. India emerging as a global manufacturing hub	17
3. India's competitiveness among the leading manufacturing economies	18
A. Comparison on key economic parameters.....	18
B. Labour market comparison	19
C. Comparison of manufacturing ecosystem	19
4. India's focus on boosting domestic manufacturing of Room Air Conditioners	20
A. Government policies and schemes driving manufacturing in India	20
B. Production Linked Incentive (PLI) scheme for Air Conditioners.....	21
CHAPTER 2: OVERVIEW OF GLOBAL AND INDIAN CONSUMER DURABLES MARKET	25
1. Global consumer durables industry	25
A. Market overview of global consumer durables industry	25
B. Consumer durable market segmentation by product categories	26
C. Consumer durable market segmentation by geography	28
D. Growth drivers of global consumer durable industry	28
E. Key market trends of global consumer durable industry.....	29
2. Indian consumer durables industry	29
A. Overview of Indian consumer durables industry	30
B. Indian consumer durable market segmentation by product categories.....	30
C. Growth drivers of consumer durable industry in India	31
D. Key market trends of consumer durable industry in India.....	33
E. Level of localization across consumer durable industry in India.....	33
CHAPTER 3: OVERVIEW OF INDIAN CONSUMER DURABLES ODM MARKET	35

1.	Introduction to Original Design Manufacturer (ODM) model.....	35
A.	Emergence of ODM Model in the Consumer Durables industry.....	35
B.	Size of Indian Consumer Durables ODM Industry.....	36
C.	Outlook of Indian Consumer Durable ODM market.....	37
D.	Competitive landscape of the Indian Consumer Durables ODM market.....	37
	CHAPTER 4: OPPORTUNITIES IN THE ROOM AIR CONDITIONER ODM MARKET.....	39
1.	Overview of global Room Air Conditioner (RAC) market.....	39
A.	Global Room Air Conditioner (RAC) market size.....	39
B.	Global RAC market segmentation by region (from demand perspective).....	40
C.	Global RAC market segmentation by product type.....	40
D.	Global RAC import market.....	41
E.	Key trends of the global RAC market.....	42
2.	Overview of the Indian Room Air Conditioner (RAC) market	42
A.	Market overview of Indian RAC industry.....	42
B.	Penetration of RAC in India and outlook.....	43
C.	Energy labelling for Room Air Conditioners	45
D.	Growth drivers of Indian RAC market	45
E.	Indian RAC market segmentation by product categories	47
F.	Indian RAC market segmentation by domestic manufacturing vs imports.....	48
G.	Competitive landscape of Indian RAC market.....	49
3.	Value Chain of RAC Manufacturing:	49
A.	Room Air Conditioner manufacturing process.....	49
A.	Cost contribution of various RAC components:	53
B.	Level of integration of the brands across the manufacturing value chain.....	53
C.	Right to Win for ODM companies in the Indian RAC manufacturing industry.....	54
4.	OEM/ODM and Component opportunity estimation for Indian RAC industry	56
A.	FY23 Room Air Conditioner (RAC) ODM market in India.....	56
B.	Growth opportunity in the RAC ODM business in India.....	57
C.	Growth opportunity in the RAC component business in India.....	60
D.	Export opportunities for the Indian ODM companies.....	61
	CHAPTER 5: OPPORTUNITIES IN SMALL DOMESTIC APPLIANCES (SDA) ODM MARKET.....	63
5.	Overview of Indian Small Domestic Appliances (SDA) Market	63
A.	Indian SDA market segmentation by select product categories (mixer-grinder, induction cooktop and water dispenser).....	64
6.	Mixer-Grinders.....	64
A.	Overview of mixer-grinder market in India	64
B.	Competitive landscape of mixer-grinder market in India	65

C.	Domestic manufacturing vs imports	66
D.	Domestic manufacturing market: In-house vs outsourcing	66
E.	Mixer-grinders: Market trends and growth drivers	67
7.	Induction Cooktop.....	67
A.	Overview of induction cooktop market in India.....	67
B.	Competitive landscape of induction cooktop market in India	69
C.	Domestic manufacturing vs imports	69
D.	Domestic manufacturing market: In-house vs outsourcing	70
E.	Induction cooktop: Market trends and growth drivers.....	70
8.	Water Dispenser Market	71
A.	Market overview of water dispenser in India	71
B.	Competitive landscape of water dispenser market in India.....	72
C.	Domestic manufacturing vs imports	73
D.	Domestic manufacturing market: In-house vs outsourcing	73
E.	Water dispenser: Market trends and growth drivers.....	74
	CHAPTER 6: COMPETITIVE LANDSCAPE AND FINANCIAL BENCHMARKINGS	75
1.	Profiling of key competitors.....	75
2.	Financial benchmarking of EPACK Durable Ltd with key competitors.....	76
3.	KPI's of key competitors (public listed companies).....	80

ACRONYMS

Title	Abbreviation	Title	Abbreviation
5G	Fifth Generation	IMF	International Monetary Fund
AA	Advance Authorization	IoT	Internet of Things
A&D	Aerospace and Defence	ICT	Information Technology
AC	Air Conditioner	LED	Light Emitting Diode
AI	Artificial Intelligence	LTE	Long Term Evolution
APAC	Asia-Pacific	LPG	Liquified Petroleum Gas
ASP	Average Sales Price	MNC	Multi-National Company
B2C	Business to Consumer	ML	Machine Learning
BEE	Bureau of Energy Efficiency	MoSPI	Ministry of Statistics and Program Implementation
BIS	Bureau of Indian Standards	MSMEs	Micro, Small, and Medium Enterprises
BOM	Bill of Material	NMZ	National Manufacturing Zones
BS	Bharat Stage	NPE	National Policy on Electronics
CAPEX	Capital Expenditure	ODM	Original Design Manufacturer
CAGR	Compound Annual Growth Rate	ODS	Ozone-depleting substances
CEA	Consumer Electronics & Appliances	ODU	Outdoor Unit
CM	Contract Manufacturing	OEM	Original Equipment Manufacturer
CNN	Convolutional Neural Network	OS	Operating System
CY	Calander Year	PAT	Profit After Tax
EDA	Electronic Design Automation	PCB	Printed Circuit Board
EMC	Electronics Manufacturing Clusters	PCBA	Printed Circuit Board Assembly
EMI	Equated monthly installment	PFCE	Private Final Consumption Expenditure
EMS	Electronic Manufacturing Services	PLI	Production Linked Incentive
EU	European Union	PMP	Phased Manufacturing Programme
EV	Electric Vehicle	PPP	Purchasing Power Parity
FDI	Foreign Direct Investment	RAC	Room Air Conditioners
FTA	Free Trade Agreements	R&D	Research and Development
FY	Fiscal/ Financial Year	RBI	Reserve Bank of India
GDP	Gross Domestic Product	SEZ	Special Economic Zone
GOI	Government of India	SDA	Small Domestic Appliances
GST	Goods and Services Tax	SME	Small and Medium Enterprises
HD	High Definition	SMT	Surface Mount Technology
IC	Integrated Circuit	ToC	Total Cost of Ownership
IDU	Indoor Unit	USA	United States of America
IED	Intelligent Electronic Devices	VOC	Volatile Organic Compounds
ITeS	Information Technology Enabled Services		

DEFINITION

Title	Definition
Brands	Companies that market the product under its label. In the Indian RAC industry, companies such as Voltas, Daikin, Havells, LG, Hitachi, Blue Star, etc. are referred as Brands
Original Design Manufacturer (ODM)	Companies that have the capability to design, develop, and manufacture the entire product, are known as ODM. However, unlike the brands, ODM does not sell the product under its label. It sells white label products to the brands which is then rebranded and sold in the market. In the Indian RAC industry, companies such as EPACK Durable Ltd, Amber Enterprises India Ltd, PG Electroplast Ltd, etc. are known as ODM.
Components	It includes all the components that are required to manufacture a Room Air Conditioners - sheet metal components, plastic moulded components, heat exchangers, induction motors, compressors, cross flow fan, PCB assembly etc.
Calendar Year (CY)	The calendar year is defined from January to December. For instance, CY22 refers to 1st January 2022 to 31st December 2022
Financial Year (FY)	The financial year in India is defined from April to March. For instance, FY23 refers to 1st April 2022 to 31st March 2023

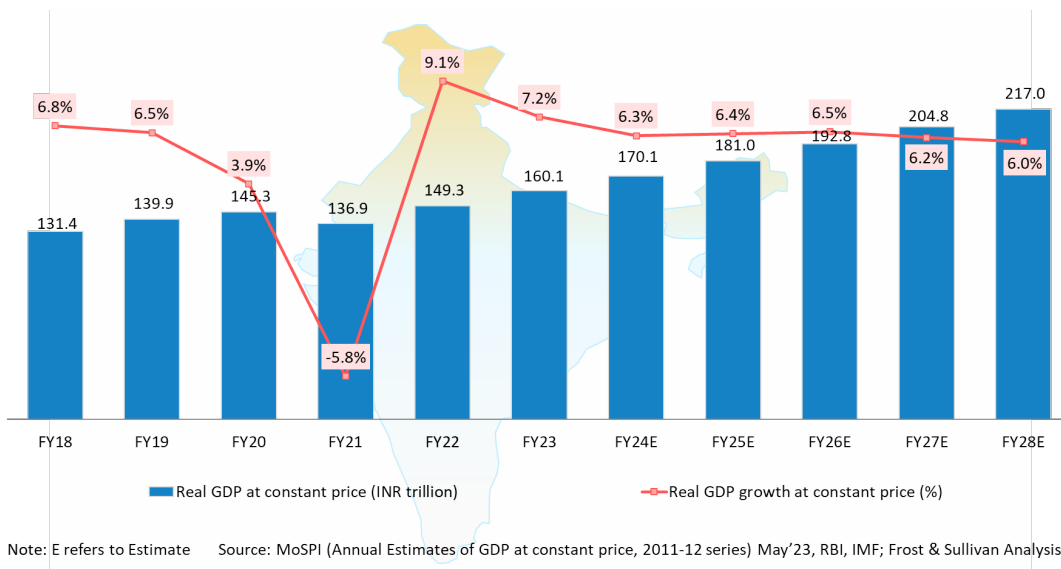
CHAPTER 1: MACROECONOMIC OVERVIEW - INTRODUCTION TO THE INDIAN ECONOMY

1. India macroeconomic overview

A. Real Gross Domestic Product (GDP) of India – historical and outlook

The Indian economy is the fifth largest in the world, with a Gross Domestic Product (GDP) of USD 3.75 trillion in FY2023 (MoSPI estimates). The last decade was a mixed bag for the Indian economy with a see-saw movement in the GDP growth between 2010 and 2020. The economy, which was already slowing down since FY18, received a massive jolt in FY21 due to Covid 19 pandemic and shrunk by 5.8% in FY21. However, the Indian economy showed tremendous resilience and bounced back from Q3 FY21 on the back of corrective measures taken by the government along with huge pent-up demand and the festive season. FY22 and FY23 were strong, and the Indian economy registered 9.1% and 7.2% growth respectively, outperforming many other major economies.

Exhibit 1.1: India - Real GDP and real GDP growth (annual percentage change), value in INR trillion, growth in %, FY18-FY28E



The Indian government has been promoting structural reforms, such as a focus on infrastructural development, disinvestment, and higher FDI limits, while also working on a national logistics policy. These reforms have been critical for accelerating the post-pandemic economic recovery. The FY23 budget has proposed a total capex outlay of INR 10 trillion, which is a 33% increase y-o-y and 3.3% of the total GDP. In addition, the government has announced seven priorities for the budget, 'Saptarishi,' which include inclusive development, reaching the last mile, infrastructure, and investment, unleashing the potential, green growth, youth power, and the financial sector. The outlook for FY24 looks positive, with an estimated growth of 6.3%.

There is a strong focus on the growth of the domestic manufacturing sector through various policy initiatives such as Atmanirbhar Bharat, PLI schemes, etc. The PLI scheme aims to enhance India's manufacturing capabilities, increase domestic production, create employment opportunities, and make India a global manufacturing hub. It provides a competitive edge to Indian manufacturers by offering them financial incentives and support to increase their production and export competitiveness. These initiatives will help the economy to register stable growth of approximately 6.3% in the medium term between FY23 and FY28.

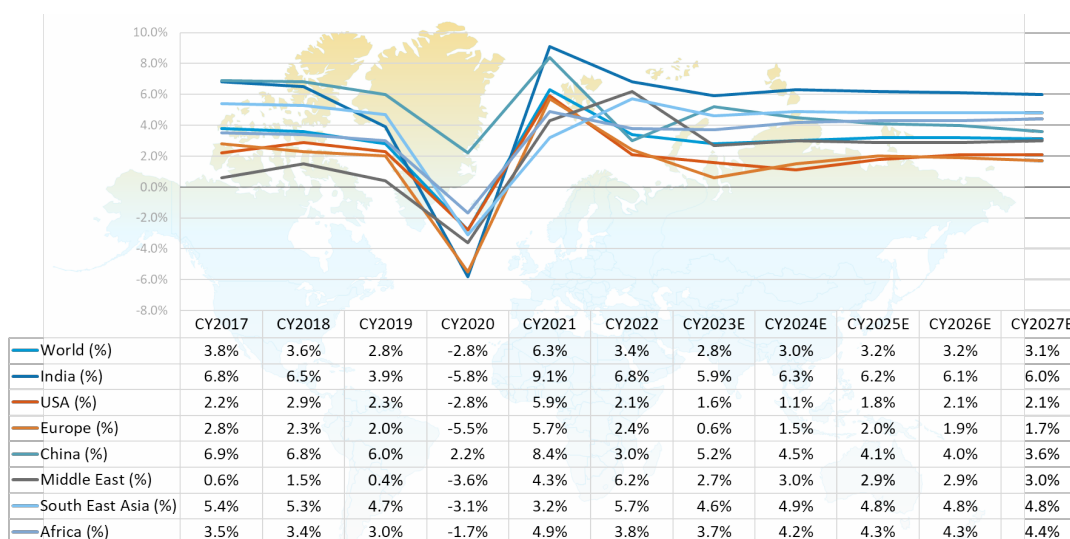
Favourable business environment, liberal FDI norms, constantly improving 'Ease of Doing Business' rankings, an enormous consumer base and rapidly improving digital infrastructure are some of the key factors that will drive investment in India in the coming years.

Several other policies such as consumer protection law, energy efficiency standards, and e-commerce digital marketplaces have aided in boosting consumer confidence, created awareness among consumers about energy efficiency, and incentivized manufacturers to produce more energy-efficient products. Policies governing e-commerce and digital marketplaces have facilitated the growth of online sales in the consumer durables sector. These policies have created a conducive environment for e-commerce platforms, enabling manufacturers and retailers to reach a wider customer base, increase sales, and enhance market penetration.

B. Growth in Real GDP – India vs. leading global economies

The global economy, like India, suffered a heavy loss in CY2019 and CY2020 due to COVID-19 pandemic and is now on the path of recovery and stabilization. In CY2021, the global economy grew by 6.3%, owing largely to the inherent strength of major economies such as the USA, China, Japan, Germany, UK, and India. However, the Russia-Ukraine war, which began in February 2022, had an impact on the global economy, with shortages of essential goods from Russia and Ukraine. Sharply rising commodity prices and fluctuations in the global fuel price were the most immediate economic consequences, and the global economy grew by a moderate 3.4% in CY2022.

Exhibit 1.2: India vs. Global - Real GDP growth (annual percentage change) in key economies (India, USA, Europe, China, Middle East, South East Asia and Africa), growth in %, CY2017-CY2027E



Note: E refers to Estimate

Source: IMF, World Economic Outlook, April 2023; Frost & Sullivan Analysis

India is the world's third-largest economy by purchasing power parity (PPP). Despite global events such as Covid-19 pandemic and Russia-Ukraine war, the Indian economy grew at a faster pace than many of its peer economies which reflect a relatively robust consumption base and lesser dependence on global demand. The Indian economy grew by 9.1% in CY2021 and 6.8% in CY2022, outpacing other major economies, owing to robust macroeconomic fundamentals. Compared to the rest of the world, India has much lower debt in the economy. India's core debt is lower than the global average and its core debt-to-GDP ratio is lower when compared to major economies of the world. The global average of debt-to-GDP ratio is 248% for all the countries, while the same for India is 170%.

The US economy witnessed a strong recovery from the pandemic as the real GDP registered a 5.9% growth in CY2021, the fastest GDP growth in a calendar year since 1984. The growth, however, moderated in 2022 to 2.1% as US Central Bank hiked the benchmark lending rate seven times within a calendar year to tackle the surge in inflation. Rising interest rates, high inflation, an inverted yield curve, and an unexpected banking crisis led to widespread fear of a looming recession in the US in 2023. However, six months into 2023, the case for a 2023 US recession is crumbling due to a very strong job market – 339,000 jobs have been added in May 2023 (Source: CNN Business), more jobs than the US economy added in any single month in 2019 which was a very strong year for the jobs market.

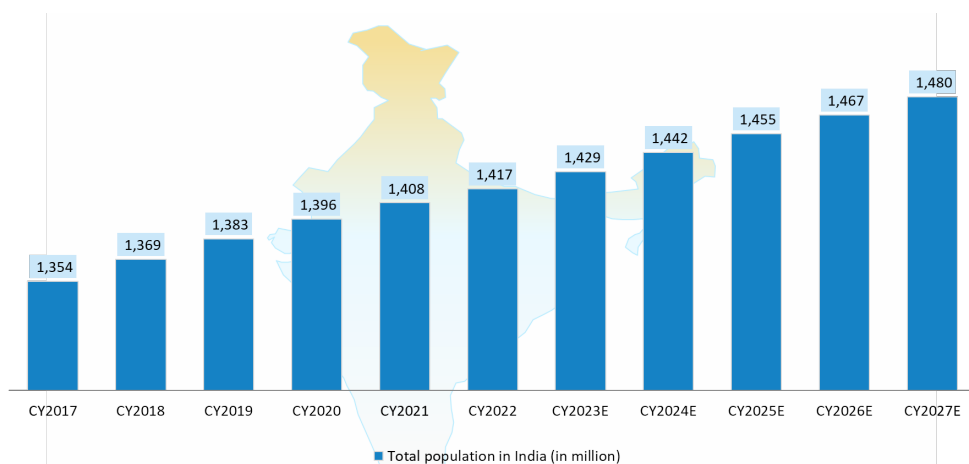
The European Union (EU) economy too made a strong recovery in CY2021 through 5.7% growth in the real GDP - The joint fiscal, monetary, regulatory, and supervisory response to the COVID-19 crisis had been instrumental for this recovery. However, disruptions caused by the ongoing war in Ukraine, surging energy prices, persistently high inflation, and the looming risk of Russia cutting off gas supplies in the winter months have put the Eurozone economy under an unprecedented level of stress. This persistent uncertainty has resulted in a moderate growth of 2.4% of the EU economy in CY2022. Experts predict that over the next two years, euro area growth will remain above its long-term average (Source: European Central Bank or ECB).

In CY2022, China’s strict "zero COVID" policy had a huge impact on the economy, especially with the global supply chain. Following a widespread protest, the government announced partial unlocking by the end of 2022, but China struggled with a coronavirus resurgence for a brief period. As a result, GDP growth in CY2022 was reduced to 3.0% from 8.1% in CY2021.

C. Population growth and median age - India vs. leading global economies

As per World Bank, India is the world's most populous country surpassing China, with 1.41 billion people in CY2022, or 18% of the world's total population. India’s population is expected to grow at an average of 0.9% between CY2022 and CY2027. India's Gen Y (indicates the millennials in the age group of 27-42 years) constitutes a third of the country's population and will join the working-age group, forming 42% of the total working-age population by CY2027.

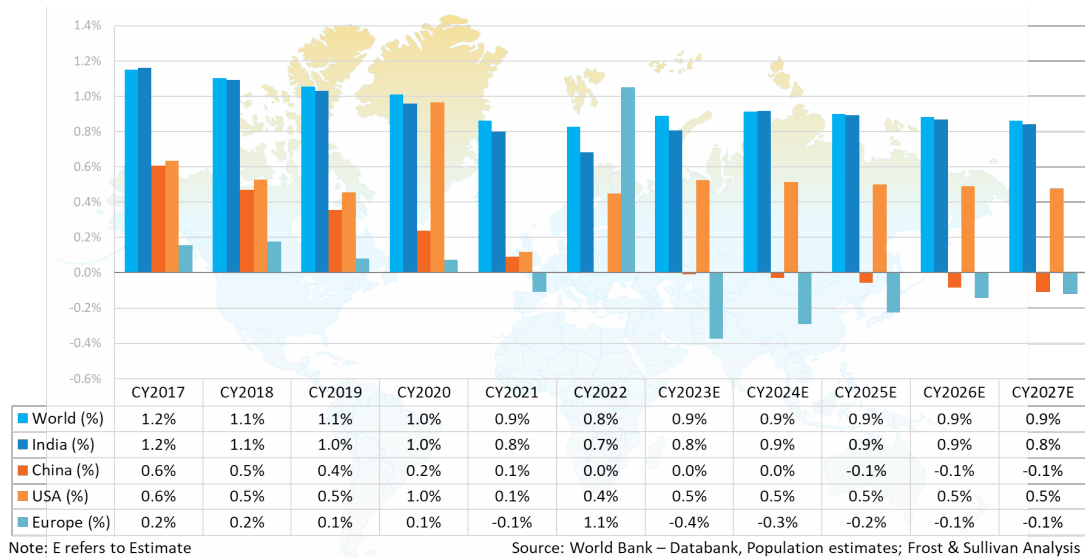
Exhibit 1.3: India - Total population, in million, CY2017-CY2027E



Note: E refers to Estimate

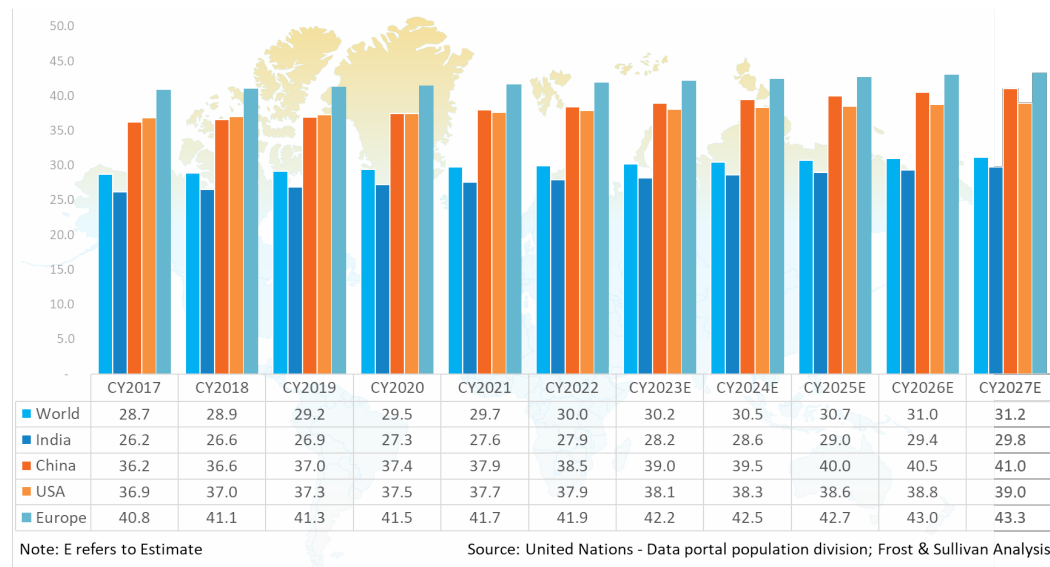
Source: World Bank – Databank, Population estimates; Frost & Sullivan Analysis

Exhibit 1.4: India vs. Global - Population growth of India vs leading economies (USA, China and Europe), rate in %, CY2017-CY2027E



The total global population is to grow at 0.9% CAGR between CY2022 and CY2027. This growth is aided by improved healthcare, sanitation, and general living conditions. Over the past five years, China’s population growth has slowed significantly. It is projected to have a negative growth rate of -0.1% during the forecast period as a result of various initiatives implemented by the Chinese government, such as population control effects and changing circumstances in the working and social environments of the Chinese people. The USA and Europe, two other major economies, are forecast to grow at rates of 0.5% and -0.2% CAGR, respectively, through CY2027.

Exhibit 1.5: India vs. Global – Median age of India vs leading economies (USA, China and Europe), age in no. of years, CY2017-CY2027E



In CY2022, the global median age is around 30 years, while India’s median age is 27.9 years. Among developed economies, the United States has a median age of 37.9 years, whereas Europe has a median age of 41.9 years

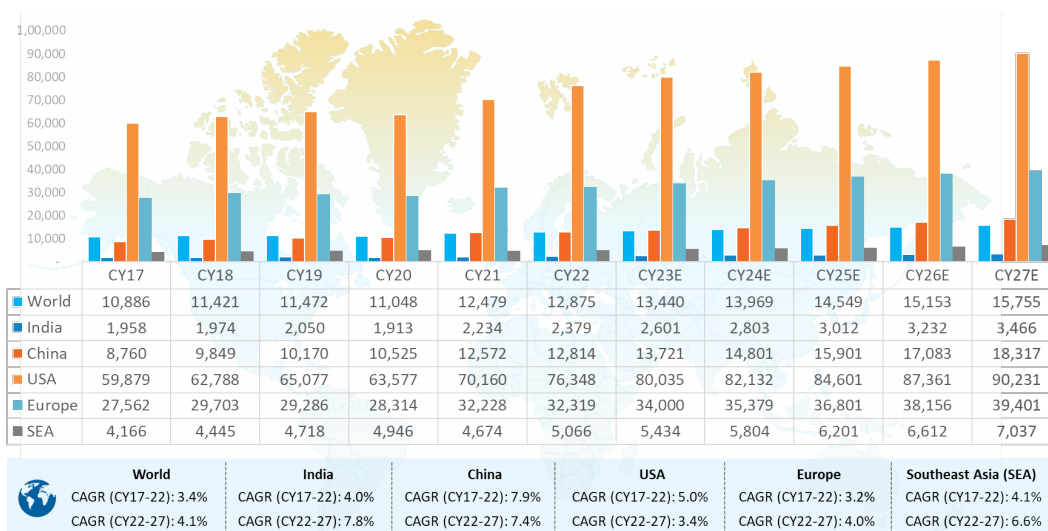
– this implies that an average Indian is 10 years younger than its American or European counterparts. According to Economic Survey 2018-19, India’s demographic dividend is expected to peak around 2041, when the share of the working-age (20-59 years) population is likely to hit 59%. This young, productive workforce will create greater human capital which in turn will boost the country’s economic growth and improve living standards.

D. Per capita income – India vs. leading global economies

Per capita income is a broad indicator of the prosperity of an economy. Consumer confidence and discretionary consumption both improve with the rising per capita income. India’s per capita income in CY2022 was USD 2,379 and is considered a lower middle-income country. For India to become a middle-income country, its per capita income needs to grow by almost 2.5 times to USD 6,100. Even though India’s per capita income grew by almost 100% since 2014-15, wealth distribution among India’s 1.4 billion people remains highly skewed. Equitable access to healthcare, quality education, and jobs would be critical for India to deliver sustained growth in per capita income.

Global average per capita income in CY2022 was 5.4 times higher than India at USD 12,875. CY2022 per capita income of USA, Europe, and China was USD 76,348, USD 32,319, and USD 12,814 respectively.

Exhibit 1.6: India vs. Global – Per capita income of India vs leading economies (USA, China, Europe and Southeast Asia), value in USD, CY17-CY27E

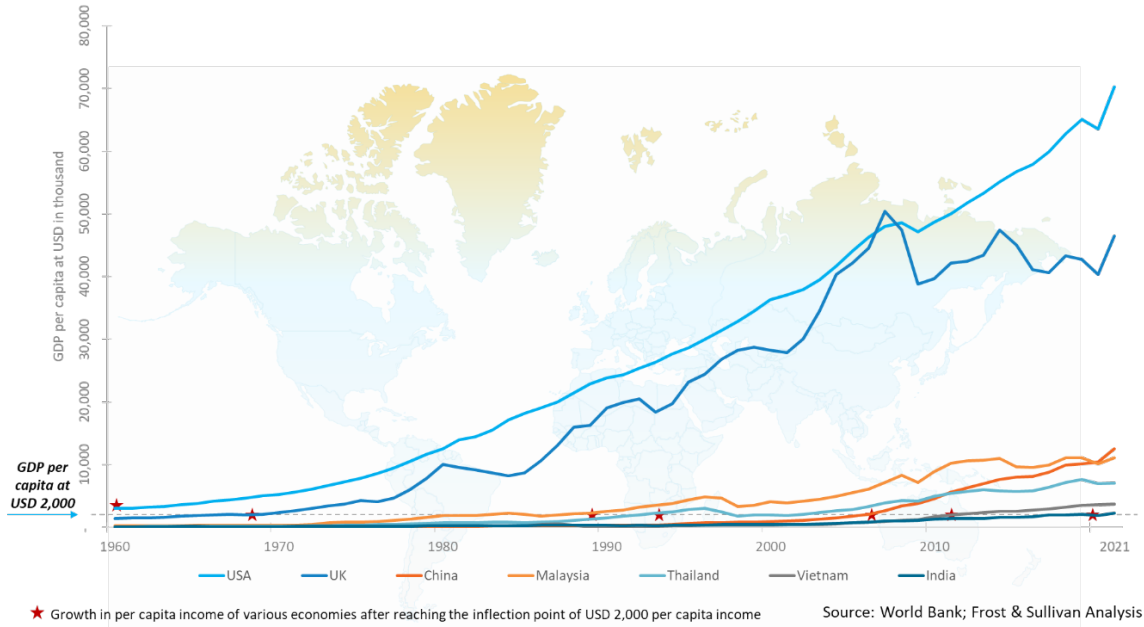


Note: E refers to Estimate

Source: IMF, World Economic Outlook, April 2023; Frost & Sullivan Analysis

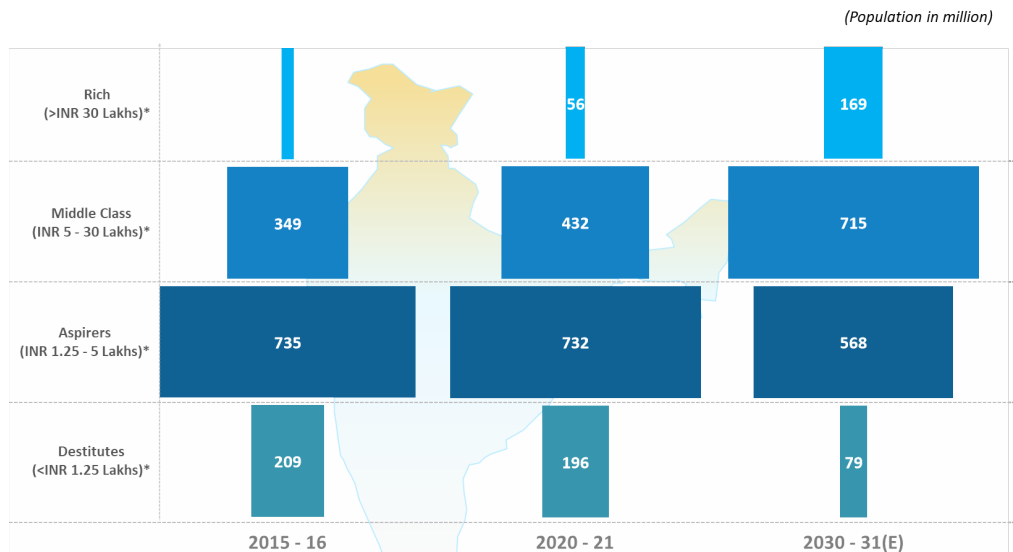
An interesting trend has been observed that the per capita income of most of the economies grows at a faster pace after reaching the inflection point of USD 2,000. The USA and UK reached this mark between 1950 and 1970, while Malaysia reached the mark in 1986, Thailand in 1994, China in 2007 and Vietnam in 2012. It has also been observed that this event generally has a positive effect on the consumer electronics market. With higher income levels, consumers often aspire to upgrade their lifestyles and seek improved living standards. They tend to invest in products that offer convenience, comfort, and enhanced features, such as high-end electronics, home appliances, and luxury goods. India reached this very important milestone of USD 2,000 per capita income in CY2020 and has the potential to achieve USD 10,000 per capita income or a USD 20 trillion economy by the year 2047 if it manages to accomplish a sustained growth rate of 7–7.5%.

Exhibit 1.7: India vs. select developed and developing economies, Per capita income after reaching the inflection point of USD 2000, CY1960-CY2022E



At USD 2,000 per capita income level, demand for high-end consumer electronics products increases which in turn drives innovation of technologically superior products. India in the last few years has seen a significant expansion of middle-class households which is the key demand generator for room air conditioning products. Robust economic development, growing population, relatively slower aging, and rising income levels coupled with urbanization would result in nearly 400 million additional middle-class and high-income population being added to the country’s economy by FY31 effectively pushing the share of upper middle class and high-income earners to nearly 58% of the population by FY31.

Exhibit 1.8: India - Income distribution, FY16, FY21 and FY31E



* Annual household income at 2020-21 prices

Note: E refers to Estimate

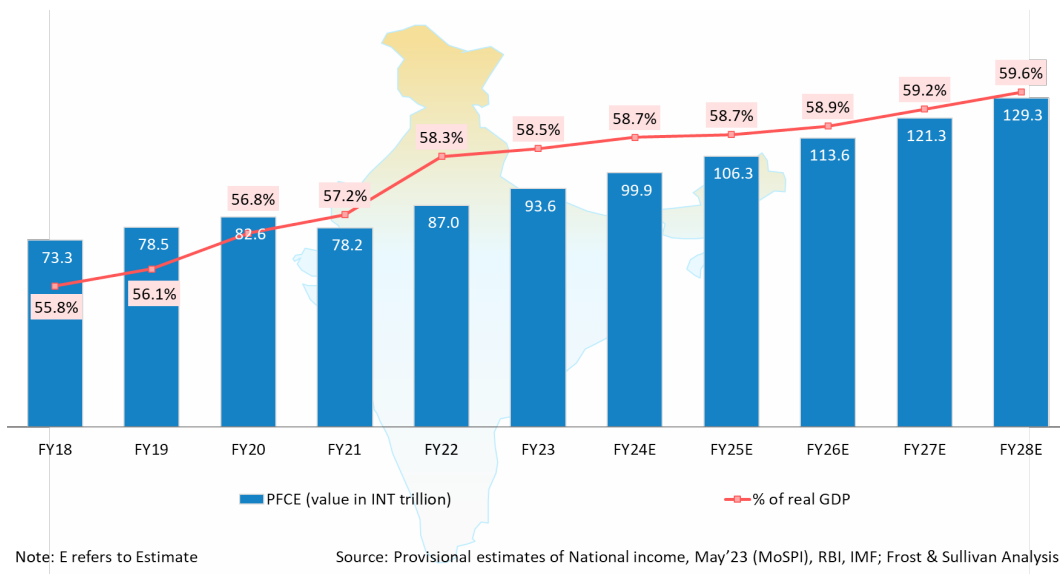
Source: PRICE (People Research on India’s Consumer Economy) projections based on ICE 360°C survey, 2022

By FY31, India is also expected to have the largest working-age population at the youngest relative age effectively resulting in higher income opportunities and rising discretionary spending. With a growing economy and rising income levels, more consumers will invest in superior cooling solutions for their homes, which would boost the demand for room air conditioning products in the country.

E. Private Final Consumption Expenditure (PFCE) of India

The Private final consumption expenditure (PFCE) is defined as the expenditure incurred by the resident households and non-profit institutions serving households (NPISH) on final consumption of goods and services, whether made within or outside the economic territory. Items covered under PFCE include food, clothing and footwear, gross rent, fuel, power, furniture, furnishings, appliances and services, medical care and health services, transport and communication, recreation, education and cultural services, and miscellaneous goods and services. An increase in PFCE indicates an increase in discretionary expenditure by consumers, which has a significant impact on the growth of the consumer electronics market in India including room air conditioners.

Exhibit 1.9: India – Private Final Consumption Expenditure as % of real GDP, value in INR trillion, contribution in %, FY18-FY28E

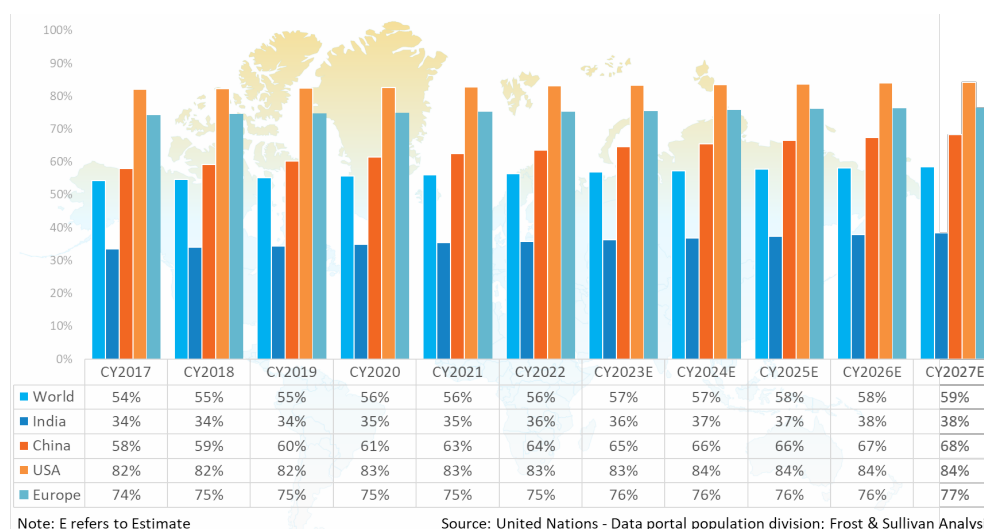


While it is a known fact that Indian consumers are price sensitive, their purchase behaviour is evolving in recent times. Although price remains an important consideration, Indian consumers have now started becoming more quality conscious. The key trigger for this shift has been the exposure to modern lifestyle and media which provides a perspective on various products and their benefits.

F. Urbanisation - India vs. global economies

At the end of CY2022, 56% of the world's population live in urban areas. This trend is expected to continue, with the urban population more than doubling its current size by 2050 (Source: World Bank). A higher urbanization level results in higher per capita income for the country which in turn boosts economic growth. Urbanization levels of some of the world's key economies such as USA (83%), Europe (75%), and China (64%) are much higher than India (36%), which has been going through massive urbanization in the past two decades.

Exhibit 1.10: India vs. Global - Urban population in India vs key economies (USA, China and Europe), % of total population, CY2017-CY2027E



There has been a drastic increase in urban towns and cities in the country over the past few decades. A better standard of living and increasing income opportunities in the cities have led to urbanisation, which has further increased the requirement for infrastructure and housing in these cities. Increasing disposable income of the urban population, a growing number of flats/apartments/houses in the urban centres, and growing preference towards energy efficient, technologically superior, and smart products have created a positive demand outlook for consumer electronics products such as room air conditioners, washing machines, refrigerators, televisions, air coolers, and others.

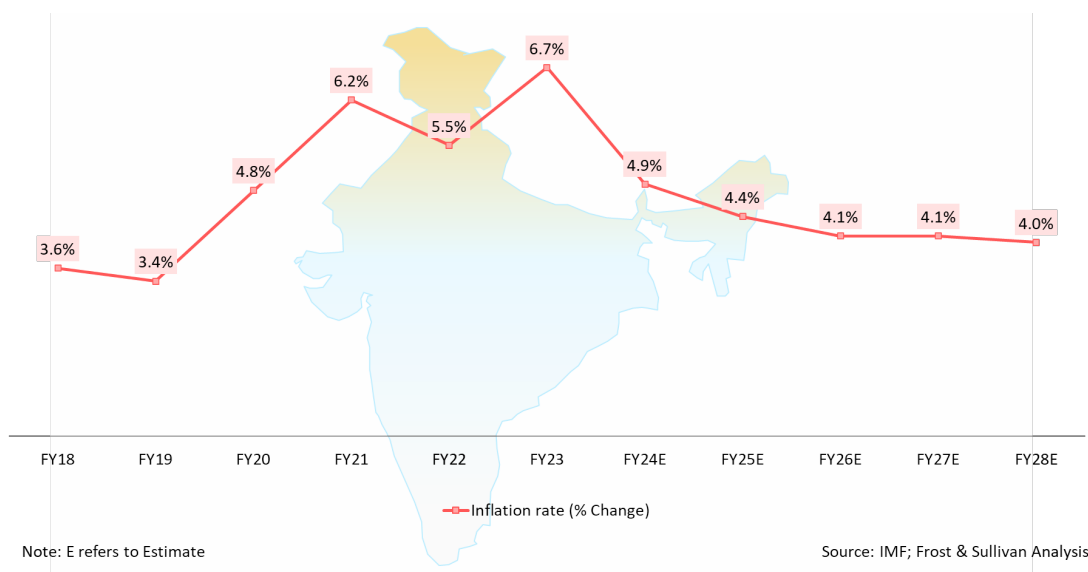
In addition, India’s rural market has been growing steadily and has become a crucial driver of economic growth. Some of the critical factors driving the growth of the Indian rural market are increase in disposable income, improvement in rural infrastructure, the ‘Digital India’ programme (connecting rural India with high-speed internet), rise of e-commerce platforms, and the government’s focus on financial inclusion. Room air conditioners, once considered a luxury product with usage limited to affluent households, have now become a household product in the urban and rural middle-class segments.

G. Inflation in India – historical and outlook

Indian Government, Reserve Bank of India (RBI), and associated institutions have taken suitable measures in the past to control inflation in the economy. As a result, inflation gradually started to decline since the mid of last decade and reached its lowest at 3.4% during FY19. Factors such as sharp drop in global crude price between 2014 and 2018, stable global commodity prices, improved supply management, and fiscal prudence were the key reasons for the steady moderation in the inflation rate in the second half of the last decade. However, the Indian economy buffeted by multiple shocks in the last three and half years – first, it was Covid-19 pandemic, followed by supply chain shocks, and then Russia-Ukraine war which caused widespread inflation in the economy. Inflation started showing an upward trend since FY20 and increased to 6.7% in FY23. Rising inflation emerged as a key macroeconomic concern in FY23 with prices of almost every commodity touching new heights.

In order to contain inflation, RBI’s Monetary Policy Committee (MPC) increased the policy repo rate by 225 basis points from 4.0 percent to 6.25 percent between May and December 2022. Central Government has undertaken several fiscal measures like reduction in excise duty on petrol and diesel, prohibition of the export of wheat products, imposition of export duty on rice, reduction in import duties and cess on pulses, rationalization of tariffs, and imposition of stock limits on edible oils and oil seeds, maintenance of buffer stock for onion and pulses and rationalization of import duties on raw materials used in the manufactured products. (Source: Economic Survey 2022-23).

Exhibit 1.11: India - Annual inflation rate, rate in %, India, FY18-FY28E



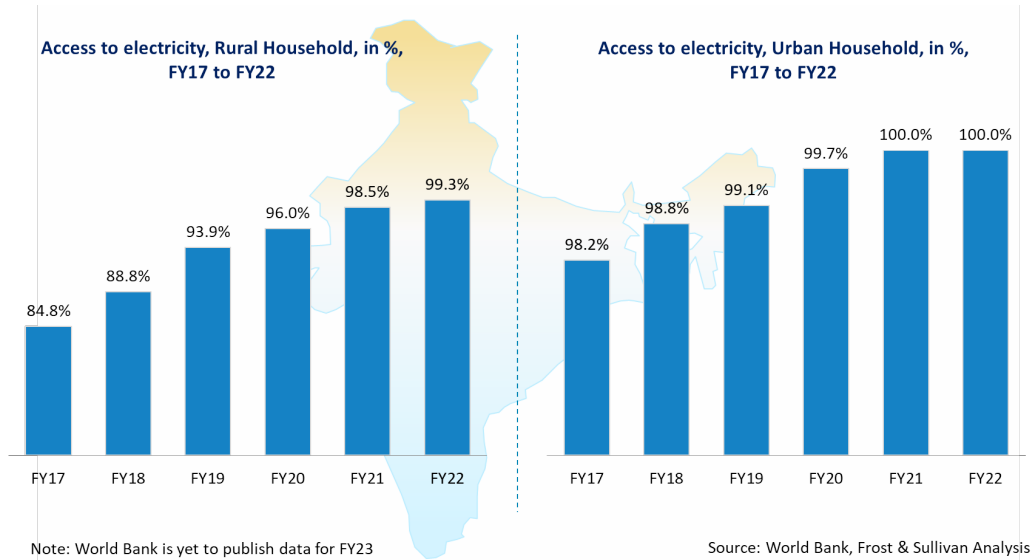
The inflation for FY24 is projected to remain below 5 percent level. It is also expected that the RBI will keep the repo rate unchanged and go for a prolonged pause. Moreover, it is expected that the central bank will downgrade inflation projections for FY24 and possibly upgrade the GDP growth forecast.

H. Growth in Electrification in India

Power is among the most critical components of infrastructure, crucial for the economic growth, industry, and welfare of nations. The Ministry of Power, GoI has made significant efforts over the past decades to turn the country from one with a power shortage to one with a surplus by establishing a single national grid, fortifying the distribution network, and achieving universal household electrification.

The government of India launched Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) in December 2014 for the rural areas with the objective of electrification of all un-electrified villages as per Census 2011. Similarly, Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA) was launched in October 2017 with the objective to achieve universal household electrification by providing electricity connections to all un-electrified households in rural areas and all poor households in urban areas of the country. The program has successfully electrified nearly all households across the length and breadth of the country. 100% of urban households and 99.3% of Indian rural households have access to electricity till the end of FY22 as per World Bank.

Exhibit 1.12 : Access to electricity, in % of household, Rural and Urban India, FY17 – FY22



India is experiencing the impacts of climate change, including rising temperatures and heatwaves. Electricity availability throughout the day would improve quality of life for the households as they would be able to adopt various colling solutions for their homes including room air conditioners.

2. India emerging as a global manufacturing hub

In FY22, India exported manufacturing goods worth USD 418 billion. It is well on its course to becoming a global manufacturing hub with the potential to export goods worth USD 1 trillion by 2030 (source: IBEF). The manufacturing sector plays a significant role in the Indian economy, accounting for 17% of GDP and employing more than 62 million people. The Indian government plans to increase the share of manufacturing in the economy to 25% by 2025 through the implementation of various programmes and policies.

Government of India has undertaken various steps to promote manufacturing sector and to boost domestic and foreign investments in India. These include introduction of Goods and Services Tax, reduction in corporate tax, interventions to improve ease of doing business, FDI policy reforms, measures for reduction in compliance burden, policy measures to boost domestic manufacturing through public procurement orders, Phased Manufacturing Programme (PMP), to name a few.

The series of measures taken by the Government to improve the economic situation and convert the disruption caused by COVID 19 into an opportunity for growth includes Atmanirbhar packages, introduction of Production Linked Incentive (PLI) Scheme in various Ministries, investment opportunities under National Infrastructure Pipeline (NIP) and National Monetisation Pipeline (NMP), India Industrial Land Bank (IILB), Industrial Park Rating System (IPRS), soft launch of the National Single Window System (NSWS), etc. An institutional mechanism to fast-track investments has been put in place, in the form of Project Development Cells (PDCs) in all concerned Ministries/ Departments of Government of India.

Keeping in view India’s vision of becoming ‘Atmanirbhar’ and to enhance India’s Manufacturing capabilities and Exports, an outlay of INR 1.97 lakh crore (over US\$ 26 billion) has been announced in Union Budget 2021-22 for PLI schemes for 14 key sectors of manufacturing, starting from FY22. With the announcement of PLI

Schemes, significant creation of production, skills, employment, economic growth, and exports is expected over the next five years and more.

The reforms taken by Government have resulted in increased Foreign Direct Investment (FDI) inflows in the country. FDI inflows in India stood at USD 45.15 billion in FY15 and have continuously increased since then, and India registered its highest ever annual FDI inflow of USD 84.84 billion in FY22. The total FDI inflows received in FY23, which includes equity inflows, reinvested earnings, and other capital sources, amounted to USD 70.97 billion.

As per Economic Survey 2021-22, inspite of Covid related disruptions, there is trend of positive overall growth of Gross Value Addition (GVA) in manufacturing sector. The total employment in this sector has increased from 57 million in the year FY18 to 62.4 million FY20.

3. India's competitiveness among the leading manufacturing economies

At present, China is world's second-largest economy and accounts for approximately 29% of the global manufacturing output. China has been the manufacturing hub of the world for decades, but the country has been gradually losing its position due to a number of factors.

Aging manufacturing hubs that rely on cheap labour are no more working for China. According to a Reuters report, many Chinese factory bosses cited that the work environment needs to change as workers do not have the same mindset as they had a few decades back. A shrinking and aging workforce in China implies that the country's labour-driven manufacturing expertise is fading, is facing stiff competition from other South Asian and Southeast Asian nations including India. Data from China's statistics bureau indicated that the country has lost 41 million workers in the last three years. China will become a 'Severely ageing' country by 2035 when 400 million of its citizens will be 60 and above, accounting for 30% of its total population. This is expected to pose a major threat to the country's labour-intensive economy.

Another factor that is hampering China's position as a global manufacturing hub is rising labour costs. Real average daily wage in CY2021 was USD 46.0 in China compared to USD 7.7 in India – this is forcing the major companies to explore cheaper manufacturing destinations such as India, Thailand, Vietnam, Bangladesh, etc.

Besides the above factors, escalating trade tensions between China and the United States have forced many major tech companies to diversify their supply chain and opt for China+1 strategy. For instance, companies like Apple and Foxconn have aggressively expanded their operations in India – a path that many large manufacturing companies are expected to follow in the coming years.

Economic development in India is gaining pace on the back of a strong domestic consumption base and increasing private investments. While India has the advantage of cheap labour and young work force, the Government in the last few years have taken multiple initiatives to make the country an attractive manufacturing destination for the world. The below sections depict India's position in comparison to other manufacturing economies such as China, Thailand, Vietnam, and Mexico on various parameters.

A. Comparison on key economic parameters

The below chart clearly indicates that demographic dividend is a clear advantage that India has over the other leading manufacturing economies. India has the largest young workforce among its peers with an average Indian being 10 years younger than a Chinese. India is the fastest growing large economy in the world and as

per IMF forecast, poised to grow at 6.0% CAGR over the next 5 years – second fastest among the above-mentioned economies.

Exhibit 1.13: Comparison on key economic parameters – India vs. China, Thailand, Vietnam, and Mexico, 2022

PARAMETERS	 INDIA	 CHINA	 THAILAND	 VIETNAM	 MEXICO	
Total Population (Million)	1,417.2	1,412.3	71.7	98.2	127.5	
Population in age 15-64 years (Million)	960.8	974.9	49.7	67.3	85.6	
Median age (Years)	27.9	38.5	39.7	32.4	29.4	
Annual GDP (USD Trillion)	3.38	18.10	0.53	0.41	1.41	
GDP Growth (%)	CY2022	6.8	3.0	2.6	8.0	3.1
	CY2027	6.0	3.6	3.0	6.7	1.8
Inflation (%)	6.7	1.9	6.1	3.2	7.9	






Source: World Bank (Data Bank), IMF (May'23), UN (Population Data), Frost & Sullivan analysis

B. Labour market comparison

India has one of the world's largest workforces, next to China, with nearly 470 million working-aged people. India is the only country where the supply of workforce is growing faster than demand. Every year, approximately 12 million young people reach employable age, which separates India from the other leading manufacturing economies. The Ministry of Skill Development & Entrepreneurship (MSDE), National Skill Development Corporation (NSDC), and Sector Skill Councils (SSCs) have taken multiple initiatives including vocational training to create technically skilled job-ready workforce to reap the benefits of demographic dividend.

In comparison to their Asian counterparts, India, and Vietnam benefit from lower labour costs. Real average daily wage in 2021 was lowest for India at USD 7.7 followed by Vietnam at USD 9.5. In the same year, China's real average daily wage was approximately 6 times higher than India at USD 46. As global manufacturers are rushing to Vietnam establish manufacturing facility to avoid US tariffs, the country is experiencing unprecedented shortage in the skilled labour force. That is where India clearly has a distinct advantage over all its Southeast Asian counterparts.

Exhibit 1.14: Labour market comparison - India vs. China, Thailand, Vietnam, and Mexico, 2022

PARAMETERS	 INDIA	 CHINA	 THAILAND	 VIETNAM	 MEXICO
Total Labour Force (Million)	467.4	780.4	38.2	55.5	57.5
Total Labour Force, Female (% of Total population)	26.8	45.2	45.8	48.0	39.0
Labour force participation rate (% of total population)	46.8	75.9	72.2	77.8	63.8
Employment in Industry (% of Total Employment)	11.7	28.7	15.7	21.4	16.5
Wage and salaried workers (% of Total Employment)	24.2	55.3	49.7	45.7	68.1
Real average daily wage 2021 (USD)	7.7	46.0	15.3	9.5	15.1






Source: World Bank (Data Bank), IMF, ILO, Statista, Frost & Sullivan analysis

C. Comparison of manufacturing ecosystem

As per the 'Global Manufacturing Risk Index 2022' by Cushman & Wakefield, China remains the most advantageous location for manufacturing among 45 countries across the continents. Recently, India has overtaken the US to become the 2nd most sought-after manufacturing destination globally, driven mainly by cost competitiveness. The rankings in the index are based on parameters such as operating conditions, cost

competitiveness, labour cost, and economic and political risks. The government’s continual focus on improving manufacturing infrastructure, improving ease of business scenario (63rd rank in 2022 compared to 142 in 2014), a growing young and vibrant workforce, and cost competitiveness have helped India to become 2nd most advantageous location for manufacturing globally.

Exhibit 1.15: Comparison of manufacturing ecosystem - India vs. China, Thailand, Vietnam, and Mexico, 2022

PARAMETERS	 INDIA	 CHINA	 THAILAND	 VIETNAM	 MEXICO
Manufacturing Value Added (% of GDP)	14.4	27.4	27.0	24.6	18.1
Total Export (USD Trillion)	0.44	3.59	0.29	0.37	0.58
Total Imports (USD Trillion)	0.72	2.71	0.31	0.36	0.60
Manufacturing Risk Index (Rank)	2	1	5	7	24
Global manufacturing output (% share)	3.3%	28.4%	1.1%	0.7%	1.5%
FDI Investments (USD Billion)	35.4	189.1	12.6	22.4	35.3
Favourable government policies	High	High	High	Medium	Medium
Developed component ecosystem	Medium	High	High	Medium	Medium

Note: Rank 1 indicates the most advantageous location for manufacturing in the world

Source: World Bank (Data Bank), Trading Economics, Macro trends, Statista, Frost & Sullivan analysis

4. India’s focus on boosting domestic manufacturing of Room Air Conditioners

A. Government policies and schemes driving manufacturing in India

The manufacturing sector of India is going through a major transformation. Government of India has undertaken several schemes/initiatives to promote India as a global manufacturing hub. Some of the notable initiatives are:

Make in India initiative: ‘Make in India’ is an initiative which was launched on 25th September 2014 to facilitate investment, foster innovation, build best in class infrastructure and make India a hub for manufacturing, design, and innovation. It was one of the unique single, vocal for local initiative that promoted India’s manufacturing domain to the world. ‘Make in India’ initiative is not the state/district/city/area specific initiative, rather it is being implemented all over the country.

Production Linked Incentive (PLI) scheme: Keeping in view India’s vision of becoming ‘Atmanirbhar’, Production Linked Incentive (PLI) Schemes for 14 key sectors have been announced with an outlay of INR 1,663 billion to enhance India’s Manufacturing capabilities and Exports. These schemes have potential for creation of high production, economic growth, exports, and significant employment over the next five years and more. As per the scheme, a total production of INR 11,500 billion is expected including INR 7,000 billion exports in the next five years.

The Production Linked Incentive Scheme for White Goods (PLIWG) (Air Conditioners and LED Lights) proposes a financial incentive of INR 62 billion to boost domestic manufacturing and attract large investments in the White Goods manufacturing value chain.

The Union Budget 2023-24 has put aside INR 80.8 billion for the production-linked incentive schemes (PLI), where the bulk of the money has been earmarked for large-scale electronics manufacturing, which includes mobile devices, pharma, auto and auto components, and food processing. INR 0.7 billion has been earmarked for the White Goods (Air Conditioners & LED Lights) segment.

Exhibit 1.16: Approved financial outlay under Production Linked Incentive (PLI) scheme

Sectors	Implementing Ministry/Department	Approved financial outlay over a five-year period (INR billion)
White Goods (Air Conditioners and LED Lights)	Department for Promotion of Industry and Internal Trade	62.4
Mobile manufacturing and specified electronic components	Ministry of Electronics and Information Technology	409.5
Automobiles & Auto Components[#]	Department of Heavy Industries	259.4
Advance Chemistry Cell ACC Battery	NITI Aayog and Department of Heavy Industries	181.0
Pharmaceuticals drugs	Department of Pharmaceuticals	150.0
Telecom & Networking Products	Department of Telecom	122.0
Food Products	Ministry of Food Processing Industries	109.0
Textile Products	Ministry of Textiles	106.8
Critical key starting materials/ drugs intermediaries, APIs	Department of Pharmaceuticals	69.4
Speciality Steel	Ministry of Steel	63.2
Electronic/Technology Products	Ministry of Electronics and Information Technology	50.0
High Efficiency Solar PV Modules	Ministry of New and Renewable Energy	45.0
Manufacturing of medical devices	Department of Pharmaceuticals	34.2
Drone and Drone components	Department of Civil Aviation	1.2
Total		1,663.1

Financial outlay for Automobiles & auto components was revised on September 2021 from INR 570.4 billion to INR 259.4 billion

Source: DPIIT, Invest India
<https://www.investindia.gov.in/production-linked-incentives-schemes-india>

Exhibit 1.17: Amount earmarked towards PLI in the 2023-24 Budget

Sectors	Implementing Ministry/Department	Amount allocated in 2023-24 Budget (INR Billion)
White Goods (Air Conditioners and LED Lights)	Department for Promotion of Industry and Internal Trade	0.7
Large scale electronic manufacturing including mobile devices	Ministry of Electronics and Information Technology	45.0
Food processing	Ministry of Food Processing Industries	15.3
Pharmaceutical product, bulk drugs and medical devices	Department of Pharmaceuticals	12.0
Auto and Auto components	Department of Heavy Industries	6.0
IT Hardware	Ministry of Electronics and Information Technology	1.5
Drone	Ministry of Civil Aviation	0.3
Textile	Ministry of Textiles	0.1
Total		80.8

Source: DPIIT, Invest India
<https://www.investindia.gov.in/production-linked-incentives-schemes-india>

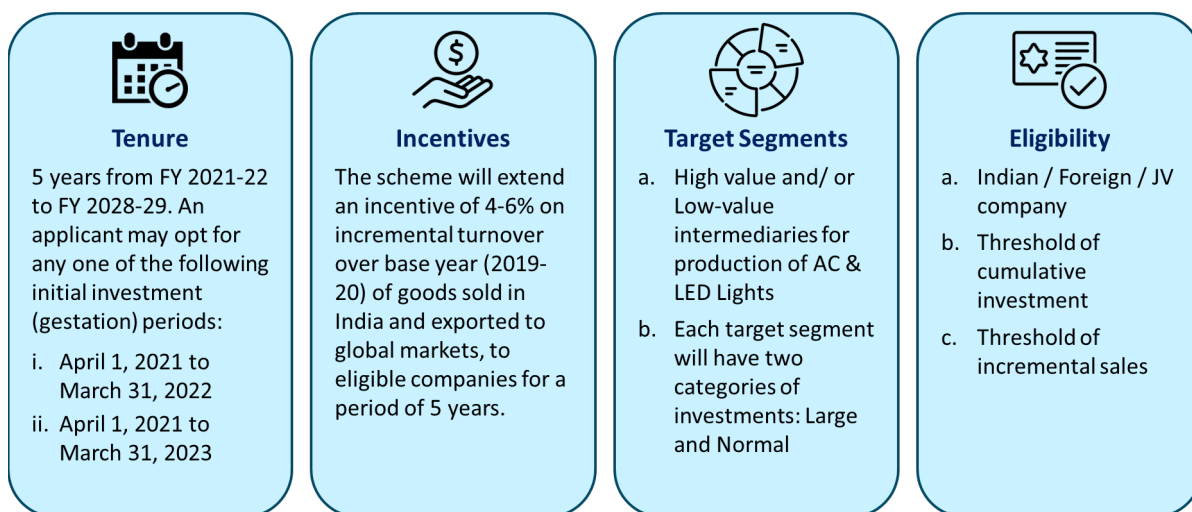
B. Production Linked Incentive (PLI) scheme for Air Conditioners

The prime objective for Production Linked Incentive Scheme for White Goods (PLIWG) (Air Conditioners and LED Lights) include removing sectoral disabilities, creating economies of scale, enhancing exports, creating a robust component ecosystem and employment generation. The scheme is being designed to develop complete component ecosystem for the Air Conditioners and LED Lights Industry in India and make India an essential part of the global supply chains. The scheme will extend an incentive of 4% to 6% on incremental sales for a period of 5 years succeeding to the base year and one year of incubation period.

Only manufacturing of the components of Air Conditioners and LED Lights will be incentivized under this scheme. 90% of Bill of Material (BoM) for ACs and 87% of BoM for LED Lights are covered under this PLI scheme. This will increase in-country value addition from 20% to 85% and create a robust component ecosystem for these industries. Over the next 5 years, the scheme is estimated to lead to a total production of about INR 2,710 billion of components of ACs and LEDs. The scheme will bring further investment in

component manufacturing eco-system of ACs and LED Lights industry to the tune of INR 59 billion. (Source: DPIIT, Ministry of Commerce & Industry)

Exhibit 1.18: Highlights of the PLI scheme for White Goods (Air Conditioners and LED Lights)



Source: DPIIT
<https://www.investindia.gov.in/pli-scheme-for-white-goods>

Exhibit 1.19: Target segments under PLI Scheme for White Goods (Air Conditioners and LED Lights)

S. No	Target Segment	Eligible Products
1	ACs (Components)	<ul style="list-style-type: none"> i. High value intermediaries of Acs ii. Low-value intermediaries of Acs iii. A combination of (i) and (ii)
2	High Value Intermediaries of ACs	<ul style="list-style-type: none"> i. Compressor ii. Copper Tube (plain and/ or grooved) iii. Aluminium Stock for Foils or Fins of Heat Exchangers
3	Lower Value Intermediaries of ACs	<ul style="list-style-type: none"> i. Control Assemblies for IDU or ODU or Remotes ii. Display panel (LCD/ LED) iii. Motors iv. Cross Flow Fan (CFF) v. Valves and Brass components vi. Heat Exchangers vii. Sheet Metal Components viii. Plastic Moulding Components

Source: DPIIT
<https://www.investindia.gov.in/pli-scheme-for-white-goods>

In November 2021, 42 companies were shortlisted as beneficiaries under the PLI Scheme for White Goods with a committed investment of INR 46 billion. The selected applicants include 26 Air Conditioner manufacturers with committed investments of INR 39 billion. Further, In June 2022, 6 more companies were shortlisted as beneficiaries under the PLI Scheme for White Goods (Air Conditioners) in the 2nd round of applications, with committed investments of INR 9 billion.

Exhibit 1.20: List of brands selected under PLI Scheme for White Goods (Air Conditioners)

S. No.	Applicant Name	Control assembly for IDU	Control assembly for ODU	Compressor	Motor	Heat Exchanger	Cross Flow Fan	Display Panel (LCD/LED)	Sheet Metal Component	Plastic Moulding Component	Valves & Brass Component	Copper Tube (plain and/or grooved)	Aluminium Stocks for Foils & Fins for Heat Exchangers	Gestation Period	Committed investment (INR Crore)
1	Daikin Airconditioning India Pvt Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓				Upto 03/ 23	538.70
2	Blue Star Climatech Ltd					✓			✓					Upto 03/ 23	156.00
3	Havells India Ltd	✓	✓			✓			✓	✓				Upto 03/ 22	112.71
4	Johnson Controls Hitachi AC India Ltd					✓	✓		✓	✓				Upto 03/ 22	100.67
5	Voltas Ltd					✓	✓			✓				Upto 03/ 23	100.00
6	IFB Industries Ltd				✓	✓			✓					Upto 03/ 22	57.00
7	Panasonic India Pvt Ltd	✓	✓			✓			✓	✓				Upto 03/ 22	50.00
8	LG Electronics India Pvt Ltd	✓	✓	✓	✓	✓				✓				Upto 03/ 23	300.00
9	Mitsubishi Electric India Pvt Ltd	✓	✓			✓	✓							Upto 03/ 23	50.00
Total															1,465.08

Source: DPIIT, Invest India
<https://dpiit.gov.in/production-linked-incentive-scheme/production-linked-incentive-scheme-pli-white-goods>

Exhibit 1.21: List of RAC ODMs selected under PLI Scheme for White Goods (Air Conditioners)

S. No.	Applicant Name	Control assembly for IDU	Control assembly for ODU	Compressor	Motor	Heat Exchanger	Cross Flow Fan	Display Panel (LCD/LED)	Sheet Metal Component	Plastic Moulding Component	Valves & Brass Component	Copper Tube (plain and/or grooved)	Aluminium Stocks for Foils & Fins for Heat Exchangers	Gestation Period	Committed investment (INR Crore)
1	Amber Enterprises India Ltd (+) IL Jin Electronics India Pvt Ltd	✓	✓		✓	✓	✓		✓	✓				Upto 03/ 22	627.51
2	PG Technoplast Pvt Ltd	✓	✓			✓	✓		✓	✓				Upto 03/ 22	321.00
3	E-Pack Durable Solutions Pvt Ltd (+) Epavo Electricals Pvt Ltd	✓	✓		✓	✓	✓	✓	✓	✓				Upto 03/ 22	358.00
4	Bhagwati Products Ltd	✓	✓		✓	✓	✓		✓	✓	✓			Upto 03/ 22	61.00
5	Virtuoso Optoelectronics Ltd	✓	✓			✓	✓		✓	✓	✓			Upto 03/ 22	50.50
Total															1,418.01

Source: DPIIT, Invest India
<https://dpiit.gov.in/production-linked-incentive-scheme/production-linked-incentive-scheme-pli-white-goods>

Exhibit 1.22: List of RAC Component suppliers selected under PLI Scheme for White Goods (Air Conditioners)

S. No.	Applicant Name	Control assembly for IDU	Control assembly for ODU	Compressor	Motor	Heat Exchanger	Cross Flow Fan	Display Panel (LCD/LED)	Sheet Metal Component	Plastic Moulding Component	Valves & Brass Component	Copper Tube (plain and/or grooved)	Aluminium Stocks for Foils & Fins for Heat Exchangers	Gestation Period	Committed investment (INR Crore)
1	Hindalco Industries Ltd											✓	✓	Upto 03/ 23	539.00
2	Mettube India Pvt Ltd											✓		Upto 03/ 23	300.21
3	Napino Auto and Electronics Ltd	✓	✓											Upto 03/ 23	66.60
4	Lucas-TVS Ltd	✓	✓		✓									Upto 03/ 23	54.00
5	Nidec India Pvt Ltd				✓									Upto 03/ 22	51.92
6	Dixon Devices Pvt Ltd	✓	✓											Upto 03/ 22	51.00
7	Syrma Technology Pvt Ltd	✓	✓											Upto 03/ 23	51.00
8	VVDN Technologies Pvt Ltd	✓	✓		✓				✓	✓				Upto 03/ 23	51.00
9	East India Technologies Pvt Ltd	✓	✓						✓	✓				Upto 03/ 23	50.00
10	Magnum MI Steel Pvt Ltd	✓	✓		✓	✓			✓					Upto 03/ 23	50.00

11	Sun Home Appliances Pvt Ltd	✓	✓	✓	✓	✓	✓	✓	Upto 03/ 23	50.00
12	Triton Valves Climatech Pvt Ltd							✓	Upto 03/ 23	50.00
13	Adani Copper Tubes Ltd							✓	Upto 03/ 23	408.00
14	Starion India Pvt Ltd	✓	✓		✓	✓	✓	✓	Upto 03/ 23	50.10
15	Kaynes Technology India Ltd	✓	✓				✓	✓	Upto 03/ 23	50.00
16	Swaminathan Enterprises Pvt Ltd			✓					Upto 03/ 23	50.00
Total										1,922.83

Source: DPIIT, Invest India

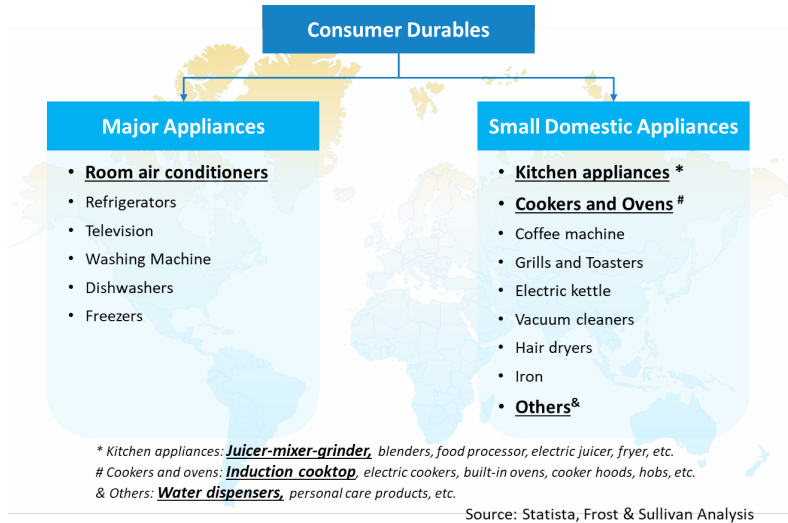
<https://dpiit.gov.in/production-linked-incentive-scheme/production-linked-incentive-scheme-pli-white-goods>

CHAPTER 2: OVERVIEW OF GLOBAL AND INDIAN CONSUMER DURABLES MARKET

1. Global consumer durables industry

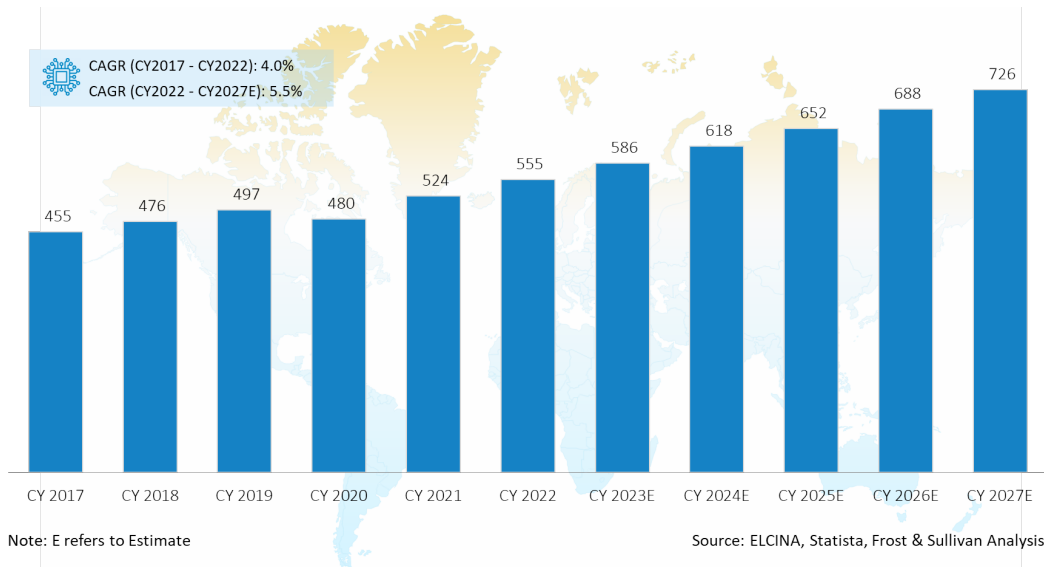
The global consumer durables industry refers to the sector that produces and sells durable goods for personal and household use. Consumer durables are long-lasting products that are intended to be used over an extended period, typically lasting for several years. This industry encompasses a wide range of products, including room air conditioner, refrigerator, television, washing machine, air cooler, audio systems, etc., as well as small home/ kitchen appliances.

Exhibit 2.1: Consumer durables industry, segmentation by product categories - major and small appliances



A. Market overview of global consumer durables industry

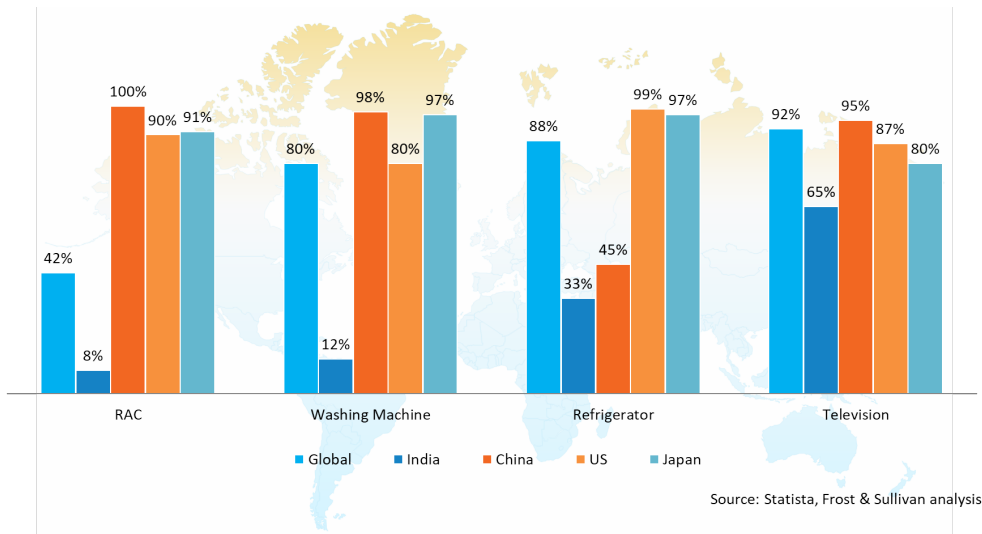
Exhibit 2.2: Global consumer durables industry size, value in USD billion, growth in %, CY2017-CY2027E



The COVID-19 pandemic was unprecedented and caused staggering effects on the consumer durables market globally, which was experiencing lower than anticipated demand across regions in CY20. The market

witnessed a robust growth of approximately 9.2% in CY21; however, there was an unexpected slowdown in CY22 and a drop in sales until June 2022 owing to the Ukraine-Russia war and various other factors. The consumer durables market clocked in at USD 555 billion in CY22, with a growth rate of 6% compared to CY21; and it is expected to grow at a rate of 5.5% in the next 5 years.

Exhibit 2.3: Comparison of consumer durables penetration in India vs other countries, CY2022



Globally, the consumer durables industry has been evolving due to the rapid rate of urbanisation and the growth of a young population, along with rise in disposable income, a changing lifestyle, and the consumption patterns of households. Penetration rates for consumer durables in the rest of the world varies significantly depending on regional and economic factors, however, developed economies have generally show higher consumer durable penetration levels due to higher average incomes, greater purchasing power, and more mature consumer durables markets.

Television has the highest global average penetration of 92% in CY2022, followed by refrigerators and washing machines at 88% and 80%, respectively. The global penetration of room air conditioners is approximately at 42%, which is rapidly increasing due to the change in weather conditions and increasing adoption across the world. The penetration of RAC is significantly higher in other key economies such as China (100%) and USA (90%) when compared to India which has achieved only 8% penetration till date.

B. Consumer durable market segmentation by product categories

Refrigerator accounts for the maximum share of the total consumer durable market globally, contributing to around 23% by value, followed by SDA, television, washing machine and room air conditioners.

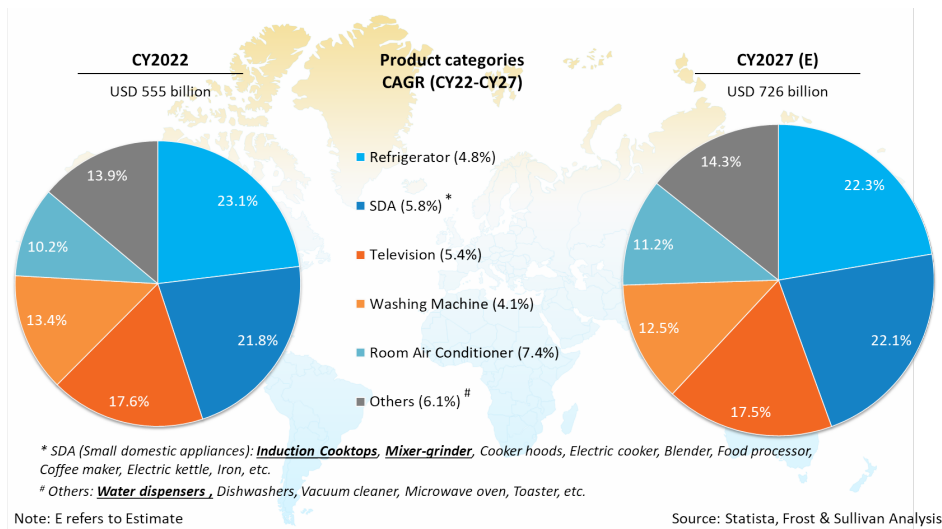
Room Air conditioners (RAC): The AC industry is anticipated to experience tremendous growth due to the rising global temperatures and humidity levels, as well as the increasing adoption of air conditioners among developing regions. The introduction of technologically improved air conditioners, such as those with inverters and air purification technologies, is expected to have a favourable impact on the air conditioner industry.

Lower total cost of ownership (TCO) is a significant reason for the higher penetration of room air conditioners in the global market nowadays. The total cost of ownership includes not only the initial purchase price but also the ongoing expenses associated with operating, maintaining, and servicing the air conditioner.

Modern air conditioners often come with features that simplify maintenance such as easily removable filters, and self-cleaning functions. Energy-efficient air conditioners have gained popularity due to their ability to lower energy consumption and reduce electricity bills. They are designed to operate more efficiently, utilizing less power while delivering the desired cooling output.

The most prominent global players include Daikin, Haier, Gree, Midea, Hitachi, LG, and Carrier. Over the next five years, the market is projected to expand by a CAGR of 7.4% by value from USD 57 billion in CY22 to USD 81 billion in CY27.

Exhibit 2.4: Global consumer durables market - Segmentation by product categories, value in USD billion, growth in %, CY2022-CY2027E



Television (TV): The TV sales are driven by falling prices and demand for smart TVs, especially 4K and HDR. As screen sizes and device sophistication increase at the high end, traditional and smart TV price points at the low end is decreasing. Korea's two largest TV makers, LG and Samsung, are the global leaders in TV sales. Other prominent players include Sony, Hisense, TCL, and Xiaomi. The market is expected to grow at a rate of 5.4% over the next 5 years from USD 98 billion in CY22 to USD 127 billion in CY27.

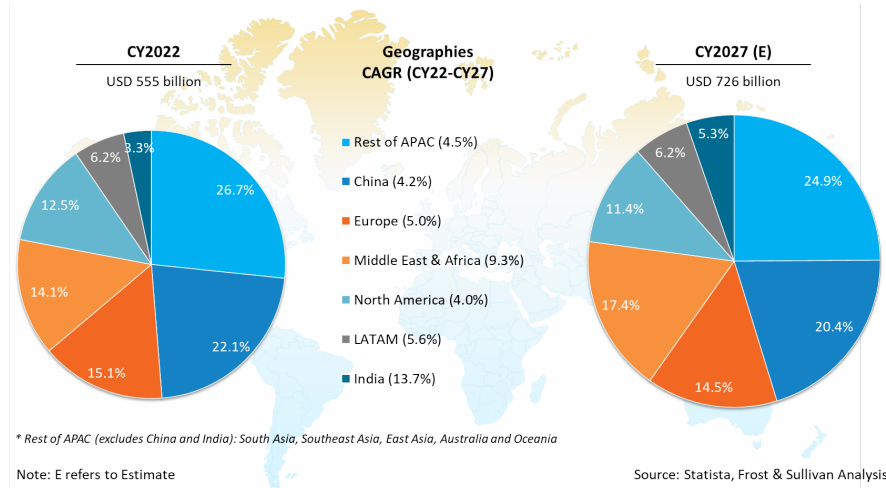
Refrigerator: Globally, the refrigerator has become an essential household appliance. Various storage options, such as multiple doors and sections for specific items, is a developing trend in the refrigerator market. In addition, technological advancements in refrigerators are a significant trend that is boosting the global market share for refrigerators. The most prominent manufacturers include LG, Haier, Kitchen Aid, Electrolux, Whirlpool, Samsung, Bosch, Panasonic, Kelvinator, Hisense, Midea, and Hitachi. Over the next five years, the global refrigerator market is anticipated to grow at a CAGR of 4.8% from USD 128 billion in CY22 to USD 162 billion in CY27.

Washing Machine: Washing machines can be classified as fully automatic, semi-automatic, and others, and the different technologies are top-load and front-load that are used for residential and commercial applications. Manufacturers of washing machines are continually producing energy-efficient products to reduce their carbon footprint and enable consumers to save energy. Whirlpool, Electrolux, Samsung, Haier, Panasonic, and Bosch are among the most significant market participants. The market for washing machines is anticipated to expand at a 4.1% CAGR over the next five years from USD 74 billion in CY22 to USD 91 billion in CY27. Rapid urbanisation is a key contributor to the growth of the washing machine market globally.

C. Consumer durable market segmentation by geography

Developed regions such as the North American market are mature, homogeneous, and highly penetrated, and hence growth will be driven by replacement demand. Large households provide enough space for multiple appliances, including large and small appliances. The European appliance market is fragmented and characterised by widely divergent consumer patterns across nations and a large number of companies, brands, and retailers.

Exhibit 2.5: Global consumer durables market - Segmentation by geography, value in USD billion, growth in %, CY2022 and CY2027E



Continuous industry consolidation is the result of structural overcapacity and price pressure, with participants seeking to achieve economies of scale. Emerging economies, rapid urbanisation, limited living spaces, and an expanding middle class characterise the APAC region. China is the largest household appliance market in the world, and domestic manufacturers dominate the Chinese market. As their affluence increases, consumers in emerging markets prioritise refrigerators, washing machines, and air conditioners. The popularity of energy-efficient products and foreign premium brands is increasing in this region.

Over the past five years, the consumer durables market in India has experienced significant growth. In the near future, the market is anticipated to experience growth acceleration fuelled by rising rural consumption, a shorter replacement cycle, increased retail penetration, and the availability of numerous brands and products at various price points.

D. Growth drivers of global consumer durable industry

Rising Disposable Incomes and Middle-Class Expansion: Increasing disposable incomes, particularly in emerging economies, have contributed to the growth of the consumer durables market. As middle-class populations expand, consumers have more purchasing power and are able to afford durable goods such as appliances, electronics, and furniture.

Changing Consumer Lifestyles and Preferences: Evolving consumer lifestyles, urbanization, and demographic shifts will likely influence the demand for consumer durables. As consumers seek convenience, comfort, and improved living standards, there is a growing preference for products that cater to these needs, such as smart home devices, connected appliances, and efficient and ergonomic designs.

E-commerce and Digitalization: The rise of e-commerce and digitalization has transformed the consumer durables market. Online platforms provide consumers with convenience, access to a wide range of products, and competitive pricing. E-commerce has expanded the reach of consumer durables, allowing manufacturers and retailers to tap into global markets and reach a larger customer base.

Uptick on infrastructure spending: Infrastructure spending has begun to rebound from the pandemic and the global financial crisis and is expected to grow rapidly. Economic growth is frequently connected to investment in the construction industry, which plays a significant role in the growth of consumer durable industry. Construction of new residential buildings and housing projects creates demand for consumer durables such as RACs, appliances, furniture, lighting fixtures, and other home-related products. Homebuyers often need to furnish and equip their new homes, leading to increased sales in the consumer durable industry.

E. Key market trends of global consumer durable industry

Increasing penetration of consumer durable products: Consumer electronics has mixed penetration across the world, depending on the specific product category. The increased use of a broader range of consumer electronics in the household sector has helped the growth of the global consumer electronics market. Consumers are becoming more interested in portable, weightless, and advanced technologies. As a result, the use of small electric components is propelling the global consumer electronics industry forward.

Demand for Smart Home Solutions: The concept of smart homes is gaining traction, driving the demand for consumer durables that can be seamlessly integrated into smart home ecosystems. Consumers seek interconnected systems that enable remote monitoring, energy management, and enhanced security.

Health and Hygiene Considerations: The COVID-19 pandemic has heightened consumer awareness about health and hygiene. Products such as touchless appliances, UV sanitization devices, and air quality monitors will see increased demand as consumers prioritize cleanliness and well-being.

APAC region to witness a faster growth: The penetration of consumer durables in the US (~90%) and Europe region (>85%) is high compared to APAC (~ 40-50%). The penetration of consumer durables in APAC region is increasing fast, due to increasing disposable income of the population in the region which has resulted in the high consumption of home appliances in countries such as India, China and other South-East Asian countries. The APAC region is expected to dominate the global market due to presence of global players such as Samsung, LG, Sony, Panasonic in countries such as Japan, China and Korea.

Technology innovation around energy efficiency: Manufacturers are significantly investing in the integration of various digital technologies in consumer electronic products and are increasingly focusing on providing consumers with high-quality experiences. Technological innovations are set to transform the global consumer durables industry with profound impacts on both energy efficiency and ease of operations. As more people across the world can afford to buy and use goods like air conditioners, they will benefit from healthier environments as well as increased comfort and convenience. Connected smart appliances deliver real-time data that is easy to interpret and reduces energy consumption.

2. Indian consumer durables industry

In India, the consumer durables market has grown steadily during the last five years (FY18 to FY23) at a CAGR of 10%. Looking ahead, the market is predicted to accelerate growth due to rising urban and rural penetration, shorter replacement cycles, higher retail penetration, and a diverse range of brands and products at various

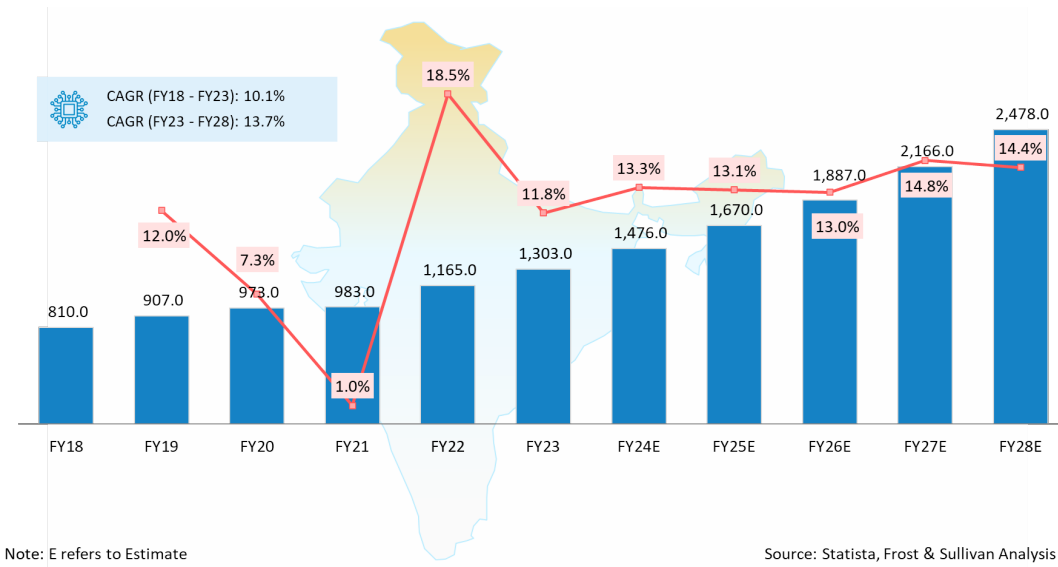
price ranges. With an increase in consumer durable product purchases and advantageous government efforts such as 'Make in India' and the National Policy on Electronics, India also has the potential to become a global manufacturing hub.

A. Overview of Indian consumer durables industry

A developing Indian economy, greater consumer spending power, and improved access to high-quality items at reasonable prices have transformed India’s consumer durables market. Rapid urbanization, a huge developing middle class, and easy digital access have all contributed to the expansion of consumer durables. The overall market size of consumer durables market for FY23 is estimated at INR 1,303 billion, and the market is expected to grow at an 13.7% CAGR until FY28.

Consumer spending is being fuelled by innovative retail marketing strategies such as exchange programs, bundled offers, appealing discounts, freebies, and extended warranty services. The availability of simple financing alternatives gives consumers more purchasing power. Also, factor such as energy efficiency and longevity of product has a direct bearing on TCO, particularly for appliances that consume significant amounts of energy, such as refrigerators, air conditioners, and washing machines. Energy-efficient models consume less electricity, resulting in lower operational costs and reduced energy bills over the lifespan of the product. Accelerated local production of electronic items to meet rising domestic demand will hasten the development of the industry’s domestic supply base during the next five years.

Exhibit 2.6: Indian consumer durables market size, value in INR billion, growth in %, FY18-FY28E



B. Indian consumer durable market segmentation by product categories

Room Air Conditioners (RAC): Indian Room Air Conditioners (RAC) market is driven by the increase in disposable income, urbanization, electrification, and easy consumer financing. Tightening of energy efficiency norms has led to the introduction of inverter technology, resulting in reduction of operating costs. This has resulted in more consumers opting for RACs. Government initiatives such as PMP and PLI will result in higher indigenisation of the RAC value chain, resulting in lower costs for the consumers, driving faster growth in demand. Penetration of RACs in Indian households is around 8% in 2022, implying that there is considerable scope for growth. Indian RAC market is highly fragmented with varied set of players – global, indigenous and

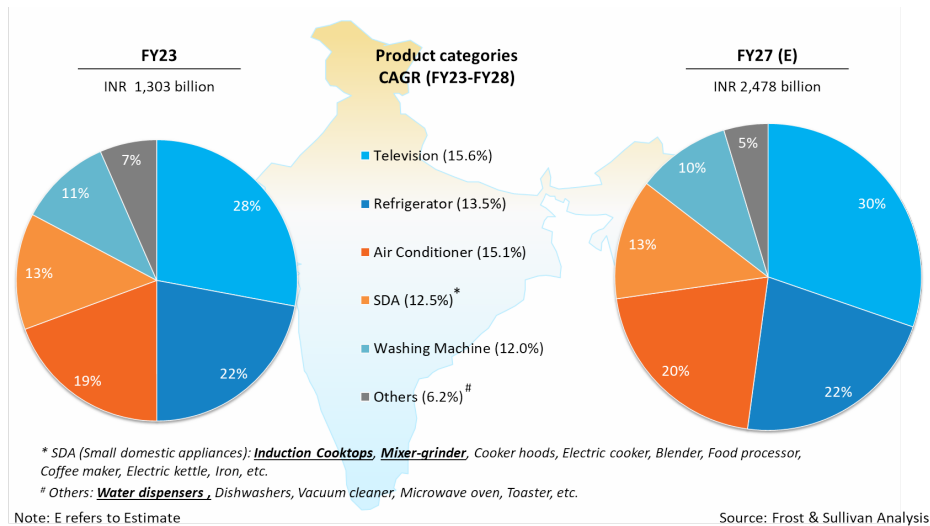
importers – selling a wide range of products in the market. Voltas, Llyod, Daikin, and LG are the marker leaders and have a long-standing presence in India. The revenue market is forecast to grow at a CAGR of 15.1% between FY23 and FY28.

Television: The TV industry has seen dramatic technological advancements over the last decade, with the introduction of panel televisions resulting in the phase-out of cathode ray tube (CRT) televisions. TV penetration in India is approximately 65%, which is the highest among the consumer electronics. Television is one of India's fastest growing consumer electronics products. This is demonstrated by the fact that while the total number of houses in the country increased by just 3% in FY20 while the TV market expanded by 8% during the same period. The revenue market is forecast to grow at a CAGR of 15.6% between FY23 and FY28.

Refrigerators: Rise in number of nuclear families, easy availability of credit, evolving lifestyle, introduction of new models, uninterrupted electricity availability, technology advancement and increasing consumer awareness are driving the growth of refrigerators in India. Penetration of refrigerators in India currently is around 33%, implying sufficient head room for growth. The refrigerator market is expected to grow at a rate of 13.5% between FY23 and FY28.

Washing Machines: Indian washing machines industry has been witnessing sustained and stable growth. Dual income families, growing disposable incomes, and paucity of time have been instrumental in driving the demand for washing machines. Penetration of washing machines in India is currently 15% in 2022 implying high scope for growth. Increasing appreciation for the value that the product delivers, affordable pricing, and innovative products has aided the strong growth of washing machines in India. The washing machine market is expected to grow at a rate of 12% between FY23 and FY28.

Exhibit 2.7: Indian consumer durables market - Segmentation by product categories, value in INR billion, growth in %, FY23-FY28E



C. Growth drivers of consumer durable industry in India

Increasing household income and discretionary spend: India’s per capita PPP is steadily growing, which is an important enabling factor for buying home appliances. India’s GDP per capita PPP was at USD 4,216 in CY10 and reached USD 7,242 in CY21. This growth in per capita income would support the growth of the consumer durables market in the long-term.

The collective purchasing power of the Indian middle-class families would make India into one of the world's most vital markets; this budding segment of the population and its improved spending capacity might fuel creativity and create jobs, enhancing economic growth. The growth of people's purchasing power in India is the essential driver of the consumer durable industry.

Rising temperature: Rising temperatures is likely to have a significant impact on the growth of the consumer durables market, particularly the room air conditioning market. As temperatures rise, the demand for cooling solutions, including room air conditioners, is likely to increase. Consumers will seek relief from hot weather conditions, leading to higher adoption rates of air conditioning units. This increased demand for cooling solutions can drive the growth of the room air conditioning market.

Rising temperatures in regions that traditionally had milder climates may also lead to the expansion of the room air conditioning market into new geographies. Areas that previously had lower demand for air conditioners may experience a surge in adoption as hotter temperatures become more prevalent.

Regulatory landscape – a positive factor for domestic manufacturers: India is seeing major changes in its policies, particularly those related to the regulatory and business environment. The government is making some long-due reforms leading to the recognition in the 'Ease of Doing Business' rankings of India on a global level. The appliance and consumer electronics sector and the upcoming national policy for electronics (NPE) will further bring about the major policy changes for the industry. The India growth story is set for a major push given the low penetration levels of consumer durables. While the cost of finance has gone up with numerous regulatory and energy efficiency parameters, GST has led to benefits being passed on to consumers. Also, regulations related to trade, import/export, and tariffs can impact consumer durable manufacturers. Changes in trade policies and regulations create opportunities for manufacturers, depending on factors such as market access, tariff rates, and compliance requirements.

Low-cost of production in India: In recent years, the Indian government has made a number of critical decisions to strengthen the country's manufacturing ecosystem. As the production volume increases, the cost per unit of production tends to decrease. Larger-scale production allows for better utilization of resources. Effective supply chain management, optimized inventory management, and strong supplier relationships, helps in further reducing the cost. Availability of low-cost inputs, access to skilled and semi-skilled labour at competitive wages, government incentives, efficient product process, further aids in low-cost production. All these factors have enabled companies to lower the cost of consumer durables for end customers. The price point for these products has corrected from a few years ago due to the low cost of products combined with rising income levels. The new Indian customers can afford to purchase consumer durables at their income levels.

Rise in Nuclear households: In India, which is set to be the youngest in the world, more than 45% of the population is under the age of 25. Rising urbanisation and a rise in the workforce in Tier I cities have resulted in an increase in nuclear households. The share of nuclear families has risen steadily over the last two decades to 70%, with a forecast increase to 74% by 2025. This ongoing transition is significant for marketers since nuclear families spend 20% to 30% more per capita than coupled families, which drives the consumer durable industry¹.

¹ BCG: The New Indian - The Many Facets of a Changing Consumer, 2017

D. Key market trends of consumer durable industry in India

Increasing Adoption of Smart Home Appliances: The demand for smart home appliances is on the rise in India. Consumers are increasingly embracing connected devices and IoT-enabled appliances that offer convenience, automation, and remote-control features. Smart TVs, smart air conditioners, smart refrigerators, and smart home security systems are witnessing significant growth in the Indian market.

Surge in Online Sales: The consumer durables market in India has witnessed a surge in online sales. E-commerce platforms have gained widespread acceptance due to their convenience, wider product range, and attractive deals. Online channels provide a platform for consumers to compare prices, read reviews, and make informed purchasing decisions. The trend of online sales is expected to continue growing in India.

Focus on After-sales Service and Customer Support: The Indian consumer durables market has witnessed a greater emphasis on after-sales service and customer support. Consumers prioritize brands that offer reliable after-sales service, easy availability of spare parts, and timely resolution of queries and complaints. Companies that provide efficient customer service and build a strong service network tend to gain a competitive edge.

Growing Interest in Health and Wellness Appliances: Indian consumers are increasingly conscious of their health and wellness. This has led to a growing demand for appliances that cater to this segment, such as air purifiers, water purifiers, air humidifiers, and fitness devices. As consumers prioritize their well-being, the market for health and wellness appliances is expected to continue growing.

Increasing financing options and no-cost EMI schemes: The growth of Indian electronics market is driven by technological advancements and rising disposable income. The Indian consumer market has been cautious, with a mix in purchase of small and large consumer appliances. In recent years, due to the availability of no-cost EMI as a payment method, the purchase behaviour of Indian consumers has shifted significantly. In addition, trends such as digitalization and new business models have enabled India's financial institutions to reach consumers in rural and semi-urban areas and meet their growing demand. Various brands are also partnering with consumer finance firms, which not only benefits consumers but also increases brand visibility in smaller markets. eCommerce is no longer restricted to small-value purchases. Easy finance options are provided by eCommerce companies and have encouraged the purchase of large-value products. Attractive discounts offered online act as a key driver. Consumers visit physical stores, select a product, and order it online to reap the discount benefits.

E. Level of localization across consumer durable industry in India

The Indian consumer durables industry has seen supply-chain disruption in all major product categories because of heightened supply chain localization. Although, dependency on external factors can be reduced, achieving efficiencies in supply chain, operational procedures, inventory volumes, and logistics. Localisation of components for air conditioners, TV, washing machine, refrigerators, etc, at scale, can help cut the cost gap with China and can also help stir up the micro, small, and medium enterprise (MSME) sector.

Due to the recent surge caused by the pandemic and the trade war, refrigerator manufacturers have gone on a localisation drive. INR 75bn worth of investments were made in the past five years for the purpose of capacity expansion, and new capacity deployment has started in the industry. The government's refined duty

structure has also led to encouragement of backward integration of the production component amongst the manufacturers, with a stronger push towards domestic manufacturing.

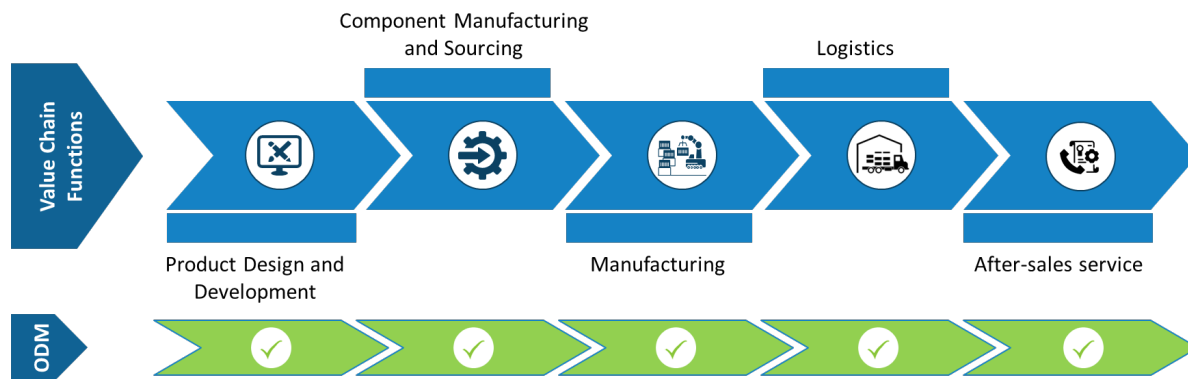
Incentives offered by the government in the form of PLI scheme, Industry Development Policies, etc. is going to provide a necessary boost to the much-needed localization in India. Imports of consumer electronics have been decreasing and exports have been rising in India, and this trend is expected to continue. Many companies, domestic and international, have made substantial investments in setting up manufacturing bases in India, to cater to the large domestic market and to take part in the global supply chain.

CHAPTER 3: OVERVIEW OF INDIAN CONSUMER DURABLES ODM MARKET

1. Introduction to Original Design Manufacturer (ODM) model

Under this model, ODM companies design products as per the high-level specifications or product requirements shared by the brands. ODM companies then source components, carry out fabrication and assembly, test the final product, and undertake logistics and after sales services related activities in some cases. This model helps the ODM companies to have deeper and long-term business relations with the brands. This is a high margin business and comes at a premium for good designs.

Exhibit 3.1: Original Design Manufacturer (ODM) business model



Source: ELCINA, Frost & Sullivan

A. Emergence of ODM Model in the Consumer Durables industry

Globally, the consumer durables market is competitive, and manufacturers are constantly exploring new ways to optimize their production processes and reduce costs. Hence, brands have started to engage ODM players to leverage their manufacturing capabilities and cost advantages. ODM companies are becoming globally relevant today due to several key factors such as:

- **Globalization and Market Expansion:** With the increasing globalization of markets, companies are seeking to expand their operations beyond their domestic boundaries. ODM companies provide an efficient and cost-effective solution for companies to access global markets. By leveraging the manufacturing capabilities of ODMs, companies can quickly enter new markets and meet the demand of international customers.
- **Cost-Effectiveness:** ODM companies are often located in regions with lower production costs, such as China, Southeast Asia, and other emerging economies. This cost advantage allows companies to reduce manufacturing expenses and improve profit margins. Outsourcing production to ODMs helps companies remain competitive in the global marketplace by accessing affordable manufacturing without compromising on quality.
- **Time-to-Market Advantage:** ODM companies have streamlined processes and efficient production capabilities, enabling companies to reduce their time-to-market. By partnering with ODMs, companies can accelerate their product development cycles, respond quickly to market demands, and gain a competitive advantage in fast-paced industries.
- **Supply Chain Management:** ODM companies have established extensive networks of suppliers, manufacturers, and distributors across different regions. They have the expertise to navigate complex

global supply chains efficiently, ensuring timely sourcing of materials, streamlined production, and effective distribution. This capability simplifies the logistics and reduces the complexities associated with global manufacturing and distribution for companies.

- **Manufacturing Expertise:** ODM companies specialize in manufacturing and have developed expertise in producing a wide range of products. They possess advanced manufacturing capabilities, efficient production processes, and quality control systems. This expertise ensures that companies receive high-quality products that meet international standards. ODMs' manufacturing prowess and experience make them a reliable partner for companies looking to outsource their production.
- **Technology adoption:** Technology and product dynamism in the consumer durables industry necessitates ongoing investments in innovation. Innovation in business models aimed at enhancing productivity and profitability have been driving consumer durable brands to embrace the services of ODM companies.

The increasing demand for consumer durables in India's increasing consumption economy has brought the country's original design manufacturer (ODM) business into the limelight. Propelled by the need for import substitution, and faster ramping up of domestic manufacturing of consumer durables have attracted immense attention from both industry and policymakers. Favourable policy initiatives in recent years, along with the changing dynamics in the global manufacturing landscape, have shifted the focus onto India as a preferred destination for investments in the manufacturing sector.

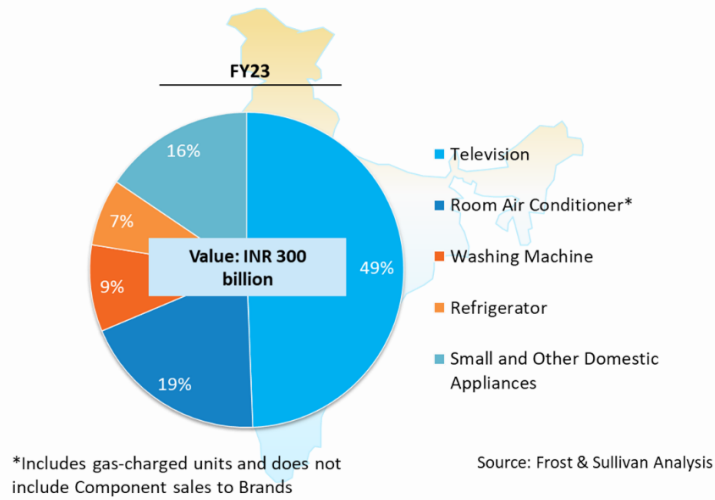
Consumer durable brands which earlier were either importing or manufacturing the products in-house, are now inclined to utilise the expertise of ODM companies. This is because of the large investment requirements to cater to the growing domestic and export demand, which they want to avoid and engage with an ODM partner who can use its expertise to quickly ramp up the manufacturing capacity to help the brands meeting the market demand with desirable quality.

From the ODM business perspective, The Indian RAC and SDA manufacturing industries pose higher barriers to new entrants. Typically, integration into the supply chain of the RAC and SDA brands involves a long gestation period, as such integration often entails a lengthy approval process and requires long-term relationships with them to be developed and maintained over several years. Further, the manufacturing infrastructure for these industries requires an initial capital investment, which can act as an entry barrier to new ODM players in these industries. Given the nature of the products being manufactured and the complexity of the manufacturing processes involved, RAC and SDA ODM companies need to have strong technological expertise, with the ability to continually innovate in a cost-efficient manner and deliver quick turnaround times. Products in these industries are required to meet certain BEE standards, and to meet such requirements, RAC and SDA ODM companies must continually refine their product design. Cost-efficient innovation and the continuous refinement of designs require considerable investment in R&D, which acts as further barriers to new entrants. High initial capital expenditure and investment in R&D provide economies of scale to existing RAC and SDA ODM companies such as EPACK Durable in the long term, further disincentivising new entrants.

B. Size of Indian Consumer Durables ODM Industry

Based on interactions with the industry associations, experts and a select ODM companies, Indian Consumer Durables ODM market has been estimated at approximately INR 300 billion FY23. Television is the largest segment accounted for 49% market share, followed by Room Air Conditioner (19% share), Washing Machines (9% share), Refrigerators (7% share), and small and other Domestic Appliances (16% share).

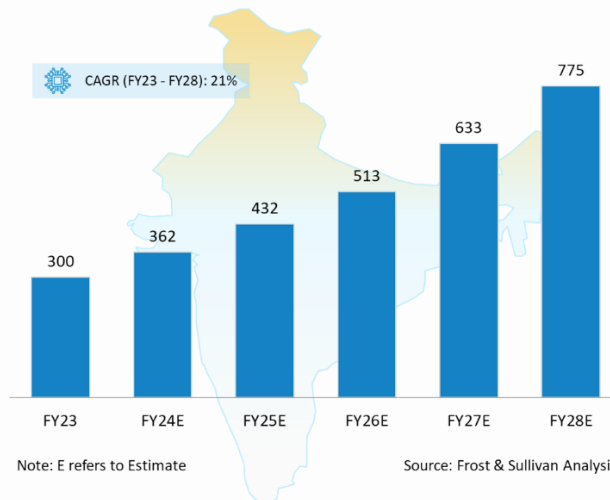
Exhibit 3.2: Size of Indian Consumer Durables ODM Market, In INR billions, FY23



C. Outlook of Indian Consumer Durable ODM market

Due to multiple favourable factors as mentioned in the earlier part of this chapter and growing export opportunities, Indian Consumer Durables ODM market is expected to grow at a 21% CAGR over the next 5 years to become INR 775 billion market by FY28. Refrigerator would be the fastest growing segment followed by Washing Machines, Room Air Conditioners, Television, and small and other Domestic Appliances segments.

Exhibit 3.3: Size of Indian Consumer Durables ODM Market, In INR billions, FY23-FY28E



D. Competitive landscape of the Indian Consumer Durables ODM market

The Indian Consumer Durables ODM market is catered by 50+ companies at different capacities. While the large ones manufacture multiple consumer durable products, the smaller ones primarily cater to one to two segments. Backward-integration capabilities also vary by the size of the ODM companies. While companies like EPACK Durable have the largest backward integrated facilities under one roof for Room Air Conditioner, the smaller ones rely on local sourcing of components for assembly of products. The prominent ODM companies in the Indian ODM market are EPACK Durable, Dixon Technologies, Amber Enterprises, PG Electroplast, MIRC Electronics, Radiant Appliances, etc.

Exhibit 3.4: Portfolio of India's leading Consumer Durables ODM companies

Key ODM players	Room Air Conditioner	Television	Refrigerator	Washing Machine	Small and Other Domestic Appliances
EPACK Durable Ltd	✓				✓
Dixon Technologies (India) Ltd		✓	✓	✓	
Amber Enterprises India Ltd	✓				
PG Electroplast Ltd	✓	✓		✓	✓
MIRC Electronics Ltd	✓	✓	✓	✓	✓
Vierra Electronics Pvt Ltd		✓		✓	✓
GEM Appliances Pvt Ltd			✓	✓	✓
Virtuoso Optoelectronics Ltd	✓				✓
Radiant Appliances & Electronics Pvt Ltd		✓			
Videotex International Pvt Ltd		✓			
Bhagwati Electronics Pvt Ltd		✓		✓	
Bharat FIH Ltd		✓			
Noble Eletronics Pvt Ltd		✓			✓
Vimal Enterprises Pvt Ltd					✓
Elin Electronics Ltd					✓
Suvidha Appliance Industries Pvt Ltd (Canbara)					✓
Vardhman Enterprises Pvt Ltd					✓
Genus Electrotech Pvt Ltd					✓
RS Polymers Pvt Ltd					✓
Veeline Industries Ltd					✓
Vending Updates India Pvt Ltd (Atlantis)					✓

Source: Frost & Sullivan Analysis

- EPACK Durable, Amber Enterprises, and PG Electroplast are the leading ODM companies for Room Air Conditioners. EPACK Durable operates in the RAC industry and the SDA industry which are sub-sets of the consumer durables market.
- Dixon Technologies, Radiant, Videotex and Bhagwati are the leading ODM companies for Television.
- Dixon Technologies, PG Electroplast, Vierra, and MIRC Electronics are the leading ODM companies for Washing Machines.
- GEM Appliances, MIRC Electronics, and Dixon Technologies are the leading ODM companies for Refrigerators.
- Vierra, Genus, Vimal, and PG Electroplast are the leading ODM companies for Air Coolers.
- EPACK Durable, Veeline Industries, Vending Updates, Penguin are the leading ODMs for Water Coolers
- EPACK Durable, Suvidha Appliances and Vardhman are the leading ODM companies for Induction Cook Tops (ICTs).
- EPACK Durable, Elin, Suvidha Appliances and Vardhman are the leading ODM companies for Mixer-Grinders.

CHAPTER 4: OPPORTUNITIES IN THE ROOM AIR CONDITIONER ODM MARKET

1. Overview of global Room Air Conditioner (RAC) market

The global room air conditioner (RAC) market attained pre-covid level in CY2022 and is poised to grow at a healthy pace in the near to medium term. Increasing disposable income levels, ease of financing, availability of multiple brands, and improved supply chain are driving growth of the global RAC market. Increasingly poor air quality and warmer climatic conditions are further bolstering the global RAC demand. While first-time purchase contributes a large percentage of this demand, replacement sales are also increasing owing to the availability of energy-efficient inverter and smart ACs.

A. Global Room Air Conditioner (RAC) market size

After a steep drop in CY2020 due to Covid-19 pandemic, the global RAC market continued its growth momentum in CY2022 and is expected to grow at a CAGR of 5.4% over the next 5 years. 104.7 million Room Air Conditioners worth USD 57 billion have been sold globally in CY2022. The sales volume is expected to reach to 136.5 million units by CY2027.

Exhibit 4.1: Global room air conditioner market size, volume in million units, growth in %, CY2017-CY2027E

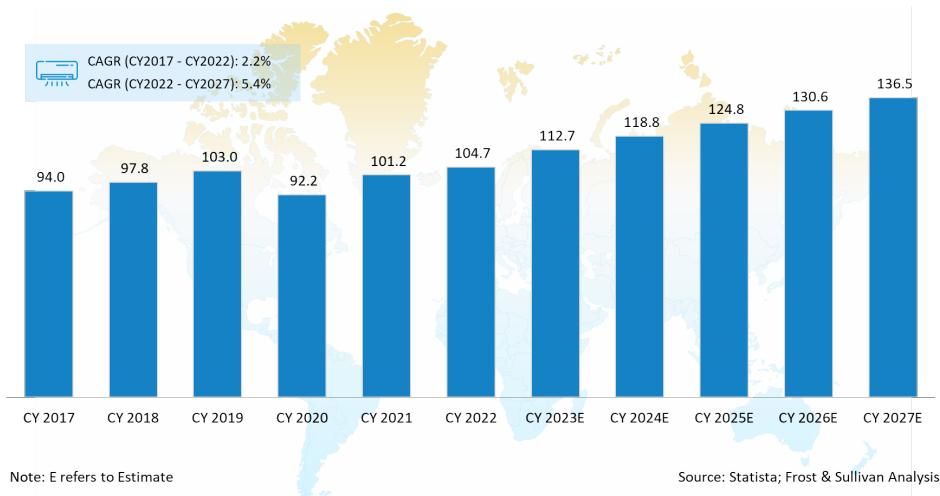
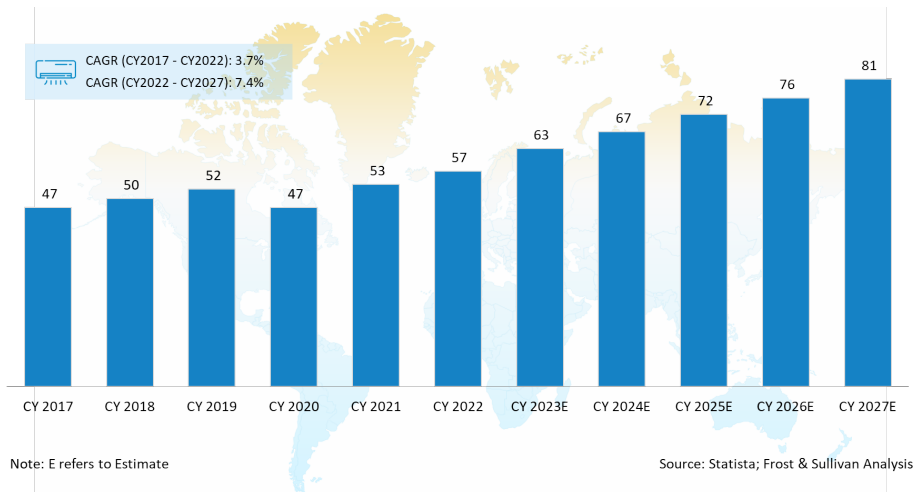


Exhibit 4.2: Global room air conditioner market size, value in USD billion, growth in %, CY2017-CY2027E



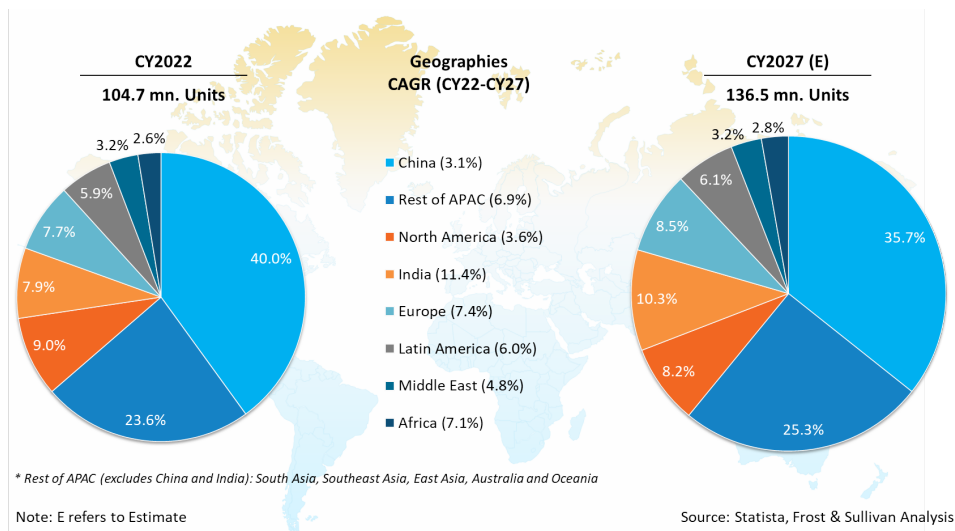
The demand for energy-efficient RACs, especially inverter-based solutions, is growing at a fast pace. This demand is expected to rise further, driven by stricter regulations, and increasing electricity prices. Increasing urbanization along with rising disposable income in the developing economies are some of the key reasons for the growth in the RAC market globally. Also, rising temperatures and extreme weather conditions, such as being seen in Europe have made air conditioning a necessity to ensure indoor comfort and good health.

B. Global RAC market segmentation by region (from demand perspective)

In 2022, China accounted for 40% of the global RAC demand, followed by the APAC region (excluding China). After a slight decline the previous year, the demand for RACs in North America and Europe reached a new peak in 2022. In most regions, the demand for air conditioners has remained stable. The global retail volume of RAC is anticipated to grow steadily between 2022 and 2027, owing primarily to steady growth in the APAC, Indian and European markets and contributing factors such as a large population base, a low penetration rate, and weather conditions. From export perspective, Following are the key markets for Window AC:

- APAC - Taiwan, Philippines, Hong Kong
- Middle East - Saudi Arabia, UAE, Oman, Qatar
- Latin America - Brazil, Mexico

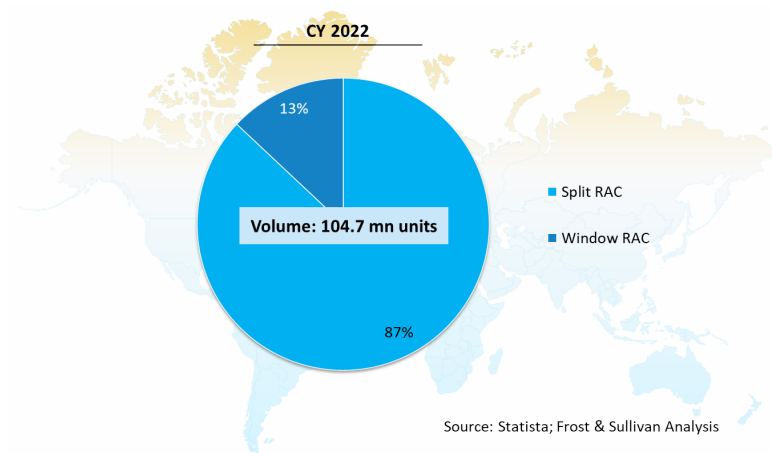
Exhibit 4.3: Global room air conditioner demand – Segmentation by major geographies, volume in million units, split in % and CAGR, CY2022 and CY2027



C. Global RAC market segmentation by product type

Window air conditioners were popular two decades ago, but today split air conditioners dominate the market. In 2022, split AC had the largest market share of 87%, followed by window AC with 13%. Split ACs offer several advantages over traditional window ACs, including energy efficiency, simultaneous heating and cooling capabilities, better user experience, and precise temperature control. In the long run, split ACs are becoming less expensive than they were a decade ago. The introduction of smart ACs that can be controlled by mobile devices has further accelerated the demand for split ACs.

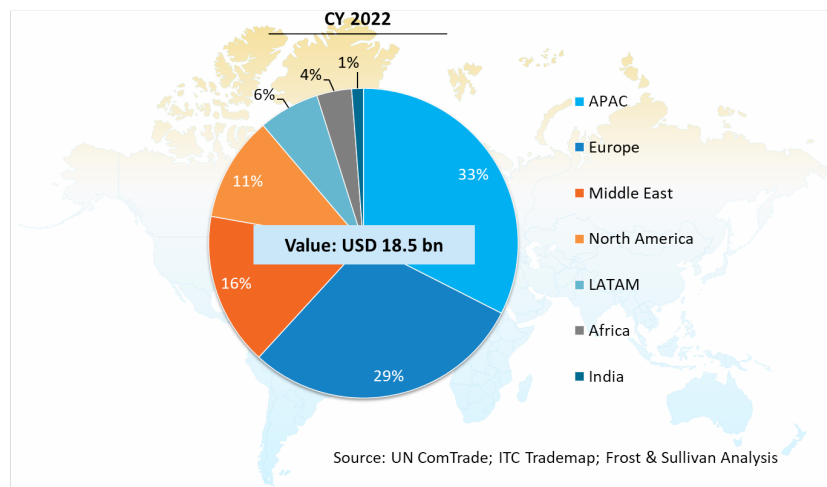
Exhibit 4.4: Global room air conditioner market – Segmentation by product types, volume in million units, split in %, CY22



D. Global RAC import market

Globally, requirement for space cooling in residential and commercial segments are rapidly increasing. In CY2022, Asia-Pacific, Europe, Middle East, and North America were the leading importing regions. Within APAC, Philippines, Indonesia, Japan and Australia were the key importing countries. From the other regions, United States and Saudi Arabia were among the largest importers.

Exhibit 4.5: Global room air conditioner market, key importing regions, value in USD billion, split in %, CY2022



China has been the largest manufacturer and exporter of RAC in the global markets for decades. China manufactures over 70% of the world’s room air conditioners and accounts for around 22% of the installed cooling capacity worldwide. Chinese brands such as Midea, Gree, TCL, Hisense, AUX, and Haier enjoy significant market share in RAC sales across most of the regions in the world. However, this trend is steadily changing as countries such as India, Thailand, and Vietnam are expanding their domestic manufacturing capabilities, and global manufacturers are opting for the China+1 strategy.

E. Key trends of the global RAC market

Poor air quality and hot, humid climatic conditions will drive the demand for RACs: Regions such as Asia and Africa have been plagued by issues related to poor air quality. According to a report by UN Environment, fewer than 8% of people living in Asia breathe 'clean air'. Poor outdoor air quality is forcing more people to turn to air conditioning. Customers are looking for air conditioning systems that include advanced air filtration capabilities that can remove unhealthy pathogens like pollen, dust, bacteria, and viruses.

Increased demand for energy-efficient air conditioners: RACs account for a lion's share in the electricity consumption within the households. As electricity prices are soaring and organizations such as Department of Energy (DOE), International Energy Agency (IEA), European Commission, etc. are mandating stringent energy performance standards, this has led to the introduction and growth of energy-efficient inverter technology in the RAC market. The technology helps in saving energy and power with the help of a variable speed compressor. Additionally, benefits such as no temperature fluctuations, longer durability, faster cooling, and reduced noise in comparison with non-inverter ACs are expected to fuel the demand for inverter technology in the coming years.

Market for smart Air Conditioners is expected to grow in the coming years: Demand for smart air conditioners is expected to grow in the coming years. The rising popularity of smart gadgets that can convert conventional remote-controlled air conditioners into smart devices is likely to be the primary growth driver. There would be high demand for smart air conditioning systems that can be controlled through mobile devices and voice assistants.

Usage of natural refrigerants: Government regulations on refrigerants are forcing manufacturers to develop energy-efficient and eco-friendly products. There have been many technological developments observed in the market due to the phasing out of key refrigerants. Once the most preferred refrigerants, CFCs (R-22), are likely to be completely replaced by other refrigerants (R32 etc.) in the next few years.

Emergence of multi-functional air conditioning systems: There would be increased demand for RACs that can combine heating, cooling, and ventilation functions. As the suppliers such as Daikin and Mitsubishi Electric are introducing Heat Pump technology in Room Air Conditioners, the same RAC would be able to provide cooling in the hot summers and heating in cold winters. Thus, consumers would be able to use the same machine throughout the year for both heating and cooling purposes.

2. Overview of the Indian Room Air Conditioner (RAC) market

The Indian economy is witnessing an upswing due to increased economic activity and rising household income. Enhanced purchasing power have moved products from the earlier luxury category to being essential today. Climate change has also played its part. Room Air Conditioners, an erstwhile luxury product, is now becoming an essential product in the middle-class segment.

A. Market overview of Indian RAC industry

Multiple factors are driving the market for Room Air Conditioners (RAC) in India – increase in disposable income, urbanization, electrification, and easy consumer financing. Tightening of energy efficiency norms has led to the introduction of inverter technology, resulting in reduction of operating costs. This has resulted in more consumers are opting for Rom Air Conditioners (RAC). The Indian RAC industry has grown at a rate of 8.8% in the last five years (FY18 to FY23) in volume terms and at a rate of 11.2% in value terms despite the

disruption due to the Covid-19 pandemic which impacted 2 consecutive seasons for the industry. Penetration of RACs in Indian households has risen from 5% to 8% in the last five years (FY18 to FY23) implying that there is considerable scope for growth. The constant change in consumer preferences has led the manufacturers to bring in new innovative and value-added products. These new technology products are now driving the replacement demand in the country. 8.4 million RACs worth INR 252 billion were sold in India in FY23. Considering its relatively low penetration, the Indian RAC industry is forecasted to grow at a rate of 12.1% by volume and 15.1% by value from FY23 till FY28. Future demand for RACs in urban areas will be driven by cost competitiveness, better features, and energy efficiency.

Exhibit 4.6(a): Indian RAC market, domestic sales, volumes in million, growth in %, FY18 – FY28E

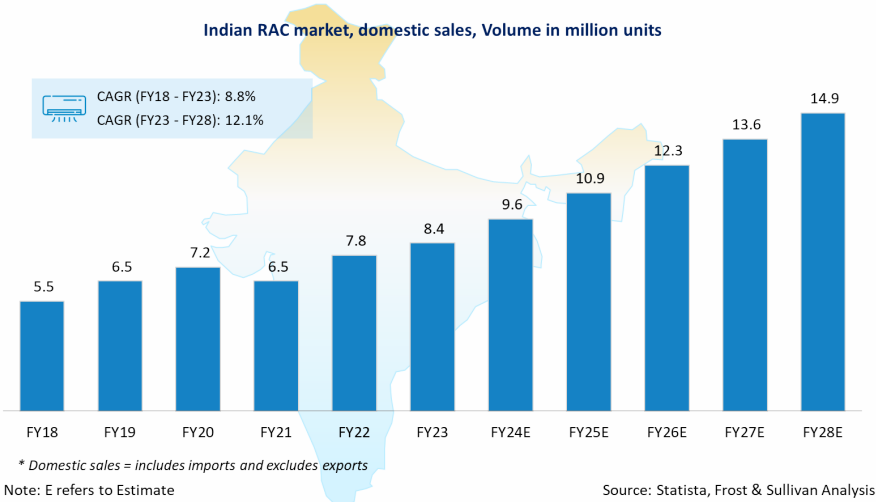
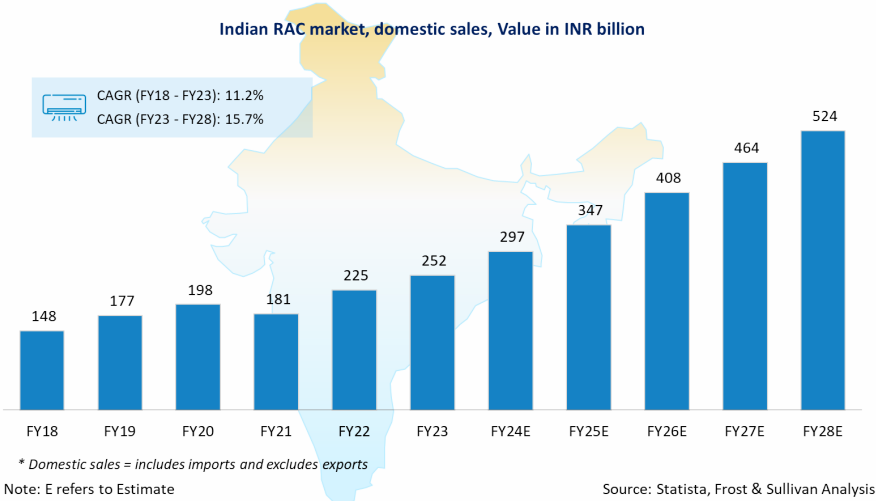


Exhibit 4.6(b): Indian RAC market, domestic sales, value in INR billion, growth in %, FY18 – FY28E

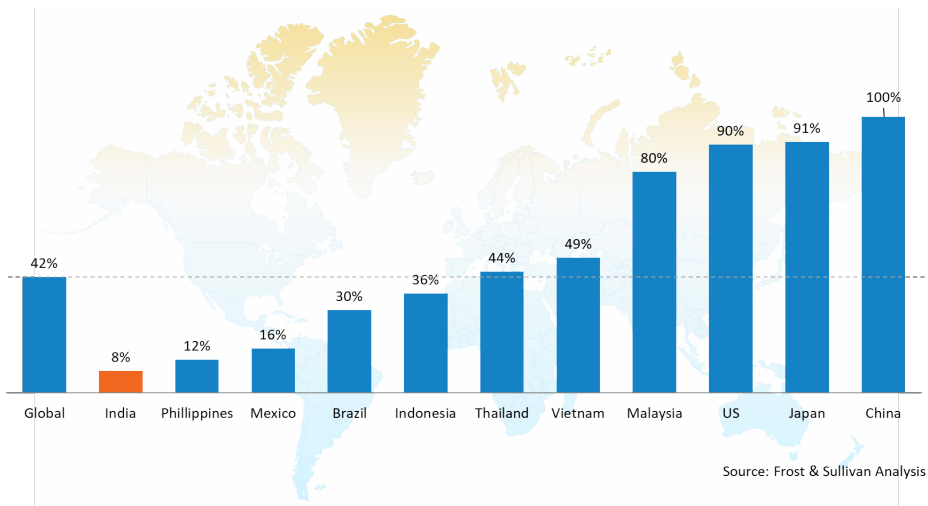


B. Penetration of RAC in India and outlook

Penetration of RAC is extremely low in India when compared to various developed economies and only one-fifth of the global average RAC penetration. Most companies have now shifted their focus towards India due to its low penetration levels and high adoption rate. In comparison to other Asian countries, there is tremendous potential in the Indian market, as the overall RAC penetration is relatively low at 8%. Being a

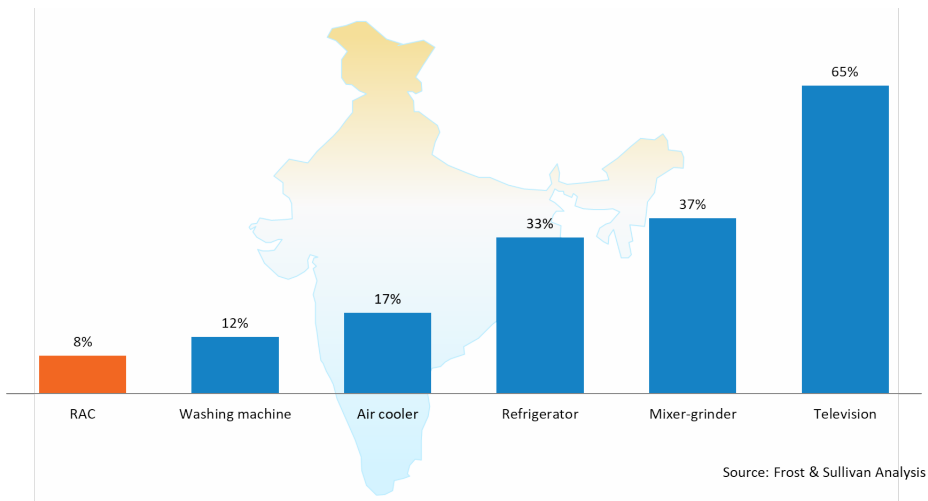
large economy, India is likely to lead global RAC market growth over the next few years, aided by favourable demographic and macroeconomic factors.

Exhibit 4.7: Comparison of RAC penetration in India vs other countries, CY2022



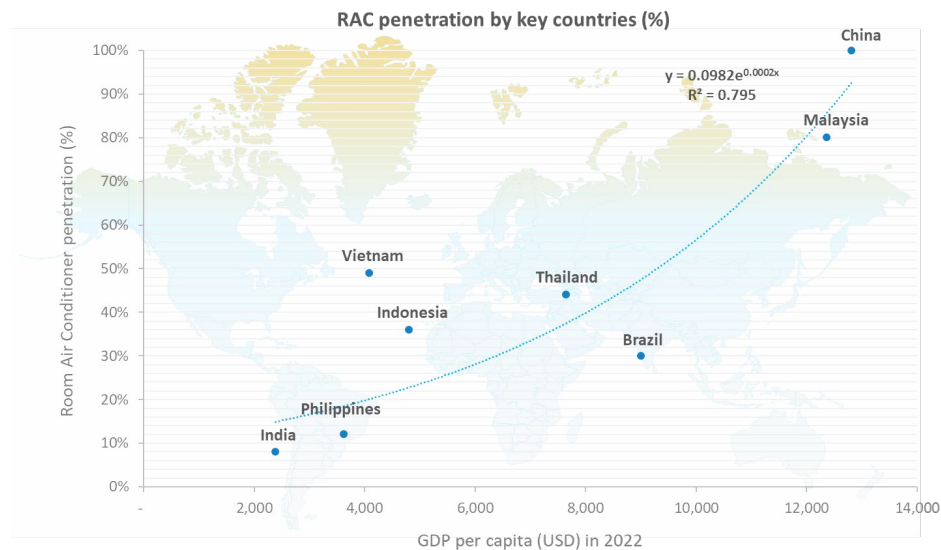
Also, RAC penetration is the lowest among consumer durables, compared to washing machines (12%), refrigerators (33%), and televisions (65%). Frequent power outages and the emergence of competing electronic products contributed to this low penetration rate, as room air conditioners are still perceived as a luxury item in comparison to refrigerators and televisions. However, the power outage scenario has changed drastically in the last one decade. India has completely transformed herself from a power-starved nation a decade back to a power surplus nation. India has achieved near 100% electrification in the last few years. Power outage has significantly reduced in the urban centre from multiple hours to almost zero outage. These developments will propel the Indian RAC market to a double-digit volume growth over the next decade.

Exhibit 4.8: Comparison of penetration of RAC vs other consumer durables in India, FY23



Another interesting fact can be observed from the below chart. GDP per capita and RAC penetration has a strong correlation among the developing and warmer nations. As the GDP per capita crosses the inflection point of USD 2,000, RAC penetration shows a steady upward trend. India has crossed this critical mark in 2021 and now all set for a strong growth in the RAC penetration over the next decade.

Exhibit 4.9: India vs. comparable economies, GDP per capita income Vs RAC Penetration, CY2022



Source: World Bank; Frost & Sullivan Analysis

C. Energy labelling for Room Air Conditioners

The Bureau of Energy Efficiency (BEE) is the apex body for the formulation and implementation of energy efficiency measures in India. BEE initiated the standards and labelling (S&L) programme for appliances in 2006. It helps consumers to make an informed choice about various consumer appliances available in the market. Room ACs are required to have mandatory star labelling before being sold in the market. The ratings of RACs involve a comparison of the equipment's Energy Efficiency Ratio (EER) tested under specific conditions, and the RACs are provided ratings between 1 and 5. The BEE ratings are revised after every 2 years. In India, 3-star rated RACs are mostly sold, followed by 4-star and 5-star. Comparatively economical prices and higher payback periods for 4-star and 5-star rated ACs (the majority of the households use RAC for 5-6 hours in a day) are the key demand drivers for 3-star rated RACs in India. The BEE revised the star ratings in the mid of last year and an average of 10–12% additional power savings are expected from the products complying with this new star rating system.

D. Growth drivers of Indian RAC market

Air conditioner is no more a luxury, but a necessity: Due to enhanced purchasing power and increasingly erratic climatic conditions in India, air conditioners are no more considered a luxury but a necessity among most middle-class Indian households. Study shows that air conditioner can improve health conditions and save lives. Besides, room air conditioners have applications in multiple other segments such as hospitals. Air conditioning has a critical role in maintaining indoor air quality and ventilation, thus preventing the recirculation of air within confined spaces, as this acts as a carrier of airborne contaminants brought in by the movement of people and parts, thereby causing harm to products and people occupying these spaces.

Growth in residential construction: Driven by the sustained demand for housing and supportive government policy, residential construction is expected to grow at a 6.5% CAGR till 2030, according to a Fitch 2021 report. The sector witnessed a surge in demand with 215,000 residential units² sold in 2022 across the top seven

² <https://www.jll.co.in/content/dam/jll-com/documents/pdf/research/apac/india/jll-residential-market-update-q4-2022.pdf>

cities such as Mumbai, Delhi NCR, Bengaluru, Hyderabad, Chennai, Kolkata, and Pune. This is the highest sales in the past 10 years. New project launches in 2022 stood at 247,000 units, which is 81% higher than 2021. A strong residential supply pipeline is expected to create strong demand for RAC in the short-to-medium term.

Factors such as improved economic growth, infrastructure development, enhanced connectivity, lower cost of living, and attractive real estate prices have transformed the Tier 2 and Tier 3 cities into robust real estate destinations for homebuyers and investors. Key destinations include Lucknow, Chandigarh, Ludhiana, Bhopal, Indore, Kochi, Amritsar, Goa, Guwahati, and Jaipur. This would lead to a surge in RAC demand from these cities in the coming years.

Growing purchasing power: India's per capita income has steadily grown from USD 1,351 in 2010 to USD 2,379 in 2022 at a CAGR of 4.8%. Due to this, India in the last few years has seen a significant expansion of middle-class households which is the key demand generator for Room Air Conditioners. Robust economic development, growing population, relatively slower aging, and rising income levels coupled with urbanization would result in nearly 400 million additional middle-class and high-income population being added to the country's economy by FY31 which would create a strong consumption base for Room Air Conditioners in the country.

Availability of Financing options: A key deterrent in RAC adoption among Indian households is the very high price of the product. The availability of financing options thus made RAC affordable to a large section of Indian households. This has reduced immediate burden on consumer's wallets and allowed them to pay the amount over a long period. This reduces the immediate financial burden and makes the purchase more affordable, as consumers can pay in smaller monthly instalments rather than making a large upfront payment. With enhanced credit availability, consumers can access premium RACs that may have better energy efficiency ratings or advanced features.

Significant reduction in load shedding across India cities and towns: The Indian government through the past decade made significant efforts to turn the country from one with a power shortage to one with a surplus by establishing a single national grid, fortifying the distribution network, and achieving universal household electrification. Due to investment across the power sector value chain, the energy deficit in the country has declined from more than 10% a decade back to only 0.5% in FY23. The load shedding scenario has also improved drastically in Indian cities and towns – from 6 to 8 hours in the summer months a couple of decades back to less than one hour or no-load shedding on some days. This has removed a key deterrent for people to use consumer electronics products such as Room Air Conditioners.

Climate change and rising temperature: Climate change has resulted in longer, more intense heat waves during the summer, forcing India to balance its cooling requirements. Access to cooling can be an effective method for preventing fatalities resulting from extreme heat. As temperatures have gone up, there has been a sharp rise in the demand for cooling products, especially air conditioners and air coolers. The demand for RACs typically peak during the first half of the calendar year and reduce in the second half of the calendar year. The sale of RACs is generally significantly higher in the summer months due to the heat and warm weather, and considerably lower during the monsoon and winter months.

E. Indian RAC market segmentation by product categories

Split AC dominates the Indian RAC market with 89% share in FY23. Split AC systems have gained popularity owing to advantages such as easy installation, aesthetics, low-noise operations, and ability to cool larger rooms more efficiently.

Exhibit 4.10: Indian RAC market, domestic sales split by product types, in percentage, FY23

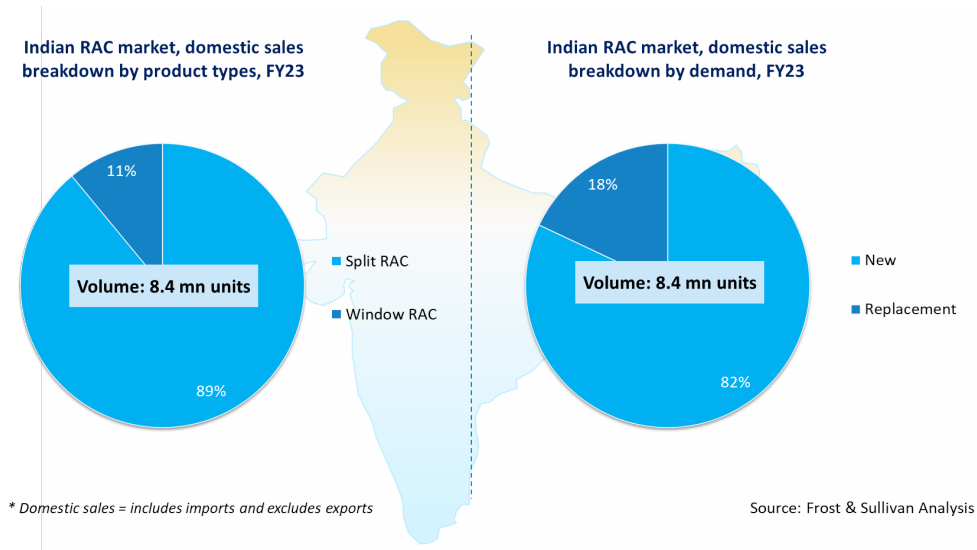
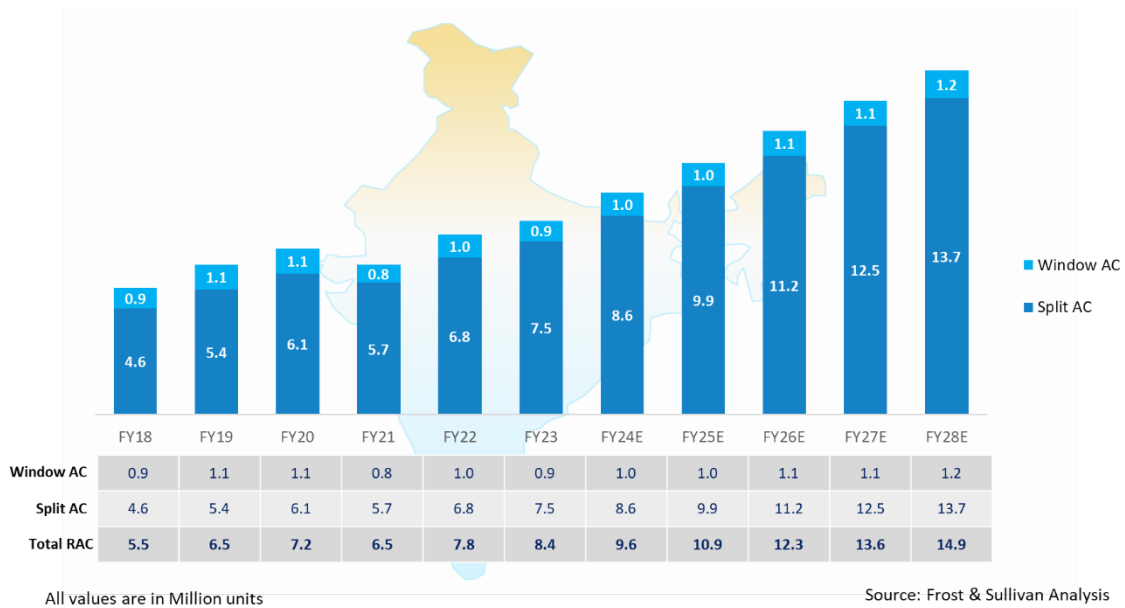


Exhibit 4.11: Indian RAC market, Split AC and Window AC sales trend, in Million units, FY18 - FY28E

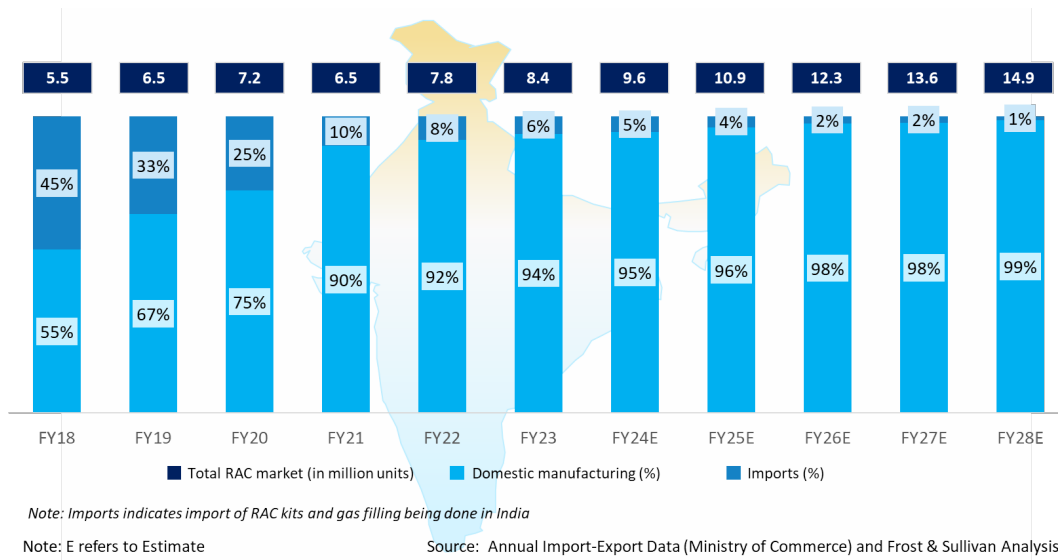


On the other hand, Window AC, which was a popular choice a few decades back, now accounts for only 11% share in the Indian RAC market. While lower servicing costs and easy relocation are some of the benefits of Window AC, they are comparatively less energy efficient and very noisy. As the Indian RAC market grows, there would be marginal growth of Window AC by volume however, its share will further decline to 8% by FY28.

F. Indian RAC market segmentation by domestic manufacturing vs imports

In a bid to promote domestic manufacturing, the Indian government has banned the import of completely built units of air-conditioners with refrigerants from FY21. Air-conditioner imports was on the radar of the government for some time and had been identified as one of the priority sectors for reduction of imports in-line with the government’s ‘Atmanirbhar Bharat Abhiyan’ initiative. According to a DGFT notification, import of all types of split air-conditioners and window air-conditioners with “refrigerants” have been now put in the “prohibited” category from the “free” category.

Exhibit 4.12: Indian RAC market, domestic sales percent split by domestic manufacturing and imports, volume in million units, split by %, FY18-FY28E



The government’s move and Production Linked Incentive (PLI) scheme for air conditioners have made a good business case for the brands and the ODM companies such as EPACK Durable to invest in domestic manufacturing of RAC components. The share of imported RACs have shown a steep decline from about 25% in FY20 to a mere 6% in FY23. At present some brands such as Mitsubishi Electric, O’General, etc. are importing RAC kits and getting the gas filling done in India through the ODM companies. In-country value addition has sharply increased from about 20% a decade back to almost 65% - 70% in FY23. Among the components, only compressors and refrigerants are still imported from countries such as China.

Following are the key growth drivers for domestic manufacturing of RACs in India:

- Phased Manufacturing Programme (PMP):** The programme mandated increase in custom duties on RACs and components in a phased manner which made imports an expensive option. As a result, Domestic brands had to pursue local sourcing.
- BIS Certification Requirement:** The government mandated that BIS certification is mandatory for selling RACs and components in India. This proved cumbersome for exporters in China, Thailand, etc. and hence acted as a deterrent.
- Production Linked Incentive Scheme (PLI):** Sales and capex linked incentives were announced for local manufacturing of components and not for mere RAC assembly. This encouraged the brands to pursue local sourcing due to cost benefits.

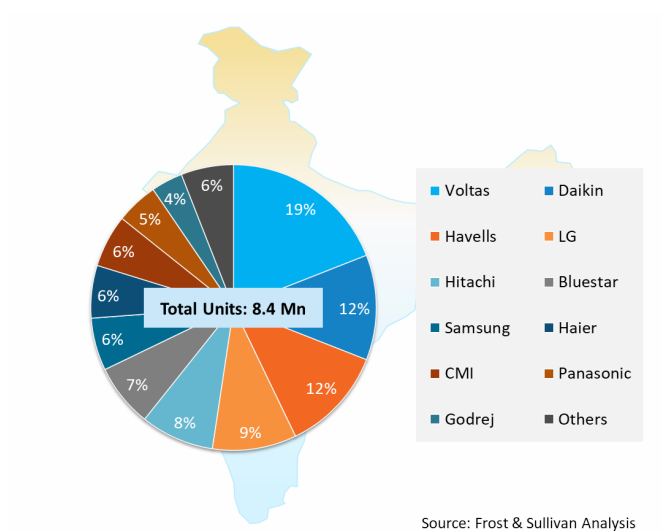
- d. Ban on import of gas charged units: Complete ban on import of gas charged units impacted imports and forced MNC brands to evaluate local manufacturing.

As a result, India’s domestic manufacturing of RAC has grown at 22% CAGR, from 3.0 million units in FY18 to 7.9 million units in FY’23. Domestic manufacturing is expected to grow further at 13% CAGR and is expected to reach 14.7 million units by FY28.

G. Competitive landscape of Indian RAC market

Indian RAC market is a fairly organized market with participation of prominent global and Indian brands with a wide range of products. Voltas, Havells (Lloyd), Daikin, LG, Hitachi, and Blue Star are the top 6 brands account for 67% of RAC sales in FY23. EPACK Durable Limited customers include four of the top six RAC brands in the Indian market (in terms of RAC sales in FY23 in India). Indian customers are both brand and price conscious, and word-of-mouth plays a major role in the purchase decisions.

Exhibit 4.13: Indian RAC market, domestic sales percent split by competition, split in %, FY23



3. Value Chain of RAC Manufacturing:

A. Room Air Conditioner manufacturing process

Air Conditioner manufacturing is a complex activity and involves manufacturing multiple components, sub-assemblies, and assemblies. The following is a list of key components / processes required to manufacture a Room Air Conditioner.

- a. Stamping / sheet metal components manufacturing
- b. Injection Moulding / plastic components manufacturing
- c. Bending and forming of copper tubes
- d. Heat Exchanger manufacturing
- e. Powder coating
- f. Compressor manufacturing
- g. Induction Motor manufacturing
- h. Cross Flow Fan manufacturing
- i. PCB Assembly

- j. Final Assembly
- k. Quality control
- l. Packaging and shipping

These processes can be further clubbed into areas of expertise like metallurgy, plastics manufacturing, refrigeration, electronics, and assembly / quality control. The need to build simultaneous capabilities across each of these areas, is one of the reasons why there are very few RAC manufacturers of scale in India.

Stamping/sheet metal components: Sheet metal is crucial in the construction of room air conditioners,



serving as the primary element for the Outdoor Unit (ODU), as well as the heat exchanger and air ducts. Various types of machines such as mechanical and hydraulic presses, bending machines, blanking machines, and shearing machines are used in the manufacturing of these components. Cold Rolled (CR) sheet metal of 0.6 mm to 1.2 mm thickness is commonly used in the manufacturing of RAC. Sheet metal is also an excellent heat-

transfer medium, making it suitable for manufacturing evaporator and condenser coils.

Injection Moulding / plastic components: Plastic components are extensively used in the manufacturing of air conditioners. In Injection Moulding, plastic pellets are melted and inserted into a mould using specialized



machinery, resulting in solid plastic components that are durable and able to withstand temperature and humidity fluctuations. High-quality thermoplastics such as ABS or polycarbonate are often used for components such as the front panel, air intake grills, and covers due to their durability. Plastic moulding is preferred due to its high production efficiency, low manufacturing costs, and ability to produce intricate forms

and patterns. Additionally, plastic components are lighter than their metal equivalents, contributing to the air conditioner's portability.

Copper Tubing and Heat Exchanger: Heat Exchanger is one of the most critical and expensive components of a Room Air Conditioner. For the manufacturing of the heat exchangers i.e., evaporator and condenser coils, copper or aluminium, and fin tubing are shaped and put together. Aluminum has similar characteristics to



Copper in terms of heat transfer, at a much lower cost. But there is a public perception that Copper is better. In general, Copper tubing is preferred in the manufacturing of air conditioners in India.

Copper tubing is crucial in room air conditioners as it transports refrigerant between the interior and exterior units, allowing it to absorb heat and chill the environment. Copper is selected for its strong corrosion resistance, excellent heat conductivity, and flexibility. It can be easily bent and formed into various sizes and shapes to meet the specific requirements of the air conditioning system. Copper tubing is also used in the evaporator coil, which cools indoor air by absorbing heat from it as it passes over a network of copper tubes and metal fins.

Automated machines are used to perform the bending and forming of copper tubes. Large copper tube rolls are used in the process. The copper tubes are directly fed into the machine from the rolls or cut into specific

sizes and then fed manually into the machines for to achieve the desired form. Post this, copper tubes, sheet metal panels, and other components are assembled to manufacture the heat exchangers i.e., condenser and evaporator coils.

Traditionally, 7 mm diameter copper tubing was used in the manufacturing of heat exchangers. EPACK Durable is one of the initial Indian RAC ODM companies to manufacture 5 mm copper tubing for the heat exchangers. For this, the company was awarded with 'Copper Excellence Award' by the 'International Copper Association India (ICAI)' in 2018. This innovation has not only reduced the weight by approx. 35%, but also contributed to direct savings in the input cost. Copper being a costly raw material and mostly imported, has helped in a significant reduction in the raw material cost. Besides, at a lower diameter, it became easier to manage the charging of R32 gas in RACs. Since then, the Indian market has largely moved to 5 mm heat exchangers.

Powder Coating: When applied to room air conditioners, powder coating provides a surface that is more durable and scratch-resistant than traditional liquid coatings, which can peel or break over time. Powder coating is more environmentally friendly than liquid coatings since it doesn't include solvents that can release volatile organic compounds (VOCs) into the atmosphere as liquid coatings do. Powder coating, which can be sprayed in a number of colours and finishes, allows manufacturers to change the appearance of their air conditioning systems to fit the preferences of their consumers. This helps in improving the aesthetics of the RACs and protects them from environmental conditions.



Compressor: Compressor is the heart of a Room Air Conditioner. Its performance and energy efficiency are critical differentiators among the RAC products available in the market from various brands. The compressor is made using a combination of metal casting, machining, and assembly techniques. The compressor's main body is made of cast iron or aluminium, which is then machined to precise specifications. The compressor's valves and internal components are also machined and assembled into the compressor body. The motor and electrical components are added, and the compressor is tested to ensure it meets performance specifications. The final compressor is then installed in the air conditioning system, where it compresses the refrigerant and circulates it throughout the system to cool the air.



There are companies which are specialized in compressor manufacturing and supply compressors to various air conditioner brands globally. Indian ODMs do not manufacture compressors in-house as it requires advanced engineering capabilities. Currently, compressors are largely imported into the country. Among the brands, only LG manufactures compressors in India, and through PLI, Daikin is expected to start manufacturing compressors from August 2023.

Induction Motor: The motors used in room air conditioners are manufactured using a combination of manufacturing techniques, including aluminium die casting, stamping, and copper wire winding. The motor's rotor and stator are usually made of metal, such as steel or aluminum, that is shaped and stamped to create the necessary components. The wires that make up the motor's coils are wound around the stator, and the motor is then



assembled with other components such as bearings, shafts, and housings. The manufacturing process is often highly automated and relies on advanced machinery to ensure consistency and quality. The final product is a motor that is designed to provide reliable and efficient performance in a room air conditioner.

Cross Flow Fan: A cross flow fan circulates air in a room air conditioner. It is a very complex and critical product for Room Air Conditioners. Its main components are cylindrical housing, an impeller with curved blades, and motors. Housing and impellers are typically made from plastic or aluminum through plastic moulding or metal casting. The impeller's blades are designed to provide uniform airflow and reduce noise. The motor driving the impeller is usually a shaded pole or capacitor motor. All components are manufactured, assembled, and tested to ensure they meet performance standards.

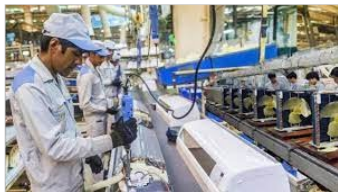


PCB Assembly: The printed circuit board assembly (PCBA) is crucial to the proper functioning of a room air conditioner. It acts as the air conditioner's "brain," controlling the electrical and mechanical components such as the fan motor, compressor, and sensors. Located in the interior unit, the PCBA receives information from sensors and switches located throughout the system to monitor temperature, humidity, and other environmental factors. It adjusts the air conditioner's performance accordingly, such as turning on the compressor if the room is too warm. The PCBA also has safety measures and diagnostic tools to ensure the air conditioner operates safely and effectively, including providing diagnostic data to repair professionals.



For PCB Assembly, bare PCB boards are sourced from the board manufacturers, either in India or from other countries such as China, Thailand, etc. The conductive pathways engraved in the laminated copper sheets of PCBs are used within a non-conductive substrate in order to form the assembly. Post that, all the components are soldered and installed on the printed circuit board (PCB) to complete the assembly. Surface Mount Technology (SMT) is the method used to mount electrical components directly onto the surface of a PCB. Leading RAC ODMs have typically invested in their own state-of-art SMT lines for PCB activities, thereby helping boost margins while reducing manufacturing lead times.

Final Assembly: This is the final step of Room Air Conditioner manufacturing. All the individual components, sub-assemblies such as heat exchanger and condenser coils, cross flow fan, PCB assembly, and bought-out components such as compressors, motors, etc. are all assembled as per the guidelines to manufacture the room air-conditioners. Some of the steps in the assembly lines are automated and some are performed manually.



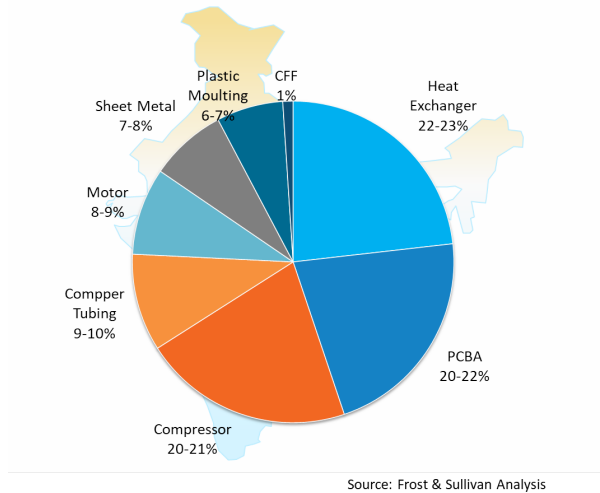
Quality Control: Following assembly, the air conditioner goes through a number of tests to make sure it complies with the necessary requirements and regulations. Necessary actions are taken to repair the faulty products or components.

Packaging and shipping: After passing the quality control tests, the air conditioners are packaged in designated cartons or boxes and then shipped to retailers or distributors for sale.

B. Cost contribution of various RAC components:

Heat Exchanger, PCBA and Compressor are the three key components of a Split AC and accounts for approx. 55-56% of the overall manufacturing cost. The other components i.e., Copper Tubing, Motor, Sheet Metal, Plastic Moulding and CFF accounts for the remaining 44-45% of the manufacturing cost. While Compressor is a completely bought out item for all the ODMs, most of the remaining components are already manufactured in India.

Exhibit 4.14: Cost contribution of various components, Split AC



C. Level of integration of the brands across the manufacturing value chain

The brands can be further classified based on their level of backward integration. In the below chart, the leading brands in the country have been bucketed under six categories based on their component manufacturing and assembly capability at the end of FY23 across all their plants in India.

Exhibit 4.15: Categorization of Indian RAC Brands based on level of backward integration at the end of FY23

Level of backward integration	Description	ODM opportunity	Brands
5 Fully integrated	<ul style="list-style-type: none"> All components manufactured in-house Final assembly for IDU and ODU done in-house 	NA	No brand has end to end manufacturing capability at the end of FY23
4 Near-fully integrated	<ul style="list-style-type: none"> Substantial components manufactured in-house: Sheet metal (part), large IM, HE; Smaller parts outsourced on OEM basis Final assembly for IDU and ODU done in-house 	Low, maybe cross-flow fan or PCB assembly	Havells, Haier, Hitachi
3 Partial integration	<ul style="list-style-type: none"> Source components/ parts from large number of small vendors on OEM basis; Some critical components in-house Final assembly done in-house 	Sheet metal or IM components; IDU facia	LG, Blue Star, Carrier-Midea, Panasonic
2 HE & Assembly only	<ul style="list-style-type: none"> Part HE manufactured in-house; all other components outsourced Final ODM assembly done in-house 	Components, ODU & IDU Kits, ODU, IDU, CBU	Voltas, Daikin, Godrej
1 Assembly only	<ul style="list-style-type: none"> All components outsourced, mostly as kits Gas charging and final assembly done in-house 	ODU & IDU Kits, ODU, IDU, CBU	Samsung
0 No manufacturing/ Total outsourcing	<ul style="list-style-type: none"> Entire manufacturing is outsourced 	Completely built units	Mitsubishi, O'General, Amstrad, Onida, Reliance, Croma, etc.

Note: Scale of 0 – 5 indicates the level of backward integrations

- At the end of FY23, none of the RAC brands in the country had the capability to manufacture all the components including compressors in-house. However, under the PLI scheme, some of the leading brands are setting up near-fully integrated manufacturing facilities which would further augment the country's domestic RAC manufacturing capability.
- Brands like Mitsubishi Electric, O'General, Amstrad, Onida, Reliance, Croma, etc. rely entirely on imports/outsourcing.
- Except LG and Hitachi, all the other brands source Window ACs from ODM companies such as EPACK Durable.
- Despite in-house manufacturing, most brands source 20-30% of demand as fully built units from local ODMs/ OEMs.
- There are brands that procure ODU/IDU kits from ODMs and assemble them in-house.
- Even the brands that have a higher level of integrated manufacturing operations, source 20-30% of their requirements from ODM players due to seasonality issues and need for a wide product mix. And with year-on-year growth in volumes, their reliance on ODM players will continue to sustain as they are unlikely to add capacity each year.
- Further, despite manufacturing capacity, several components are procured through ODMs in season time.

D. Right to Win for ODM companies in the Indian RAC manufacturing industry

The leading ODM companies in the Indian RAC manufacturing market are Amber Enterprises, EPACK Durable, and PG Electroplast. EPACK Durable is the second largest RAC ODM manufacturer in India in terms of no. of units (IDU + ODU) manufactured in FY23 through ODM route.

Exhibit 4.16: RAC manufactured through ODM route in FY23

Company	Approx. RAC Units (IDU + ODU) manufactured in FY23 (million units)	Approx. share of ODM business	Approx. ODM Volume in FY23 (million units)
Amber Enterprises	3.15	85% - 90%	2.7 - 2.8
EPACK Durable	1.20	100%	1.20
PG Electroplast	1.30	80% - 85%	1.05 - 1.1

Source: Primary research with industry stakeholders

Note: Outdoor units that are fitted with heat exchangers, with or without compressors and the design and tooling have been developed by the ODM company, have been considered as ODM units.

Following are the factors that create differentiation among the ODM players and help them to capture higher share in the RAC manufacturing industry:

Backward integrated operations (most of the bill of materials manufactured in-house): As the domestic Room Air Conditioner manufacturing industry is evolving, ODM companies have started manufacturing most of the components and assemblies in-house. The 'Make in India' drive has resulted into indigenization of most of the products and at present, except compressors, all the other air conditioner parts are manufactured in India. A fully backward integrated operation helps the ODM companies to have a higher control on the input costs which in turn helps them in maintain sustainable margins. EPACK Durable has the highest amount of

backward integration for RACs at a single location, that has been grown within the same company organically in India.

Exhibit 4.17: Backward integration of the leading RAC OEM/ODM companies at a single location

Manufacturing capability available at the facility

Company - Location	Plastic Injection Moulding	Cross Flow Fan	Heat Exchanger	Copper Tubing Fabrication	Press & Powder Coating	PCB Assembly	Motor
EPACK Durable – Bhiwadi	√	√	√	√	√	√	√
PG Electroplast - Ahmednagar	√	√	√	√	√	√	

Amber Enterprises, the largest RAC ODM company in the country has 28 manufacturing units across 9 locations. As each unit specializes on a specific set of components and products, the company does not have a single site / unit which manufactures all the RAC components. While the components are manufactured across 11 locations - Dehradun, Jhajjar, Pune, Greater Noida, Rudrapur, Rajpura, Shahjanpur, Chennai, Sri City, Kadi & Manesar; only 4 locations - Dehradun, Jhajjar, Pune & Sri City have RAC Finished Goods capability. Motors are manufactured at Faridabad while PCBAs are manufactured at Greater Noida, Pune and Chennai facilities. (source: Amber Enterprises Q2FY24 Result Presentation, October 2023)

Large-scale manufacturing (for cost-efficiencies): Economies of scale result in cost advantages reaped by companies when production becomes efficient, resulting in a decreased cost-per-unit. Air conditioner is an underpenetrated product in India and hence, there is tremendous growth potential. As the market is poised to grow at a CAGR of 12.1% between FY23 and FY28, and as the brands continue to outsource manufacturing of WAC, IDU, ODU and components, these would result in increased production volume for the existing ODM companies such as EPACK Durable. As overheads are generally higher for the brands, this would result in improved margins for both the brands and the ODM companies. At the end of FY23, there are only three large scale RAC ODM companies in India with manufacturing capacity of more than 1 million units – Amber Enterprises, EPACK Durable, and PG Electroplast.

Ability to innovate – provide design related solutions: Innovation is the ability to generate ideas that create value and improve processes, from inventing a machine to finding a faster route to work. Innovation helps the companies to develop new designs and achieve process efficiency which in turn helps the companies to grow profitably. ODM companies such as EPACK Durable, after years of experience in the air conditioner manufacturing domain now have the capability to develop new designs / features and can own IP for the same. This in turn improves the company’s ability to sell its designs to the brands and earns premium for the service. EPACK Durable is one of the initial Indian RAC ODM companies to design and manufacture Window ACs (both fixed speed and inverter models) with R32 refrigerant.

Strategic location closer to consumers: Staying closer to the consumers helps the ODM Companies on multiple fronts. It reduces the company’s logistics costs and helps the companies to serve its customers faster and in an efficient way. Traditionally, North India used to be the air conditioner manufacturing hub with most of the brands and ODM companies having their facilities spread across different North Indian states. However, Southern Indian states are big markets for air conditioners due to prolonged summer which starts from February. Now some of the leading brands such as Voltas and Mitsubishi Electric are setting up manufacturing facilities at Gummidipoondi in Tamil Nadu whereas, other leading brands such as Daikin, Havells, and Blue Star have set up / are setting up manufacturing facilities at Sri City in Andhra Pradesh. Along with them, ODM companies such as EPACK Durable has established state-of-art fully backward integrated manufacturing facility in Sri City. This would enable them to stay closer to the brands and key customers, optimise logistics costs, and would also help to enjoy specific incentives as Sri City is a designated Special Economic Zone (SEZ).

Ability to manufacture variety of designs / multiple SKUs: As the RAC market is growing, brands are launching multiple models / variants / SKUs through different channels to attract customers. Brands have the limitation to develop multiple variants in-house within a short period of time. Large ODM companies such as EPACK Durable have the required technological expertise and efficient manufacturing process to develop and manage multiple SKUs and bring them to market at an optimum time.

All the factors mentioned above i.e., backward integrated operations, large-scale manufacturing that requires significant capital investments, technological prowess, innovation capabilities, and ability to manage multiple SKUs create a strong entry barrier for a new company to enter into RAC manufacturing. This creates opportunities for the existing companies to further invest in capacity expansion, backward integration, and innovations.

Besides, such integrated capabilities of the ODM companies make switching difficult for the brands. Switching cost for the brands increases as the ODM companies not only manufacture the products but also controls the designs – this increases the stickiness of the brands as new product introduction and development is a complicated and lengthy process for both the brands and the new ODMs. This in turn helps the existing ODM partners to maintain a sustainable and profitable business in the long run.

As the Indian RAC market is growing, retail giants such as Reliance, Croma, Flipkart, etc. and other small brands like Onida, Cruise, etc. are creating their own labels and trying to capture a pie of this growing business. These companies do not have any plans to invest in manufacturing, and hence would create significant ODM opportunities for companies such as EPACK Durable.

EPACK Durable's revenue from RAC business has increase at a 15% CAGR between FY13 and FY23, which is evident by its 29% market share in FY23 in the Indian RAC ODM industry. EPACK Durable's aggregated wallet share from its top 3 RAC customers has increased at a 75% CAGR between FY21 and FY23.

4. ODM/OEM and Component opportunity estimation for Indian RAC industry

A. FY23 Room Air Conditioner (RAC) ODM/OEM market in India

ODM companies supplied 6.1 million units (Window AC + Split IDU + Split ODU Kits + Split ODU) to the RAC brands in FY23. Out of these units, 5.1 million units were manufactured in the country and the rest 1.0 million units were imported as kits and gas charging was done in India. This translates to INR 58 - 60 billion ODM/OEM market in FY23 – INR 48 - 50 billion for the domestically manufactured units and INR 10 billion for the gas charged units. Product wise, ODM companies manufactured 0.6 million window ACs and 5.1 million split AC units (IDU + ODU) in FY23.

Exhibit 4.18: Indian RAC ODM/OEM market by unit type, million units and INR billion, FY23

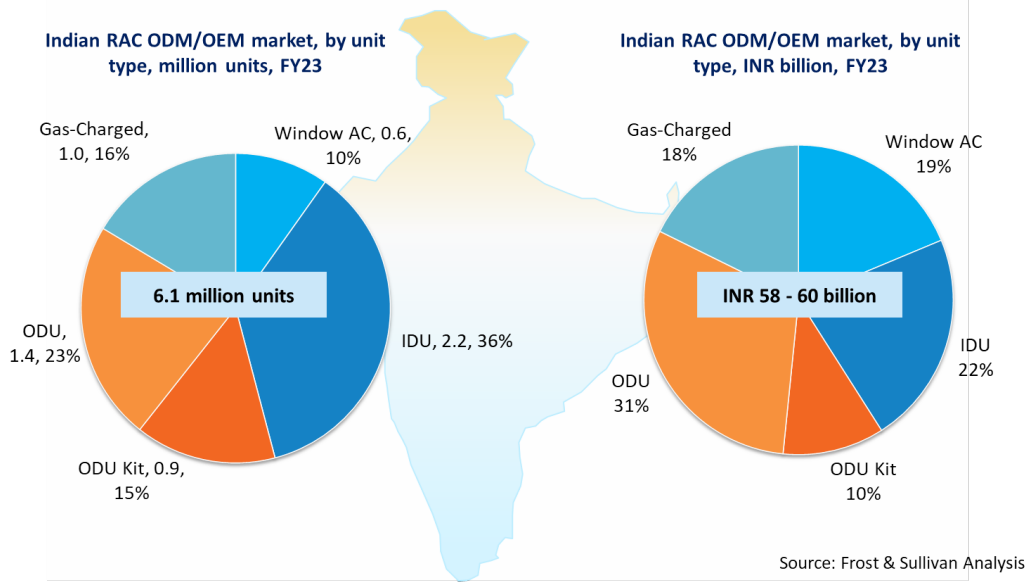
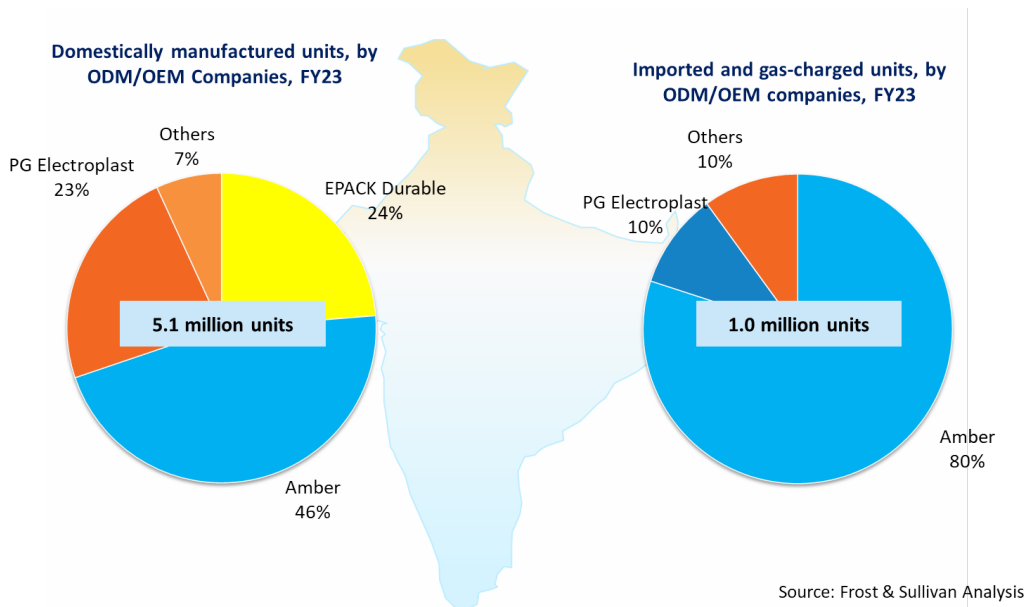
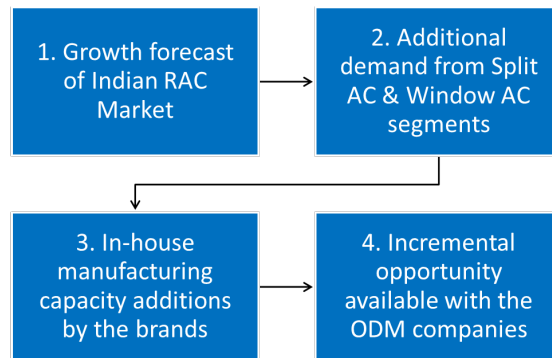


Exhibit 4.19: Indian RAC ODM/OEM market, share of the ODM companies, FY23



B. Growth opportunity in the RAC ODM/OEM business in India

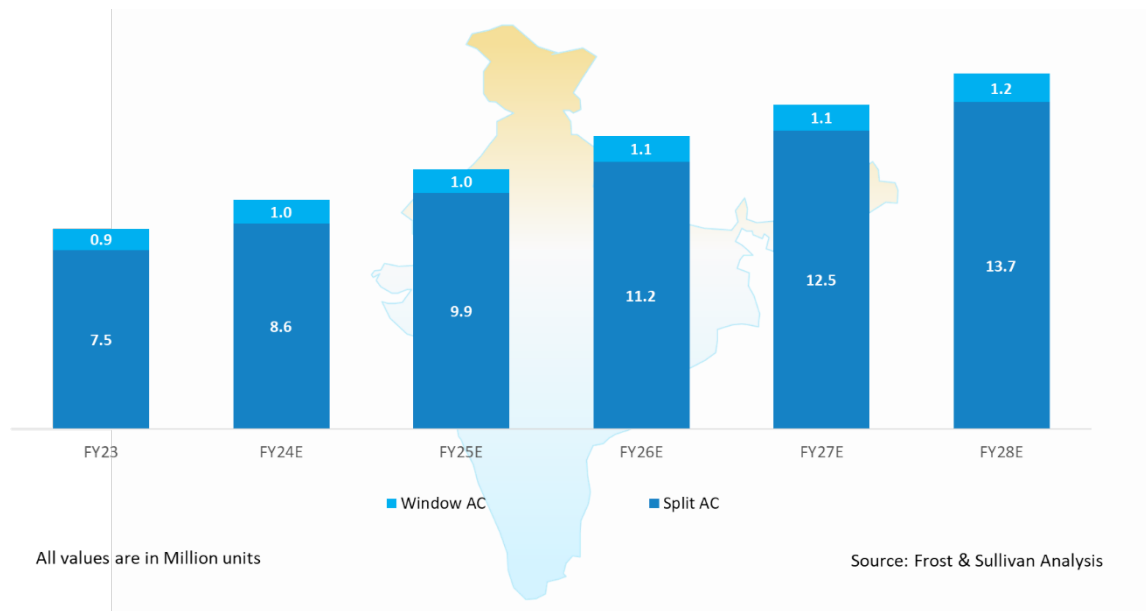
For estimating the growth opportunity in the ODM business over the next 5 years i.e., till FY28, following methodology has been adopted:



1. Growth forecast of the Indian RAC market:

Growth outlook for the Indian RAC market in the near to medium term is positive due to multiple factors which have already been elaborated in the previous sections. Indian RAC market is poised to grow at 12.1% CAGR over the next 5 years to reach 14.9 million units by FY28. Split AC market is expected to grow at 12.8% CAGR to reach 13.7 million units by FY28. On the other hand, growth of the window AC market would be rather moderate – the market is expected to grow at 5.9% CAGR to reach 1.2 million units by FY28.

Exhibit 4.20: Indian RAC market growth forecast, in Million units, F23-FY28E



2. Additional demand from Split AC and Window AC segment

The exhibit 4.18 indicates an additional demand of 6.2 million Split ACs and 0.3 million Window ACs over the FY23 demand by FY28. **This translates to additional demand of 12.7 million units (6.2 million Split IDUs + 6.2 million split ODU + 0.3 million Window AC) by FY28.**

3. In-house manufacturing capacity additions by the brands

However, the entire incremental demand will not generate ODM/OEM business opportunity. This is because, some of the leading brands, under PLI scheme, are setting up near-fully integrated manufacturing facility which will be fully operational before FY28.

Exhibit 4.21: List of brands setting up RAC manufacturing facilities under PLI scheme

S. No.	Applicant Name	Control assembly for IDU	Control assembly for ODU	Compressor	Motor	Heat Exchanger	Cross Flow Fan	Display Panel (LCD/LED)	Sheet Metal Component	Plastic Moulding Component	Valves & Brass Component	Copper Tube (plain and/ or grooved)	Aluminium Stocks for Foils & Fins for Heat Exchangers	Gestation Period	Committed investment (INR Crore)
1	Daikin Airconditioning India Pvt Ltd	✓	✓	✓	✓	✓	✓		✓	✓				Upto 03/ 23	538.70
2	Blue Star Climatech Ltd					✓			✓					Upto 03/ 23	156.00
3	Havells India Ltd	✓	✓			✓			✓	✓				Upto 03/ 22	112.71
4	Johnson Controls Hitachi AC India Ltd					✓	✓		✓	✓				Upto 03/ 22	100.67
5	Voltas Ltd					✓	✓			✓				Upto 03/ 23	100.00
6	IFB Industries Ltd				✓	✓			✓					Upto 03/ 22	57.00
7	Panasonic India Pvt Ltd	✓	✓			✓			✓	✓				Upto 03/ 22	50.00
8	LG Electronics India Pvt Ltd	✓	✓	✓	✓	✓				✓				Upto 03/ 23	300.00
9	Mitsubishi Electric India Pvt Ltd	✓	✓			✓	✓							Upto 03/ 23	50.00
Total															1,465.08

Source: DPIIT, Invest India
<https://dpiit.gov.in/production-linked-incentive-scheme/production-linked-incentive-scheme-pli-white-goods>

4. Incremental opportunity available with the ODM companies

Incremental ODM/OEM business opportunity would arise from three sources:

- Brands which are investing in manufacturing, however, may source a portion of the requirements from the ODM companies due to seasonality issues and need for a wide product mix.
- Considering the low penetration of RAC manufacturing operations in south India, brands that do not intend to set up manufacturing operations in south India but intend to cater to the south Indian market from more localized manufacturing operations, may offer ODM/OEM opportunities to companies like EPACK Durable.
- New entrants that will follow the ODM model to meet their requirements.

Exhibit 4.22: Indian RAC ODM/OEM market growth forecast and mix, FY23-FY28E

Unit Type	FY'23 ODM/OEM business mix	FY'28 ODM/OEM business mix forecast	Expected growth in ODM/OEM volume
Window AC	0.6	0.9	0.3
Split – IDU	2.2	5.1	2.9
Split – ODU (Kits + CBU)	2.3	5.2	2.9
Gas-Charged	1.0	0.2	-0.8
TOTAL ODM MARKET	6.1	11.4	5.3

All values are in million units

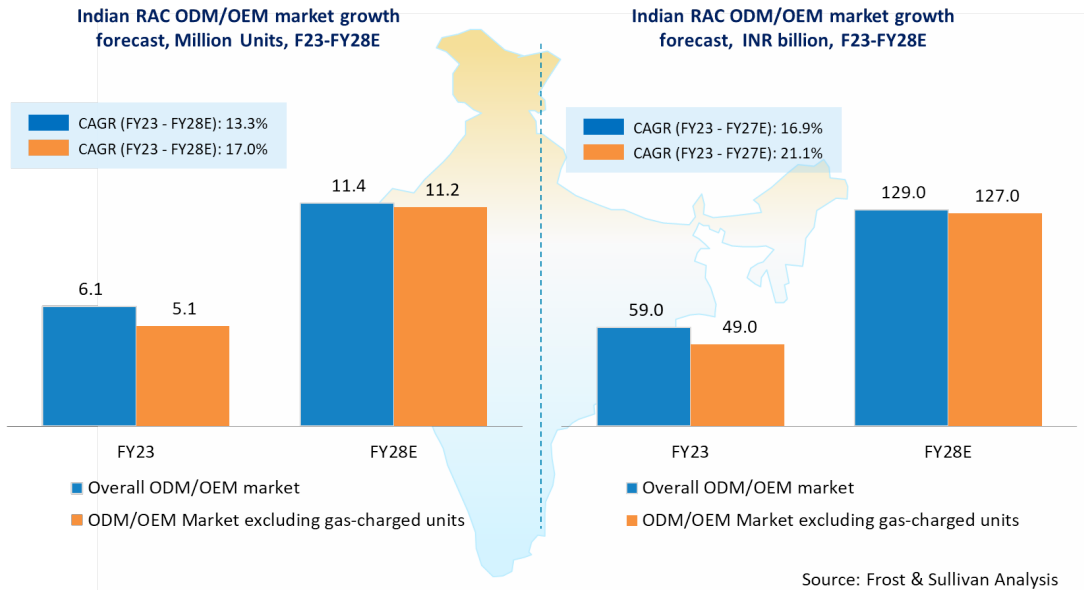
Frost & Sullivan Analysis

This would generate incremental ODM/OEM opportunity of approx. 2.5 million split ACs (5 million units) and 0.3 million Window ACs for the ODM companies by FY28. The opportunity mix is however expected to change as the currently imported units will largely be replaced through domestic manufacturing.

Volume wise, this translates to a significant growth of 13.3% in the ODM/OEM business between FY23 and FY28. However, if the gas-charged units are excluded, the growth rate further increases to 17% CAGR. Value

wise, this translates to growth in ODM/OEM business from INR 58-60 billion to INR 128-130 billion by FY28 at a CAGR of 16.9%. Excluding the gas-charged units, ODM/OEM business is expected to grow from INR 48-50 billion in FY23 to INR 125-127 billion by FY28 at a CAGR of 21.1%.

Exhibit 4.23: Indian RAC ODM/OEM market growth forecast, million units and INR billion, FY23-FY28E



C. Growth opportunity in the RAC component business in India

Besides supplying IDUs and ODUs, ODM companies also supply Split AC components to the brands to aid in their assembly process. ‘Components’ is also a sizable business for the ODM companies however, this market is also catered by standalone sheet metal fabricators, injection moulding companies, copper tube manufacturers, EMS companies, induction motor manufacturers, and compressor suppliers. ODM companies such as EPACK Durable has capability to manufacture all the components under one roof except Compressor, which is a bought-out item for most of the brands and ODMs. Window AC is a pure-play ODM business.

For estimating the growth opportunity in the components business over the next 5 years i.e., till FY28, following methodology has been adopted:

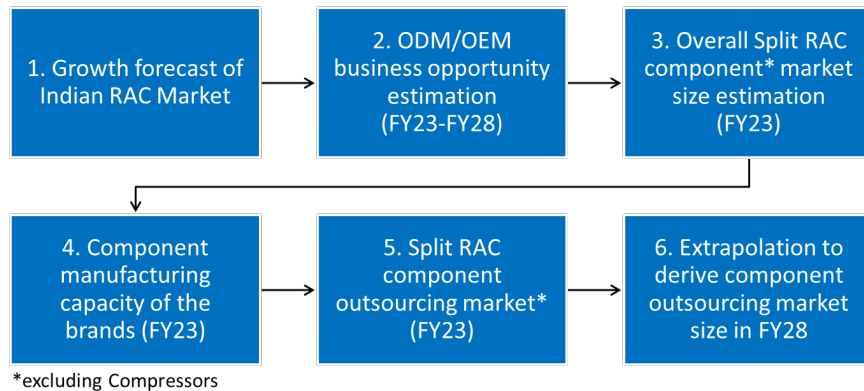


Exhibit 4.24: Indian Split RAC component business growth forecast, INR billion, FY23-FY28E

	FY23	FY28E
Split RAC Sales	7.5 million ACs	13.7 million ACs
ODM/OEM Sales	2.8 million ACs	5.3 million ACs
Component Sales	4.7 million ACs	8.4 million ACs
Component price* / SAC (excluding compressor)	INR 12,000 – 12,500	INR 13,800 – 14,300
Overall component market size (excluding compressor)	INR 56 - 60 billion	INR 115 – 120 billion
Outsourcing opportunities available to ODMs and standalone suppliers	55 – 60%	
Split RAC Component outsourcing market	INR 30 – 32 billion	INR 63 - 65 billion
CAGR		15% - 16%

*3% y-o-y increase in component price Source: Frost & Sullivan analysis

The above chart indicates that component opportunity will increase from 4.7 million Split ACs in FY23 to 8.4 million Split ACs by FY28. Considering component price (excluding compressor) of INR 12,000 – 12,500 per Split AC and a 3% appreciation in the price on a year-on-year basis, this translates to overall component opportunity of INR 56 - 60 billion in FY23 and is expected to grow to INR 115 - 120 billion by FY28.

Based on the in-house capacity available with the brands, ODMs and standalone component suppliers could cater to only 55-60% of this opportunity in FY23. The same ratio of 55-60% has been considered for estimating the component outsourcing market in FY28. Component outsourcing market in FY23 was INR 30 – 32 billion and is expected to grow at a CAGR of 15% - 16% to reach INR 63 – 65 billion by FY28.

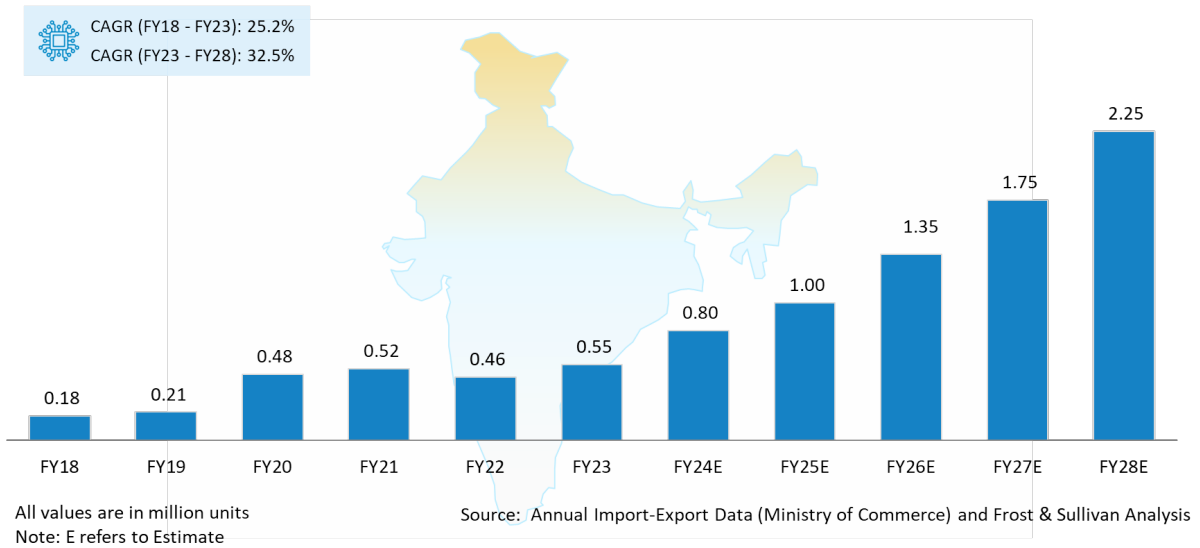
D. Export opportunities for the Indian ODM companies

In FY23, India exported 0.5 million units of RACs. Most of India's air conditioners are exported to the United Arab Emirates, and Sri Lanka. India's exports to emerging and developing countries account for more than half of India's total merchandise exports, which have increased by more than 10% over the last decade.

Exhibit 4.23 indicates that RAC export has remained stagnant at around 0.5 million units between FY20 and FY23. India exported 0.55 million RACs in FY23 which is approximately 7% of the domestic production volume of 8.4 million units.

As the Indian Government is promoting domestic manufacturing and exports through Production Linked Incentive (PLI) and various other schemes, brands and ODM companies are establishing manufacturing facilities to meet both the rising local demand and tapping into potential export opportunities. Based on discussion with the industry stakeholders, share of export may reach to 15% from the current 7% level over the next 5 years. This translates to export of approximately 2.25 million units by FY28.

Exhibit 4.25: Export of RACs from India, Volume in million units, FY18-FY28E



Demographically similar and neighbouring regions such as Africa, Southeast Asia, and the Middle East will be the key export destinations for the Indian brands and the ODM companies. African continent is an emerging market for RACs. Investments in infrastructure development and rising disposable income in several African countries are some of the key reasons that are driving the growth of RAC in the region. Countries such as South Africa, Egypt, Kenya, Nigeria, etc. will offer significant export opportunities for the Indian RAC brands which in turn will generate ODM opportunities for companies like EPACK Durable.

CHAPTER 5: OPPORTUNITIES IN SMALL DOMESTIC APPLIANCES (SDA) ODM MARKET

5. Overview of Indian Small Domestic Appliances (SDA) Market

The market segment for small domestic appliances (SDA) comprises kitchen appliances such as mixer-grinders, blenders, food processors, and others; cookers and ovens; grills and toasters; electric kettles; vacuum cleaners; hair dryers; irons; air coolers, etc. The product line of the SDA segment has evolved over the past few years, and suppliers continue to use diverse strategies to penetrate the Indian market. An increase in the total SDA market in the country has boded well for the sales of products designed specifically for the Indian market. In recent years, the development of the market has been influenced by an increase in rural consumption, domestic electrification, urbanisation, shorter replacement cycles, increased penetration of lifestyle appliances, and the availability of numerous brands at varying price points.

Exhibit 5.1(a): Indian SDA market, domestic sales, volumes in million units, growth in %, FY18 – FY28

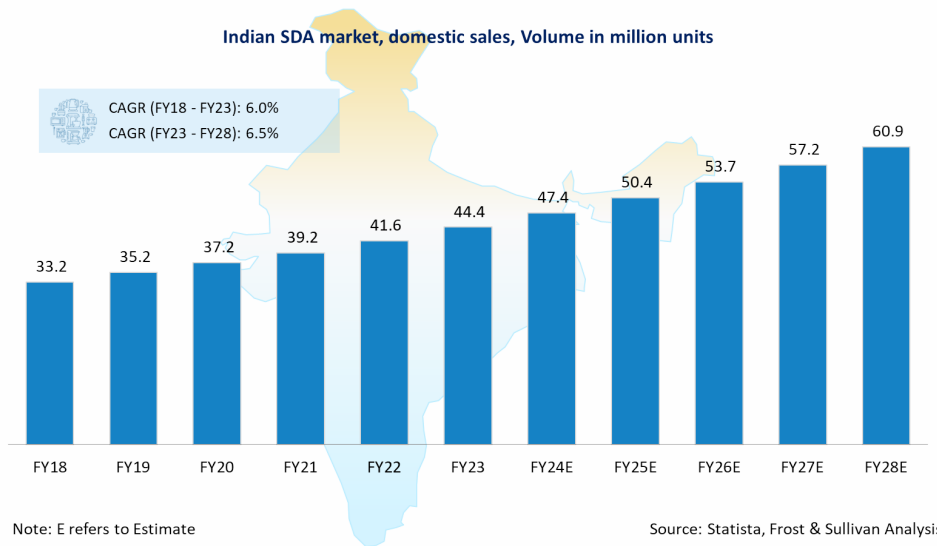
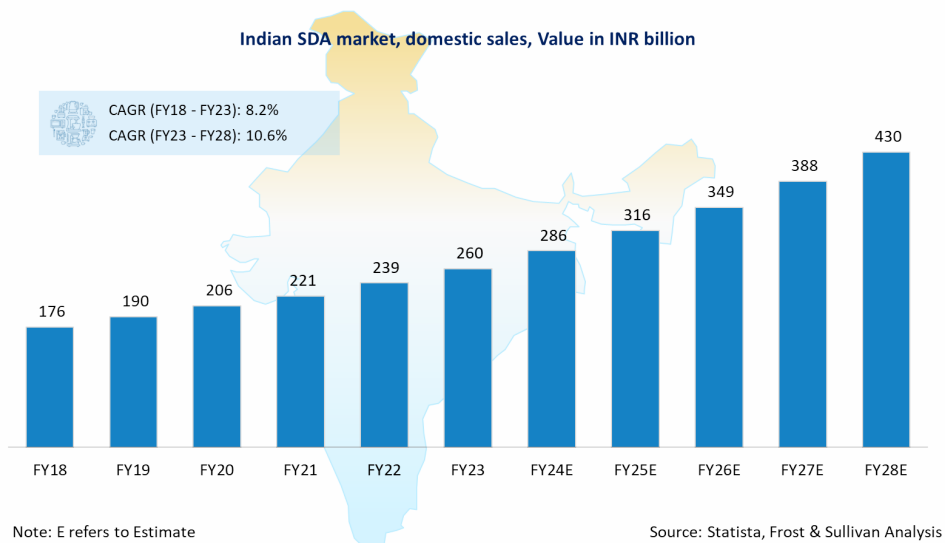


Exhibit 5.1(b): Indian SDA market, domestic sales, value in INR billion, growth in %, FY18 – FY28

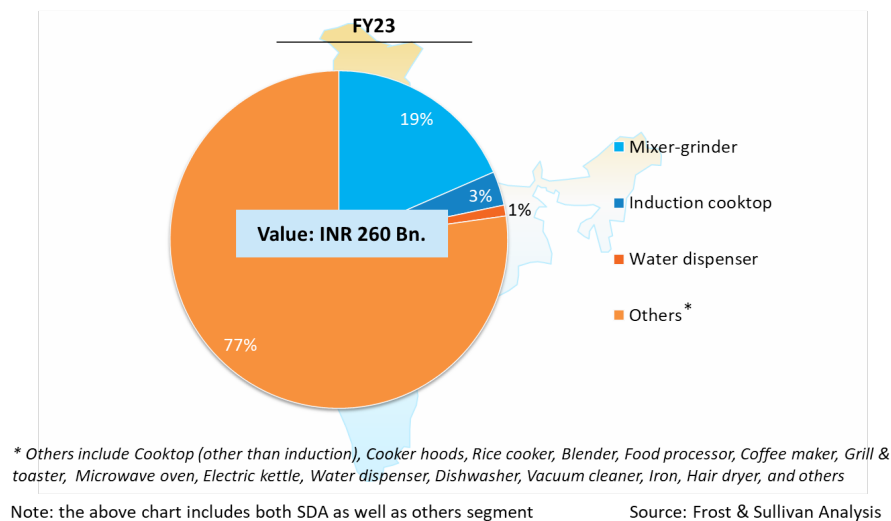


A. Indian SDA market segmentation by select product categories (mixer-grinder, induction cooktop and water dispenser)

According to industry experts, the SDA market will grow at a considerable pace for the next few years as domestic demand rises. The large young population with an exploratory mindset will overcome the challenge of price sensitivity, and consumers will prefer high-end products. Among the select set of product categories in SDA, mixer-grinders, induction cookers, and water dispensers contributing to around INR 60 billion market by revenue.

EPACK Durable is one of the promising players in the SDA segment. The company's aggregated wallet shares of its top 3 customers of SDA increased by a CAGR of 47% from Fiscal 2021 to Fiscal 2023.

Exhibit 5.2: Indian SDA market, split by select product categories, value in INR Billion, India, FY23



6. Mixer-Grinders

A. Overview of mixer-grinder market in India

Mixer-grinders are multi-purpose kitchen appliances that are used in the course of daily food preparation, used in both residential and commercial segments. It is most commonly used for grinding, mixing, blending, crushing, chutney and sauce making. Mixer-grinders are available in various sizes and capacities to accommodate different cooking needs.

In India, mixer-grinders are the most popular product among kitchen appliances, and they have numerous advantages over other markets. The overwhelming volume of consumers in the residential segment is a major factor. The market is gaining prominence and expanding its presence, primarily due to the growing health consciousness of Indian consumers, the rising number of working women, the expansion of the middle class, and the ease of supply. In value terms, the domestic sales of mixer-grinders are estimated to be INR 48 billion in FY23, with a volume of 14.7 million units. The market for mixer grinders is forecast to grow at a CAGR of 6.9% to reach INR 67 billion in FY28.

Exhibit 5.3(a): Indian mixer-grinder market, domestic sales, volumes in million, growth in %, FY18 – FY28E

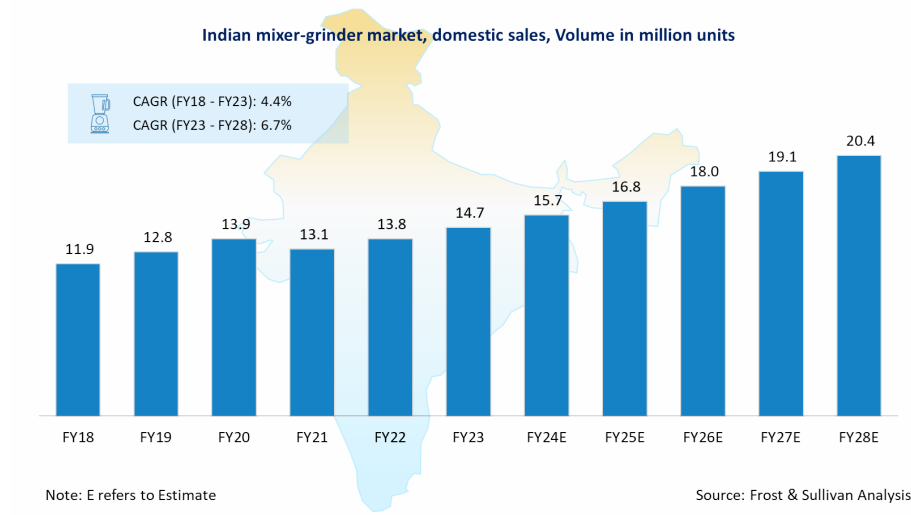
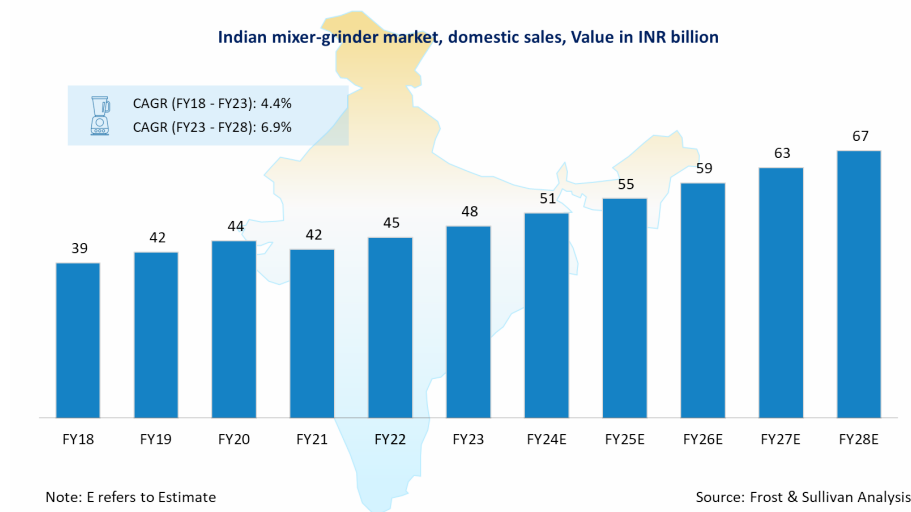


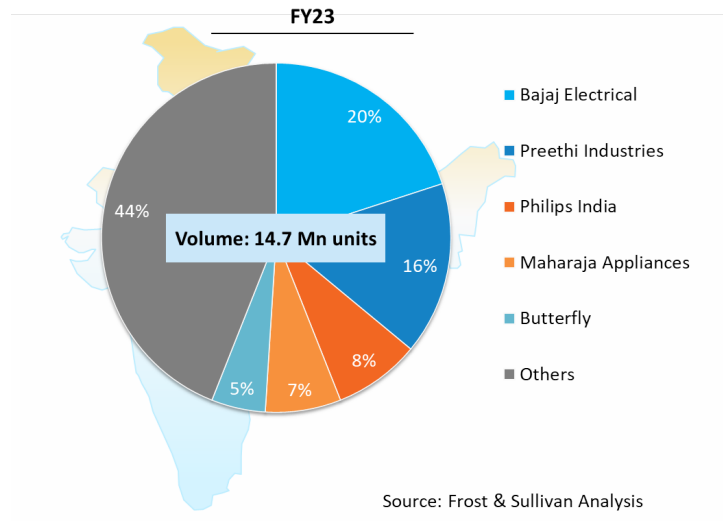
Exhibit 5.3(b): Indian mixer-grinder market, domestic sales, value in INR billion, growth in %, FY18 – FY28E



B. Competitive landscape of mixer-grinder market in India

The market for mixer-grinders is fragmented and highly competitive due to the presence of various small and large brands. Companies are innovating new multifunctional mixer-grinders in order to remain competitive and attract consumers. To reach a large number of customers, stakeholders are focusing on both offline and online sales channels. The top five brands, including Bajaj, Preethi, Philips, Maharaja, and Butterfly, account for approximately 55% of the market, while the remaining 44% is served by multiple brands with regional and pan-Indian presence.

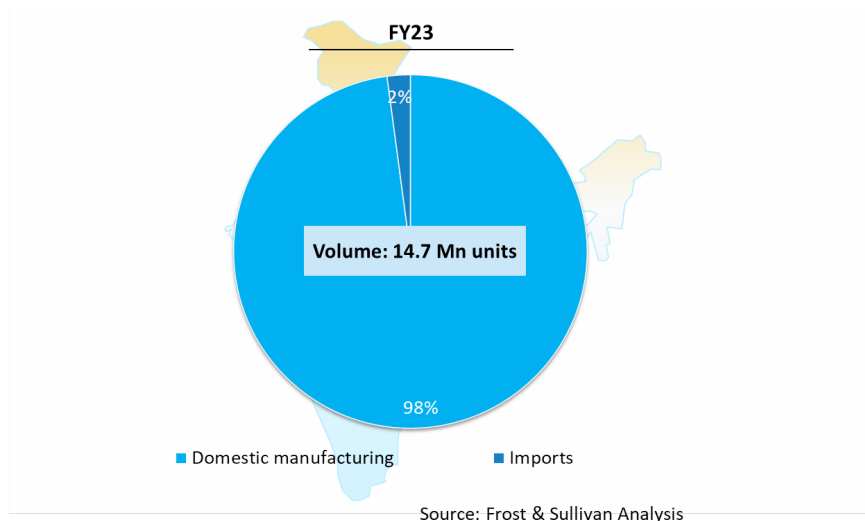
Exhibit 5.4: Indian mixer-grinder market, domestic sales percent split by competition, volume in millions, split in %, FY23



C. Domestic manufacturing vs imports

The Indian market for mixer-grinders is dominated by domestic manufacturers. Very few high-end models are imported into India, which contributes to around 2% of the total domestic sales. Many Indian companies have established manufacturing facilities in the country, which has further reduced the cost of the products.

Exhibit 5.5: Indian mixer-grinder market, domestic production vs imports, volume in millions, split in %, FY23

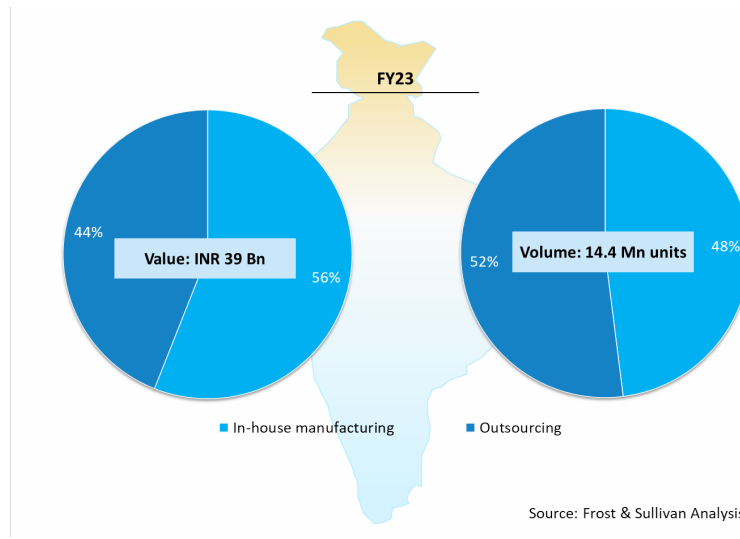


Manufacturers are working on incorporating advanced technologies and smart solutions into mixers and grinders to provide a user-friendly interface and ease of operation in order to suit diverse consumer demands.

D. Domestic manufacturing market: In-house vs outsourcing

The mixer-grinder market in India, is addressed by both in-house/ brand manufacturers (~ 48% by volume) and outsourcing/ EMS companies (~ 52% by volume). Major brands such as Bajaj, Preethi, Butterfly are manufacturing a small portion in-house. Some of the key players manufacturing mixer-grinder include Elin electronics, EPACK Durable, Suvidha Appliances, Vardaman, RS polymers and MVM.

Exhibit 5.6: Indian mixer-grinder market, in-house manufacturing vs. outsourcing, volume in million units, value in INR billion, split by %, FY23



E. Mixer-grinders: Market trends and growth drivers

Market trends

Connected appliances: Technological evolution is transforming the small appliances market, especially with connected/ smart home applications.

New compact solutions: Suppliers style their products as per the evolving trend of appliances as perceived more as lifestyle defining, especially among affluent, urban consumers. Sleek design, neutral colours, and matte finishes add to the appealing factor.

Changing urban lifestyles with nuclear families and increase in the participation of men in kitchen activities have led suppliers to develop products that are small and convenient for usage.

Growth drivers

E-commerce and retail marketing initiatives such as the exchange programs, bundled offers, attractive discounts, freebies, and extended warranty services are attracting this market, enabling the growth of mixer-grinder market.

Innovations in kitchen appliances: Evolving trend towards exploring opportunities through innovations in kitchen with a preference towards small and convenient appliances is on rise. The trend towards adopting the Western food culture has led to a higher adoption of compact sized mixer-grinder.

The under penetrated semi-urban/ rural market is expected to be the critical demand trigger for the small appliances market in the next few years on the back of rising incomes and electrification.

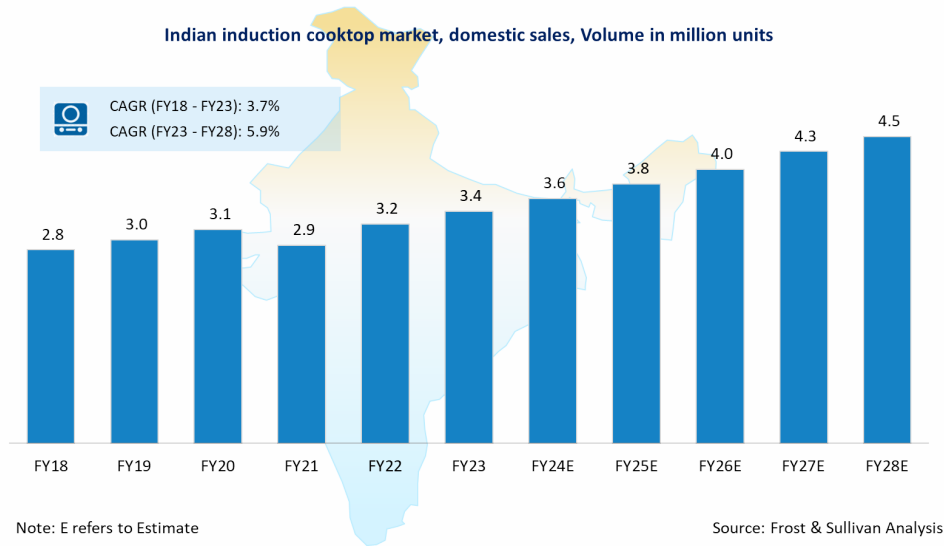
7. Induction Cooktop

A. Overview of induction cooktop market in India

Cooktops are essentially cooking stoves. An induction cooktop is a modern kitchen appliance that uses electromagnetic induction to directly heat suitable cookware. The appliance includes a control panel, an

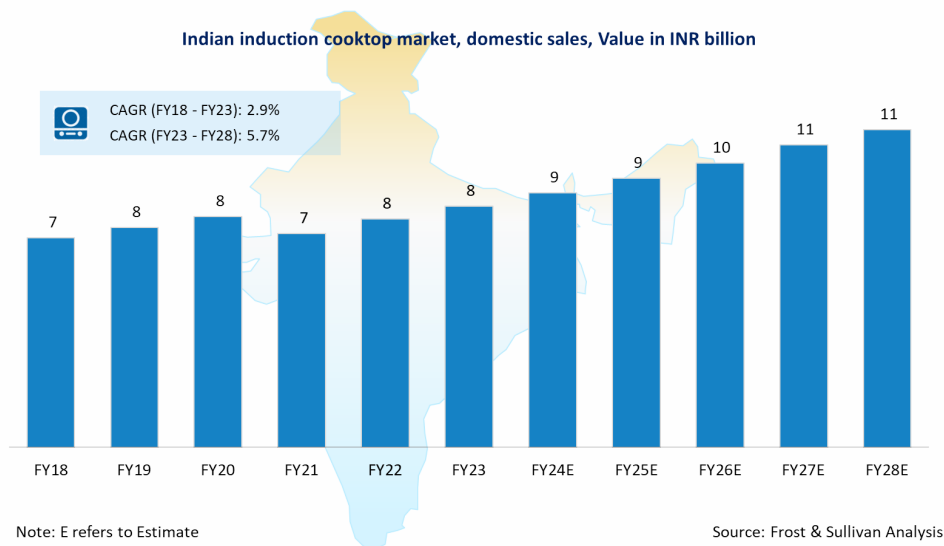
exquisite glass-ceramic surface, induction coils, and safety components. Energy efficiency, rapid heating, precise temperature control, and safety are the key advantages of induction cooking. Due to their efficient and practical cooking capabilities, induction cookers have grown in popularity among households seeking cutting-edge and modern cooking solutions.

Exhibit 5.7(a): Indian induction cooktop market, domestic sales, volume in million units, growth in %, FY18 – FY28



As the cost of LPG increases, consumers prefer induction cooktops due to their energy efficiency, which helps to reduce utility bills. Also, induction cooktops are safer to use than LPG cylinders. Increased consumer spending on modern kitchen appliances as a result of an increasing number of working women and a busy lifestyle, rising awareness of indoor pollution, and rising demand for innovative smart electrical appliances are the key drivers for the induction cooktops in India. The market is expected to be around 3.4 million units in FY23 and is projected to grow at a rate of 5.9% over the next five years to reach 4.3 million units in FY28.

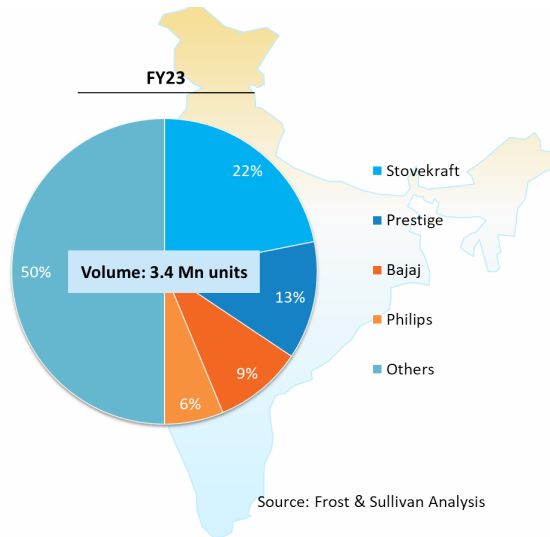
Exhibit 5.7(b): Indian induction cooktop market, domestic sales, value in INR billion, growth in %, FY18 – FY28



B. Competitive landscape of induction cooktop market in India

This induction cooktop market is addressed by both regional and global players. Market participants compete with one another in terms of product differentiation, capacity, advanced features, and pricing. Competitors are focusing on market expansion and the adoption of new technologies to increase their profit margins and market shares. In addition, some manufacturers are developing eco-friendly and energy-efficient induction cooktops with added features such as the addition of more burners, noiseless operations, and touchscreen features. Stovekraft, Prestige, Bajaj, and Philips account for 50% of the total induction cooktop market in India.

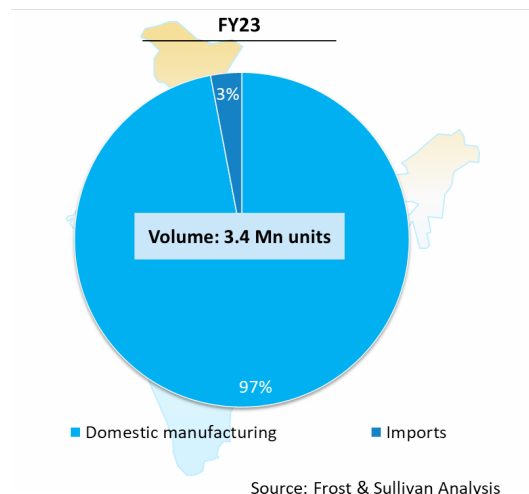
Exhibit 5.8: Indian induction cooktop market, domestic sales percent split by competition, volume in millions, split in %, FY23



C. Domestic manufacturing vs imports

The induction cooktop is completely manufactured in India. A very few models are imported, which is negligible. In addition, manufacturers are investing in their research and development due to the growing demand for efficient cooktops in the industry.

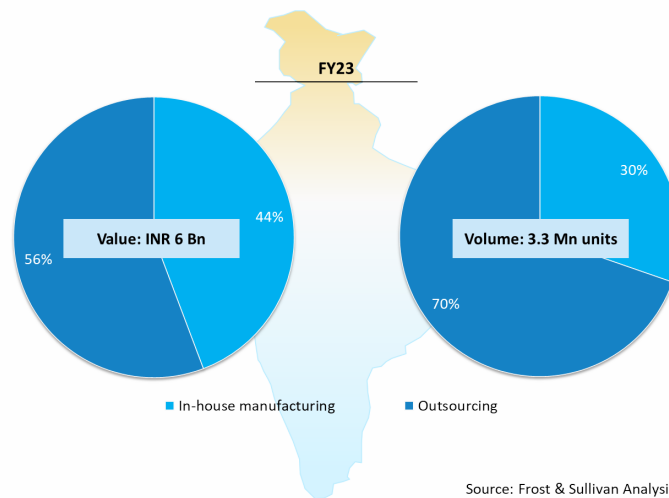
Exhibit 5.9: Indian induction cooktop market, domestic production vs imports, volume in millions, split in %, FY23



D. Domestic manufacturing market: In-house vs outsourcing

Very few brands manufacture ICTs in-house, with the vast majority being produced by outsourcing partners in India. Outsourcing partners manufacture about 70% of the market. Due to the rising demand, home appliance brands are pacing up to meet this increasing need with an extensive line of highly creative and reasonably priced ICTs, which has paved the way for domestic manufacturing. EPACK Durable, Suvidha Appliances (Canbara), Agilitive, Vardhaman, MVM, and Kaser are some of the leading outsourcing partners for large brands of induction cooktops in India. EPACK Durable, with a production volume of 0.9 million units, is a leading outsourcing partner for many reputable brands in India.

Exhibit 5.10: Indian induction cooktop market, in-house manufacturing vs. outsourcing, volume in million units, value in INR billion, split by %, FY23



E. Induction cooktop: Market trends and growth drivers

Market trends

Increasing Innovations to the Cooktops: A few Indian and global brands are investing a remarkable amount of money in their research and development division because of the industry's growing need for efficient cooktops. Diverse advances are being developed simultaneously to encourage market expansion.

Government initiatives: Government programmes promoting clean cooking methods and energy efficiency have prompted more people, particularly in rural regions, to buy induction cooktops.

Technological Advancements: The convenience and control of induction cooktops are improved by cutting-edge technologies including touch controls, pre-programmed cooking modes, safety measures, and connectivity choices.

Growth drivers

Energy Efficiency and Cost Savings: High energy efficiency of induction cooktops results in considerable long-term cost reductions. An induction cooktop is considered to be a more energy-efficient compared to both the traditional gas stove and the electrical cookers, increasing overall adoption.

Changing Lifestyles and Urbanization: Due to urbanisation and changing lifestyles, city inhabitants have fewer kitchen spaces, making induction cooktops with their sleek designs and space-saving features popular.

Environmental Concern: Because of their lower emissions and less carbon impact, induction cooktops are regarded as a greener option and an eco-friendly solution among the end-users.

Affordability and Competitive Pricing: Induction cooktops are more accessible and economical thanks to increased production and availability, which has resulted in competitive pricing.

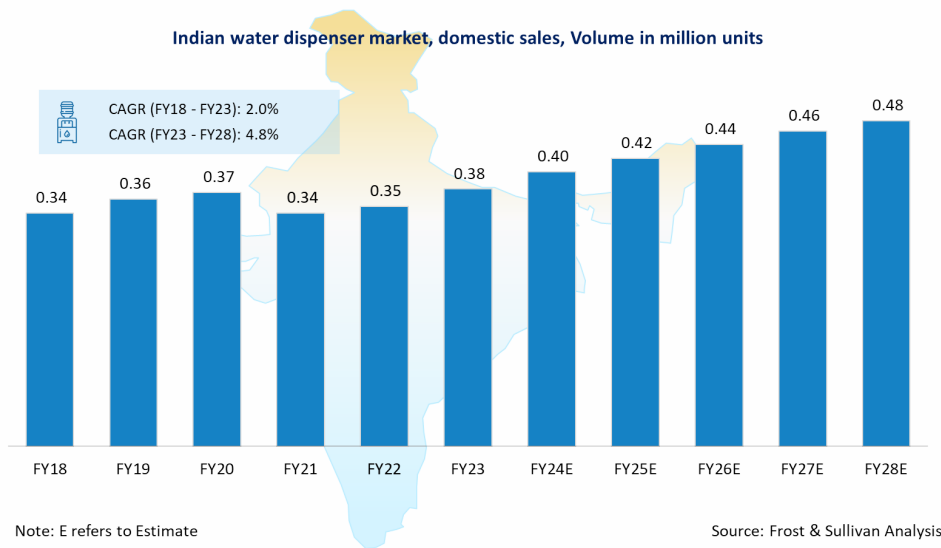
Rising online sales channel: As more people shop online, key market participants are using digital channels to reach customers. The digital marketing strategy boosts e-commerce traffic and product discovery on e-commerce platforms. Rising usage of the internet and smartphones is accelerating the transition to digital payments and e-commerce on online platforms, bringing customers and brands closer together.

8. Water Dispenser Market

A. Market overview of water dispenser in India

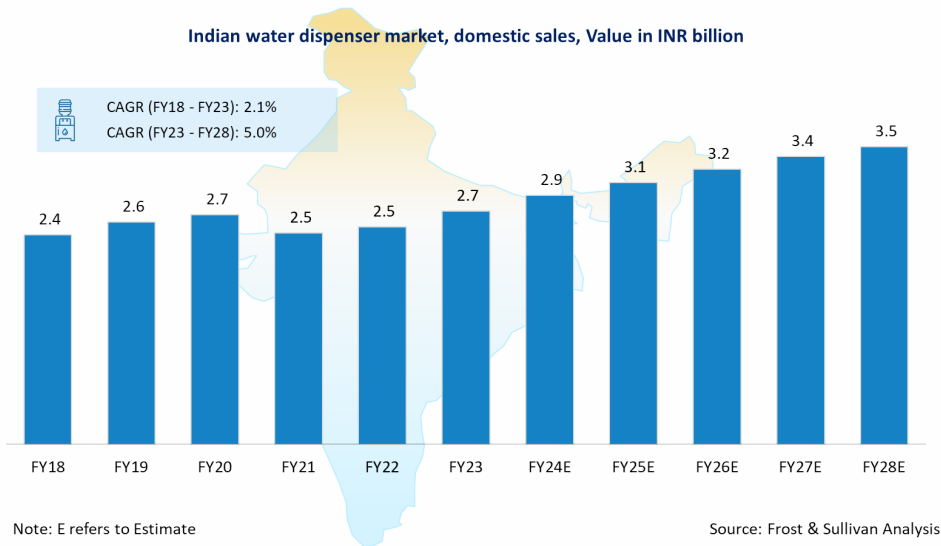
A water dispenser is an appliance typically used in the home or office to dispense water. It consists of a water storage tank, a heating or cooling system, and a dispensing system that makes it easy to get hot or cold water for drinking and other purposes. It provides a convenient way to access both hot and cold water instantly. There are different types of water dispensers available, such as bottled water dispensers, point-of-use dispensers, and bottom-loading dispensers.

Exhibit 5.11(a): Indian water dispenser market, domestic sales, volume in million unit, growth in %, FY18 – FY28



The demand for water dispensers is driven by factors such as portability, ease of use and installation, and low maintenance costs. Also, rising health consciousness, increasing demand from commercial and industrial sectors, increasing usage of bottled water, and deteriorating quality of groundwater, are further expected to boost demand for water dispensers. The water dispense market in India is estimated at 0.38 million units in FY23 at a value of INR 2.7 billion, which is expected to grow at a rate of 4.8% over the next five years to reach 0.48 million units in FY28. Water dispensers are primarily used in offices, canteens, small shops, etc., where there is limited footfall. The market in the country is dominated by top mounted water dispensers due to their reasonable price and technological innovations.

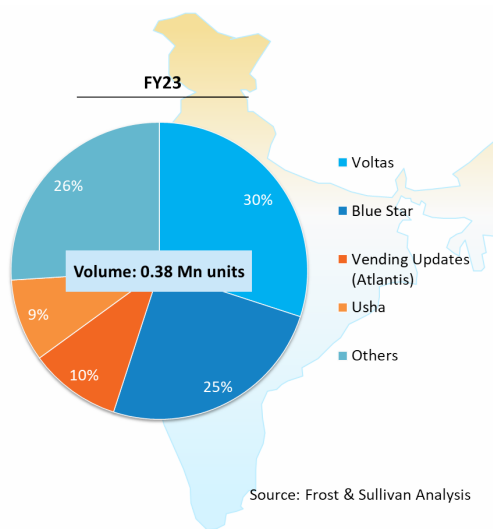
Exhibit 5.11(b): Indian water dispenser market, domestic sales, value in INR billion, growth in %, FY18 – FY28



B. Competitive landscape of water dispenser market in India

Indian water dispenser market is a moderately competitive, with domestic brands playing a significant role. Product differentiation is almost absent, while the target audience is highly price sensitive. The Indian market has a diverse selection of water dispensers, each with its own set of features and benefits. Both domestic and global players provide a variety of water dispensers to meet various consumer needs. The Indian market offers a wide range of water dispensers, each with a unique set of features and benefits. Key players such as Voltas, Blue Star, Vending Updates (Atlantis), and USHA operating in the market account for a considerable market share and have a strong presence across India. Voltas and Blue Star together contribute 55% of the total market in India.

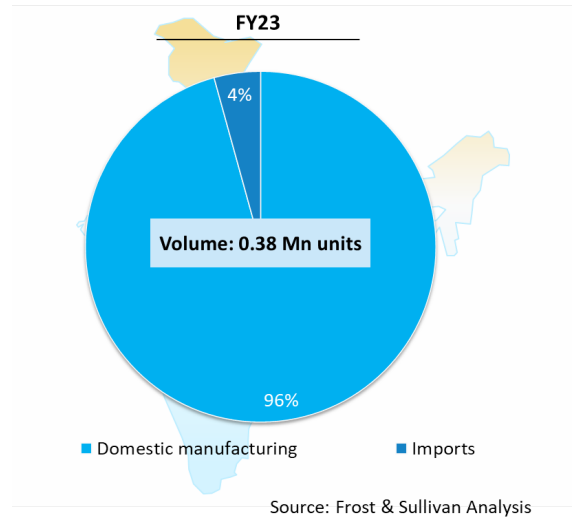
Exhibit 5.12: Indian water dispenser market, domestic sales, % split by competition, volume in millions, FY23



C. Domestic manufacturing vs imports

The water dispensers are completely manufactured in India, with a negligible amount imported into India. Manufacturers have developed domestic capability or sourcing components from local vendors to reduce import requirements.

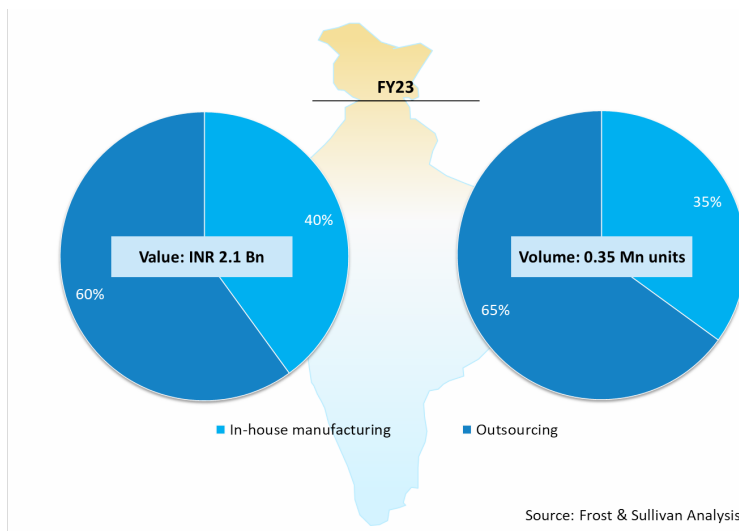
Exhibit 5.13: Indian water dispenser market, domestic production vs imports, volume in millions, split in %, FY23



D. Domestic manufacturing market: In-house vs outsourcing

Large players have in-house manufacturing facility. However, they outsource few volumes to EMS or outsourcing partners due to increasing demand. Veeline and Vending Updates are the key outsourcing partners for major brands in India. Vending Updates though a key contract manufacturer, is having its own brand. Some of the other key players manufacturing in India include EPACK Durable and Penguin.

Exhibit 5.14: Indian water dispenser market, in-house manufacturing vs. outsourcing, volume in million units, value in INR billion, split by %, FY23



E. Water dispenser: Market trends and growth drivers

Market trends

Changing Lifestyles and Convenience: Water dispensers are a ubiquitous fixture in homes and offices because they make it easy to obtain cold or hot water instantaneously and eliminate the need for kettles or freezers.

Increasing urbanisation: Rapid urbanisation, higher disposable incomes, and modern lifestyles have transformed water dispensers into a convenience icon that is becoming increasingly popular in modern houses.

Growth drivers

Rising concern about water contamination and increasing health awareness: Consumers are preferring water dispensers with purification or filtration systems for clean, healthy water due to increased concerns about water contamination and the need for safe drinking water. The emphasis on living a healthy lifestyle has increased demand for water consumption, and water dispensers help consumers keep hydrated and meet their daily water intake goals.

Infrastructure Development: The rise of commercial buildings, offices, educational institutions, and healthcare facilities has raised demand for water dispensers, which provide a dependable source of clean drinking water to workers, students, and visitors.

CHAPTER 6: COMPETITIVE LANDSCAPE AND FINANCIAL BENCHMARKINGS

1. Profiling of key competitors

Exhibit 6.1: Overview of key competitors, India, FY23

Name of the EMS / OEM	Head Office	Company Background
EPACK Durable Ltd	Greater Noida	• EPACK Durable Limited, is a technology focused company with an intention of improving people's lives and empowering customers with innovative solutions in OEM & ODM processes serving in the living appliances category
Dixon Technologies (India) Ltd	Noida	• Founded in 1993, Dixon Technologies is engaged in manufacturing of products in the consumer durables, lighting and mobile phones markets in India. Company also provide solutions in reverse logistics.
Amber Enterprises India Ltd	Gurugram	• Amber Enterprises, established in 1990, is a prominent solution provider for Air conditioner OEM/ODM industry in India. It has a leading presence in complete RAC units and deals in major RAC components.
PG Electroplast Ltd	Noida	• PG Electroplast, a flagship company of PG group started its journey in 1977 and is a leading diversified EMS provider. The company specializes in ODM, OEM, and plastic injection moulding providing a one-stop solution.
Elin Electronics Ltd	Kolkata	• Elin Electronics, founded in 1969, is the flagship company of the Elin Group. Initially focused on switches and relays, later forayed into backward integration, producing motors and small appliances.
Veeline Industries Ltd	Kolkata	• Veeline Industries, founded in 1989 is an ODM/OEM electrical appliance manufacturing company for brands around the globe. The comprehensive range of products include Water Dispensers, Water Purifiers, Geysers, etc.
Vending Updates India Pvt Ltd	Noida	• Vending Updates India Pvt. Ltd. founded in 1996 is one of the leading manufacturer of water dispensers, vending machines and tea-coffee premixes in India

Source: Frost & Sullivan Analysis

Exhibit 6.2: Comparison of presence of key competitors across product segments, India, FY23

Name of the EMS / OEM	Window AC	Split AC	AC Components	Water Dispenser	Kitchen Appliances	Sheet Metal	Plastic Components
EPACK Durable Ltd	✓	✓	✓	✓	✓	✓	✓
Dixon Technologies (India) Ltd			✓			✓	✓
Amber Enterprises India Ltd	✓	✓	✓			✓	✓
PG Electroplast Ltd	✓	✓	✓			✓	✓
Elin Electronics Ltd					✓	✓	✓
Veeline Industries Ltd				✓	✓		
Vending Updates India Pvt Ltd				✓	✓		

Source: Frost & Sullivan Analysis

Exhibit 6.3 (a): Operational metrics of key competitors - RAC, India, FY23

Name of the EMS / OEM	No. of facilities	Installed capacity	Level of integration	Strategy & Outlook
EPACK Durable Ltd	2 facilities at Dehradun and Bhiwadi. Upcoming facility at Sricty	2.4 mn units (RAC) 0.1 mn units (water dispenser) 2.4 mn units (induction cooktop) 0.5 mn units (Juicer mixer grinder)	<ul style="list-style-type: none"> Heat exchanger, copper tubing Sheet metal component Injection moulding, CFF Motors, control boards PCBA and product assembly. 	<ul style="list-style-type: none"> All RAC capabilities are developed inhouse. EPACK is in the process of setting up its third facility at Sri City, increasing its total manufacturing capacity to 3.6 mn units EPACK Durable has strong and sticky relationships with leading, blue-chip brands. The company has a dedicated R&D team for RAC & SHA products.
Dixon Technologies (India) Ltd	18 facilities located in Uttar Pradesh, Uttarakhand and Andhra Pradesh	Controller boards (RAC) 5.5 mn units (TVs) 8 mn units (CCTV) 300 mn units (LED) 2.4 mn units (WM) 30 mn units (mobile phones)	<ul style="list-style-type: none"> Research & Development Design Sheet metal & plastic moulding Control boards and other components PCBA and product assembly 	<ul style="list-style-type: none"> In FY22, the company formed a JV with Rexxam, Japan to build controller boards for air conditioners. The JV company is a PLI recipient and will be investing INR 51 Crore over five years. In continuation with its backward integration strategy, the company will be investing INR 100 Crore in lighting segment.

Name of the EMS / OEM	No. of facilities	Installed capacity	Level of integration	Strategy & Outlook
Amber Enterprises India Ltd	27 facilities across 9 States	6.4 mn units (RAC)	<ul style="list-style-type: none"> Heat exchangers Sheet metal, Injection moulding, Motors, control boards, and system tubing. PCBA and product assembly. 	<ul style="list-style-type: none"> The company relied on acquisitions for developing RAC capabilities, such as - they acquired Ijlin for PCBA, PR for Crossflow fan, Pravartika for Plastic moulding. Expanding its four new facilities for components, heat exchangers, compressor parts for refrigerators Capex would be INR 625- 650 crore for FY23. For FY24, the company plans to incur capex of INR 200-250 crore.
PG Electroplast Ltd	8 facilities across 3 States	2 mn (IDU); 1 mn (ODU); 0.8 mn (washing machine)	<ul style="list-style-type: none"> Heat exchangers Sheet metal, Injection moulding, Motors, control boards, and system tubing. PCBA and product assembly. 	<ul style="list-style-type: none"> Planned an investment of INR 100 crore for the ongoing fiscal year, to be spent on setting up a new air-conditioner manufacturing plant at Ahmednagar in Maharashtra

Source: Frost & Sullivan Analysis

Exhibit 6.3 (b): Operational metrics of key competitors - SDA, India, FY23

Name of the EMS / OEM	No. of facilities	Installed capacity	Level of integration	Strategy & Outlook
Elin Electronics Ltd	5 plants across Delhi, Kolkata, Ghaziabad, Baddi and Goa	2.4 mn (mixer grinder & hand blender); 1.5 mn (ceiling & exhaust fan); 20 mn (LED lights)	<ul style="list-style-type: none"> System tubing Control boards and motors PCBA and product assembly 	<ul style="list-style-type: none"> It's current capacity utilization is 75-105%, indicating effective production utilization. Expansion with Brownfield adds Rs. 200cr revenue; new Philips partnership boosts FY23 topline.
Veeline Industries Ltd	3 plants across West Bengal, Himachal Pradesh and Gujarat	1 mn (water dispenser) 1 mn (water heater)	<ul style="list-style-type: none"> Components Sheet metal Tubing Motors & controls boards PCBA and product assembly 	<ul style="list-style-type: none"> Veeline's focus is to provide world-class quality certified products globally.
Vending Updates India Pvt Ltd	3 plants in Delhi, Noida and Ghaziabad	0.3 mn (water dispenser) 0.2 mn (vending machine)	<ul style="list-style-type: none"> Sheet metal fabrication Plastic moulding PCBA and product assembly 	<ul style="list-style-type: none"> Add hot/cold food and beverage machines, self-service laundry machines. Target other regions in India, South Asian countries. Upgrade software, hardware, payment systems to improve vending machine efficiency and functionality.

Source: Frost & Sullivan Analysis

2. Financial benchmarking of EPACK Durable Ltd with key competitors

Exhibit 6.4: Operating Revenue and Gross Profit comparison of peers, India, Value in INR Million, FY20 – FY24H1

Name of the Company	Revenue from operations (INR million)					Year on Year growth (%)				Gross Profit ² (INR million)					
	FY20	FY21	FY22	FY23	FY24H1	CAGR*	FY20 to FY21	FY21 to FY22	FY22 to F23	FY20	FY21	FY22	FY23	FY24H1	CAGR*
EPACK Durable Ltd	NA	7,362.45	9,241.62	15,388.32	6,148.04	44.57%	NA	25.52%	66.51%	NA	871.54	1,298.21	2,147.50	872.51	56.97%
Dixon Technologies (India) Ltd	44,001.17	64,481.70	1,06,970.80	1,21,920.10	82,146.80	37.51%	46.55%	65.89%	13.98%	5,399.12	6,784.50	9,178.40	11,712.7	7,898.20	31.39%
Amber Enterprises India Ltd	39,627.93	30,305.20	42,063.97	69,270.95	26,290.50	51.19%	-23.53%	38.80%	64.68%	6,610.66	4,863.44	6,767.31	10,593.3	5,038.20	47.59%
PG Electroplast Ltd	6,394.17	7,032.07	11,116.35	21,599.48	11380.30	75.26%	9.98%	58.08%	94.30%	1,356.94	1,466.92	2,276.00	3,954.40	2,176.22	64.19%
Elin Electronics Ltd	7,855.84	8,623.78	10,937.54	10,754.28	5,271.73	11.67%	9.78%	26.83%	-1.68%	2,317.82	2,376.87	2,780.80	2,751.49	1,370.78	7.59%
Veeline Industries Ltd	1,597.99	1,607.59	2,607.86	NA	NA	NA	0.60%	62.22%	NA	474.82	471.18	608.98	NA	NA	NA
Vending Updates India Pvt Ltd	346.06	328.88	657.38	NA	NA	NA	-4.96%	99.89%	NA	96.31	88.20	153.68	NA	NA	NA

NA - Data not available; *CAGR represent FY21 to FY23

Source: Annual Reports of Companies published in RoC, MCA; Frost & Sullivan Analysis

¹ Revenue from operations = Revenue from contracts with customers and other operating income such as Scrap Sales, Government grants, Export Incentive and Service charges.

² Gross Profit = Revenue from operations – Cost of goods sold (COGS)

- COGS = Sum of cost of materials consumed, Purchases of stock-in-trade and change in inventories of finished goods and work-in-progress

Exhibit 6.5: EBITDA and PAT comparison of peers, India, Value in INR Million, FY20 - FY24H1

Name of the Company	EBITDA ³ (INR million)						PAT ⁴ (INR million)					
	FY20	FY21	FY22	FY23	FY24H1	CAGR*	FY20	FY21	FY22	FY23	FY24H1	CAGR*
EPACK Durable Ltd	NA	420.33	688.03	1,025.25	369.77	56.18%	NA	78.03	174.34	319.72	26.54	102.42%
Dixon Technologies (India) Ltd	2,230.64	2,865.90	3,791.10	5,127.50	3,362.80	33.76%	1,205.00	1,598.00	1,903.30	2,550.80	1,805.50	26.34%
Amber Enterprises India Ltd	3,092.71	2,202.88	2,753.83	4,179.33	1,914.60	37.74%	1,641.45	832.79	1,113.23	1,637.76	409.50	40.23%
PG Electroplast Ltd	399.15	497.60	899.57	1,760.40	1,033.68	88.09%	26.15	116.12	374.16	774.69	461.90	158.29%
Elin Electronics Ltd	554.55	664.80	790.16	651.07	196.46	-1.04%	274.87	348.57	391.47	268.02	76.90	-12.31%
Veeline Industries Ltd	180.86	220.98	264.30	NA	NA	NA	85.00	109.01	107.92	NA	NA	NA
Vending Updates India Pvt Ltd	41.07	20.04	55.88	NA	NA	NA	27.24	10.37	22.14	NA	NA	NA

NA - Data not available; *CAGR represents FY21 to FY23;

Source: Annual Reports of Companies published in RoC, MCA; Frost & Sullivan Analysis

³ EBITDA (Earnings before interest, tax, depreciation & amortization) = Profit before Tax + Profit/(loss) of associate + Exceptional items + Finance cost + Depreciation and amortization - Other income;

⁴ PAT (Profit after tax) = Total profit for the period

Exhibit 6.6: Gross profit margin, EBITDA margin and PAT margin of peers, India, Ratio in %, FY20 - FY24H1

Name of the Company	Gross profit margin ⁵ (%)					EBITDA margin ⁶ (%)					PAT margin ⁷ (%)				
	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1
EPACK Durable Ltd	NA	11.84%	14.05%	13.96%	14.19%	NA	5.71%	7.44%	6.66%	6.01%	NA	1.06%	1.89%	2.08%	0.43%
Dixon Technologies (India) Ltd	12.27%	10.52%	8.58%	9.61%	9.61%	5.07%	4.44%	3.54%	4.21%	4.09%	2.74%	2.48%	1.78%	2.09%	2.20%
Amber Enterprises India Ltd	16.68%	16.05%	16.09%	15.29%	19.16%	7.80%	7.27%	6.55%	6.03%	7.28%	4.14%	2.75%	2.65%	2.36%	1.56%
PG Electroplast Ltd	21.22%	20.86%	20.47%	18.31%	19.12%	6.24%	7.08%	8.09%	8.15%	9.08%	0.41%	1.65%	3.37%	3.59%	4.06%
Elin Electronics Ltd	29.50%	27.56%	25.42%	25.59%	26.00%	7.06%	7.71%	7.22%	6.05%	3.73%	3.50%	4.04%	3.58%	2.49%	1.46%
Veeline Industries Ltd	29.71%	29.31%	23.35%	NA	NA	11.32%	13.75%	10.13%	NA	NA	5.32%	6.78%	4.14%	NA	NA
Vending Updates India Pvt Ltd	27.83%	26.82%	23.38%	NA	NA	11.87%	6.09%	8.50%	NA	NA	7.87%	3.15%	3.37%	NA	NA

NA - Data not available

Source: Annual Reports of Companies published in RoC, MCA; Frost & Sullivan Analysis

⁵Gross profit margin = Gross profit / Revenue from operations;

⁶EBITDA margin = EBITDA / Revenue from operations;

⁷PAT margin = PAT / Revenue from operations

Exhibit 6.7: RoE, RoCE, Gross Fixed Asset Turnover Ratio, Cash conversion Cycle of peers, India, FY20 - FY24H1

Name of the Company	RoE ⁸ (%)					RoCE ⁹ (%)					Gross Asset Turnover Ratio ¹⁰					Cash Conversion Cycle ¹¹				
	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1
EPACK Durable Ltd	NA	12.00%	18.28%	14.68%	0.67%	NA	11.72%	13.68%	11.85%	2.71%	NA	5.37	3.61	3.59	1.17	NA	108	117	82	68
Dixon Technologies (India) Ltd	22.26%	25.00%	21.94%	22.36%	13.08%	30.70%	32.20%	25.45%	27.87%	17.04%	8.89	11.09	11.66	9.33	5.21	1	1	2	2	-1.62
Amber Enterprises India Ltd	14.11%	5.94%	6.52%	8.79%	2.09%	15.68%	9.27%	8.37%	10.85%	4.03%	2.94	2.15	2.50	2.99	0.97	29	40	28	17	36
PG Electroplast Ltd	1.48%	6.30%	14.82%	21.88%	6.92%	7.44%	9.46%	13.43%	17.76%	8.03%	2.10	2.18	2.56	3.53	1.60	42	37	50	53	55
Elin Electronics Ltd	12.07%	14.23%	13.85%	6.73%	1.55%	15.73%	16.97%	16.78%	9.99%	2.74%	5.10	5.27	5.83	4.75	1.66	50	64	67	67	72
Veeline Industries Ltd	10.96%	13.09%	8.92%	NA	NA	12.99%	14.52%	11.10%	NA	NA	3.75	3.49	5.72	NA	NA	92	129	113	NA	NA
Vending Updates India Pvt Ltd	28.50%	10.30%	18.92%	NA	NA	32.29%	11.53%	16.98%	NA	NA	6.53	5.69	4.39	NA	NA	63	46	21	NA	NA

⁸RoE (Return on equity) = PAT / Average total equity (Net worth);

⁹RoCE (Return on capital employed) = EBIT / Average Capital Employed

- EBIT = Profit before tax + Share of profit/ loss of associate + Exceptional items + Finance costs
- Capital employed = Total Equity + Current Borrowings + Non-Current Borrowings + Interest accrued but not due on borrowings

¹⁰Gross Asset Turnover ratio = Revenue from operations / Average Gross Block of Assets

- Gross Block of Assets = Gross block of property, plant and equipment + Other intangible assets + Right of use assets

¹¹Cash Conversion Cycle = Trade Receivable Days + Inventory Days – Days Payable

- Trade Receivable Days = 365/ (Revenue from contracts with customers/ Average trade receivables)
- Inventory Days = 365/ (Cost of goods sold (COGS)/ Average inventory)
- Trade Payable Days = 365/ (Total purchase of raw material and stock in trade / Average trade payables)
- For FY24H1, the above three parameters have been calculated based on 182 days of operations

For FY24H1, ROE and ROCE has not been calculated on annualized basis.

Exhibit 6.8: Trade Receivable Days, Inventory Days and Trade Payable Days, India, FY20 – FY24H1

Name of the Company	Trade Receivable Days ¹²					Inventory Days ¹³					Trade Payable Days ¹⁴				
	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1
EPACK Durable Ltd	NA	109	118	102	95	NA	78	96	79	84	NA	78	97	98	110
Dixon Technologies (India) Ltd	43	45	42	46	42	47	39	35	35	32	89	84	75	79	76
Amber Enterprises India Ltd	79	116	103	81	85	72	98	81	60	79	122	174	156	125	129
PG Electroplast Ltd	58	64	59	55	50	61	58	78	66	70	77	85	87	68	65
Elin Electronics Ltd	42	58	60	64	67	53	57	53	55	60	45	50	46	52	55
Veeline Industries Ltd	72	92	71	NA	NA	115	132	95	NA	NA	96	95	53	NA	NA
Vending Updates India Pvt Ltd	63	63	33	NA	NA	37	73	47	NA	NA	37	89	59	NA	NA

NA - Data not available

Source: Annual Reports of Companies published in RoC, MCA; Frost & Sullivan Analysis

¹² Trade Receivable Days = 365/ (Revenue from contracts with customers/ Average trade receivables);

¹³ Inventory Days = 365/ (Cost of goods sold (COGS)/ Average inventory);

- COGS = Cost of materials consumed + Purchases of stock-in-trade + Change in inventories of finished goods and work-in-progress

¹⁴ Trade Payable Days = 365/ (Total purchase of raw material and stock in trade / Average trade payables)

For FY24H1, the above three parameters have been calculated based on 182 days of operations

Exhibit 6.9: Working Capital Cycle Days and Debt to Equity Ratio, India, FY20 - FY24H1

Name of the Company	Working Capital Cycle Days ¹⁵					Debt to Equity Ratio ¹⁶				
	FY20	FY21	FY22	FY23	FY24H1	FY20	FY21	FY22	FY23	FY24H1
EPACK Durable Ltd	NA	110	118	91	61	0.00	3.47	3.15	1.58	0.78
Dixon Technologies (India) Ltd	6	7	7	7	0.3	0.15	0.21	0.46	0.12	0.17
Amber Enterprises India Ltd	37	56	39	29	53	0.28	0.21	0.58	0.69	0.74
PG Electroplast Ltd	45	45	76	68	45	0.99	0.96	1.23	1.37	0.29
Elin Electronics Ltd	48	82	66	66	75	0.31	0.43	0.34	0.16	0.04
Veeline Industries Ltd	86	150	114	NA	NA	0.43	0.58	0.33	NA	NA
Vending Updates India Pvt Ltd	63	35	31	NA	NA	0.23	0.56	1.09	NA	NA

NA - Data not available

Source: Annual Reports of Companies published in RoC, MCA; Frost & Sullivan Analysis

¹⁵ Working Capital Cycle Days = (Working Capital x 365) / Revenue from Operations; [Working Capital = Trade Receivables + Inventories – Trade Payables]

¹⁶ Debt to Equity Ratio = Total Debt / Total Equity; [Total Debt = Current borrowing + Non-current borrowings (including current maturities) + interest accrued but not due on borrowings]

For FY24H1, Working Capital Cycle Days has been calculated based on 182 days of operations.

Exhibit 6.10: Segmental revenue and total number of employees, India, FY23

Name of the Company	FY23 Segmental Revenue	Total no. of employees (FY23 End)
EPACK Durable Ltd	-	734
Dixon Technologies (India) Ltd	Consumer electronics: 35% (Television) Mobile Phones & EMS: 43% (Smartphones, STB) Lighting products: 9% (LED lights) Home Appliances: 9% (Washing machine) Security Systems: 4% (CCTV) Emerging segments: NA (Telecom, Refrigerators, IT Hardware, PCBA for AC, Wearables)	15,601
Amber Enterprises India Ltd	RAC division: 43% Components division: 30% (RAC + Non-RAC) Electronics division: 16% Mobility division: 6% Motors division: 4%	13,767
PG Electroplast Ltd	Product business: 62% (Room AC, Washing machine, Air coolers) Plastic Moulding: 30% (Consumer durables, Sanitaryware, Automotive, Consumer Electronics) Consumer electronics: 7% (Televisions, PCB Assemblies) Tool Manufacturing: 1% (Consumer Durables, Sanitaryware, Automotive, Others)	4,939
Elin Electronics Ltd	Lighting, Fans & Switches: 42% (Lights, Flashlights, Fans, Switches) Small Appliances: 30% (Kitchen & Home care, Personal care) FHP Motors: 23% (Consumer durables, Fans, Others) Other EMS: 5%	5,151
Veeline Industries Ltd	NA	NA
Vending Updates India Pvt Ltd	NA	NA

NA - Data not available

Source: Annual Reports of Companies published in RoC, MCA; Frost & Sullivan Analysis

Total no. of employees = Permanent employees + Contractual Labourers

Note: Segment revenue is not comparable as the segmentation is different for each company

3. KPI's of key competitors (public listed companies)

Exhibit 6.11: Dixon Technologies (India) Ltd

Particulars	H1 FY2024	FY2023	FY2022	FY2021
Financial				
Total Income (in ₹ million) ⁽¹⁾	82,182.50	121,976.20	107,008.90	64,497.50
Revenue from Operations (in ₹ million) ⁽²⁾	82,146.80	121,920.10	106,970.80	64,481.70
Revenue growth (year on year) (%) ⁽³⁾	NA	13.98%	65.89%	46.55%
Revenue CAGR (FY2021 – FY2023) (%) ⁽⁴⁾	NA			37.51%
Revenue from Operations (in India) (in ₹ million) ⁽⁵⁾	82,146.80	121,920.10	106,970.80	64,481.70
Revenue from top 10 customers (in ₹ million) ⁽⁶⁾	NA	NA	NA	NA
Revenue contribution from top 10 customers (%) ⁽⁷⁾	NA	NA	NA	NA
Cash and Cash Equivalents (in ₹ million)	1,266.10	2,170.40	1,764.60	638.40
Trade Receivables Days ⁽⁸⁾	42	46	42	45
Inventory Days ⁽⁹⁾	32	35	35	39
Trade Payable Days ⁽¹⁰⁾	76	79	75	84
Cashflow from Operations (₹ million)	1,516.00	7,257.50	2,727.40	1,701.10
Gross Block of Assets (in ₹ million) ⁽¹¹⁾	NA	14,870.00	11,668.00	6,686.00
EBITDA (in ₹ million) ⁽¹²⁾	3,362.80	5,127.50	3,791.10	2,865.90
EBITDA Growth (year on year) (%) ⁽¹³⁾	NA	35.25%	32.28%	28.48%
EBITDA CAGR (FY2021 – FY2023) (%) ⁽¹⁴⁾	NA			33.76%
EBITDA Margin (%) ⁽¹⁵⁾	4.09%	4.21%	3.54%	4.44%
Profit for the year (in ₹ million)	1,805.00*	2,550.80	1,903.30	1,598.00
Profit for the year CAGR (FY2021 – FY2023) (%) ⁽¹⁶⁾	NA			26.34%
PAT Margin (%) ⁽¹⁷⁾	2.20%	2.09%	1.78%	2.48%
ROE (%) ⁽¹⁸⁾	13.08%	22.36%	21.94%	25.00%
ROCE (%) ⁽¹⁹⁾	17.04%	27.87%	25.45%	32.20%
Debt to Equity Ratio ⁽²⁰⁾	0.17	0.12	0.46	0.21
Gross Asset Turnover (in times) ⁽²¹⁾	5.21	9.19	11.66	11.09
Gross Profit (in ₹ million) ⁽²²⁾	7,898.20	11,712.70	9,178.40	6,784.50
Gross Profit Margin (%) ⁽²³⁾	9.61%	9.61%	8.58%	10.52%
Gross Profit Growth (year on year) (%) ⁽²⁴⁾	NA	27.61%	35.28%	25.66%
Operational				
Number of employees ⁽²⁵⁾	NA	2,844	19,580	15,483
Number of Contract Labourers ⁽²⁶⁾	NA	12,757	11,971	13,549
Working capital cycle days ⁽²⁷⁾	NA	7	7	7
Number of employees in Research and Development department ⁽²⁸⁾	NA	49	61	51

Source: Values are taken from un-audited financials for H1 FY24 and audited financials for FY23, FY22 and FY21

Exhibit 6.12: Amber Enterprises India Ltd

Particulars	H1 FY2024	FY2023	FY2022	FY2021
Financial				
Total Income (in ₹ million) ⁽¹⁾	26,611.10	69,797.57	42,396.30	30,636.20
Revenue from Operations (in ₹ million) ⁽²⁾	26,290.50	69,270.95	42,063.97	30,305.20
Revenue growth (year on year) (%) ⁽³⁾	NA	64.68%	38.80%	-23.53%
Revenue CAGR (FY2021 – FY2023) (%) ⁽⁴⁾	NA			51.19%
Revenue from Operations (in India) (in ₹ million) ⁽⁵⁾	26,290.50	69,270.95	42,063.97	30,305.20
Revenue from top 10 customers (in ₹ million) ⁽⁶⁾	NA	NA	NA	NA
Revenue contribution from top 10 customers (%) ⁽⁷⁾	NA	NA	NA	NA
Cash and Cash Equivalents (in ₹ million)	463.10	3,231.80	2,985.80	1,799.60
Trade Receivables Days ⁽⁸⁾	85	81	103	116
Inventory Days ⁽⁹⁾	79	60	81	98
Trade Payable Days ⁽¹⁰⁾	129	125	156	174
Cashflow from Operations (₹ million)	-710.50	3,205.50	2,407.30	2,209.60
Gross Block of Assets (in ₹ million) ⁽¹¹⁾	NA	27,346.57	18,930.10	14,683.24
EBITDA (in ₹ million) ⁽¹²⁾	1,914.60	4,179.33	2,753.83	2,202.88
EBITDA Growth (year on year) (%) ⁽¹³⁾	NA	51.76%	25.01%	-28.77%
EBITDA CAGR (FY2021 – FY2023) (%) ⁽¹⁴⁾	NA			37.74%
EBITDA Margin (%) ⁽¹⁵⁾	7.28%	6.03%	6.55%	7.27%
Profit for the year (in ₹ million)	409.50*	1,637.76	1,113.23	832.79
Profit for the year CAGR (FY2021 – FY2023) (%) ⁽¹⁶⁾	NA			40.23%
PAT Margin (%) ⁽¹⁷⁾	1.56%	2.36%	2.65%	2.75%
ROE (%) ⁽¹⁸⁾	2.09%	8.79%	6.52%	5.94%
ROCE (%) ⁽¹⁹⁾	4.03%	10.85%	8.37%	9.27%
Debt to Equity Ratio ⁽²⁰⁾	0.74	0.69	0.58	0.21
Gross Asset Turnover (in times) ⁽²¹⁾	0.97	2.99	2.50	2.15
Gross Profit (in ₹ million) ⁽²²⁾	5,038.20	10,593.31	6,767.31	4,863.44
Gross Profit Margin (%) ⁽²³⁾	19.16%	15.29%	16.09%	16.05%
Gross Profit Growth (year on year) (%) ⁽²⁴⁾	NA	56.54%	39.15%	-26.43%
Operational				
Number of employees ⁽²⁵⁾	NA	3,737	9,010	8,580
Number of Contract Labourers ⁽²⁶⁾	NA	10,030	NA	NA
Working capital cycle days ⁽²⁷⁾	NA	29	39	56
Number of employees in Research and Development department ⁽²⁸⁾	NA	NA	NA	NA

Source: Values are taken from un-audited financials for H1 FY24 and audited financials for FY23, FY22 and FY21

Exhibit 6.13: PG Electroplast Ltd

Particulars	H1 FY2024	FY2023	FY2022	FY2021
Financial				
Total Income (in ₹ million) ⁽¹⁾	11,426.10	21,643.33	11,159.59	7,058.26
Revenue from Operations (in ₹ million) ⁽²⁾	11,380.30	21,599.48	11,116.35	7,032.07
Revenue growth (year on year) (%) ⁽³⁾	NA	94.30%	58.08%	9.98%
Revenue CAGR (FY2021 – FY2023) (%) ⁽⁴⁾	NA			75.26%
Revenue from Operations (in India) (in ₹ million) ⁽⁵⁾	11,380.30	21,599.48	11,116.35	7,032.07
Revenue from top 10 customers (in ₹ million) ⁽⁶⁾	NA	NA	NA	NA
Revenue contribution from top 10 customers (%) ⁽⁷⁾	NA	NA	NA	NA
Cash and Cash Equivalents (in ₹ million)	1,545.61	86.71	238.50	74.20
Trade Receivables Days ⁽⁸⁾	50	55	59	64
Inventory Days ⁽⁹⁾	70	66	78	58
Trade Payable Days ⁽¹⁰⁾	65	68	87	85
Cashflow from Operations (₹ million)	2,075.12	457.40	-788.00	572.90
Gross Block of Assets (in ₹ million) ⁽¹¹⁾	NA	6,129.00	5,280.00	3,402.00
EBITDA (in ₹ million) ⁽¹²⁾	1,033.68	1,760.40	899.57	497.60
EBITDA Growth (year on year) (%) ⁽¹³⁾	NA	95.69%	80.78%	24.67%
EBITDA CAGR (FY2021 – FY2023) (%) ⁽¹⁴⁾	NA			88.09%
EBITDA Margin (%) ⁽¹⁵⁾	9.08%	8.15%	8.09%	7.08%
Profit for the year (in ₹ million)	461.90	774.69	374.16	116.12
Profit for the year CAGR (FY2021 – FY2023) (%) ⁽¹⁶⁾	NA			158.29%
PAT Margin (%) ⁽¹⁷⁾	4.06%	3.59%	3.37%	1.65%
ROE (%) ⁽¹⁸⁾	6.92%	21.88%	14.82%	6.30%
ROCE (%) ⁽¹⁹⁾	8.03%	17.76%	13.43%	9.46%
Debt to Equity Ratio ⁽²⁰⁾	0.29	1.37	1.23	0.96
Gross Asset Turnover (in times) ⁽²¹⁾	1.60	3.79	2.56	2.18
Gross Profit (in ₹ million) ⁽²²⁾	2,176.22	3,954.40	2,276.00	1,466.92
Gross Profit Margin (%) ⁽²³⁾	19.12%	18.31%	20.47%	20.86%
Gross Profit Growth (year on year) (%) ⁽²⁴⁾	NA	73.74%	55.15%	8.11%
Operational				
Number of employees ⁽²⁵⁾	NA	1,391	3,899	2,500+
Number of Contract Labourers ⁽²⁶⁾	NA	3,548	2,632	NA
Working capital cycle days ⁽²⁷⁾	45	68	76	45
Number of employees in Research and Development department ⁽²⁸⁾	NA	NA	NA	NA

Source: Values are taken from un-audited financials for H1 FY24 and audited financials for FY23, FY22 and FY21

Exhibit 6.14: Elin Electronics Ltd

Particulars	H1 FY2024	FY2023	FY2022	FY2021
Financial				
Total Income (in ₹ million) ⁽¹⁾	5,320.15	10,776.95	10,946.68	8,649.01
Revenue from Operations (in ₹ million) ⁽²⁾	5,271.73	10,754.28	10,937.54	8,623.78
Revenue growth (year on year) (%) ⁽³⁾	NA	-1.68%	26.83%	9.78%
Revenue CAGR (FY2021 – FY2023) (%) ⁽⁴⁾	NA			11.67%
Revenue from Operations (in India) (in ₹ million) ⁽⁵⁾	5,320.15	10,776.95	10,946.68	8,649.01
Revenue from top 10 customers (in ₹ million) ⁽⁶⁾	NA	NA	NA	NA
Revenue contribution from top 10 customers (%) ⁽⁷⁾	NA	NA	NA	NA
Cash and Cash Equivalents (in ₹ million)	3.94	3.90	40.10	46.80
Trade Receivables Days ⁽⁸⁾	67	64	60	58
Inventory Days ⁽⁹⁾	60	55	53	57
Trade Payable Days ⁽¹⁰⁾	55	52	46	50
Cashflow from Operations (₹ million)	110.35	623.19	571.10	-336.40
Gross Block of Assets (in ₹ million) ⁽¹¹⁾	3,846.03	2,510.00	2,020.00	1,730.00
EBITDA (in ₹ million) ⁽¹²⁾	196.46	651.07	790.16	664.80
EBITDA Growth (year on year) (%) ⁽¹³⁾	NA	-17.60%	18.86%	19.88%
EBITDA CAGR (FY2021 – FY2023) (%) ⁽¹⁴⁾	NA			-1.04%
EBITDA Margin (%) ⁽¹⁵⁾	3.73%	6.05%	7.22%	7.71%
Profit for the year (in ₹ million)	76.90	268.02	391.47	348.57
Profit for the year CAGR (FY2021 – FY2023) (%) ⁽¹⁶⁾	NA			-12.31%
PAT Margin (%) ⁽¹⁷⁾	1.46%	2.49%	3.58%	4.04%
ROE (%) ⁽¹⁸⁾	1.55%	6.73%	13.85%	14.23%
ROCE (%) ⁽¹⁹⁾	2.74%	9.99%	16.78%	16.97%
Debt to Equity Ratio ⁽²⁰⁾	0.04	0.16	0.34	0.43
Gross Asset Turnover (in times) ⁽²¹⁾	NA	2.97	3.58	3.10
Gross Profit (in ₹ million) ⁽²²⁾	1,370.78	2,751.49	2,780.80	2,376.87
Gross Profit Margin (%) ⁽²³⁾	26.00%	25.59%	25.42%	27.56%
Gross Profit Growth (year on year) (%) ⁽²⁴⁾	NA	-1.05%	16.99%	2.55%
Operational				
Number of employees ⁽²⁵⁾	NA	2,870	4,617	NA
Number of Contract Labourers ⁽²⁶⁾	NA	2,281	1,682	NA
Working capital cycle days ⁽²⁷⁾	NA	66	66	82
Number of employees in Research and Development department ⁽²⁸⁾	NA	NA	171	NA

Source: Values are taken from un-audited financials for H1 FY24 and audited financials for FY23, FY22 and FY21

Notes:

- (1) Total income is the sum of Revenue from Operations and other income.
- (2) Revenue from Operations means Revenue from contracts with customers and other operating income such as Scrap Sales, Government grants, Export Incentive and Service charges.
- (3) Revenue growth (year on year) means the annual growth in Revenue from Operations.
- (4) Revenue CAGR means the compounded annual growth rate of Revenue from Operations.
- (5) Revenue from Operations (in India) means the revenue from operations generated domestically.
- (6) Revenue from top 10 customers means the revenue generated from the top 10 customers for the respective Fiscal / period.
- (7) Revenue contribution from top 10 customers is the revenue generated from the top 10 customers for a particular Fiscal as a percentage of the revenue from operations for that Fiscal / period.
- (8) Trade Receivables Days is calculated as $365/183$ divided by (Revenue from Contracts with Customers (excluding scrap sales)/ average trade receivables).
- (9) Inventory Days is calculated as $365/183$ divided by (cost of goods sold / average inventory). Cost of goods sold is the sum of Cost of materials consumed, Purchases of stock-in-trade and change in inventories of finished goods and work-in-progress.
- (10) Trade Payable Days is calculated as $365/183$ divided by (total purchase of raw material and stock in trade / average trade payables).
- (11) Gross Block of Assets is calculated as gross block of property, plant and equipment, other intangible assets and right of use assets.
- (12) EBITDA is calculated as profit before tax, share of profit/(loss) of associate, exceptional items plus finance costs, depreciation and amortisation expense minus other income.
- (13) EBITDA Growth (year on year) means the annual growth in EBITDA.
- (14) EBITDA CAGR means the compounded annual growth rate of EBITDA.
- (15) EBITDA Margin is calculated as EBITDA divided by Revenue from Operations.
- (16) Profit for the year CAGR means the compounded annual growth rate of profit for the year.
- (17) PAT Margin is calculated as profit for the year / period divided by Revenue from Operations.
- (18) ROE is calculated as profit for the year divided by average total equity (net worth).
- (19) ROCE is calculated as EBIT divided by Average Capital Employed. Where EBIT is sum of profit before tax, share of profit/(loss) of associate, exceptional items and finance costs. Capital Employed is calculated as the sum of Total Equity, Current Borrowings, Non-Current Borrowings, Interest accrued but not due on borrowings.
- (20) Debt to Equity Ratio is calculated as total debt divided by total equity, where total debt is the sum of current borrowings, non-current borrowings (including current maturities) and interest accrued but not due on borrowings.
- (21) Gross Asset Turnover is calculated as Revenue from Operations divided by Average Gross Block of Assets
- (22) Gross Profit is calculated as Revenue from Operations minus cost of goods sold.
- (23) Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations.
- (24) Gross Profit Growth means the annual growth rate of Gross Profit.
- (25) Number of employees means the number of employees as on the last date of the respective Fiscal / period.
- (26) Number of Contract Labourers means the number of contract labourers as on the last date of the respective Fiscal / period.
- (27) Working capital cycle days is calculated as working capital multiplied by $365/183$ and divided by Revenue from Operations, where working capital is defined as trade receivables plus inventories minus trade payables.
- (28) Number of employees in Research and Development department means the number of employees in the research and development department as on the last date of the respective Fiscal / period.
- (NA) Not available