

PRODU[T]TECH



ASSESSMENT OF BUSINESS POTENTIAL FOR THE PRODUCTION TECHNOLOGIES SECTOR IN THE INDIAN MARKET

Study conducted in June 2017 by

marketaccess
EXPERTS IN INTERNATIONAL BUSINESS



Estatua do Deus Shiva, Coimbatore , India

CONTENT

Content.....	3
Figures	5
Tables.....	9
Executive Summary	11
1 / Overview of the Indian Market.....	13
1.1. Political Background.....	19
1.2. India – World Relations	21
1.3. India – Portugal Relations	27
1.4. Economic Development	31
1.5. Regional Inequality.....	37
1.6. Population and Educational Environment.....	41
1.7. Geography and Infrastructures.....	45
1.8. Legal Aspects of Importing Products to India	49
1.9. Language of Imported Goods.....	51
2 / Industry Overview in India	53
2.1. State of Industry by Regions	57
2.2. Opportunities and Risks for the Indian Industry	63
2.3. Privatizations and State Takeovers	71
2.4. Prospect Goals and Investment Plans.....	73
2.5. Public Procurement and Participation in Tenders	77
3 / Key Sectors and Industries.....	79
3.1. Automobile Industry Overview.....	85
3.2. Auto-Components Industry.....	99
3.3. Retail Sector	117
3.4. IT & ITeS Industry	131
3.5. 3D Printing Technology	141
3.6. Building Material and Construction Technology.....	153

3.7.	Defence and Aeronautics Industry in India	167
3.8.	Food Processing Industry.....	173
3.9.	Metal Products Manufacturing.....	189
3.10.	Pharma Industry.....	195
3.11.	Plastic Industry.....	211
3.12.	Indian Ports.....	217
3.13.	Pulp Industry	233
3.14.	Renewable Energy.....	243
3.15.	Technical Textiles	259
3.16.	Textiles	273
3.17.	Leather Clusters.....	287
4 /	50 Reasons to Partner with India.....	301
5 /	Appendix	327
	Appendix 1: State wise literacy rate in last 3 decades and gaps	327
	Appendix 2: Some Import-Export Data.....	329
	Appendix 3: Energy Data	335
	Appendix 4: List of Main Industrial Equipment Suppliers in India	336
	Appendix 5: Machinery used in Leather processing Clusters	344

FIGURES

FIGURE 1: INDIA, AN OVERVIEW (2016).....	18
FIGURE 2: CORRUPTION PERCEPTIONS INDEX 2016.....	20
FIGURE 3: INDIA MAJOR EXPORTS, 2015 (% SHARE)	21
FIGURE 4: INDIA MAJOR IMPORTS, 2015 (% SHARE)	21
FIGURE 5: ORIGIN OF INDIAN IMPORTS, 2015 - REGIONS (% SHARE).....	22
FIGURE 6: INDIA BALANCE OF TRADE	25
FIGURE 7: PORTUGAL EXPORTS TO WORLD, 2015 (% SHARE)	28
FIGURE 8: INDIA IMPORTS FROM PORTUGAL (2015-16).....	29
FIGURE 9: MR. NARENDRA MODI AND MR. ANTÓNIO COSTA, INDIAN AND PORTUGUESE PRIME-MINISTERS, JUNE 2017	30
FIGURE 10: INDIA'S REAL GDP	32
FIGURE 11: INDIA'S GROWTH POTENTIAL COMPARED WITH OTHER EMERGING MARKETS	33
FIGURE 12: TOP FIVE CITIES IN INDIA, 2030.....	33
FIGURE 13: FOREIGN DIRECT INVESTMENT INTO ASIA-PACIFIC IN 2015.....	35
FIGURE 14: STUDY RELEASED BY RIGHTS GROUP OXFAM AHEAD OF THE WORLD ECONOMIC FORUM (WEF) ANNUAL MEETING, 2017	36
FIGURE 15: BALANCING THE STATES, INDIA	39
FIGURE 16: GDP OF INDIAN STATES (2013-14)	40
FIGURE 17: INDIA COUNTRY PROFILE, 2016.....	41
FIGURE 18: POPULATION DENSITY MAP IN INDIA, 2011 CENSUS	42
FIGURE 19: LITERACY RATE MAP IN INDIA, 2011 CENSUS.....	43
FIGURE 20: FEMALE LITERACY AND FERTILITY RATE IN INDIA, 2012	44
FIGURE 21: INDIA'S ADMINISTRATIVE DIVISION	45
FIGURE 22: HIGHWAY DENSITY IN INDIAN STATES, 2012	46
FIGURE 23: INDIAN INTERNATIONAL AIRPORTS	47
FIGURE 24: INDIAN CONTAINER TERMINALS (2014-15).....	48
FIGURE 25: INDIA INDUSTRIAL PRODUCTION, ANNUAL GROWTH (%), 1996-2016.....	55
FIGURE 26: INDIA INDUSTRIAL PRODUCTION, ANNUAL GROWTH (%), JUL 2016-APR 2017	55
FIGURE 27: MAJOR INDUSTRIAL REGIONS IN INDIA.....	57
FIGURE 28: INDIA INDUSTRIAL CLUSTERS.....	61
FIGURE 29: INDUSTRIAL CLUSTER'S SHARE OF INCREMENTAL GDP	62
FIGURE 30: INDIA'S POPULATION 2030 (MILLIONS).....	63
FIGURE 31: THE YOUNG & THE RESTLESS.....	64
FIGURE 32: INDIA NUMBER 1 FDI DESTINATION.....	74
FIGURE 33: INVESTMENT PLAN IN INDIA	75

FIGURE 34: INDIA IN 2020, PROJECTIONS.....	76
FIGURE 35: "MAKE IN INDIA" KEY POINTS.....	78
FIGURE 36: MANUFACTURING - KEY SECTOR OVERVIEW	79
FIGURE 37: MANUFACTURING CLUSTERS IN INDIA	83
FIGURE 38: INDIAN AUTOMOTIVE INDUSTRY - CURRENT SCENARIO AND OUTLOOK	85
FIGURE 39: INDIAN AUTOMOBILE MARKET SHARE (FY15)	87
FIGURE 40: MARKET SIZE OF INDIAN AUTOMOTIVE INDUSTRY, INR BILLION (US\$ BILLION)	88
FIGURE 41: EMERGENCE OF LARGE AUTOMOTIVE CLUSTERS IN INDIA	89
FIGURE 42: CHANGING INCOME DYNAMICS OF INDIA'S POPULATION	92
FIGURE 43: SALES OF AUTOMOBILES IN 2016 (IN MILLION UNITS)	93
FIGURE 44: PORTER FIVE FORCES ANALYSIS.....	94
FIGURE 45: AGGREGATE TURNOVER, INDIA (USD BILLION).....	100
FIGURE 46: AUTO COMPONENT'S SEGMENTS, INDIA	101
FIGURE 47: ORGANIZED SECTOR VS. UNORGANIZED SECTOR, INDIA	102
FIGURE 48: AUTO COMPONENTS R&D CLUSTERS IN INDIA	108
FIGURE 49: STRATEGIES ADOPTED, INDIAN RETAIL SECTOR.....	113
FIGURE 50: PORTER'S FIVE FORCES ANALYSIS, AUTO COMPONENTS SECTOR	114
FIGURE 51: INDIA AS AN OUTSOURCING HUB.....	115
FIGURE 52: MARKET CHARACTERIZATION	118
FIGURE 53: INDIAN RETAIL MARKET SIZE	120
FIGURE 54: GROWTH DRIVERS FOR RETAIL IN INDIA.....	125
FIGURE 55: KEY PLAYERS, INDIAN RETAIL SECTOR	126
FIGURE 56: PORTER'S FIVE FORCES ANALYSIS	127
FIGURE 57: STRATEGIES ADOPTED IN INDIAN RETAIL SECTOR.....	128
FIGURE 58: GROWTH VALUE PROPOSITION, RETAIL SECTOR (INDIA).....	129
FIGURE 59: INDIA MARKET MONITOR 2015-16	130
FIGURE 60: MARKET SIZE OF IT INDUSTRY IN INDIA (USD BILLION).....	132
FIGURE 61: SEGMENTS OF INDIA IT SECTOR.....	133
FIGURE 62: KEY POLICY INITIATIVES AND SECTOR ADVANTAGES, INDIA.....	138
FIGURE 63: PORTER'S FIVE FORCES ANALYSIS	139
FIGURE 64: NEWER GEOGRAPHIES AND VERTICALS PROVIDE HUGE OPPORTUNITIES, INDIA.....	140
FIGURE 65: INDIA 3D PRINTER MARKET REVENUES, 2010-2021F (\$ MILLION)	142
FIGURE 66: MARKET DISTRIBUTION OF 3D PRINTERS IN INDIA, 2013.....	143
FIGURE 67: INDIAN CONSTRUCTION EQUIPMENT REVENUES, INDIA	154
FIGURE 68: MAJOR SEGMENTS OF CONSTRUCTION EQUIPMENT INDUSTRY	155
FIGURE 69: UNIT SALES OF EQUIPMENT, INDIA.....	156
FIGURE 70: INFRASTRUCTURES CLUSTERS, INDIA	157

FIGURE 71: REVENUES FROM CONSTRUCTION EQUIPMENT (USD BILLION)	160
FIGURE 72: CONSTRUCTION EQUIPMENT, KEY PLAYERS (INDIA)	162
FIGURE 73: INDIAN STRATEGIES ADOPTED IN CONSTRUCTION INDUSTRY	162
FIGURE 74: PORTER'S FIVE FORCES ANALYSIS	165
FIGURE 75: AVIATION VALUE CHAIN, INDIA.....	168
FIGURE 76: GROWTH IN AVIATION MRO SECTOR.....	169
FIGURE 77: INDIAN COMPANIES VENTURES INTO THE AEROSPACE SECTOR.....	169
FIGURE 78: OPPORTUNITIES IN INDIAN AEROSPACE.....	170
FIGURE 79: FOOD INDUSTRY COMPOSITION	175
FIGURE 80: VALUE CHAIN IN FOOD PROCESSING SECTOR AND KEY PLAYERS	175
FIGURE 81: EXPORT OF KEY PROCESSED PRODUCTS	180
FIGURE 82: FLOWCHART FOR MEGA FOOD PARK	184
FIGURE 83: KEY AGRICULTURAL AND RELATED COMMODITIES WHERE INDIA IS RANKED 1	187
FIGURE 84: KEY AGRICULTURAL AND RELATED COMMODITIES WHERE INDIA IS RANKED 2	188
FIGURE 85: PHARMA MACHINERY MARKET IN INDIA, 2008-2020P (IN USD BN)	196
FIGURE 86: SHARE OF EQUIPMENT IN INDIAN DEVICE SECTOR	197
FIGURE 87: STRUCTURE OF PHARMA SECTOR IN INDIA	198
FIGURE 88: SEGMENTS OF INDIAN PHARMACEUTICALS SECTOR.....	198
FIGURE 89: INDIAN ADOPTED STRATEGIES.....	202
FIGURE 90: STATES HOSTING KEY PHARMACEUTICAL VENTURES.....	206
FIGURE 91: PORTER'S FIVE FORCES ANALYSIS	207
FIGURE 92: PHARMA INDUSTRY OPPORTUNITIES, INDIA	209
FIGURE 93: STRUCTURE OF THE INDIAN PLASTIC INDUSTRY.....	213
FIGURE 94: PLASTIC INDUSTRY PROCESSES	214
FIGURE 95: CATEGORIES OF PORTS IN INDIA, 2016.....	222
FIGURE 96: MAJOR PORTS IN INDIA	223
FIGURE 97: CARGO TRAFFIC IN NON-MAJOR PORTS (MMT).....	224
FIGURE 98: PERCENTAGE SHARE OF PORTS, INDIA	224
FIGURE 99: TRENDS IN PORT SECTOR (1/2).....	225
FIGURE 100: TRENDS IN PORT SECTOR (2/2).....	226
FIGURE 101: INDIAN PORTS - SECTOR SNAPSHOT.....	227
FIGURE 102: ELECTRICITY PRODUCTION IN INDIA (BU)	244
FIGURE 103: INDIAN ADOPTED STRATEGIES IN ENERGY SECTOR.....	247
FIGURE 104: STATEWISE RENEWABLE ENERGY INSTALLED CAPACITY (MW)	249
FIGURE 105: INDIA SOLAR RESOURCES.....	250
FIGURE 106: PORTER'S FIVE FORCES ANALYSIS	256
FIGURE 107: KEY SEGMENTS OF TEXTILE INDUSTRY, INDIA	274

FIGURE 108: INDIA'S TEXTILE MARKET SIZE (USD BILLION)	275
FIGURE 109: INDIAN TEXTILE SECTOR – OPPORTUNITIES	277
FIGURE 110: KEY TEXTILES AND APPAREL ZONES IN INDIA	279
FIGURE 111: TRENDS IN INDIAN TEXTILES INDUSTRY	280
FIGURE 112: GOVERNMENT SUPPORT IN FY16 BUDGET	280
FIGURE 113: PORTER'S FIVE FORCES ANALYSIS	284
FIGURE 114: TEXTILES AND APPARELS, INDIA	286
FIGURE 115: INDIAN LEATHER SEGMENTS	289
FIGURE 116: SWOT ANALYSIS, INDIAN LEATHER INDUSTRY	295
FIGURE 117: PRODUCTION CLUSTERS IN THE INDIAN LEATHER INDUSTRY	296
FIGURE 118: LEATHER PRODUCTS PRODUCTION CAPACITY	297
FIGURE 119: COMPANY SHARE IN TURNOVER	297

TABLES

TABLE 1: EASE OF DOING BUSINESS IN INDIA, 2016-2017	17
TABLE 2: INVESTMENTS IN GLOBAL CAR MANUFACTURERS.....	97
TABLE 3: AUTO COMPONENTS - SECTOR SNAPSHOT, INDIA	112
TABLE 4: INDIAN 3D PRINTING MARKET SWOT ANALYSIS	146
TABLE 5: SECTOR GROWTH	157
TABLE 6: INDIA STEEL PRODUCER'S LIST	190
TABLE 7: PRODUCT SEGMENTATION AND SUPPLY CHAIN OF PHARMA MACHINERY, INDIA	197
TABLE 8: PFL VARIATION ACCORDING WITH TECHNOLOGY AND LOCATION	251
TABLE 9: MAJOR FOREIGN PLAYERS.....	262
TABLE 10: CURRENT MARKET SIZE (TECHNICAL TEXTILES)	263
TABLE 11: EXPECTED GROWTH CAGR (IN 5 YEARS)	263
TABLE 12: INDIAN TEXTILES MARKET SIZE	274
TABLE 13: INDO ITALIAN CHAMBER OF COMMERCE (IICCI)	288
TABLE 14: INDIA'S EXPORT OF LEATHER AND ITS PRODUCTS FOR FIVE YEARS.....	288
TABLE 15: PRODUCT PORTFOLIO (GRIND MASTER).....	336
TABLE 16: PRODUCT PORTFOLIO (ROHIT POLISHERS).....	337
TABLE 17: PRODUCT PORTFOLIO (CEL)	337
TABLE 18: PRODUCT PORTFOLIO (NORTON SAINT GOBAIN INDIA)	337
TABLE 19: PRODUCT PORTFOLIO (JYOTI).....	338
TABLE 20: PRODUCT PORTFOLIO (OKUMA)	339
TABLE 21: PRODUCT PORTFOLIO (MACPOWER)	340
TABLE 22: PRODUCT PORTFOLIO (MICROMATIC).....	340
TABLE 23: PRODUCT GROUP (IR).....	341
TABLE 24: PRODUCT PORTFOLIO (PACE ASSEMBLY TOOLS).....	341
TABLE 25: PRODUCT GROUP (MALAX INDIA)	342
TABLE 26: PRODUCTS GROUP / ACCESSORIES (EASTMAN).....	342
TABLE 27: PRODUCT PORTFOLIO (TOOL INDIA PVT. LTD.).....	343
TABLE 28: PRODUCT PORTFOLIO (MAKITA).....	343
TABLE 29: PRODUCTS GROUP (DENSIN)	343
TABLE 30: MACHINERY USED IN THE LEATHER GOODS INDUSTRY	344



EXECUTIVE SUMMARY

A newly industrialised country, India is the sixth-largest economy in the world measured by nominal GDP and the third-largest by purchasing power parity (PPP). The Indian economy is home to one of the fastest growing service sectors in the world, and is a major exporter of IT, BPO and software services. The agricultural sector is the largest employer in India's economy overall, with a rapidly declining share of GDP.

The Industry sector constitutes about one-fourth of India's GDP, which has remained consistent over the years. India's industrial manufacturing GDP output was the 6th largest in the world in 2015, which played a crucial role in its economic growth overtaking China for the first time in twenty five years. The Indian automobile industry is one of the largest in the world, and the engineering industry is the largest sub-sector of its industry GDP.

While demographic factors such as the young workforce and healthy saving and investment trends are important factors in the positive long-term scenario for the Indian economy, its increasing integration in a swiftly globalising world is crucial for sustained growth. Pervasive issues such as corruption, lack of educational opportunities, income inequality, and environmental degradation are slowly being addressed. The last two decades saw improvement in infrastructure and skilled workforce, which have been a boon to the manufacturing sector. The recent environment of progressive policy reforms and stable political conditions are also improving the ease of doing business in India.

Despite initial hiccups, the relationship between Portugal and India has been warm and friendly for several decades now. The total trade between the two reached a total of USD 700 million in 2015-16, and the production technology sector has been a key component of the major articles of import from Portugal. Understanding the legal aspects of foreign trade and the licensing and regulatory environment in India is crucial for foreign participation in this complex and booming economic arena.

As the country looks to establish its credentials as a manufacturing destination, there are some gaps that we need to address. These include an enabling

regulatory environment, developing the requisite talent and skills, fast-tracking of infrastructure development, incubating R&D and innovation culture, and enhancing supply chain competitiveness.

The Indian automotive sector, given its potential contribution to GDP and employment, presents a significant opportunity to be one of the biggest growth drivers for the economy. What we do need to emerge as a “world-class automotive manufacturing hub” is a concerted effort from the Government and the automotive industry to create an enabling ecosystem. The country’s key strengths such as a large domestic consumption base, a cost competitive value chain (that includes low design, testing and validation costs, frugal engineering capabilities and low labour costs) and strategic geographical location would go a long way to develop the country as a world class automotive manufacturing base.



Source: incredibleindia.org

1 / OVERVIEW OF THE INDIAN MARKET

This section provides an overview of the Indian market, and includes some of the most important points that should be considered to support decision-making in relation to this market. Among these peculiarities are political factors, economic relations between Portugal and India, educational and social issues, geography and infrastructure, legal aspects of importation as affecting the rapid expansion of products and services.

“Twenty-five years ago, India embarked on a journey of economic liberalization, opening its doors to globalization and market forces. We, and the rest of the world, have watched as the investment and trade regime introduced in 1991 raised economic growth, increased consumer choice, and reduced poverty significantly.”

Report McKinsey Global Institute August 2016



Source: glasslewis.com

KEY FINDINGS

Political Context

The Republic of India is a democratic republic consisting of 36 administrative divisions.

India is a country with serious corruption problems placed at 79th position amongst the 176 countries ranked by Transparency International, but has been improving its reputation for past some years.

The recent political condition is stable with Indian government bringing in many reforms to facilitate the ease of doing business.

Economic Development

India has the third largest GDP by PPP, as per the World Bank.

India also topped the World Bank's growth outlook for 2015-16 with economy having grown 7.6% in 2015-16, and an average growth rate of 7.37% over the last decade.

Income Inequality

A significant increase in the standard of living is only evident in a few metropolitan cities, while the majority of the country remains with significant levels of poverty.

The richest 1% of Indians own 58% of wealth while richest 10% own 76.3% wealth (2017 data).

India is ranked 2nd on income inequality chart by New World Wealth only after South Africa.

India is among the ten richest countries of the world, as per the total individual wealth, and yet the average Indian is relatively poor.

Population and Educational Context

The population of India is approximately 1.311 billion, making it the second most populous country in the world.

The most populated city in India is Mumbai closely followed by Delhi and Bengaluru.

India's literacy rate is at 74.04%, with Kerala leading the list with 93.91% literacy (Census, 2011).

Only the urban areas have constant access to stable internet and phone connection, with internet penetration still hovering at 15.1% of the total population (World Bank, 2013).

Monetary Unit and International Payments

All domestic transactions have to be carried out in Indian Rupee (INR).

International payments are made normally in US\$, Euro, GBP, according to the current exchange rate, or internal rate agreed between all parties and fixed in the contract.

Relations between Portugal and India

Political relations between Portugal and India are warm and friendly.

The election of Mr. Antonio Costa, who is partially of Indian origin, as the Prime Minister of Portugal in 2015, has the potential to energize the bilateral relations.

The total trade between Portugal and India, in 2015-16, reached a total of 700 million US\$. Imports (102.55 million US\$) from Portugal remained still very moderate as compared to the Exports (589.64 million US\$) from India (DGFT).

Major articles of import from Portugal are Machinery and Mechanical appliances, electrical machinery and equipment, plastics, organic chemicals, copper and articles, paper, etc.

Geography and Infrastructure

India represents one of the largest emerging markets in the world.

It is composed of 36 administrative divisions: 29 States and 7 Union Territories.

As of 2015, India has the second largest road network in the world at 5.47 million km.

The Indian roads carry almost 90% of the country's passenger traffic and around 65% of its freight, with sales of automobiles and movement of freight growing at a rapid rate.

Most of the parts of the country are well connected via roads and railways.



Source: roteiroviagemdemochileiros.com.br

Legal Aspects of Importation

In India imports and exports are regulated by Foreign Trade (Development and Regulation) Act 1992.

The Central Government can prohibit, restrict and regulate imports and exports, in all or specified cases as well as subject them to exemptions.

Language of Imported Products

The Packaging Rules prescribe that every package manufactured or imported for sale in Indian market must specify the mandatory declarations either in Hindi i.e., in Devanagri script or in English.

Further, any other Indian regional languages, in addition to Hindi or English can also be used on such packages.

EASE OF DOING BUSINESS IN INDIA

Globally, India stands at 155 in the ranking of 190 economies on the ease of starting a business.

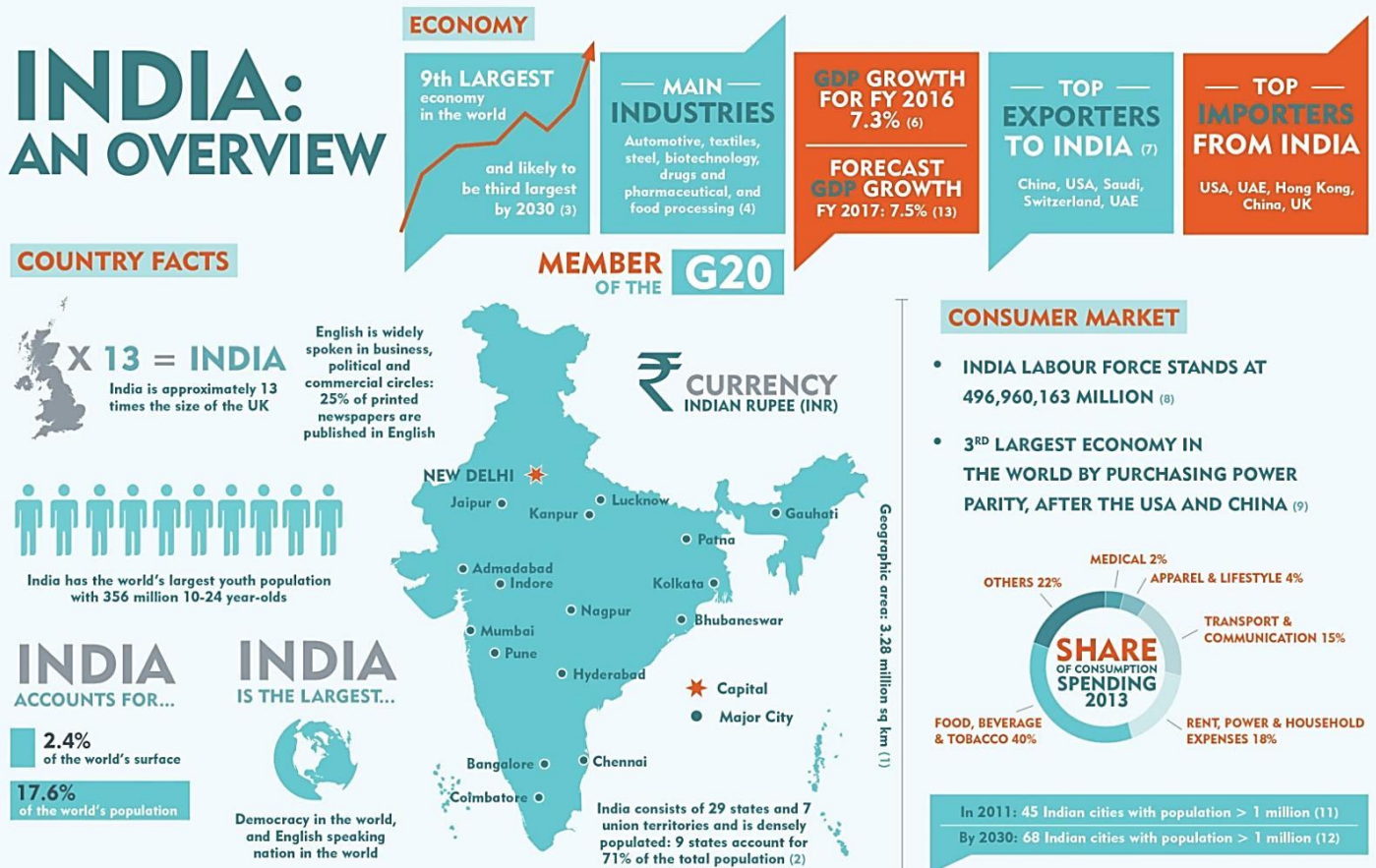
Topics	DB 2017 Rank	DB 2016 Rank	DB 2017 DTF (% Points)	DB 2016 DTF (% Points)	Change in DTF (% Points)
Overall	130	131	55.27	53.93	+1.34
Starting a Business	155	151	74.31	73.74	+0.57
Dealing with Construction Permits	185	184	32.83	32.83	
Getting Electricity	26	51	85.09	79.76	+5.33
Registering Property	138	140	50.00	49.97	+0.03
Getting Credit	44	42	65.00	65.00	
Protecting Minority Investors	13	10	73.33	73.33	
Paying Taxes	172	172	46.58	43.17	+3.41
Trading across Borders	143	144	57.61	56.45	+1.16
Enforcing Contracts	172	178	35.19	32.41	+2.78
Resolving Insolvency	136	135	32.75	32.59	+0.16

TABLE 1: EASE OF DOING BUSINESS IN INDIA, 2016-2017

Source: The World Bank

Note: DTF - measures the distance of each economy to the "frontier," which represents the best performance observed on each of the indicators across all economies in the Doing Business sample since 2005.

India's economy is finally showing signs of the impact of demonetisation, which was the removal of high-value currency from circulation. GDP growth slowed to 6.1% in the March quarter, down from 7% in the prior quarter. The slowdown will likely be temporary, though, and the economy is expected to bounce back later in the year. There was a broad-based slowdown across most sectors of the economy, though construction was the hardest-hit. Moreover, consumption remains the catalyst of growth while investment is struggling on the back of rising bad loans on bank balance sheets.



(1) Census of India <http://censusindia.gov.in> (2) The states of Uttar Pradesh, Maharashtra, Bihar, West Bengal, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Rajasthan and Gujarat – Census of India (3) WorldBank (4) Business Portal of India www.business.gov.in (5) World Bank (6) IMF (7) Indian Department of Commerce (8) WorldBank (9) International Monetary Fund (10) KMPC (11) UKIBC, with data from the Census of India (12) McKinsey & Company (13) IMF

FIND OUT MORE AT WWW.UKIBC.COM

FIGURE 1: INDIA, AN OVERVIEW (2016)

Source: UK India Business Council

1.1. POLITICAL BACKGROUND

India is the world's largest democracy and according to UN estimates, its population is expected to overtake China's in 2028 to become the world's most populous nation.

By the 19th century, Great Britain had become the dominant political power on the subcontinent. The British Indian Army played a vital role in both World Wars. Years of nonviolent resistance to British rule, led by Mohandas Gandhi and Jawaharlal Nehru, eventually resulted in Indian independence, which was granted in 1947. Large-scale communal violence took place before and after the subcontinent partition into two separate states - India and Pakistan. The neighbouring nations have fought three wars since independence, the last of which was in 1971 and resulted in East Pakistan becoming the separate nation of Bangladesh. India's nuclear weapons tests in 1998 encouraged Pakistan to conduct its own tests that same year. Despite pressing problems such as significant overpopulation, environmental degradation, extensive poverty, and widespread corruption, economic growth following the launch of economic reforms in 1991 and a massive youthful population are driving India's emergence as a regional and global power.



Nowadays India is a democratic republic consisting of 36 administrative divisions. Constitutionally the Prime Minister of India is elected for a 5 year term. Current Prime Minister, elected on 26 May 2014, is Mr. Narendra Modi.

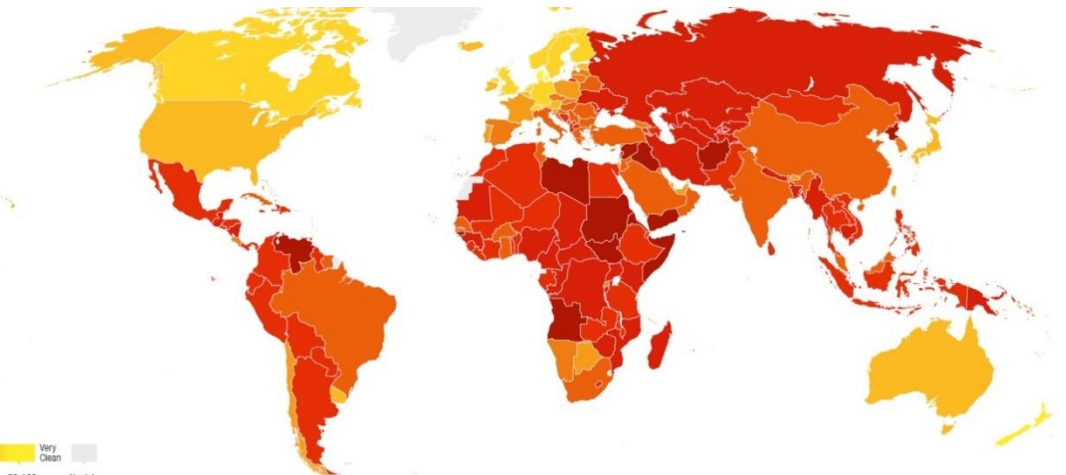
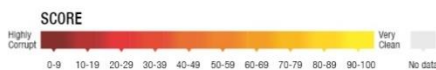
The new government, since 2014, has brought many economic and structural reforms. The budget presented has been tilted towards the rural India and emphasizes more on social welfare. Also the age old conflict with Pakistan has been causing troubles for the present government also, but the Indian government policy aims to build peaceful environment within the country as well as reliable and open relations with its neighboring countries and rest of the world.

Also, corruption is one of the major problems in India with the country standing at 79th position among the 176 countries ranked in 2016, in the Corruption Perceptions Index. But the corruption has been decreasing in the country for past some years now.



CORRUPTION PERCEPTIONS INDEX 2016

The perceived levels of public sector corruption in 176 countries/territories around the world.



RANK	COUNTRY/TERRITORY	SCORE	RANK	COUNTRY/TERRITORY	SCORE	RANK	COUNTRY/TERRITORY	SCORE	RANK	COUNTRY/TERRITORY	SCORE	RANK	COUNTRY/TERRITORY	SCORE
1	Denmark	90	21	Uruguay	71	80	Italy	47	95	Sri Lanka	36	138	Myanmar	28
2	New Zealand	90	22	Estonia	70	81	Sao Tome and Principe	46	101	Gabon	35	139	Nigeria	28
3	Finland	89	23	France	69	82	Saudi Arabia	46	101	Niger	35	139	Papua New Guinea	28
4	Sweden	88	24	Bahamas	66	83	Montenegro	45	101	Peru	35	142	Guinea	27
5	Switzerland	86	24	Chile	66	84	Orman	45	101	Philippines	35	142	Mauritania	27
6	Norway	85	24	United Arab Emirates	66	84	Senegal	45	101	Thailand	35	142	Haiti	20
7	Singapore	84	27	Israel	64	84	South Africa	45	101	Timor-Leste	35	142	Djibouti	30
8	Netherlands	83	28	Portugal	64	87	Suriname	45	101	Trinidad and Tobago	35	145	Honduras	30
9	Germany	82	29	Poland	62	87	Greece	44	108	Algeria	34	145	Laos	30
10	Luxembourg	81	31	Barbados	61	87	Bahrain	43	108	Cote d'Ivoire	34	145	Mexico	30
11	United Kingdom	81	31	Qatar	61	90	Ghana	43	108	Egypt	34	145	Moldova	30
12	Australia	79	31	Slovenia	61	90	Burkina Faso	42	108	Ethiopia	34	145	Paraguay	30
13	Iceland	78	31	Taiwan	61	90	Serbia	42	108	Guyana	34	145	Sierra Leone	30
14	Belgium	77	35	Botswana	60	90	Liberia	37	108	Armenia	33	145	Iran	29
15	Hong Kong	77	35	Saint Lucia	60	90	Morocco	37	113	Bolivia	33	145	Kazakhstan	29
16	Austria	75	38	Saint Vincent and The Grenadines	60	95	The FYR of Macedonia	37	113	Vietnam	33	145	Nepal	29
17	United States	74	38	Cape Verde	59	95	Argentina	36	113	Ukraine	32	145	Russia	29
18	Ireland	73	38	Lithuania	59	95	Benin	36	116	Malawi	32	145	Turkmenistan	22
19	Japan	72	38			95	Tunisia	41	116	Pakistan	32	145	Zimbabwe	22
						95	Turkey	41	116	Guatemala	28	145	Cambodia	21
						95	Belarus	40	116	Tanzania	32	145	Democratic Republic of Congo	21
						95	Brazil	40	116	Togo	32	145	Syria	14
						95			116	Lebanon	28	145	Yemen	14
						95			116	Uzbekistan	21	145	Sudan	14
						95			116			145	Libya	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95			116			145	Yemen	14
						95			116			145	Sudan	14
						95			116			145	Yemen	14
						95			116			145	Syria	13
						95</								

1.2. INDIA – WORLD RELATIONS

In 2015 India exported \$276B, making it the 16th largest exporter in the world. During the last five years the exports of India have increased at an annualized rate of 2.9%, from \$205B in 2010 to \$276B in 2015. The most recent exports are led by Refined Petroleum which represents 10.6% of the total exports of India, followed by Diamonds, which account for 8.4%.

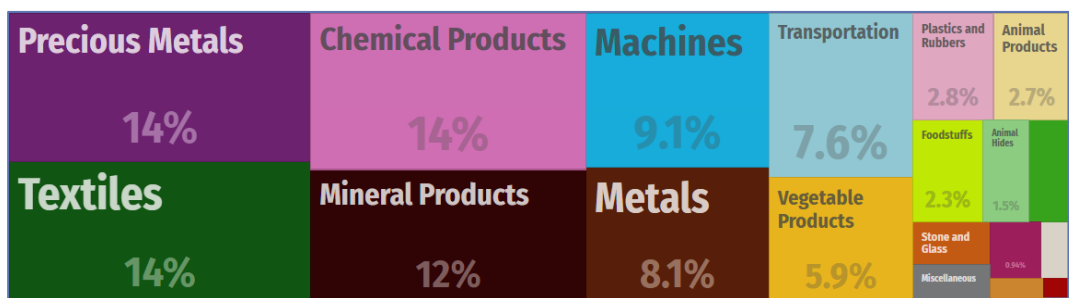


FIGURE 3: INDIA MAJOR EXPORTS, 2015 (% SHARE)

Source: The Observatory of Economic Complexity

In 2015 India imported \$368B, making it the 14th largest importer in the world. During the last five years the imports of India have increased at an annualized rate of 1.1%, from \$324B in 2010 to \$368B in 2015. The most recent imports are led by Crude Petroleum which represent 17.5% of the total imports of India, followed by Gold, which account for 9.6%.

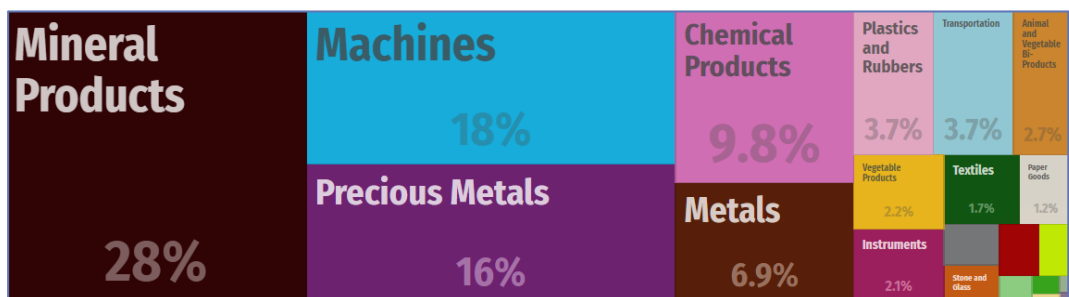


FIGURE 4: INDIA MAJOR IMPORTS, 2015 (% SHARE)

Source: The Observatory of Economic Complexity

The top import origins of India are China (\$59B), Switzerland (\$21.5B), the United States (\$20B), Saudi Arabia (\$19.9B) and the United Arab Emirates (\$19.4B).



FIGURE 5: ORIGIN OF INDIAN IMPORTS, 2015 - REGIONS (% SHARE)

Source: The Observatory of Economic Complexity

MERCHANDISE TRADE

Exports (including re-exports)

In consonance with the revival exhibited by exports in the last four months, during January 2017 exports continued to show a positive growth of 4.32 per cent in dollar terms (valued at US\$ 22115.03 million) and 5.61 per cent in Rupee terms (valued at Rs. 150559.98 crore) as compared to US\$ 21199.02 million (Rs. 142568.31 crore) during January 2016.

Cumulative value of exports for the period April-January 2016-17 was US\$ 220922.78 million (Rs. 1484473.55 crore) as against US\$ 218532.64 million (Rs. 1420572.68 crore) registering a positive growth of 1.09 per cent in Dollar terms and positive growth of 4.50 per cent in Rupee terms over the same period last year. Non-petroleum exports in January 2017 were valued at US\$ 19422.86 million against US\$ 19111.38 million in January 2016, an increase of 1.6 %. Non-petroleum exports during April - January 2016-17 were valued at US\$ 196254.10 million as compared to US\$ 192071.50 million for the corresponding period in 2016, an increase of 2.2%.

The growth in exports is positive for USA (2.63%), EU (5.47%) and Japan (13.43%) but China has exhibited negative growth of -1.51% for November 2016 over the corresponding period of previous year as per latest WTO statistics.

Imports

Imports during January 2017 were valued at US\$ 31955.94 million (Rs. 217557.32 crore) which was 10.70 per cent higher in Dollar terms and 12.07 per cent higher in Rupee terms over the level of imports valued at US\$ 28866.53 million (Rs. 194134.02 crore) in January 2016. Cumulative value of imports for the period April-January 2016-17 was US\$ 307311.86 million (Rs. 2065656.42 crore) as against US\$ 326277.38 million (Rs. 2120158.57 crore) registering a negative growth of 5.81 per cent in Dollar terms and 2.57 per cent in Rupee terms over the same period last year.



Source: oilandgaspeople.com

Crude Oil and Non-Oil Imports

Oil imports during January 2017 were valued at US\$ 8140.83 million which was 61.07 percent higher than oil imports valued at US\$ 5054.29 million in January 2016. Oil imports during April-January 2016-17 were valued at US\$ 69062.66 million which was 5.81 per cent lower than the oil imports of US\$ 73321.66 million in the corresponding period last year.

Non-oil imports during January 2017 were estimated at US\$ 23815.11 million which was 0.01 per cent higher than non-oil imports of US\$ 23812.24 million in January, 2016. Non-oil imports during April-January 2016-17 were valued at US\$ 238249.20 million which was 5.81 per cent lower than the level of such imports valued at US\$ 252955.72 million in April-January, 2015-16.

TRADE IN SERVICES (FOR DECEMBER 2016, AS PER THE RBI PRESS RELEASE DATED 15TH FEBRUARY 2017)

Exports (Receipts)

Exports during December 2016 were valued at US\$ 13804 Million (Rs. 93729.71 Crore) registering a positive growth of 3.49 per cent in dollar terms as compared to positive growth of 1.72 per cent during November 2016 (as per RBI's Press Release for the respective months).

Imports (Payments)

Imports during December 2016 were valued at US\$ 8294 Million (Rs. 56316.59 Crore) registering a negative growth of 0.35 per cent in dollar terms as compared to positive growth of 8.37 per cent during November 2016 (as per RBI's Press Release for the respective months).

TRADE BALANCE

Merchandise

The trade deficit for April-January 2016-17 was estimated at US\$ 86389.08 million which was 19.82% lower than the deficit of US\$ 107744.74 million during April-January 2015-16.

Services

As per RBI's Press Release dated 15th February 2017 the trade balance in Services (i.e. net export of Services) for December 2016 was estimated at US\$ 5510 million. The net export of services for April - December 2016-17 was estimated at US\$ 48316 million which is lower than net export of services of US\$ 53557 million during April - December 2015-16.

Overall Trade Balance

Overall the trade balance has improved. Taking merchandise and services together, overall trade deficit for April- January 2016-17 is estimated at US\$ 38073.08 million which is 29.7 percent lower in Dollar terms than the level of US\$ 54187.74 million during April-January 2015-16. (Services data pertains to April-December 2016-17 as December 2016 is the latest data available as per RBI’s Press Release dated 15th February 2017).

India trade gap widened 120.7 percent year-on-year to USD 13.84 billion in May of 2017, above market expectations of a USD 12.48 billion gap. It is the highest shortfall since November of 2014, due to a jump in gold imports. Total purchases surged 33.09 percent year-on-year to USD 37.86 billion, boosted by a 236.69 percent increase in gold imports and a 29.54 percent rise in oil.

Exports went up 8.32 percent to USD 24.01 billion. Balance of Trade in India averaged -2213.03 USD Million from 1957 until 2017, reaching an all-time high of 258.90 USD Million in March of 1977 and a record low of -20210.90 USD Million in October of 2012.

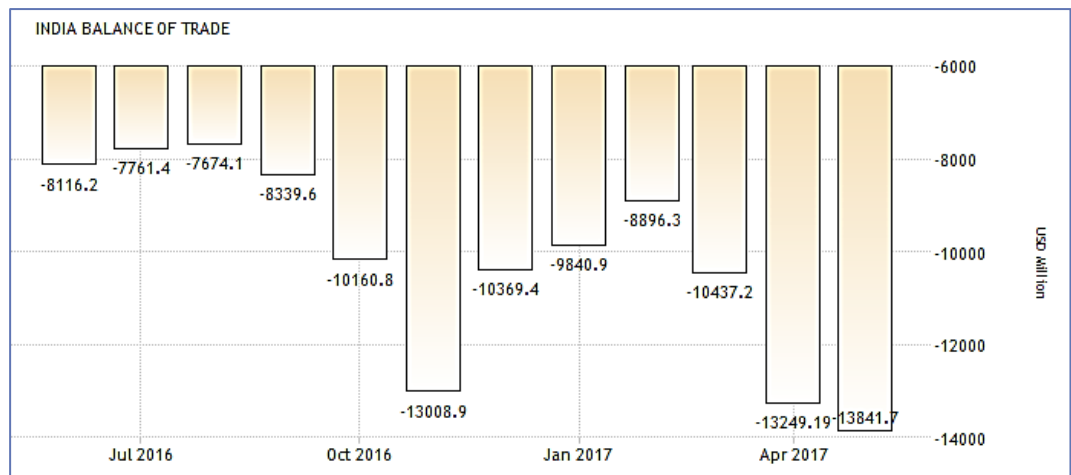


FIGURE 6: INDIA BALANCE OF TRADE

Source: tradingeconomics.com



São Francisco Xavier Church, Goa, India

1.3. INDIA – PORTUGAL RELATIONS

The election of Mr. Antonio Costa, who is partially of Indian origin, as the Prime Minister of Portugal in 2015, has the potential to energise the bilateral relations between India and Portugal.

India's relations with Portugal are close and friendly. Relations between India and Portugal began amicably in 1947 after India's independence and diplomatic relations were established in 1949. Bilateral relations however went into decline after 1950 over Portugal's refusal to surrender its enclaves of Goa, Daman Diu and Dadra and Nagar Haveli on India's west coast. By 1955, the two nations had cut off diplomatic relations, triggering a crisis which precipitated the liberation of Goa by Indian military forces, ending Portuguese rule over Indian enclaves in 1961. It brought to an end, 451 years of Portuguese overseas provincial governance in Goa. With the signing of a treaty in New Delhi on December 31, 1974 with the new democratic Portuguese Government, the two Embassies were re-established and amicable bilateral relations were restored.

The two countries today share warm and friendly ties with close political, security, cultural, people to people ties. Portugal and India also cooperate actively in multilateral fora including support for each other's' candidatures. Portugal supports of India's bid for a permanent seat in the United Nations Security Council. In October 2005, Portugal extradited Abu Salem and Monica Bedi who were facing terror charges in India, becoming the first European nation to do so. On October 9, 2015, Portugal became the first European and western country, and only the fourth outside the East Asia Summit, to sign a Memorandum of Understanding on the Establishment of the Nalanda University in India.

Political Relations between both countries are warm and friendly. Over the years many agreements have been signed between them to improve their political and business relations like Cooperation Agreement 1992 (between FICCI and ICEP), Bilateral Investment Promotion and Protection Agreement 2000, Cultural Exchange Programme (2007–2010), Extradition Treaty and others.

“Some important existing bilateral agreements/MoUS are: MoU on Avoidance of Double Taxation Agreement (1988), Agreement for cooperation in Science & Technology (1998), Agreement on Economic and Industrial Cooperation (2000), Bilateral Investment Protection Agreement (BIPA), Treaty of Extradition (2007), Agreement on Social Security Convention (2013), MoU on the establishment of Nalanda University (2015), MoU on Joint Issue of Stamps (2015) and Agreement on gainful employment of diplomatic spouses (2016).”

Embassy of India in Lisbon, Portugal

In 2015 Portugal exported \$55.1B, making it the 46th largest exporter in the world. During the last five years the exports of Portugal have increased at an annualized rate of 2.9%, from \$48.7B in 2010 to \$55.1B in 2015. The most recent exports are led by Refined Petroleum which represents 5.09% of the total exports of Portugal, followed by Cars, which account for 4.51%.

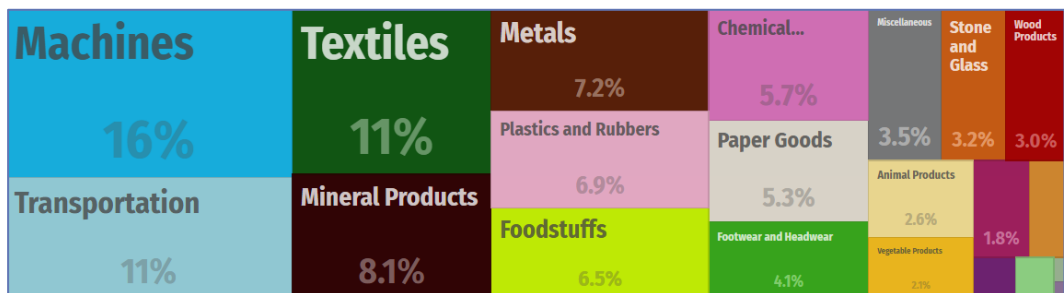


FIGURE 7: PORTUGAL EXPORTS TO WORLD, 2015 (% SHARE)

Source: The Observatory of Economic Complexity

Total trade between Portugal and India reached 700 million US\$ in 2015-16. Imports (107 million US\$) from Portugal remained still very moderate as compared to the exports (552 million US\$) from India. Major articles of import from Portugal are Machinery and Mechanical appliances, electrical machinery and equipment, plastics, organic chemicals, copper and articles and paper, per example. Indian exports consisted principally of marine products, cotton and

synthetic textiles, leather, footwear, hides and skins, staple fibres, coffee, tea & spices. In the twenty-first century exports diversified to include items such as carpets, gems and jewellery, silk and silk products, tobacco, electrical machinery & parts, iron & steel products, dyeing & tanning products, and organic chemicals. Automobile spares and components, computer software, bicycles, scooters and other two wheelers, and rice have also been exported.

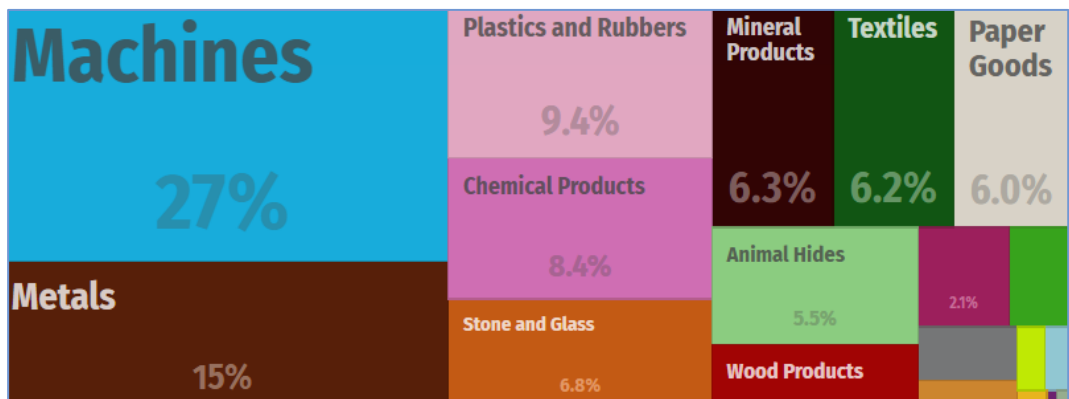


FIGURE 8: INDIA IMPORTS FROM PORTUGAL (2015-16)

Source: *The Observatory of Economic Complexity*

The comparative analysis of the most exported product groups by Portugal to the World and imported by India from Portugal shows that Portugal has great potential in increasing its export capacity to India, since the most exported product groups in Portugal are also the most imported by India from that country: Machines (27%), Metals (15%), Plastics (9.4%), Chemicals (8.4%), Stone (6.8%), Mineral Products (6.2%).

Apart from these groups, Portugal has a considerable export capacity of Transportation Stuff (11%), nevertheless a sector where India reveals a great productive force, being the fifth largest exporter of Asian cars (per example).

Thus, we see a correspondence between what India seeks in the World and what Portugal exports to the World.

On June 3, 2015 a Joint Venture agreement was concluded between Portugal's Visabeira Group and Vindhya Telelinks Limited, creating a new joint venture company, Birla Visabeira Private Limited that plans operations both in India and third countries.

INDIA AND PORTUGAL SIGN 11 PACTS TO BOOST BILATERAL TIES

India and Portugal announced a four million euros joint fund to bolster research in science and technology as Prime Minister Narendra Modi held in-depth talks with his Portuguese counterpart on cooperation in areas like counter-terrorism, space and climate studies. The agreements signed included cooperation in outer space, double taxation avoidance, nano technology, improving cultural ties, youth and sports, higher education and scientific research, and Portugal-India business hub and Indian Chamber of Commerce.



FIGURE 9: MR. NARENDRA MODI AND MR. ANTÓNIO COSTA, INDIAN AND PORTUGUESE PRIME-MINISTERS, JUNE 2017

Source: A Semana, 2017

1.4. ECONOMIC DEVELOPMENT

India's diverse economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of services.

Slightly less than half of the work force is in agriculture, but services are the major source of economic growth, accounting for nearly two-thirds of India's output but employing less than one-third of its labour force.

India has capitalized on its large educated English-speaking population to become a major exporter of information technology services, business outsourcing services, and software workers.

India is developing into an open-market economy, yet traces of its past autarkic policies remain. Economic liberalization measures, including industrial deregulation, privatization of state-owned enterprises, and reduced controls on foreign trade and investment, began in the early 1990s and served to accelerate the country's growth, which averaged nearly 7% per year from 1997 to 2016. India's economic growth slowed in 2011 because of a decline in investment caused by high interest rates, rising inflation, and investor pessimism about the government's commitment to further economic reforms and about slow world growth. Rising macroeconomic imbalances in India and improving economic conditions in Western countries led investors to shift capital away from India, prompting a sharp depreciation of the rupee.

India is the third largest GDP by PPP (The World Bank) and has topped the World Bank's growth outlook for 2015-16 with economy having grown 7,6% in 2015-16, and an average growth rate of 7,37% over the last decade.

The beginning of the XXI century was marked by the rapid economic growth (2000-2008). Slight reduction was observed in 2008-09, because of the financial crisis, but over the past decade its GDP has grown by an annual average rate of 7.37%, while the real personal incomes also grew at a good rate. In that report, South Asia is presented as the global growth hotspot, which has proven resilient to external headwinds and India's GDP growth will remain strong in 2017 and

2018. This growth is supported by expectations of a rebound in agriculture; civil service pays reforms supporting consumptions, increasingly positive contributions from exports and a recovery of private investment in the medium term.

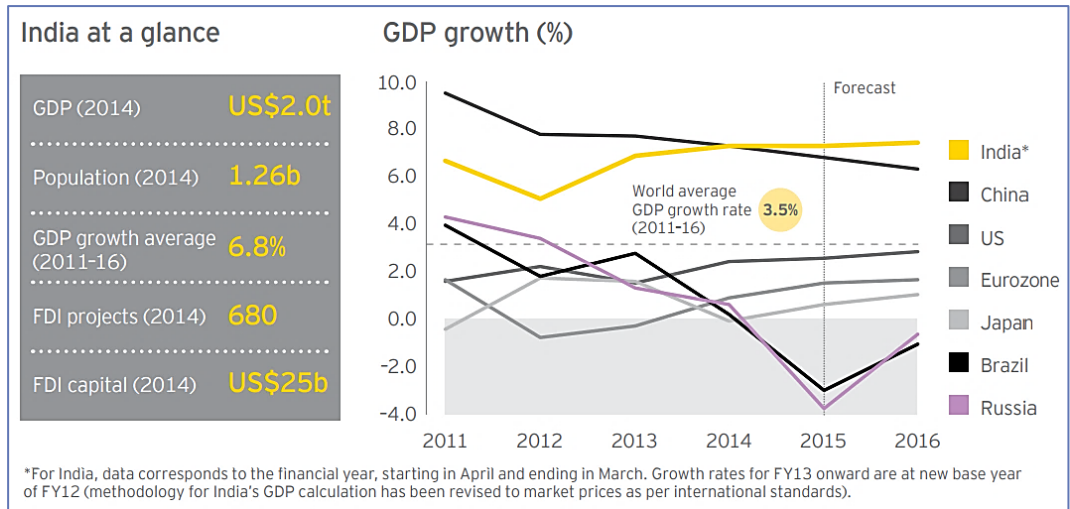


FIGURE 10: INDIA'S REAL GDP

Source: Ernst & Young, 2015

“As uncertainties cloud the global economic picture, the International Monetary Fund has projected that India’s GDP will grow by 7.4 percent for 2016 –17, making it the world’s fastest-growing large economy.”

Report McKinsey Global Institute August 2016

India also compares favourably with other emerging markets in growth potential. The country offers an attractive long-term future powered largely by a consuming class that’s expected to more than triple, to 89 million households, by 2025.

Liberalization has created new opportunities. The challenge for policy makers is to manage growth so that it creates the basis for sustainable economic performance.

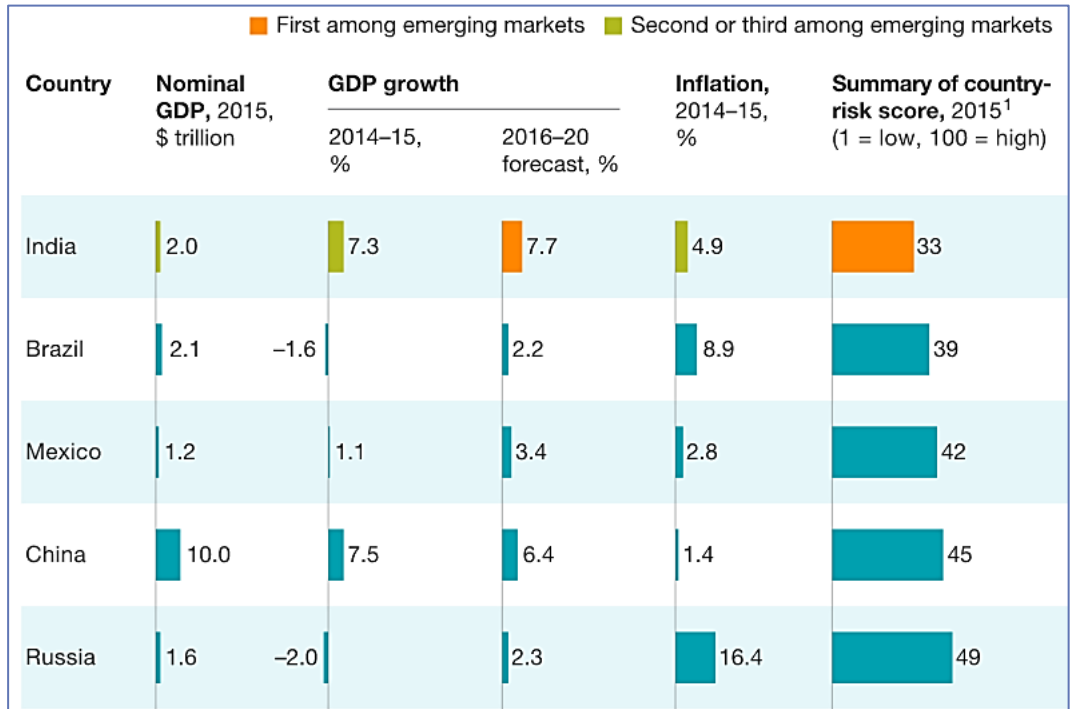


FIGURE 11: INDIA'S GROWTH POTENTIAL COMPARED WITH OTHER EMERGING MARKETS

Source: Report McKinsey Global Institute August 2016

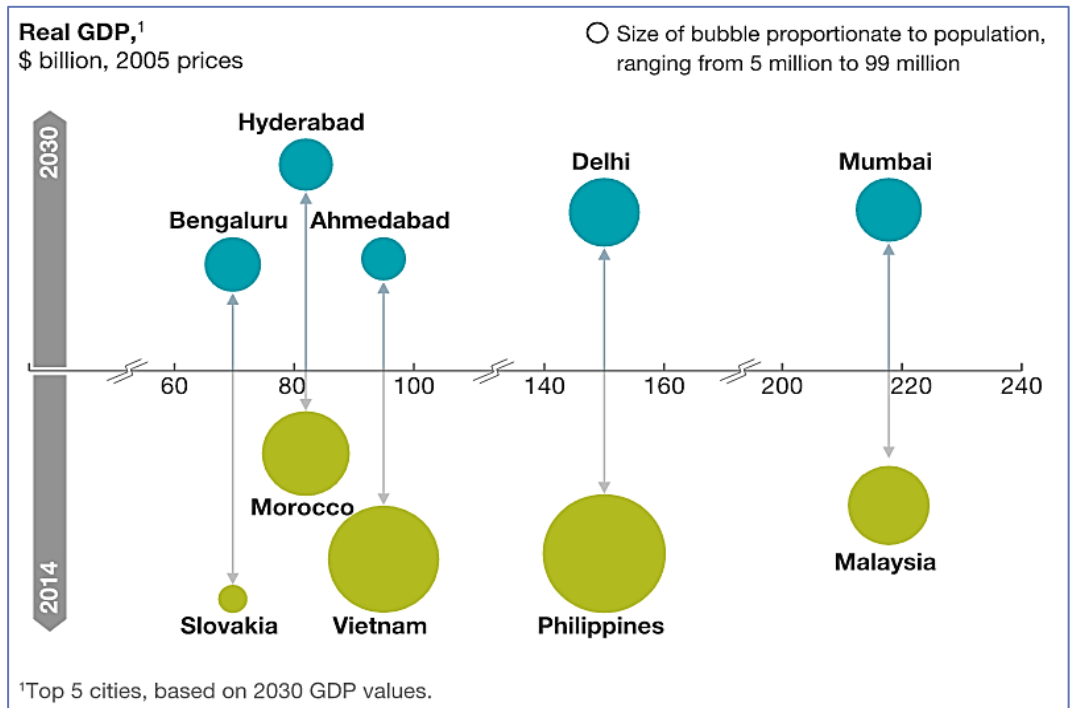


FIGURE 12: TOP FIVE CITIES IN INDIA, 2030

Source: Report McKinsey Global Institute August 2016

“By 2030, the economies of India’s top five cities will be comparable to those of middle-income countries today.”

Report McKinsey Global Institute August 2016

To achieve sustainable growth, these cities will have to become more liveable places, offering clean air and water, reliable utilities, and extensive green spaces. India’s urban transformation represents a huge opportunity for domestic and international businesses that can provide capital, technology, and planning know-how, as well as the goods and services urban consumers demand.

There are many factors to support India’s growth and development in future like:

- A fast growing population of working age. There are 700 million Indians under the age of 35 and the demographics look good for Indian growth in the next twenty years at least. India is experiencing demographic transition that has increased the share of the working-age population from 58 percent to 64 percent over the last two decades.
 - India has a strong legal system and many English-language speakers – this has been a key to attracting inward investment from companies such as those specialising in IT outsourcing.
 - Wage costs are low in India and India has made strides in recent years in closing some of the productivity gap between her and other countries at later stages of development.
 - India’s economy has successfully developed highly advanced and attractive clusters of businesses in the technology space – with the rapid emergence of Bangalore as a hub for global software businesses. External economies of scale have deepened their competitive advantages in many related industries.

India is also one of the most favored countries for foreign direct investment (FDI). It was the top destination for FDI in 2015. Asia’s third largest economy raced past China—which was at the top for many years—with \$63 billion worth of foreign investment, according to fDi Intelligence, a unit of the Financial Times group.

An increase in the number of investment projects in coal and power in India helped the country surpass China. The number of projects in the country rose 8% to 697 in 2015 over the previous year. This is still lower than China’s (789 projects) which indicates that the value of investments was much higher in India.

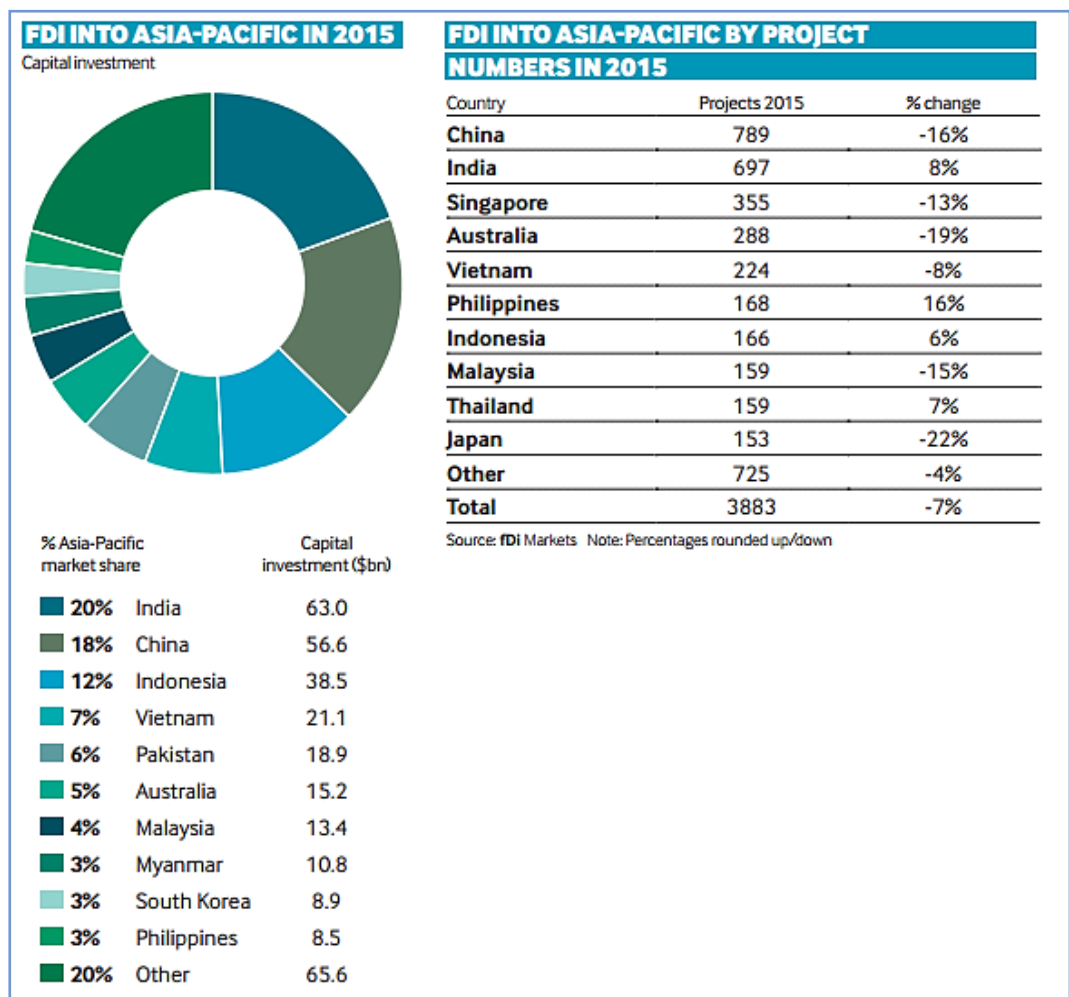


FIGURE 13: FOREIGN DIRECT INVESTMENT INTO ASIA-PACIFIC IN 2015


Source: FDI Markets

However, India also faces some big challenges which are mainly domestic, and include policy uncertainties and fiscal vulnerabilities. Some other challenges faced by Indian economy are- further accelerating the responsiveness of poverty reduction to growth, promoting inclusion and extending gains to a broader range of human development outcomes related to health, nutrition, education and gender.

India's rising income inequality: Richest 1% own 58% of total wealth.

In signs of rising income inequality, India's richest one per cent now holds a huge 58 per cent of the country's total wealth -- higher than the global figure of about 50 per cent, a new study showed by Oxfam in January 2017. The study showed that just 57 billionaires in India now have same wealth (\$ 216 billion) as that of the bottom 70 per cent population of the country. Globally, just 8 billionaires have the same amount of wealth as the poorest 50 per cent of the world population.

The study said there are 84 billionaires in India, with a collective wealth of \$248 billion, led by Mukesh Ambani (\$9.3 billion), Dilip Shanghvi (\$16.7 billion) and Azim Premji (\$15 billion). The total Indian wealth in the country stood at \$3.1 trillion.



HIGHLIGHTS

- The study said there are 84 billionaires in India, with a collective wealth of \$248 billion
- The CEO of India's top IT firm earns 416 times the salary of a typical employee in his company
- Women form 60 per cent of the lowest paid wage labour

FIGURE 14: STUDY RELEASED BY RIGHTS GROUP OXFAM AHEAD OF THE WORLD ECONOMIC FORUM (WEF) ANNUAL MEETING, 2017

Source: *The Times of India, Business*

1.5. REGIONAL INEQUALITY

The average annual growth rates (2007-12) for Uttarakhand (13,66%), Bihar (10,15%) or Jharkhand (9,85%) were higher than for West Bengal (6,24%), Maharashtra (7,84%), Odisha (7,05%), Punjab (6,85%) or Assam (5,88%).

Various economic and social indicators confirm the higher level of inter-state disparities in India. Almost the same picture emerges among the different districts and regions within the states. Even in highly developed states such as Maharashtra, Gujarat, Tamil Nadu, Punjab and Haryana, there are districts and regions whose indicators are comparable to those of the poorest districts in most backward states. Maharashtra is one of the most developed states in India but maximum numbers of farmers have committed suicides over there. This shows that benefits of economic growth have not percolated downward.

Different factors affecting India's growing income inequality are:

The economic policy in low-income states may be holding them back. Although it would appear they should be ripe for investment, places like Uttar Pradesh are unappealing due to poor governance. According to a study by the National Council of Applied Economic Research, India's poorest states are among the least attractive for investment due to concerns about the political climate and infrastructure.

In contrast to other emerging economies, India's growth has come in "skill-intensive sectors rather than low-skill ones." In manufacturing-growth-led China, regions with low labour costs are enticing because the labour needed can be done by pretty much anyone. But in India, where the service sector drives far more growth than manufacturing or agriculture, high-skill people are the engines of growth. The most educated Indians tend to cluster in cities like Bangalore where high-tech firms are located, exacerbating regional inequality.



Source: Photobucket

ASYMMETRIES BETWEEN REGIONS

Economic development has enhanced divergence rather than fostering convergence. Inter- and intra-regional disparity has accentuated. The Organisation for Economic Co-operation and Development (OECD) Economic Survey of India, Article IV Consultations of the International Monetary Fund and the Economic Survey, all conclude that spatial income inequality in India is not only large but increasing.

Intra-regional disparity to overall income inequality has also increased substantially. The OECD Economic Survey of India concludes that the “difference across households living in the same state” is the most important source of income inequality. Inter-alia, factors like distance to the closest urban agglomeration, differences in urbanisation, electricity provisions and state-specific characteristics play a crucial role in explaining divergence across districts.

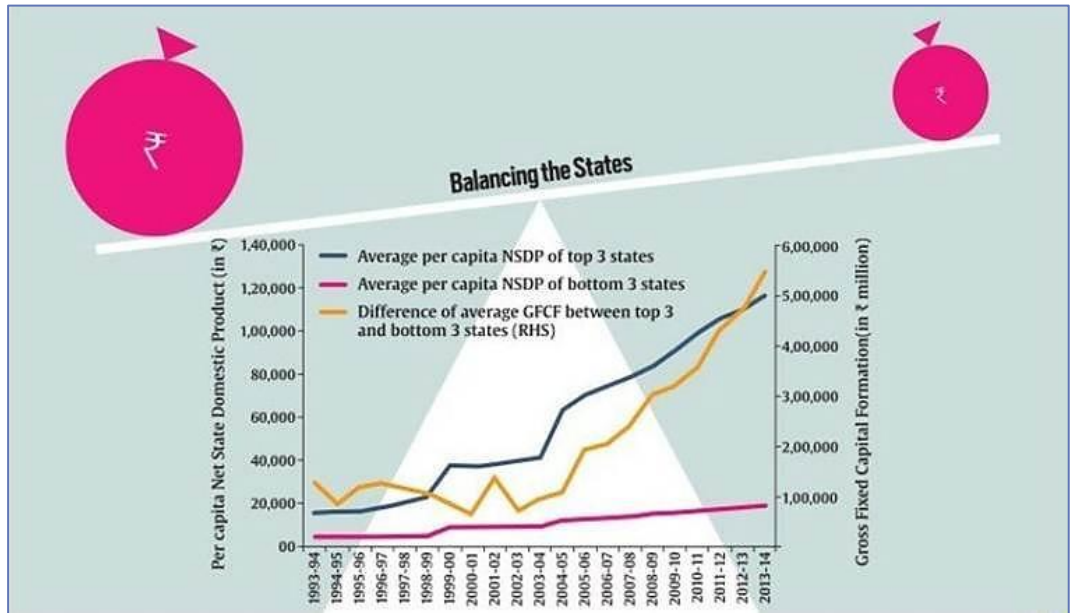


FIGURE 15: BALANCING THE STATES, INDIA

Source: The Indian Express



Source: weforum.org

Maharashtra has highest GSDP among Indian States and Union Territories. Maharashtra contributes 14.42% of total India's GDP with gross state domestic product around of 1,510,132 crore INR at current prices. India's most populated state Uttar Pradesh is at second position with share of 8.24%. Tamil Nadu (8.16%) is at 3rd, India's most economically Free State Gujarat (7.31) is at 4th

and West Bengal (6.75%) is at 5th position in year 2013-14. For year 2014-15, data of 23 states/UTs are available. Tamil Nadu is at 2nd place ahead of Uttar Pradesh with GSDP 976,703 Indian rupees as of 2014-15 data. At 2004-05 prices, Tamil Nadu is at second; Uttar Pradesh is at third position.

India's largest states Rajasthan is at number 7, poorest state Bihar is at number 14 and capital Delhi is at number 12. Newly created state Telangana (3.74%) is at 11th position with GSDP Rs. 391,751. Andhra Pradesh (4.43%) is now at number 8. Top 5 states shares 44.87% in India's total economy. Five states of South India share 25.98%. Eight states of North-East India share 2.64%. 13 states/UTs has GSDP less than 1 lakh crore INR.

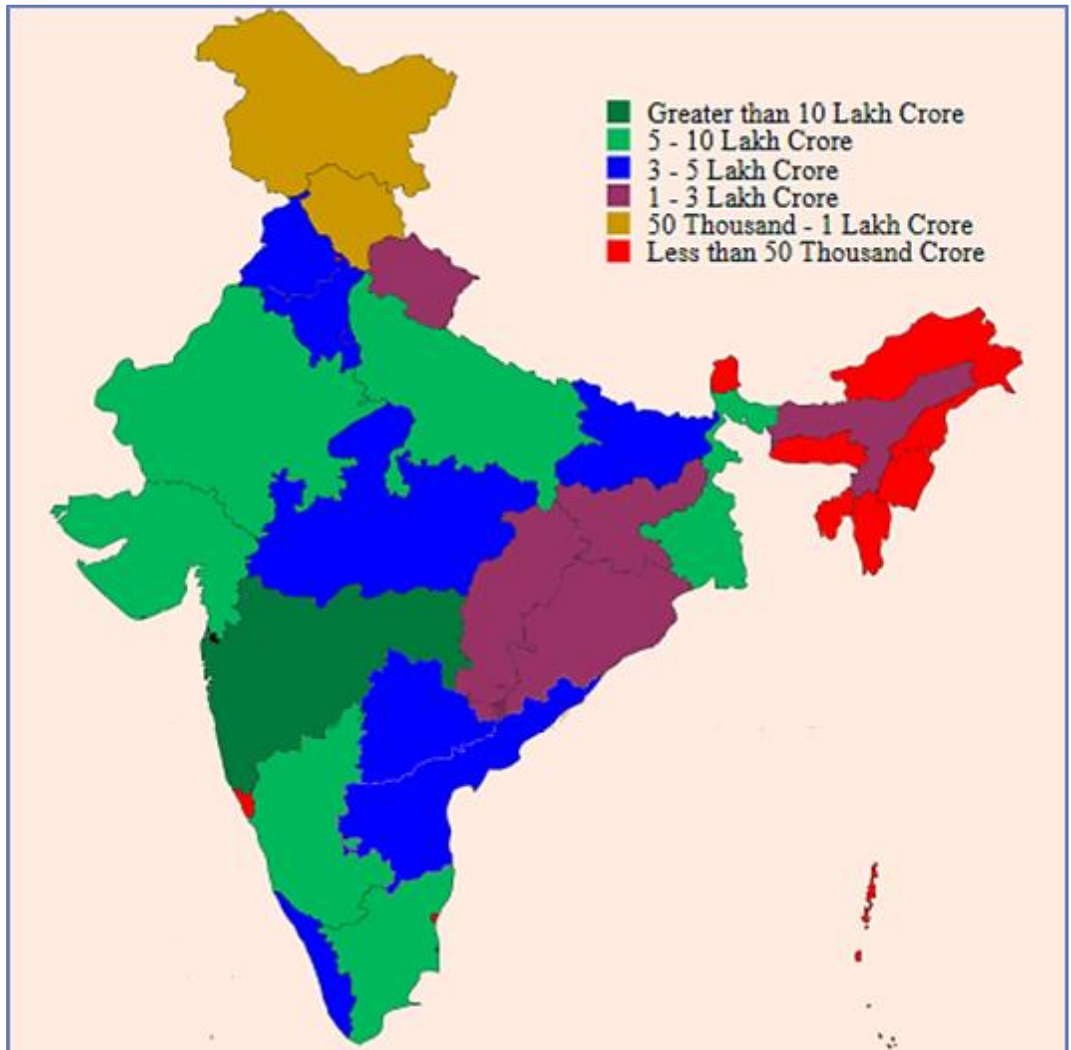


FIGURE 16: GDP OF INDIAN STATES (2013-14)

Source: *statisticstimes.com*

1.6. POPULATION AND EDUCATIONAL ENVIRONMENT

India represents almost 20% of the world population, only second to China. According to UN in July 2016 the population stood at 1.3 billion and is projected to be the most populous country in the world by 2022, surpassing China. Thus, India is expected to become the first political entity in history to be home to more than 1.5 billion people.

India has more than 50% of its population below the age of 25 and more than 65% below the age of 35. It is expected that, in 2020, the average age of an Indian will be 29 years, compared to 37 for china and 48 for japan; and, by 2030, India’s dependency ratio should be just over 0.4.



FIGURE 17: INDIA COUNTRY PROFILE, 2016

Source: BBC News

India has more than two thousand ethnic groups, and every major religion is represented, as are four major families of languages (Indo-European, Dravidian, Austroasiatic and Sino-Tibetan languages) as well as two language isolates (the Nihali language spoken in parts of Maharashtra and the Burushaski language spoken in parts of Jammu and Kashmir).

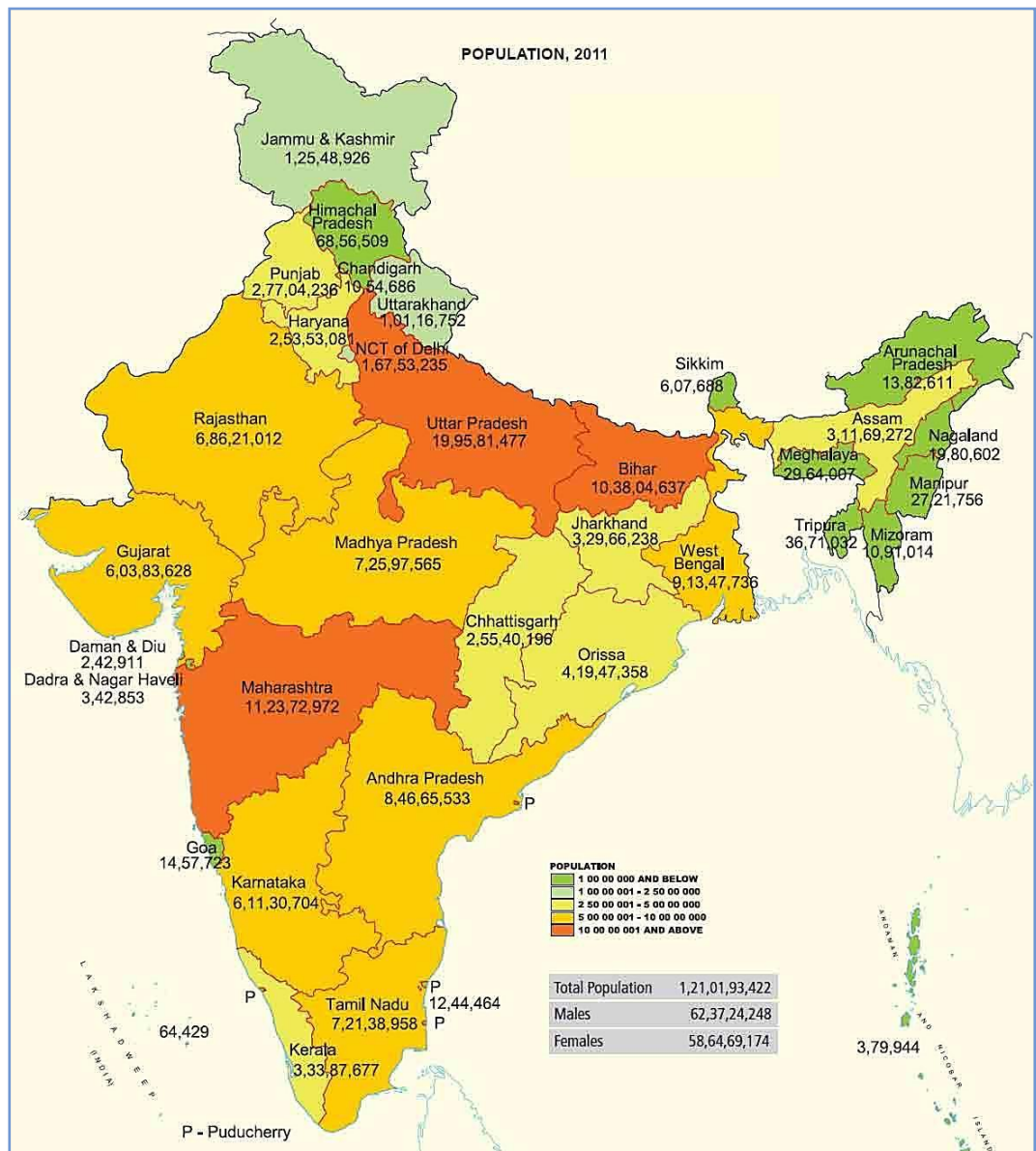


FIGURE 18: POPULATION DENSITY MAP IN INDIA, 2011 CENSUS

Source: <http://cdn.yourarticlelibrary.com>

Further complexity is lent by the great variation that occurs across this population on social parameters such as income and education. Only Africa as a continent exceeds the linguistic, genetic and cultural diversity of the nation of India. The sex ratio is 944 females for 1000 males (2016).

The literacy rate in India has grown sluggishly over the past many years. Although it has seen an increase of more than six times in this area, from 12% at the time of independence in 1947 to 74.04% in 2011, the level is still below the world average literacy rate of 84%. The 2011 census indicated a 2001–2011 decadal literacy growth of 9.2% which is slower than the growth seen during the previous decade.

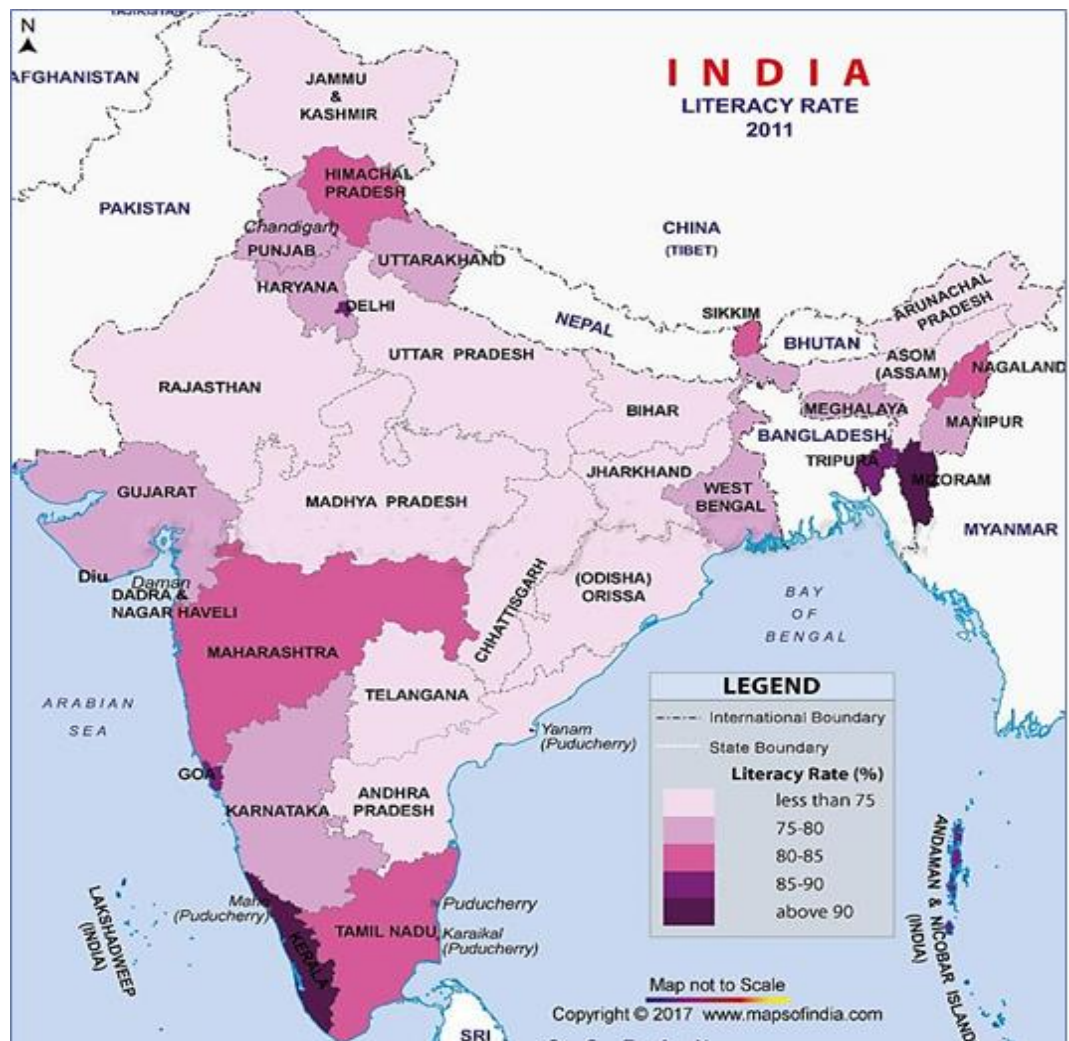


FIGURE 19: LITERACY RATE MAP IN INDIA, 2011 CENSUS

Source: mapsofindia.com

Literacy rate in India is uneven and as such, different States and Union Territories of India have differences in their literacy rates.

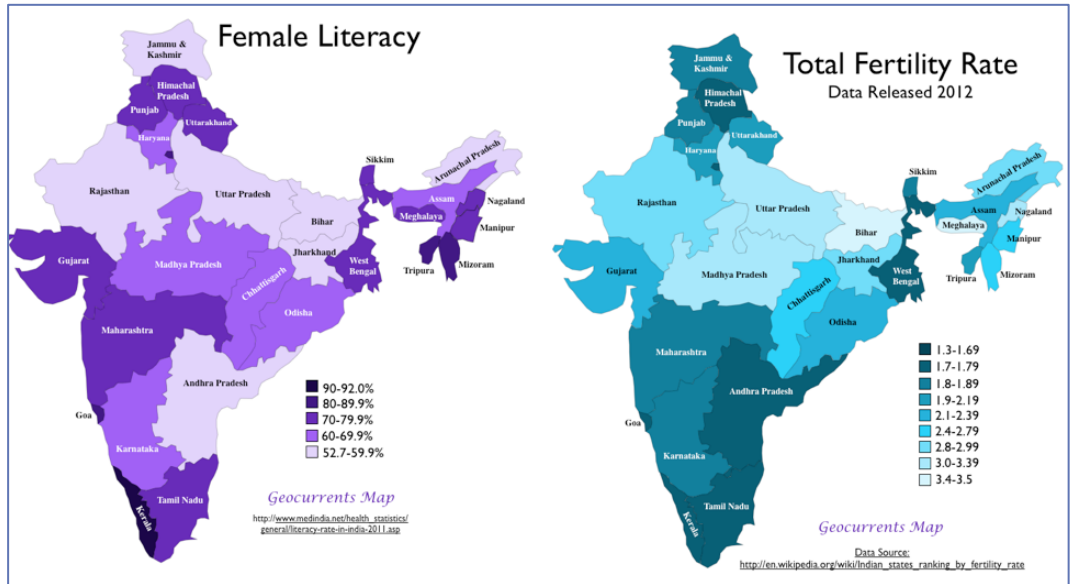


FIGURE 20: FEMALE LITERACY AND FERTILITY RATE IN INDIA, 2012

Source: <http://geocurrents.info>

According to Census 2011, Kerala has the highest total literacy rate and female literacy rate whereas Lakshadweep had the highest male literacy rate. Bihar has the lowest total literacy rate and male literacy rates while Rajasthan has the lowest female literacy rate.



Source: Gulf News

1.7. GEOGRAPHY AND INFRASTRUCTURES

India is the seventh largest country in the world with a total land area of 1.26 million sq. miles. It represents one of the largest developing markets of the world and consists of 36 administrative divisions: 29 States and 7 Union Territories.

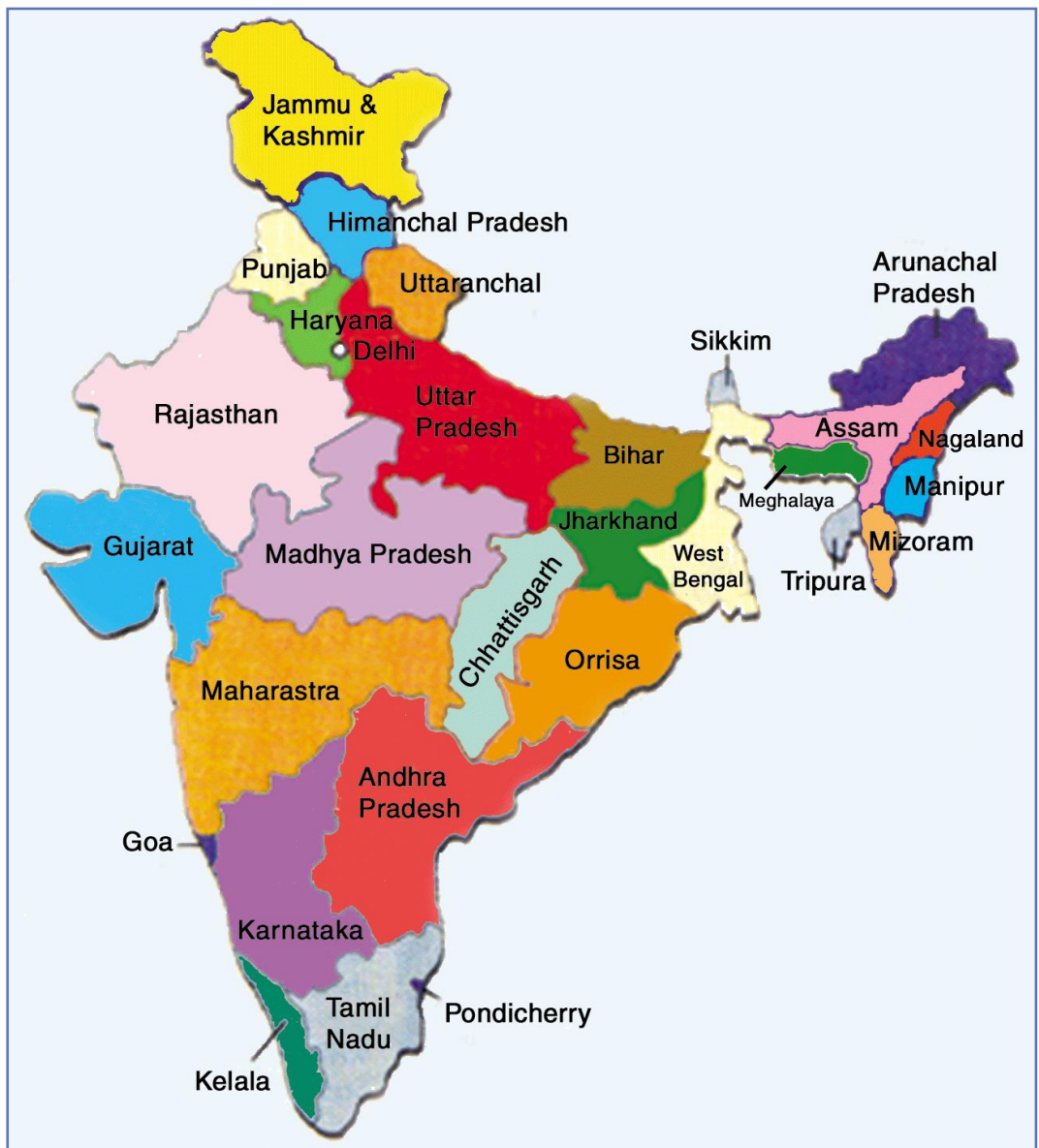


FIGURE 21: INDIA'S ADMINISTRATIVE DIVISION

Source: geocurrents.info

With the notable exception of the deserts in the northwest, including the Thar Desert, and the mountain fringe in the north, a very high population density exists throughout most of the country; the core of the population is in the north along the banks of the Ganges, with other river valleys and southern coastal areas also having large population concentrations.

India also has the second largest road network, of 5.47 million km, in the world. The Indian roads carry almost 90% of the country's passenger traffic and around 65% of its freight, with sales of automobiles and movement of freight growing at a rapid rate. Most of the parts of the country are well connected via roads and railways. The highway density map indicates there is slight variation in the highway density among different states of the country.

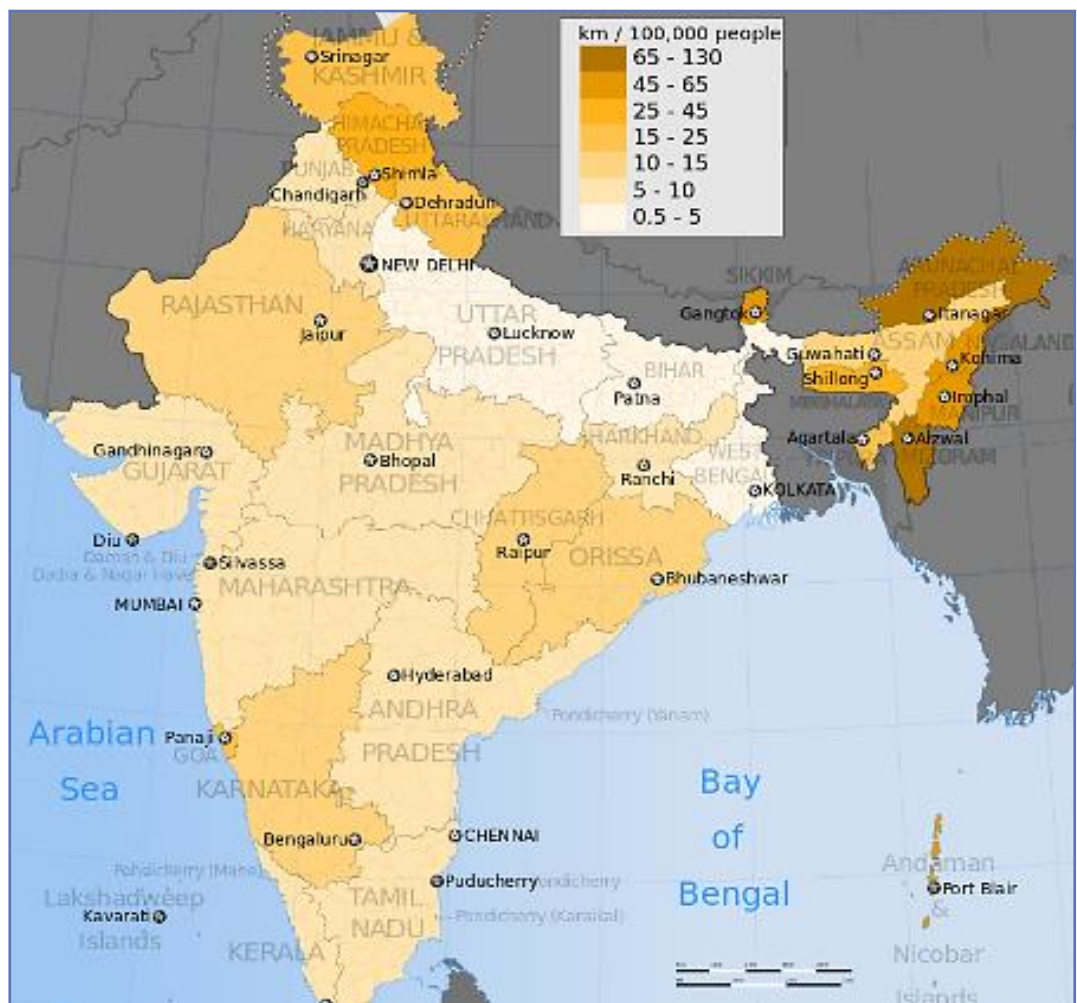


FIGURE 22: HIGHWAY DENSITY IN INDIAN STATES, 2012

Source: Wikipedia



FIGURE 23: INDIAN INTERNATIONAL AIRPORTS

Source: mapsofworld.com



Source: <http://hotelexpress.co.za>

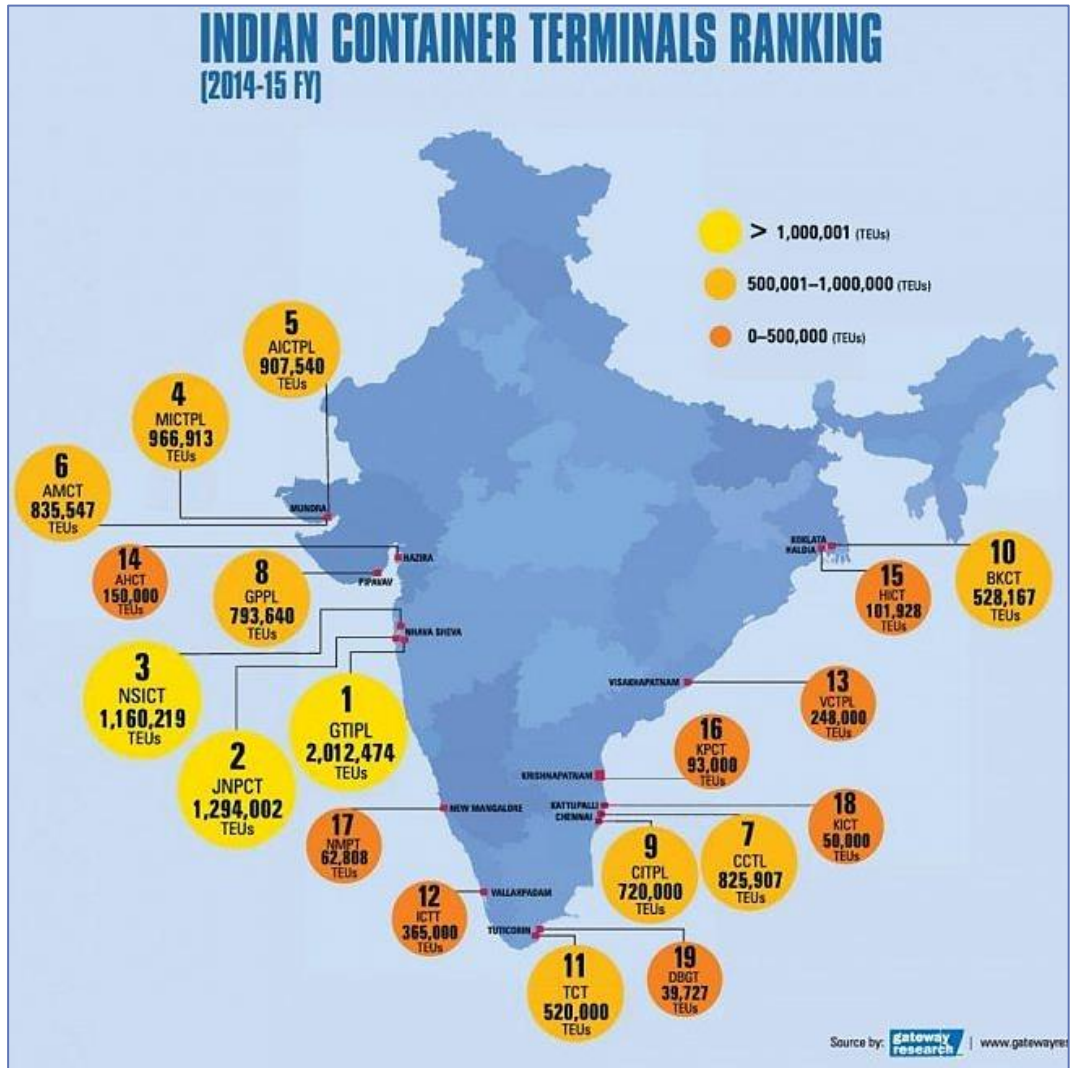


FIGURE 24: INDIAN CONTAINER TERMINALS (2014-15)

Source: assets.porttechnology.org



Source: pearlshipindia.com

1.8. LEGAL ASPECTS OF IMPORTING PRODUCTS TO INDIA

In India, exports and imports are regulated by the Foreign Trade (Development and Regulation) Act, 1992, which replaced the Imports and Exports (Control) Act, 1947, and gave the Government of India enormous powers to control it.

Also there is a duty imposed on import of goods into India, known as import duty. This duty can be imposed because of the authorization of the Section 12 of the Customs Tariffs Act, 1975.

Different kinds of Import Duties are as follows:

- Basic Customs Duty: it is listed in the first schedule of the Custom Tariffs Act, 1975.
- Additional duty: it is usually imposed to make the price of imported goods at par with the price of the domestic goods produced in our country. (Section 3 of Customs Tariff Act, 1975)
- Special Additional Customs duty: in some cases, Central Government often place a tax equivalent to the VAT (Value Added Tax) and any local tax that can also be imposed. (Section 3A of the Customs Tariff Act, 1975)
- Anti- Dumping duty: when the price of the article imported comes out to be less than the normal sale price of that particular product in our country. So to reduce the difference and bring it at with the par with the price of the domestic country, this duty can be imposed. (Section 9A, Customs Tariff Act 1975).
- Safeguards Duty: some goods can cause serious injury and can be threatening to the domestic industry, in that regard, such duty can be imposed. (Section 8B of the Customs Tariff Act, 1975).

CUSTOMS PROCEDURES

Bodies intending to import goods must submit an application to the Directorate General of Foreign Trade and obtain an Importer and Exporter Code (IEC)

number. With a valid IEC indicated on the customs forms (e.g. Bill of Entry), most goods can be freely imported in India. Indeed, with the Government's attempts to ease imports, a majority of import items fall within the scope of India's EXIM Policy regulation of Open General License (OGL), meaning that they are deemed to be freely importable without restrictions and without a licence. Imports of items not covered by OGL are regulated and fall into three categories: banned or prohibited items, restricted items requiring an import licence, and 'canalised' items importable only by government trading monopolies and subject to approval regarding timing and quantity.

SPECIFIC IMPORT PROCEDURES

Electronic Data Interface (EDI), and enabling e-payment of duties, implementation of customs Risk Management System (RMS), automation of customs formalities to Special Economic Zones (SEZ).

Certain goods are prohibited under Foreign Trade (Development and Regulation) Act, 1992.

IMPORTING SAMPLES

Samples for non-commercial use are allowed in case the goods are supplied free of charge. For duty free clearance, the value of individual sample should not exceed Rs.5000/- and aggregate value should not exceed Rs.60 000/- per year or 15 units of samples in a year. However, the Prototypes of engineering goods can be imported even if the value is more than Rs.5000/-.



Source: Shutterstock

1.9. LANGUAGE OF IMPORTED GOODS

Indian Customs are strict and ensure that imported items have the legally required information before these enter the retail market or are sold for consumption, excluding those products that fall under the EOU segment.

The Packaging Rules advise that every package imported for sale in Indian market must specify the mandatory declarations either in Hindi i.e., in Devanagari script or in English. Further, any other Indian regional languages, in addition to Hindi or English can also be used on such packages.

As per a Notification issued by the Ministry of Commerce on November 24, 2000, all pre-packaged commodities (intended for direct retail sale only) imported into India must carry the following declarations, in Hindi or English and any other regional language if need be, on the label:

- **Name** and address of the importer.
- Generic or **common name** of the commodity packed.
- **Net quantity** in terms of standard unit of weights and measurement. All units of weight or measurements must be metric. If the net quantity of the imported package is given in any other unit, its equivalent of standard units must be declared by the importer.
- **Month and year of packing** in which the commodity is manufactured, packed or imported, and the maximum retail sales price (MRP) at which the commodity in packaged form may be sold to the end consumer. The MRP includes all taxes, freight transport charges, commission payable to dealers, and all charges towards advertising, delivery, packing, forwarding and the like.
-
-

ESSENTIAL CUSTOMS INFORMATION

All goods shipments to India require Know Your Customer (KYC) documentation to be presented to Customs; otherwise shipments will go into Customs Bond until the documentation is presented. KYC is recognised by the Indian government as a form of identification. The shipper needs to be registered with India's Directorate General of Foreign Trade (DGFT, www.dgft.gov.in) and provide an IEC (Importer Exporter Code), a unique 10-digit number issued by the DGFT.

A GATT Declaration is required for shipments valued above INR 100,000. Evidence of value must accompany the document.

A Letter of Authority is required so that Transport Company can act on the receiver's behalf.

Duty exemptions may apply by virtue of specific circulars/notifications by Indian Customs.

The receiver needs a valid Import Export Code (IEC) number unless the items are shipped for genuine personal use.

An NOC (No Objection Certification) is required for certain imports.



Source: containersindia, 2014

2 / INDUSTRY OVERVIEW IN INDIA

Industry is considered the backbone of the economic reproduction. A large number of industries have been established in the post-independence period, in India, in private, public and joint sectors. There are a lot of industrial resources and raw materials available in India. Bhilai, Bokaro, Rourkela, Ranchi, Jamshedpur, Renukoot, etc., emerged as major centres during the first one and a half decades of independence.

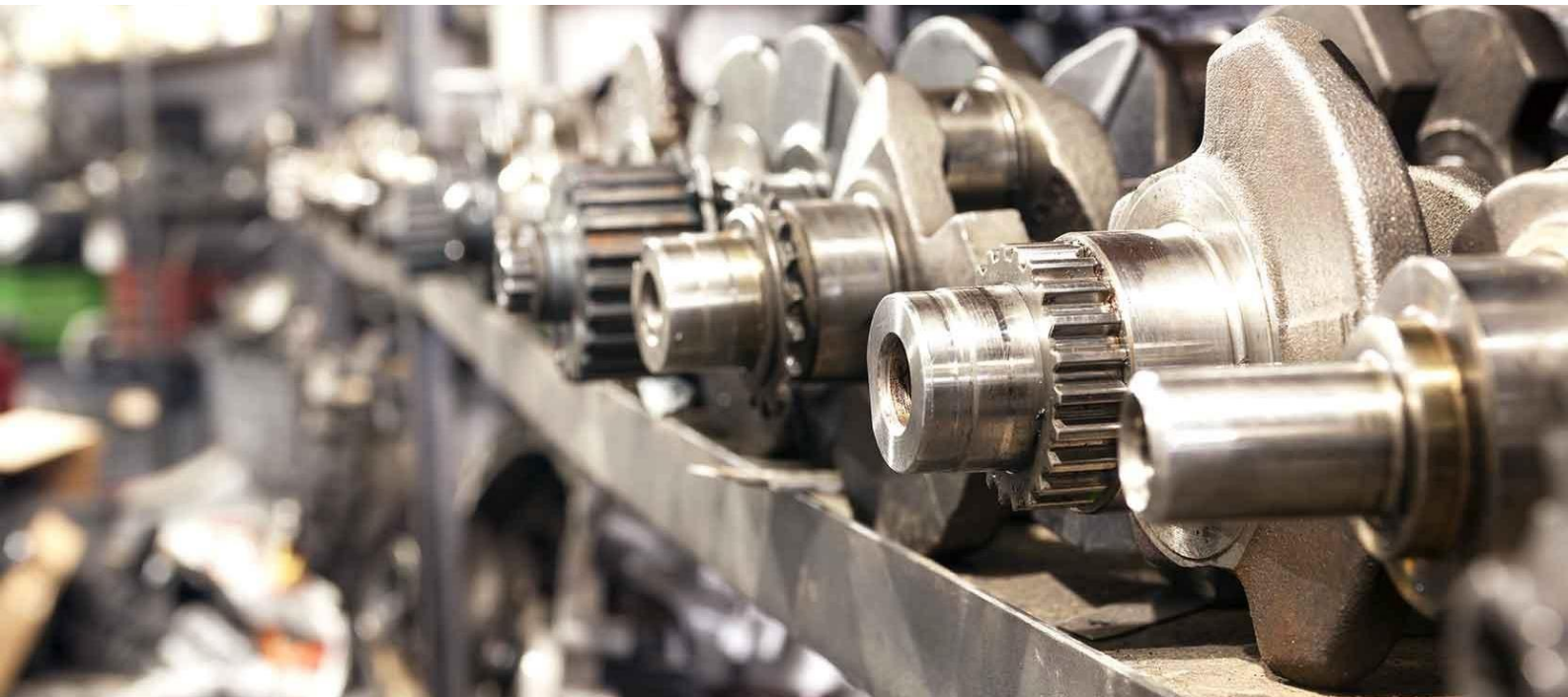
However, later on, industrialisation at medium and small scale was taken up in all the states. Today the main sectors of industrialisation are electronics, transport and telecommunication. Compared to advanced countries, there is very little industrialisation in India. About 10 per cent of the total workers are employed in the organised industrial sector. Both private and public sectors have grown side by side since independence.

In 1948, it was decided to reserve right of control with the state over coal, steel, aviation and petroleum industries. All other industries were open to private enterprises. In 1956, a resolution was passed under which private capital was allowed to enter into the reserved sectors of industry. A number of top-ranking industrialists were members of the Central Advisory Council and Development Council.

The state enterprises and public sector undertakings ran into heavy losses, and this put a question mark on the capabilities of the Indian State and its approaches in managing its own establishment. A debate started on private-public sector partnership and divide. The debate tilted in favour of the private sector.

Many of the government enterprises were handed over to private entrepreneurs and industrialists. Privatisation has entered in a selected way in offices and transport sector, including roads, railways and airways. 'Contractualism' is the new slogan today.

Large-scale industries started in the first fifteen years of planning in India. Rate of industrial growth was fluctuating between 2 to 12 per cent. However, we have observed a steady industrial progress after 1967.



Source: cfo-india, 2017

The enduring factors which have contributed to the growth are vast natural resources, economic surplus, large labour force, high urban concentration, concentration of surplus within a small social group, availability of trained personnel, a stable political structure, powerful means of state economic control, etc. Currently, the growth rate is around 8 per cent. Today, India is one of the top developing countries compared to the countries of Africa and South America.

However, production of luxury goods, control of monopolies, sluggish rate of agricultural development, etc., have come as obstacles in industrial development. Despite these factors, investments in private sector have been increasing.

Collaborations with industrially advanced countries like the USA, UK, Russia, France, Germany, Italy, Japan, etc., are a clear testimony of India's industrial

progress. A boost has been given to the development of small-scale industries too during various plans. India has become a global market today.



FIGURE 25: INDIA INDUSTRIAL PRODUCTION, ANNUAL GROWTH (%), 1996-2016

Source: Tradingeconomics.com

Industrial production in India increased by 3.1 percent year-on-year in April 2017, following an upwardly revised 3.8 percent rise in the previous month and slightly higher than market expectations of a 3 percent gain. Output rose at a slower pace for both mining (4.2 percent from 10.3 percent in March) and electricity (5.4 percent from 6.2 percent) while manufacturing production accelerated (2.6 percent from 2.4 percent). Industrial Production in India averaged 6.64 percent from 1994 until 2017, reaching an all-time high of 20 percent in November of 2006 and a record low of -7.20 percent in February of 2009.



FIGURE 26: INDIA INDUSTRIAL PRODUCTION, ANNUAL GROWTH (%), JUL 2016-APR 2017

Source: Tradingeconomics.com



2.1. STATE OF INDUSTRY BY REGIONS

Following are the major industrial regions of India:



FIGURE 27: MAJOR INDUSTRIAL REGIONS IN INDIA

Source: mapsofindia.com

Mumbai-Pune Industrial Region

This region extends from Thane to Pune and in adjoining districts of Nashik and Solapur. The growth of this industrial region is fully connected with the growth of cotton textile industry in India. In addition to cotton textile and chemical industries, engineering goods, leather, oil refineries; petrochemicals, synthetic and plastic goods, chemicals, drugs, fertilizers, electricals, electronics, software, ship-building, transport and food industries have also developed here.

Hugli Industrial Region

Located in West Bengal, this region extends as a narrow belt running along the river Hugli for a distance of about 100 km from Bansbaria and Naihati in the north to Birlanagar in the south. Cotton textile industry has grown along with jute industry in this region. Paper, engineering, textile machinery, electrical, chemical, pharmaceuticals, fertilizers and petrochemical industries have also developed in this region. However, the industrial growth of this region has slowed down as compared to the other regions. There are several reasons for this sluggish growth but decline in jute industry is said to be one of the main reasons.

Bangalore-Tamil Nadu Industrial Region

Spread in two states of Karnataka and Tamil Nadu, this region experienced the fastest industrial growth in the post-independence era. This region is a cotton-growing tract and is dominated by the cotton-textile industry. In fact cotton textile industry was the first to take roots in this region. But it has large number of silk-manufacturing units, sugar mills, leather industry, chemicals, rail wagons, diesel engines, radio, light engineering goods, rubber goods, medicines, aluminium, cement, glass, paper, cigarette, match box and machine tools, etc.

Gujarat Industrial Region

The nucleus of this region lies between Ahmedabad and Vadodara as a result of which it is also known as Ahmedabad-Vadodara industrial region. However, this region extends up to Valsad and Surat in the south and Jamnagar in the west. The discovery and production of oil at a number of places in the Gulf of Khambhat area led to the establishment of petrochemical industries around Ankleshwar, Vadodara and Jamnagar. Petroleum refineries at Koyali and

Jamnagar provide necessary raw materials for the proper growth of petrochemical industries. Besides textiles (cotton, silk and synthetic fibres) and petrochemical industries, other industries are heavy and basic chemicals, dyes, pesticides, engineering, diesel engines, textile machinery, pharmaceuticals, dairy products and food processing.

Chotanagpur Industrial Region

As its name indicates, this region is located on the Chotanagpur plateau and extends over Jharkhand, Northern Orissa and Western part of West Bengal. Besides raw materials, power is available from the dam sites in the Damodar Valley and the thermal power stations based on the local coal. This region is surrounded by highly populated states of Jharkhand, Bihar, Orissa and West Bengal which provide cheap labour. Heavy engineering, machine tools, fertilizers, cement, paper, locomotives and heavy electricals are some of the other important industries in this region.

Vishakhapatnam-Guntur Industrial Region

This industrial region extends from Vishakhapatnam district in the north-eastern part of Andhra Pradesh to Kurnool and Prakasham districts in the south-east and covers most of the coastal Andhra Pradesh. Petroleum refinery at Vishakhapatnam has facilitated the growth of several petrochemical industries. Vishakhapatnam has the most modern iron and steel plant which have the distinction of being the only plant in India having coastal location. One lead-zinc smelter is functioning in Guntur district. The other industries of this region include sugar, textiles, paper, fertilizers, cement, aluminium and light engineering.

Gurgaon-Delhi-Meerut Industrial Region

This region developed after independence, but is one of the fastest growing regions of India. It consists of two industrial belts adjoining Delhi. One belt extends over Agra-Mathura-Meerut and Saharanpur in U.P. and the other between Faridabad-Gurgaon- Ambala in Haryana. Sugar, agricultural implements, vanaspati, textile, glass, chemicals, engineering, paper, electronics and cycle are some of the important industries of this region. Software industry is a recent addition, Agra and its environs have glass industry. Mathura has an oil

refinery with its petro-chemical complex. One oil refinery has been set up at Panipat also. This will go a long way to boost the industrial growth of this region. Gurgaon has Maruti car factory as well as one unit of the IDPL. Faridabad has a number of engineering and electronic industries. Ghaziabad is a large-centre of agro-industries. Saharanpur and Yamunanagar have paper mills.

Kolfam-Thiruvananthapuram Industrial Region

This is comparatively small industrial region and spreads over Thiruvananthapuram, Kollam, Alwaye, Emakulam and Allapuzha districts of south Kerala. Plantation agriculture and hydroelectricity provide the industrial base to this region. The main industries are textiles, sugar, rubber, match box, glass, chemical fertilizers, food and fish processing, paper, coconut coir products, aluminium and cement. Oil refinery set up in 1966 at Kochi provides solid base to petrochemical industries.



Source: Australian & New Zealand Business Association in India

CLUSTERS IN INDIA

Companies considering a granular pan-India play could target metropolitan clusters. It is expected that just 49 of them (some 183 districts) will account for about 77 percent of India's incremental GDP, 72 percent of its consuming-class households, and 73 percent of its income pool from 2012 to 2025.5 Top-ranked metropolitan districts constitute the nucleus of these clusters, and the surrounding high-potential districts make them serviceable markets with similar psychographics. The clusters are also at least at par with India as a whole on core development parameters, such as access within the household to basic urban services like water supply, sanitation, and electricity.

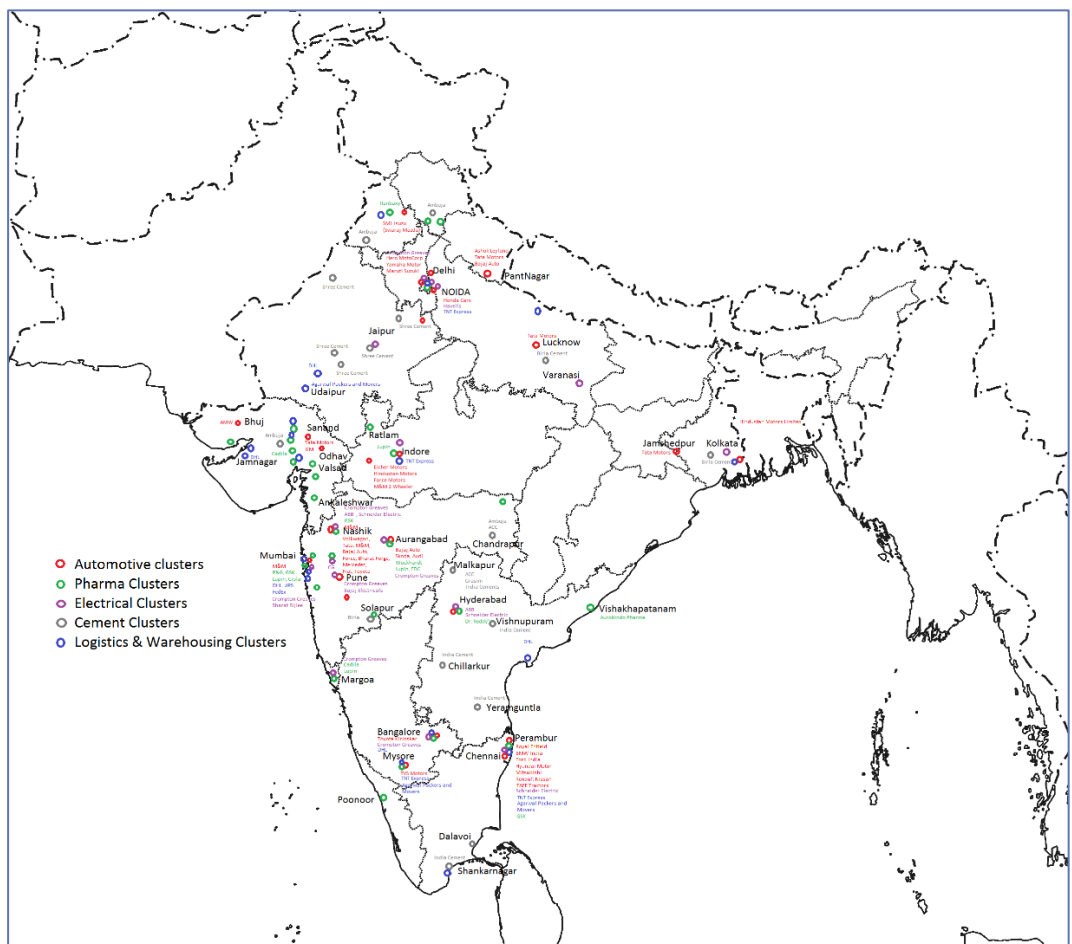


FIGURE 28: INDIA INDUSTRIAL CLUSTERS

Source: Wikipedia

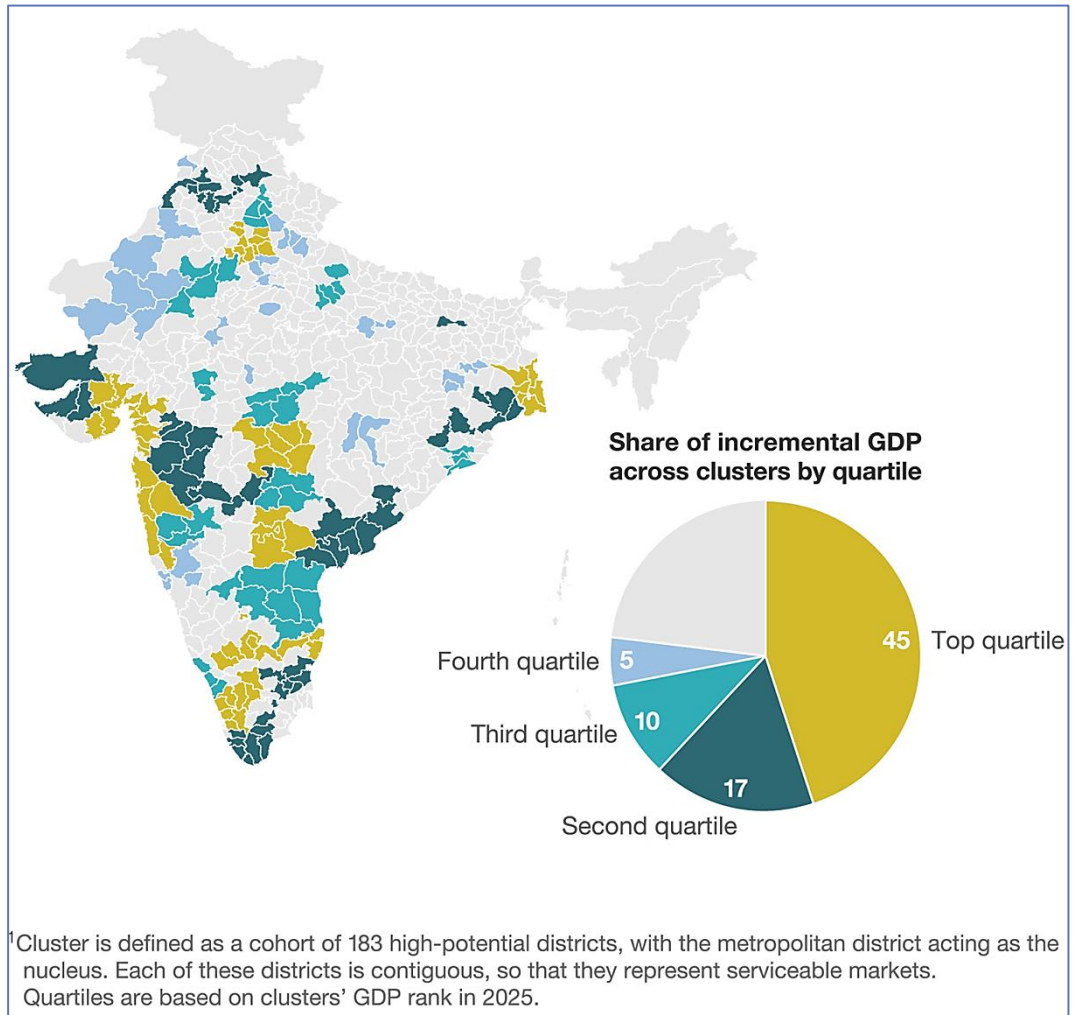


FIGURE 29: INDUSTRIAL CLUSTER'S SHARE OF INCREMENTAL GDP

Source: McKinsey Analysis



Source: indianmirror.com

2.2. OPPORTUNITIES AND RISKS FOR THE INDIAN INDUSTRY

The Indian market has a huge potential and lots to offer to businesses developing. The second most populous country in the world is undergoing a transition, both in terms of investor perceptions of its market potential, and in reality. The Indian economy is registering around 6% growth amid uncertain global economic conditions. The number of people in the Indian middle class is set to treble over the next 15 years, implying a significant impact on disposable income.

OPPORTUNITIES

India will be the most populous country, surpassing China. India will have the world’s youngest population, where as China, Japan and EU will have ageing population. This country will shape lifestyle consumption trends and will have the largest working age groups in the world – 700 million work forces.

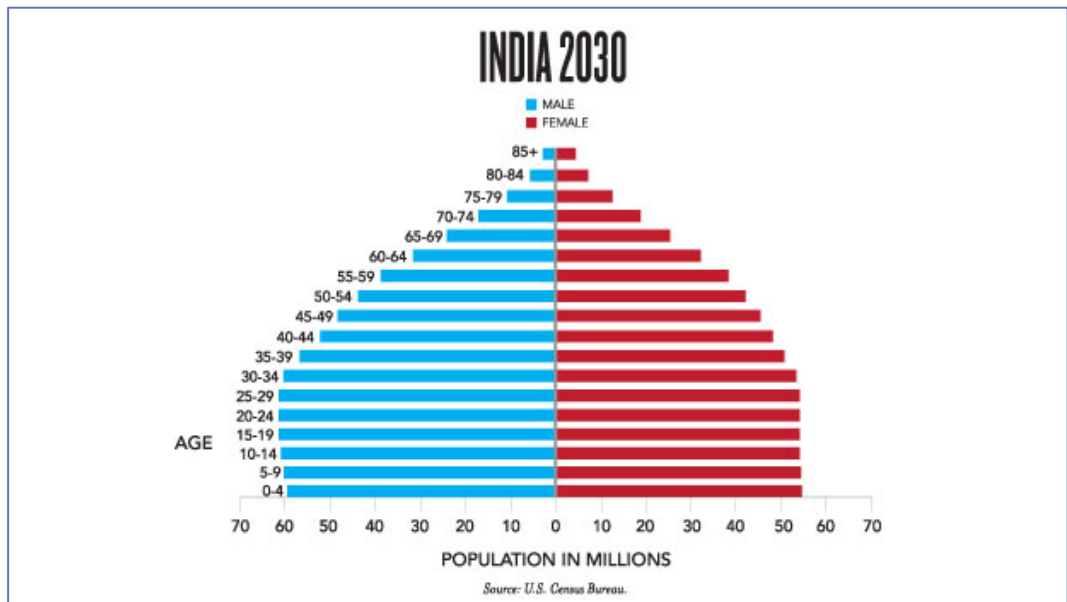


FIGURE 30: INDIA'S POPULATION 2030 (MILLIONS)

Source: U.S. Census Bureau

In 2030 India's projected population is about 1.461 million, with a median age of 32 years old.

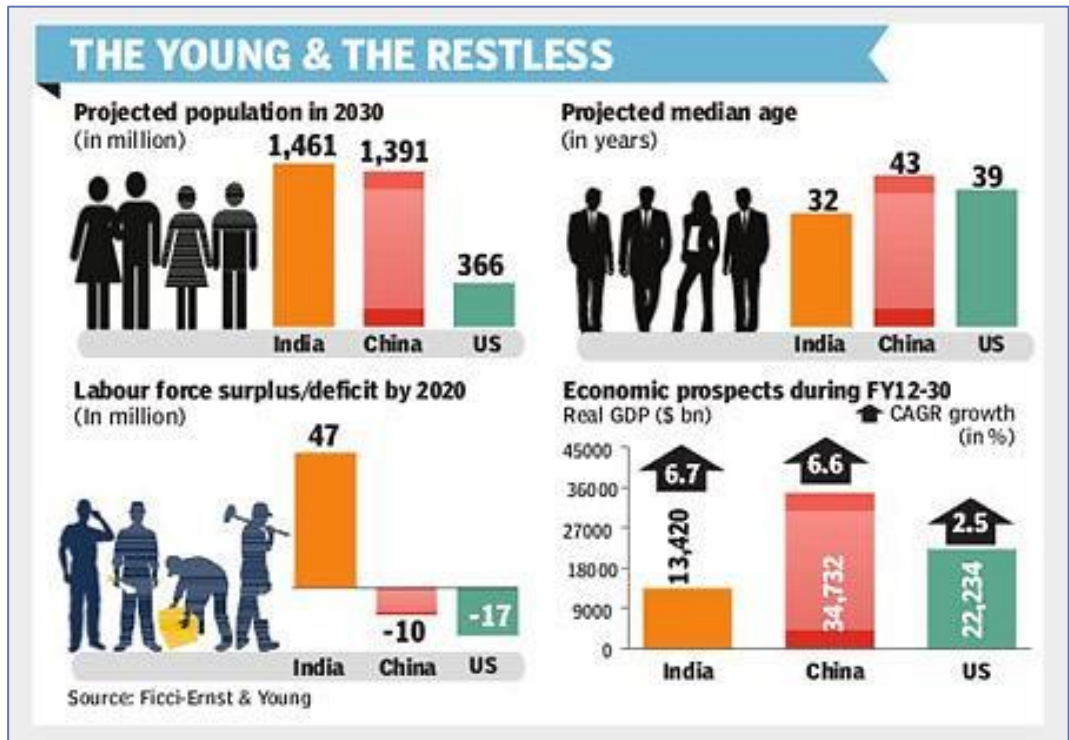


FIGURE 31: THE YOUNG & THE RESTLESS

Source: Ficci – Ernst & Young

Domestic demand is expected to grow at a compound rate of 9.2% per year between 2010 and 2030, creating opportunities for many industries.

India's economic liberalization began in the early 1990s and has accelerated ever since. More and more sectors are opening up for foreign direct investment. Recently, the Indian Government decided to open up the multi-brand retail sector as well. This will create huge opportunities for Indian and foreign companies and consultants involved in agriculture, retail and infrastructure in the cold chain logistics sector. Attracted to these ever growing opportunities, many companies have already come and are expanding their business in India. Indian companies themselves have become more and more active in the world market as well,

through acquisitions of foreign companies to leverage them to develop their own business at home or as an entry point for the lucrative markets they are targeting abroad. In that sense, the country is no longer only an emerging market for foreign investments but has become a significant player in the world economy itself. It's not only market opportunity that attracts companies.

India is known for its highly skilled labour force, which speaks English and is well informed about western culture and society, reason why many western companies transfer parts of their activities to India and more and more western multinational companies are setting up their R&D facilities in India to benefit from the abundance of young and highly educated professionals.

Being centrally located in South Asia, India enjoys an advantageous position for doing trade with other South Asian countries, Australia and the countries of Africa, the Middle East and the Far East. Combined with the huge domestic market and the pool of well-educated young people, India might very well function as a hub for business activities all around the region.

CHALLENGES

India presents lucrative business opportunities, but both foreign and domestic enterprises face formidable challenges in conducting their businesses there. India is a complex market due to regional diversity, large rural-urban divide, dominant unorganized markets and multiple legal and administrative systems. Furthermore, a complex bureaucracy and lack of proper infrastructure facilities magnify these challenges.

The biggest challenge that most multinational companies face is the Indian governance framework, which is intertwined between the Central and State structures.

The companies face several complex bureaucratic procedures and are forced to comply with both state and central rules and regulations. Moreover, duties and levies undergo frequent revisions during the Annual Central and State budget exercise. These factors are the major reasons why many Dutch companies indicate 'dealing with regulations and procedures' as one of the major challenges.

Skills and Talent Development

To become a major competitive player in the global economy, it is critical that government, industry, and business work together to develop and deliver appropriate training to create a workforce which possesses technical capabilities, as well as varied skills that are consistent with the demands of the marketplace.

India's National Skill Development Policy (NSDP) 2009 attempts to address this need within the larger context of the country's vision of "sustainable inclusive growth." In line with the policy, central ministries and state governments across the country are implementing multiple initiatives toward skills building, including the National Skill Development Agency (NSDA) and National Skill Development Corporation (NSDC), which have implemented initiatives in viability gap funding, knowledge creation, and institutional development.

With the establishment of the industry-backed Sector Skill Councils (SSC), progress is being made in defining job roles and aligning industries. The role of industry in defining acceptable standards of training curriculum through SSCs should assist in creating a globally acceptable workforce, while also assuring availability of requisite talent for those setting up industries within India.

While these initiatives are set to address the low levels of employability of graduating students, the employability of skilled youth is also dependent on the quality of employment opportunities.

Additionally, there must be new models of investment support from government and industry to deliver manufacturing-related training, along with financing schemes for students that can make courses more broadly affordable. This will

help training organizations, both in private and government sectors expand their reach through sustainable models for training delivery. Moreover, development opportunities must be accessible to youth from all regions of the country—as well as to school and those currently not in employment, education and training.

Trade/Business process facilitation

The increasingly integrated global economy has prompted multinational firms to want to compete more intensively in the Indian market. In order to stay competitive and realize its full potential as a leading G20 economy, India must further liberalize trade and investment, and create a trade policy framework that fosters competitiveness and innovation systemically across sectors, both domestically and internationally. Continuing trade restrictive barriers that place foreign entrants at a competitive disadvantage will ultimately work against the continued growth and sustainability of the Indian economy.

Trade facilitation boosts trade by reducing costs and delays for traders through measures that provide predictability, simplicity, and uniformity in customs and other border procedures. A more seamless trade facilitation process across the global trading system allows for greater participation in those wanting to do business around the world — which is particularly helpful for SMEs and developing countries.

Furthermore, it is crucial for India to establish a smart regulatory infrastructure that enables efficient and effective business operations. There are estimated to be more than 40 regulations that need to be complied with for operating a business, not counting the sector-specific ones. Many of these regulations have not been updated over the years and, consequently, some of their provisions are not in line with current business practices. The added complication is that around 60 to 70 percent of these regulations are administered by the individual state governments, with some falling under the remit of the local government, which are separate democratically elected bodies.

Many of these organizations lack adequate capacity to administer their respective regulations effectively in terms of skilled manpower and IT-enabled efficient business processes.

The central government has already taken some promising steps to simplify the overall regulatory framework by updating regulations within its purview to remove restrictive provisions and ease compliance requirements. It is also taking steps to move to a fully automated transparent system for key central government compliances, and is developing IT based systems that can be used by interested state governments to streamline their compliance processes.



Source: DP3 Business & Investments 2016

WEAKNESSES

Poor rural consumption continues to be a major worry for India. Approx. 66% of the population resides in rural India where agriculture is the primary occupation and Agriculture currently accounts for only 16% of the GDP. Hence, poverty is rampant and 30% of the rural India is below poverty line with approx. income of less than \$350/yr. Poor infrastructure, unskilled labour, and heavy dependence

on rainfall for irrigation hampers labour productivity and crop yield. Indian economy has high sensitivity towards monsoon as it directly affects rural incomes and consumption.

Non-financial corporate balance sheets remain stressed leading to poor private investment. Due to overcapacity and debt overhang capital expenditures have declined in industrial sector and will take time to recover. Weak global demand and supply side constraints may add to existing problems.

Despite interest rate cuts from Central Bank of India, the bank credit from public banks will remain tight. Public banks have weak balance sheets and they are using lower interest rates to improve condition of the balance sheets instead of easing the credit thus resulting in lower economic activity.

Tax to GDP ratio has been stagnant at 10% for last 5 years despite high GDP growth. The govt. has been planning implementation of GST (goods and services tax) to boost this ratio but still continues to face major roadblocks.

The initial momentum gained through high GDP growth rates during some of the years between 2003 & 2011 could not be sustained due to weak manufacturing sector. Manufacturing sector's contribution to GDP has been low resulting in continued unemployment problem. Multiple issues plague the manufacturing sector- lack of infrastructure and inefficient regulations, slow implementation of reforms etc; however, crippled infrastructure is the most significant one. Congestion in logistics infrastructure and lack of modernization result in significant transportation costs and time delays.

Increasing demand for oil imports means Indian economy is prone to fluctuations in oil prices. In recent past India has benefited from fall in oil prices but it had also faced problems in 2008 when crude oil prices were highest.



Source: [bosch-presse.de](https://www.bosch-presse.de)

2.3. PRIVATIZATIONS AND STATE TAKEOVERS

India is a mixed economy with both private and public sector performing various activities in accordance with regulations. But the public sector was affected by inefficiencies and incompetence in a non-sustainable manner by 1991.

The New Industrial Policy of 1991 contained several reform measures for the public sector. Some of them are selling of loss making units to the private sector, inviting private participation in PSEs, and strategic sale. Some of these reform measures included privatization in a low degree.

In India, hence privatization was in a unique form in accordance with the priorities of our mixed economy and as well as by considering operational aspects of the PSUs. Privatization in the country was launched mainly to enhance the efficiency of the public sector enterprises as well as to concentrate the operation of the public sector in priority areas.

Following the industrial policy of 1991, the government has adopted disinvestment, strategic sale of minority shares to private partners and selling of loss making units to the private sector. Some of the chronically loss making units were either sold –off, or closed after all workers got their legitimate dues and compensation. Selling of loss making units and strategic sale imply full privatization as the company’s ownership is transferred to a private entity. But the main form of inviting private participation was disinvestment which results in transfer of minority shareholding to the general public, at the same time the government maintaining 51% share. The sale of minority stake to private sector has enabled the government to inject competitive and efficient private sector business practices in government enterprises.

Government of India chose for a mixed economy in which both public and private sectors were permitted to operate together. The Government recognizes that it would be desirable to allow such undertakings to develop with as much freedom as possible, consistent with the targets and objectives of the national plan.



Source: asiagreenbuildings.com

2.4. PROSPECT GOALS AND INVESTMENT PLANS

“Our programs of inclusive development, including financial inclusion, universal access to basic needs by target year, Make in India, Skill India, Digital India, Industrial Corridors and Smart Cities will boost growth and employment in India.”

Narendra Modi, November 2015

G20 Multilateral Summit, Turkey

The current government has taken several growth and investment strategies to promote inclusive growth of Indian economy:

- **FINANCIAL INCLUSION:** Despite the progress government data reveal that 37.1% (or 71 million of 191 million) of the new accounts had no money in them, zero-balance in official parlance (2015).
- **SMART CITIES:** India's Smart Cities Mission is meant to provide core infrastructure and improve the quality of life in 500 metropolitan areas. The government says it will spend Rs. 48,000 crore (\$7.2 billion) and Rs. 50,000 crore (\$7.5 billion) on the Smart Cities Mission and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) respectively. So far, the ministry of urban development has sanctioned Rs. 194 crore (\$29.4million) for 96 selected cities to prepare city plans. The cities and towns selected under this program consist of 24 state capitals, 24 business and industrial centers, 18 culture and tourism hubs, 5 port cities as well as 3 education and healthcare hubs.
- **SKILL DEVELOPMENT:** 2.1 million more trained in a year; 12 million join job market every year.
- **MAKE IN INDIA:** 48% rise in foreign direct investment but mostly in non-manufacturing sectors.
- **INDUSTRIAL CORRIDORS:** The Indian government has planned five industrial corridors, connecting various major cities. The aim is to create mega cities and interlinked industrial and transport zones with jobs and homes as India's pace of urbanization grows.

India has emerged as the number one Foreign Direct Investment destination in the world during the first half of 2015. India has outpaced all other economies, moving up to the premier position from being in the fifth spot during the corresponding period of the previous year.

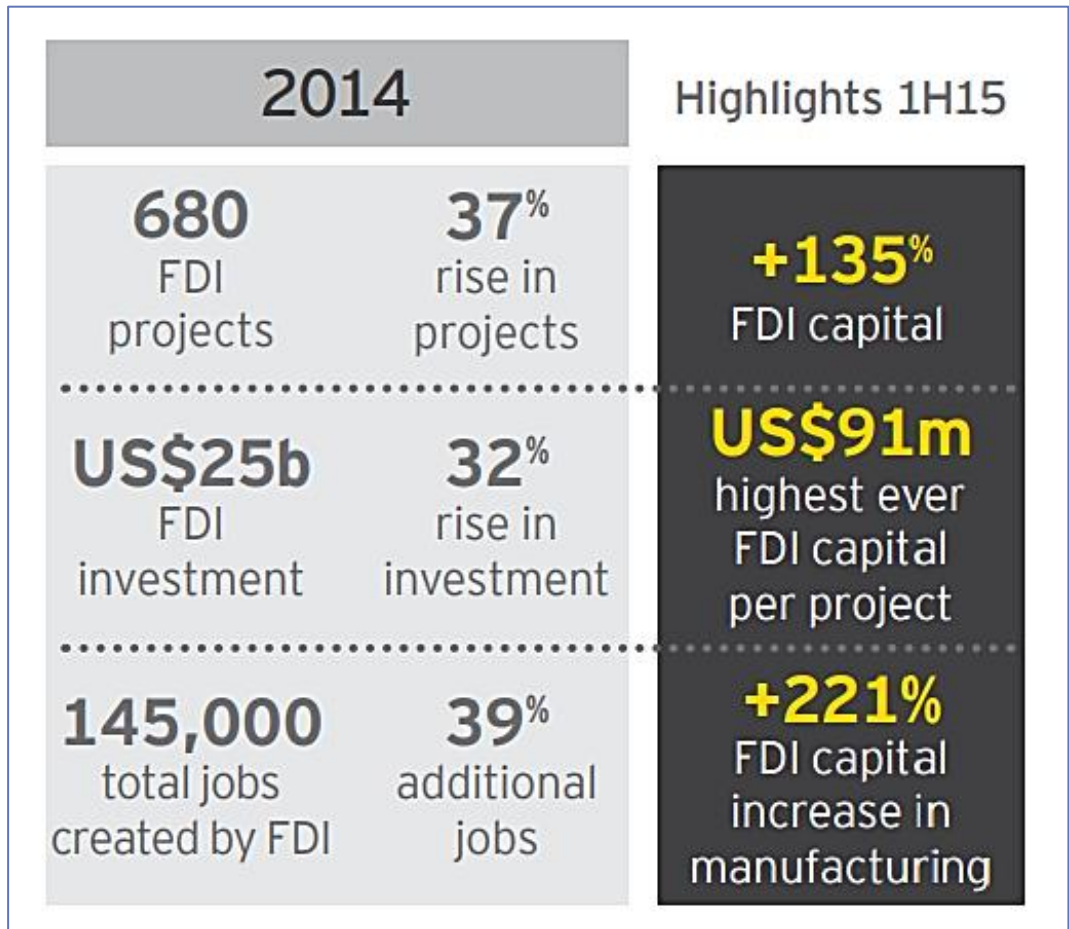


FIGURE 32: INDIA NUMBER 1 FDI DESTINATION

Source: EY's attractiveness survey India 2015

MANUFACTURING LEADS INVESTMENT PLANS

Manufacturing has regained its share in FDI capital flows in 2014, amounting to approximately 46%. Investors are most optimistic about the sector, with 62% of those interested to expand or enter India over the next year, saying that they plan manufacturing activities.

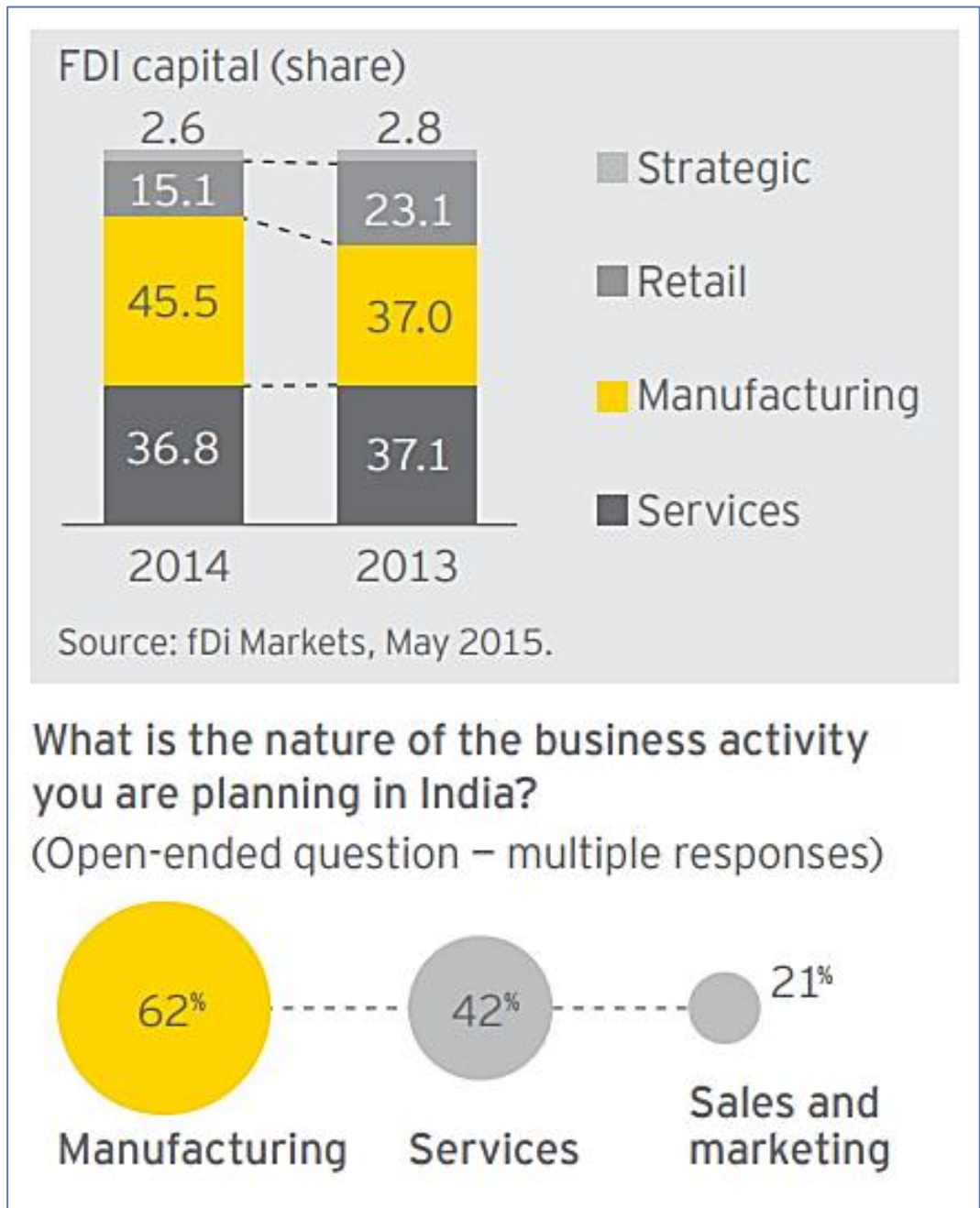


FIGURE 33: INVESTMENT PLAN IN INDIA

Source: EY's attractiveness survey India 2015

A promising outlook shows that investors see India speeding up pace toward becoming one of the world's top destinations for manufacturing, as well as a regional hub for operations.

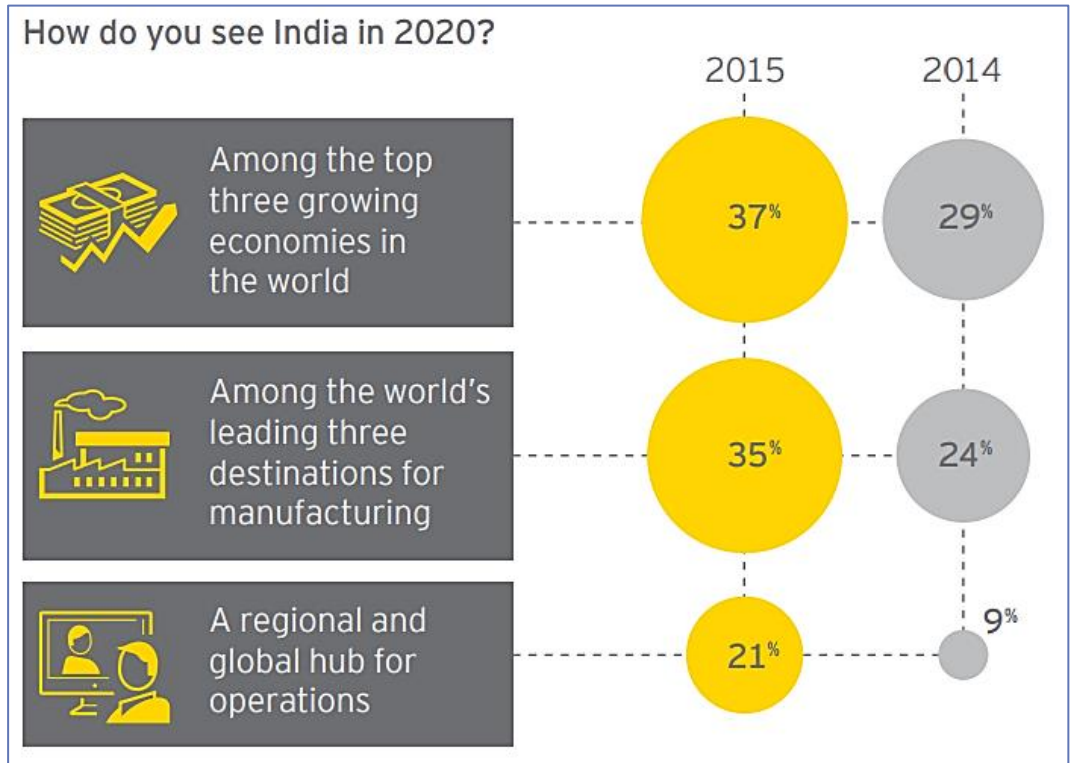


FIGURE 34: INDIA IN 2020, PROJECTIONS

Source: EY's attractiveness survey India 2015



Source: London Partners Corporation

2.5. PUBLIC PROCUREMENT AND PARTICIPATION IN TENDERS

The aim of procurement service is to ensure optimum price, quality and quick delivery in order to support efficient running of the company's core business. Therefore, the procurement service must have a competitive basis of suppliers meeting the requirements of the company, the transparent procurement process and the best price offer in the market.

Nowadays the problems of public procurement are under severe scrutiny of the Government, mass media and the foreign business community.

There are four sources of risks existing in the sphere of public procurement in India:

- **Customers:** unsatisfactory planning, tailoring documents to the needs of specific suppliers, unreasonable requirements regarding the procured goods (services), ill-founded initial pricing, restriction of access to open information, low contractual discipline.
- **Committees:** unreasonable behaviour in evaluation and selection of winners.
- **Electronic tender platform:** technical failures, disclosure of information about bidders, blocking access of participants.
- **Suppliers (contractors, providers):** submitting unreliable information and documents, unfair competition, collusion (both with other bidders and with customers), substandard contract performance.

"MAKE IN INDIA" PROCUREMENT POLICY

The strategy would help local manufacturing and increase domestic demand for locally manufactured products. Standing committee would oversee application of "Make in India" preference in public procurement, adding there would be a transparent mechanism of self- certification and a third party accreditation to verify local content.

20% margin of purchase preference for local suppliers in procurement of Rs 50 lakh or more on cards.

There would also be an annual review to increase local content requirements in public procurement, which would be subject to local competition and quality.



FIGURE 35: "MAKE IN INDIA" KEY POINTS

Source: EY – Making India a world class automotive manufacturing hub, 2016



Source: <http://findajob.blogspot.pt>

3 / KEY SECTORS AND INDUSTRIES

Manufacturing has emerged as one of the high growth sectors in India. Indian Prime Minister, Mr. Narendra Modi, had launched the ‘Make in India’ program to place India on the world map as a manufacturing hub and give global recognition to the Indian economy.

India is expected to become the fifth largest manufacturing country in the world by the end of year 2020. Manufacturing sector contributes about 15% of India’s GDP and 50% to the country’s exports. It is expected to touch US\$1 trillion by 2025.



FIGURE 36: MANUFACTURING - KEY SECTOR OVERVIEW

Source: International Enterprise Singapore

“A growing India offers opportunity across sectors — notably infrastructure, pharma, automobiles, education and many more — in an investor-friendly environment.”

Source: Invest India

MARKET SIZE AND CHARACTERIZATION

There is potential for the sector to account for 25-30 per cent of the country's GDP and create up to 90 million domestic jobs by 2025. Business conditions in the Indian manufacturing sector continue to remain positive.

With the help of Make in India drive, India is on the path of becoming the hub for hi-tech manufacturing as global giants such as GE, Siemens, HTC, Toshiba, and Boeing have either set up or are in process of setting up manufacturing plants in India, attracted by India's market of more than a billion consumers and increasing purchasing power.

Foreign Direct Investment (FDI) inflows in India's manufacturing sector grew by 82 per cent year-on-year to US\$ 16.13 billion during April-November 2016. The Government of India has taken several initiatives to promote a healthy environment for the growth of manufacturing sector in the country.

Some of the initiatives and developments are:

- Introduction of policy measures in the Union Budget 2017-18 to provide impetus to the manufacturing sector. Some of which include reduction of income tax rate to 25 per cent for MSME companies having turnover up to Rs 50 crore (US\$ 7.5 million), MAT credit carry forward extended to 15 years from 10 years and abolishment of Foreign Investment Promotion Board (FIPB) by 2017-18.
- The Union Cabinet has approved the Modified Special Incentive Package Scheme (M-SIPS) in which, proposals will be accepted till December 2018 or up to an incentive commitment limit of Rs 10,000 crore (US\$ 1.5 billion).
- The Government has removed the 12.5 per cent excise duty and 4 per cent special additional duty (SAD) on the manufacturing of point-of-sale (PoS) machines till March 31, 2017, which is expected to give a boost to the cashless economy as more PoS machines will be deployed in the future.
- National Institution for Transforming India (NITI Aayog), after its recent push for Rs 6,000 crore (US\$ 900 million) textile sector package, aims to persuade the Government for similar support in the manufacturing sectors

with large-scale employment generation opportunities, such as electrical and electronics engineering, footwear and light manufacturing segments, which also have export potential.

- The Ministry of Labour and Employment plans to relax compliance measures for MSMEs by exempting them from inspections related to key labour laws in order to encourage entrepreneurs to help promote manufacturing in India.
- The Government plans to give a big boost to local manufacturing by introducing the new 'Make in India green channel', which will reduce the time taken for cargo clearance at ports from about a week to a few hours without any upfront payment of duties.
- Gujarat government is planning to set up an electronics products manufacturing hub in the state, through its newly announced Electronics Policy 2016, which will generate about 500,000 jobs in the electronics sector in the next five years.
- The Ministry of Heavy industries and Public Enterprises, in partnership with industry associations, has announced creation of a start-up centre and a technology fund for the capital goods sector to provide technical, business and financial resources and services to start-ups in the field of manufacturing and services.
- NITI Aayog plans to release a blueprint for various technological interventions which need to be incorporated by the Indian manufacturing economy, with a view to have a sustainable edge over competing neighbours like Bangladesh and Vietnam over the long term.
- Ms Nirmala Sitharaman, Minister of State for Commerce and Industry, has launched the Technology Acquisition and Development Fund (TADF) under the National Manufacturing Policy (NMP) to facilitate acquisition of Clean, Green and Energy Efficient Technologies, by Micro, Small & Medium Enterprises (MSMEs).
- The Government has asked New Delhi's envoys in over 160 countries to focus on economic diplomacy to help government attract investment and transform the 'Make in India' campaign a success to boost growth during the annual heads of mission's conference.

- Government has planned to invest US\$ 10 billion in two semiconductor plants in order to facilitate electronics manufacturing in the country.
- Entrepreneurs of small-scale businesses in India will soon be able to avail loans under Pradhan Mantri MUDRA Yojana (PMMY). The three products available under the PMMY include: Shishu - covering loans up to Rs 50,000 (US\$ 735), Kishor - covering loans between Rs 50,000 (US\$ 750) to Rs 0.5 million (US\$ 7,500), and Tarun - covering loans between Rs 0.5 million (US\$ 7,500) and Rs 1 million (US\$ 15,000).



Source: publishyourarticles.net

MANUFACTURING CLUSTERS IN INDIA

The capital goods industry employs 1.4 million of people and is estimated to employ 2.8 million by the end of 2017.

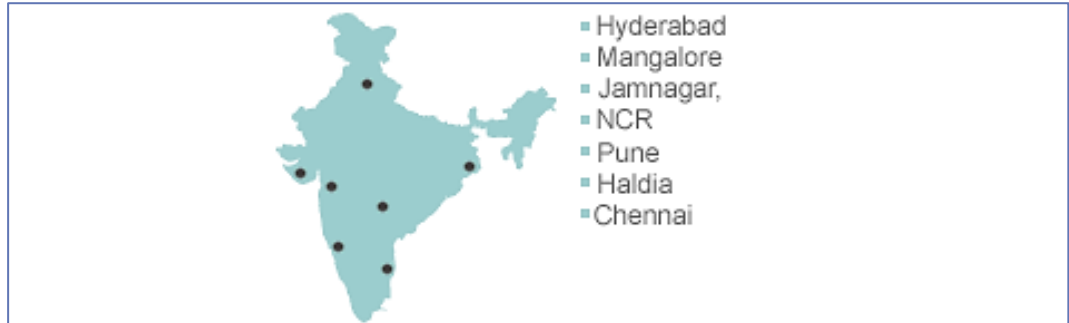


FIGURE 37: MANUFACTURING CLUSTERS IN INDIA

Source: India Brand Equity Foundation

OPPORTUNITIES

The Government of India has an ambitious plan to locally manufacture as many as 181 products. The move could help infrastructure sectors such as power, oil and gas, and automobile manufacturing that require large capital expenditure and revive the Rs 1,85,000 crore (US\$ 27.75 billion) Indian capital goods business.

India is an attractive hub for foreign investments in the manufacturing sector. Several mobile phone, luxury and automobile brands, among others, have set up or are looking to establish their manufacturing bases in the country.

With impetus on developing industrial corridors and smart cities, the government aims to ensure holistic development of the nation. The corridors would further assist in integrating, monitoring and developing a favourable environment for the industrial development and will promote advance practices in manufacturing.



Source: assets.entrepreneur.com

3.1. AUTOMOBILE INDUSTRY OVERVIEW

The automobile industry in India was expected to be the world's third largest in 2016.

Indian automobile industry is a two-wheeler dominated market with 80% market share of the total automobile industry is held by the two-wheelers as per FY14-15. The passenger vehicle is second in the market share with 14% and three-wheelers and commercial vehicles share 3% each.

MARKET SIZE AND CHARACTERIZATION

India was the third largest automobile industry in 2016. India's passenger vehicle market is expected to touch 8% in the global market by 2020 from 2.8% of 2015 (Source: SIAM, NEMMP 2020 - National Electric Mobility Mission Plan, TechSci Research). Also India is world's second largest two-wheeler manufacturers. Two-wheeler production is expected to rise from 18.8 million in FY16 to 34 million by FY20 with a CAGR of 15.97%.

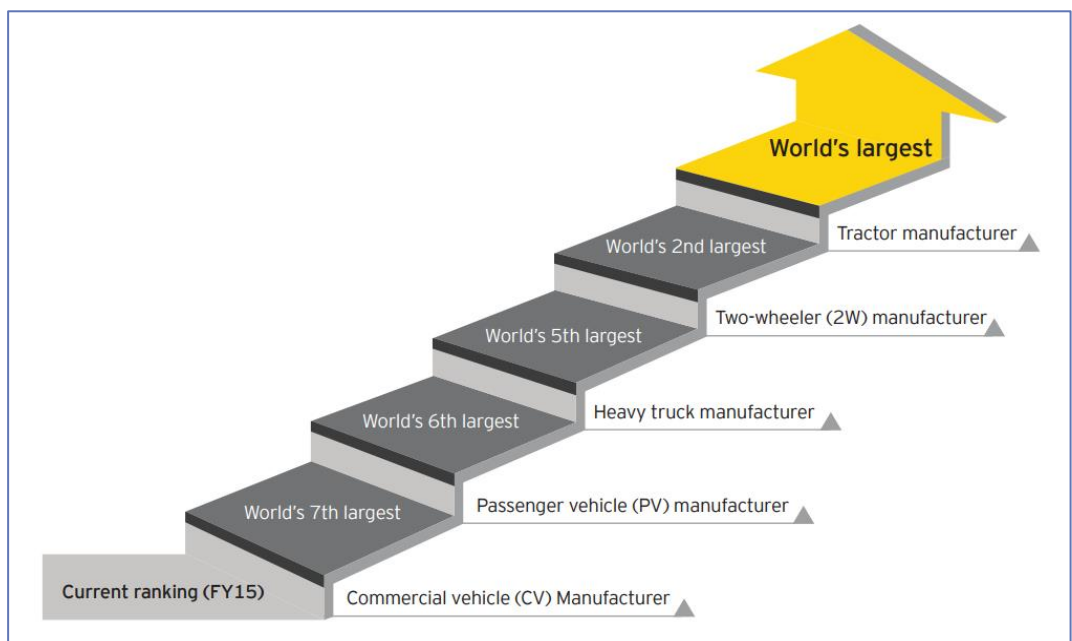


FIGURE 38: INDIAN AUTOMOTIVE INDUSTRY - CURRENT SCENARIO AND OUTLOOK

Source: EY – Making India a world class automotive manufacturing hub, 2016

India has the largest population of young people in the world, with around 66% of population under the age of 35. The country's low vehicle penetration (32 vehicles per 1000 people in 2015) makes it one of the world's most attractive auto markets. Owing to its unique demographic dividend, the Indian auto industry has immense growth potential. India's passenger vehicle parc of around 29 million during 2015 is expected to grow to more than 48 million vehicles by 2020.



Source: roboticsbusinessreview.com

The Indian automobile market is segmented into two wheelers, three wheelers, passenger vehicles, and commercial vehicles. The market leader in the passenger vehicles and commercial vehicles and other dominant players in the market are represented in the following figure. The market leader in the two-wheeler segment is Hero Motocorp with 40% market share and the market leader in the Passenger vehicles segment is Maruti Suzuki with 45% market share.

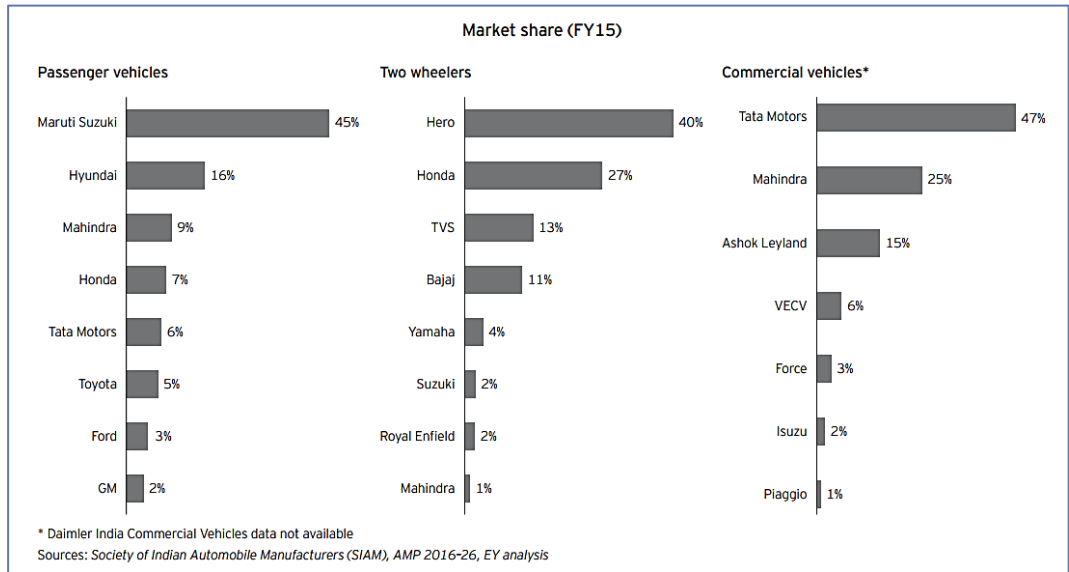


FIGURE 39: INDIAN AUTOMOBILE MARKET SHARE (FY15)

Source: EY – Making India a world class automotive manufacturing hub, 2016

Two wheeler market

The two-wheeler market saw strong demand in Sep-16 and a healthy growth of 8.7% in oct-16, but owing to the aftermath of demonetization in Nov-16, the sales figures had a steeper decline than expected. The de-growth was high in the 110cc-125cc sub-categories but the higher displacement motorcycles continued to do well. The rural areas attract only the entry level motorcycles of 75cc-110cc, but with demonetization, this segment reported to have the highest decline. The entry level segment accounts for more than 60% of the total two wheeler segment and this pulled down the figures of the entire two-wheeler market.

Passenger Vehicles market

With a strong second quarter of FY17, the PV industry grew by 4.5% in oct-16 and due to demonetization, the industry growth slowed down in Nov-16. But Maruti Suzuki was able to withstand the impact as there was high demand for Baleno and Brezza, but other players like Hyundai and M&M had declined in sales volume.

Commercial vehicles market

The commercial vehicle segment and truck segments are the worst hit of the demonetization decision. The M&HCV sales declined by 19.1% and LCV sales decline by 10.4%. With the major decision from central, the cash dependent business like the freight business stopped purchasing vehicles with decreasing orders from their respective customers.

Three wheeler market

With demonetization, the three wheeler market declined by 26% as compared to expected growth of 12%. With the challenging markets, the exports hit the downward slope and it is calculated to be a 34% decline.

AUTOMOTIVE MISSION PLAN 2016-26

The Indian auto sector has the potential to generate up to US\$300 billion in annual revenue by 2026, create around 65 million additional jobs and contribute more than 12% to India’s GDP, according to the Automotive Mission Plan 2016-26 prepared jointly by the SIAM and the Government.

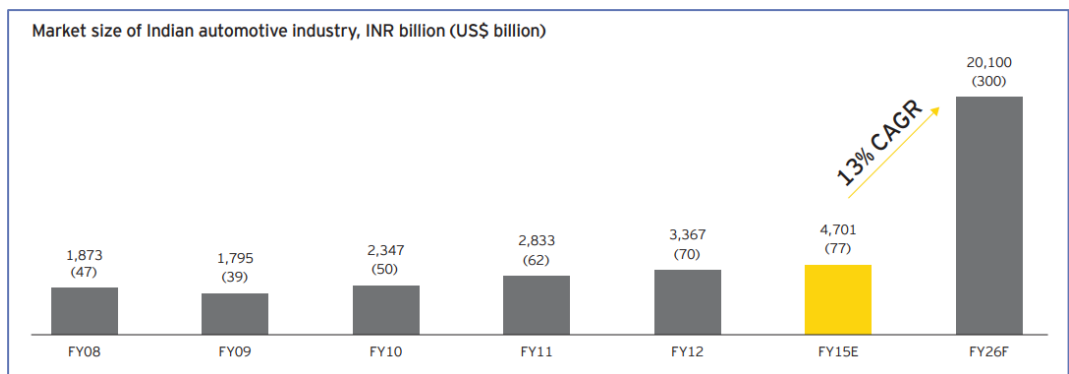


FIGURE 40: MARKET SIZE OF INDIAN AUTOMOTIVE INDUSTRY, INR BILLION (US\$ BILLION)

Source: EY – Making India a world class automotive manufacturing hub, 2016

Vehicle sales are expected to touch 66 million units by FY26. To achieve the projections, the auto industry will require additional investment of INR 4.5 trillion – 5.5 trillion. The growth of the automotive market will translate into huge potential

for the auto component sector. It is expected to grow at a CAGR of 13% from US\$38 billion in FY15 to more than US\$150 billion by 2026.

The sales of PVs, CVs and 2Ws grew by 9.17 per cent, 3.03 per cent and 8.29 per cent respectively, during the period April-January 2017.

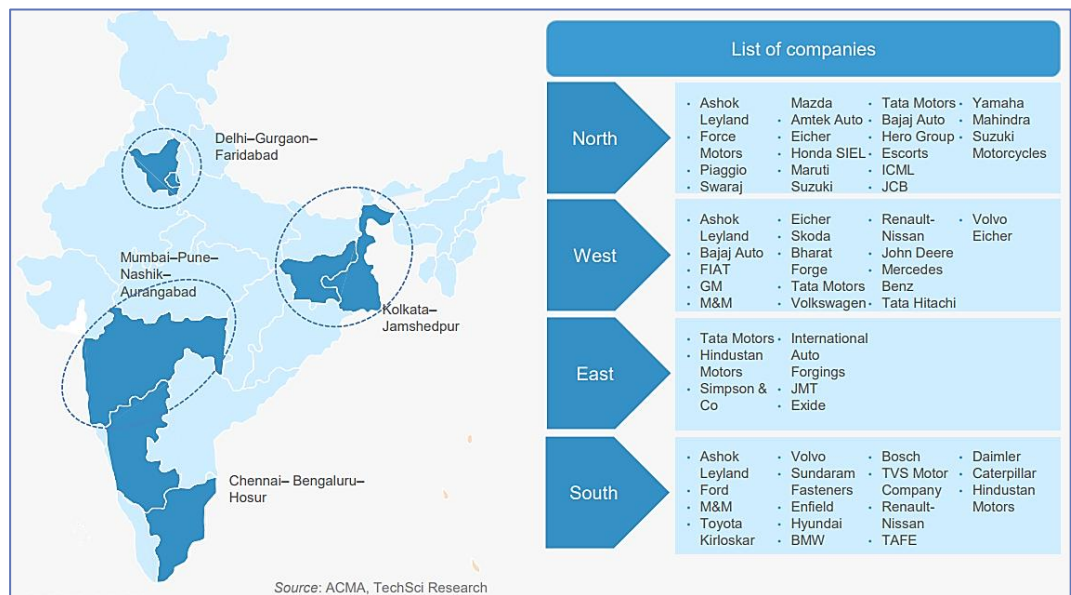


FIGURE 41: EMERGENCE OF LARGE AUTOMOTIVE CLUSTERS IN INDIA

Source: Ibf, 2017

INVESTMENTS

In order to keep up with the growing demand, several auto makers have started investing heavily in various segments of the industry during the last few months. The industry has attracted Foreign Direct Investment (FDI) worth US\$ 15.79 billion during the period April 2000 to September 2016, according to data released by Department of Industrial Policy and Promotion (DIPP).

Some of the major investments and developments in the automobile sector in India are as follows:

- Electric car maker Tesla Inc. is likely to introduce its products in India sometime in the summer of 2017.
- South Korea's Kia Motors Corp is close to finalising a site for its first factory in India, slated to attract US\$1 billion (Rs 6,700 crore) of investment. It is deciding between Andhra Pradesh and Maharashtra. The target for operationalising the factory is the end of 2018 or early 2019.
- Several automobile manufacturers, from global majors such as Audi to Indian companies such as Maruti Suzuki and Mahindra & Mahindra, are exploring the possibilities of introducing driverless self-driven cars for India.
- BMW plans to manufacture a local version of below-500 CC motorcycle, the G310R, in TVS Motor's Hosur plant in Tamil Nadu, for Indian markets.
- Honda Motorcycle and Scooter India (HMSI) has inaugurated its 900th Honda Authorised Exclusive Dealership in India, thereby taking its total dealership network to 4,800 across the country and further plans to increase its network to 5,300 by end of 2016-17.
- Hero MotoCorp Ltd seeks to enhance its participation in the Indian electric vehicle (EV) space by pursuing its internal EV Programme in addition to investing Rs 205 crore (US\$ 30.75 million) to acquire around 26-30 per cent stake in Bengaluru-based technology start-up Ather Energy Pvt Ltd.
- JustRide, a self-drive car rental firm, has raised US\$ 3 million in a bridge round of funding led by a group of global investors and a trio of Y-Combinator partners, which will be utilised to amplify JustRide's car sharing platform JustConnect and Yabber, an internet of things (IoT) device for cars that is based on the company's smart vehicle technology.
- Ford Motor Co. plans to invest Rs 1,300 crore (US\$ 195 million) to build a global technology and business centre in Chennai, which will be designed as a hub for product development, mobility solutions and business services for India and other markets.
- Cummins has plans to make India an export hub for the world, by investing in top components and technologies in India.
- Suzuki Motor Corporation, the Japan-based automobile manufacturer, plans to invest Rs 2,600 crore (US\$ 390 million) for setting up its second

assembly plant in India and an engine and transmission unit in Mehsana, Gujarat.

- Mr Masayoshi Son, Chief Executive Officer, SoftBank Group, has stated that Ola Cabs may introduce a fleet of one million electric cars in partnership with an electric vehicle maker and the Government of India, which could help reduce pollution and thereby transform the electric mobility sector in the country.
- China's biggest automobile manufacturer, SAIC Motor, plans to invest US\$ 1 billion in India by 2018, and is exploring possibilities to set up manufacturing unit in one of three states – Maharashtra, Andhra Pradesh and Tamil Nadu.
- Suzuki Motorcycle India Pvt Ltd has started exports of made-in-India flagship bike Gixxer to its home country of Japan, which will be in addition to current exports to countries in Latin America and surrounding countries.
- General Motors plans to invest US\$ 1 billion in India by 2020, mainly to increase the capacity at the Talegaon plant in Maharashtra from 130,000 units a year to 220,000 by 2025.
- FIAT Chrysler Automobiles has recently invested US\$280 million in its Ranjangaon plant to locally manufacture Jeep Compass, its new compact SUV which will be launched in India in August 2017.

GROWTH IN DOMESTIC DEMAND

- GDP per capita has grown from USD1,430.19 in 2010 to USD1,805.57 in 2015, & is expected to reach USD2,128.78 by 2018(E);
- Apart from the impact of rising incomes, widening of the consumer base will also be aided by expansion of the middle class, increasing urbanisation & changing lifestyles;
- A young population is boosting demand for cars;
- Demand for commercial vehicles increased due to the development of roadways & greater market access;
- Easier access to credit favours the acquisition of vehicles.

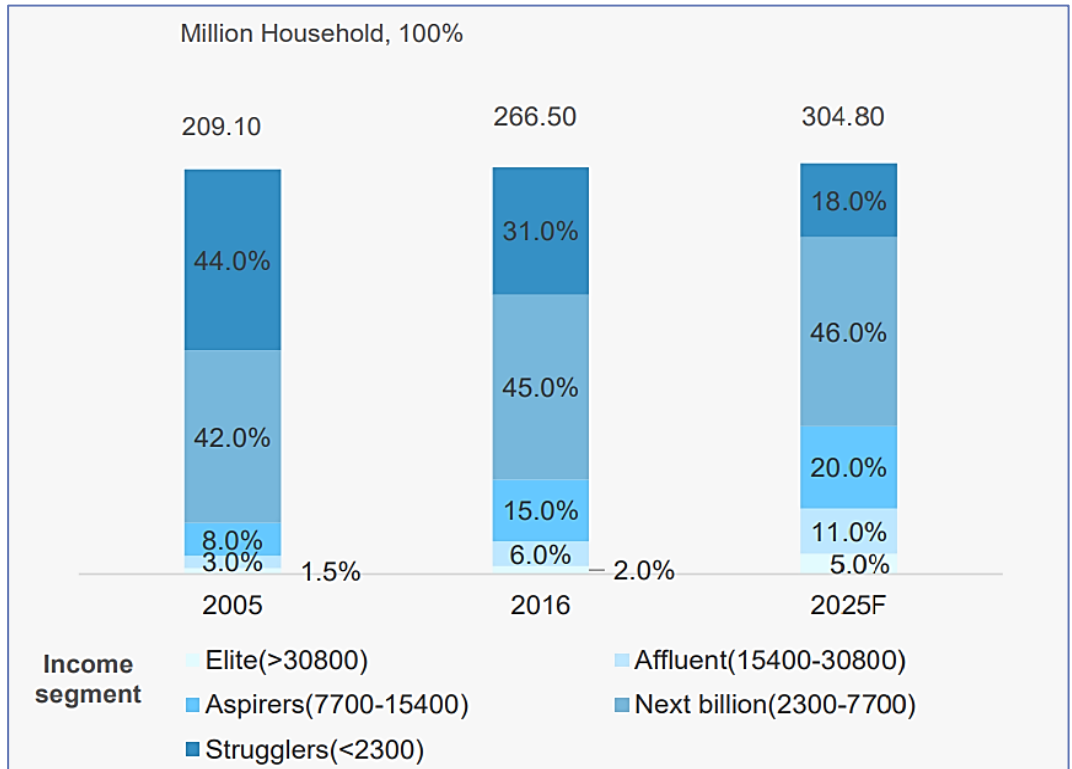


FIGURE 42: CHANGING INCOME DYNAMICS OF INDIA'S POPULATION

Source: Ibef, 2017



Source: autocomponentsindia.com

TRENDS

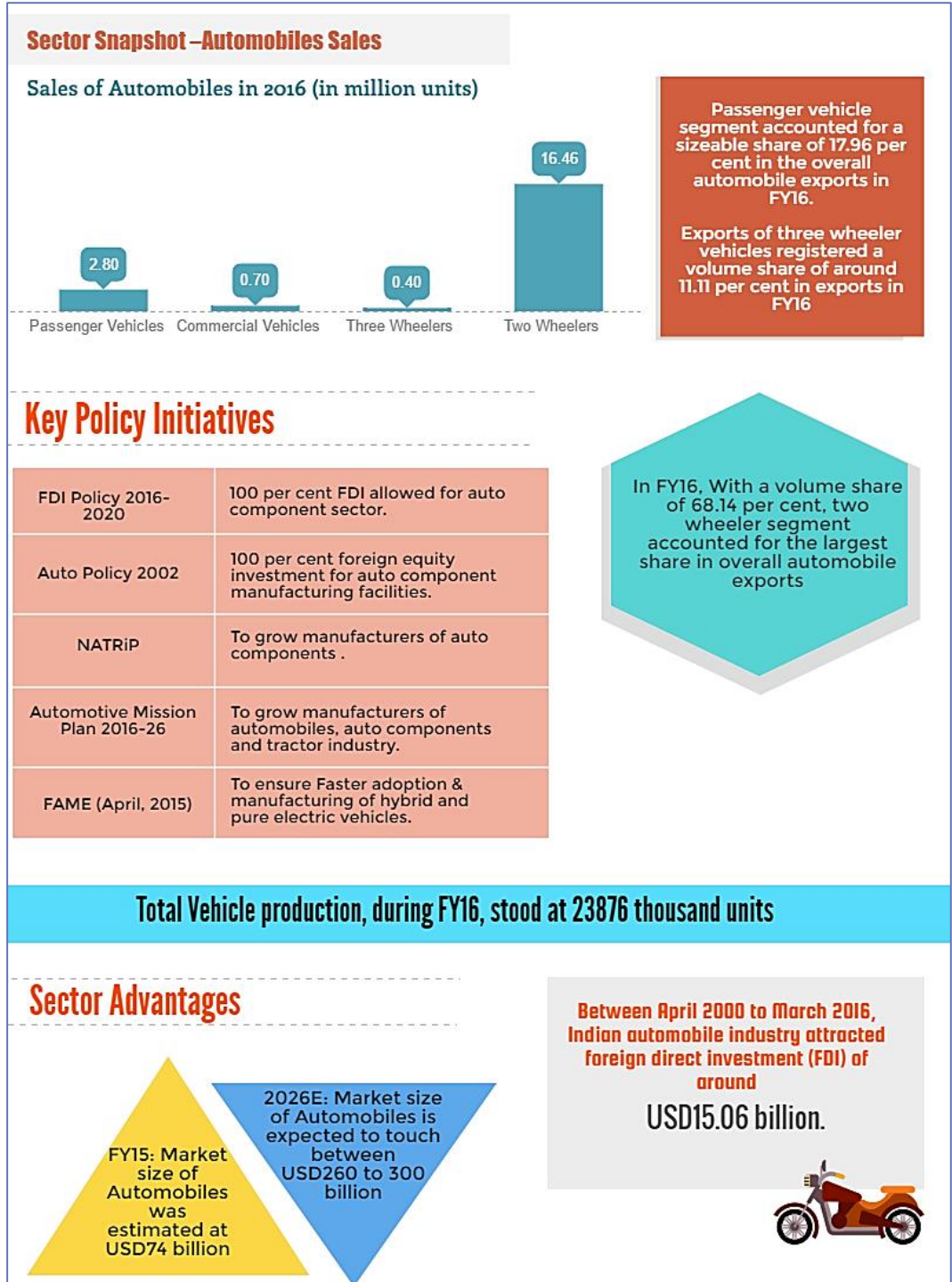


FIGURE 43: SALES OF AUTOMOBILES IN 2016 (IN MILLION UNITS)

Source: Ibf, 2017

PORTER FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> Competitive rivalry has increased post liberalisation to a great extent The competition has turned more intense after the entry of foreign players like Volkswagen and Ford in low- priced hatchback segment Foreign firms have aggravated the competition by changing their traditional designs and substituting it to cater Indian needs 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> The threat of new entrants is generally medium because of the brand equity and capital intensive nature of the business But, considering India, foreign firms (with capital) have done pretty well 	<ul style="list-style-type: none"> The threat from substitute products continues to be low, with public transportation being under developed even in cities Changing travel patterns and the convenience give it an edge
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> Bargaining power of suppliers is low as most of the auto component manufacturers are specialised in some segments related to only one client Suppliers, in turn depend on them 	<ul style="list-style-type: none"> In a market, like India there is lot of bargaining power available to the customers as there are variety of products available in the same range, by different manufacturers It still depends on the markets

FIGURE 44: PORTER FIVE FORCES ANALYSIS

Source: Ibef, 2017

OPPORTUNITIES

India is fast emerging as a global R&D hub:

- Strong support from the government;
- Private players, such as Hyundai, Suzuki, GM, keen to set up R&D base in India;

- Strong education base, large skilled English-speaking manpower;
- Comparative advantage in terms of cost;
- Indian automobile industries invest USD100 billion for R&D sector, annually.

Opportunities for creating sizeable market segments through innovations:

- Mahindra & Mahindra targeting on implementing digital technology in the business;
- Bajaj Auto, Hero Honda & M&M plan to jointly develop a technology for 2-wheelers to run on natural gas;
- By 2018, Hyundai is planning to enter the hybrid vehicles segment, to explore alternative fuel technology & to avail the government incentives.

Small-car manufacturing hub:





- General Motors, Nissan & Toyota announced plans to make India their global hub for small cars;
- Passenger vehicle market is expected to touch 10 million units by 2020;
- Strong export potential in ultra-low-cost cars segment (to developing & emerging markets).



Source: innovativebug.com

INVESTMENTS BY GLOBAL CAR MANUFACTURERS

Global car majors have been ramping up investments in India to cater to the growing domestic demand. Also, these manufacturers plan to leverage India’s competitive advantage to set up export-oriented production hubs.

	<p>Planning to double its current investment level of about USD2.5 billion over the next five years;</p> <p>Aims to raise its market share from 1.5 per cent in FY13 to 10 per cent by FY19;</p> <p>To increase the Chennai Plant capacity to 400,000 units a year in a few years’ time;</p> <p>The company plans to launch 8 new car models in India by 2021.</p>
	<p>On 10th September 2015, Ford has signed a MoU with the Tamil Nadu government for increasing the manufacturing capacity of its plant & for establishing new engineering & technology center at Chennai;</p> <p>As of November 2016, Ford announced its plans to invest USD193.36 million for setting up technical & business centre in India.</p>
	<p>Volkswagen announced launch of its first Made-in-India & Made-for-India compact sedan, Ameo in June 2016</p> <p>The company plans to increase its production volume by 15 percent in 2016 over 123000 units in 2015 at Pune</p>
	<p>Plans to launch up to eight models over the next 5–6 years. The company plans to export over 70,000 vehicles this year to various markets.</p>

 <p>HONDA</p>	<p>Honda is planning to invest USD160 million in India to expand its capacity for cars and bike by the end of 2016;</p> <p>This will include a new diesel engine component production and a forging plant;</p> <p>Toyota is planning invest USD165 million on its new engine plants and projects.</p>
 <p>TOYOTA</p>	<p>Expects to invest another USD163 million at Bidadi plant near Bengaluru.</p>
 <p>HYUNDAI</p>	<p>Plans to invest USD552-737million over the next two to three years to develop new products</p>
 <p>Mercedes-Benz</p>	<p>Increased the plant capacity of 20,000 units per year in Chakan Plant, which is the largest for any luxury car manufacturer in India.</p> <p>Expansion of MIDC and MoU, and to invest USD244 mn for capacity expansion in Chakan, Pune</p> <p>Mercedes-Benz will introduce 15 products in 2015, including products without any predecessors in India. These 15 new products are Mercedes-Benz India's biggest product initiative till date.</p>

TABLE 2: INVESTMENTS IN GLOBAL CAR MANUFACTURERS

Source: Ibef, 2017



Source: KPMG, The Indian Automotive Industry Report

3.2. AUTO-COMPONENTS INDUSTRY

The Indian Automotive Industry has been growing at an appreciable pace with an expanding domestic and export market during the past decade. By 2020, India is expected to become a major automobile manufacturing hub and one of the largest markets for automobiles.

The auto-components industry accounts for almost seven per cent of India's Gross Domestic Product (GDP) and employs as many as 19 million people, both directly and indirectly. A stable government framework, increased purchasing power, large domestic market, and an ever increasing development in infrastructure have made India a favorable destination for investment.

MARKET SIZE AND CHARACTERIZATION

The Indian auto-components industry can be broadly classified into the organised and unorganised sectors. The organised sector caters to the Original Equipment Manufacturers (OEMs) and consists of high-value precision instruments while the unorganised sector comprises low-valued products and caters mostly to the aftermarket category.

Over the last decade, the automotive components industry has scaled three times to US\$ 39 billion in 2015-16 while exports have grown even faster to US\$ 10.8 billion. This has been driven by strong growth in the domestic market and increasing globalisation (including exports) of several Indian suppliers.

The Indian Auto Component industry is expected to grow by 8-10 per cent in FY 2017-18, based on higher localisation by Original Equipment Manufacturers (OEM), higher component content per vehicle, and rising exports from India, as per ICRA Limited.

According to the Automotive Component Manufacturers Association of India (ACMA), the Indian auto-components industry is expected to register a turnover

of US\$ 100 billion by 2020 backed by strong exports ranging between US\$ 80- US\$ 100 billion by 2026, from the current US\$ 11.2 billion.

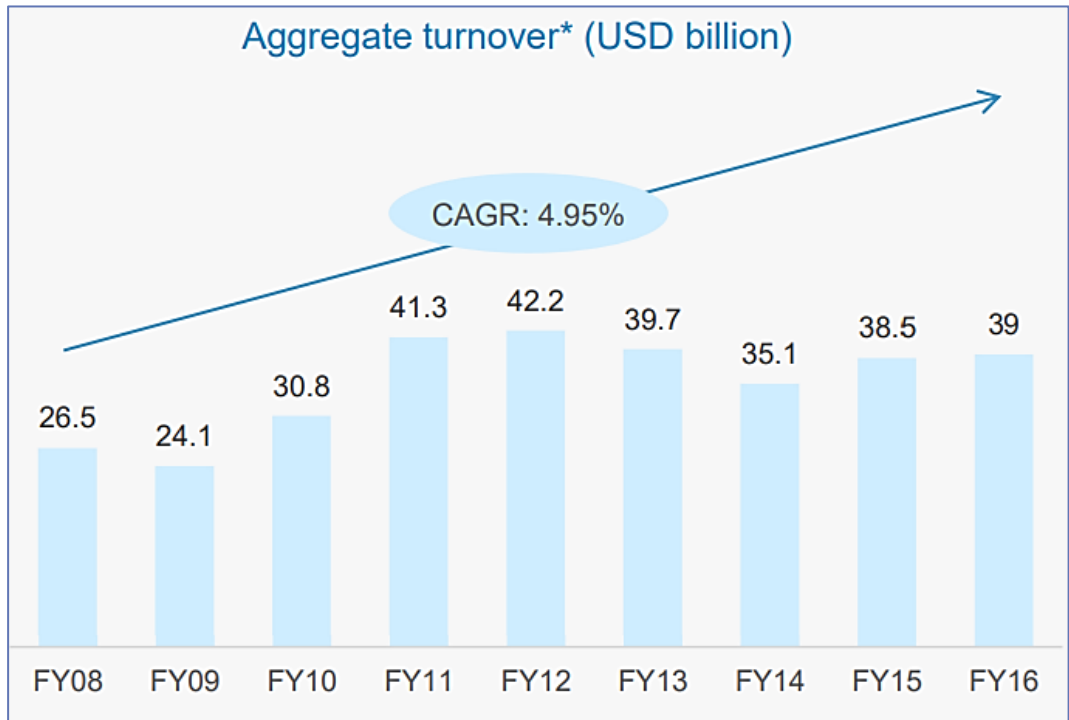


FIGURE 45: AGGREGATE TURNOVER, INDIA (USD BILLION)

Source: Ibef, 2017

- Revenues have risen from USD26.5 billion in FY08 to USD39 billion in FY16 at a CAGR of 4.95 per cent during FY08-16.
- The market size for auto component sector increased by 8.8 per cent reaching to USD39 billion in FY16 from USD38.5 billion in FY15.
- As per Automobile Component Manufacturers Association (ACMA) forecasts, automobile component exports from India are expected to reach US\$70-billion by 2026 from US\$10.8-billion in FY15-16. The Indian auto component industry aims to achieve US\$200 billion in revenues by 2026.

AUTO COMPONENTS SEGMENTS

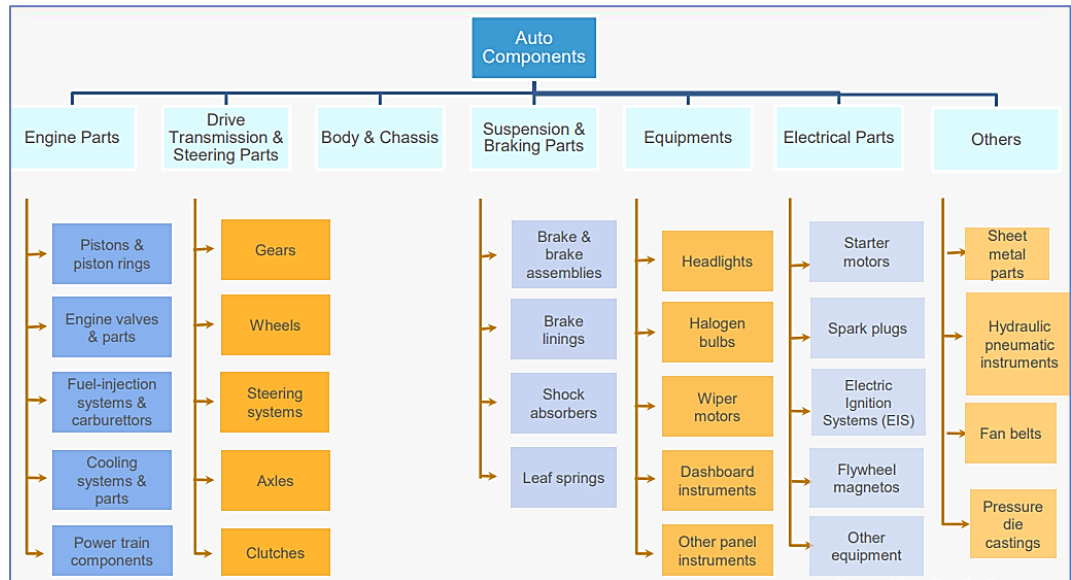


FIGURE 46: AUTO COMPONENT'S SEGMENTS, INDIA

Source: Ibef, 2017

ORGANIZED SECTOR VS. UNORGANIZED SECTOR

- The number of manufacturing units in the unorganised sector are far higher than those in the organised one
- Although lesser in number, the organised sector accounts for 85 per cent of total industry turnover (FY15)
- India auto component aftermarket is expected to grow at 10.5 per cent to touch US\$13 billion by 2019-20, as compared to US\$8.4 billion in 2016-17.
- Organised sector dominates production despite large number of unorganised players.

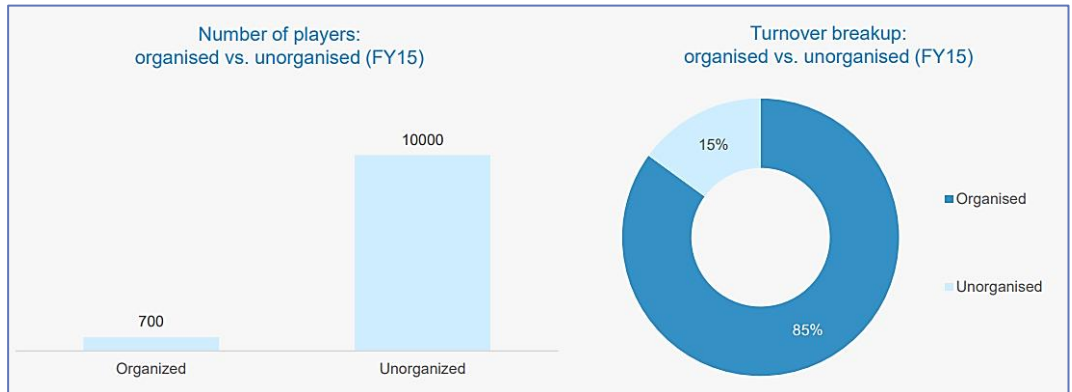
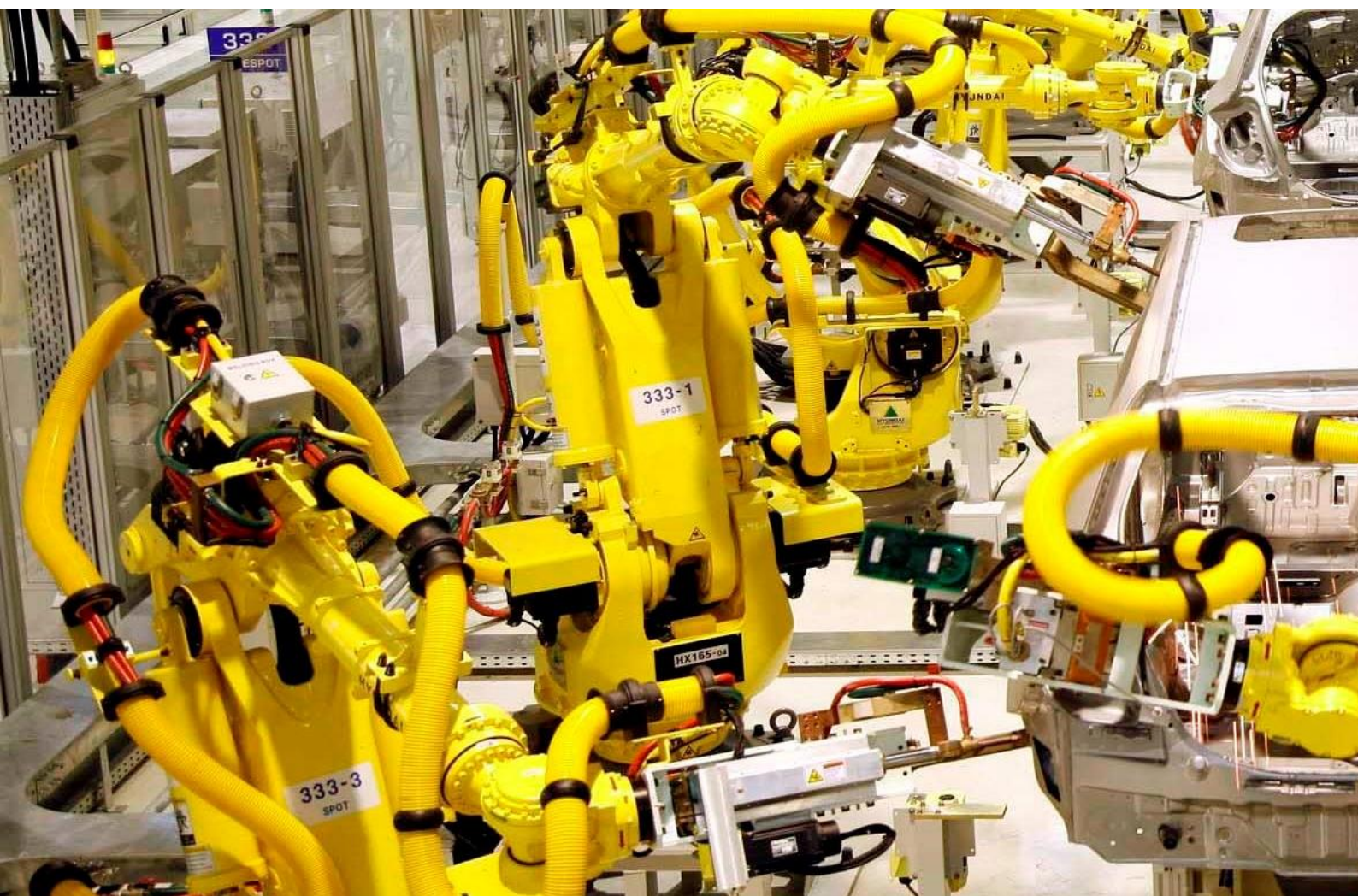


FIGURE 47: ORGANIZED SECTOR VS. UNORGANIZED SECTOR, INDIA

Source: Ibef, 2017



Source: Toyota India

INVESTMENTS

The cumulative Foreign Direct Investment (FDI) inflows into the Indian automobile industry during the period April 2000 – September 2016 were recorded at US\$ 15.80 billion, as per data by the Department of Industrial Policy and Promotion (DIPP).

Some of the major investments made into the Indian auto components sector are as follows:

- Gestamp, Spanish automobile component manufacturing company, has invested Rs 260 crore (US\$ 38.63 million) in a new hot stamping plant in Pune, to cater the increasing demand for lighter vehicles in India.
- Exide Industries, India's biggest automotive battery maker, plans to invest Rs 300 crore (US\$ 45 million) in West Bengal to expand its capacity for advanced motorcycle batteries over a period of 18 months.
- Motherson Sumi Systems Ltd, an automobile components manufacturer, has acquired Finland-based truck wire maker PKC Group Pic for € 571 million (US\$ 609.57 million), which will help the company expand its presence in the global wiring harness business for commercial vehicles.
- Sundaram Clayton, part of the TVS group, plans to invest Rs 400 crore (US\$ 59.76 million) in India over the next three years.
- Mercedes Benz India Private Limited has set up India's largest spare parts warehouse in Pune, with an area of 16,500 square meters which can stock up to 44,000 parts. It will also include a vehicle preparation centre that can stock up to 5,700 cars to customise them before delivery.
- JK Tyre and Industries Ltd, India's leading tyre manufacturer, has acquired Cavendish Industries Ltd (CIL) for Rs 2,200 crore (US\$ 329.2 million), which will enable JK's entry into the fast-growing two-wheeler and three-wheeler tyre market.
- Japanese auto major Honda is planning to step up supply and target exporting of auto components worth Rs 1,500 crore (US\$ 224.45 million) from India to its various international operations.

- Auto components maker Bharat Forge Ltd (BFL), the flagship company of the US\$ 3 billion Kalyani Group, has formalised agreement with Rolls-Royce Plc which will supply BFL with critical and high integrity forged and machined components
- Canada's Magna International Incorporated has started production at two facilities in Gujarat's Sanand, which will supply auto parts to Ford Motor Co in India
- Everstone Capital, a Singapore-based private equity (PE) firm, has purchased 51 per cent in Indian auto components maker SJS Enterprises for an estimated Rs 350 crore (US\$ 51.35 million).
- ArcelorMittal signed a joint venture agreement with Steel Authority of India Ltd to establish an automotive steel manufacturing facility in India.
- German auto components maker Bosch Ltd opened its new factory at Bidadi, near Bengaluru, which is its fifth manufacturing plant in Karnataka. The company has also signed a memorandum of understanding (MoU) with Indian Institute of Science (IISc), Bengaluru with a view to strengthen Bosch's research and development in areas including mobility and healthcare thereby driving innovation for India-centric requirements.
- French tyre manufacturer Michelin announced plans to produce 16,000 tonnes of truck and bus tyres from its Indian facility this year, a 45 per cent rise from last year.
- Amtek Auto Ltd acquired Germany-based Scholz Edelstahl GmbH through its 100 per cent Singapore-based subsidiary Amtek Precision Engineering Pte Ltd.
- MRF Ltd plans to invest Rs 4,500 crore (US\$ 660.231 million) in its two factories in Tamil Nadu as part of its expansion plan.
- Hero MotoCorp is investing Rs 5,000 crore (US\$ 733.59 million) in five manufacturing facilities across India, Colombia and Bangladesh, to increase its annual production capacity to 12 million units by 2020.

AUTO COMPONENT MANUFACTURERS

Auto Component Manufacturers follow a tier based system where tier 1 suppliers are the OEM suppliers who supply components to the above mentioned automotive brands. They also out-source manufacturing of some of the components to tier 2 and tier 3 suppliers who are the medium and small scale auto component manufacturers (MSME's). Almost all of these manufacturers are located in geographical clusters where the automobile manufacturers are located. Majority of these MSMEs are located in Chennai- which accounts for close to 50% of all cars produced in India, the rest of which are distributed in Gujarat and Haryana.

Some of the Tier 1 auto component manufacturers are as follows:

1. TVS Sundaram Clayton (SCL)

SCL is part of the US\$ 6.5 billion TVS group, one of the largest auto components manufacturing and distribution group in India. SCL is a leading supplier of aluminium die castings to automotive and non-automotive sector.

2. Bosch India

In India, Bosch is a leading supplier of technology and services in the areas of automotive and industrial technology, consumer goods and building technology. Additionally, Bosch also has the largest development centre, outside Germany, in India for end to end engineering and technology solutions.

3. Exide

Since its inception in 1880, Exide is one of the most well recognised battery brands in India. Exide has a wide distribution network and service which is continuously monitored and kept contemporary through evolving life cycles. The brand has earned for itself a unique status by becoming generic to the category. Exide offers batteries for nearly every conceivable application, from golf carts and motorcycles to submarines and inverters. Its technology options range from maintenance-free batteries to standard service batteries from fully charged, off-the-shelf batteries to dry-charged ones.

4. JBM Group

JBM Group is a tier-1 supplier to the automotive original equipment manufacturing (OEM) industry and provides services to esteemed clients that include Ashok Leyland, Bajaj Auto Ltd, Fiat, Ford and General Motors, among others. The group was established in 1983 and today has a turnover of around US\$ 1.35 billion. The group has a diversified portfolio to serve in the field of automotive, engineering and design services, renewable energy and education sectors and has an infrastructure of 35 manufacturing plants, four engineering & design centres across 18 locations globally. JBM has broadened its horizons by focusing on quality delivery, solutions approach, product development processes, flexible manufacturing systems and contract manufacturing.

5. Avtech Limited

Avtec Ltd is one of the largest independent manufacturers of 'Powertrains and Precision Engineered Products' in India. It is a part of CK Birla Group - a leading global business house with over 20,000 employees and a combined turnover of US\$ 1.6 billion.

6. Bharat Forge Limited

Bharat Forge Ltd (BFL), the Pune-based Indian multinational is a technology driven global leader in metal forming having transcontinental presence across eight manufacturing locations. It serves several sectors, including automotive, power, oil and gas, construction and mining, locomotive, marine and aerospace.

7. Amtek Group

Amtek The Amtek Group, headquartered in India, is one of the largest integrated component manufacturers in India with a strong global presence. It has also become one of the world's largest global forging and integrated machining companies. The Group has operations across Forging, Iron and Aluminium Casting, Machining and Sub-Assemblies.

8. Sona Group

Sona Koyo Steering Systems Limited (SKSSL), established in 1985, is the flagship company of the Sona Group, and the largest manufacturer of steering systems for passenger car utility vehicles and light commercial vehicles in India.

9. Anand Group

Established in 1961, Anand Group has successfully partnered with leading global automotive engineering frontrunners. It operates two business verticals: automotive solutions in India and a chain of luxury hotels – Sujan Luxury Hotels. It is an industry leader in automotive solutions and recorded a sales turnover of Rs 60 billion last year.

10. Minda Industries

Minda Industries Limited (MIL) is the flagship company of the UNO MINDA, NK Minda Group and is among the leading manufacturers of automotive components in India.

Other OEMs include Lucas TVS, Wheels India, Dunlop, and CEAT.



Source: Autocar Professional

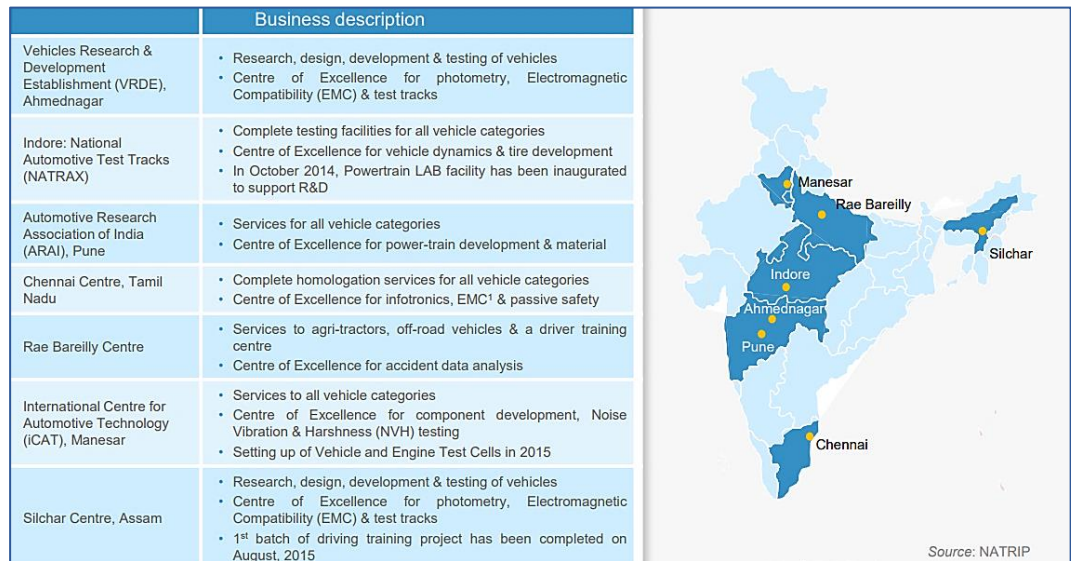


FIGURE 48: AUTO COMPONENTS R&D CLUSTERS IN INDIA

Source: Ibef, 2017

*It would be ideal for **Produtech** to approach these manufacturers who are looking to overhaul their production machineries and through them drill down to the MSMEs who are the suppliers of these tier-1 companies. MSMEs would look to overhaul their machineries only when they have a surety that the tier 1 auto component majors would buy from them if they overhaul their machines. This message should be communicated to generate orders among MSMEs apart from targeting the Tier 1 suppliers.*

MSME CLUSTERS OF AUTO COMPONENTS IN INDIA

Auto component Industry is one of the fastest growing during the past two decades among the Clusters of MSME segment in India. These MSME's are key contributors to the total production of auto components, and also have a significant share in the exports made by the Auto Components Industry.

There are a total of 10 Auto – Component Clusters in India spread all across the country with highest concentration of 5 each in Maharashtra & Gujarat, followed by 4 in Punjab, 3 in Haryana, 2 in Karnataka, and 1 each in Andhra Pradesh, Delhi, Jharkhand, Madhya Pradesh, & Tamilnadu.

This Industry being dependent on parent foreign MNCs, are highly fragmented, and mostly in the un-organised sector. They operate in a tier framework, and most of the companies in the MSME segment are in the Tier II or below out of which few of the suppliers of Original Equipment Manufacturers (OEM's) are Medium scale enterprises.

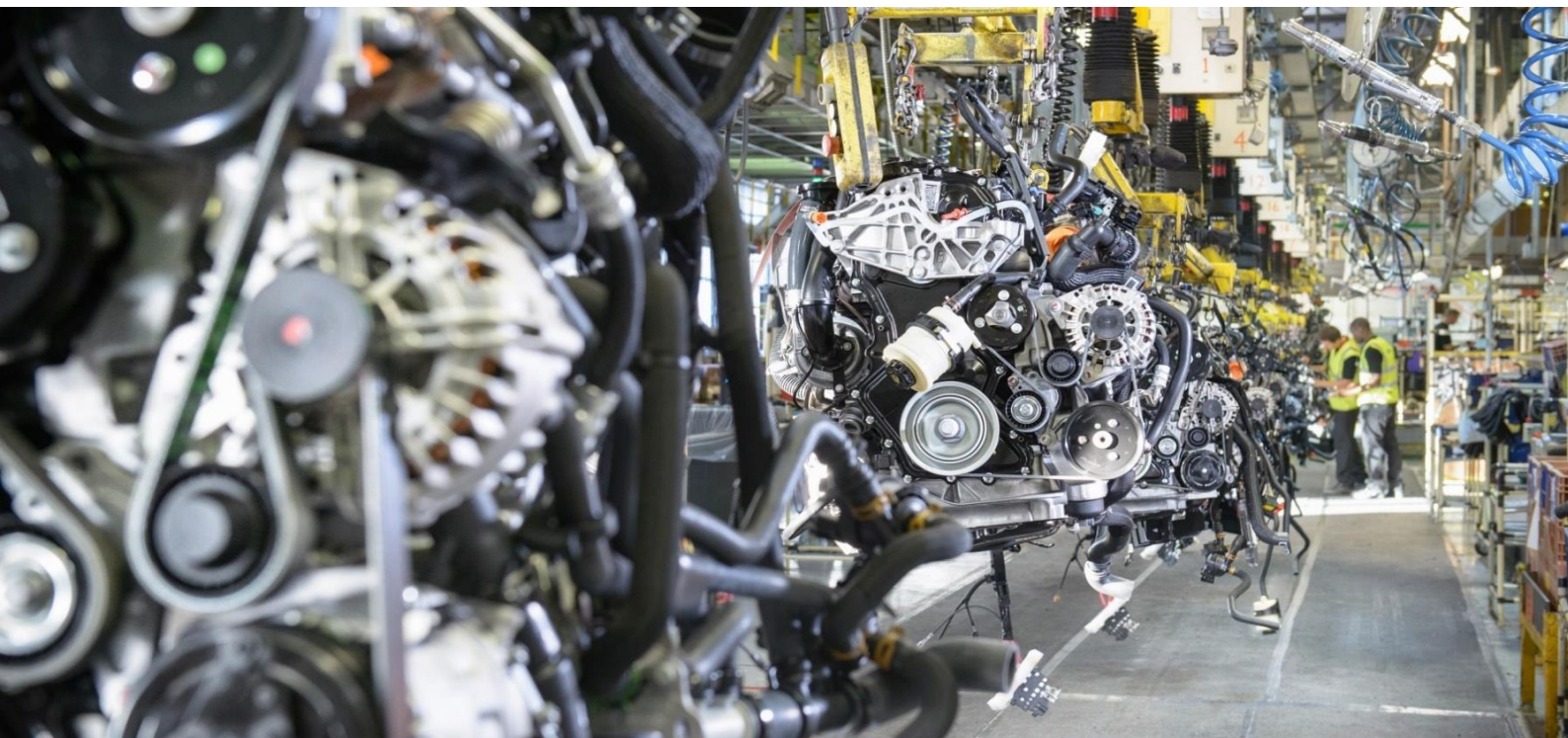
Though Auto Sector is riding a boom phase, driven by demand from global auto manufacturers their MSME counterparts in this industry are undergoing a major restructuring and many existing companies are expected to move up in the value chain to a higher tier. Nevertheless, sustenance and survival still remains an issue of concern for these companies, as they will have to absorb global best practices to keep growing in the ever increasing competitive business environment and a rapidly changing technological backdrop.

Cost competitiveness, price fluctuations in inputs, customer orientation, lead time, logistic issues are some of the key factors, the auto component industry in MSME segment will have to imbibe in order to survive in the new global set-up. At the same time, these companies face the limitations of being MSME, like their:

- Low capital base,
- Limited generation of surplus funds for re-investment due to tight working capital cycle,
- Lack of awareness of business opportunities going past,
- Inadequate exposure to international environment,
- Limited geographical diversity of markets,
- Rapid Obsolescence of Design & Technology, and
- Poor infrastructure facilities.

Despite these limitations, the Indian MSMEs have managed to significantly contribute towards development of India's industrial base. The key risks that the auto component MSMEs faces include:

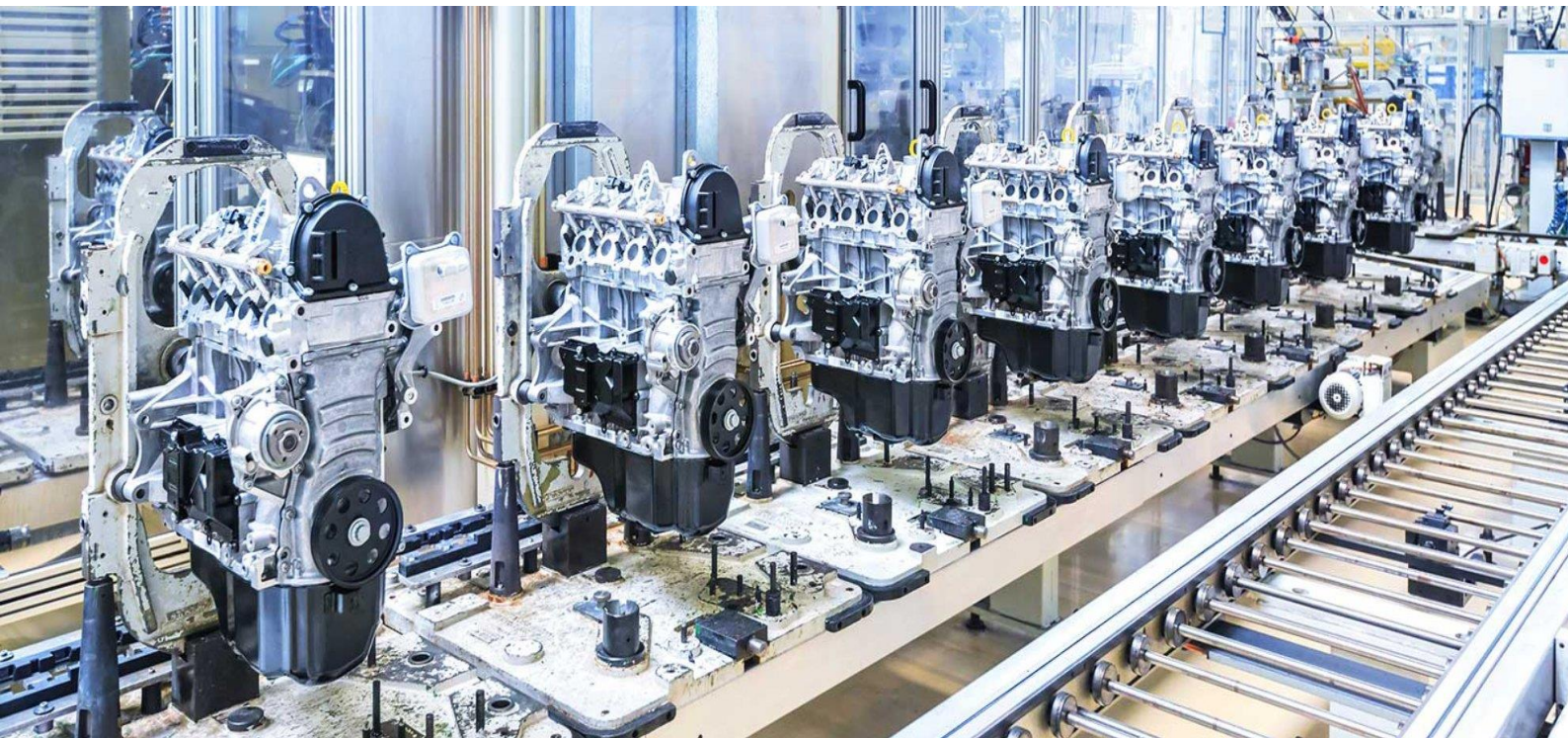
- Fluctuations in the cost of production; especially raw materials like steel, aluminium, polymers etc.
- Poor negotiation powers due to fragmented nature of industry; which in turn limits their pricing power,
- Dependence on traders and agents to access overseas markets which threatens their competitiveness
- Product substitutes due to fast-changing technology.



Source: Digitalist Magazine

Addressing these challenges and risks has been crucial to promoting MSMEs in auto component industry. The government has initiated cluster-based development – geographical concentration of enterprises having similar lines of business – which gives rise to external economies and favours emergence of specialized technical, administrative and financial services. This form of networking of small firms is a means of achieving economies of scale. Extending these initiatives further, the government is encouraging banks to adopt a Cluster-Based Lending approach to ease availability of funds to MSMEs.

The Ministry of MSME is implementing Micro Small Enterprises - Cluster Development (MSE-CD) scheme under which capacity building, technology, and marketing support are provided to the Auto Clusters in physical presence areas, and ensure their readiness to absorb the changes at the locations of their operational control.



Source: [LinkedIn.com](https://www.linkedin.com)

TRENDS

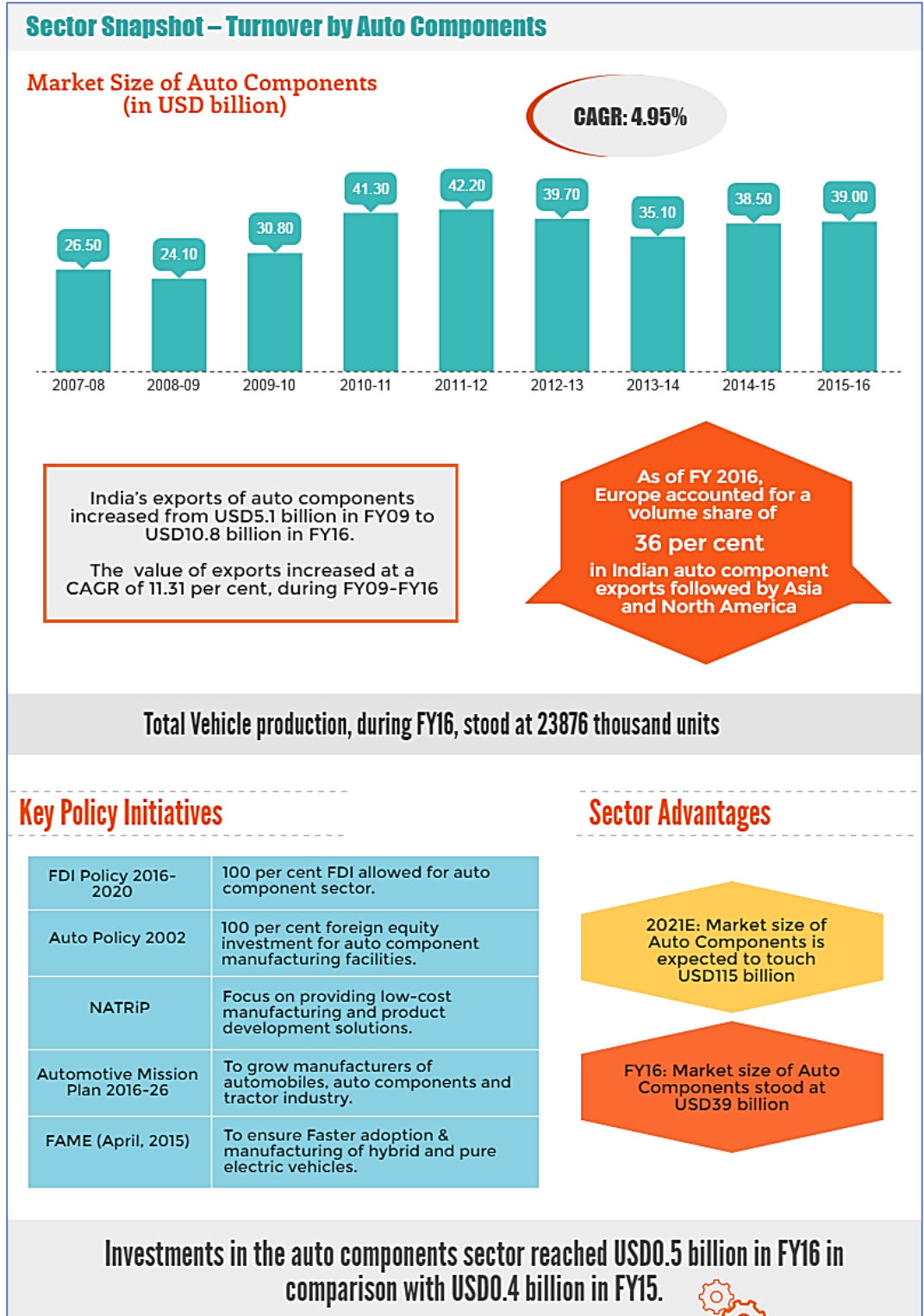


TABLE 3: AUTO COMPONENTS - SECTOR SNAPSHOT, INDIA

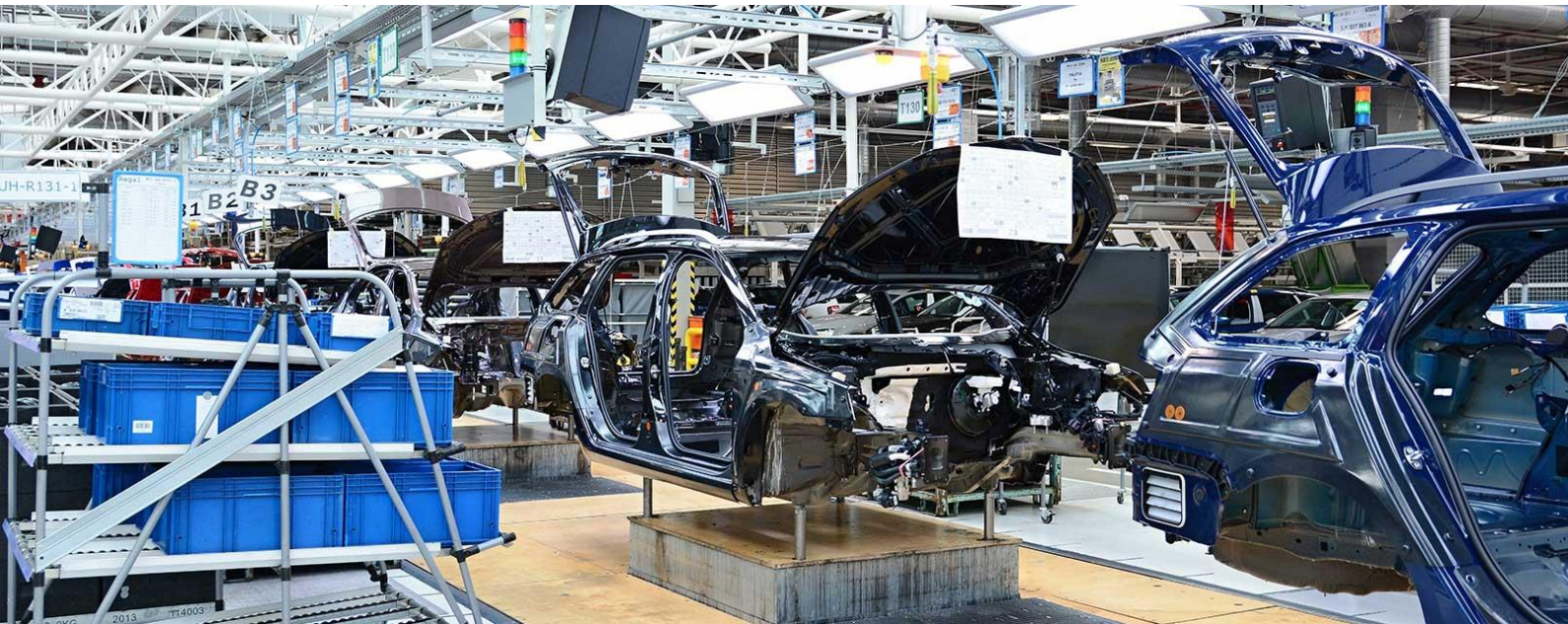
Source: Ibf, 2017

STRATEGIES

<p>New strategies</p>	<ul style="list-style-type: none"> • Auto component suppliers are focused on entering new vehicle segments & manufacturing new products with higher margin • Both Indian & global manufacturers are investing in new capacities & newer programmes, in order to get long term advantage • As markets in North, West & South are getting saturated, components makers are now focusing on untapped market like the Northeast region of the country. • As of May 2017, private equity investment in the sector increased by 607 per cent compared to the first five months of the previous. Mergers & acquisitions were valued at US\$254.8 million, which is 170 per cent higher compared to Jan-May, 2016.
<p>Diversification</p>	<ul style="list-style-type: none"> • Many Indian firms specialising in only one product market or segment & are looking forward to diversify horizontally in other segments like 2-wheelers, passenger cars or commercial vehicles. • They are stepping up their product development capabilities in order to have the best chance of capturing growth opportunity.
<p>Capacity</p>	<ul style="list-style-type: none"> • India's projected production is around 8.7mn passenger vehicles per year by 2020 (with most of them being compact cars) • Many MNC's like Ford, Hyundai, Toyota & GM are launching new vehicle models due to their earlier success in the Indian market.
<p>R&D facilities</p>	<ul style="list-style-type: none"> • Looking at the opportunity many global suppliers for example Bosch Chassis Systems, Tenneco & Faurecia have established R&D facilities in India to adapt global designs & develop new products • Increasing investments in R&D also assists companies in setting up laboratories, new facilities to conduct analysis, simulation & engineering animations. For instance Magneti Marelli entered into a JV with Maruti Suzuki, to establish a new plant to manufacture robotized gearboxes for automobiles.

FIGURE 49: STRATEGIES ADOPTED, INDIAN RETAIL SECTOR

Source: Ibef, 2017



Source: thedollarbusiness.com

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Competition among industry players is intense as government has already deregulated the sector • Increasing number of foreign firms (Ford, Volkswagen, etc.) are increasing their presence • Cheaper imports of components from China is increasing 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • The threat level is medium, given the concentration of industry clusters in specific strategic centers • Foreign firms are increasing their footprints in India 	<ul style="list-style-type: none"> • Threat from substitute products remains low, as public transportation is underdeveloped even in most cities • Rapid growth in Indian economy has changed travel patterns
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Bargaining power of suppliers is medium, as there are a large number of steel and aluminum manufacturers (key raw material) • Some of them have their own units which give them linkage power 	<ul style="list-style-type: none"> • High demand from car manufacturers give them lesser bargaining power • Product differentiation is low

FIGURE 50: PORTER'S FIVE FORCES ANALYSIS, AUTO COMPONENTS SECTOR

Source: Ibf, 2017

OPPORTUNITIES

The rapidly globalising world is opening up newer avenues for the transportation industry, especially while it makes a shift towards electric, electronic and hybrid cars, which are deemed more efficient, safe and reliable modes of transportation. Over the next decade, this will lead to newer verticals and opportunities for auto-

component manufacturers, who would need to adapt to the change via systematic research and development.

The Indian auto-components industry is set to become the third largest in the world by 2025. Indian auto-component makers are well positioned to benefit from the globalisation of the sector as exports potential could be increased by up to four times to US\$ 40 billion by 2020.

INDIA AS AN OUTSOURCING HUB

Global auto component players are increasingly adopting a dual-shore manufacturing model, using overseas facilities to manufacture few types of components & Indian facilities to manufacture the others.


 HYUNDAI	<ul style="list-style-type: none"> Hyundai plans to source gasoline and diesel engines from its Indian manufacturing operations for its domestic & global operations. The company is also planning to invest USD300 million for a new engine plant & metal pressing shop in India & is also in plans to open its 2nd manufacturing plant in Rajasthan. With the encouragement of Indian government, Hyundai, is planning to set up its 3rd new plant in the country & expand its production capacity to 7.2 lakh units annually.
 Ford	<ul style="list-style-type: none"> Ford expanded its retail distribution network of genuine parts in Gujarat, Daman & Diu & Silvassa. Ford is currently working on a small – capacity petrol engine called Dragon which is estimated to be ready by 2016 – 17. The Detroit – based company is planning to produce 1.5 million units a year globally, 4 lakh of which will be produced in India.
 HONDA	<ul style="list-style-type: none"> Honda is likely to setup a 3rd manufacturing plant in Gujarat for which USD384.9 million (approx.) has been initially invested which is expected to reach USD655.1 million by the end of the project The company has an export base for certain key engine components in India. The company planned to invest USD59.23 million (approx.) in Tapukara plant to expand production capacity from 120,000 units per annum to 180,000 units per annum.
 TOYOTA	<ul style="list-style-type: none"> Toyota Kirloskar Motor disclosed its fully integrated cloud based telematics service for Indian market, by the name Toyota Connect. Toyota India under a new joint venture initiated production of diesel engines at Jigani Industrial Area.

FIGURE 51: INDIA AS AN OUTSOURCING HUB

Source: Ibef, 2017

“India is a great test in terms of competitiveness...I'm a big admirer of engineering in India because Indians have a particular skill and gift in frugal engineering.”

Carlos Ghosn

Group CEO, Renault-Nissan Alliance



Source: International Business Times

3.3. RETAIL SECTOR

By 2018, the Indian retail sector is likely to grow at a CAGR of 13 per cent to reach US\$ 950 billion. India is the world's fifth-largest global destination in the retail space. Indian retail Industry accounts for 10% of the country's GDP and 8% of employment.

The overall retail market is expected to grow at 12 per cent *per annum*, modern trade would expand twice as fast at 20 per cent per annum and traditional trade at 10 per cent. The growth drivers are income growth, urbanization and behavioral changes. The Indian retail industry is generally divided into organized and unorganized retailing.

Organized retailing refers to trading activities undertaken by licensed retailer, those who have registered for sales tax, income tax etc. These include corporate-backed hypermarkets and retail chains, and also privately-owned large retail businesses. Various estimates put the share of organized retail to go up to 20% by 2020. Unorganized retailing refers to the traditional forms of low cost retailing, for example, local kirana shops, owner-operated general stores, paan/beedi shops, convenience stores, hand cart and street vendors, etc. The growth of unorganized retail sector is pegged at 6 percent.

MARKET SIZE AND CHARACTERIZATION

India's retail market is expected to nearly double to US\$ 1 trillion by 2020 from US\$ 600 billion in 2015, driven by income growth, urbanisation and attitudinal shifts. While the overall retail market is expected to grow at 12 per cent per annum, modern trade would expand twice as fast at 20 per cent per annum and traditional trade at 10 per cent.

India's Business to Business (B2B) e-commerce market is expected to reach US\$ 700 billion by 2020. Online retail is expected to be at par with the physical stores in the next five years.

India is expected to become the world’s fastest growing e-commerce market, driven by robust investment in the sector and rapid increase in the number of internet users. Various agencies have high expectations about growth of Indian e-commerce markets. Indian e-commerce sales are expected to reach US\$ 120 billion by 2020 from US\$ 30 billion in FY2016. Further, India's e-commerce market is expected to reach US\$ 220 billion in terms of gross merchandise value (GMV) and 530 million shoppers by 2025, led by faster speeds on reliable telecom networks, faster adoption of online services and better variety as well as convenience.

India’s direct selling industry is expected to reach a size of Rs 23,654 crore (US\$ 3.54 billion) by FY2019-20, as per a joint report by India Direct Selling Association (IDSA) and PHD. Indian exports of locally made retail and lifestyle products grew at a compound annual growth rate (CAGR) of 10 per cent from 2013 to 2016. The size of modern retail in India is expected to double to Rs 171,800 crore (US\$ 25.7 billion) from Rs 87,100 crore (US\$ 13 billion) in three years driven by omni-channel retail.

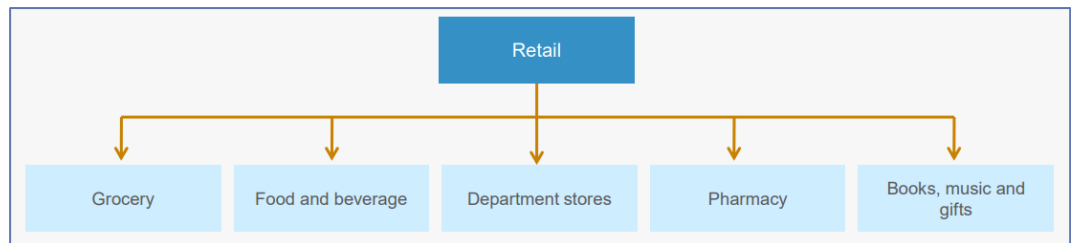


FIGURE 52: MARKET CHARACTERIZATION

Source: Ibef, 2017

- **Hyper/Supermarkets:** large self-servicing outlets offering products from a variety of categories. Mom-and-pop stores: they are family owned business catering to small sections; they are individually handled retail outlets and have a personal touch.
- **Departmental stores:** are general retail merchandisers offering quality products and services. Convenience stores: are located in residential areas with slightly higher prices goods due to the convenience offered.

- **Shopping malls:** the biggest form of retail in India, offer customers a mix of all types of products/services including entertainment and food under a single roof.
- **E-trailers:** are retailers providing online buying and selling of products and services. Discount stores: these are factory outlets that give discount on the MRP.
- **Vending:** it is a relatively new entry, in the retail sector. Here beverages, snacks and other small items can be bought via vending machine.
- **Category killers:** small specialty stores that offer a variety of categories. They are known as category killers as they focus on specific categories, such as electronics and sporting goods. This is also known as Multi Brand Outlets or MBO's.
- **Specialty stores:** are retail chains dealing in specific categories and provide deep assortment. Mumbai's Crossword Book Store and RPG's Music World are a couple of examples.



Source: Mobiloitte

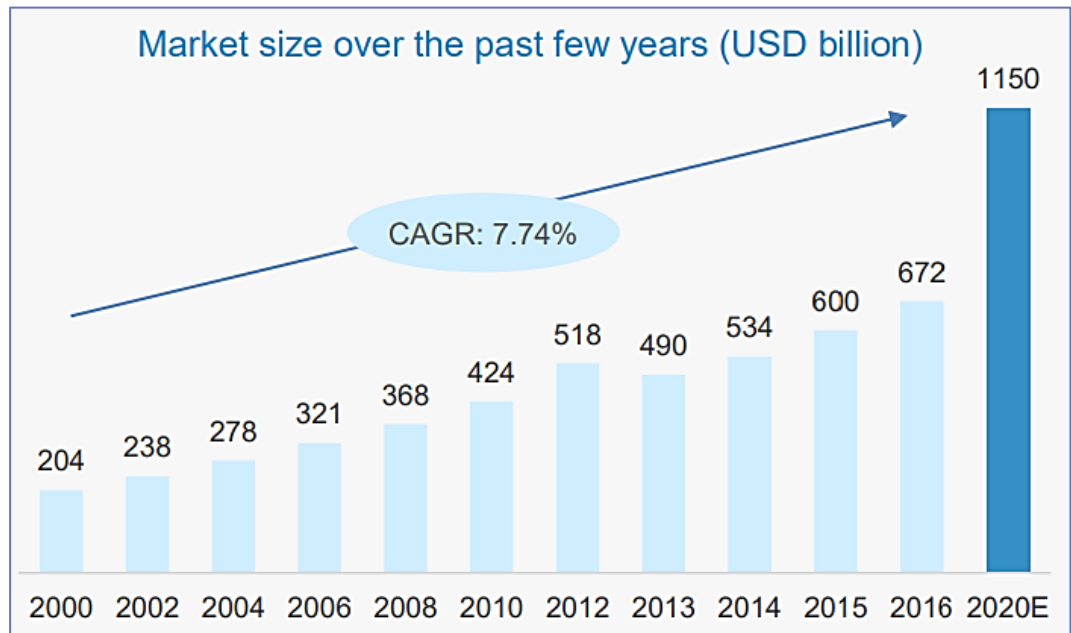


FIGURE 53: INDIAN RETAIL MARKET SIZE

Source: Ibef, 2017

- The retail sector in India is emerging as one of the largest sectors in the economy
- The total market size was estimated to be around USD672 billion in 2016, thereby registering a CAGR of 7.474per cent since 2000.
- Retail industry is expected to grow to USD1.1 trillion by 2020, registering growth at a CAGR of 9.03 per cent between 2000 and 2020.

INVESTMENT

- The Indian retail trading has received Foreign Direct Investment (FDI) equity inflows totalling US\$ 935.74 million during April 2000–December 2016, according to the Department of Industrial Policies and Promotion (DIPP).
- With the rising need for consumer goods in different sectors including consumer electronics and home appliances, many companies have invested in the Indian retail space in the past few months.

- US apparel retail major Gap Inc, has tied up with Arvind Group's fashion portal NNNow.com to sell its products online, which will help the retailer expand its presence beyond metros and tier-I cities.
- Hamleys, has stated that India is one of the most important markets for Hamleys globally, and outlined plans of opening six more stores, taking its total store count in the country to 32 by the end of March 2017.
- Roche Bobois Group, outlined plans of opening new stores in cities like Hyderabad, Chennai, Pune, Kolkata and Ahmedabad, in order to make India one of its top five markets by 2022.
- A joint venture between Dutch asset manager APG Asset Management and real estate asset platform Virtuous Retail, has acquired a portfolio of three shopping malls for US\$ 300 million, and has committed an additional US\$ 150 million as equity capital to expand the portfolio.
- Future Consumer Ltd has formed a joint venture with UK's largest wholesaler, Booker Group, with an investment of Rs 50 crore (US\$ 7.5 million), to set up 70 cash-and-carry stores in India in the next 3-4 years.
- Adidas India Private Limited, outlined plans of opening around 30-40 big flagship stores across Delhi, Mumbai and Bengaluru, by 2020.
- Mad Over Donuts, outlined plans of expanding its operations in India by opening nine new stores in Hyderabad and Chennai by March 2017.
- Switzerland's luxury retail brand Bally, plans to re-enter the Indian market in a joint venture with Reliance Brands Ltd, by opening its first store in New Delhi in 2017, and thereafter aiming to expand to four stores in Delhi, Mumbai, Kolkata and Chennai over the next 3 to 4 years.
- Urban Ladder, online furniture store, is in advanced talks to raise around US\$ 25-30 million from existing investors Kalaari Capital, SAIF Partners and Sequoia Capital, which will be used to fund its expansion plans.
- H&M is in advanced talks with Mumbai-based Prakhhyat Infraprojects Pvt Ltd to lease around 275,000 square feet of space at Bhiwandi, Maharashtra, to set up its first warehousing hub in India.
- Future Group has partnered with UK retailer Laura Ashley to make and sell merchandise as well as wholesale distribution in India.

- Parle Agro Pvt Ltd is launching Frooti Fizz, a succession of the original Mango Frooti, which will be retailed across 1.2 million outlets in the country as it targets increasing its annual revenue from Rs 2800 crore (US\$ 0.42 billion) to Rs 5000 crore (US\$ 0.75 billion) by 2018.
- Mr Amit Agarwal, Country Head, Amazon, has stated that India continues to be viewed as a long-term opportunity and the company would continue to invest aggressively in Indian operations.
- International Finance Corporation (IFC), plans to invest up to Rs 134 crore (US\$ 19.86 million) in Kishore Biyani's Future Consumer Ltd, which is expected to aid the company in driving its growth plans.
- Amazon India has opened six new fulfilment centres across Chennai, Coimbatore, Delhi, Jaipur and Mumbai, which will open up 5.5 million square feet of storage space for sellers on the marketplace who use the 'Fulfilled by Amazon' service.
- IKEA, the world's largest furniture retailer, plans to invest Rs 10,500 crore (US\$ 1.56 billion) to set up 25 stores across India and hire over 50,000 employees to assist in running its stores.
- Massimo Dutti, has entered India by opening its first store at the Select Citywalk mall in New Delhi.
- Lenskart, India's largest online eyewear retailer, has raised Rs 400 crore (US\$ 59.3 million) in series D round of funding led by International Finance Corporation, which will be used to enhance its technology, supply chain, lens manufacturing, and expand the reach of its high-quality eyewear products across Tier-3 and Tier-4 cities of India.
- Neil Barrett, one of the leading Italian fashion brands, has forayed into the Indian market by establishing its retail presence through an exclusive partnership with Fervour, a multi-brand boutique that stocks international designer brands.
- New York-based designer brand Kate Spade will be launched in India later this year and will set up a network of stand-alone stores across major cities, thus becoming one more global brand entering the Indian retail space after the Government of India relaxed single brand retail norms recently.

- KartRocket, a Delhi based e-commerce enabler has completed its US\$ 8 million funding round by raising US\$ 2 million from a Japanese investor, which will be used to enhance Kraftly, a mobile-first online-to-offline marketplace targeting small sellers, individuals and home-based entrepreneurs in India in product categories such as apparel and accessories.
- PurpleTalkInc, a US based mobile solutions company, has invested US\$ 1 million in Nukkad Shops, a Hyderabad based uber-local commerce platform that helps neighbourhood retail stores take their businesses online through a mobile app.
- Hopscotch.in, Mumbai baby care products, has raised US\$ 13 million in a round of funding from Facebook co-founder Mr E. Saverin, which will help the firm in growth and expansion of its technology platform.
- Gurgaon-based e-commerce firm Shopclues has raised US\$ 150 million from Singapore government's GIC and its existing investors Tiger Global and Nexus Venture Partners, at a valuation of US\$ 1.1 billion, thereby becoming the latest among several e-commerce companies from India reaching a billion dollar valuation.
- Adidas AG, renowned for its Adidas and Reebok sports brands, has become the first foreign sports company to get government approval to open 100 per cent foreign-owned stores in India.
- Opinio, a hyperlocal delivery start-up, has raised US\$ 7 million in a Series-A funding from Gurgaon e-commerce fulfilment service firm Delhivery along with investment from Sands Capital and Accel Partners.
- Walmart India plans to add 50 more cash-and-carry stores in India over the next four to five years
- Textile major Arvind Limited has announced a partnership with Sephora, owned by LVMH Moet Hennessy Louis Vuitton, in order to enter into the beauty and cosmetics segment.
- Abu Dhabi-based Lulu Group plans to invest Rs 2,500 crore (US\$ 370.6 million) in a fruit and vegetable processing unit, an integrated meat processing unit, and a modern shopping mall in Hyderabad, Telangana.

- Aditya Birla Retail, a part of the US\$ 40 billion Aditya Birla Group and the fourth-largest supermarket retailer in the country, acquired Total hypermarkets owned by Jubilant Retail.
- US-based Pizza chain Sbarro plans an almost threefold increase in its store count from the current 17 to 50 over the next two years through multiple business models.

GOVERNMENT POLICIES

Government of India has allowed 100 per cent Foreign Direct Investment (FDI) in online retail of goods and services through the automatic route, thereby providing clarity on the existing businesses of e-commerce companies operating in India.

The Government of Andhra Pradesh signed pacts worth Rs 1,500 crore (US\$ 222.36 million) in a wide range of sectors including retail and steel and gas with Walmart India, Future Group, Arvind Lifestyle Brands Ltd and Spencer's Retail, during the Partnership Summit in Visakhapatnam, while also unveiling a retail policy aimed to attract retail businesses to invest in the state. The Ministry of Urban Development has come out with a Smart National Common Mobility Card (NCMC) model to enable seamless travel by metros and other transport systems across the country, as well as retail purchases. The Government has approved a proposal to scrap the distinctions among different types of overseas investments by shifting to a single composite limit, which means portfolio investment up to 49 per cent will not require government approval nor will it have to comply with sectorial conditions as long as it does not result in a transfer of ownership and/or control of Indian entities to foreigners. As a result, foreign investments are expected to increase, especially in the attractive retail sector.



Source: Retail Scan

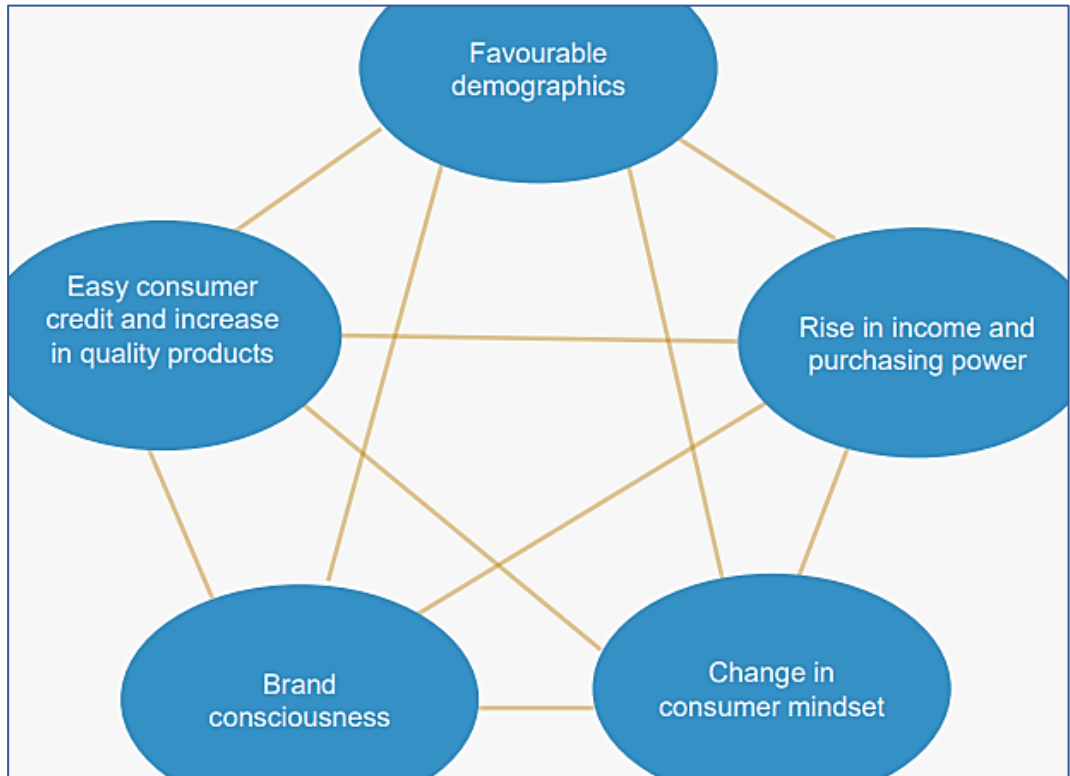


FIGURE 54: GROWTH DRIVERS FOR RETAIL IN INDIA

Source: Ibef, 2017

- Acceptance and usage of e-retailers by consumers are increasing due to convenience & secured financial transactions;
- Expansion in the size of the upper middle class & advertisement has led to greater spending on luxury products & high brand consciousness.

KEY PLAYERS

Some of the key players in the Indian retail market, with a dominant share are Pantaloon Retail Ltd, a Future group venture - Over 12 mn sq. ft. of retail space spread over 1,000 stores, across 71 cities in India, Shoppers Stop Ltd - Over 1.82 mn sq. ft. of retail space spread over 35 stores, in 15 cities, Spencer's Retail, RPG Enterprises - Retail footage of over 1.1 mn sq. ft. with approx 250 stores, across 66 cities and Lifestyle Retail, Landmark group venture: Has

approximately 15 lifestyle stores and 8 Home centers. Other major domestic players in India are Bharti Retail, Tata Trent, Globus, Aditya Birla 'More', and Reliance retail.

Some of the major foreign players who have entered the segment in India are Carrefour which opened its first cash-and-carry store in India in New Delhi. - Germany-based Metro Cash & Carry which opened six wholesale centres in the country. - Walmart in a JV with Bharti Retail, owner of Easy Day store—plans to invest about US\$ 2.5 billion over the next five years to add about 10 million sq. ft. of retail space in the country. - British retailer Tesco Plc (TSCO) in 2008 signed an agreement with Trent Ltd. (TRENT), the retail arm of India's Tata Group, to set up cash-and-carry stores. - Marks & Spencers have a JV with Reliance retail.



FIGURE 55: KEY PLAYERS, INDIAN RETAIL SECTOR

Source: Ibef, 2017

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Entry of foreign players in the market & e-retailers have intensified competition • Customers' low switching cost increases competition • The Indian retail sector is highly fragmented, which increases competition 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • Entry as a retailer is quite simple. However, players need to establish strong distribution channels & achieve economies of scale to compete 	<ul style="list-style-type: none"> • Threat of substitute products is low. However, customers may purchase products from a local store instead of purchasing from a retailer
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Retailers have low switching costs, which make the supplier power low. Larger retailers can easily switch to different suppliers. 	<ul style="list-style-type: none"> • The consumers are price sensitive & have information about the product & its price • Low switching cost gives customers high bargaining power

FIGURE 56: PORTER'S FIVE FORCES ANALYSIS

Source: Ibef, 2017



Source: <http://eretailtech.in>

STRATEGIES

Strong distribution and logistic network	<ul style="list-style-type: none"> Every retailer needs to have a strong distribution & logistics network to succeed in this sector. Players follow a distribution network that suits them the best. For instance, Shoppers Stop follows a "hub & spoke" model to increase efficiency & productivity.
Marketing innovation	<ul style="list-style-type: none"> In March 2017, PepsiCo Inc. announced the launch of ready to cook breakfast items like khichdi, dosa, idli etc., which would be sold under the brand namely Quaker Nutri Foods In March 2017, Parle launched Frooti its iconic drink in a fizzy version, it's the 1st innovation in the brand since its launch 32 years ago.
Focus	<ul style="list-style-type: none"> In February 2017, Tanishq is focusing on expanding its large format-retailing concept, with re-launching their showrooms in Velachery. The Future Group will set up 4000 "neighbourhood" retail stores in the next 3-5 years as a part of its focus on small stores. The brand will increase the number of stores from 538 in March 2017 to 1000 by September 2018. In May 2017, Myntra voiced intentions to increase their market penetration by spending on technology & buying more brands instead of spending on discounts & marketing.
Omni-channel retailing	<ul style="list-style-type: none"> Retailers are opting for many channels to maximise sales. Omni-channel retailing is being adopted by many retailers in India. For example, Shoppers Stop is making efforts to be an omni-channel retailer & Ezone has launched an online platform. In February 2017, Myntra became the 1st e-commerce brand to manage the fashion brand -- Mango's omni channel presence, globally.
Changing the perception	<ul style="list-style-type: none"> Retailers benefit if consumers perceive their store brands to have consistent & comparable quality & availability in relation to branded products. Retailers provide more variety in private level brands to compete with other brands. Innovation, aggressive retail mix & everyday low pricing strategy help to get edge over supplier's brand.

FIGURE 57: STRATEGIES ADOPTED IN INDIAN RETAIL SECTOR

Source: Ibef, 2017

OPPORTUNITIES

E-commerce is expanding steadily in the country. Customers have the ever increasing choice of products at the lowest rates. E-commerce is probably creating the biggest revolution in the retail industry, and this trend would continue in the years to come. Retailers should leverage the digital retail channels (e-commerce), which would enable them to spend less money on real estate while reaching out to more customers in tier-2 and tier-3 cities. Both organised and unorganised retail companies have to work together to ensure better prospects for the overall retail industry, while generating new benefits for their customers. Nevertheless, the long-term outlook for the industry is positive, supported by rising incomes, favourable demographics, entry of foreign players, and increasing urbanisation.

Large number of retail outlets

- India is the fifth largest preferred destination globally;
- The sector is experiencing exponential growth.

Rural markets offer significant growth potential

- With increasing investment in infrastructure, retailers would be able to increase their access to high-growth potential rural markets.

Private Label opportunities

- Private label strategy is likely to play a dominant role as its share in US and UK markets is 19 and 39 per cent, respectively, while its share in India is just 6 per cent. Stores such as Shopper Stop and Lifestyle generate 15-25 per cent revenues from private label brands.

Sourcing base

- Global retailers such as Walmart, GAP, Tesco and JC Penney are increasing their sourcing from India and establishing their own wholly-managed sourcing and buying offices.

Luxury retailing

- Luxury retailing including fragrances, gourmet retailing, accessories and jewellery, is gaining importance in India, as Indian consumers are ready to splurge on luxury items.
- India will be the 12th largest luxury retail market in world by 2020.



FIGURE 58: GROWTH VALUE PROPOSITION, RETAIL SECTOR (INDIA)

Source: Ibef, 2017

"India is now becoming a very important market and in terms of investment, it will be one of the countries where we will invest the most in the future"

Damien Veilleroy

Head – Asia Metro AG

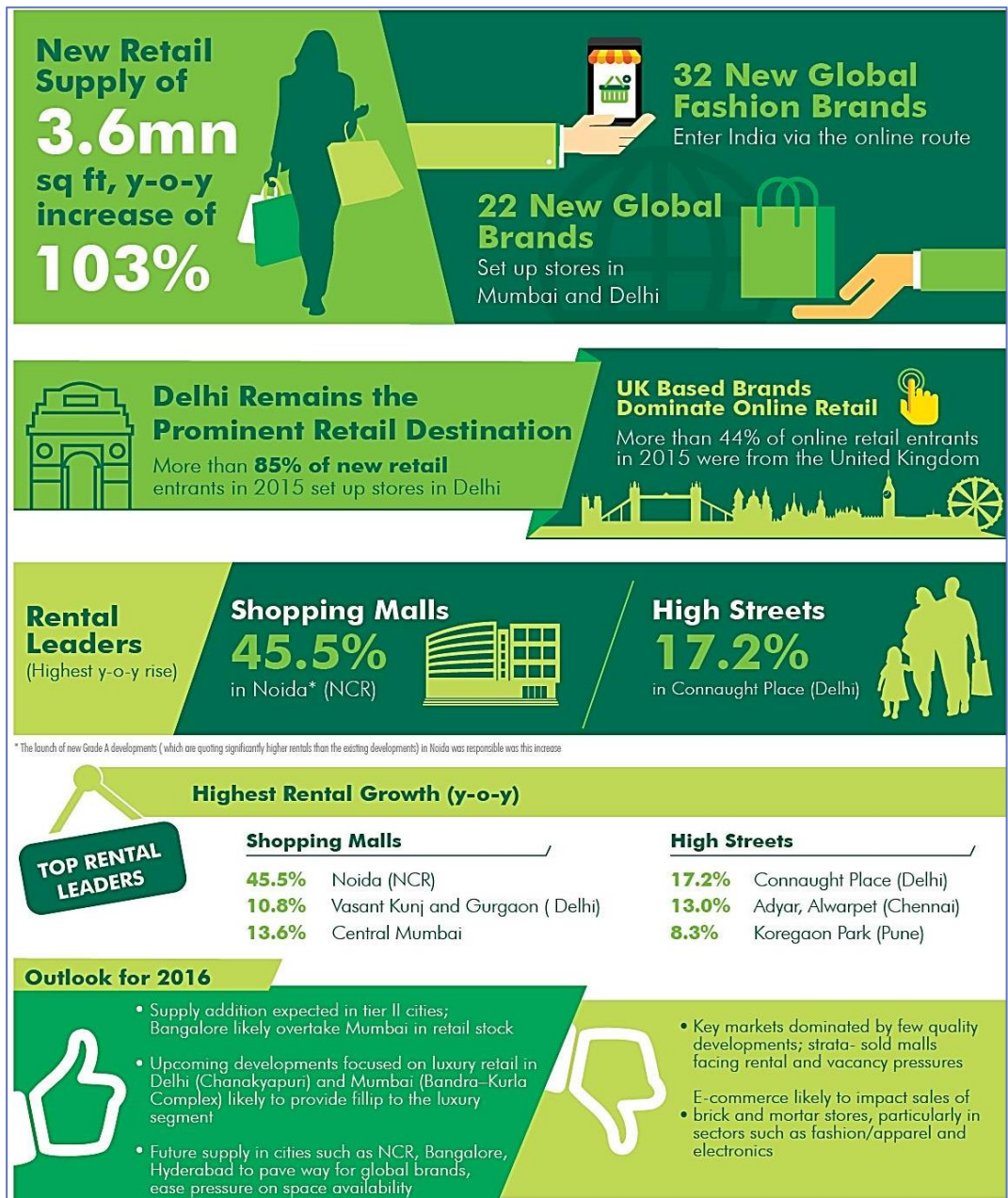


FIGURE 59: INDIA MARKET MONITOR 2015-16

Source: CBRE India

3.4. IT & ITeS INDUSTRY

IT-business process management (BPM) sector in India is estimated to expand at a CAGR of 9.5 per cent to US\$ 300 billion by 2020.

India is the world's largest sourcing destination for the information technology (IT) industry, accounting for approximately 67 per cent of the US\$ 124-130 billion market. The industry employs about 10 million workforces. More significantly, the industry has led the economic transformation of the country and altered the perception of India in the global economy. India's cost competitiveness in providing IT services, which is approximately 3-4 times cheaper than the US, continues to be the mainstay of its Unique Selling Proposition (USP) in the global sourcing market. However, India is also gaining prominence in terms of intellectual capital with several global IT firms setting up their innovation centres in India.

The IT industry has also created significant demand in the Indian education sector, especially for engineering and computer science. The Indian IT and ITeS industry is divided into four major segments – IT services, Business Process Management (BPM), Software Products and Engineering Services, and Hardware.

MARKET SIZE AND CHARACTERIZATION

The Indian IT sector is expected to grow at a rate of 12-14 per cent for FY2016-17 in constant currency terms. The sector is also expected triple its current annual revenue to reach US\$ 350 billion by FY 2025.

Employees from 12 Indian start-ups, such as Flipkart, Snapdeal, Makemytrip, Naukri, Ola, and others, have gone on to form 700 start-ups on their own, thus expanding the Indian start-up ecosystem. India ranks third among global start-up ecosystems with more than 4,200 start-ups.

Global companies such as Accenture, HP Enterprise Services, IBM and Capgemini have a strong presence in India. These companies already have a

large number of India-based employees — Accenture (40,000+), IBM (130,000+), HP Enterprise Services (15,000+) and Cap Gemini (26,000+); global players are aiming to develop onshore service providers who can deliver seamless hybrid onshore-offshore services at low costs.

IT and ITeS has played a major role in the overall growth and development of India. In the electronics and IT sector, 100% FDI is permitted under the automatic route. The major fiscal incentives provided by the Government of India in this sector have been for export-oriented units (EOU), software technology parks (STP) and special economic zones (SEZ).

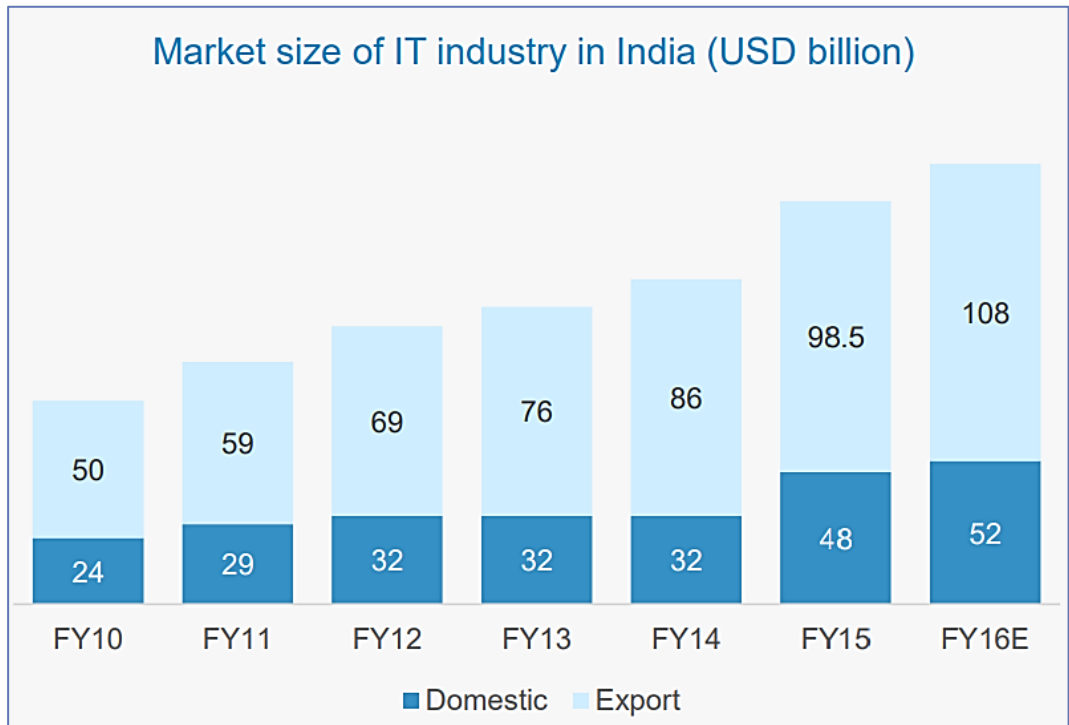


FIGURE 60: MARKET SIZE OF IT INDUSTRY IN INDIA (USD BILLION)

Source: Ibef, 2017

- India’s technology & BPM sector (including hardware) is likely to generate revenues of USD160 billion during FY16 compared to USD146.5 billion in FY15, implying a growth rate of 9.5 per cent;

- The contribution of the IT sector to India’s GDP rose to approximately 9.3 per cent in FY15 TCS is the market leader, accounting for about 10.4 per cent of India’s total IT & ITeS sector revenue in FY16;
- The top 5 IT firms contribute over 25 per cent to the total industry revenue, indicating the market is fairly competitive.



Source: Pest Control (India) Pvt. Ltd.

SEGMENTS OF INDIA IT SECTOR

IT services	Business Process Management (BPM)	Software products & engineering services	Hardware
<ul style="list-style-type: none"> • Market Size: USD75 billion during FY16E • Over 81 per cent of revenue comes from the export market • BFSI continues to be the major vertical of the IT sector 	<ul style="list-style-type: none"> • Market size: USD28 billion during FY16E • Around 87 per cent of revenue comes from the export market • Market size of BPM industry is estimated to rise from USD41 billion in FY20 to USD54 billion by FY25 	<ul style="list-style-type: none"> • Market size: USD27 billion during FY16E • Over 83.9 per cent of revenue comes from exports 	<ul style="list-style-type: none"> • Market size: USD13.3 billion during FY16E • The domestic market accounts for a significant share • The domestic market is experiencing growth as the penetration of personal computers is rising in India

FIGURE 61: SEGMENTS OF INDIA IT SECTOR

Source: Ibf, 2017

INVESTMENTS

Indian IT's core competencies and strengths have attracted significant investments from major countries. The computer software and hardware sector in India attracted cumulative Foreign Direct Investment (FDI) inflows worth US\$ 22.83 billion between April 2000 and December 2016, according to data released by the Department of Industrial Policy and Promotion (DIPP).

Leading Indian IT firms like Infosys, Wipro, TCS and Tech Mahindra, are diversifying their offerings and showcasing leading ideas in blockchain, artificial intelligence to clients using innovation hubs, research and development centres, in order to create differentiated offerings.

Some of the major developments in the Indian IT and ITeS sector are as follows:

- Bengaluru-based fintech company ZestMoney, owned by Camden Town Technologies Pvt. Ltd, has raised US\$ 6.5 million in a series A round of funding led by Naspers-owned PayU; and will invest the funds in technology and product development.
- Google plans to set up its first data centre in India in the city of Mumbai by 2017, to improve its services to local customers wanting to host their applications on the internet, and to compete effectively with the likes of Amazon and Microsoft,
- Sagoon Inc, a social network and e-commerce start-up, has filed mini-initial public offering (IPO) papers with the US Securities and Exchange Commission (SEC), to raise around US\$ 20 million, which will be used to set up a campus in India, expand its team in India, the US and Nepal, and support marketing and branding and other general purposes.
- SAP SE, in partnership with the Associated Chambers of Commerce of India (ASSOCHAM), has rolled out a knowledge sharing resource centre which will serve as a one-stop portal for businesses looking to adopt or migrate to technology that will make them future ready for the biggest taxation reform of goods and services tax (GST).
- Freshdesk, one of first companies from India to offer Software-as-a-Service (SaaS) to global companies, has raised US\$ 55 million in the latest round

of funding led by Sequoia Capital India and existing investor Accel Partners, estimating to value the company at US\$ 700 million.

- Warburg Pincus LLC, the US-based private equity firm, plans to invest around US\$ 75 million in series C round of funding to buy a significant stake in Capital Float, an online credit platform.
- Helpshift Inc, which makes customer support software for mobile apps, announced raising US\$ 2 million from Cisco Investments, in addition to working with Cisco to integrate its in-app customer support with Cisco's contact centre solutions.
- Knowlarity Communications Pvt Ltd, a cloud telephony provider, has announced raising US\$ 20 million from multiple investors such as Dubai-based private equity investor Delta Partners, existing investors Sequoia Capital Funds and Mayfield Fund, apart from venture-debt from Blacksoil and Trifecta Capital.
- Flipkart, India's largest e-commerce marketplace, has re-entered the private label business by launching Smart Buy, the first of two new private labels, with a view to boost earnings and fill gaps in its product selection.
- Fitpass, a Delhi-based revolutionary app which offers access to gyms and health clubs membership, has raised US\$ 1 million in seed funding from investors in Mumbai, Delhi, and Bengaluru.
- Apple's supplier and assembler, Taiwan-based Winstroon, will set up an iPhone assembly facility in Peenya, Bengaluru's industrial hub, thus making India the third country across the world to have an assembly unit for Apple's iPhone.
- Kratikal Tech Pvt Ltd, a cyber-security start-up, has raised around US\$ 500,000 in seed round of funding led by Mr Amajit Gupta, former director of Microsoft India, which will be used for product development and building training modules.
- International Finance Corporation (IFC) plans to invest US\$ 10 million as equity in Bengaluru-based Zinka Logistics Pvt Ltd, which provides a technology platform called Blackbuck for long-haul trucking market in India, estimated at US\$ 70 billion.

- Paytm's online marketplace unit raised US\$ 200 million in a funding round led by a US\$ 177 million investment to be made by Alibaba Group Holding Ltd, and balance by SAIF Partners.
- Intel Corporation plans to invest in Digital India related solutions such as India stack, Unique Identification (UID), e-government 2.0 and other government initiatives, and scale up operations of its data centre group (DCG), as per Mr Prakash Mallya, Director DCG, Asia for Intel Corporation.
- Reliance Industries Ltd (RIL) plans to set up entrepreneurship hubs in key cities and towns, and a Rs 5,000 crore (US\$ 748 million) fund, under the name of Jio Digital India Startup Fund, to invest in technology based startups.
- Gurgaon-based digital wallet start-up MobiKwik, which is owned and operated by One MobiKwik Systems Private Limited, has raised US\$ 40 million from Nasdaq-listed firm Net1, a South African payments technology company.
- Orange Business Services, the business services arm of Orange Group, has launched a state data centre for Himachal Pradesh government, which will be the first data centre in India to be designed using 'green' data centre concepts that minimise power requirements and increase power utilisation efficiency.
- PurpleTalk Inc, a US based mobile solutions company, has invested US\$ 1 million in Nukkad Shops, a Hyderabad based uber-local commerce platform that helps neighbourhood retail stores take their businesses online through a mobile app.
- KartRocket, a Delhi based e-commerce enabler has completed its US\$ 8 million funding round by raising US\$ 2 million from a Japanese investor, which will be used to enhance Kraftly, a mobile-first online-to-offline marketplace targeting small sellers, individuals and home-based entrepreneurs in India in product categories such as apparel and accessories.
- Xpressbees, an e-commerce logistics firm operated by Busybees Logistics Solutions Private Limited, has raised US\$ 12.5 million in a Series A funding, led by its existing investors SAIF Partners, IDG Ventures, Vertex

Ventures and Valiant Capital, which will be used to strengthen technology initiatives and processes of the firm.

- Housejoy, an online home services provider, has raised Rs 150 crore (US\$ 22 million) in a Series B round of funding led by Amazon, and which also includes new investors such as Vertex Ventures, Qualcomm and Ru-Net Technology Partners.
- Nasscom Foundation, a non-profit organisation which is a part of Nasscom, has partnered with SAP India to establish 25 National Digital Literacy Mission (NDLM) centres in 12 cities across India, as a part of Government of India's Digital India initiative.

MAIN PLAYERS

IT sector in India is one of the most important service sectors. It contributes significantly to the country's GDP. Top IT companies in India comprise of companies like TCS, Infosys, Wipro leading the ranks with Tech Mahindra, HCL forming the middle. Mindtree, Rolta, Mphasis are growing strong and make into the top 10 Indian IT companies. Top IT Companies in India 2016 are:

- 1st Place: Tata Consultancy Services (TCS)
- 2nd Place: Infosys
- 3rd Place: Wipro
- 4th Place: HCL Technologies
- 5th Place: Tech Mahindra
- 6th Place: Mphasis
- 7th Place: L&T Infotech
- 8th Place: Mindtree
- 9th Place: Oracle Financial Services Software
- 10th Place: Rolta

GOVERNMENT INITIATIVES

In the Union Budget 2017-18, the Government of India announced the following key proposals: i) To allocate Rs 10,000 crore (US\$ 1.5 billion) for BharatNet project under which it aims to provide high speed broadband to more than 150,000 gram panchayats by 2017-18; ii) To launch the Bharat Interface for Money app, an Aadhaar-based mobile payment application that will allow users to make digital payments without having to use a credit or debit card. The app has already reached 10 million downloads.

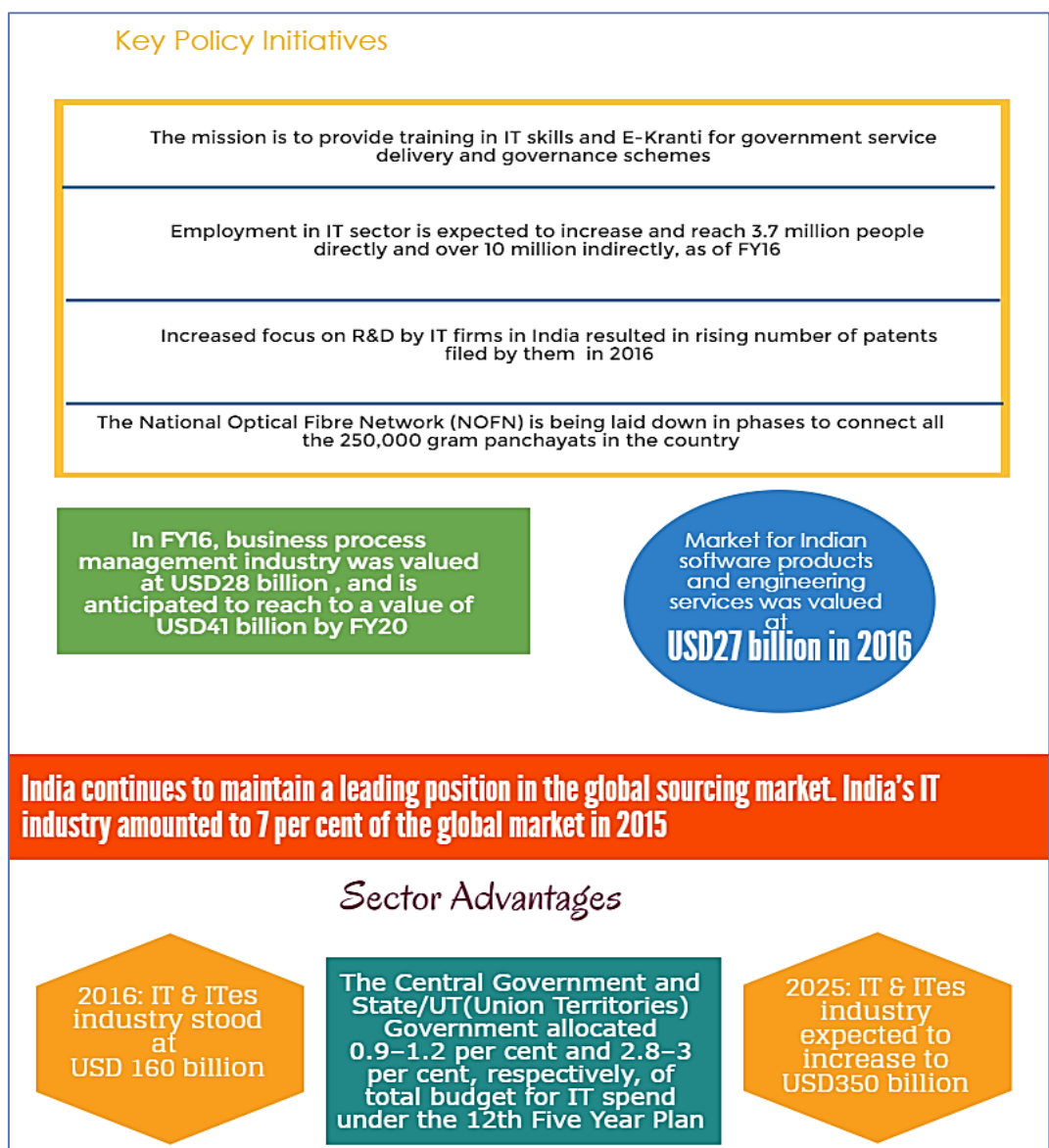


FIGURE 62: KEY POLICY INITIATIVES AND SECTOR ADVANTAGES, INDIA

Source: Ibef, 2017

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Intense competitive rivalry exists due to low switching costs • Most of the bigger Indian firms offer same services and there is little product differentiation 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • Easy entry as the capital required is low • Large players, however, toughen prospects of small and medium players to win large deals 	<ul style="list-style-type: none"> • Threat is medium as new centres, such as Philippines and China, are fast gaining ground among investors due to their low cost advantages
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Bargaining power of suppliers is less as most of their businesses come from the same geographies • Price taker rather than price maker 	<ul style="list-style-type: none"> • Bargaining power is high as many IT firms fight for a similar project • Firms are mostly dependent on same geography, which increases customer power

FIGURE 63: PORTER'S FIVE FORCES ANALYSIS

Source: Ibef, 2017

OPPORTUNITIES AND ADVANTAGES

Indian IT's core competencies and strengths have attracted significant investments from major countries. The computer software and hardware sector in India attracted cumulative Foreign Direct Investment (FDI) inflows worth US\$ 22.83 billion between April 2000 and December 2016, according to data released by the Department of Industrial Policy and Promotion (DIPP).

Leading Indian IT firms like Infosys, Wipro, TCS and Tech Mahindra, are diversifying their offerings and showcasing leading ideas in blockchain, artificial intelligence to clients using innovation hubs, research and development centres, in order to create differentiated offerings.

India is the topmost offshoring destination for IT companies across the world. Having proven its capabilities in delivering both on-shore and off-shore services to global clients, emerging technologies now offer an entire new gamut of opportunities for top IT firms in India. Social, Mobility, Analytics and Cloud (SMAC) are collectively expected to offer a US\$ 1 trillion opportunity. Cloud represents the largest opportunity under SMAC, increasing at a CAGR of approximately 30 per cent to around US\$ 650-700 billion by 2020. The social media is the second most lucrative segment for IT firms, offering a US\$ 250 billion market opportunity by 2020. The Indian e-commerce segment is US\$ 12 billion in size and is witnessing strong growth and thereby offers another attractive avenue for IT companies to develop products and services to cater to the high growth consumer segment.

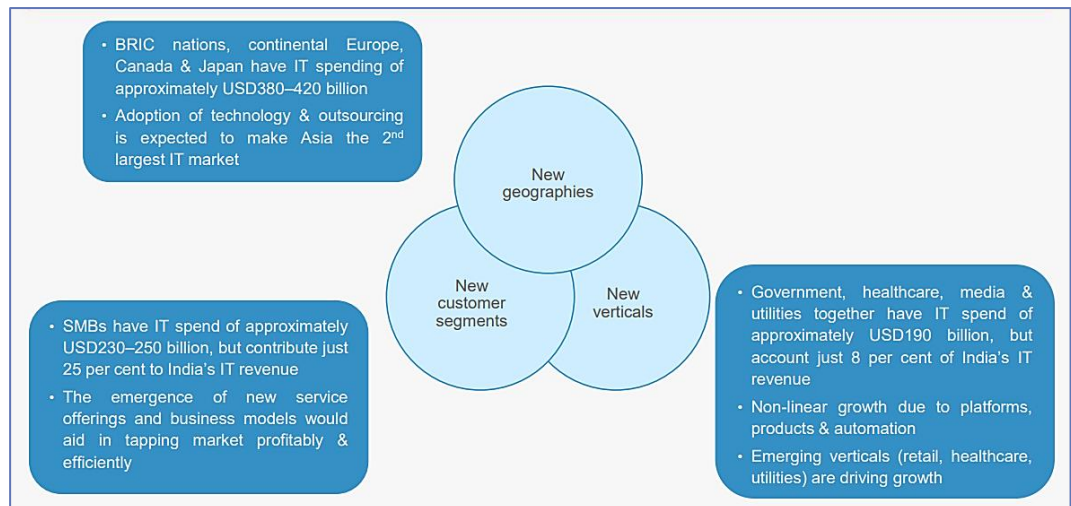


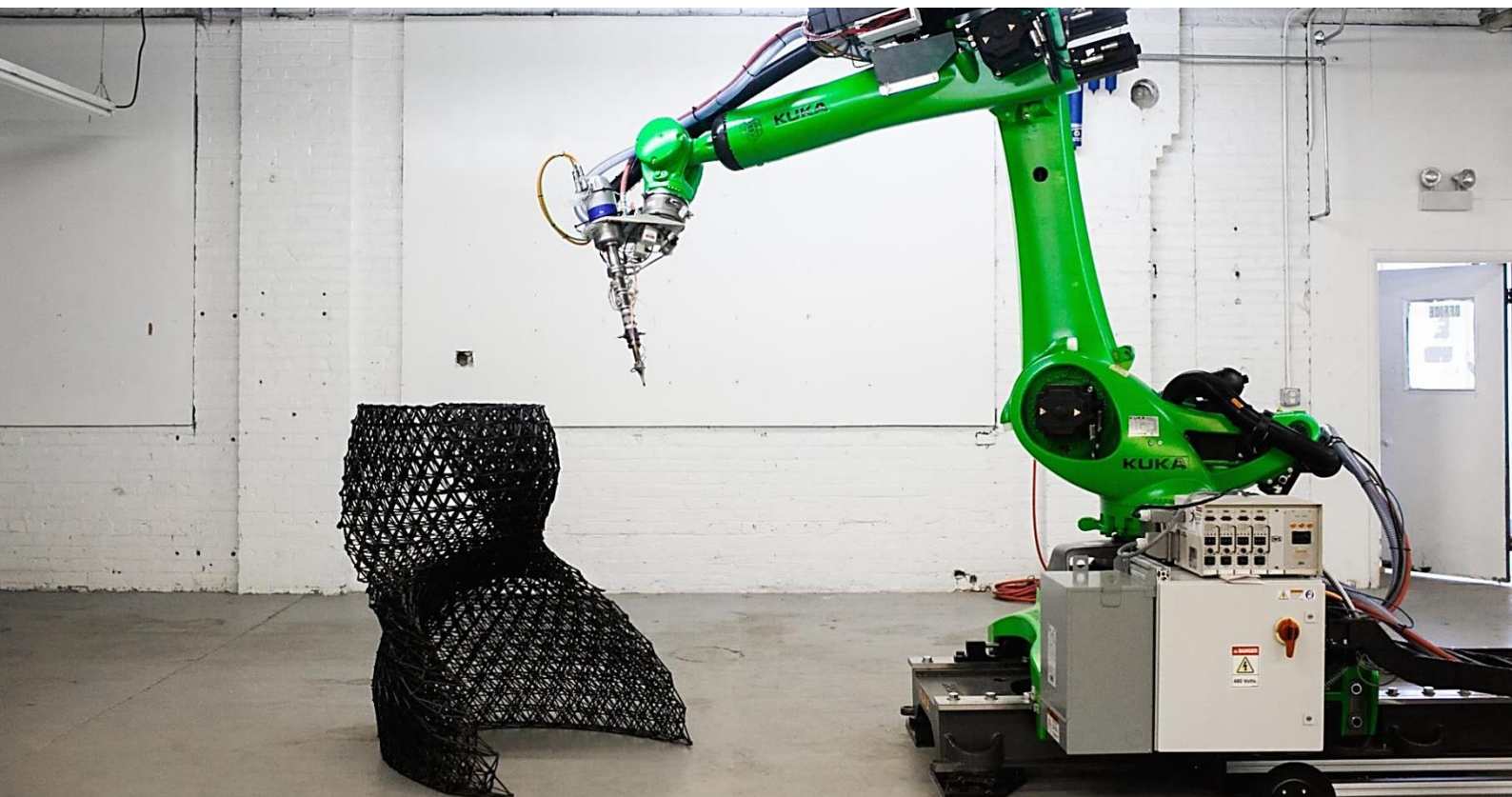
FIGURE 64: NEWER GEOGRAPHIES AND VERTICALS PROVIDE HUGE OPPORTUNITIES, INDIA

Source: Ibf, 2017

3.5. 3D PRINTING TECHNOLOGY

3D printing industry is considered to be still in its infancy stage from India's perspective. 3D printers and DIY kits were being sold in India for prices ranging from Rs. 40000 to Rs. 1.5 Lac around 10 years back. But today there are many 3D Printer business start-ups in India with 'Global 3D Labs' being the first one to start in 2014.

These start-ups offer 3D printing services and indigenous printers or DIY kits. India has around 350 listed 3D printing services out of which Mumbai alone has 100. Thus 3D printing industry in India has been experiencing growth in demand and awareness. Campaigns like Make in India together with low cost of manufacturing and increasing adoption of this technology is expected to spur the 3D printer market in India.



Source: 3dprint.com

“3D printing technology is one of greatest innovations ever, and it is turning into reality — with a tremendous number of new opportunities and challenges.”

Frank Thewihsen, EMEA Advisory Supply

Chain & Operations Leader, EY

MARKET SIZE AND CHARACTERIZATION

According to 6W Research, the available market size in India for 3D Printers is expected to touch \$46 mn by year 2019 growing at around a CAGR of 20%.

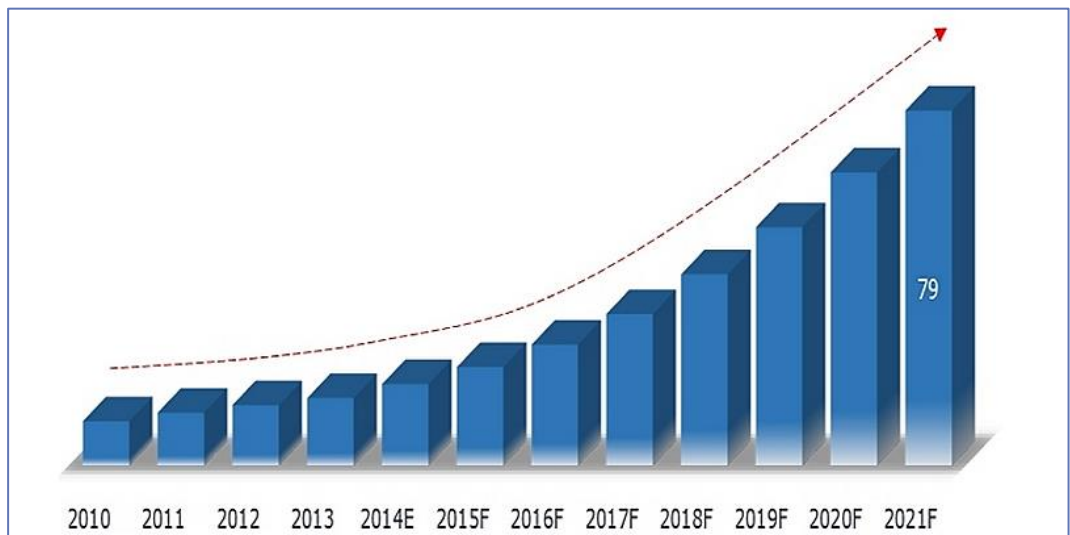


FIGURE 65: INDIA 3D PRINTER MARKET REVENUES, 2010-2021F (\$ MILLION)

Source: 6W Research

By 2021, the market size for 3D Printers is expected to reach \$79 million. Tier-1 cities are expected to have more than 75% of 3D printer market. The research also indicated that automotive and industrial sector will account for the largest share, in revenue and volume in the 3D printer market, application wise.

3D printers are emerging as a key growing printing technology in global landscape. In India, the market for 3D printers is at its nascent stage; however, offers huge growth opportunities in the coming years. Low market awareness, cost constraint and lower domestic production are witnessed as key hurdles for

the adoption in the country. Although, with government of India initiatives to boost domestic manufacturing sector, these challenges are expected to be overcome.

In India, 3D printer market is one of the emerging markets, where demand is primarily exhibited from Tier-I cities. India accounts for major potential growth for domestic manufacturers, local assemblers and distributors due to increasing use of rapid prototyping and 3D modelling across various industry sectors. Further, “Make in Campaign” which started in 2014 is anticipated to drive the future growth of the market.

Amongst all 3D printing technologies, FDM technology based 3D printers dominates the overall market. Low cost and ease of availability of these printers have led for their majority of the market revenues.

In India’s 3D printer market, automotive application accounts for largest of the revenue & volume share. Over the next six years, medical and aerospace & military applications are exhibiting promising growth in overall market, owing to increase in spending towards R&D of aerospace & military and medical sector.

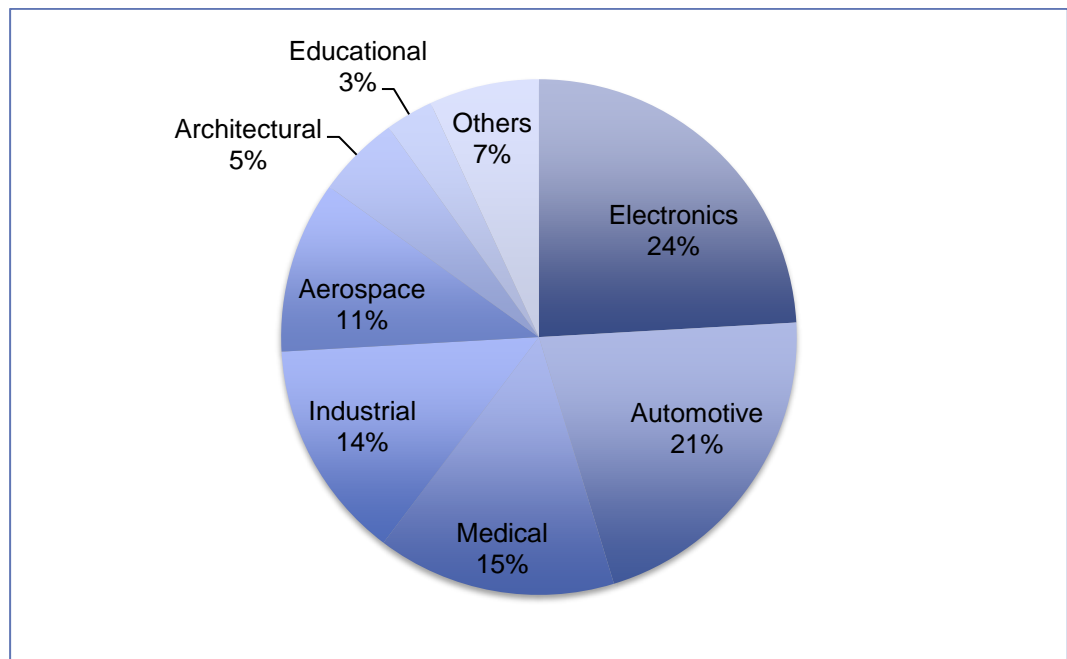


FIGURE 66: MARKET DISTRIBUTION OF 3D PRINTERS IN INDIA, 2013

Source: 6W Research

Today, consumers are demanding more in terms of customization and responsiveness. In these times, more and more companies are adopting 3D printing solutions as they are more agile and cost effective. Therefore, the market share of 3D printing is only set to increase in the coming times.

Out of the sectors, Consumers goods, automotive and aerospace industries are expected to grow at higher rates of 15%, 13% and 10% respectively. Hence, these sectors hold more potential for 3D printer industry.

SECTOR ANALYSIS

According to this livemint.com report, the 3D printing industry is still maturing with many local manufacturers also providing 3D printing services and DIY kits. In many cases, these bundled offerings have imported components, but are sold under the “Made in India” label. Research firm Gartner reports that the Indian 3D printing industry has gone through a sea change since the emergence of indigenous 3D printer manufacturers.

The Indian 3D printing industry currently supports the following business models:

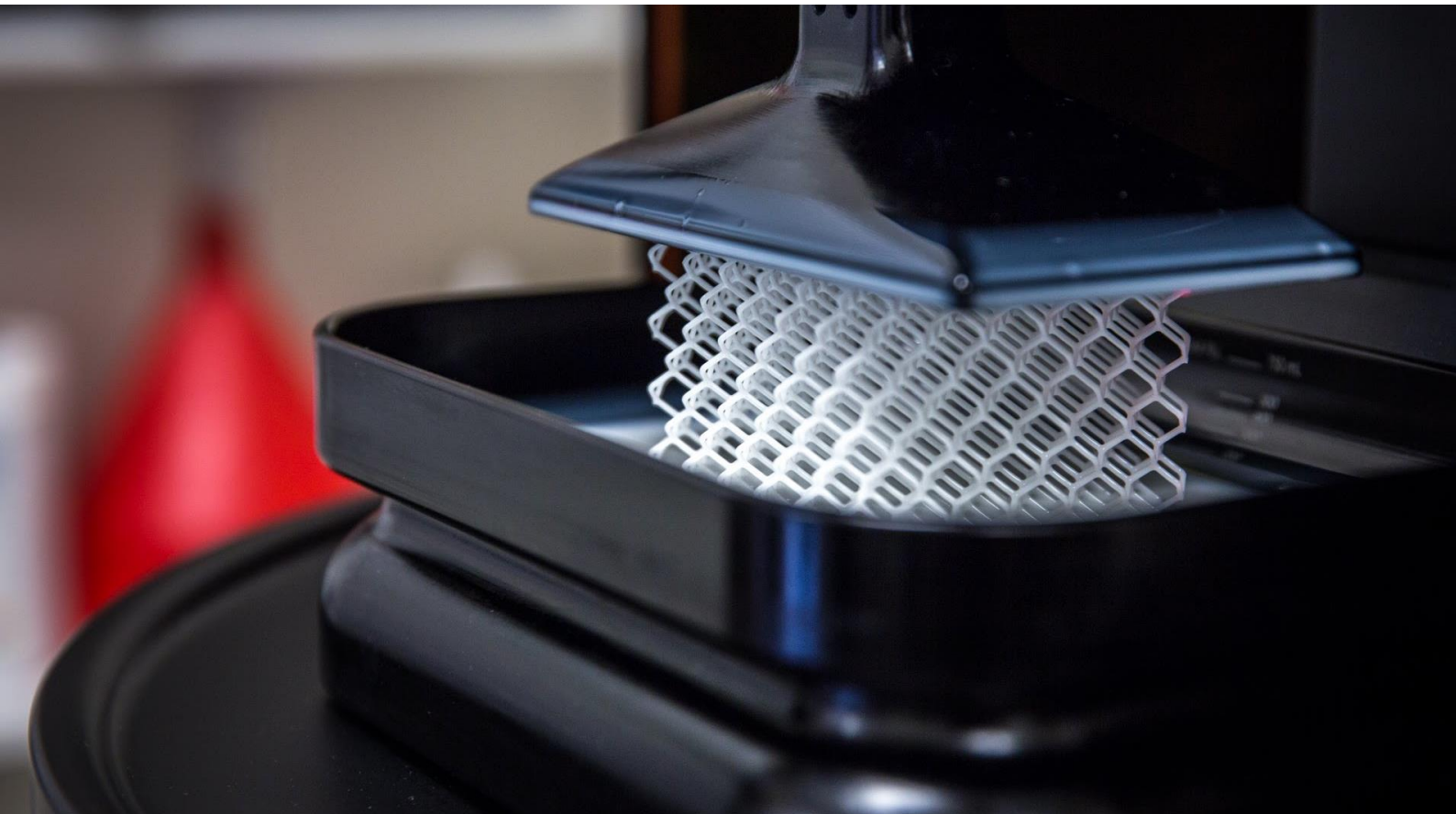
- Reseller companies in India sell premium brand 3D printers manufactured in Germany or USA.
- Indian entrepreneurs have set up partnerships with foreign collaborators to share 3D printing technology and manufacture printers I India.
- Indian hi-tech companies designing and manufacturing indigenous 3D Printers.
- Apart from selling 3D Printers, many India hi-tech companies are also selling 3D printing services.

The 3D printing industry is garnering more and more media attention in India, especially due to initiatives like Make in India, Start up India etc. Many big and medium sized companies are exploring the various possibilities in this market.

Since the 3D printing industry is in an infancy stage, a lot of players are entering into the market for 3D printer manufacturing. However, there is possibility of

consolidation happening in the future when 3D printing gets more acceptances in different industries. Therefore, 3D printer manufacturing industry looks promising in the long term once the Indian market has matured.

On the other hand, 3D printing services business holds more promise in the short term if the right kind of industry where 3D printing will have a big role to play is targeted. Having joint alliances with Indian companies for the same can also be beneficial. The threat of backward integration will always be there but 3D printing is more of a skill based industry than a scale based industry and so, most of the Indian companies may prefer partnerships, at least in the beginning. Besides, the Indian market will take some time to understand the complete benefits of 3D printing and until then, 3D printer services would be the way to go forward.



Source: youtube.com

Strengths	Weaknesses
<p>Supportive Government</p> <p>Increasing awareness among major industries, private and individual customers</p> <p>Low Manufacturing Cost in India</p> <p>No entry barriers or legal constraints</p> <p>Growing user base of professional CAD/CAM softwares</p>	<p>Lack of in-depth knowledge of the technology preventing exploitation of full potential</p> <p>High Import Duties</p> <p>Fewer R&D facilities</p> <p>Size and Cost of 3D printers</p> <p>Capital intensive nature of starting the business</p> <p>No Government recognition for the 3D printing industry</p> <p>Inefficient supply chain for raw materials and components</p> <p>High troubleshooting costs</p>
Opportunities	Threats
<p>Can be used by Government for printing necessary supplies on a large scale and improving educational offerings</p> <p>Can revolutionize experimentation scenarios in Science, Space, Organ printing etc.</p> <p>Many 3D printing related patents are getting expired providing opportunities to implement them</p> <p>High Growth opportunity as the Indian market is in the nascent stage</p> <p>Government initiatives like 'Make in India', 'Start up India' etc. encourage use of 3D Printers for low cost manufacturing</p> <p>Many industries can be benefitted and even disrupted by 3D printing technology implementation as they provide cost efficiency and increased responsiveness</p>	<p>Frequent technological changes in 3D printing industry</p> <p>Evolving technologies like Computational thermoforming as a substitute to 3D printing.</p> <p>Increasing Raw material Prices</p> <p>High Import Duties as some of the components may have to be imported</p> <p>Extent of adoption of 3D technologies has not been up to the mark till now</p> <p>Misuse of 3D printing technology. E.g. Printing fire arms</p> <p>Backward integration by automotive, manufacturing companies</p>

TABLE 4: INDIAN 3D PRINTING MARKET SWOT ANALYSIS

MAIN PLAYERS

There are many companies that have established their base in 3D printing industry such as Stratsys and MakerBot. These companies have established partnership with many Indian companies in order to increase their customer base. The major companies in India that are aspirants in this new field of printing are:

ALTEM Technologies

ALTEM Technologies is the Indian distributor for Stratasys 3D printers. The company has signed a partnership agreement with Stratasys in the year 2010. Since then the company has been supplying 3D printer to Indian consumers. The company sells Fused Deposition Modeling and Polyjet technology based 3D printers so that an ultimate 3D printing experience can be obtained by the consumers. The company has its headquarters in Bangalore.

Imaginarium

The company claims to be the largest Rapid Prototyping and Rapid Manufacturing Center in India. The company provides exclusive prototypes for a wide range of industries like from jewelry, engineering, automotive, architecture, consumer goods etc. The company has more than 30 years of experience in Rapid Prototyping and it uses this experience to deliver complete solution to the needs of the customers.

Brahma 3

It is a startup company which is all set to explore the potential of 3D printing with the help of powerful hardware and very creative members on board. The company is one of the few Indian companies that have successfully made a 3D printer. The company has named the printer as the Braham Anvil. The printer is made for both beginners as well as professionals.

JGroup Robotics

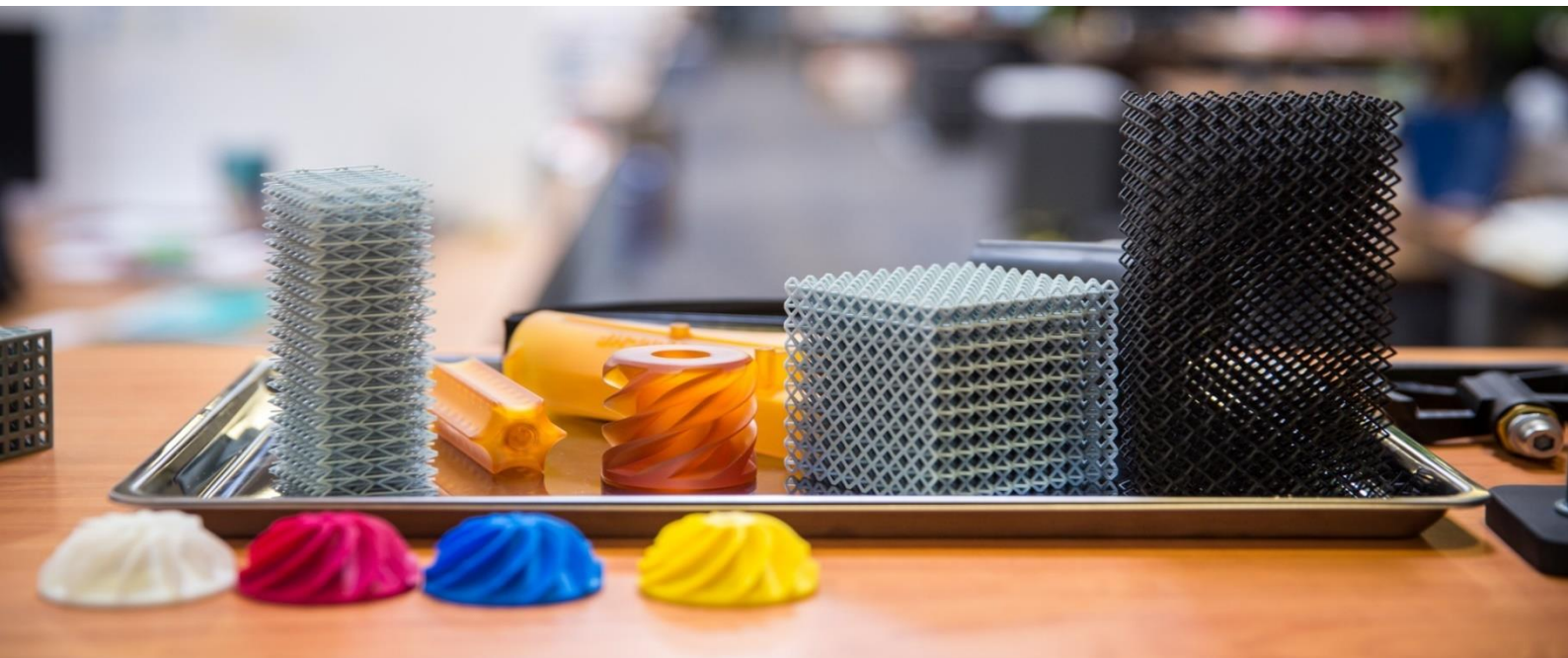
The company aims to manufacture 3D printers with supreme quality. With products such as Dimension 3 LE and Vector PLA 3D, the company delivers value added solutions. The company professes to have developed printers which have duplication accuracy up to 99%.

KCbots

KCbots is another Indian 3D printing company that is making extremely user friendly and powerful printers based on the knowledge and experience of its founder Karan Chaphekar. The company was founded on the base of this knowledge. The company believes that the best 3D printer is a one that is reliable as well as consistent. The name of the 3D printer is named Gbot 3D creator. The printer has been made especially for the Indian market. The company also offer support for customers via key support and training resources.

Think3D

Think3D is another major startup in 3D printing space in India. think3D works with the mission “3D Printing For Everyone”. The company works on a multi-pronged strategy. (a) 3D Printer & Filament Sales (b) 3D Print On Demand (c) 3D Design Store (d) Training & Workshops. The company also covers latest happenings on 3D printing across the world. Partnered with various 3D printer manufacturers across the world and thus offer reseller services for those manufacturers.



Source: cloudfront.net

TRENDS

- Indian market is sensitive towards prices of 3D printer technology. Most of the established industries follow conventional approach of modeling through CNC machines on the flipside large format 3D printers are expensive and cost almost same as that of conventional machines, which raises reluctance among industrial consumers to opt for 3D printing. 3D printing market is still on evolving stage and yet to witness major transformation such as compatibility for mass production, easier designs capabilities, and manufacturing of large format objects.
- Utilisation of 3D printers on commercial scale is yet to develop on large scale due to expensive nature, lack of awareness, and scalability of machines. These aforementioned reasons inhibit market growth in India.
- The applications of 3D printing have been identified in the field of electronics, automotive, medical, architectural, aerospace, educational, industrial, and others. The predominantly used technologies in the market are selective laser sintering, stereo lithography, fused deposition modelling, and polyjet. As of 2013, electronics application leads the market (volume share of 24.1%) followed by automotive (21.2%), medical (15%), industrial (13.8%), aerospace (10.8%), architectural (5.2%), and educational (3.0%). India 3D printer market revenue is projected to reach \$46 million by the year 2019.
- Indian market for 3D printers have more potential in commercial segment including healthcare sector, architecture, educational, art & craft, and other 3D printing service provider companies. Special purpose applications, extent of customisation, use in organ replacement, customised footwear designs, interior decoration, furniture modelling, educational models, fashion & apparels, animation & gaming, and chocolate and drug printing are some of the niche applications of 3D printers in Indian market.

OPPORTUNITIES

Although 3D printers can be used in various sectors ranging from manufacturing, automotive, industrial to furniture designing, interior decoration, educational models or medicine printing some examples could be given of these applications in the major sectors.

- **Automotive Sector** – Prototyping new designs, Manufacturing spare parts and Tools.
 - E.g.: Honda Access use 3D printing for mass customization of wheel bespoke finishes.
- **Manufacturing Sector** – Prototyping product designs, low volume production, Mass customization, Virtual Inventory.
 - E.g.: Ford is using 3D printer for printing moulds for prototype Engine testing.
- **Medical Sector** – Creating patient specific models from CT and MRI scans, ear moulds, dental parts, printed prostheses, medical devices, among others.
 - E.g.: Doctors are using 3D Printed models for virtual operation planning.
- **Education Sector** – Practical Hands-on approach, print small models of animals, historical artefacts, organ parts, robots, scientific models.
 - E.g.: Students have used 3D printing technology in their projects and have successfully built cars, robots.
- **Electronics Sector** – Micro and Nano printing, printing special purpose and regular circuit boards.

3D printers are used by architects to create **design models** which can visualize and approved in a quick manner.

Use for on-demand **high-precision jewellery printing**, thus enabling quicker delivery.

These are just some of the many applications which are made easy by use of 3D Printing. They represent potential clients for companies who provide 3D printing services.

CHALLENGES

The technologies are extremely capital intensive and so are the materials which are higher than the prices prevalent outside India as everything is imported from the developed countries.

A lot of design participants/entities (especially small scale & medium scale) still do not believe in prototyping as an investment but see it as a costly expenditure.

Only if materials could be engineered and locally produced, the cost could come down drastically directly resulting in a healthy demand and supply.

The size of 3D printing equipment restricts a lot of products from being made at one go.

A lack of in-depth knowledge about this 3D printing technology makes companies who opt for prototyping, finally either doing away with it entirely or finding another alternative. A common occurrence is including in their budget, the prices of items and materials as mentioned in the newspapers which many a time publish prices of only low-cost equipments and machines as compared to industrial grade equipments which are a lot more expensive. This makes them postpone their need entirely ignoring the cost-benefit ratio, which if taken into consideration would go a long way in companies including 3D printing in their design, research and even manufacturing cycles.

Not many understand the various 3D printing technologies available today and most of the service bureaus do not provide design-prototyping-manufacturing assistance which largely reduces the reach of 3D printing.

Consumers and companies spent more than \$600 million on 3-D printer-related products in 2014. Given the huge opportunities that exist in the market and the rapid consolidation that is taking place, it is certain that 3D printing will be adopted a lot more across industries. Added to this is the fact that start-ups and entrepreneurs in India are seeing immense potential and benefits in 3D printing technologies. It is only a matter of time before a compact and low-cost 3D printer comes out of India that will become a must-buy during Diwali for Indian households in the near future.



Source: Photobucket

3.6. BUILDING MATERIAL AND CONSTRUCTION TECHNOLOGY

Construction Industry in India is the second largest after agriculture. It accounts for about 11 % of India as GDP and contributes to the national economy also by providing employment to large number of people.

Growth drivers are consequently in general the estimated urban housing shortage of 18.8 Million dwelling units and in the rural India the shortage is estimated at 47.4 Million units in 2012. Concerning the Infrastructure in India, the present level is inadequate to meet the demand of the existing urban population. Therefore, a re-generation of urban areas in existing cities and the creation of new, inclusive smart cities are needed due to an increasing population and migration from rural to urban areas. Those future cities require smart real estate and urban infrastructure. Further also the Government pushes the growth by launching a new urban development mission to help develop 500 cities, which include cities with more than 100,000 and some cities of religious and tourist importance. The mission includes the support of use of private capital and expertise through Public Private Partnerships (PPPs), to bolster their infrastructure and services in the next 10 years.

Construction Industry in India is highly fragmented. There are number of unorganized players which work on the subcontracting basis and the profitability of the construction projects varies across different segments. There are mainly three segments in the construction industry in India like Real Estate Construction which includes residential and commercial construction, Infrastructure Building which includes roads, railway and Industrial Construction that consists of oil and gas refineries, pipelines, and textiles and so on. The growth in the construction industry will have a direct impact on the construction equipment industry.

MARKET SIZE AND CHARACTERIZATION

India needs Rs 31 trillion (US\$ 454.83 billion) to be spent on infrastructure development over the next five years, with 70 per cent of funds needed for power, roads and urban infrastructure segments.

The Indian power sector itself has an investment potential of US\$ 250 billion in the next 4-5 years, providing immense opportunities in power generation, distribution, transmission and equipment, according to Mr Piyush Goyal, Union Minister of Coal, Power and Renewable Energy.

India's core sector growth rose 3.4 per cent in January 2017, on the back of robust natural gas and steel output, which recorded a year-on-year growth of 11.9 per cent and 11.4 per cent respectively, according to data from the Ministry of Commerce & Industry.

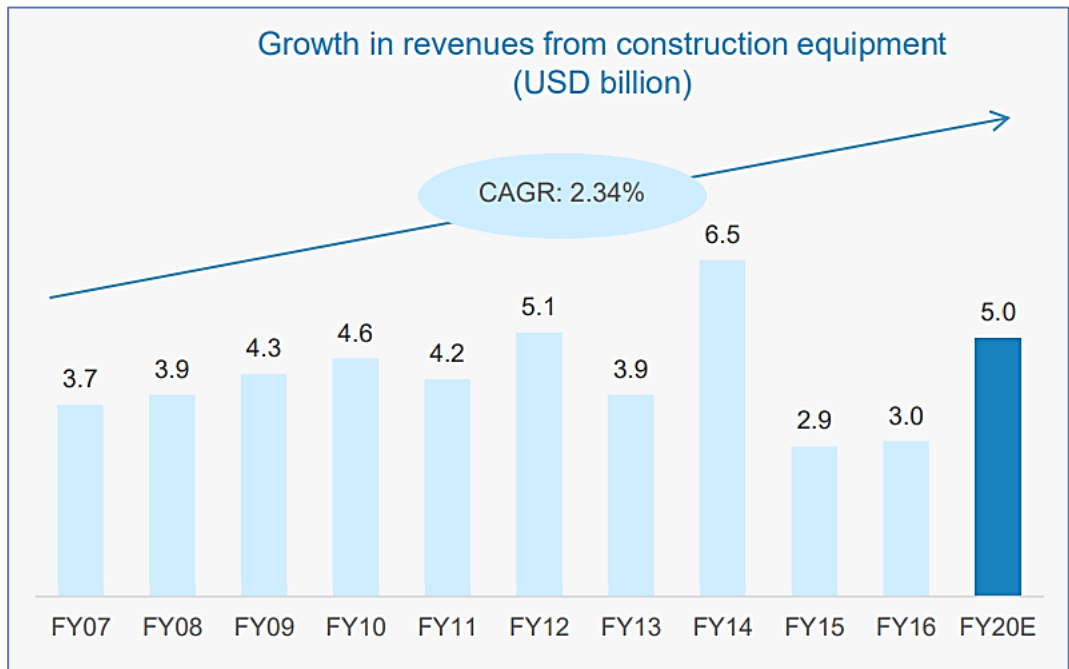


FIGURE 67: INDIAN CONSTRUCTION EQUIPMENT REVENUES, INDIA

Source: Ibef, 2017

- By FY20, construction equipment industry's revenue is estimated to reach to USD5 billion;
- In FY16, India construction equipment industry grew at a Y-o-Y of around 3.45 per cent over the previous year.

The Indian construction equipment industry's revenues are estimated to reach US\$ 22.7 billion by 2020.

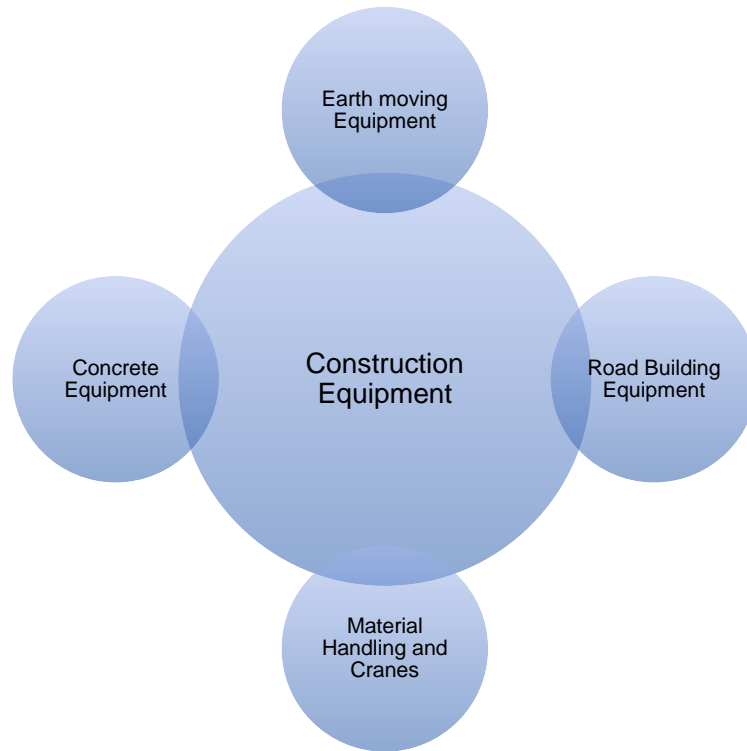


FIGURE 68: MAJOR SEGMENTS OF CONSTRUCTION EQUIPMENT INDUSTRY

Source: Ibef, 2017

- **Earth moving Equipment:** Earth-moving equipment is the largest segment of the construction equipment sector in India; this equipment primarily finds use in mining & construction. Equipment includes backhoe loaders, excavators, wheeled loaders, dumpers/tippers, skid steer loaders.
- **Material handling:** Material handling equipment has 4 categories: storage & handling equipment, engineered systems, industrial trucks & bulk material handling. There are 50 units in the organized sector for the manufacture of material handling equipment and many units in the small-scale sector as well.
- **Concrete Equipment:** Concrete equipment are used to mix & transport concrete. They include equipment such as concrete pumps, aggregate crushers, transit mixers, asphalt pavers, batching plants.
- **Road Building Equipment:** Road building equipment is used in the various stages of road construction. Widely used ones are excavators, diggers, loaders, scrapers, bulldozers etc.

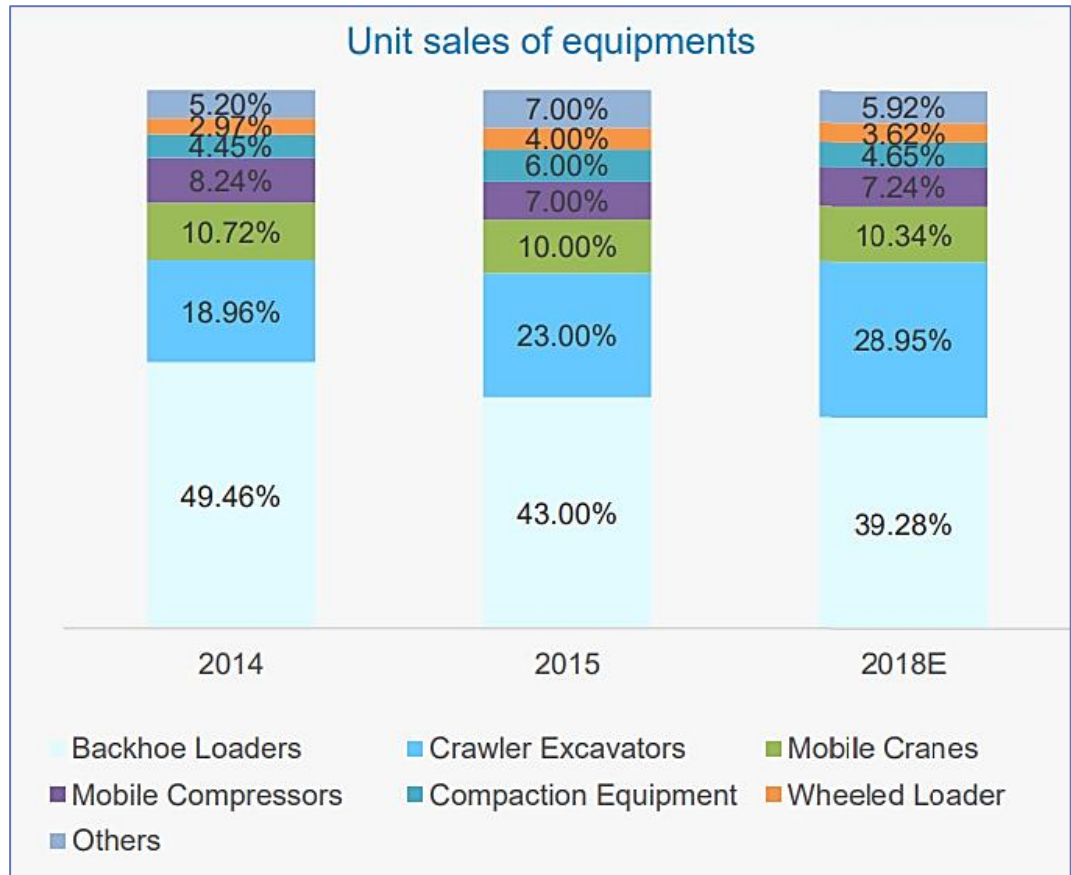


FIGURE 69: UNIT SALES OF EQUIPMENT, INDIA

Source: Ibef, 2017

- By 2016, backhoe loaders & crawlers are estimated to reach 70 per cent of the total construction equipment; crawler excavators is anticipated to grow from 2 per cent in 2015 to 35 per cent in 2016
- Crawler excavators is expected to be the fastest growing segment by 2018, mainly on demand for mid-sized crawlers (20T) from the construction segment their versatile usage
- Backhoe loaders & crawlers excavators are expected to account for over 68.23 per cent of total sales by 2018
- Others consists of Asphalt Finishers, Crawler Dozers, Mini Excavators, Rigid Dump Trucks, etc.



FIGURE 70: INFRASTRUCTURES CLUSTERS, INDIA

Source: Ibef, 2017

<p>High revenues and unit sales</p>	<ul style="list-style-type: none"> • Construction equipment industry in India is expected to reach USD5 billion by FY20 from USD3 billion in FY16, in value terms. While, volume sale of construction equipment is expected to grow to 96,730 units by 2018 from 76,000 units in FY16.
<p>Rising infrastructure investments</p>	<ul style="list-style-type: none"> • The NITI Aayog estimates total infrastructure spending to be about 9 per cent of GDP by 2017, up from 7.2 per cent during the 11th Five year plan (2007–12).
<p>Increasing private sector involvement</p>	<ul style="list-style-type: none"> • Private sector is emerging as a key player across various infrastructure segments, ranging from roads & communications to power and airports.
<p>Growth in real estate sector</p>	<ul style="list-style-type: none"> • The real estate market is estimated to grow to USD180 billion by 2020 from USD126 billion in 2015, driven by demand mainly from residential sector.
<p>Construction equipment analysis</p>	<ul style="list-style-type: none"> • Construction equipment forms around 7 per cent to 8 per cent of GDP & expected to give employment to more than 3.0 million people in the country by 2020. It also accounts for more than 60 per cent in total infrastructural investment.

TABLE 5: SECTOR GROWTH

Source: KPMG, FICCI, Corporate Catalyst India Pvt Ltd, Indian Construction Equipment Manufacturers' Association (ICEMA), TechSci Research

INVESTMENTS

India is witnessing significant interest from international investors in the infrastructure space. Many Spanish companies are keen on collaborating with India on infrastructure, high speed trains, renewable energy and developing smart cities.

Some key investments in the sector are listed below:

- Abertis Infraestructuras SA, a Spanish infrastructure firm, has agreed to buy two toll road assets in operation in South India from Macquarie Group for Rs 1,000 crore (US\$ 151 million) to scale up its presence in India.
- GVK Power & Infrastructure Ltd won the bid to develop Mumbai's second airport in Navi Mumbai for Rs 16,000 crore (US\$ 2.39 billion).
- UAE-based Gamma Group, outlined plans of investing around Rs 3,000 crore (US\$ 453 million) in the infrastructure, health and education sectors of Kerala.
- skyTran Inc., a NASA technology partner specialising in developing pod car systems for urban transport, plans to build a one-kilometre pilot track in India at its own cost as per the requirement of the government, which has shortlisted skyTran as one of the three companies chosen to build pod cars on trial basis.
- Infrastructure Leasing and Financial Services Ltd (IL&FS) and global private equity (PE) firm Lone Star plan to jointly invest US\$ 550 million in stressed infrastructure projects in India.
- Silver Spring Capital Management, a Hong Kong-based equity hedge fund, plans to invest over Rs 2,000 crore (US\$ 306 million) in Hyderabad-based infrastructure developer Transstroy India Ltd, for construction of highways in the country.
- Altico Capital, the non-banking finance company (NBFC) of Clearwater Capital Partners LLC, plans to invest around US\$150 million in the commercial office properties and infrastructure sector over the next 12-18 months.

- Sovereign wealth funds and global pension funds plan to invest up to US\$ 50 billion in Indian infrastructure sector over the next five years.
- The Asian Development Bank (ADB) and Government of India signed a loan agreement of US\$ 80 million, which is the third tranche of a US\$ 200 million financing facility under the North Eastern Region Capital Cities Development Investment Programme, and will be invested for improving water supply, solid waste management and sanitation in the cities of Agartala and Aizwal, the capital cities of Tripura and Mizoram respectively.
- Private equity giant Carlyle Group is planning to invest Rs 500 crore (US\$ 73.36 million) in Feedback Infra, which could make the US firm a major shareholder in the Gurgaon-based infrastructure services company.
- PTC India Financial Services (PFS) and India Infrastructure Finance Company Limited (IIFCL) have signed a Memorandum of Understanding (MoU) to jointly provide funding for infrastructure projects in India, particularly in the energy sector.
- France has announced a commitment of € 2 billion (US\$ 2.17 billion) to convert Chandigarh, Nagpur and Puducherry into smart cities.
- The Construction Industry Development Board (CIDB) of Malaysia has proposed to invest US\$ 30 billion in urban development and housing projects in India, such as a mini-smart city adjacent to New Delhi Railway Station, a green city project at Garhmukhteshwar in Uttar Pradesh and the Ganga cleaning projects.

“Our stake in IDFC underlines our interest in the fast growing infrastructure sector in India and allows us to participate through an investment in the largest infrastructure finance company in India...”

Robert Morrice

Chairman & CEO, Barclays Asia-Pacific

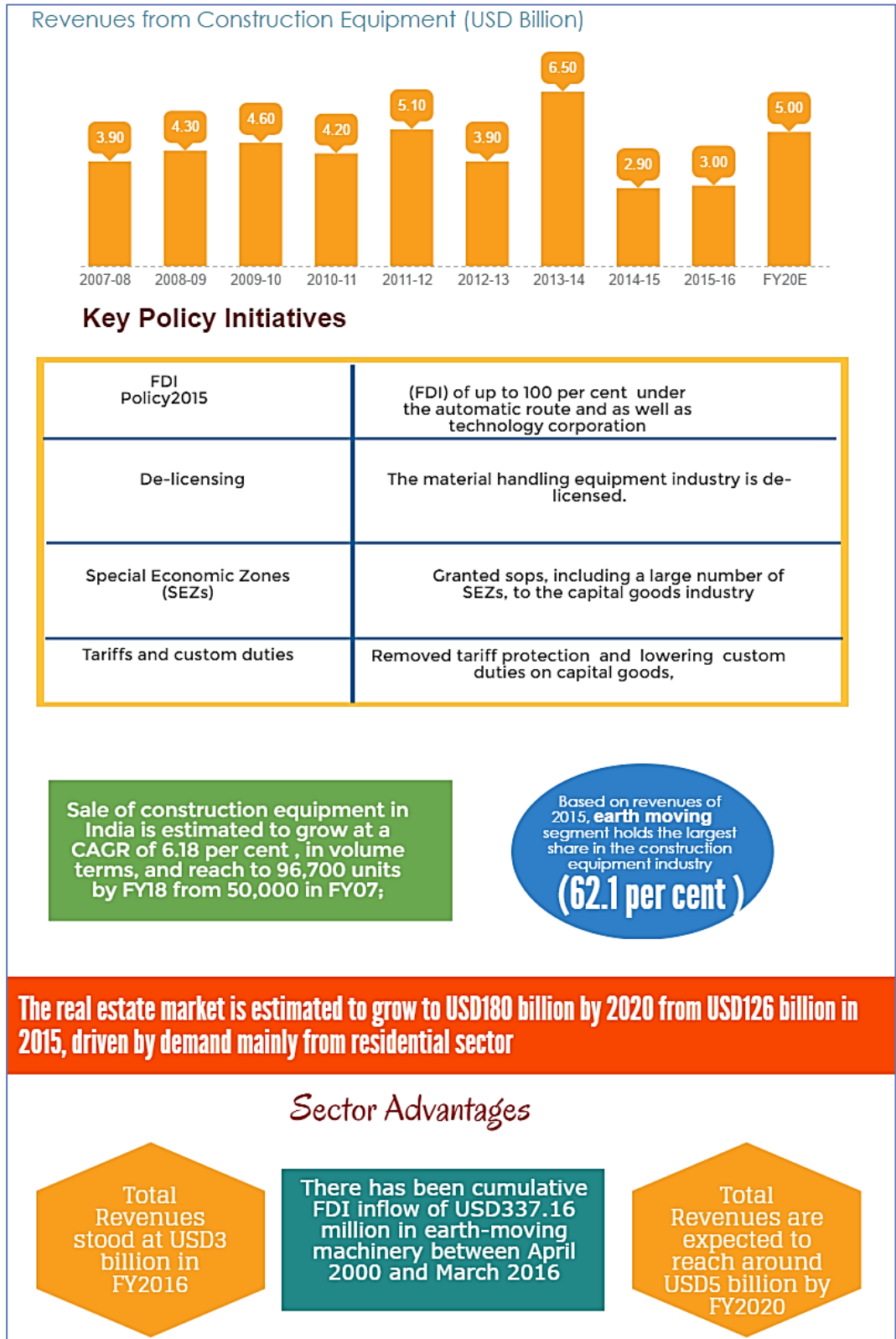


FIGURE 71: REVENUES FROM CONSTRUCTION EQUIPMENT (USD BILLION)

Source: Ibef, 2017

TRENDS IN CONSTRUCTION EQUIPMENT INDUSTRY

Increasing Imports from China

- Chinese equipment manufacturers have a strong presence in some segments such as wheel loaders, dozers, due to which imports from China increased in FY16.
- Chinese equipment tends to be price competitive, thereby putting downward pressure on prices of domestic equipment manufacturers.

Rising Private Sector Share

- 12th Five-Year Plan includes plans for investment of USD1 trillion, out of which the share of private sector is estimated to be 47 per cent, up from 25 per cent during the 10th Five-Year Plan;
- In April 2017, Capacit'e Infraprojects Ltd, a Mumbai-based construction company, filed its draft prospectus with the market regulator for an initial public offering (IPO) to raise up to US\$59.5 million.

Rapidly Growing Excavator Segment

- The share of crawler excavators is estimated to increase to 35 per cent in 2016 from the 23 per cent in 2015, mainly on demand for mid-sized crawlers (20 tonnes) from the construction segment
- As a part of Make in India Initiative, Kobelco Construction Equipment India Pvt. Ltd introduced Made-in-India Excavator model (SK140HDLC) in 2015, suitable for common applications related to construction sector. The product ensures best of machine productivity & return on investments.
- In March 2017, Volvo Construction Equipment completed the 1st edition of Operator's Championship. The event lays great emphasis on training & improvement in skills among construction equipment drivers & operators, for ensuring better productivity & efficiency.
- In April 2017, Kobelco, a Japan-based construction equipment producer, launched new excavators in the 20-24 tonnes segment in India.

KEY PLAYERS







	Company	Revenue in USD million	Products
	JCB India Ltd	845.6 (FY16)	Backhoe Loaders, Wheel Loaders, Tracked Excavators, Compactors, Skid Steer Loaders, Telehandler, Generators, Super Loaders
	BEML Ltd	468.65 (FY16)	Crawler dozers, wheel dozers, excavators, dump trucks, loaders, backhoe loaders, pipe layers, walking draglines, rope shovels & sprinklers
	McNally Bharat Engineering Co Ltd	402.38 (FY16)	Crushing, screening & milling equipment, pressure vessels, material-handling equipment, steel plant equipment
	Greaves Cotton Ltd	247.02 (FY16)	Transit mixers, concrete pumps, heavy tandem rollers, soil compactors
	L&T	15,678.58 (FY16)	Hydraulic excavators, components & hydraulic systems
	Elecon Engineering Co Ltd	194 (FY16)	Elevators, conveyors, moving machines, gears & crushers

FIGURE 72: CONSTRUCTION EQUIPMENT, KEY PLAYERS (INDIA)

Source: Ibef, 2017

STRATEGIES



FIGURE 73: INDIAN STRATEGIES ADOPTED IN CONSTRUCTION INDUSTRY

Source: Ibef, 2017

Technical tie up with foreign partners

- In order to move up the value chain and become a one-stop shop, companies form JVs with international players for technology transfer
- In February 2016, Russia's Uralmash, decided to form a joint venture with India's SRB International to manufacture heavy equipments in the country, with 50:50 partnership
- BEML had a technical tie-up with Vosta to enter into dredging

Modernizing products suiting changing customer trends

- Companies today emphasize on mechanization to suit the needs of changing Indian mining industry
- Oil and coal companies are demanding larger-sized mining machinery with larger capacity so as to increase output by enhancing recovery rates

Provision of after-sales services

- Most equipment's manufactured in India undergo considerable wear and tear; thus, maintenance of machinery becomes necessary after a period of time
- Companies are looking forward to increase their backup of trained technical professionals to cater to maintenance demand in addition to focusing on human resource development, to create a motivated sales and service force
- For instance, Providing on-site training and spare stock of consumables to customers

Research & Development

- Companies are stepping up their R&D spending to manufacture equipment without foreign assistance
- Other aspects include quality control, enhancing power-to-load ratio, reducing operating costs and use of better materials
- Britain's University of Warwick has been working with partners JCB & Pektron PLC for developing a technology that would ensure improved engine operation thereby, optimizing the fuel economy of vehicles

Acquisition & Integrated Facility

- In April 2017, Manitou Group finalized the acquisition of Terex Equipment Pvt. Ltd. (TEPL), a company based in Greater Noida. It will help Manitou Group to handle as well as expand in the Indian market
- In February 2015, Allahabad gets its 1st integrated facility for JCB Equipment
- Adoption of these strategies has seen growth which also includes infusion of several other factors too. Business should be expanded considering these strategies in mind.

GROWTH DRIVERS

- Investment in infrastructure is the main growth driver of the construction equipment industry. The NITI Aayog estimates total infrastructure spending to be about of 9 per cent of GDP during the 12th Five Year Plan (2012-17), up from 7.2 per cent during the previous plan (2007-12);
- India's investment in infrastructure is estimated to double to about USD1 trillion during the 12th Five Year Plan (2012-17) compared to the previous Five Year Plan;
Of total investment of USD1 trillion during the 12th Five-Year Plan, over 20 per cent each is estimated to have been allocated for roads & power sub-segments;
- India has the world's 2nd largest road network – spanning 4.7 million kms. The Government intends to increase the paved road to total road ratio & build more national highways;
- China submitted a 5 year trade & cooperation plan to India offering its willingness to finance 30 per cent of government's USD1 trillion investment target.

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Big firms have intense competitive rivalry, as all major world players operate in India • Competition is deep as companies fight with each other on the quoted price to win a contract amid high price sensitivity • Low switching costs from buyers increase competition 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • Threat is low due to the capital-intensive nature of the industry • High maintenance and distribution costs are other barriers 	<ul style="list-style-type: none"> • Threat is very low as there is no substitute in this sector • Same players are required even for maintenance and up-gradation of existing machines
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Bargaining power of suppliers is low due to high price sensitivity and very low switching costs for buyers 	<ul style="list-style-type: none"> • Power is high as few construction and mining companies do majority of bulk buying, which gives them an edge

FIGURE 74: PORTER'S FIVE FORCES ANALYSIS

OPPORTUNITIES

Indian port sector is poised to mark great progress in the years to come. It is forecasted that by the end of 2017 port traffic will amount to 943.06 MT for India's major ports and 815.20 MT for its minor ports.

Along with that, Indian aviation market is expected to become the third largest across the globe by 2020, according to industry estimates. The sector is projected to handle 336 million domestic and 85 million international passengers with projected investment to the tune of US\$ 120 billion. Indian Aviation Industry,

which currently accounts for 1.5 per cent of the gross domestic product (GDP), has been instrumental in the overall economic development of the country. Given the huge gap between potential and current air travel penetration in India, the prospects and possibilities of growth of Indian aviation market are enormous.

The Ambassador of Japan to India has stated that the Government of Japan is interested in urban development initiatives of the Government of India and has decided to be associated with development of cities like Chennai, Ahmedabad and Varanasi as smart cities in the country.

CHALLENGES FACED IN CONSTRUCTION EQUIPMENT INDUSTRY

Lack of qualified workers: The supply is not at par with the heavy demand for construction gear for numerous tasks. The availability of trained manpower, skilled operators and workers to operate heavy machinery is a big challenge in this sector

Less renting options: Renting Equipment is a suitable option for a large number of businesses to reduce heavy investments by saving on the high costs of equipment. However, renting options are limited in terms of getting right in good condition at right time & right place.

Market fluctuations: There is no consistency in the demand owing to the fluctuations in the market thereby making capacity planning challenging for the equipment suppliers.



Source: businessfirstfamily.com

3.7. DEFENCE AND AERONAUTICS INDUSTRY IN INDIA

India imports most of its civil and defence aircraft. The only aircraft manufacturer of note is the state-owned Hindustan Aeronautics Ltd. Over the past decade, the Tata group and the Mahindra group have gradually built a presence in the aerospace sector and have insinuated themselves into the global supply chain.

According with PricewaterhouseCoopers India, propelled by an increase in defence spending and a growing commercial aviation market the Indian aerospace industry has become one of the fastestgrowing aerospace markets in the world. The rapid growth of this industry has attracted major global aerospace companies to India and has incentivised domestic aerospace players to increase and deepen operations.

“The Indian aerospace industry is one of the fastest growing aerospace markets in the world due to an increase in defence spending, growing commercial aviation market, rising technological expertise and high levels of technical expertise and knowledge.”

PricewaterhouseCoopers India, 2010

MARKET SIZE AND CHARACTERIZATION

With a base in Hyderabad, Tata is making defence aircrafts like, Pilatus PC-12, Dornier 228, the main tail and fuselage parts of the Lockheed Martin C-130J Super Hercules turboprop military transport aircraft, and Sirkosky helicopter cabins. With a base in Hyderabad, Tata is making Pilatus PC-12, Dornier 228, the main tail and fuselage parts of the Lockheed Martin C-130J Super Hercules turboprop military transport aircraft, and Sirkosky helicopter cabins. Tata makes two empennages (tail assembly) for the Lockheed Martin C-130 a month right now and plans to take this up to four a month when sought by the manufacturer.

By the end of 2015, Tata became the sole supplier to Lockheed Martin for this empennage. Matching global quality standards is key, “otherwise global manufacturers won’t buy from us”, Sukaran Singh, managing director and chief executive officer of Tata Advanced Systems (TASL).

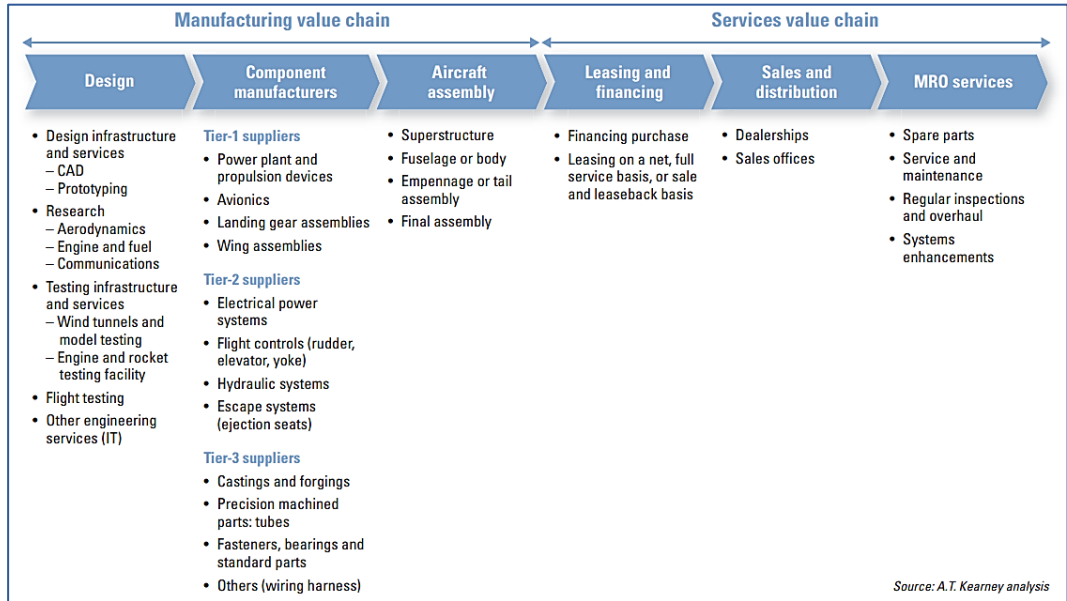


FIGURE 75: AVIATION VALUE CHAIN, INDIA

Source: A. T. Kearney Analysis

INDIA AS A MANUFACTURING AND MRO DESTINATION

India has a strong aerospace industry supported by qualified engineering, science and IT graduates, the availability of parts and components, robust manufacturing expertise, production systems, leading academic institutions, a supportive R&D environment, etc. Many aerospace companies are looking to India as a manufacturing and MRO destination.

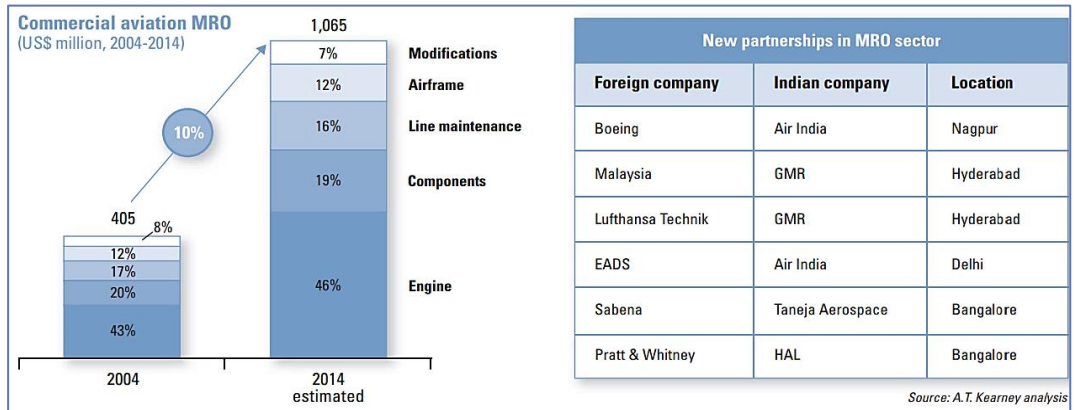


FIGURE 76: GROWTH IN AVIATION MRO SECTOR

Source: A. T. Kearney Analysis

MAIN PLAYERS

Company	Alliance partner	Segment	Nature of alliance
TATA	Boeing	Defense aircraft components	<ul style="list-style-type: none"> Signed memorandum of understanding (MOU) , February 2008 Initial orders of \$500 million Planned production in Nagpur SEZ*
	Sikorsky	Chopper cabin manufacturing	<ul style="list-style-type: none"> Signed MOU (February 2008) Tata Advanced Systems (TAS) to manufacture S-92 helicopter cabins in India
	Piaggio Aero	Aircraft manufacturing	<ul style="list-style-type: none"> Purchased 33 percent stake (August 2008) Tata to market turboprops in India Taj Air establishes service center in India
Kingfisher Airlines	Epic	Aircraft manufacturing	<ul style="list-style-type: none"> Purchased 50 percent stake (December 2007) Company builds small business jets Plans to market aircraft in Middle East
	EADS Socata	Aircraft manufacturing	<ul style="list-style-type: none"> Initiated discussions (June 2008) Company plans to co-develop business jets Planned investment of \$200 million
Lufthansa Technik	Boeing EADS Socata	Aerospace component manufacturing	<ul style="list-style-type: none"> Established MOUs (August 2007) Boeing, EADS to source components Planned investment of \$104 million in setting up facility
Mahindra	Plexion	Aerospace design	<ul style="list-style-type: none"> Acquired 88.41 percent stake Company provides computer-aided engineering services to the aerospace sector
	National Aerospace Laboratories (India)	Aircraft manufacturing	<ul style="list-style-type: none"> Initiated running contract to develop jointly a five-seat aircraft

FIGURE 77: INDIAN COMPANIES VENTURES INTO THE AEROSPACE SECTOR

List of Government agencies in aircraft and missile manufacturing industry:

- Defense Research and Development Organization (DRDO);
- National Aerospace Laboratories (NAL);
- Hindustan Aeronautics Limited (HAL);
- Indian Space Research Organization (ISRO).

India is majorly manufacturing structural components (airframe frame) for aircrafts. Reason: structural component manufacturing is more labour-intensive and in India labour cost is low without compromising quality. Added to that, raw material availability and processing is hassle-free in India comparing to China and other developing countries.

OPPORTUNITIES

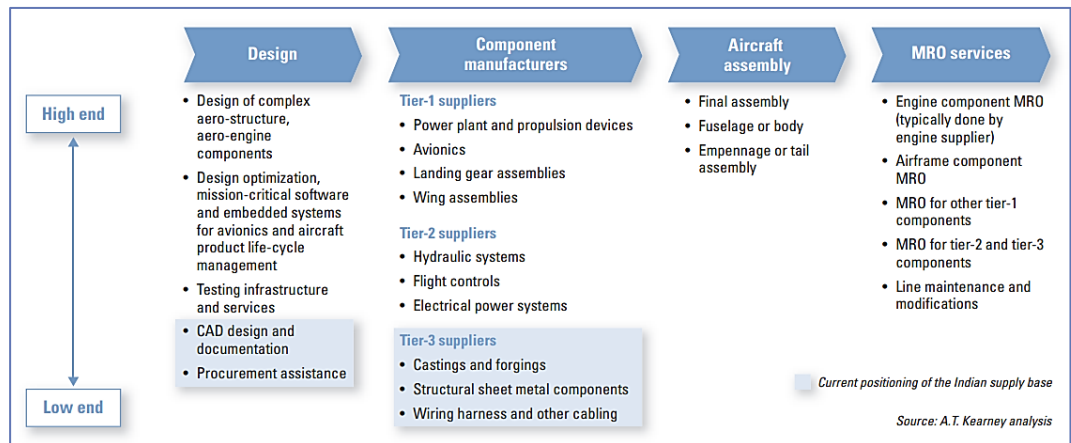


FIGURE 78: OPPORTUNITIES IN INDIAN AEROSPACE

Source: A. T. Kearney Analysis

In India, use of Automation is emerging nowadays. The market is expected to grow at the highest CAGR between 2016 and 2022. The market is expected to grow at the highest CAGR between 2016 and 2022. The main drivers for this growth are the demand for collaborative industrial robots from small- and medium-scale enterprises in China, Japan, South Korea, and India as well as the growing investments in countries such as India to boost manufacturing under projects such as Make in India.

Aircraft are assembled together by manufacturing various parts from different locations, but now their metallic and composite skins are riveted and bonded. And increasingly, those modern-day seamstresses are robots. With their renowned repeatability, and now greater rigidity and accuracy, robots are the lower-cost tools of choice for many aerospace manufacturing operations. Drilling,

fastening, sealing, painting, and composite part production all benefit. Coupled with additive manufacturing and soon, a new rivet-free technology that could transform how aircraft is made, robots are helping to shape the aerospace factory of the future.

Boeing worked closely with KUKA Systems to develop an advanced automated manufacturing process for its wide-body commercial airliners. Called Fuselage Automated Upright Build (FAUB), the robotic production line assembles the forward and aft fuselage sections of the Boeing 777 jetliner. Several aspects of this robotic assembly line make it unique.

KUKA Systems also developed the multifunctional end effector for the robot, which clamps the different material layers that make up the fuselage, and then drills, fills and bucks – all with one end-of-arm tool.

After emerging as India’s answer to US’s Silicon Valley, Bangalore became the aviation hub of Indian aerospace and defence industry. There are around 50+ top players which are located in Bangalore. Added to that, Pune, Hyderabad, Hosur are known for its aviation parks. “Make in India” and many government initiatives attract international aerospace manufactures to India. It is clearly seen that India will have a good demand for aerospace manufacturing equipment and machines.



Source: <http://digital-factory-journal.de>



Source: <http://elevate.com.au>

3.8. FOOD PROCESSING INDUSTRY

Food processing industry has an enormous significance for India's development because of the vital linkages and synergies it promotes between the pillars of its economy, industry and agriculture. Fast growth in the food processing sector and simultaneous improvement in the development of value chain are also of great importance to achieve favourable terms of trade for Indian agriculture both in the domestic and the international markets.

With a number of fiscal relief and incentives to encourage commercialisation and value addition, Government of India has accorded 'high priority' status to the food processing industry. Food processing is recognised as the priority sector in the National Manufacturing Policy (2011). The Ministry of Food Processing Industries (MOFPI) has been set up as a nodal agency for formulation and implementation of the policies and plans for the food processing industries. With an overall objective of positioning India as the 'Food Basket' to the world, several initiatives have been undertaken with the objective of promoting investments, innovation and bringing best practices. This vision is in line with the 'Make in India' initiative of the Government.

MARKET SIZE AND CHARACTERIZATION

India, as a large producer and consumer of food is likely to have an overwhelming impact on world demand and supply of food products in the future, according to the estimates provided by the Food and Agriculture Organisation (FAO) in 2012. With its vast production base, India has the potential to become one of the largest food suppliers to the world and at the same time serve its own vast population (MOFPI 2014).

Registering a growth of around 20 percent per annum, the total value of the Indian food processing industry is expected to touch US\$ 194 bn in 2015 from the earlier value of US\$ 121 bn in 2012.

Food and grocery constitute a substantial part of India’s consumption basket accounting for around 31 percent share in the total. In contrast, consumers in other countries spend a much lower proportion of their income on food and grocery—9 percent in the United States (US), 17 percent in Brazil and 25 percent in China. Food and grocery is the largest segment in India’s retail sector, with a share of more than 60 percent in India’s total retail market in 2014.

While there are tremendous opportunities on the demand side, India also has a strong supply base for the food and grocery industry. India is the world’s second largest producer of food after China. The arable land area of 159.7 mn hectares (394.6 mn acres) is the second largest in the world (after the US). India has a strong raw material base for the food processing industry. India is one of the largest producers of certain fruits, vegetables, pulses, cereals and dairy products such as mangoes, papaya, potatoes, onions, ginger, chick peas, rice, wheat, groundnuts, milk and eggs among others. Over time, there has been a continuous increase in the production of food processing industry. The total value addition of the food processing sector as a share of GDP manufacturing was 9.8 percent in 2013-14.



Source: <http://cdn.foodnewsinternational.com>

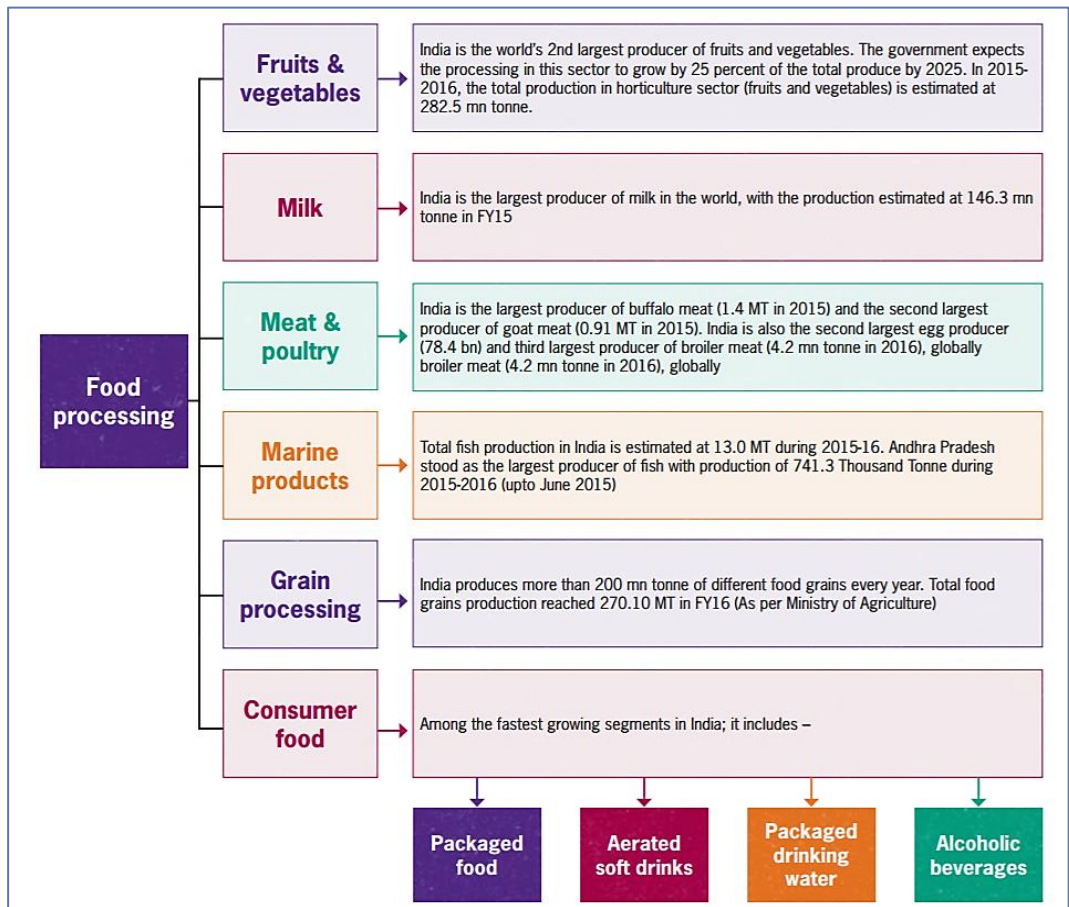


FIGURE 79: FOOD INDUSTRY COMPOSITION

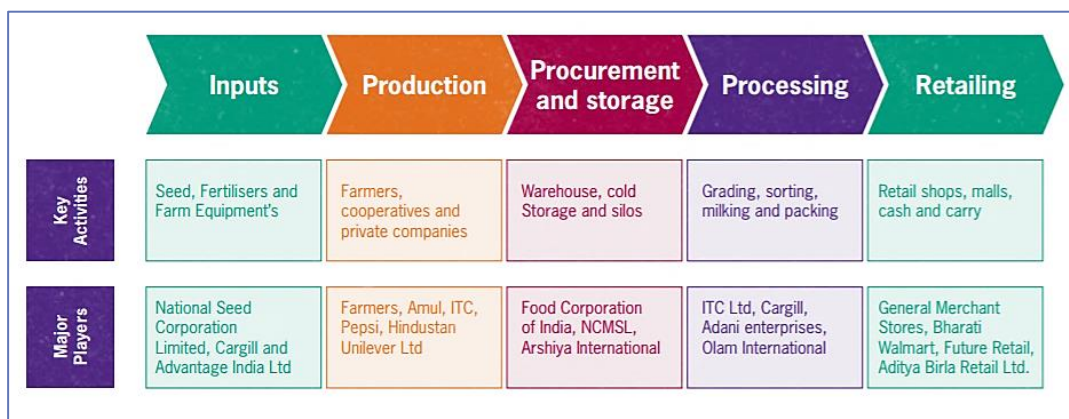


FIGURE 80: VALUE CHAIN IN FOOD PROCESSING SECTOR AND KEY PLAYERS

INVESTMENTS

According to the data provided by the Department of Industrial Policies and Promotion (DIPP), the food processing sector in India has received around US\$ 7.47 billion worth of Foreign Direct Investment (FDI) during the period April 2000-December 2016. The Confederation of Indian Industry (CII) estimates that the food processing sectors have the potential to attract as much as US\$ 33 billion of investment over the next 10 years and also to generate employment of nine million person-days.

Some of the major investments in this sector in the recent past are:

- US-based food company Cargill Inc, aims to double its branded consumer business in India by 2020, by doubling its retail reach to about 800,000 outlets and increase market share to become national leader in the sunflower oil category which will help the company be among the top three leading brands in India.
- Mad Over Donuts (MoD), outlined plans of expanding its operations in India by opening nine new MOD stores by March 2017.
- Danone SA plans to focus on nutrition business in India, its fastest growing market in South Asia, by launching 10 new products in 2017, and aiming to double its revenue in India by 2020.
- Uber Technologies Inc plans to launch UberEATS, its food delivery service to India, with investments made across multiple cities and regions.
- Di Bella, the Australia-based coffee chain, plans to invest Rs 67 crore (US\$ 10 million) for setting up around 20 new outlets in Mumbai, besides entering Delhi and Bangalore by 2017.
- KKR & Co LP, the US-based private equity firm, plans to invest about Rs 520 crore (US\$ 77.38 million) in dairy company Kwalitiy Ltd, which will be used to strengthen its milk procurement infrastructure and increase processing capacity.
- Henry Ford Health Systems (HFHS), a US-based health and wellness group, plans to enter India by signing a franchise partnership with Chandigarh-based hospitality and food services firm KWalls Hospitality, and set up 'Culinary Wellness' branded stores across the country.

- Mondelez International, the US-based confectionery, food, and beverage major, inaugurated its new manufacturing plant in Andhra Pradesh set up for Rs 1,265 crore (US\$ 190 million), with an annual production capacity of 250,000 tonnes.
- PureCircle, a Malaysia-based natural sweetener producer, plans to invest around Rs 1,300 crore (US\$ 200 million) in India to set up a manufacturing plant and make the country its regional production and export hub in the next five years.
- Swiggy, a food delivery start-up owned by Bundl Technologies Private Limited, has raised Rs 230.34 crore (US\$ 33.80 million) in a Series C funding round, with its existing investors SAIF Partners, Accel Partners, Norwest Venture Partners and Apoletto Asia Ltd contributing 79 per cent of the new funds raised.
- Gujarat Cooperative Milk Marketing Federation (GCMMF), popularly known as 'Amul', plans to invest Rs 5,000 crore (US\$ 733.6 million) to establish ten new processing plants as well as expand the current capacity to touch 32 million litres per day (MLPD) capacity by 2020.
- Private Equity (PE) firm India Value Fund Advisors (IVFA) plans to invest around US\$ 100-150 million in the food business in India over the next two years.
- Zomato, a restaurant search and discovery platform, has raised US\$ 60 million from Singapore government-owned investment company Temasek, along with existing investor Vy Capital, in order to explore new business verticals.
- ITC Limited plans to invest Rs 800 crore (US\$ 117.4 million) to set up a world-class food processing facility in Medak, a district located in Telangana. The company has also formulated plans to enter the dairy market.

TRENDS

Changing Profile and Tastes of the Consumer

Rapid urbanization, increase in the number of nuclear families, increase in the number of working women, less time devoted in the household have changed a lot of habits of the Indian families. Increased literacy and rising per capita income have induced the customers to increase their spend on value added food, which has a higher shelf life, packs greater nutritive value and takes less time to cook. This has led to change in consumer tastes and preferences towards processed food.

Product Innovation

Companies are offering a wider range of products to the consumers as a result of their investments into product innovation, research and development. They are moving up the value chain, e.g. cooperatives are transitioning from being pure producers of milk to offering a wide range of dairy products such as flavoured yogurts, ice creams, etc.

New entrants are trying to entice the markets and capture market share by offering new flavours and localized versions of international products such as chips made in Indian flavours and from Indian spices.

Increased Spending on Healthy and Nutritional Foods

The changing lifestyle and working habits of the younger India has led to a rise in lifestyle diseases such as diabetes, blood pressure, cardiac problems, muscular pains, etc. *With a rise in disposable income levels and increasing awareness, consumers spend on healthy and nutritional food has also gone up.*

Advent of Branded Food and Organized Retail

With a higher disposable income and a higher propensity to spend, the consumers are looking for quality branded food. Organized retail has helped a greater penetration in the rural and tier II markets in India and has improved the shopping experience of the consumers. It has also helped to maintain the shelf life of the packaged food by providing the required infrastructure.

Rising Export Opportunities

The demand of processed food is higher in the developed economies where the pace of life is much faster than that of emerging markets. Moreover, the preference for Indian processed food such as pickles has added to the global demand. India has a greater integration with the global economy and its proximity to key export markets serves as a stronger link between the trading countries.

Better Preservation and Packaging Techniques

With improvement in technology, better preserving and packaging techniques have been developed that not only increase the shelf life but also improve the nutritive value of the processed food. A more conscious consumer is increasingly demanding such processed food as it promises to be more hygienic and nutritive than the raw agricultural produce which has high levels of pesticides, insecticides sprayed upon it.

Industry Composition

The food industry, which is currently valued at US\$ 39.71 bn is expected to grow at a CAGR of 11 percent to US\$ 65.4 bn by 2018. In FY 2015, food processing industry constituted 14 percent to India's GDGP through manufacturing.



Source: foodnavigator.com

EXPORT SCENARIO IN FOOD PROCESSING SECTOR

With globalisation and increasing trade across the borders approximately about 460 mn tons of food valued at US\$ 3 bn is traded annually. India has thus, a great potential for global trade in agricultural and processed food products. The share of food processing exports in total exports was around 12 percent in the last few years. During FY 2011-15, India’s exports of processed food related products have been growing at a CAGR of 23.3 percent.

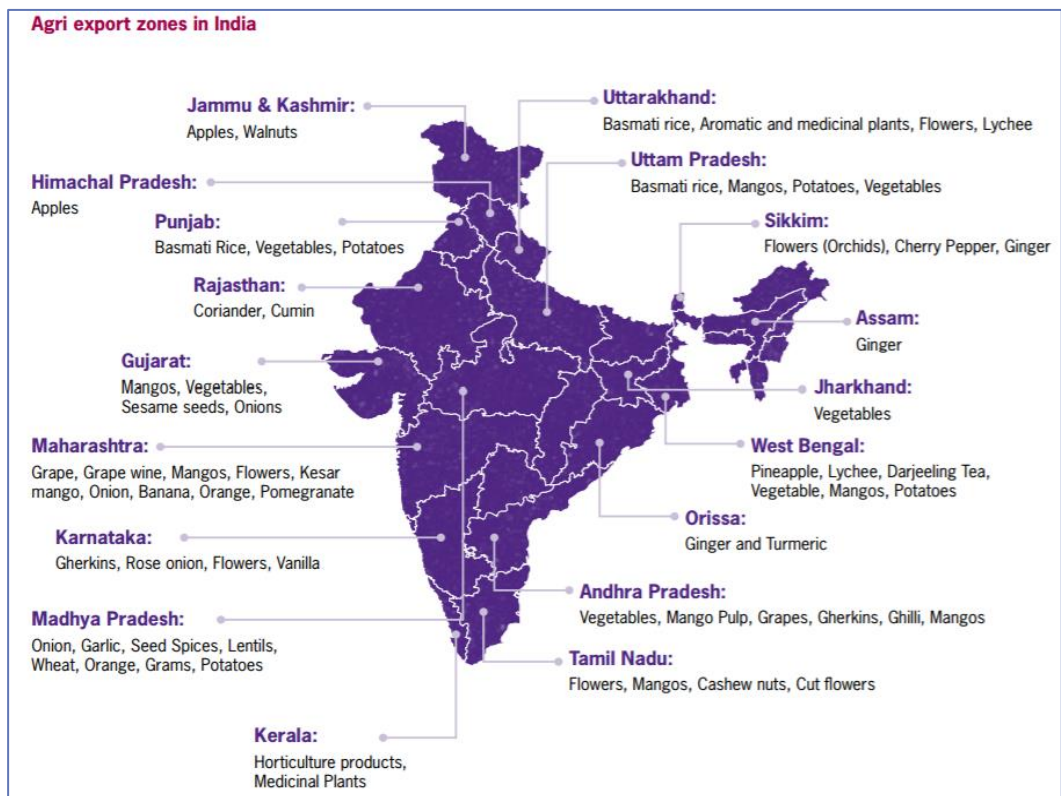


FIGURE 81: EXPORT OF KEY PROCESSED PRODUCTS

THE INDIAN ADVANTAGE

Strong Demand Growth

- Demand for food processed food rising with growing disposable income, urbanisation, young population and nuclear families.
- Household consumption set to double by 2020.
- Changing lifestyle, increasing expenditure on health and nutritional food.

Food Processing HUB

- Indian benefits from large agriculture sector, abundant livestock and cost competitiveness.
- Investment opportunities arise in agriculture, food infrastructure and contract farming.
- Diverse agro-climatic conditions encourage cultivation of different crop.

Increasing Investment

- Govt. has received US\$ 21.9 bn of investment in food processing infrastructure in 2015.
- Investment including FDI would rise with strengthening demand and supply fundamentals.
- Launch of infrastructure development schemes to increase investment in food processing infrastructure.

Policy Support

- Sops to private sector participation; 100% FDI under automatic route. Investment in April 2000- March 2016 stood at US\$ 6.82 bn.
- Promoting rationalisation to tariff and duties relating to food processing sector.
- Setting up of National Mission on Food Processing.
- Foreign Trade Policy 2015-2020.

Government Support***Tax Incentives***

- Entities in infrastructure development for food processing unit are given a tax deduction of 100 percent for the first 5 years & 30 percent for the next 5 years for the calculation of taxable income

- Customs duty on all imported capital goods, raw materials and other inputs is exempted, in addition to excise duty and sales tax on domestic inputs, for all export oriented units
- There is a provision for duty-free import replenishment of inputs, subject to basic input-output norms for approximately 600 export categories
- Import duty scrapped on capital goods and raw materials for 100 percent export-oriented units. 100 percent tax exemption for 5 years followed by 25 percent in subsequent years
- Tax exemption for the next 5 years for new agro-processing industries. Full excise duty exemption for goods that are used in installation of cold storage facilities

Policy Support

- Encouragement to private sector – 100 percent export-oriented units are allowed to sell up to 50 percent of their produce in the domestic market. Export earnings are exempted from corporate taxes
- 100 percent FDI under automatic route (except for alcohol, beer, and sectors reserved for small scale industries). Repatriation of capital and profits permitted
- Focus on infrastructure - Assigned priority sector for bank credit. 60 Agri Export Zones (AEZ) have been set up across the country. 42 mega food-parks have been approved along with 128 cold chain
- Incentives for development of storage facilities - Investment-linked tax incentive of 100 percent deduction of capital expenditure for setting up and operating cold chain facilities (for specified products), and for setting up and operating warehousing facilities (for storage of agricultural produce)
- A corpus of US\$ 0.303 bn during 2014-15 and onwards for providing direct term loans to establish infrastructure in the Mega Food Parks
- Food Safety and Standards Act 2006 Convergence of different food safety laws under one act that is FSSA.

Mega Food Park

The Mega Food Park- an initiative by the central government is an inclusive concept which is aimed at establishing direct linkages from the farm to processing and on to the consumer markets, through a network of collection centres and Primary Processing Centres. Efficient logistics facilities will connect the collection centres to the primary processing centres, which in turn will be connected to a central processing centre.

A sanction of 42 food parks has been planned, out of which 25 in various states have already been sanctioned with 17 pending; expression of interest is available from companies with the government. According to the Government, as of October 2016, 8 mega food parks have become operational and all 42 would be operational in the next 2 years. Each of these mega food parks attracts investment worth Rs.200 Crore according to an estimate.

The Mega Food Park will have a Central Processing Centre (CPC) as the heart of all value addition activities facilitated by Primary Processing Centres (PPCs), which will act as point of aggregation and primary handling to provide ready to use raw materials to be processed further in the units to be set up in the CPC. The PPCs will be fed by field Collection Centres which will be the first point of contact with growers.



Source: hungryforever.com

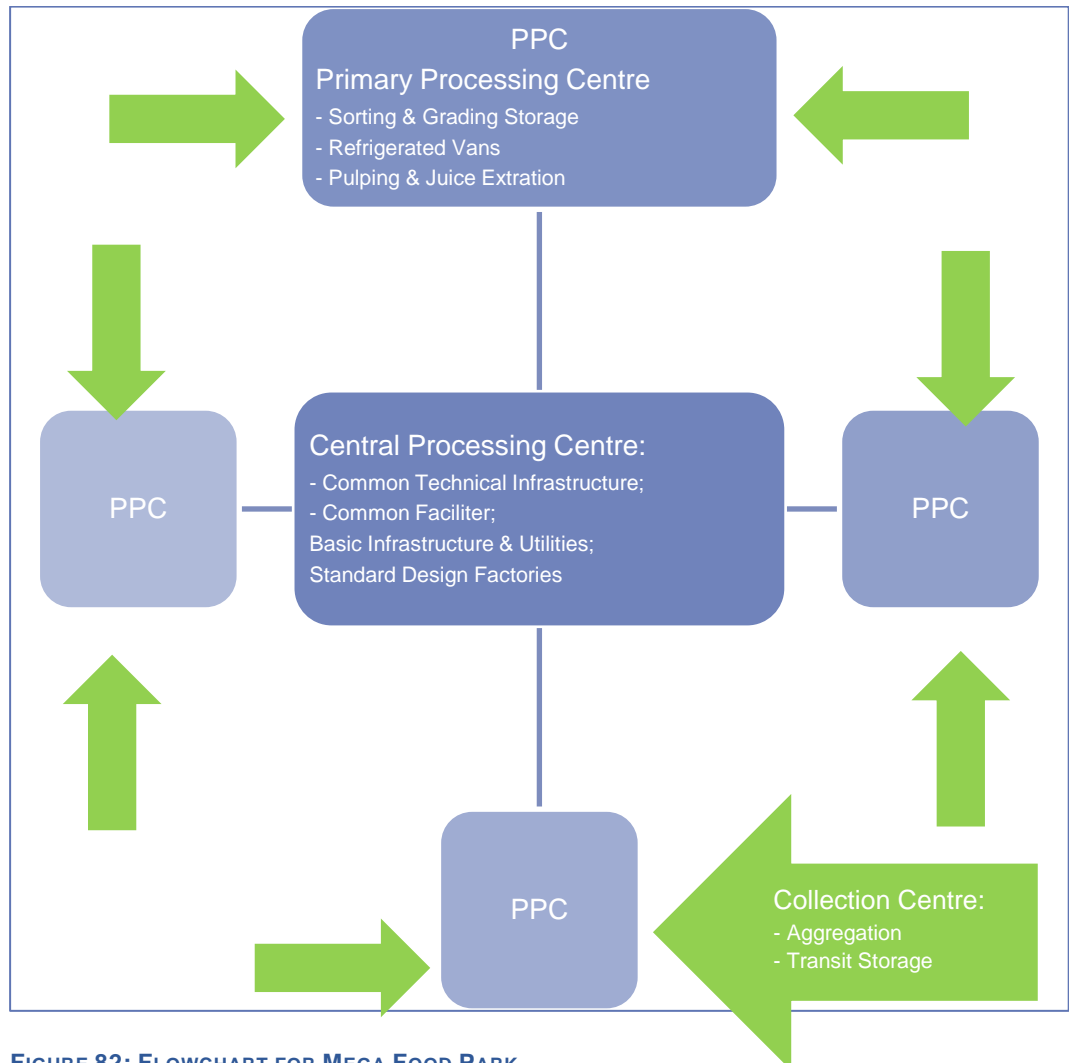


FIGURE 82: FLOWCHART FOR MEGA FOOD PARK

COLLECTION CENTRES

The collection centres are usually built in areas where the farm outputs are being produced. The CCs work as points of aggregation of the produce from individual farmers, farmer’s groups and Self Help Groups. They feed the raw material to the PPCs. The collection centres are managed by local entrepreneurs. They serve as farm level aggregation points for adjoining areas within a radius of about 10 Kms. The collection centres, while serving as the primary nodes for the Mega Food Park network will also enhance farm level value realization by providing direct market access to the farmers. Also it is expected that the collection centres will in course of time emerge as centres of rural commerce thereby spurring economic activity in the area.

MAIN PLAYERS

There are a large number of foreign players operating in India, either directly or in collaboration with Indian partners. For instance, McDonald's is present in India through two collaborations, one which involves a Development Licensee for the southern and western regions, and the other a joint venture for operations in the north and east.

The US-based private equity fund, New Vernon Private Equity Limited (NVPEL), has decided to invest Rs 45 crore in Kochi-based spice major, Eastern Condiments, which is the flagship company of the Eastern Group. Another example is America's largest chocolate and confectionery-maker, Hershey, which is acquiring a 51% stake in Godrej Beverages and Foods for US\$ 54 million.

The Indian food processing industry is divided into agri-products, milk and milk products, and meat, poultry and marine products. In agri-products, India is the largest producer of several fruits, such as banana, mango and papaya. It is also the second-largest producer of vegetables such as brinjal, cabbage and onion. The country is also the second-largest producer of rice, wheat, sugar and cotton. In milk and milk products, India is the largest producer, accounting for 20% of global production. In terms of livestock, the country has the largest livestock population in the world, with 98.7 million buffaloes and 176 million cows..

Many big Indian players have invested in the food processing sector. Some of them include ITC, HLL, Cargill, Venky's India, Godrej, Marico, Priya Foods, MTR, Surya Food & Agro and Haldiram's. Some of the companies that are active in the organised food retail domain include ITC, Bharti, Reliance, Aditya Birla Group, Subhiksha and the Future Group. Almost 70% of the sector is dominated by the unorganised and small-scale players, indicating the huge potential inherent in the Indian food processing sector.

There are 12 products reserved for manufacturing by the small-scale sector. These products include bread, pastries, confectioneries, rapeseed oil, mustard oil, sesame oil, groundnut oil, sweetened cashewnut products, ground and processed spices other than spice oil and oleo resin spice, tapioca sago and tapioca flour.

UNIDO has identified over 60 food processing clusters, consisting of small and medium enterprises, across India. The state-wise distribution of the clusters shows the largest concentration of companies in Maharashtra and Gujarat followed by Andhra Pradesh, Punjab and Orissa.



Source: burnsmcclublog.com

OPPORTUNITIES

- The Indian packaged processed foods industry is estimated at US\$ 10.87 bn – US\$ 13.05 bn, including biscuits, chocolates, ice-cream, confectionery, snacks, cheese and butter.
- The industry is growing at a healthy 15 percent over the past three years.
- During FY11–16, India's exports of processed food and related products (inclusive of animal products) grew at a CAGR of 11.74 per cent, reaching US\$ 16.2 billion.
- The industry received foreign direct investment (FDI) totalling US\$ 6000 mn in 2012-16 against US\$ 5.70 mn in 2006-07.

- With the second largest arable land in the world, India is the largest producer of milk, pulses, sugarcane and tea in the world and the second largest producer of wheat, rice, fruits and vegetables. Indian agriculture being the primary supporter caters to around 60 percent of the population for their livelihood and contributes to 17 percent of GDP. Despite the massive production, the degree of processing is low and ranges between 2 to 35 percent for different produce.
- India is one of the top rankers in the production of bananas, guavas, ginger, papaya etc., although processing levels in the country remain limited. This indicates an extensive opportunity in the food processing sector.

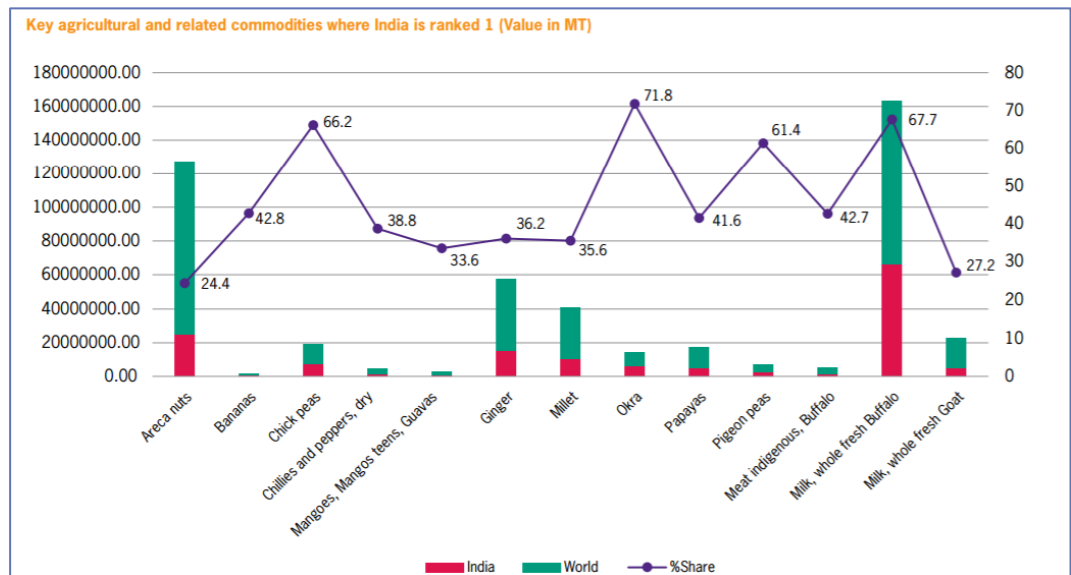


FIGURE 83: KEY AGRICULTURAL AND RELATED COMMODITIES WHERE INDIA IS RANKED 1

- By 2020, Indian food and retail market is projected to touch US\$ 482 bn.
- By FY 2013-14, India’s export of processed food and related products increased to US\$ 37.9 bn.
- By FY 2022, Food processing sector has the potential of attracting. US\$ 33 bn of investment in coming years and generate employment of 9 mn persons days.

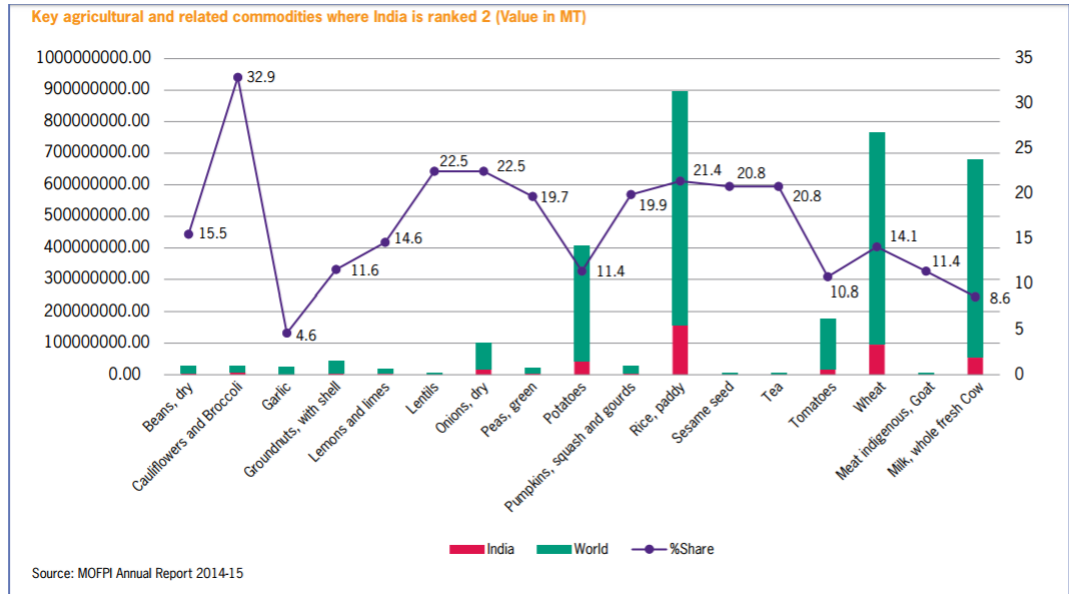


FIGURE 84: KEY AGRICULTURAL AND RELATED COMMODITIES WHERE INDIA IS RANKED 2



Source: presscdn.pagely.netdna-cdn.com

3.9. METAL PRODUCTS MANUFACTURING

Metal products industry involves manufacturing of products using metals like aluminium, iron, steel, stainless steel and copper. Gold and Silver might also be included but the manufacture of gold and silver requires small scale plants with the ability to make intricate designs that are carried out by jewellers in the country.

The metal products industry in India comprises of large players who have a small portfolio of products ranging from 4-6 products (mostly B2B) and small companies that manufacture customized products that would meet the needs of the end consumer with a huge portfolio of products. The large companies produce their own steel and use a part of their production to produce metal products and have a competitive edge in terms of price by eliminating a level in the supply chain as they need not source raw materials from other companies like small players that should.

IRON, STEEL AND STAINLESS-STEEL INDUSTRY PRODUCTS

The market value of the Indian steel industry has been increasing at a CAGR of 14.33%. The exports have been consistently increasing over the recent years with an increase of 102% in 2016-2017 and imports have been consistently decreasing with a decrease of 36.6% in 2017.

India is currently a net exporter of steel as a result of slower than anticipated growth in infrastructure. However, forecasts and government policies indicate an increase in the per-capita consumption of steel as a result of the increasing infrastructure projects in the near future.

The steel producing companies are mostly concentrated in the states of Chhattisgarh, Orissa, West Bengal, Maharashtra and in states of South India. A comprehensive list of steel producers is shown in the table below:

Steel Producers	Location	Capacity (Million Metric Tonnes)	Products
Essar Steel	Maharashtra, Gujarat, NCR and Tamil Nadu	4	Specialized in flat products
JSW steel	Karnataka, Tamil Nadu and Maharashtra	14.3	Sheets, TMT bars and wire rods
Rashtriya Ispat Nigam Ltd.	Andhra Pradesh	6.3	Angles, Billets, Blooms, Channels, I-Beams, Rounds, TMT rods, Wire rod coils
Steel Authority of India Ltd.	Orrisa, Chhattisgarh, West Bengal, Jharkhand, Tamil Nadu, Karnataka, Maharashtra	13.9	Railway products, galvanized products, Narrow parallel Flange beam, Structural, bars, rods, Sheets and Plates.
TATA Steel	Chhattisgarh, Maharashtra, Madhya Pradesh, West Bengal	23.88 (with 9.7 in India)	Steel, Flat steel products, Long steel products, Plates, Wire product and Wheel and axle for Indian Railways.
VISA Steel	Orissa	0.5	Long steel products, Ferro-chrome
Bhushan Steel	Uttar Pradesh, Maharashtra and Orrisa	5.6	Coils, strips, sheets, pipes and billets
MESCO Steel	Orissa, Rajasthan	1.2	Plates and pellets.
Facor steel	Orissa, Andhra Pradesh and Maharashtra.	0.447	Blooms, angles, rounds, bars and billets
Mahamaya Steel Industries	Chhattisgarh	1.2	Angles, TMT rods and sheets
Gerdau steel Industries	Andhra Pradesh	0.3	Billets squares and bars
Jindal steel and power	Chhattisgarh	3	Billets, rounds, plates and coils.

TABLE 6: INDIA STEEL PRODUCER'S LIST

All these plants have a nation-wide distribution system and have authorized dealers who take care of sales of their products throughout India. Steel manufacturing by processing Iron ore is almost saturated industry being run by large players in the industry. Hence, it would be hard to get a considerable market share for steel production.

ALUMINIUM PRODUCTS MANUFACTURING:

Aluminium has the property of being light but robust. Unlike other metals, aluminium doesn't lose its properties when recycled even after multiple cycles. Unlike steel which is produced by many players. Aluminium production is concentrated within 5 players who produce majority of the aluminium production in India. The companies that hold a considerable share of market capital include:

Hindustan Aluminium Company (HINDALCO): HINDALCO has the highest market share in the Indian aluminium industry with a market share of 39%. It's manufacturing facility is in Uttar Pradesh.

National Aluminium Company (NALCO): Indian government has an 87.15% ownership in National Aluminium Company. It has its plant located in Orissa.

Bharat Aluminium Company (BALCO): BALCO plant is in Korba, Chhattisgarh. It is currently into power production that is used for its internal operation as well as for distribution to the grid.

Madras Aluminium Company Ltd. (MALCO): MALCO has its operations situated in Tamil Nadu and was started in collaboration with Montecatine of Italy in 1965.

The limitation to aluminium plant is that it requires large amount of electricity as aluminium is produced using electrolysis that requires huge amount of electricity. India already has electricity demand higher than supply which makes it hard to get the required power from the grid. It would also make it hard to establish a plant close to existing powerplants as they have been constructed with a plan to cater to a certain demand centre.



Source: India Steel

COPPER PRODUCTS MANUFACTURING

Copper products have been used in India for a long time. The main products of copper manufacturers are copper wires that are used in electrical equipment and in domestic and industrial electrical wiring. Its application for Air Conditioning ducts are increasing currently with increase in the number of air conditioners installed across the country. With copper being comparatively costlier compared to other metals, it cannot be used as a substitute as an alternative to other metals and is used only when other metals cannot be used in place of copper. Capacity of copper industry in India was estimated to grow at a CAGR of 13.7% in 2007 when the capacity of copper processing in India was 574,000 tonnes per annum.

The major manufacturers of copper in India are:

- Hindustan copper Limited: Hindustan Copper Limited has 4 plants located in Rajasthan, Jharkhand, Madhya Pradesh and Maharashtra and a plant acquired from Jhagadia Copper Limited in Gujarat. These 4 plants have a collective capacity of around 100,000 tonnes per year and the Jhagadia Copper limited plant has a capacity of 50,000 tonnes per annum.
- Hindalco Industries Limited (Birla Copper): Hindalco is one of the largest producers of aluminium in the world, who also produce copper. The current capacity of the plant is 244,000 metric tonnes per annum and it has been planned to increase its capacity to 484,000 metric tonnes per annum by setting up a new unit
- Sterlite industries Limited: Sterlite industries Limited which is run by Vedanta Limited is India's largest producer of copper with a capacity of 400,000 metric tonnes per annum. BALCO which is a primary producer of aluminium is also a part of Vedanta Limited. The copper production mostly happens in its plant situated in Tuticorin, Tamil Nadu. It has a current capacity of 295,000 metric tonnes per annum.
- Nissan Copper Limited India: Nissan Copper Limited has a Capacity of 7200 metric tonnes per annum located in Maharashtra.
- Gujarat Copper Alloys Limited: Gujarat Copper Alloys Limited was started in Daman. They have a portfolio of products that can be found in the link: <http://www.gcal.co.in/index.html>

INDUSTRY ATTRACTIVENESS

1. Barriers to entry

Iron and Steel: A plant that only manufactures products by sourcing steel and iron from existing producers have low barriers to entry in contrast to high barriers of entry for firms that manufacture their own steel due to the high amount of capital cost involved.

Aluminium: A plant that sources materials from primary producers and convert them into end products like cans have lower barriers of entry in contrast to companies that produce their own aluminium due to the high capital and running costs involved and as a result of huge economies of scale.

Copper: The barrier to entry in copper plants is very much similar to that of an iron and steel plant.

2. Bargaining power of suppliers

Iron and steel: Since iron and steel (and their ores) are commodities and their prices depend on the supply and demand of these products are low. Since, there can be no customization that can be done to these products the ability of suppliers to gain bargaining power is also low.

Aluminium: Aluminium ore and aluminium sheet suppliers have low bargaining power as they are commodities and the suppliers are supposed to sell them at the price of these commodities in the market. Electrical power supplier has a high bargaining power as government is the only supplier. This bargaining power can be reduced by constructing integrated plants that have a power plant owned by the aluminium manufacturer in close proximity to the aluminium plant.

Copper: Copper is also a commodity and hence the supplier power is considerably low as suppliers will have to sell them the ore at the price of copper ore in the market with the quality of ore determining the price.

3. Bargaining power of customers

Iron, steel and aluminium: Customers have a high bargaining power as it is a commodity and this purchasing power cannot be reduced unless there is a huge level of customization to meet the needs of the customer. In this case, the

customers bargaining power would reduce considerably. However, the presence of large number of small firms makes it hard to apply. Hence, large scale customization is the only way to reduce the bargaining power of consumers.

Copper: Customers have a high bargaining power due to the commodity nature of the copper products. However, with a variety of by-products obtained while refining the copper ore provides a better portfolio of products for the copper manufacturers that reduces the overall bargaining power of the buyer.

4. Competition

Iron and steel: Low competition in case of differentiation as iron and steel are commodities. However, competition happens on the basis of price and quality. With large number of players in the industry, this competition might be higher than in industries with lower number of players like aluminium industries.

Aluminium: The competition here is similar to that in the iron and steel industry and the competition is on the basis of price and quality. Due to lower number of players in the aluminium industry, the level of competition can be reduced by having a consensus on the standards to be followed among the players in the industry.

Copper: With most of the mines already having been associated with certain plants. It would be hard to compete with the existing players to get ore from them. Copper ores are heavy and the productivity of these ores are comparatively less that makes it hard to transport them over long distances.

5. Threat of substitutes (for iron, steel, aluminium and copper)

There are no economically viable substitutes to these metal products in the industry. Hence, the threat of substitutes in these industries is almost non-existent. It is safe to assume that there would not be any economically viable substitutes for a considerable duration in the future as the need for it hasn't risen yet and there are abundant resources for these industries in India.

3.10. PHARMA INDUSTRY

Indian pharma machinery market is expected to grow at 14% CAGR to reach 1.78 billion USD by 2020 and a 10-year projected growth to 4.9 billion USD. India's pharmaceutical sector will touch US\$ 45 billion by 2020.

The Indian pharmaceuticals market is the third largest in terms of volume and thirteenth largest in terms of value, as per a report by Equity Master. India is the largest provider of generic drugs globally with the Indian generics accounting for 20 per cent of global exports in terms of volume. Of late, consolidation has become an important characteristic of the Indian pharmaceutical market as the industry is highly fragmented.

Key growth drivers are:

- Capacity addition for the generics production;
- Sales to newer export markets;
- 18% of total capital expenditure for a company is on plant and machinery.

India's pharmaceutical sector will touch US\$ 45 billion by 2020

The Government of India unveiled 'Pharma Vision 2020' aimed at making India a global leader in end-to-end drug manufacture. Approval time for new facilities has been reduced to boost investments. Further, the government introduced mechanisms such as the Drug Price Control Order and the National Pharmaceutical Pricing Authority to deal with the issue of affordability and availability of medicines.

The Government of India plans to set up around eight mini drug-testing laboratories across major ports and airports in the country, which is expected to improve the drug regulatory system and infrastructure facilities by monitoring the standards of imported and exported drugs and reduce the overall time spent on

quality assessment. India is expected to rank among the top five global pharmaceutical innovation hubs by 2020, based on Government of India's decision to allow 50 per cent public funding in the pharmaceuticals sector through its Public Private Partnership (PPP) model.

MARKET SIZE AND CHARACTERIZATION

The Indian pharma industry, which is expected to grow over 15 per cent per annum between 2015 and 2020, will outperform the global pharma industry, which is set to grow at an annual rate of 5 per cent between the same period. The market is expected to grow to US\$ 55 billion by 2020, thereby emerging as the sixth largest pharmaceutical market globally by absolute size. Branded generics dominate the pharmaceuticals market, constituting nearly 80 per cent of the market share (in terms of revenues).

India has also maintained its lead over China in pharmaceutical exports with a year-on-year growth of 11.44 per cent to US\$ 12.91 billion in FY 2015-16, according to data from the Ministry of Commerce and Industry. In addition, Indian pharmaceutical exports are poised to grow between 8-10 per cent in FY 2016-17. Imports of pharmaceutical products rose marginally by 0.80 per cent year-on-year to US\$ 1,641.15 million.

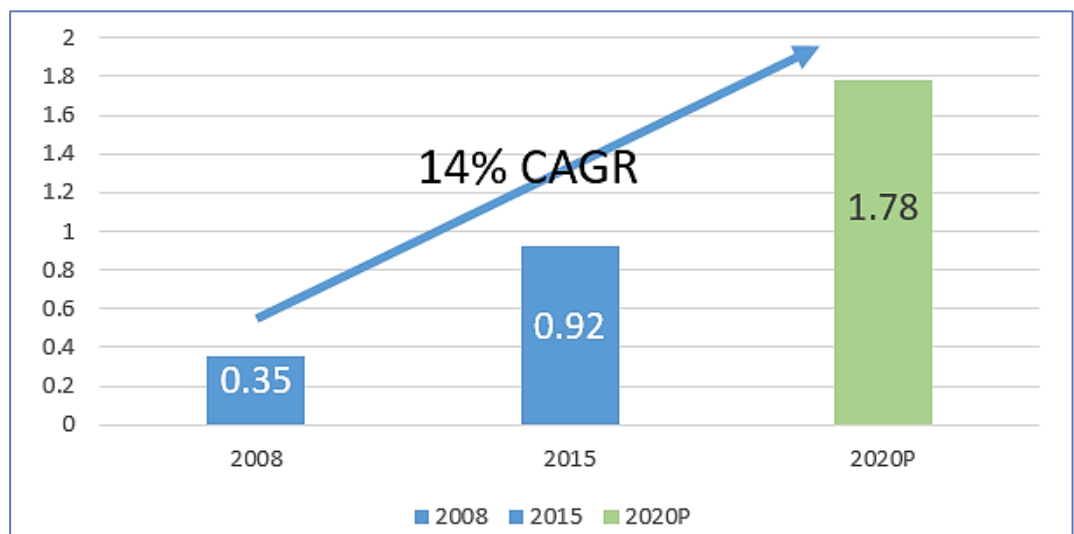


FIGURE 85: PHARMA MACHINERY MARKET IN INDIA, 2008-2020P (IN USD BN)

Share of equipment in Indian Medical device sector:

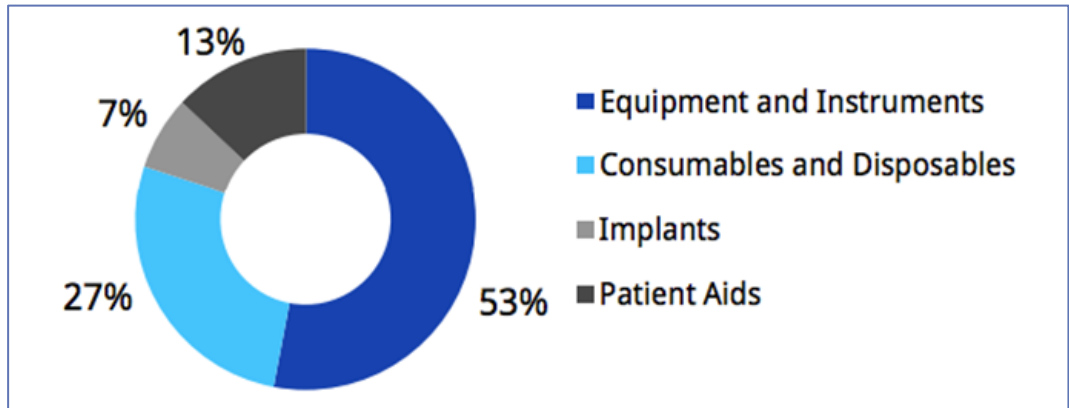


FIGURE 86: SHARE OF EQUIPMENT IN INDIAN DEVICE SECTOR

Source: SKP Analysis

65% - 75%: Share of Imported Equipment and Instruments in India

Product Segmentation	Players	Consumers	Supply Chain
Equipment and Instruments	Domestic Players: low-price, high volume products MNCs dominate in high-end products (technology, price and quality)	70% spend by private and 30% spend by the government	Purchase departments of hospitals and government tenders play a crucial role in the equipment and instruments segment
'Consumables and Disposables' and 'Implants' with 17% and 25% CAGR, respectively	Some MNCs have customised products for Indian Markets with lower price point	Increasing consumer base specifically in the implants segment on account of increasing insurance penetration	Distributors and government tenders play a crucial role in Consumables. Surgeons influence decision-making in the case of Implants.

TABLE 7: PRODUCT SEGMENTATION AND SUPPLY CHAIN OF PHARMA MACHINERY, INDIA

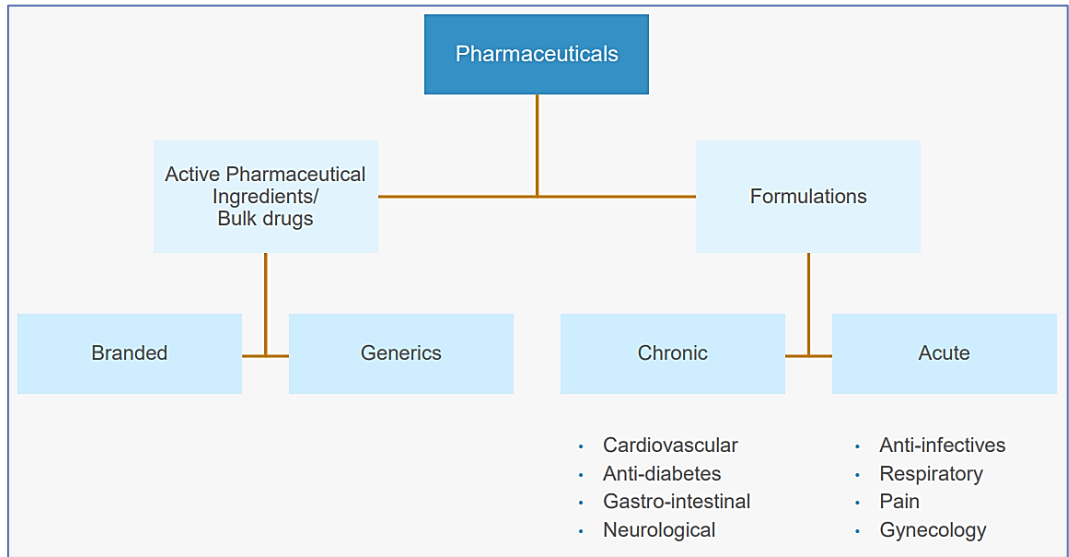


FIGURE 87: STRUCTURE OF PHARMA SECTOR IN INDIA

Source: Ibef, 2017



FIGURE 88: SEGMENTS OF INDIAN PHARMACEUTICALS SECTOR

Source: Ibef, 2017

INVESTMENTS

The Union Cabinet has given its nod for the amendment of the existing Foreign Direct Investment (FDI) policy in the pharmaceutical sector in order to allow FDI up to 100 per cent under the automatic route for manufacturing of medical devices subject to certain conditions.

The drugs and pharmaceuticals sector attracted cumulative FDI inflows worth US\$ 14.53 billion between April 2000 and December 2016, according to data released by the Department of Industrial Policy and Promotion (DIPP).

Some of the major investments in the Indian pharmaceutical sector are as follows:

- Piramal Enterprises Ltd acquired a portfolio of spasticity and pain management drugs from UK-based specialty biopharmaceutical company Mallinckrodt Pharmaceuticals, in an all-cash deal for Rs1,160 crore (US\$ 171 million).
- Aurobindo Pharma has bought Portugal based Generis Farmaceutica SA, a generic drug company, for EUR 135 million (US\$ 144 million).
- Sun Pharmaceutical Industries Ltd, India's largest drug maker, has entered into an agreement with Switzerland Novartis AG, to acquire the latter's branded cancer drug Odomzo for around US\$ 175 million.
- Kedaara Capital Advisors LLP, a private equity (PE) firm, plans to invest Rs 430 crore (US\$ 64.5 million) to acquire a minority stake in Hyderabad-based diagnostics chain Vijaya Diagnostic Centre Pvt Ltd.
- Sun Pharmaceuticals Industries Limited plans to acquire 85.1 per cent stake in Russian company Biosintez for US\$ 24 million for increasing its presence in Russia through local manufacturing capability.
- Abbott Laboratories, a global drug maker based in US, plans to set up an I&D center in Mumbai, which will help in developing new drug formulations, new indications, dosing, packaging and other differentiated offerings for Abott's global branded generics business.
- India's largest drug maker Sun Pharmaceutical Industries Limited has entered into a distribution agreement with Japan's Mitsubishi Tanabe Pharma Corporation to market 14 prescription brands in Japan.

- Syngene International Limited will be setting up its fourth exclusive Research and Development (R&D) center named Syngene Amgen Research and Development Center (SARC) for a US-based biotechnology company Amgen Incorporation in Bengaluru.
- India's third largest drug maker Lupin Limited plans to file its first biosimilar Etanercept for approval in Japan, world's second largest drug market, in 2017.
- Rubicon Research Pvt Ltd, a contract research and manufacturing services firm, is in advanced talks with Everstone Capital and a few high-net-worth Individuals to raise up to Rs 240 crore (US\$ 36 million), which will be used to increase the company's manufacturing capabilities.
- Lupin Ltd plans to acquire a portfolio of 21 generic brands from Japan Shionogi for Rs 10 billion (US\$ 151 million), which will help to strengthen its presence in the world's second largest pharmaceutical market.
- International Finance Corporation (IFC), plans to invest upto US\$ 75 million in Glenmark, which is looking to raise around US\$ 200 million for expansion and the launch of several new products in India and other emerging markets over the next three years.
- Cipla Limited plans to invest around Rs 600 crore (US\$ 90 million) to set up a biosimilar manufacturing facility in South Africa for making affordable cancer drugs and growing its presence in the market.
- Rusan Pharma, a firm which specialises in de-addiction and pain management products, plans to invest Rs 100 crore (US\$ 15 million) in a R&D centre and a manufacturing unit in Kandla, located in Gujarat.
- The Medicines Patent Pool (MPP) has signed a licencing agreement with six Indian drug makers for the generic manufacturing of four antiretrovirals (ARV) and hepatitis C direct-acting antiviral drug Daclatasvir.
- Dr Reddy's Laboratories, one of the major pharmaceutical companies of India, has entered into a strategic collaboration agreement with Turkey-based TR-Pharm, to register and subsequently commercialise three biosimilar products in Turkey.

- Lupin has completed the acquisition of US-based GAVIS Pharmaceuticals in a deal worth US\$ 880 million, which is expected to enhance its product pipeline in dermatology, controlled substances and high-value speciality products.
- Cipla Ltd, one of the major pharmaceutical and biotechnology companies in India, has acquired two US-based generic drug makers, InvaGen Pharmaceuticals Inc. and Exelan Pharmaceuticals Inc., for US\$ 550 million, which is expected to strengthen Cipla's US business.
- Emcure Pharmaceuticals has acquired Canada's International Pharmaceutical Generics Ltd and its marketing arm Marcan Pharmaceuticals in order to boost its global expansion drive.
- Cipla announced the acquisition of two US-based companies, InvaGen Pharmaceuticals Inc. and Exelan Pharmaceuticals Inc., for US\$550 million.
- Glaxosmithkline Pharmaceuticals has started work on its largest greenfield tablet manufacturing facility in Vemgal in Kolar district, Karnataka, with an estimated investment of Rs 1,000 crore (US\$ 150 million).
- Lupin has acquired two US based pharmaceutical firms, Gavis Pharmaceuticals LLC and Novel Laboratories Inc, in a deal worth at US\$ 880 million.
- Several online pharmacy retailers like PharmEasy, Netmeds, Orbimed, are attracting investments from several investors, due to double digit growth in the Rs 97,000 crore (US\$ 14.55 billion) Indian pharmacy market.
- StelisBiopharma announced the breakthrough construction of its customised, multi-product, biopharmaceutical manufacturing facility at Bio-Xcell Biotechnology Park in Nusajaya, Johor, Malaysia's park and ecosystem for industrial and healthcare biotechnology at a total project investment amount of US\$ 60 million.
- Strides Arcolab entered into a licensing agreement with US-based Gilead Sciences Inc to manufacture and distribute the latter's cost-efficient Tenofovir Alafenamide (TAF) product to treat HIV patients in developing countries. The licence to manufacture Gilead's low-cost drug extends to 112 countries.

TRENDS

Indian pharma machinery and equipment industry **exports to over 80 countries** globally which contributes to approx. **35% to the industry turnover**.

Compared to pharma machinery hubs, like the ones in Germany, India has a high cost advantage in manufacturing.

Most of the **potential export markets** are in **Latin America (USD 80 bn)** and **Middle East (USD 20 bn)** as these are under-penetrated and these regions increasingly source pharma machinery and equipment from India.

STRATEGY

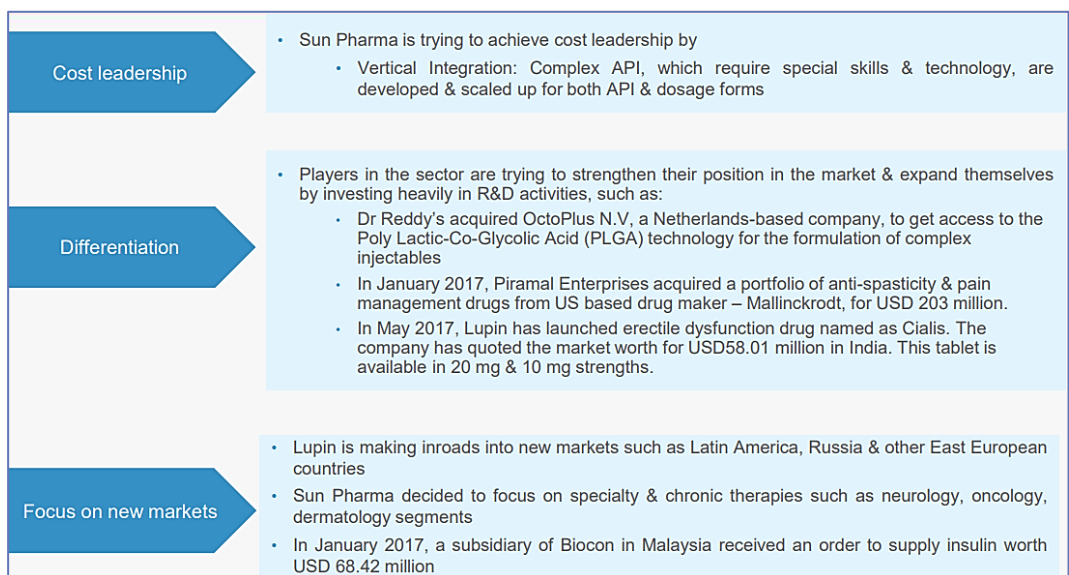


FIGURE 89: INDIAN ADOPTED STRATEGIES

Source: Ibef, 2017

MAIN PLAYERS

Indian medical machinery industry is highly fragmented with around 800 medical device manufacturers and only half of them are organized in any measure.

Pharma machinery manufacturing is dominated by small players, mainly located in **Maharashtra, Gujarat, Haryana, Delhi NCR** (proximity to central government) and **Karnataka & Tamil Nadu** (high-skilled labours) in India. These companies

generally form a joint venture with a foreign firm and manufacture their specialized products here in India, which ensures manufacturing world-class products at affordable prices.

There are almost **400 organised machinery** makers here in India, who **export Rs 200 crores worth** of machines to foreign countries.

DOMESTIC PLAYERS

Parle Global Technologies

Employee Strength: 800;

Exports to 56 countries;

Specialized in tablet compression tools;

Locations: Mumbai, Ahmedabad.

ACG Worldwide

Associated Capsule Group has a presence in over 100 countries;

ACG comprises of 13 companies, including subsidiaries in China, USA, Indonesia, Brazil and Europe;

Manufactures empty hard pharma capsules, packaging machines and films;

Locations: Mumbai.

Prism Pharma Machinery

Annual Turnover of USD 2-5 million;

Employee strength: 51-100;

Specializes in tableting, mixing and vacuuming machineries;

Location: Mumbai

Gansons Limited

Employee strength: 100-500;

Specializes in Granulation and coating equipment;

Locations: Delhi, Kolkata, Ahmedabad, Mumbai

Ambica Pharma

Specializes in filling, stoppering, capping, external washing, inspection & labelling machines;

Location: Ahmedabad.

International companies in this field are also using India as a manufacturing base by either setting up facilities of their own or by acquiring domestic manufacturers. Some examples include 3 M's manufacturing plant in Pune, Becton Dickinson's manufacturing facility in Haryana, Hollister's setting up manufacturing facility in India and Philips Medical Systems' acquisition of Medtronic and Alpha X-Ray Technologies. The equipment and instruments segment of medical machinery in India has the highest projected growth potential of up to USD 2.67 billion in 10 years. There is a great potential in low to mid-range systems as small hospitals and facilities in rural areas are purchasing them.

BIGGER PLAYERS

GE Healthcare India

Headquarters in Chicago, IL, USA;

Specializes in medical imaging and information technologies, medical diagnostics, patient monitoring, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and services;

R&D unit in Bangalore;

Distributes through its dealer network in over 30 cities in India.

Philips Healthcare

Headquarters in Amsterdam, Netherlands;

Specializes in advanced molecular imaging, clinical informatics, computed topography, diagnostic ECG, Emergency care & resuscitation, fluoroscopy, hospital respiratory care, interventional x-ray, magnetic resonance and mammography equipment;

Corporate office is in Gurgaon; R&D unit in Pune;

Philips has 7 regional distribution centres with 12 locations in India;

Mectron India

Headquarters in Carasco, Italy;

Specializes in their trademarked Piezosurgery (piezoelectric bone surgery). Surgery equipment, ultrasound, airpolishing and led curling devices;

Agency in India – Skanray Dental Pvt Ltd, Bangalore.

Schiller Healthcare

Headquarters in Switzerland;

Product range - medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services;

Manufacturing facility in Pondicherry and R&D team in Bangalore;

Distributes using a network of 75 sales and service dealers.

Danaher Corporation

Headquarters in Washington, DC, USA;

Specializes in analytical instruments for diagnostics, dental equipment, including implant systems, dental prosthetics and associated treatment planning software; orthodontic bracket systems and lab products;

R&D centres in Delhi, Mumbai and Bangalore;

Danaher distributes its products through its 28 operating companies and 1700 associates.

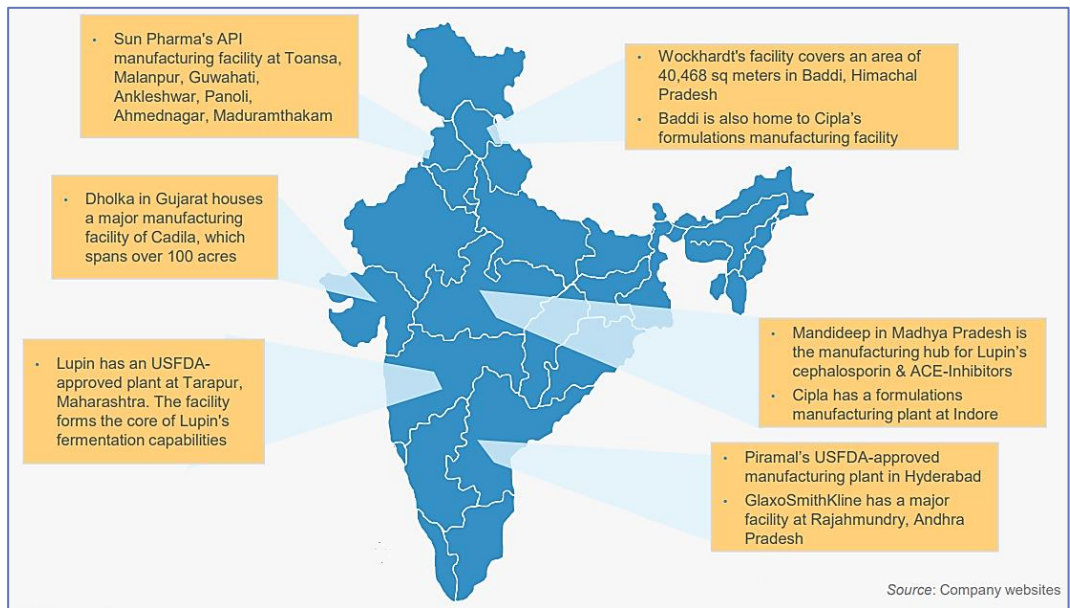


FIGURE 90: STATES HOSTING KEY PHARMACEUTICAL VENTURES

Source: Ibf, 2017

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Growth opportunities for pharma companies are expected to grow in next few years, with many drugs going off-patent in the US and other countries, thus increasing competition • Indian pharma companies will face competition from big pharma companies, backed by huge financial muscle 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • Strict government regulations thwart entry of new players • Difficult to survive because of high gestation period 	<ul style="list-style-type: none"> • Threat to substitute products is low; however, homeopathy and Ayurvedic medicines can act as substitute
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Difficult-to-manufacture APIs such as steroids, sex hormones and peptides give bargaining power to suppliers. However, generic APIs do not have much of that power 	<ul style="list-style-type: none"> • Generic drugs offer a cost-effective alternative to drugs innovators and significant savings to customers • Biosimilars offer significant cost saving for insurance companies in India

FIGURE 91: PORTER'S FIVE FORCES ANALYSIS

Source: Ibef, 2017

OPPORTUNITIES

Indian pharma companies are capitalising on export opportunities in regulated & semi-regulated markets

In FY16, India exported pharmaceutical products worth USD16.89 billion, with the number expected to reach USD40 billion by 2020

Department of Pharmaceuticals targets to export USD18.02 billion worth of pharmaceuticals in 2016. Indian drugs are exported to more than 200 countries in the world, with the US as the key market

India is the world's largest provider of generic medicines; the country's generic drugs account for 20 per cent of global generic drug exports (in terms of volumes; Depending on the size, strategy, product portfolio and access to human and capital resources, an organisation can enter the Indian market through different options.

The recommended way for international pharma machinery companies is through the **distributors/agencies** initially to market their own products. If the companies plan to export the machineries to other countries from India, then they can leverage low-cost manufacturing of India and set-up/acquire a manufacturing plant here. If the company size is small, then they can form **strategic alliances (joint ventures)** with domestic companies here to provide access to technology and produce high quality and low cost products. Eventually, when the scale gets larger, then **brownfield or greenfield** investment is also an option.

Medical device manufacturers from the core of this industry, which has predominantly been import driven (accounting for over 65% of the entire medical equipment market, 85% of which is imported from the United States). Domestic firms generally participate in the low priced, high volume market segment wherein competition is intense. MNCs do not operate in low tech device segment where local manufacturers are involved in intense price competition.

India has both government and private healthcare providers. The growth in recent years has taken place mostly in private sector. Entry of corporate sector into Indian healthcare industry has improved infrastructure and raised the quality of services

With only 10% population of India currently covered under some health financing scheme, there is a big opportunity for insurance provider to mobilize revenue streams. They currently offer diversified portfolio of health solutions targeting healthy, at-risk, and chronically ill population.

Patient profile has changed drastically over the years. They are more informed and avail of better health amenities. Burgeoning middle-class families with higher disposable income are tending to get quality healthcare.

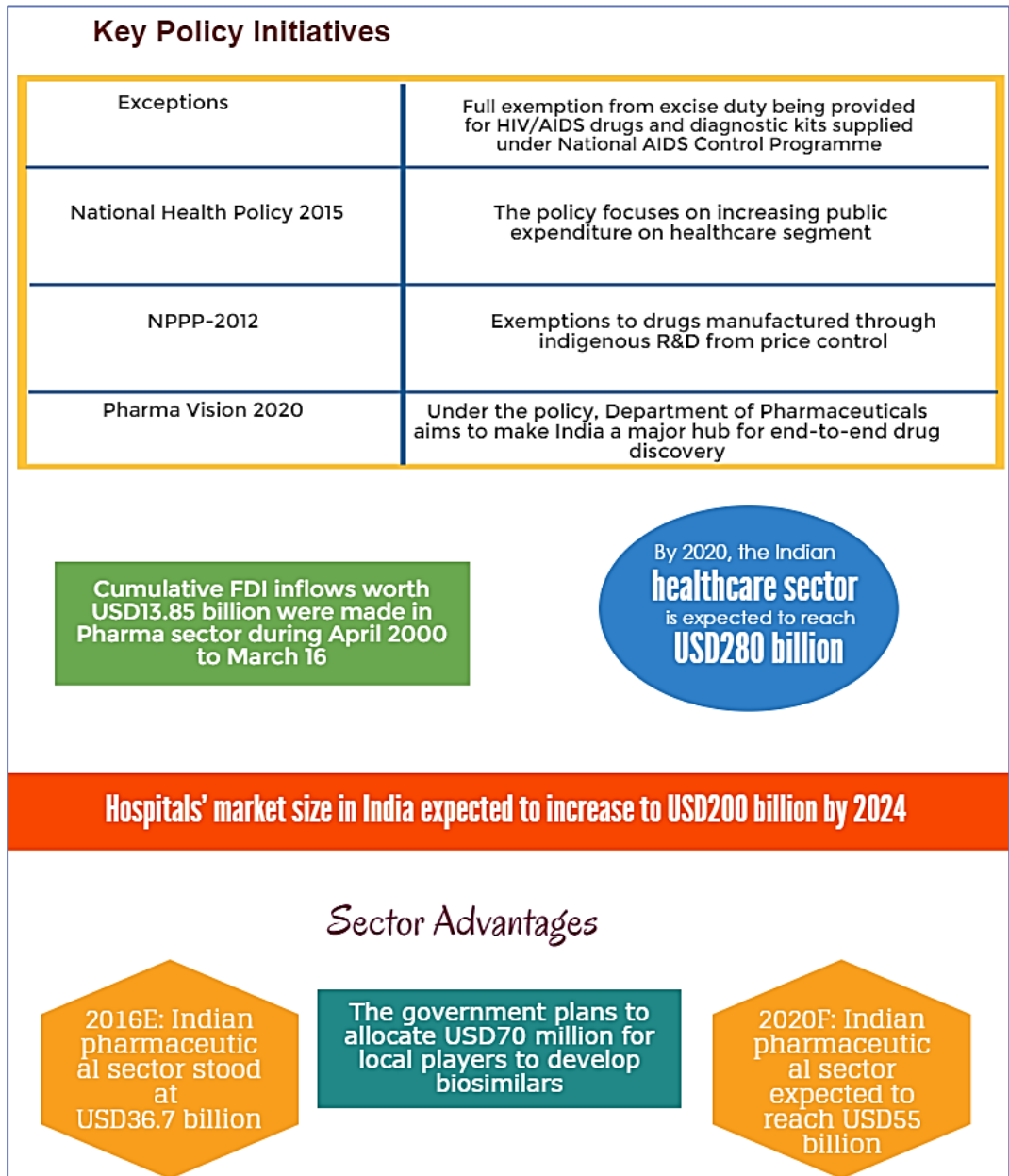


FIGURE 92: PHARMA INDUSTRY OPPORTUNITIES, INDIA

Indian pharma machinery industry is poised for huge growth due the factors listed above. The domestic market caters to low-value supplies, disposables space; some SMEs have formed joint ventures with international companies to

manufacture medical devices in India and for export too, while the costly and high end medical equipment is generally imported.

Many MNCs have either started manufacturing or importing medical machinery in India. Government is also paying attention to the high growth market to promote research and development, manufacturing and import of medical devices by allowing up to 100% FDI and giving other incentives. There is no import on certain medical equipment. Similarly, a number of lifesaving medical are exempt from payment of excise duty. Some states, like Gujarat in particular, are pushing for companies to set up their manufacturing units in their states by providing additional incentives. With all the upcoming regulatory, policy reforms and market development in this sector, Indian market is getting ripe.

CUSTOMS DUTIES ON IMPORTS OF MEDICAL EQUIPMENT

Effective custom duty of **18 to 28%** is applicable although some lifesaving equipment will enjoy complete exemption. These include Patient monitoring systems & image guidance systems, Pacemakers, Image Guided System, External Defibrillators, NT & ENT Surgery Products, Deep Brain Stimulation Implanters, Heart Lung Machine & Oxygenators, Heart valves, Annuloplasty Rings and various Cardiac catheters, Respirators and Masks, Dialysis Machines equipment and Devices and Peripheral Vascular stents.



Source: Indian Mirror

3.11. PLASTIC INDUSTRY

Total export of plastic and plastic products stood at US\$ 449.72 million in May 2015.

The Indian plastics industry made a promising beginning in 1957 with the production of polystyrene. Thereafter, significant progress has been made, and the industry has grown and diversified rapidly. The industry spans the country and hosts more than 2,000 exporters. It employs about 4 million people and comprises more than 30,000 processing units, 85-90 percent of which are small and medium-sized enterprises.

MARKET SIZE AND CHARACTERIZATION

Export of plastic products from India stood at US\$ 7.64 billion in FY 2015-16.

During 2015-16, major importers of Indian plastic products were US (US\$ 898.45 million), China (US\$ 489.25 million), UAE (US\$ 422.74 million), Germany (US\$ 290.03 million), UK (US\$ 287.68 million), Italy (US\$ 286.9 million), Turkey (US\$ 285.23 million), Bangladesh (US\$ 184.33 million), Saudi Arabia (US\$ 169.1 million) and Nepal (US\$ 161.09 million)

Domestic consumption of plastic is expected to touch 20 million Metric Tonnes by 2020.

The Indian plastics industry produces and exports a wide range of raw materials, plastic-moulded extruded goods, polyester films, moulded / soft luggage items, writing instruments, plastic woven sacks and bags, polyvinyl chloride (PVC), leather cloth and sheeting, packaging, consumer goods, sanitary fittings, electrical accessories, laboratory / medical surgical ware, tarpaulins, laminates, fishnets, travelware, and others.

The Indian plastics industry offers excellent potential in terms of capacity, infrastructure and skilled manpower. It is supported by a large number of polymer producers, and plastic process machinery and mould manufacturers in the country.

Among the industry's major strengths is the availability of raw materials in the country. Thus, plastic processors do not have to depend on imports. These raw materials, including polypropylene, high-density polyethylene, low-density polyethylene and PVC, are manufactured domestically.

PLASTIC PRODUCTION STATISTICS

India became the sixth largest manufacturer of plastic products globally. Industry's growth was driven by expanding demand for plastic sheets, packaging and other plastic products in the domestic market.

In addition, production growth was volume driven as turnover at constant prices expanded 10% in 2015 while production price index contracted 3%.

Production volume growth was achieved thanks to continuous investments into capacity expansion in 2015. This was indicated by increasing investments into plastic machinery, construction and machine tools, expanding 13%, 12% and 10% respectively in 2015. In addition, India witnessed growing investments into polymer production in 2015.

Production value of plastic packaging expanded to 7% in 2015 to reach INR722.9 billion. Demand was lifted by increasing investments into food processing capacity, which in turn augmented demand for plastic packaging.

India's plastic products industry is highly fragmented, with 99% of total companies operating in the industry hiring fewer than 10 employees as of 2015. Despite low penetration of plastic products in India and huge growth potential, such micro-sized companies struggle to attract significant funding and expand production output, as well as invest into R&D capabilities.

PLASTIC INDUSTRY

The entire chain in the Plastic industry can be classified into:

- Upstream sector: Manufacturing of polymers and,
- Downstream sector: Conversion of polymers into plastic articles.

The upstream polymer manufacturers have commissioned globally competitive size plants with imported state-of-art technology from the world leaders. The upstream petrochemical industries have also witnessed consolidation to remain globally competitive.

The downstream plastic processing industry is highly fragmented and consists of micro, small and medium units. There are over 30,000 registered plastic processing units of which about 75% are in the small-scale sector. The small-scale sector, however, accounts for only about 25% of polymer consumption. The industry also consumes recycled plastic, which constitutes about 30% of total consumption.

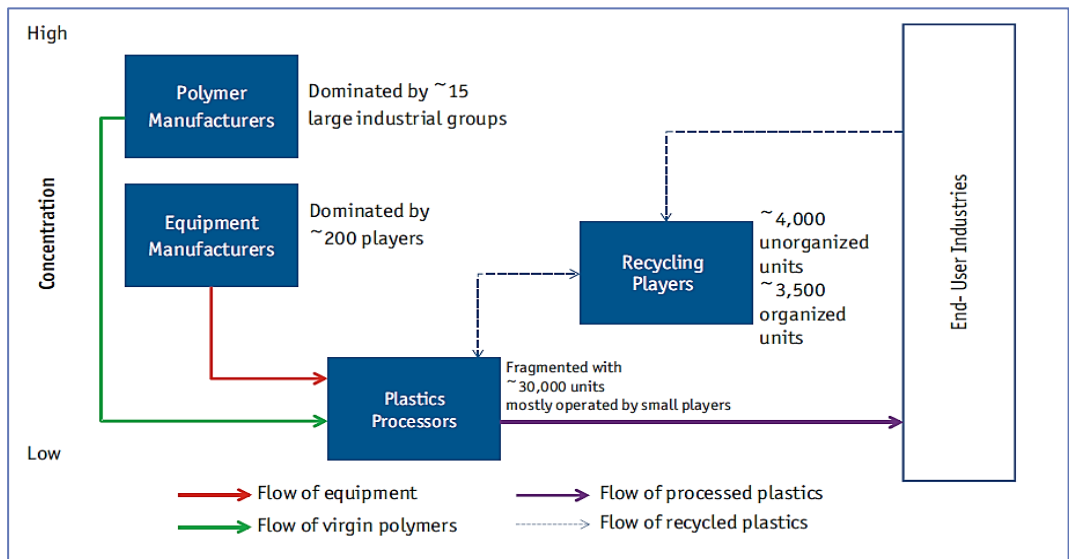


FIGURE 93: STRUCTURE OF THE INDIAN PLASTIC INDUSTRY

Source: CRISIL, Plastindia Foundation, Kanvic, TSMG Analysis

To manufacture finished products, polymers are processed through various types of techniques namely extrusion, injection moulding, blow moulding and root moulding. Extrusion process is the most commonly used process in India and accounts for ~64% of total consumption by downstream plastic processing industries.

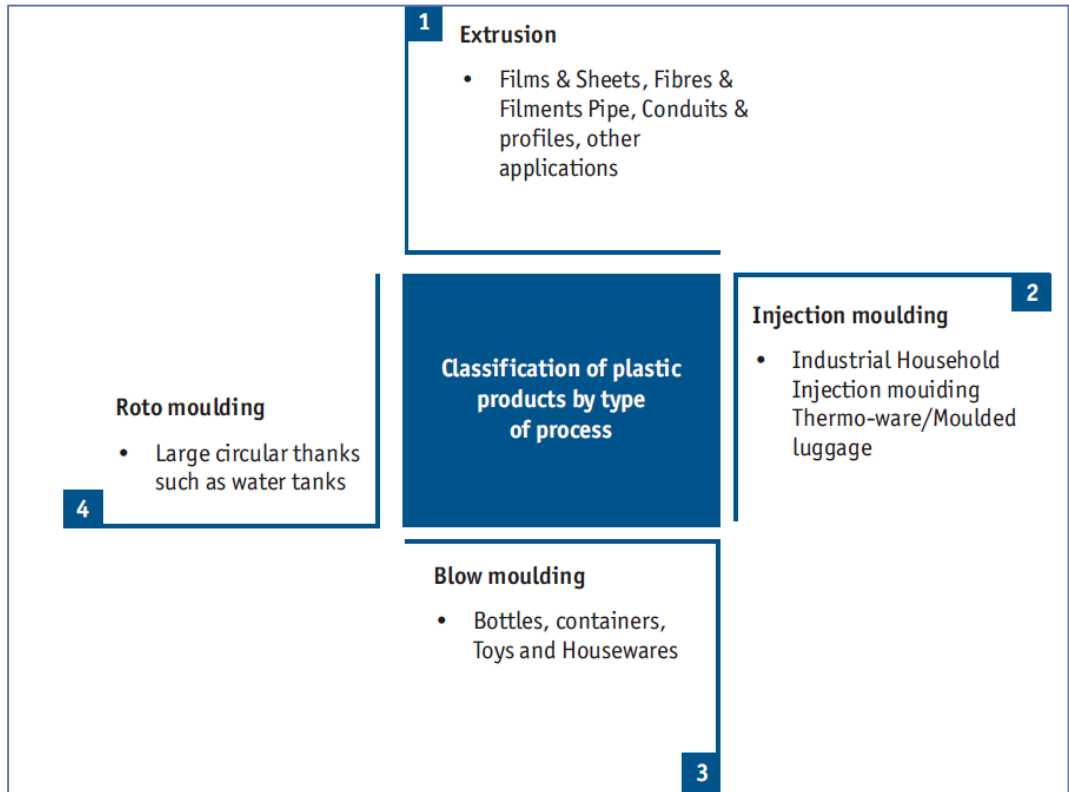


FIGURE 94: PLASTIC INDUSTRY PROCESSES

MAIN PLAYERS

The Supreme Industries Ltd

India-based company operating under the Plastics Piping System, consumer products, industrial products and packaging products divisions. Plastic Piping System manufactures polyvinyl chloride pipes, injection moulded fittings and hand-made fittings, and other plastic products. The company operates 19 facilities in India and distributes its products in India, the UK, Australasia, North America, South Africa etc.

Finolex Industries Ltd

India-based company engaged in the manufacture of PVC pipes and fittings as well as PVC resins. In addition, the company trades ethylene di chloride and

methanol, fertilizer, paints, lamination, amines and power generation. Finolex Industries operates two plants in India, on the west coast of Maharashtra State.

Responsive Industries Ltd

India-based subsidiary of the well-known Business Ventures Pvt Ltd. the company is engaged in the manufacture of PVC leather cloth, PVC flooring, PVC pharmaceutical packaging and transparent sheeting, rigid PVC products as well as synthetic ropes. It manufactures its production in Mumbai and distributes almost 50% of its production in India, while the remaining share is exported.

Time Technoplast Ltd

India-based company divided into industrial packaging, automotive components, lifestyle products, healthcare products, material handling products, composite cylinder and infrastructure products divisions. The industrial packaging division offers packaging containers, plates and sheets. The company operates 22 manufacturing sites, of which 12 are located in India.

Polyplex Corp Ltd

India-based company manufacturing thin polyester film. This company distributes its products in India and other markets.

OPPORTUNITIES

Plastic building materials is forecast to grow at a CAGR of 11% over 2015-2020. In addition, India's construction industry is expected to accelerate purchases of plastic building materials and encourage manufacturers to boost production volumes. The construction industry, lifted by government spending on programs such as Housing for All by 2022, is expected to grow at a CAGR of 13% over the forecast period.

India's plastic products industry is highly fragmented and consists primarily of micro-sized companies. However, such players lack resources to expand production capacity and invest into new products. Therefore, the industry is expected to become more concentrated over the forecast period, as companies seek partnerships to increase bargaining power and start production of higher-value plastic products.

Foreign firms having partnerships with established local firms that already have a client base and higher market share can disrupt the market and thus have an opportunity in this market.

Further investment in infrastructure, currently the major challenge in the plastic industry, along with newer technology which can be invested to make the plastic production process simpler can be used to gain advantage in the market.



Source: kraussmaffeigroup.com

3.12. INDIAN PORTS

India's cargo traffic is expected to reach 1,758 MMT by 2017.

India has 12 major and 200 notified minor and intermediate ports. Cargo traffic, which recorded 1,052 Million Metric Tonnes (MMT) in 2015, is expected to reach 1,758 MMT by 2017. The Indian ports and shipping industry plays a vital role in sustaining growth in the country's trade and commerce. India is the sixteenth largest maritime country in the world, with a coastline of about 7,517 km. The Indian Government plays an important role in supporting the ports sector. It has allowed Foreign Direct Investment (FDI) of up to 100 per cent under the automatic route for port and harbour construction and maintenance projects. It has also facilitated a 10-year tax holiday to enterprises that develop, maintain and operate ports, inland waterways and inland Ports.

MARKET SIZE AND CHARACTERIZATION

Cargo traffic handled by India's major ports increased 5.1 per cent year-on-year to 315.4 million tonnes (MT) during April-September 2016. In terms of composition of cargo traffic, the largest commodity was P.O.L. (37.1 per cent), followed by coal (23.4 per cent), container traffic (19.6 per cent), other cargo (11.9 per cent), iron ore (5.66 per cent) and Fertilizer and FRM (2.5 per cent).

The country's major ports handled a combined traffic volume of 586.29 million tonnes during April 2016-February 2017, up from 550.45 million tonnes during same period last year, while containerised cargo tonnage rose 3.7 per cent to 10.5 MT during August 2016. During April-June 2016, the ports had handled a combined volume of 2.12 million TEUs, which is roughly around 70 per cent of the country's overall container trade.

The Indian Government plays an important role in supporting the ports sector. Foreign Direct Investment (FDI) of up to 100 per cent under the automatic route for port and harbour construction and maintenance projects has been allowed. It has also facilitated a 10-year tax holiday to enterprises that develop, maintain and operate ports, inland waterways and inland ports.

Cargo traffic handled by India’s major ports increased 5.1 per cent year-on-year to 315.4 million tonnes (MT) during April-September 2016. In terms of composition of cargo traffic, the largest commodity was P.O.L. (37.1 per cent), followed by coal (23.4 per cent), container traffic (19.6 per cent), other cargo (11.9 per cent), iron ore (5.66 per cent) and Fertilizer and FRM (2.5 per cent).

The country’s major ports handled a combined traffic volume of 586.29 million tonnes during April 2016-February 2017, up from 550.45 million tonnes during same period last year, while containerised cargo tonnage rose 3.7 per cent to 10.5 MT during August 2016. During April-June 2016, the ports had handled a combined volume of 2.12 million TEUs, which is roughly around 70 per cent of the country’s overall container trade.

The government has taken several measures to improve operational efficiency through mechanisation, deepening the draft and speedy evacuations. In FY 2015-16, the Indian Port sector witnessed capacity addition of 94 Million Tonnes Per Annum (MTPA), which is the highest in the history of major ports.



Source: <http://worldmaritimeneews.com>

INVESTMENTS

The Indian Minister for Shipping, Road Transport and Highways, Mr Nitin Gadkari, announced a massive investment in India's ports and roads sector, which is likely to help boost the country's economy. The Indian government plans to develop 10 coastal economic regions as part of plans to revive the country's Sagarmala (string of ports) project.

The zones would be converted into manufacturing hubs, supported by port modernisation projects, and could span 300–500 km of the coastline. The government is also looking to develop the inland waterway sector as an alternative to road and rail routes to transport goods to the nation's ports and hopes to attract private investment in the sector.

- Reliance Defence and Engineering Ltd (RDEL) has signed a contract with the Ministry of Defence for the design and construction of 14 fast patrol vessels (FPVs) for the Indian Coast Guard, at a cost of Rs 916 crore (US\$ 137.4 million).
- Tata Steel has signed an agreement to purchase 51 per cent stake in Creative Port Development (CPDPL), which has a concession agreement with the Odisha government to develop a 10 million-tonnes-per-annum (mtpa) Subarnarekha port at Chamukh village in Balasore district of Odisha.
- India's largest container handling port Jawaharlal Nehru Port Trust (JNPT) has signed an agreement to raise US\$ 400 million from State Bank of India and Development Bank of Singapore, to improve the infrastructure required for doubling its existing capacity to 9.85 million twenty foot equivalent units (TEUs) annually.
- Inland Waterways Authority of India (IWAI) and India Ports Global Private Limited (IPGPL) have signed a Memorandum of Understanding (MoU) for implementation of three additional works worth Rs 476 crore (US\$ 71.4 million) in the Kaladan Multimodal Transit Transport Project (KMTTP) in Myanmar.
- The India Ports Global Pvt Ltd plans to set up a Special Purpose Vehicle (SPV) in Iran with participation from private Iranian and Indian firms to

develop and operate the Chabahar port project, which is expected to give India a sea-land access route into Afghanistan through Iran's eastern borders.

- Mr Julian Michael Bevis, Senior Director of Group Relations, Maersk Line India Pvt Ltd, has expressed confidence in Government of India's policies like Sagarmala project, and stated that the company is keen on taking Indian ports on lease.
- An expert panel of the Union environment ministry has recommended approvals for projects worth Rs 20,500 crore (US\$ 3.07 billion) in the aviation and port sectors.
- Minister of Road Transport and Highways, and Shipping, Mr Nitin Gadkari is hopeful of bringing a 'blue revolution' in five years which will include developing eight major ports, making 27 industrial clusters, developing rail and road connectivity with ports and will entail investment of around Rs 400,000 crore (US\$ 60 billion)
- JM Baxi Group, an integrated logistics, services and transportation conglomerate, has initiated talks with Private Equity (PE) funds to raise around US\$ 150-200 million, which will be invested in its asset-heavy businesses such as port terminals and container handling facilities.
- DP World Pvt. Ltd, world's fourth biggest container port operator, plans to invest over US\$1 billion in India, which will be used for augmenting its port-related operations.
- Government of India plans to invest Rs 70,000 crore (US\$ 10.5 billion) in 12 major ports in the next five years under 'Sagarmala' initiative.
- Government of India is planning to set up low-cost non-major ports along coastline under the Sagarmala project and has asked all the 12 major ports to accord priority berthing to such vessels and to encourage quicker movement of cargo.
- Jindal ITF plans to invest nearly Rs 500 crore (US\$ 75 million) to further transloading operations in Haldia. The company, which already transports imported coal in barges to NTPC's power plants in Farakka and Kahalgaon from the Sandheads, plans to transload cargo at the deep-drafted location at Kanika Sands and transport it to Haldia.

- A memorandum of understanding (MoU) has been signed between the Inland Waterways Authority of India (IWAI) and Dedicated Freight Corridor Corporation of India (DFCCIL) to create logistics hubs with rail connectivity at Varanasi and other places on national waterways. The joint development of state-of-the-art logistics hubs at Varanasi and other areas would lead to the convergence of inland waterways with railways and roadways, thus providing a seamless, efficient and cost-effective cargo transportation solution.
- The state-run Shipping Corporation of India Ltd (SCI) is expected to purchase five vessels from the state-owned Cochin Shipyard Ltd. It is also likely to issue tenders to buy two used Liquefied Petroleum Gas (LPG) carriers as it looks to re-start ship purchases that were frozen after poor financial performance.
- Kamarajar Port Limited (KPL, erstwhile Ennore Port Limited) has signed an agreement with M/s Toyota Kirloskar Motor Pvt Ltd to export automobile units through Kamarajar Port. The agreement primarily includes a clause that would restrict original equipment manufacturers (OEMs) to use KPL as their primary port. KPL would in turn offer volume-based discounts on the tariffs on certain facilities for the smooth functioning of operations.
- The Visakhapatnam Port Trust (VPT) has outlined an Rs 3,000 crore (US\$ 450 million) expansion-cum-modernisation plan aimed at enhancing the port's capacity by nearly 50 per cent. The port is estimated to invest Rs 800 crore (US\$ 120 million), a fourth of the planned investment, while seeking private partners to invest the remainder by way of public-private partnerships (PPPs).
- Maharashtra's Jawaharlal Nehru Port Trust (JNPT) plans to build a satellite port at Wadhwan near Dahanu (bordering Gujarat), which is estimated to cost Rs 10,000 crore (US\$ 1.5 billion) to build and likely to ease the congestion of ships at JNPT.

“The Indian Government is ensuring that the trading community has access to the best features.”

Sultan Ahmed Bin Sulayem

Chairman, DP World

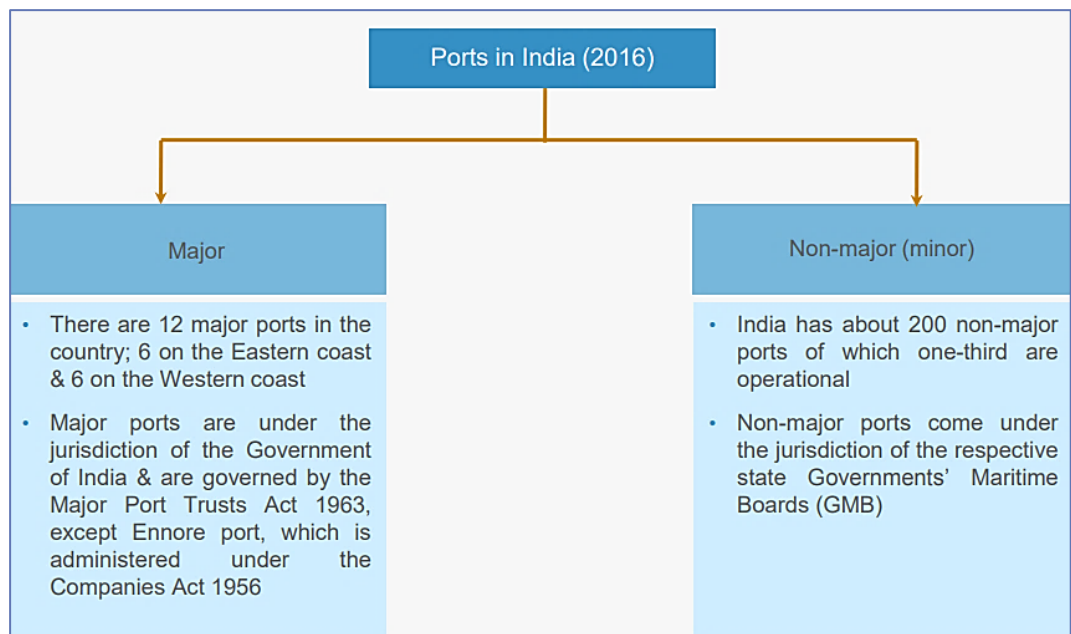


FIGURE 95: CATEGORIES OF PORTS IN INDIA, 2016

Source: Ibef, 2017

MAJOR PORTS

With a coastline of more than 7,500 km, India forms one of the biggest peninsulas in the world. The country has 13 major sea ports and about 200 non-major sea ports and intermediate ports. All the sea ports are located in the following states - Maharashtra, Gujarat, Odisha, Tamil Nadu, Daman and Diu, Andhra Pradesh, Andaman and Nicobar Islands, Kerala, Karnataka, West Bengal, Lakshadweep, Puducherry and Goa. The major ports are administered by the Shipping Ministry of the Central Government, while the minor ports are taken care off by the Ministry of the respective States where they are located.

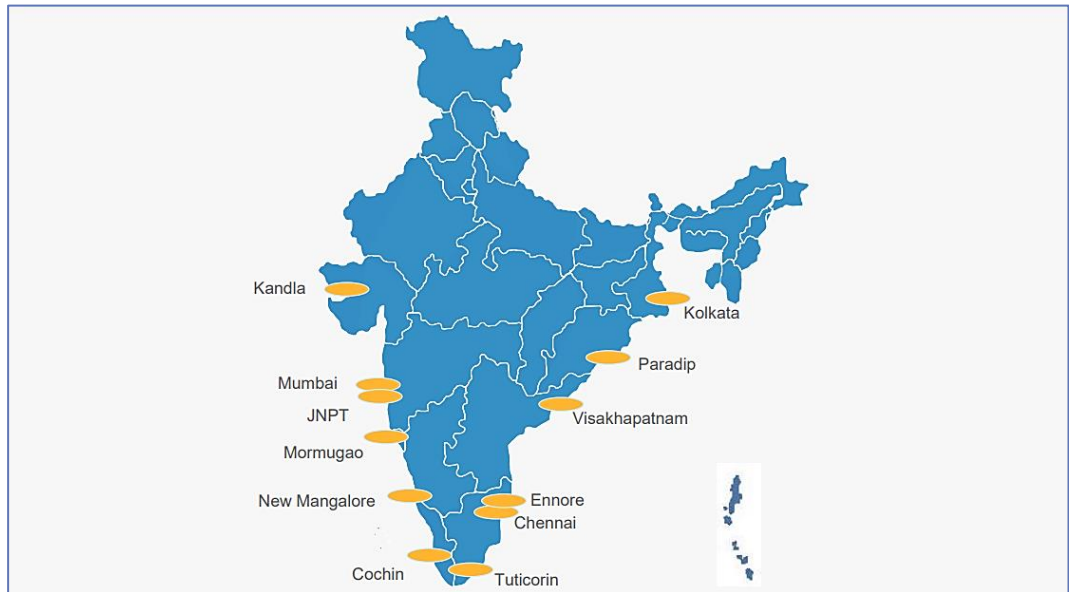


FIGURE 96: MAJOR PORTS IN INDIA

Source: Ibf, 2017

NON-MAJOR PORTS

Another interesting development is the rise of traffic in the non-major ports and their increasing share in the overall cargo traffic. This provides a unique opportunity to cargo handling equipment and O&M vendors to tap into this under developed market segment and entrench themselves as the major players.

Cargo traffic stood at 466.1 MMT in FY16. Cargo traffic has expanded at a CAGR of 10.7 per cent during FY07–16 and is expected to grow annually at 15.9 per cent during FY07-17.

Non-major ports are gaining shares and a major chunk of traffic has shifted from major ports to non-major ports. The contribution of non-major port's traffic to total traffic rose to 43.5 per cent in FY16 from 28.6 per cent in FY07.

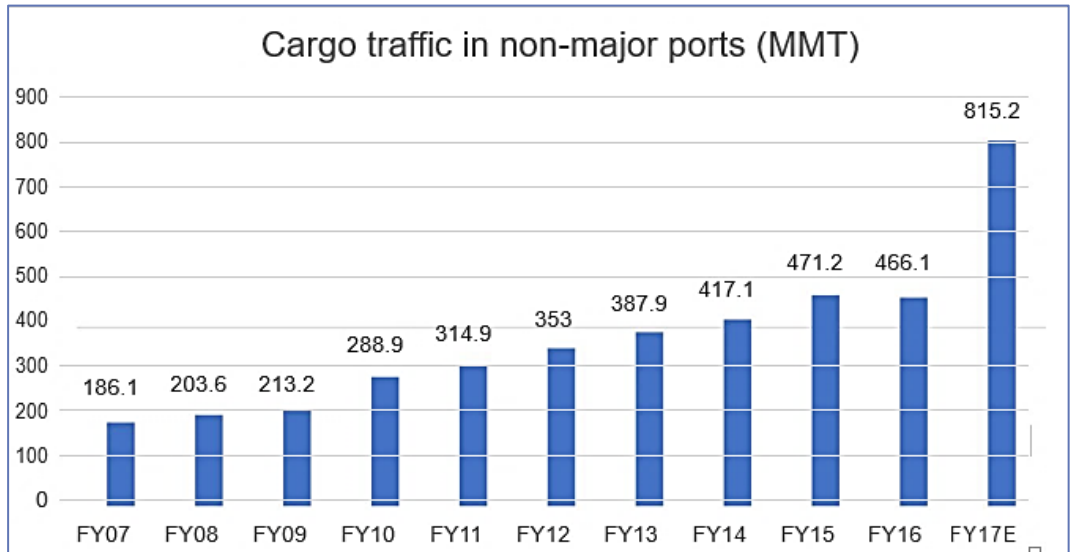


FIGURE 97: CARGO TRAFFIC IN NON-MAJOR PORTS (MMT)

Source: Ministry of Shipping, Techsci research

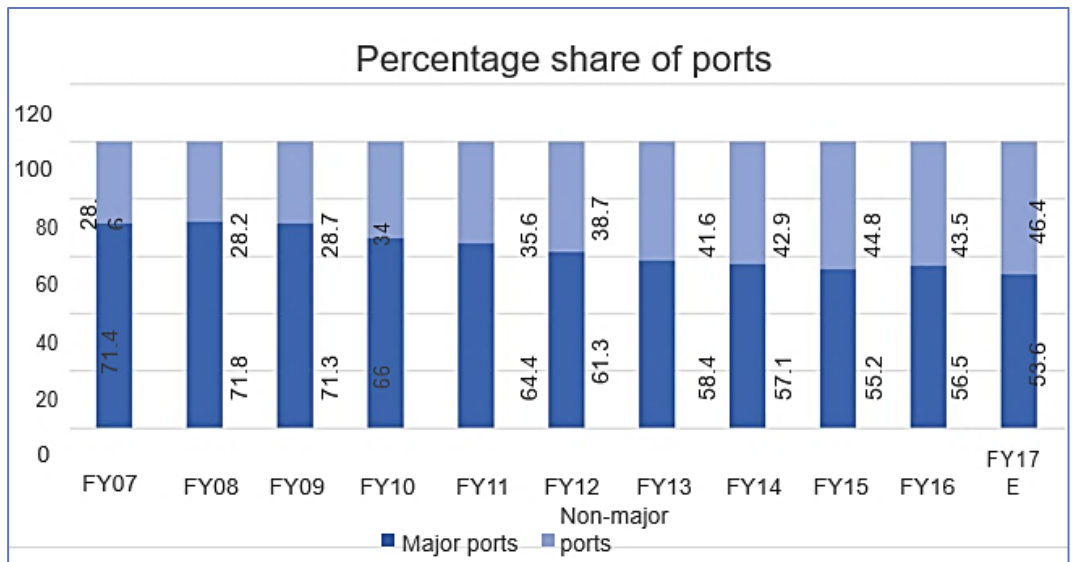


FIGURE 98: PERCENTAGE SHARE OF PORTS, INDIA

Source: Ministry of Shipping, Techsci Research

TRENDS



FIGURE 99: TRENDS IN PORT SECTOR (1/2)

Source: Ibef, 2017

Capacity at major ports grew to 965.36 MMT in FY16, implying a CAGR of 7.5 per cent since FY07

Utilisation rates of major ports in India such as JNPT port, Kandla port, Ennore port, etc., are much above the world’s average

As of November 2016, 12 Major Ports were identified under Sagarmala project, for cargo handling till 2035. The objective of this project is to promote port led development & to provide infrastructure to quickly transport goods to & from ports, with higher efficiency & at lower cost.



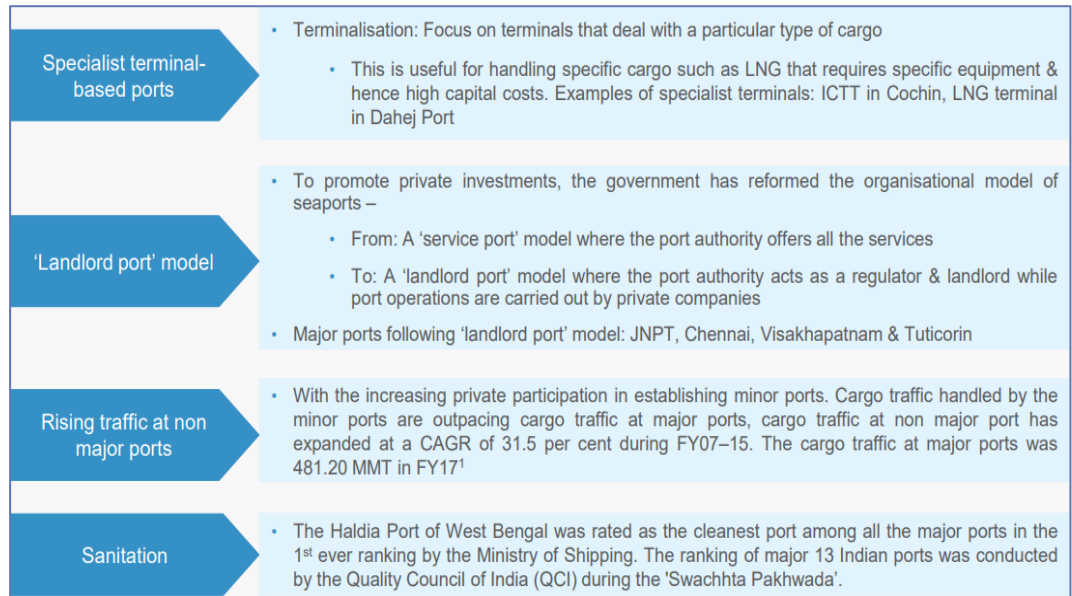


FIGURE 100: TRENDS IN PORT SECTOR (2/2)

Source: Ibef, 2017

KEY INITIATIVES

The Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, reported that the Indian ports sector received FDI worth US\$ 1.64 billion between April 2000 and December 2016. There have been some key developments/investments which will boost the growth in the cargo traffic. Some of the major ones are as below:

The Indian Minister for Shipping, Road Transport and Highways, Mr Nitin Gadkari, announced a massive investment in India's ports and roads sector. The Indian government plans to develop 10 coastal economic regions as part of plans to revive the country's Sagarmala (string of ports) project.

Major private and government organizations have entered into big ticket investments to increase existing capacities and develop new ports. (<https://www.ibef.org/industry/ports-india-shipping.aspx>)

The GOI is also trying to attract FDI into the shipping industry by giving tax incentives, streamline the process of security clearance and standardising the process.

Increasing investments and cargo traffic point towards a healthy outlook for the Indian ports sector. Providers of services such as operation and maintenance (O&M), pilotage and harbouring and marine assets such as barges and dredgers are benefiting from these investments.

The Planning Commission of India forecasted an investment of Rs 180,626 crore (US\$ 27.09 billion) for this industry in its 12th Five Year Plan. In addition, through The Maritime Agenda 2010–2020, the Ministry of Shipping has set a target capacity of over 3,130 MMT by 2020, which would be driven by participation from the private sector. Non-major ports are expected to generate over 50 per cent of this capacity.

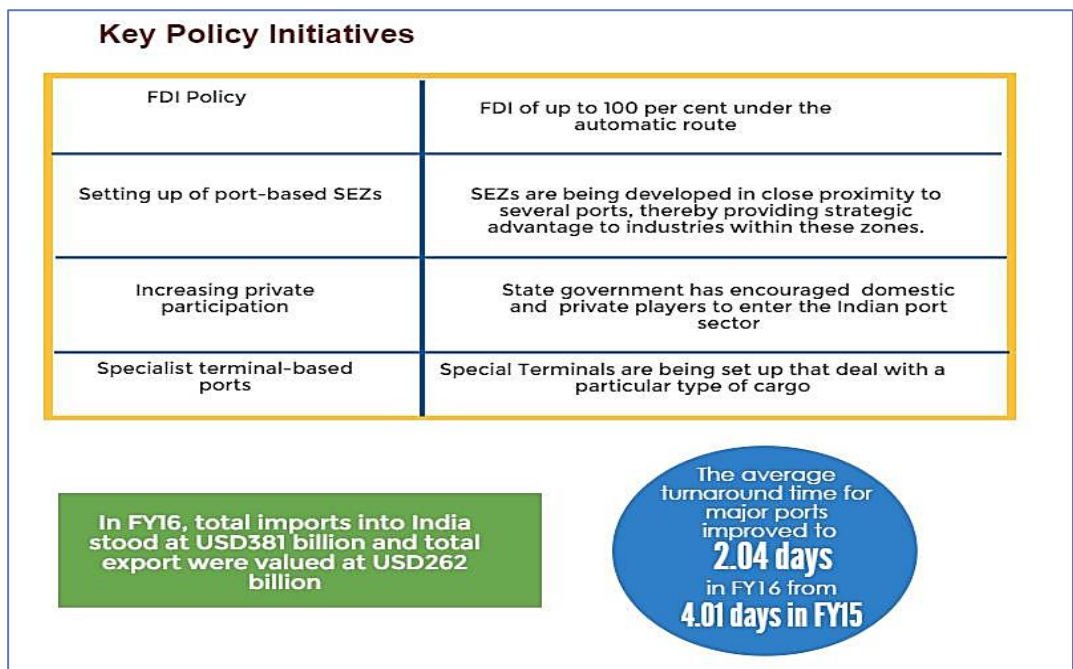


FIGURE 101: INDIAN PORTS - SECTOR SNAPSHOT

Source: Ibef, 2017

CONTAINER HANDLING EQUIPMENT

Containers are the most transported method of cargo form in the world as they are transported by all the three transportation systems available i.e. land, air and water. The aspect of cargo handling of the containers on ships become very critical as they are subjected to harsh weather and strong wind in the mid sea. Also, reduction of turnaround time and increase of cargo traffic calls for increased operational efficiency in the container handling equipment sector. There are different types of CHEs in the market namely:

Container handlers: Reach stackers, they are able to transport a container in short distances quickly and pile them in various rows. They have gained market share in cargo handling due to more stacking and storage capacity when compared to lift trucks.

Rubber tyre gantry crane: It is used for stacking intermodal containers within stacking areas of a terminal. RTGs are used at container terminals and container storage yards or when maximum storage density is desired.

Straddle Carrier: It is an on-road vehicle for use in port terminals and intermodal yards used for stacking. They are capable of speeds of up to 30 km/h with laden containers.

Rail Mounted Gantry cranes: It travels on rails and can stack 20-40 containers in the yard area. It's highly automated with very less human interference required. Compare to RTGs, RMGs have more power and higher lifting capacity.

Container Cranes: It is a large dockside gantry crane found at container terminals for loading and unloading containers from cargo ships.

MATERIAL HANDLING EQUIPMENT

Material handling equipment encompasses a diverse range of tools, vehicles, storage units, appliances and accessories involved in transporting, storing, controlling, enumerating and protecting products at any stage of manufacturing, distribution consumption or disposal. The four main categories of material handling equipment include: storage, engineered systems, industrial trucks and bulk material handling.

Storage and Handling Equipment: It is usually limited to non-automated examples, which are grouped in with engineered systems. Storage equipment is used to hold or buffer materials during “downtimes” or times when they are not being transported. Many companies have investigated increased efficiency possibilities in storage equipment by designing proprietary packaging that allows materials or products of a certain type to conserve space while in inventory.

Engineered Systems: Engineered systems cover a variety of units that work cohesively to enable storage and transportation. They are often automated. A good example of an engineered system is an Automated Storage and Retrieval System, often abbreviated AS/RS, which is a large automated organizational structure involving racks, aisles and shelves accessible by a “shuttle” system of retrieval.

Industrial Trucks: Industrial trucks refer to the different kinds of transportation items and vehicles used to move materials and products in materials handling. These transportation devices can include small hand-operated trucks, pallet-jacks, and various kinds of forklifts. There are many types of industrial trucks like hand trucks, pallet trucks, platform trucks etc.

Bulk Material Handling Equipment: Bulk material handling refers to the storing, transportation and control of materials in loose bulk form. These materials can include food, liquid, or minerals, among others. Generally, these pieces of equipment deal with the items in loose form, such as conveyor belts or elevators designed to move large quantities of material, or in packaged form, through the use of drums and hoppers.

INDUSTRY CHARACTERIZATION

Environment Analysis

The external environment affects the industry structure and its behaviour. Therefore, before studying the industry structure, it's imperative to analyse its environment. The analysis will concentrate on the below factors:

National/ International Economy: The Container traffic at major ports has almost doubled in the past 5-6 years. According to estimates, the world container throughput will reach 1 billion TEUs by 2020, which is almost double of the current container traffic. The emerging Asian & African Countries are expected to be the prime movers in achieving this growth. Most of the shipyards are filled with orders for container ships of over 10,000 TEUs capacity. These container ships will form the major part of the world maritime fleet in the coming years. India is going to be the preferred destination for a global manufacturing hub. This fact presents many opportunities for the ports to change their current operation style and be ready for the foreseen surge in demand of handling and faster evacuation of containers. Many investments have been proposed and steps have been taken by various port authorities for attracting the container traffic. Also with a growing economy, facilitated by increasing disposable income the consumption is going to increase strengthening the increase in Cargo traffic.

Technology: With increasing Cargo traffic every year, it is imperative that turnaround time be reduced for the existing container terminals. This calls for latest in technology Container handling equipment which helps in increasing the capacity of existing ports and also help in modernizing the non-major ports.

Government: In the current scenario, GOI has taken major steps to facilitate the growth of the maritime trade either through big ticket investments for developing/overhauling ports, connecting the ports through a robust network of rail and road transport systems. It is also working towards strengthening inland water transport by developing many inland ports. All these steps present an opportunity to CHE players to a growing market. The handling equipment industry for Inland Container Depots (ICDs) and Container Freight Stations (CFSs) had a total market share of \$75-80 billion and is expected to grow at a CAGR of 10-15%. Government is working on the plan to ease the movement of the containerized cargo at the port and approvals to move containers to ICD/ CFS or vice versa. Also, government is focusing towards improvement in road, rail and port infrastructure projects to provide impetus to the whole logistics industry.

OPPORTUNITIES

- India has a coastline which is more than 7,517 km long, interspersed with more than 200 ports;
- Most cargo ships that sail between East Asia & America, Europe & Africa pass through Indian territorial waters;
- India is the largest importer of thermal coal in the world;
- Non-major ports are set to benefit from strong growth in India's external trade;
- Special Economic Zones are being developed in close proximity to several ports;
- The government initiated NMDP, an initiative to develop the maritime sector; the planned outlay is USD 11.8 billion;
- FDI of 100 per cent under the automatic route and a ten year tax holiday for enterprises engaged in ports;
- Plans to create port capacity of around 3200 MMT to handle the expected traffic of about 2500 MMT by 2020.
- CFS/ICD is the link between multimodal transport operators and shipping lines in the logistics value chain. The services rendered by CFS/ICDs play a crucial role in the entire logistics value chain. CFS/ICD industry is highly fragmented with around 221 operational CFS/ICDs across the country. At JNPT and Chennai, which handle a major share of container traffic, there are around 30 players each.
- Players with presence across entire supply chain have advantage over other players. Pricing pressure in the CFS/ICD industry is high, mainly owing to a large number of players and a lack of differentiated services.

However, players that maintain good relations with shipping lines and possess good rail and road connectivity, generally enjoy higher pricing power. Higher fragmentation in the industry gives us an opportunity. Companies who have container import and export focus use the CFS/ ICD

facilities and mainly concentrated in West and South India and accounts for around 80% of total concentration.

Major hubs in India are Mumbai/ JNPT, NCR, Nagpur, Mundra, Bangalore, Ahmedabad, Chennai, Vizag, Hyderabad, Ludhiana, Kanpur, Kolkata, etc. There are as many as 247 listed container terminals in India. Most of these are CFSs located closer to the port. This demonstrates the dependency on port based facilities as the primary point for cargo containerization and clearing. By comparison, the numbers of listed ICDs are fewer than CFS, despite the fact that a large portion of the cargo traffic is bound for inland locations. ICDs having rail connectivity the share of private operators is still lagging while the government run Container Corporation of India (CONCOR) continues to be the largest player operating 48 terminals which handle EXIM cargo, while 14 others handle domestic traffic only. CFSs and ICDs are some of the fastest-growing segments of the Indian logistics industry. Their growth will gain pace in line with the increasing need to tackle the growing complexities of maritime intensive supply chain.

Growing competition from private participation will also force players to provide new services and customized logistic solutions. Recent investments in developing Free Trade Warehousing Zones (FTWZs) by private players are illustrative of the growth potential and patent need of supporting infrastructure. However, to sustain high growth in container storage, few challenges need to be tackled. The modal shift from road to rail will play a key role in facilitating a smooth flow of cargo from distant hinterlands to the port, decongesting ports and National highway in a safe and environmentally sensitive manner. The much-awaited development of dedicated freight corridors on Eastern and Western ports is likely to provide the required impetus for rail services to be competitive to road transport. Cooperation among key stakeholders including various government agencies, ports, shipping lines and private ICD operators will be a key success factor for enhancing the role of inland container depots, as well as container freight stations. The combination of such factors gives impetus for us to enter the market with a differentiated offering. In the current market scenario, end to end solution providers are the ones who would end up with significant market share.

3.13. PULP INDUSTRY

Pulp is mainly used in the paper and paperboard production. The amount of pulps being consumed depends on the required quality on the finished paper. Wood furnish, brightness, viscosity, extractives, dirt count and strength are the important quality parameters.

MARKET SIZE AND CHARACTERIZATION

India has a large forest resource with over 68 million hectares of forest, equivalent to 23% of the country. The forest industry contributes 1.7% to India's GDP of which the pulp and paper sector is comparatively small but dispersed.

Eucalyptus is the key species produced domestically and used by the pulp and paper industry. The sector also uses large volumes of recycled material – up to 80% - which is both sourced domestically and imported. India's plantation resource has been increasing in recent years and supplies much of the virgin fibre demand. Waste from other wood production operations e.g. plywood is used by the pulp and paper industry. Limited volumes originate from natural forest.

The pulp and paper industry is dispersed throughout the country and is dominated by small integrated and paper mills.

Over the next years, demand for paper is expected to increase by between two-to-twelve per cent annually, depending on paper grade. Over the past decade, the domestic pulp industry has steadily increased its usage of pulpwood because of higher pulp production, less usage of bamboo and because several pulp mills switched from recycled fiber to wood fiber.

The share of imported wood fiber for the pulp industry accounted for almost ten per cent of total consumption of wood fiber in 2014, and this share is expected to increase in the coming years.

The shortage and high cost of local pulpwood in India has resulted in increased interest in sourcing wood chips from overseas despite logistical difficulties both at the ports and when transporting the chips from the ports to the pulp mills long.

Importation of chips is fairly new and Indian pulpmills did not import any wood chips until 2013 when the first shipments of hardwood chips from South Africa, Australia and Thailand arrived. The total imports reached just over 200,000odmt in 2013, then rose to approximately 370,000odmt in 2014, according to the Wood Resource Quarterly. South Africa has been the major supplier of chips, with shipped volumes accounting for about 70 per cent of the total import volume in 2015.

During the first six months of 2015, India imported an estimated 180,000m³, or about 30 per cent more than in the same period in 2014. So far in 2015, three countries have exported wood chips to India, South Africa, Brazil and Vietnam. South Africa has been the dominant supplier to date, and is likely to continue to be the major supplier for the foreseeable future.

TRENDS

The government ban on plastic, which in turn resulted in the growing demand for packaging materials, as well as the rising volume consumption of paper by Indian printing and publishing companies showed a sudden rise in the market for the pulp and paper industry.

In 2015 the industry eased back to a 2% expansion to achieve INR 784.3 billion. The sluggish performance was controlled by falling pulp and paper prices, in accordance with the deluge of cheaper imports. Import value shrunk by 2.7% account for a significant 35.6% of the aggregate market (or INR 247.1 billion).

The decline was to a great extent gotten from a rise in the dumping of less expensive imports from China and Indonesia after the introduction of a counter veiling duty on paper imports from these nations by the US Government in mid-2015.

Paper and paperboard utilization by packaged food makers and different ventures that heavily depend on packaging materials kept on encountering strong growth since 2015-2016. The rapidly growing e-commerce sector in India was another important driver of interest for packaging papers. For instance, in 2015 alone, both Amazon and Flipkart added a joint 1.8 million sq. ft. of warehouse space in the nation. Hence, of the developing Indian packaging sector, the

corrugated paper, paperboard and containers industry increased consumption of pulp, paper and paperboard by 3%.

The industry is growing rapidly in India. According to the Audit Bureau of Circulation, newspaper circulation figures continued to thrive over the years. Even after the competition from digital sector, print media is going strong and hence the continued demand for the products in the industry.

“Out of 707,000 people employed in the forest sector 215,000 people (30%) are employed in pulp and paper sector”

State of World Forests, 2014



Source: Pure Chemicals Co

MAIN PLAYERS

There are over 800 mills in India with a capacity utilization of around 90%. The annual turnover of the industry is over INR 30,000 crores. 0.37 Million people are employed in the industry that contributes to 2.7% of the world's share Wood based industry contributes to 31%, agro based has a share of 22% and the remaining 47% can be attributed to the recycle fibre based industry.

The following are the major players in this industry in India:

ITCPSPD

Paperboards and Speciality Paper division of ITC is one of the major players in the industry. Headquartered in Secunderabad in Andhra Pradesh, they have branches in the major cities like New Delhi, Mumbai, Bangalore, Kolkata and Chennai.

They make use of light ECF bleaching technology using ozone to reduce the use of chlorine to manufacture brighter, stronger pulp which are environmental friendly. They also make use of the Green Boiler, a renewable bio mass for fuel, reducing the dependence on fossil fuel. They use Servo technology, first of its kind in India to give a perfectly registered cut-pack.

Ballarpur Industries Limited

Headquartered in Gurgaon and with units in Orissa, Maharashtra, Mumbai, Delhi, Chennai etc., they have commissioned new paper finishing equipment like Globe re-winder, Pasaban Synchro Sheeter and Beilomatic ream wrapping machine.

For the betterment of the society and environment, they have installed New-lime Sludge re-burning, commissioned oxygen De-lignification plant to control AOX discharge and revamped the effluent discharge systems.

JK Paper Limited

With Central Pulp Mills in Gujarat and JK paper Mills in Orissa, JK Paper Ltd. is headquartered at New Delhi. They have branches in all Delhi, Mumbai, Chennai

and Kolkata. To improve the properties and aesthetic look of paper, they have undertaken the usage of WGCC/PCC as fillers in their brand.

They have installed lime sludge recycling plants and rainwater harvesting plants in their factories. The company has formed a new NGO named 'Sparsh' to intensify the efforts on the community development front to create a better quality life for the people.

They are planning the installation of a pulp mill of 200,000TPA along with utilities.

Tamil Nadu Newsprint and Papers Limited

Headquartered in Chennai in Tamil Nadu, the works are mainly undertaken in Karur. They have installed a 300 TPD hardwood pulp line with ECF bleaching and a 500 TPD ECF bleach plant for chemical bagasse pulp line, along with high efficient washers, multi-fuel boiler with steam generation capacity of 125 TPH.

They have planted 50000 trees in and around the factory, implemented Non-Condensable Gas incineration system and brought down their water consumption to 62KL per tonne of paper. They have also introduced Ozone treatment and entered into an agreement with the Tamil Nadu Investment Company to reduce the total dissolved solids in the final effluent to improve standards.

International Paper APPM Ltd.

They are one of the major players in India. Established in 1964, the company employs around 2500 people and is headquartered in Hyderabad. They mainly focus on results to create value for the shareholders.

As one of the significant purchasers of pulpwood in India, IPAPPM recognises the responsibility of sustainable forestry. Their initiative towards environmental betterment has grown to nearly 535,000 acres and now provides a means of survival for many rural farmers and their communities. As of the end of 2014, they have planted nearly 1.5 billion saplings.

They also promote environmentally & socially responsible business practices by assessing and mitigating the environmental & social impacts on sustainable economic growth.

Century Pulp and Paper

Century Pulp and Paper is headquartered at Mumbai. Their factory is located in Uttarakhand and has branches in Kolkata and Delhi.

With a workforce of more than 2500, Century Pulp and Paper is headquartered at Mumbai. Their factory is located in Uttarakhand and has branches in Kolkata and Delhi.

They mainly use technologies like 450 TPD ECF fibre line along with 1300 tons' black liquor solids/day. They have a 100 TPD tissue plant equipped with the latest technology from Metso to manufacture finest paper with highest bulk and softness commissioned in the late 2000s.

They have launched unbleached absorbent kraft and century green – copier paper from recycled fibre.

They have installed an efficient full-fledged effluent treatment plant, installed pith fired boiler to utilise pith as fuel substituting coal. Electrostatic precipitators have been installed in all boilers in lime kiln to arrest particulate from flue gases.

Orient Paper and Industries Limited

Headquartered in Kolkata, the factories of Orient Paper and Industries are located in Madhya Pradesh. With a workforce of around 2000, they have been successful in converting the traditional Pulp Mill into a State of the Art Fibre line by adopting Hot Stock Screening to reduce Power consumption and improve pulp quality.

Extended oxygen De-lignification system to reduce AOX discharges in bleach plant. They also modified the bleaching sequence while focusing on the solutions pertaining to environment and minimum use of energy. They have also successfully adopted solar energy systems for industrial and domestic lighting/heating.

They have adopted technologies like diffused aeration system, sludge dewatering system for better effluent treatment process and minimization of solid waste generated.

GOVERNMENT INTERVENTION

Pulp and paper industry is one of the most polluting industries, as identified and categorised by Central Pollution Control Board (CPCB). It consumes a lot of raw materials, chemicals, energy and water and also generates very high levels of effluents. The industry's compliance to the environmental norms is inadequate even after the efforts put in by the existing players.

It uses a huge amount of water and chemicals and delivers extensive volumes of effluents. Hence, MoEF launched the Charter "Corporate Responsibility for Environment Protection (CREP)" in 2003. This was jointly formulated by the MoEF and the industrial sector.

The sector is considered to be very low on innovation by the world standards. The few developments made include changes in the bleaching techniques and increased usage of recycled paper. The Indian industry lags behind globally due to the differing qualities of the Indian Pulp and paper industry with a range of raw materials and production capabilities.



Source: indevcopapermaking.com

PRODUCTS IN USE

Pulper with belt Conveyor: It is a medium consistency pulper which helps slush all types of pulp. It is available in sizes which suits the industry requirements. A belt conveyer is supplied for feeding of the raw material to the machine.

High Density Cleaner: It helps ensure the removal of contamination in the pulps. The machine also helps ensure a clogging free operation.

Turbo Separator: Effectively separates all the heavy and light impurities.

Turbo with Extended Cleansing System: It is a two Stage Turbo and Cleaner that helps make quality pulp. It has an operating consistency of 3-4%. It has a HCC with Auto Reject Discharge System.

De-Inking Cell: De-inking removes the printing inks, stickies, etc. that might affect the paper making process. In this process, ink is detached from fibre.

Flotation technology being used provides high yield of fibres and also simple handling with maximum reliability in the operation.

Pulp Impeller: This is used to slash all type of waste papers, for both kraft paper and writing and printing paper.

MAJOR MACHINERY MANUFACTURERS FROM INDIA

S L Paper Machines: Based in Ahmedabad, they follow an eco-friendly approach to the pulp and paper industry. They are active in the Indian and international market. Their product range involves Paper pulper, paper mill belt conveyers, paper making machines, duplex board machines and many others.

JMC Paper Tech Pvt. Ltd.: They are involved in the manufacturing of various products like High consistency pulpers, cleaners, turbo separators, De-inking cells etc.

Cee Engineering Pvt. Ltd.: Based in Pune, this company is involved in the manufacture of various products including the ones used in the pulp and paper industry. They also make industrial dryers, evaporators, agro chemical power plants among many others.

Excel Paper Tech Engineers: This organization, based in Gujarat is engaged in manufacturing and supplying of Paper Plant Equipments, Industrial Machinery and Press Section. The main features of their products involve Easy installation, easy to operate, low maintenance, optimum strength and high functionality

Abi Pulp and Paper Equipments: They are known for manufacturing, supplying & exporting wide range Pulp and Paper making Machineries and Equipments. Based in Coimbatore in Tamil Nadu, their products involve pulpers, conveyers, cleaners, sludge press, turbo separators etc.

OPPORTUNITIES

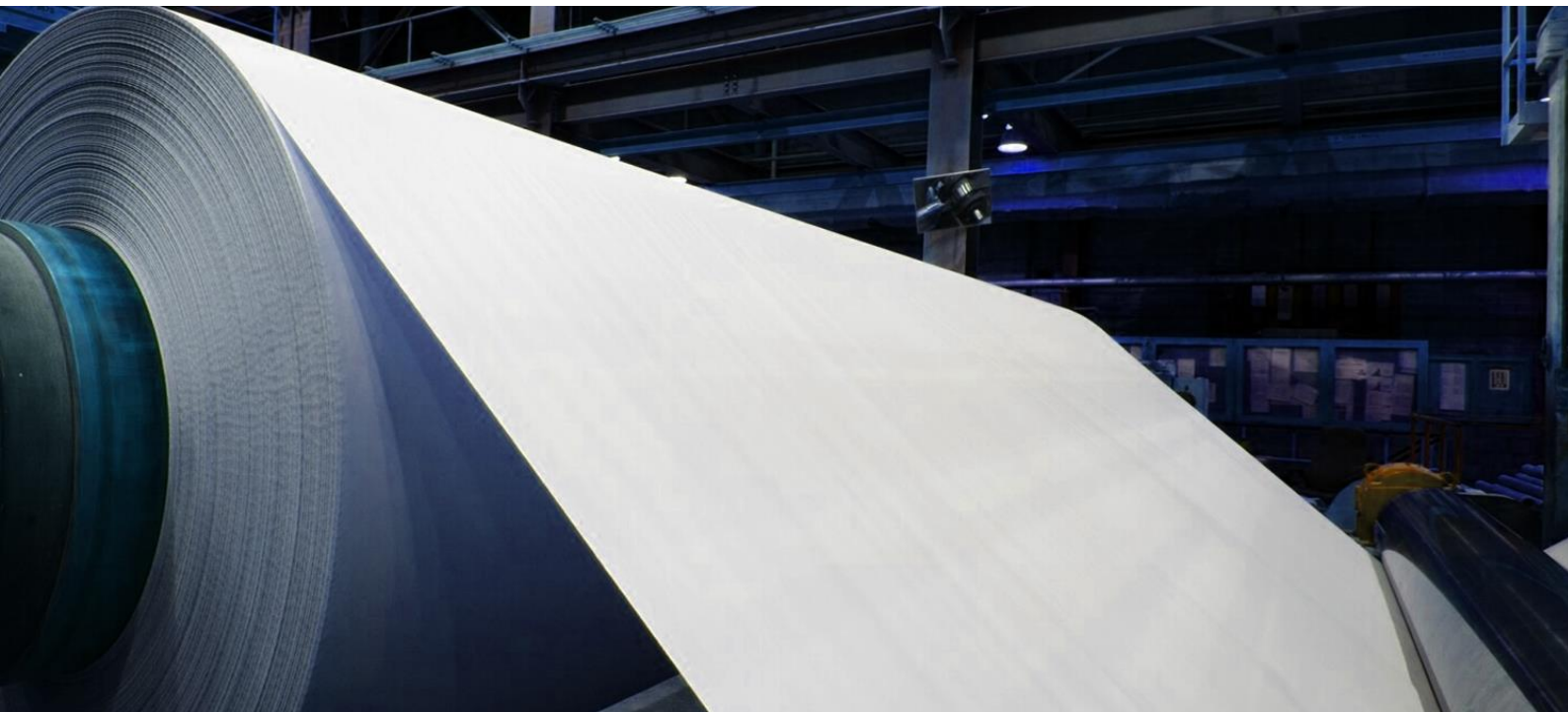
The Indian Pulp and Paper Industry currently lack technological innovations that can bring down the damage to the environment. To establish their place in the Indian market **Produtech** needs to address the following goals:

- New technology: bring in machinery that produces less effluent than the existing equipment. Also use chemicals that are less harmful to the society.
- Potential Partners: focus on building relationships with the current players in the industry like International Paper, ITC, JK, TNPL etc. who constitute more than 50% of the industry. They are looking for a more environmentally suitable alternative and hence the strategic partnership can help each other.
- Communication: The best way to approach the existing players would be by meeting them in person. Once we have established our place in the industry, word of mouth and other alternatives would become significant.
- Import/Export Market: Due to the low customs duties in countries like South Korea, China and Indonesia, the import market has been flourishing. This can be curbed by bringing in new technologies and producing lost cost paper in India.

CONCLUSION

The major issues faced by the Indian paper industries include the raw material availability/ scale of operations, technological obsolescence and cost of implementing new technologies. Some of the large wood based mills have made some progress to keep pace with the technological development, like in the western countries, adopting the State-of-the-Art green technologies. Nevertheless, the medium and small agro and recycle waste paper based mills are yet to adopt the existing or emerging advanced technologies to achieve the desired efficiency and improved environment protection.

Drastic changes in the stock preparation, bleaching and washing, if introduced, especially in small and medium scale industries, will have a significant impact on the overall standards of Indian pulp and paper mills. **Produtech** should focus on machinery which can solve these problems and reduce the negative impact caused on the environment by the existing technologies.



Source: Central Pulp & Paper Research Institute, India

3.14. RENEWABLE ENERGY

Renewable energy in India can be divided into three major segments viz. Solar, Wind and others. This report deals with two first sectors separately.

India has a substantial installed solar power capacity as well as wind capacity. Recently, India has seen an increase in the push for solar energy, with substantial increase in planned capacities and subsidies for the same.

MARKET SIZE AND CHARACTERIZATION

Indian power sector is undergoing a significant change that has redefined the industry outlook. Sustained economic growth continues to drive electricity demand in India. The Government of India's focus on attaining 'Power for all' has accelerated capacity addition in the country. At the same time, the competitive intensity is increasing at both the market and supply sides (fuel, logistics, finances, and manpower).

Total installed capacity of power stations in India stood at 315,426.32 Megawatt (MW) as of February 28, 2017.

The Ministry of Power has set a target of 1,229.4 billion units (BU) of electricity to be generated in the financial year 2017-18, which is 50 BU's higher than the target for 2016-17. The annual growth rate in renewable energy generation has been estimated to be 27 per cent and 18 per cent for conventional energy.

The Government has added 8.5 GW of conventional generation capacity during the April 2016-January 2017 period. Under the 12th Five Year Plan, the Government has added 93.5 GW of power generation capacity, thereby surpassing its target of 88.5 GW during the period.

The share of solar capacity in the renewable energy sector is likely to increase to 11 per cent in FY16.

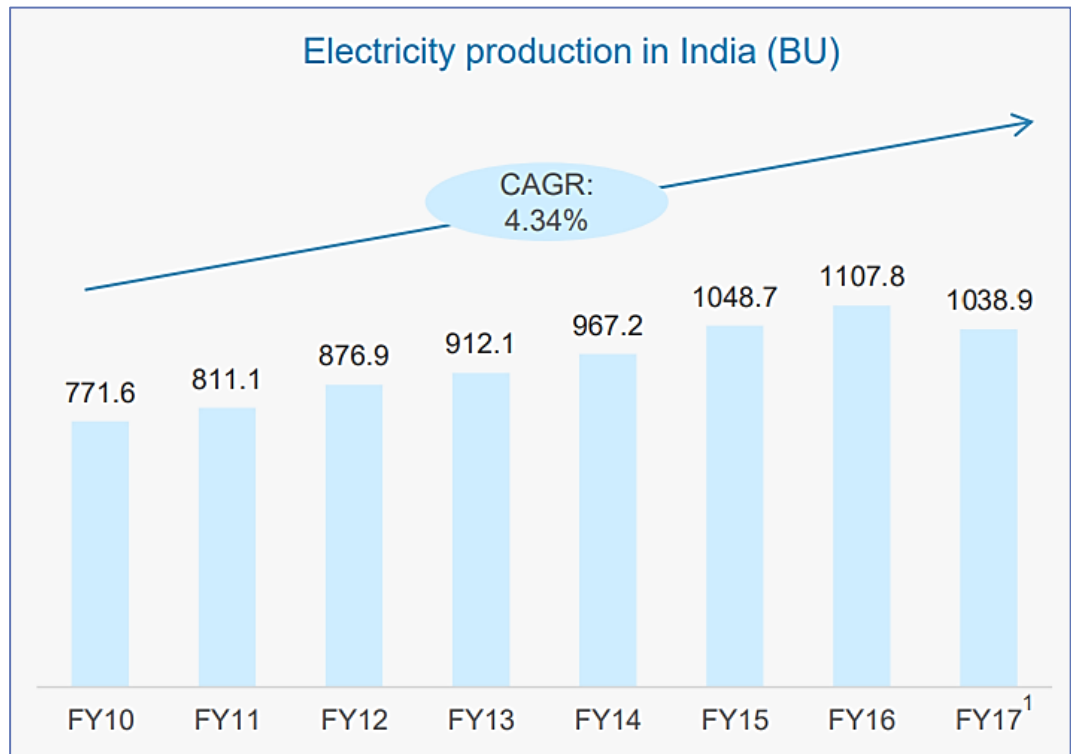


FIGURE 102: ELECTRICITY PRODUCTION IN INDIA (BU)

Source: Ibef, 2017

- With electricity production of 1,038.9 BU in India in FY17 the country witnessed growth of around 6.25 per cent over the previous fiscal year.
- Over FY10–FY17 electricity production in India grew at a CAGR of 4.34 per cent.
- The 12th Five Year Plan projects that, by 2016–17, total domestic energy production would reach 669.6 million tonnes of oil equivalent (MTOE) & would further increase to 844 MTOE by 2021–22.

INVESTMENTS

Around 293 global and domestic companies have committed to generate 266 GW of solar, wind, mini-hydel and biomass-based power in India over the next 5–10 years. The initiative would entail an investment of about US\$ 310–350 billion.

Between April 2000 and December 2016, the industry attracted US\$ 11.4 billion in Foreign Direct Investment (FDI).

Some major investments and developments in the Indian power sector are as follows:

- Japan's JERA Co. Inc, has acquired a 10 per cent stake in ReNew Power Ventures Pvt. Ltd for US\$ 200 million, valuing the company at US\$ 2 billion before its proposed Initial Public Offer (IPO).
- The Indian Railways is looking to award six tenders worth Rs 8000 crores (US\$ 1.2 billion), for setting up of a country-wide electricity transmission network, as part of a strategy to reduce electricity bills.
- Renewable energy company ReNew Power has announced securing US\$ 390 million debt funding from its existing investor Asian Development Bank (ADB) for developing and expanding capacities of 709 megawatt (MW) across various states of India.
- International Finance Corporation (IFC), along with IFC Global Infrastructure Fund, the private equity fund of IFC Asset Management Company, has announced investment of US\$ 125 million equity in Hero Future Energies, which will help the firm set up 1 gigawatt (GW) of greenfield solar and wind power plants over the next one year.
- India's largest energy conglomerate NTPC Limited plans to invest Rs 2,648 crore (US\$ 397 million) for developing three coal blocks in Odisha.
- French power major EDF Energies, has announced that EDF plans to invest US\$ 2 billion in renewable energy projects in India.
- International Finance Corporation (IFC), the investment arm of the World Bank, plans to invest Rs 840 crore (US\$ 126 million) in Hero Future Energies Limited, the renewable energy arm of the Hero Group, which will be used to fund the construction of solar and wind power plants.
- GAIL India Limited plans to enter into a partnership with California-based Bloom Energy Corporation to pursue natural gas-based fuel cell power generation, which is expected to help the country move away from relying on capital intensive fixed power infrastructure to capital light and soft infrastructure.
- Power Finance Corporation Limited (PFC) has provided a financial assistance of Rs 13 crore (US\$ 1.9 million) and collaborated with National

Green Highways Mission (NGHM) under National Highways Authority of India (NHA) for plantations work on NH7 in Nagpur region under their 'Adopt a Green Highways' Program.

- The State Bank of India (SBI) has signed an agreement with The World Bank for Rs 4,200 crore (US\$ 630 million) credit facility, aimed at financing Grid Connected Rooftop Solar Photovoltaic (GRPV) projects in India.
- The World Bank Group has committed to provide US\$ 1 billion for India's solar energy projects and plans to work with other multilateral development banks and financial institutions to develop financing instruments to support future solar energy development in the country.
- The Ministry of New and Renewable Energy (MNRE) has signed an agreement with Germany-based KfW Development Bank to fund the Rs 300 crore (US\$ 45 million) floating solar project in Maharashtra and Kerala, which is expected to generate over 310 GW of green energy.
- CLP India, one of the largest foreign investors in India's power sector, has acquired a 49 per cent stake in SE Solar, a Special Purpose Vehicle (SPV) set-up by Suzlon Group for building a 100 MW solar energy plant at Veltor in Telangana, for Rs 73.5 crore (US\$ 11.02 million).
- The Ministry of New and Renewable Energy (MNRE) plans to launch an integrated bio energy mission with an investment of Rs 10,000 crore (US\$ 1.5 billion) from FY 2017-18 to FY 2021-22, aimed at enhancing the use of bio-fuels like ethanol and biogas and reducing consumption of fossil fuels.
- Canada's second largest pension fund, *Caisse de Depot et Placement du Quebec*, has set up its office in India and committed to invest US\$ 150 million in the Indian renewable energy sector over the next three to four years.
- Sembcorp Industries have launched a 2,640 Mega Watt (MW) Sembcorp Gayatri power complex worth US\$ 3 billion in Nellore, Andhra Pradesh which is the largest Foreign Direct Investment (FDI)-driven project on a single site in the thermal power industry in India.
- SunEdison, world's largest renewable energy company, plans to continue its focus on 'Make in India' by further reducing the cost of renewable energy

and developing over 15 gigawatts (GW) of wind and solar projects in the country by 2022.

- Aditya Birla Group has announced a partnership with the Abraaj Group, a leading investor in global growth markets, to build a large-scale renewable energy platform that will develop utility-scale solar power plants in India.
- Sterlite Grid, India’s largest private operator of transmission systems is joining hands with US major — Burn & McDonnell for its Rs 3,000 crore (US\$ 450 million) power transmission project in the Kashmir valley.

STRATEGIES

Control generation costs	<ul style="list-style-type: none"> • Companies are developing captive coal fields to reduce price volatility & ensure uninterrupted supply of fuel to control generation cost • Most of the power companies are now located near energy source. This helps minimise costs of fuel transport
Acquiring sources of fuel supply	<ul style="list-style-type: none"> • Power companies are now looking at securing adequate supplies of fuel by targeting not only domestic but also overseas resources • Reliance Power already has coal reserves in Indonesia • Essar Power have captive coal mines in Indonesia from which it extracts coal for power plants in India • Government has enabled the power utilities for swapping their coal supplies with the nearest sources so as to save miscellaneous costs & decongest the rail network
Diversifying generation technologies	<ul style="list-style-type: none"> • Companies are using multiple-generation technologies based on a project’s requirement • Companies such as NTPC & Reliance Power already have coal-fired, gas-fired & hydroelectric capacity • This helps them diversify, reduces dependence on a single source
Additional revenue streams	<ul style="list-style-type: none"> • Most of the companies are now looking to sell their carbon credits to generate additional revenue by employing supercritical technology
Digital India	<ul style="list-style-type: none"> • Launch of smart grid mission with 14 DISCOMS as a pilot • Smart metering for high – end users of electricity • Under Union Budget 2017, government approved the 'Pradhan Mantri Gramin Digital Saksharta Abhiyan' (PMGDISHA) for 6 crore rural households

FIGURE 103: INDIAN ADOPTED STRATEGIES IN ENERGY SECTOR

Source: Iberf, 2017

SOLAR ENERGY

Current Scenario

Capacity additions increased 83% to 5.5 GW in FY2017 due to decreasing solar module prices, supportive central and state government policies and cheaper finance available. Biggest additions contributing to about 3.5GW were made in the states of Andhra Pradesh, Karnataka, Telangana and Tamil Nadu.

Renewable Purchase Obligations (RPOs) have been a big factor in the encouragement for solar energy. The overall RPO compliance has been 85-90%, leading to more faith in these projects. Under the National Tariff Policy 2016, RPO targets are to be increased to 8% by 2021-22, leading to a push from the state and central governments to encourage solar energy.

Efficiency of Solar Energy in India

PLF (Plant Load Factor), which is the ratio of actual energy generated to the maximum that can be generated, is generally the uncertain factor when it comes to determining the power output. Due to the previous policies and previous investment in this sector, the average PLF from April 2013 to December 2015 was a healthy 21%, with more than 85% of the projects having PLF of more than 19%,



Source: <http://betternz.org>

The table below shows the state-wise distribution of all renewable energy in India:

States / UTs	Small Hydro Power	Wind Power	Bio-Power-BM Power/ Cogen.	Bio-Power-Waste to Energy	Solar Power (As of March 17)	Total Capacity
Andhra Pradesh	242	3621	378	58	573	4872
Arunachal Pradesh	105	0	0	0	0	105
Assam	34	0	0	0	0	34
Bihar	71	0	93	0	5	168
Chhattisgarh	76	0	229	0	94	398
Goa	0	0	0	0	0	0
Gujarat	17	5224	65	0	1119	6425
Haryana	74	0	96	0	15	185
Himachal Pradesh	799	0	0	0	0	799
Jammu & Kashmir	158	0	0	0	1	159
Jharkhand	4	0	0	0	16	20
Karnataka	1221	3751	1401	1	145	6519
Kerala	205	52	0	0	13	270
Madhya Pradesh	86	2498	93	4	776	3457
Maharashtra	346	4772	1968	13	386	7485
Manipur	5	0	0	0	0	5
Meghalaya	31	0	0	0	0	31
Mizoram	41	0	0	0	0	42
Nagaland	31	0	0	0	0	31
Odisha	65	0	50	0	67	182
Punjab	171	0	62	9	405	647
Rajasthan	24	4282	119	0	1270	5695
Sikkim	52	0	0	0	0	52
Tamil Nadu	123	7876	889	8	1062	9958
Telangana	0	101	158	0	528	787
Tripura	16	0	0	0	5	21
Uttar Pradesh	25	0	1933	5	143	2107
Uttarakhand	209	0	73	0	41	323
West Bengal	99	0	300	0	8	406
Andaman & Nicobar	5	0	0	0	5	10
Chandigarh	0	0	0	0	7	7
Dadar & Nagar Haveli	0	0	0	0	0	0
Daman & Diu	0	0	0	0	4	4
Delhi	0	0	0	16	14	30
Lakshwadeep	0	0	0	0	1	1
Pondicherry	0	0	0	0	0	0
Others	0	4	0	0	58	62
Total (MW)	4334	32181	7907	114	6763	51299

FIGURE 104: STATEWISE RENEWABLE ENERGY INSTALLED CAPACITY (MW)

Source: MNRE

The PLF also depends on the kind of technology being used, with thin-film technology based plants giving a better output as compared to the crystalline ones. This is because thin-film solar cells has higher capacity to absorb diffused sunlight, making it ideal for dusty and foggy conditions, and has a higher temperature co-efficient making it better suited for high-temperature zones like Rajasthan and Gujarat.

The PLF is heavily dependent on the level of irradiance available at the location where the plant is set up. The state-wise distribution of the irradiance is given the map below.

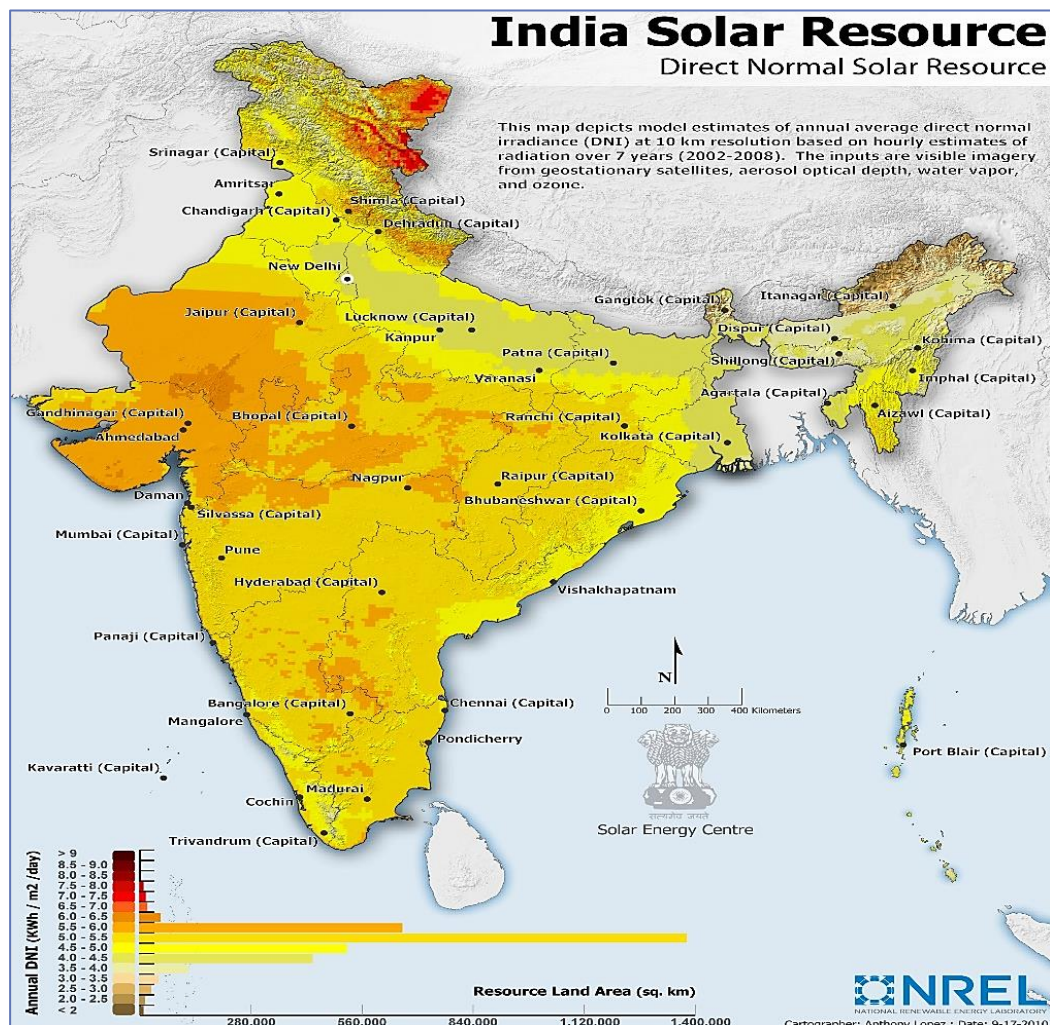


FIGURE 105: INDIA SOLAR RESOURCES

Source: NREL

The variance of the PLF according to the technology and location can be illustrated in the below table:

Scheme/Name	Location	Time Period	PLF	Details
JNNSM ¹ Phase I (Batch 1 and 2)	Rajasthan	Apr 2013-Dec 2015	21%	More than 85% had a PLF of >19%
Gujarat Policy	Gujarat	Apr 2013-Dec 2015	18%	The lower irradiance in Gujarat led to lower PLF
JNNSM Phase II (Batch 1)	Madhya Pradesh and Rajasthan	Q1-Q3 FY2015-16	21-22%	
RPSSGP ²	Jharkhand, Maharashtra and Haryana	Apr 2013-Oct 2014	16.4%	These states have lower irradiance; projects <2MW in size

TABLE 8: PFL VARIATION ACCORDING WITH TECHNOLOGY AND LOCATION

Financing

Earlier, a lot of projects did not take off for lack of funding. However, this gap in funding is now being met by funding from foreign agencies. Equipment procuring is availed from foreign funding at 9-10%. Some key foreign agencies involved in funding are International Finance Corporation (IFC), Asian Development Bank (ADB), US EXIM Bank and Germany-based KfW.

Some companies like Renew Power and NTPC are raising funds via bonds. Many Private Equity players like GIC, ADIA, IFC, Goldman Sachs and GEF etc have also invested in this field.

According to CRISIL research, 25-26GW is expected to be added to the existing one over 2017-19. The National Solar Mission, Phase II, Batch 2 to 6 would be a major contributor to this. Along with NSM, NTPC, Coal India, ONGC and the others would help in additional capacity expansion.

¹ Jawaharlal Nehru National Solar Mission, launched in 2010 to encourage solar energy in India
² Rooftop Photovoltaic and Small Solar Power Generation Programme under the JNNSM

Government Policies

Solar panels, which form up 60% of the project costs, attract a customs duty of 10+4%. However, this duty can be waived off if the project has a PPA (Power Purchase Agreement) or a net metering agreement with the power distribution company.

Current Players

The major independent players in the solar power producing segment are Tata Power Renewable Energy Ltd, Azure Power, Acme Solar, Renew Solar Power, Solardirect India, Essel Infra Project Ltd, Adani Green Energy and Sky Power. They have a combined capacity of approximately 3000MW.

Growth Drivers

According to the CRISIL Report on Solar Energy Sector, the following are the major drivers and constraints:

Drivers

Financial Health of Discoms: Various schemes like UDAY (Ujjwal Discom Assurance Yojana) are expected to ease the financial troubles of discoms, leading to better growth.

Government Incentives: JNNSM and other government schemes are already encouraging private investors to participate in the industry. Better RPO compliance rates also increase the confidence in these schemes and the sector as a whole.

Module Prices: Module prices are at an all-time low and are expected to only go lower, leading to better growth due to decreasing costs.

Energy Storage: Energy storage costs have decreased from \$1000/kWh to \$350/kWh and are expected to fall further, helping in reduction of project costs.

Constraints

Availability of Cheaper Finance: This is already less of a constraint now due to the participation of many foreign players and other channels available for raising money like bonds and PE.

Grid Stability: Current share of renewable energy in overall pie is about 6-7% and is expected to go up to 8-9% in the future. However, due to the seasonal nature of the power supplied, the chances of grid instability are high. Measures have to be taken at a fast pace to avoid this issue in the future or this may hamper further increase in solar power generation.

Grid Maintenance Charges: The above grid instability issue will have to be managed by the government for which it might charge the producers in case of under/over production. This would increase the cost of power production as a whole as these charges would be passed on to the consumers.

Availability of Land: India has enough barren land to support about 100GW of solar power generation. However, most of these are located far away from substation. Since the cost of connecting the power generation to these substations has to be borne by the generator, it adds to the cost. The closer the land is to these substations, the costlier it becomes.

Major Players

The major independent players in the solar power producing segment are Tata Power Renewable Energy Ltd, Azure Power, Acme Solar, Renew Solar Power, Solardirect India, Essel Infra Project Ltd, Adani Green Energy and Sky Power. They have a combined capacity of approximately 3000MW.

WIND ENERGY

Background

Capacity additions increased by 56% due to the Accelerated Depreciation Benefits and generation based incentives. Both of these incentives expired by March 2017, hence the rush to commission projects by March 2017 leading to 5.4GW addition in capacity in 2016-17.

Wind power was 9.2% of the total installed power generation capacity until March 2017. Of the total power generated in 2016-17, wind power contributed only 3%.

Tariffs decreased due to auctioning by the government. Even though there were delays in signing the PPAs and the final payments by the government, the wind capacity increased by 59% due to the reduction in depreciation from 80% to 40% in March 2017 and the 10 year tax break window coming to a close.

RPOs

Despite the rising capacity, RPO targets have not been met across states. Non-solar renewable RPO compliance is about 70-75%. Most of the RPO compliance was driven by states like Tamil Nadu, Maharashtra, Rajasthan and Gujarat. However, the future non-solar RPO target is 10.25% by 2019, which means that further addition in capacity is likely.

Financing

Private Equity is emerging as the new source of funding for solar projects. Firms like Actis LLP, Sembcorp, Goldman Sachs, GIC, ADIA, Equis, Merrill Lynch and Apollo Global Management have invested heavily in wind energy firms. In addition to this, we have firms raising funding via green bonds. Many public and private banks have earmarked substantial sums for renewable energy projects.

Consolidation

The industry is seeing a major trend for consolidation as companies want to sell off their non-core assets due to high costs and closing tax and depreciation

windows. As a result, assets are available for interested companies at a cheaper cost than that of a greenfield project.

Outlook

Over the next 4 years, 12-13GW of capacity is expected to be added, amounting to Rs.950Mn. In the immediate future, the wind energy is supposed to face a dip as tax breaks and depreciation is supposed to run out in March 2017. Andhra Pradesh, Karnataka and Gujarat are expected to lead the wind capacity addition. States like Maharashtra and Rajasthan are expected to lag as they already have a lot of capacity and they have fulfilled most of their RPO obligations.

Government Policies

The government has introduced the Renewable Energy Act which aims to boost renewable energy by creating a mandatory national level RPO targets with penalties in place. It also plans to introduce timely infra policies, payment security mechanism and operations improvement to encourage more investors.

The introduction of competitive bidding in the wind energy sector is also likely to make the industry more competitive.

Current Players

The major players in the Indian Wind energy sector are Suzlon Energy Ltd, Wind World Pvt Ltd, Inox Wind, Orient Green Power, Indowind Energy, Vestas India, Banner Wind World (of Enercon India), Gamesa Wind Turbines and GE Wind Energy.

Growth Drivers

Key issues in ensuring growth in Wind energy sector:

- *RPO Enforcement:* Currently, the penalties for non-enforcement are not strict enough to discourage that happening. However, the new law would ensure this happens.
- *Financial Health of Discoms:* This point has been covered in Solar Energy too. Same issue exists.

- *Infrastructure issue and resource variability:* Delay in land acquisitions and lack of transmission facilities are a huge hinderance.
- *Debt Financing:* Wind power being very capital intensive, interest costs hurt projects a lot. Most banks issue debt at high interest rate like 11-12% as compared to foreign banks with interest rates of 9%.

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Rivalry is not intense due to oligopoly structure • In India, the projected demand is already above the supply levels • Competitive rivalry is expected to increase due to government encouraging private players to enter the sector 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • Capital intensive nature of the industry makes it difficult for new entrants • Regulatory approvals, land remain a major problem 	<ul style="list-style-type: none"> • Does not have any substitutes
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Bargaining power of suppliers is high as presence of bigger players block the new entrants 	<ul style="list-style-type: none"> • Medium, as for retail consumers, government sometimes interferes to regulate prices. However, prices are not regulated for industrial customers

FIGURE 106: PORTER'S FIVE FORCES ANALYSIS

Source: Ibf, 207

OPPORTUNITIES

The Indian power sector has an investment potential of Rs 15 trillion (US\$ 225 billion) in the next 4–5 years, thereby providing immense opportunities in power generation, distribution, transmission, and equipment, according to Union Minister Mr Piyush Goyal.

- The government's immediate goal is to generate two trillion units (kilowatt hours) of energy by 2019. This means doubling the current production capacity to provide 24x7 electricity for residential, industrial, commercial and agriculture use.
- The Government of India is taking a number of steps and initiatives like 10-year tax exemption for solar energy projects, etc., in order to achieve India's ambitious renewable energy targets of adding 175 GW of renewable energy, including addition of 100 GW of solar power, by the year 2022. The government has also sought to restart the stalled hydro power projects and increase the wind energy production target to 60 GW by 2022 from the current 20 GW.
- Looking at the comparison between Solar and Wind energy, Solar energy has better growth prospects in India. The same is reflected in the larger number of players in the sector.
- While both sectors are capital intensive, wind was relatively insulated due to the tax breaks and other incentives. Solar has just begun to enjoy these advantages and also has the plus points of decreasing equipment cost and increasing efficiency. Hence, solar energy is a better sector at this point in time.
- Demand for electricity is expected to increase at a CAGR of 7 per cent to 1,894.7 TWh over FY07–22
- Current production levels are not enough to meet demand; annual demand outstrips supply by about 7.5 per cent
- All India per capita consumption of electricity is expected to reach 1348 TWh by FY17

- Various reforms being undertaken by the government are positively impacting India's power sector. In wake of the surging domestic coal production, the country's power sector is becoming increasingly stable.
- The government Five-Year Plans (GW) is targeting capacity addition of around 88.54 GW under the 12th (2012–17) & around 100 GW under the 13th (2017–22) Five-Year Plan
- The expected investments in the power sector during the 12th Plan (2012–17) is USD250 billion
- There is a tangible shift in policy focus on the sources of power. The government is keen on promotion of hydro, renewable & gas-based projects, as well as adoption of clean coal technology
- In March 2017, Bhoruka Power Corp. announced its plans is to raise USD120 million, to increase their hydro & wind renewable energy capacity to 1 gigawatt by 2020.
- The per-capita electricity consumption of India stood at 1000 KWh in FY15, lower than the global average of 2,803 KWh, representing huge potential for growth
- The addition of approximately 106 GW to the existing capacity is expected to boost GDP growth to 8 per cent by FY17
- The peak power requirement by the country in FY17 stood at 159.54GW
- To meet the rising electricity demand, the Central Government plans to expedite market opportunity of US\$ 14.94 billion for power transmission.



Source: windpowerengineering.com

3.15. TECHNICAL TEXTILES

Technical textiles are textile materials and products used for their technical performance and functional properties. Technical textiles are an important part of the textile industry and its potential is still largely untapped in India. With the increase in disposable income, the consumption of technical textiles is expected to increase. Based on past trends of growth and estimated end user segment growth, the Working Group on Technical Textiles for 12th Five Year Plan (FYP) projected the market size to reach INR 1,58,540 crore by 2016-17 at a year-on-year growth rate of 20% during the 12th Five Year Plan.

With the rapid growth in product offerings, technical textiles have started to gain a massive foothold in the textile industry. The fundamental characteristics of technical textiles are strength, adaptability, durability, convenience and light-weight.

MARKET SIZE AND CHARACTERIZATION

Due to technical and functional requirement, the Indian Technical Textile Industry classifies them into 12 sub-groups (based on their usage in different industries), as mentioned below:

- i. **AgroTech** (Agricultural Textiles): They are manufactured to support agricultural processes and decrease wastage. They include plant nets, insect protection nets, monofil nets etc.
- ii. **BuildTech** (Building and Construction Textiles): They are used in the construction industry as safety equipment, advertisement hoardings, tents etc.
- iii. **ClothTech** (Clothing and Apparel Textiles): They are used to add durability to the apparel or clothing. Their tensile strength helps the apparel to bear pressure and wear and tear. For example, Shoe laces, interlining, zip fasteners.

- iv. **GeoTech** (Geological Textiles): They are used to add strength to the infrastructural projects such as roads, railway tracks and drainage systems.
- v. **HomeTech** (Home Textiles): They are utilised in manufacturing household textile items such as carpets, soft toys etc.
- vi. **InduTech** (Industrial Textiles): They have industrial application in a multitude of sectors like automobile, electricity generation, electronics
- vii. **MediTech** (Medical Textiles): They are used as components in various medical products such as diapers, bandages and surgical disposables.
- viii. **MobileTech** (Automotive Technology): Automobile sector exploits a huge variety of technical textile, starting from tyres, seat belts, and airbags to helmets and upholstery.
- ix. **PackTech** (Packaging Technology): The durability of technical textiles has increased their usage in the packaging industry. They are used to package items like edibles, fabrics and chemicals.
- x. **ProTech** (Protective Textiles): Highly durable and tough fabrics are used to produce protective textiles.
- xi. **SporTech** (Sports Textiles): They have a vast usage in the adventure sports industry. They are used to manufacture parachutes, athletic shoes, nets etc.

Medical Textiles

India's meditech segment is expected to grow at a rate of 20% to US\$ 1,039 Million by 2016-17, as per estimates of the Working Group on Textiles and Jute Industry,

Transport Textiles

The mobiltech segment's growth depends largely on the growth of the automotive sector in India, which has been brisk in recent years. India's mobiltech segment is hence expected to grow at a rate of 17% to US\$ 1,870 Million by 2016-17 as per estimates of the Working Group on Textiles and Jute Industry,

Industrial Textiles

The Indian indutech segment is expected to grow at a rate of 18% to US\$ 2,034 million by 2016-17 as per estimates of the Working Group on Textiles and Jute Industry,

Eco Textiles

The Indian indutech segment is expected to grow at a rate of 18% to US\$ 2,034 million by 2016-17 as per estimates of the Working Group on Textiles and Jute Industry.

Geo Textiles

The Indian geotech segment is expected to grow at a rate of 22% to US\$ 201 Million by 2016-17 as per estimates of the Working Group on Textiles and Jute Industry.

Packaging Textiles

The Indian packtech segment is expected to grow at a rate of 22% to US\$ 11,782 million by 2016-17 as per estimates of the Working Group on Textiles and Jute Industry,



Source: <http://tactextile.com>

MAJOR FOREIGN PLAYERS

S. No.	Name of the Company	Investment Type/Size	Year of Investment	Segment of Technical Textiles
1	Johnson and Johnson	Subsidiary/ NA	1947	Meditech
2	Procter & Gamble	Subsidiary/NA	1951	Meditech
3	3M	76% of Stake in JV/ NA	1988	Nonwovens, Indutech, etc.
4	Dupont	Subsidiary/US\$ 65.80 million	1994	Protech
5	Kimberley-Clark	JV/NA	1994	Meditex
6	Maccaferri	Subsidiary/ US\$ 13.16 million	1997	Geosynthetics
7	Freudenberg	Subsidiary/ NA	1998	Indutech and Non-wovens
8	KARL OTTO BRAUN GmbH	Subsidiary/ US\$ 9.21 million	1998	Meditech
9	Huntsman	Subsidiary/NA	2000	Mobiltech, Geotech
10	Schoeller Textil AG	JV/ NA	2003	Protech
11	SKAPS	Subsidiary/NA	2004	Geosynthetics
12	Strata Geosystems Ltd.	JV/NA	2004	Geosynthetics
13	Ahlstrom	Subsidiary/US\$ 72.37 million	2006	Non-Woven
14	Teijin	Subsidiary/NA	2006	Protech, Composites etc.
15	Lindstrom	Subsidiary/NA	2007	Protech
16	Klopman	Subsidiary/US\$ 65.80 million	2009	Protech
17	Honeywell	Subsidiary/NA	2009	Protech and Packtech
18	Terram	Subsidiary/US\$ 10 million	2010	Geosynthetics
19	Hollingsworth & Vose	JV/NA	2011	Indutech

TABLE 9: MAJOR FOREIGN PLAYERS

KEY PERFORMANCE INDICATORS

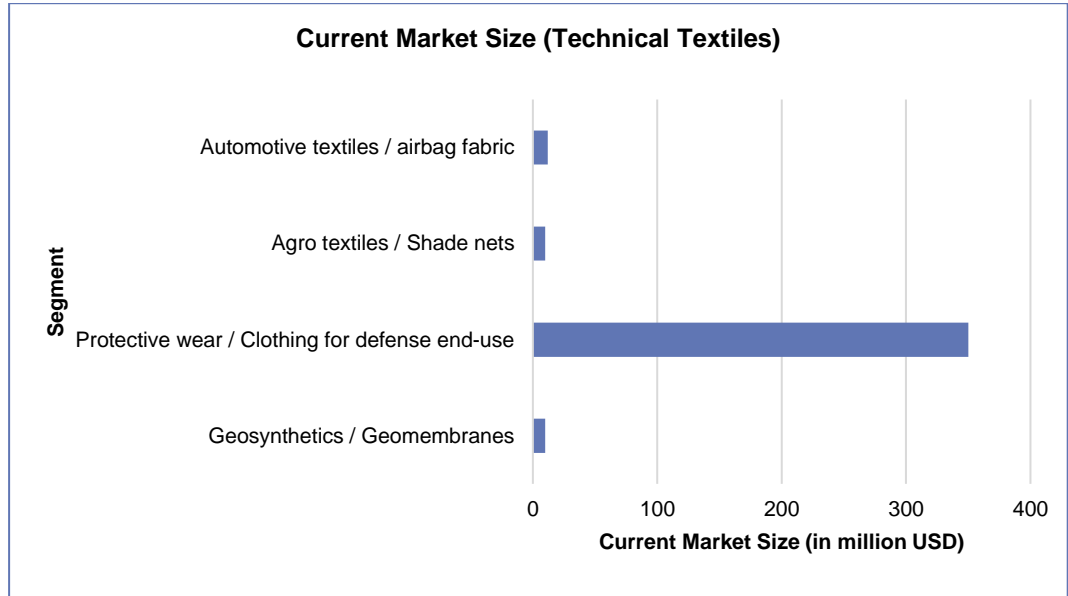


TABLE 10: CURRENT MARKET SIZE (TECHNICAL TEXTILES)

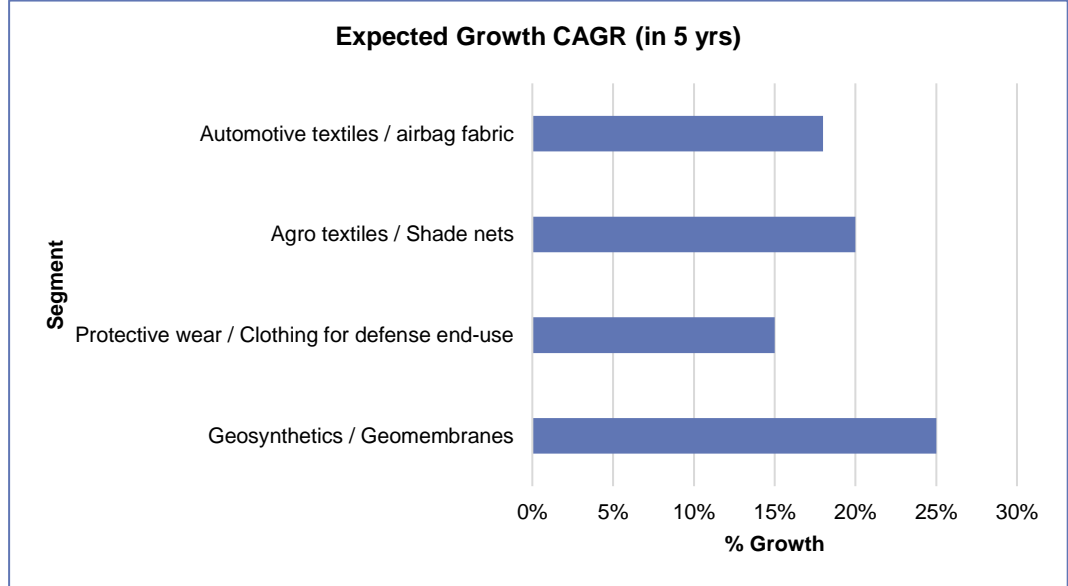


TABLE 11: EXPECTED GROWTH CAGR (IN 5 YEARS)

GOVERNMENT POLICY

Ministry of Textiles, Government of India had implemented the Scheme for Growth and Development of Technical Textiles (SGDTT) from 2007-08 to 2010-11 during the 11th Five Year Plan. The scheme encompassed three components:

- Baseline survey to build database of technical textile industry in India;
- Setting up of four Centres of Excellence (CoE) which provide infrastructure support in terms of facilities for testing with national and international accreditation, development of resource centre with I.T. infrastructure, facilities for training, prototype development, standards development on technical textiles, among other facilities;
- Awareness creation among entrepreneurs under which more than 60 Seminars/Workshops/Training programmes.

Subsequently, Ministry of Textiles, Government of India launched Technology Mission on Technical Textiles (TMTT) with two mini-missions for a period of five years (from 2010-11 to 2014-15) with a total fund outlay of INR 200 crore to overcome the issues faced by the technical textile industry.

The Ministry of Textiles is responsible for policy formulation, implementation and regulation of the textile industry. As per the ministry, the principal areas of the Ministry are:

Textile Policy & Coordination	Wool & Woollen Industry
Man-made Fibre/ Filament Yarn Industry	Decentralised Powerloom Sector
Cotton Textile Industry	Export Promotion
Jute Industry	Planning & Economic Analysis
Silk and Silk Textile Industry	Integrated Finance Matters
	Information Technology

AGENCIES

The agencies have proven to be a vital partner for foreign firms. They collaborate with these firms and oversee the import activities, supply machinery, installation, repair and provide technical assistance to the clients of the machinery firms. They also help the firms to increase their client base using their existing network base and expertise of the Indian market. The global machinery industry focusses on producing competitive products with better products and cost competitive technology. The agencies act as strategic allies to reduce the cost of machine manufacturers by eliminating their need to introduce a local subsidiary.

MACHINERY MANUFACTURERS: KEY COMPETITORS

The list below contains the major textile machinery manufacturers, who have the largest market share in the industry as a supplier.

Rieter India Pvt Ltd

Headquarters: New Delhi

Factory: Pune, MH

Product: Non-Woven Line

Mission and Goal: Rieter offers support from the planning stage of an investment process until long after the guarantee period. Customer oriented service systems, tailor-made to the requirements of the spinners, optimize the spinning plant. Technological services offer a technical coordination of the processes and automation solutions increase the efficiency of the production.

The company has a strong manufacturing base, with Production site in Pune, supported by a worldwide network in Switzerland, Germany, the Czech Republic and China. They function as suppliers and produce parts & components and offer customized solutions to internal as well as external customers.

The factory in Pune has a ground area of 102,500 m² and a floor space of 33,000 m² with a dedicated workforce of more than 500 employees. The wide spectrum of services covers manufacturing of machining components, sheet metal components, Plating and coating of components, and inspection services.

Oerlikon Neumag

Headquarters: Germany

Subsidiary: Mumbai

Products: BCF Yarn Plants, Staple Fibre, Non Woven Lines

Mission and Goal: Oerlikon Manmade Fibers with the product brands Oerlikon Barmag and Oerlikon Neumag is the world market leader for filament spinning systems used for manufacturing manmade fibers, texturing machines, BCF systems, staple fiber spinning systems and artificial turf systems and – as an engineering services provider – offers solutions along the entire textile value added chain.

The primary Oerlikon Barmag markets are in Asia, with Oerlikon Neumag's main markets in the US, Turkey and China. Correspondingly, the companies – with almost 2500 employees – have a worldwide presence in 120 countries as part of the Oerlikon Manmade Fibers network of production, sales and distribution and service organizations.

Kunshan SanYang Nonwoven Fabric Co., Ltd.

Headquarters and Plant: Jiangsu, China

Product: Non-Woven Line

Mission and Goal: is the biggest spun bonded nonwoven manufacturer in Jiangsu province. The company not only product nonwoven products, but also supply and export nonwoven production line. The company has six production lines which reach 15,000 tons production ability per year. The quality for the products is one of the best in India, and it can reach the high requirements for any worldwide customers.

Trützschler (FLEISSNER)

Headquarters: Mönchengladbach - Odenkirchen

Plant: Ahmedabad (India)

Mission and Goal: The Trützschler GmbH & Co. KG is a German textile machinery manufacturer based in Mönchengladbach - Odenkirchen . It produces machinery and equipment for the spinning and the nonwoven industry. The Trützschler Group has the production sites Mönchengladbach, Dülmen, Egelsbach, Bielefeld and Neubulach in Germany. Worldwide, the production sites are located in the countries of China (Shanghai), India (Ahmedabad), the USA (Charlotte), Brazil (Curitiba) and Switzerland (Winterthur). (Source: Wikipedia)

Agency: A.T.E. Marketing Private Limited, Andheri, Mumbai

DILO

Headquarters: Eberbach / Germany

Products: Non-Woven Line, Needle Looms

Mission and Goal: The company philosophy is based on the central position of the customer and his requirements as well as the actual realization of his expectations. Dilo is the leading machine building company for needle felting technology and renown for numerous innovations and inventions in this sector. When selling its special machinery and installations, Dilo relies on more than 60 agents and on own branches in Charlotte, North Carolina, USA, Moscow, Russia, Shanghai, China and Istanbul, Turkey. We export about 90 % of our machinery. Dilo supplies turnkey installations and is responsible for the coordination of all commercial, contractual and technical questions. (Source: DILO website)

Agency: Voltas Limited, New Delhi

Dornier Machinery India Private Limited

Headquarters: Lindau, Germany

Subsidiary: Mumbai, India

Products: Rapier weaving machine, Air-jet weaving machine

Mission and Goal: Dornier Weaving Machines are known to India for a long time. However, Dornier has started their own Liaison Office in December 2000. After initial success of the Liaison Office, Dornier established its own subsidiary in August, 2005, in order to provide closer and better consultancy, support and maintenance services for the steadily growing number of indian customers. The main activities of this subsidiary can be classified as under: Sales and Support, Repair, Spare Part Service

Karl Mayer Textilmaschinenfabrik GmbH

Headquarters: Germany

Product: Warp Knitting Machine

Mission and Goal: KARL MAYER is technology and market leader as well as driving force for innovations in textile machinery building. The manufacturer offers perfect solutions for warp knitting, technical textiles and warp preparation for weaving.

With more than 2,500 employees worldwide, the international organization produces in its main markets, so that KARL MAYER is always close to its customers and their needs. Today the company has subsidiaries in the USA, in India, Italy, Hong Kong, Japan, China and Switzerland as well as agencies all over the world. (Source: Karl Mayer Textilmaschinenfabrik GmbH)

Agency: A.T.E. Marketing Private Limited, Andheri, Mumbai

Sultex Limited

Headquarters: Switzerland

Subsidiary: Iitema Weaving, Mumbai, India

Product: Projectile weaving machine, Rapier weaving machine, Multi-phase weaving machine, Custom-built weaving machines

Precitronic Instruments & Controls

Headquarters: Coimbatore, India

Products: Moisture Meter, Low Volume (PC based) Fibre Length Testing instruments, Portable Single Yarn / Splice Strength Tester

Mission and Goals: Set up in 1996, Precitronic Instruments & Controls is an Indian firm operating from Coimbatore (TN). It employs around 25 professionals. (Source: Indiamart.com)

Agency: Inditech International, Andheri, Mumbai

Tmt Machinery, Inc.

Headquarters: Japan

Products: Synthetic spinning Polyester / Nylon plants for manufacturing High Tenacity Industrial yarns, Spandex winder, Fiberglass winder

Mission and Goal: TMT Machinery is jointly funded by the three leading manufacturers of synthetic fiber machinery in Japan; Toray Engineering, Murata Machinery and Teijin Seiki, merged their synthetic textile machinery business unit.

Agency: Inditech International, Andheri, Mumbai

Aiki Riotech Corporation

Headquarters: Japan

Products: Air Texturising machines, Carbon Fiber Pre Cursor Creel , Winder

Mission and Goal: Aiki Riotech Corporation was founded in 2009. The company's line of business includes the manufacturing of machinery for the textile industries including parts, attachments, and accessories. (Source: Bloomberg)

Agency: Inditech International, Andheri, Mumbai

Slack & Parr Ltd.

Headquarters: England

Products: Booster, oligomer, transfer pumps, Metering pumps, spin finish pumps for Industrial yarn spinning, non-woven fabrics making, carbon fibre spinning, aramid fibre pumps, spandex pumps

Agency: INDITECH INTERNATIONAL, Andheri, Mumbai



Source: <http://keywordsuggest.org>

TAXATION AND DUTIES LEVIED ON IMPORTED MACHINERY

The government of India provides various tax reliefs for the technical textile organisations, which import machinery from foreign manufacturers.

- Excise duty on all items of textile machinery in general is at 12.5%;
- Excise duty on all parts, components and accessories of textile machinery, in general, is 12.5%;
- Excise duty on textile machinery under “List 5” is 6%;
- Excise duty on textile machinery under “List 6” is 0%;
- Excise duty on parts/components of machines under “List 6” is 12.5%.

Technology Upgradation Fund Scheme (TUFS)

Technical textile manufacturing machineries have been covered under TUFS eligible for 5% interest reimbursement. Under the modified TUFS, the specified machinery for technical textile has also been made eligible for 10% capital subsidy in addition to 5% interest reimbursement. The detail of the list of eligible machines is given at Annex-D-2 of GR on erstwhile & Modified TUFS and Annex – K of GR on Modified TUFS. (Source: Ministry of Textiles, Govt. of India).

MANUFACTURERS AND EXPORTERS

The manufacturers and exporters are highly inclined towards the foreign machinery due to the high quality and precision of the machines. This is evident from the size of imports related to machinery by the technical textile industry. A good value proposition would help to secure a foothold in the industry.



Source: keycolour.net

3.16. TEXTILES

India is the second largest producer of fibre and among them 60% is cotton based and the rest include jute wool silk and manmade fibres. Textile Industry is one of oldest industries in the country which is the second largest employing industry that employs close to 40 million people as per the sources.

MARKET SIZE AND CHARACTERIZATION

The first cotton textile mill of Bombay was set up in the year 1854 and that of Ahmedabad in 1861. Textile industry is classified into two segments, one is the unorganised segment and the other is the organised segment. The former involves handlooms and handicrafts which operate on a small scale using traditional tools and methods which is labour intensive and the latter consists of apparels and garments segment where modern machinery and techniques are applied that which is capital intensive. The industry possesses more than 1200 medium to large scale mills distributed geographically across Tamil Nadu, Andhra Pradesh, Karnataka, Punjab, Maharashtra, and Gujarat.

The Indian textiles industry, currently estimated at around US\$ 108 billion, is expected to reach US\$ 223 billion by 2021. The industry is the second largest employer after agriculture, providing employment to over 45 million people directly and 60 million people indirectly. The Indian Textile Industry contributes approximately 5 per cent to India's Gross Domestic Product (GDP), and 14 per cent to overall Index of Industrial Production (IIP).

The Indian textile industry has the potential to reach US\$ 500 billion in size according to a study by Wazir Advisors and PCI Xylenes & Polyester. The growth implies domestic sales to rise to US\$ 315 billion from currently US\$ 68 billion. At the same time, exports are implied to increase to US\$ 185 billion from approximately US\$ 41 billion currently.

Indian exports of locally made retail and lifestyle products grew at a compound annual growth rate (CAGR) of 10 per cent from 2013 to 2016, mainly led by bedding bath and home decor products and textiles.

Market Size	USD 108.5 ban
Export	USD 40 ban
Contribution to Industrial Production	14%
GDP Contribution	4%
Global Share	5%

TABLE 12: INDIAN TEXTILES MARKET SIZE

- The textile & apparel industry can be broadly divided into 2 segments:
- Yarn & fibre (include natural & man-made);
- Processed fabrics (including woollen textiles, silk textiles, jute textiles, cotton textiles & technical textiles), Readymade Garments (RMGs) & apparel.

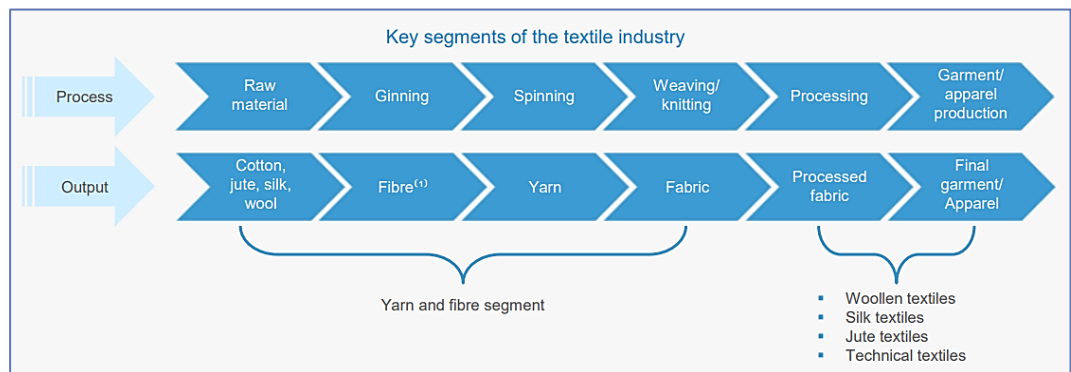


FIGURE 107: KEY SEGMENTS OF TEXTILE INDUSTRY, INDIA

Source: Ibef, 2017

- The size of India’s textile market in 2016 was around USD137 billion, which is expected to touch USD226 billion market by 2023, growing at a CAGR of 8.7 per cent between 2009-23E
- As of June 2017, the central government is planning to finalise and launch the new textile policy in the next three months. The policy aims to achieve

US\$ 300 billion worth of textile exports by 2024-25 and create an additional 35 million jobs.

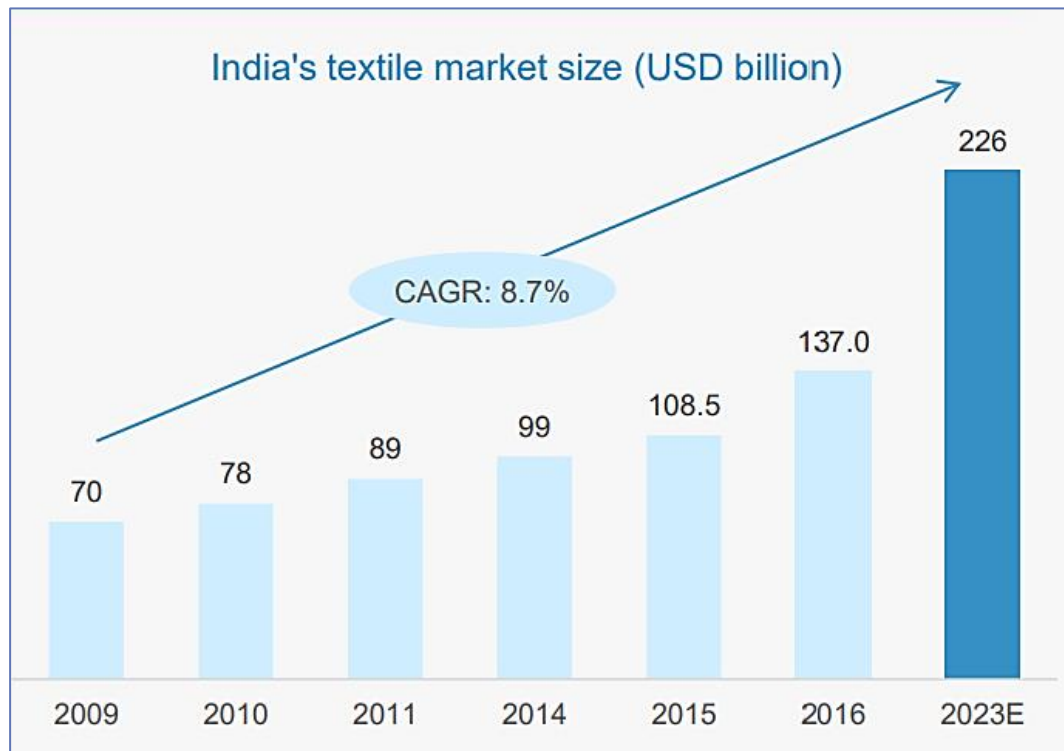


FIGURE 108: INDIA'S TEXTILE MARKET SIZE (USD BILLION)

Source: Ibf, 2017

INVESTMENTS

The textiles sector has witnessed a spurt in investment during the last five years. The industry (including dyed and printed) attracted Foreign Direct Investment (FDI) worth US\$ 2.41 billion during April 2000 to December 2016.

Some of the major investments in the Indian textiles industry are as follows:

- Raymond has partnered with Khadi and Village Industries Commission (KVIC) to sell Khadi-marked readymade garments and fabric in KVIC and Raymond outlets across India.
- Max Fashion, a part of Dubai based Landmark Group, plans to expand its sales network to 400 stores in 120 cities by investing Rs 400 crore (US\$ 60 million) in the next 4 years.

- Trident Group, one of the leading manufacturers and exporters of terry towel, home textile, yarn and paper in India, has entered into a partnership with French firm Lagardere Active Group, to launch a premium range of home textiles under the renowned French lifestyle brand Elle Décor in India.
- Raymond Group has signed a Memorandum of Understanding (MoU) with Maharashtra government for setting up a textile manufacturing plant with an investment of Rs 1,400 crore (US\$ 208.76 million) in Maharashtra's Amravati district.
- Reliance Industries Ltd (RIL) plans to enter into a joint venture (JV) with China-based Shandong Ruyi Science and Technology Group Co. The JV will leverage RIL's existing textile business and distribution network in India and Ruyi's state-of-the-art technology and its global reach.
- Giving Indian sarees a 'green' touch, Dupont has joined hands with RIL and Vipul Sarees for use of its renewable fibre product Sorona to make an 'environment-friendly' version of this ethnic ladies wear.
- Snapdeal has partnered with India Post to jointly work on bringing thousands of weavers and artisans from Varanasi through its website. "This is an endeavour by Snapdeal and India Post to empower local artisans, small and medium entrepreneurs to sustain their livelihood by providing a platform to popularise their indigenous products," said Mr Kunal Bahl, CEO and Co-Founder, Snapdeal.
- Welspun India Ltd (WIL), part of the Welspun Group has unveiled its new spinning facility at Anjar, Gujarat - the largest under one roof in India. The expansion project reflects the ethos of the Government of Gujarat's recent 'Farm-Factory-Fabric-Fashion-Foreign' Textile Policy, which is aimed at strengthening the entire textile value-chain.

"India is one of the hotspots of the world... opening up to new ideas and investments..."

Patrice de Place

President, Artistic Committee, Mod'Art International, Paris



FIGURE 109: INDIAN TEXTILE SECTOR – OPPORTUNITIES

Source: Make in India, 2014

FOREIGN PLAYERS

Rieter, Trutzschler, Zambiat, Nisshinbo, Marks & Spencer, Zara, Benetton, and Levi's are some of the foreign textile companies that have invested or are working in India.

DOMESTIC PLAYERS

Chiripal Group

They laid the foundation for Nandam Denim Limited. NDL is Ahmedabad based textile player engaged in the business of spinning and weaving denim. It has in house weaving plants and other facilities which manufacture superior quality khaki, cotton and denim.

Digjam

It is reputed for its quality and finish. It has kept re-inventing itself with the changing trends. DIGJAM products are available at exclusive showrooms and other retail outlets.

The Ruby Mills

It started in the year 1917 as a manufacturer of cotton. They have two plants one in Dadar, Central Bombay and the other Dhamni in Bombay- Pune Highway. The company has an annual income of Rs.680 million. The mill has been regularly progressing and manufacturing a wide range of products.

Arvind Mills

It is a company started by 3 brothers in 1931 and the flagship company of the Lalbhai Group. It is headquartered in Ahmedabad. It manufactures cotton shirts, denim and Khaki fabrics. In 2016 the company entered into online retailing.

Raymond Ltd.

It is the largest manufacturer of worsted fabric in the world. It is headquartered in Mumbai and covers 60% of the market for worsted suits in India.

Alok Industries

It was established in 1986 and is based in Mumbai. The company provided solutions to these 5 categories- Cotton Yarn, Apparel Fabric, Garments, Polyester yarn and Home textiles. Their customer base includes domestic and overseas retailers.

Bombay Dyeing

It was set up in the year 1879 which operates with the cotton yarn dyed by hand. It specialises in kids wear, school uniforms, stylish linen, towels etc.

Welspun India Ltd.

They are home textile manufacturer with a network across 32 countries. The company has modern manufacturing facilities in Gujarat where it produced the home textile manufactures falling under the bath and bed category.

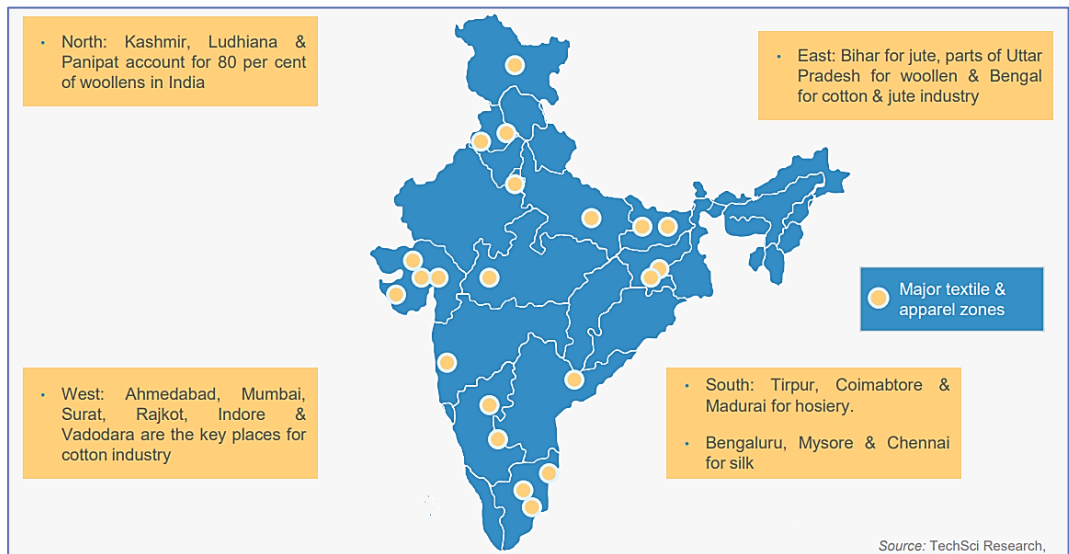


FIGURE 110: KEY TEXTILES AND APPAREL ZONES IN INDIA

Source: Ibef, 2017

As of September 2016, 4 per cent of the total operational SEZs in India are for Textile and Apparel industry.

TRENDS



FIGURE 111: TRENDS IN INDIAN TEXTILES INDUSTRY

Source: Ibef, 2017

INITIATIVES IN SUPPORT OF THE SECTOR

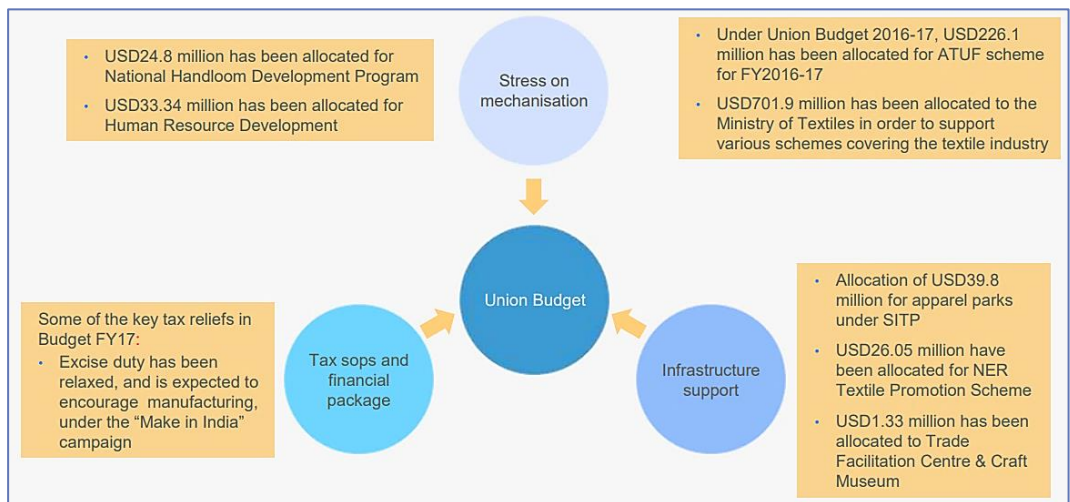


FIGURE 112: GOVERNMENT SUPPORT IN FY16 BUDGET

Source: Ibef, 2017

Under National Textile Policy (NTP) 2000 by the GOI the FDI investment can be made up to 100% in this sector. The industry has seen attractive investment in

recent years and from foreign investors as well which was 2.41 billion USD during the period from 2000-16.

The total budget allocated to the Textile Ministry is Rs. 6226.5 crores for the year 2017-18 against previous year's allocation of 6286.1 crores. Indian Government has initiated various schemes such as the Scheme for Integrated Textile Parks (SITP), Revised Restructured Technological Up gradation Fund Scheme (RRTUFS), Integrated Skill Development Scheme (ISDS) to support the textile sector.

AMENDED TECHNOLOGY UP GRADATION FUND SCHEME (ATUFS)

It was started in 2016 to promote modernization and expansion in the Industry and capital subsidy is offered to eligible weaving, garmenting, and technical textiles machinery.

INTEGRATED PROCESSING DEVELOPMENT SCHEME (IPDS)

It was launched in Oct. 2013 to facilitate creation of environment friendly processing standards and technology.

Provides support worth 50% of project cost with a ceiling of:

- Rs. 750 million for Zero Liquid Discharge (ZLD)
- Rs 100 million for conventional treatment systems.

Already 6 projects have been sanctioned.

INTEGRATED SKILL DEVELOPMENT SCHEME

Skill development training will be provided to 1.5 Million people to cover all sub-sectors of textiles such as Textile and Apparel, Handicrafts, Handlooms, Jute and Sericulture.

SCHEME FOR INTEGRATED TEXTILE PARKS (SITP)

The Government of India provides assistance for creation of textile parks in the potential growth centers and around 40 projects have been sanctioned under this. This is mainly to address the problem with the bottlenecks of infrastructure.

THE REVISED RESTRUCTURED TECHNOLOGY UP GRADATION FUND SCHEME (RRTUFS)

Technical Textiles manufacturing under this gets 5 per cent interest reimbursement and 10 per cent capital subsidy in addition to 5 per cent interest reimbursement also provided to the specified technical textile machinery under RRTUFS.

'India Handloom' initiative is a promotional campaign started by GOI on social media like Facebook, Twitter and Instagram with a view to connect with customers, especially youth, in order to promote high quality handloom products as India Handloom Brand. Government has taken a number of steps to improve the ease of doing business in India to function as a single window to get clearances. The Government also proposed 24/7 customs clearance facility at few air ports and seas ports to get faster clearance of import and export cargo. Concept of Zero defect and Zero effect approach has also been initiated by the GOI.

Quota Elimination is an initiative to eliminate the use of quotas in all textile and clothing trade between nations which are members of the World Trade Organization (WTO). With this the exports from India didn't rise as expected and it stands at 13% of nation's exports. With improvements in the productivity and quality India can increase exports and make more international presence as Indian brand against foreign is otherwise seen as a low quality or relatively perceived as not of the better standards.

TEXTILE MACHINERY

Textiles Machinery Industry is the largest in India's capital goods segment. The industry comprises more than 100 plants with a capital investment totalling about \$350 million and annual output estimated at \$350 million. At various stages of production the textile machines do these activities- yarn spinning, weaving, knitting, sewing and dyeing. India is the largest in the textile machines and accessories after China. In 2016, revenue from the textile machinery segment was Rs 4.79 billion and that in 2015 was Rs 6.02 billion.

Spinning is the process in which the raw cotton gets converted into yarn and it involves the following steps: Plucking, Ginning, Blowroom (cotton fibres are opened and cleaned thoroughly), Carding, Drawing and Roving & Spinning.

Weaving is the process in which the warp and the weft yarn are interlaced. The weaving patterns are done depending on the end design which is required.

Knitting is the process wherein the yarn is interloped and circular knitting machine is the most famous machine used in the manufacture of fabrics.

MAJOR PLAYERS IN THE TEXTILE MACHINERY SEGMENT

LMW

In 1962 Lakshmi Machine Works was founded to provide the textile industry with the latest spinning technology. It is a leading machinery manufacturer in India and has gained reputation worldwide for its cutting edge technology and quality standards.

Voltas

Voltas provide solutions for Spinning, Weaving, Knitting, Processing finishing & accessories, and non-woven & technical textiles. It has been in service of the textile industry since the past 5 decades.

Among the other players include - Mayer, Terrot, Savio, Fukuhara, Elitex, Batliboi, Voltas, Texmaticc, Pilotelli, Sapru machines Pvt Ltd etc.

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry	
<ul style="list-style-type: none"> • Intense competition between established brands and private label brands • Industry is highly fragmented with organised sector contributing only 31 per cent in 2011 	
Threat of New Entrants	Substitute Products
<ul style="list-style-type: none"> • 100 per cent FDI (automatic route) is allowed in the Indian textile sector • A few large suppliers are focusing on forward integration 	<ul style="list-style-type: none"> • Low cost substitute products from countries like Pakistan and Bangladesh • Threat from unorganised sector
Bargaining Power of Suppliers	Bargaining Power of Customers
<ul style="list-style-type: none"> • Significant presence of small suppliers has reduced the bargaining power 	<ul style="list-style-type: none"> • Major clothing brands have better bargaining power over textile manufacturers, as the product differentiation is low and number of players are high and fragmented

FIGURE 113: PORTER'S FIVE FORCES ANALYSIS

Source: Ibef, 2017



Source: catchthedetail.com

OPPORTUNITIES

- The future for the Indian textile industry looks promising, buoyed by both strong domestic consumption as well as export demand. With consumerism and disposable income on the rise, the retail sector has experienced a rapid growth in the past decade with the entry of several international players like Marks & Spencer, Guess and Next into the Indian market. The organised apparel segment is expected to grow at a Compound Annual Growth Rate (CAGR) of more than 13 per cent over a 10-year period.
- The Union Ministry of Textiles, which has set a target of doubling textile exports in 10 years, plans to enter into bilateral agreements with Africa and Australia along with working on a new textile policy to promote value addition, apart from finalising guidelines for the revised Textile Upgradation Fund Scheme (TUFS).
- The Indian cotton textile industry is expected to showcase a stable growth in FY2017-18, supported by stable input prices, healthy capacity utilisation and steady domestic demand.
- As per the sources the organized sector of the textile industry is expected to grow at a CAGR of more than 13%
- Demand for nonwoven textiles growing with the increasing affluence
- The industry today is focused on producing products which are globally competitive using the most superior quality technology which are cost competitive as well.
- Quota restrictions elimination is leading the market to grow in its length and breadth
- Customer shifting towards branded products
- The recent slowdown of the Chinese economy has also led to increased advantage to the Indian textile industry because of the competitive advantage of low cost production.
- India can aspire to achieve a CAGR of 12% and exports can also be improved to 20% from the current 13%.

- With the increasing opportunities due to the rising demand and the existing gap in the technology, **Produtech** can enter the Indian market to fill this gap and ensure a long standing in the market.
- As we know that India has the disadvantage of being situated away from the major markets, the supply chain difficulties being faced by the industry in terms of time and cost could be dealt with if the lead time in the production can be reduced through efficient production mechanisms.
- Under the Make in India initiative investment opportunities for the foreign companies and entrepreneurs are available across the entire value chain which could be utilised.
- Developing a technology that can help integrating the links in the Supply chain.

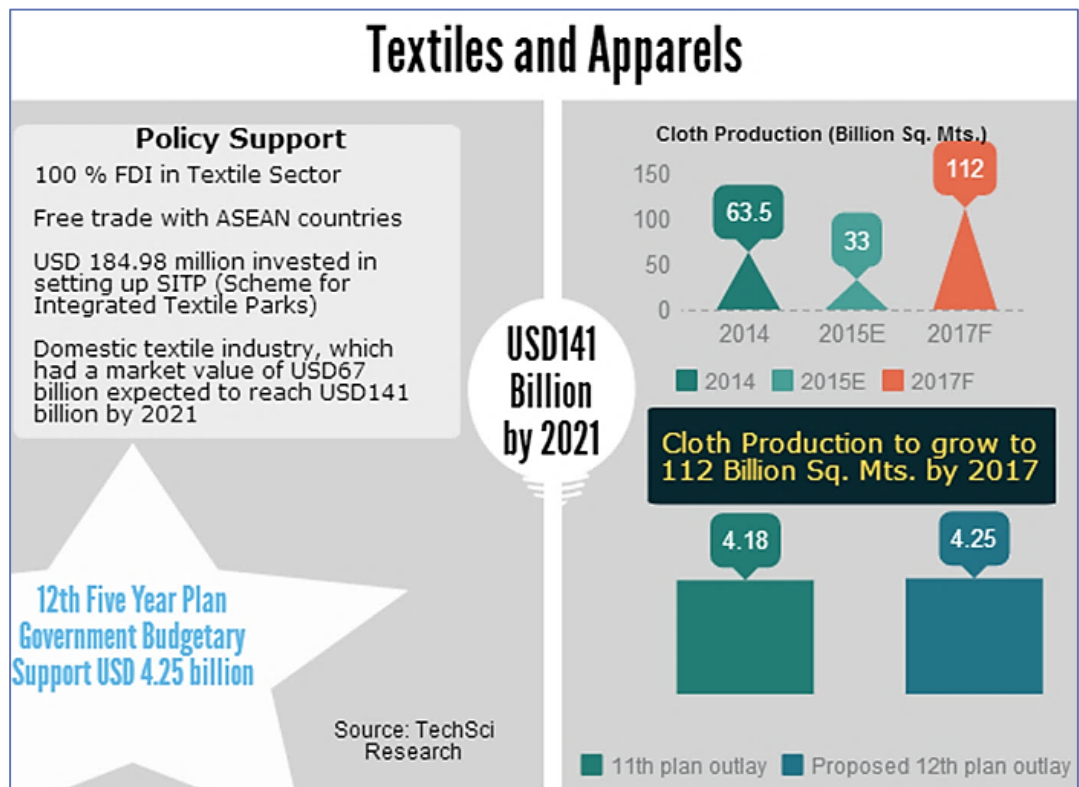


FIGURE 114: TEXTILES AND APPARELS, INDIA

Source: Ibef, 2017

3.17. LEATHER CLUSTERS

“Total leather and leather good exports from India stood at US\$ 4.72 billion during April 2016-January 2017.”

Source: Council for Leather Exports (CLE)

Today the Indian leather industry has set up itself as an important industry both in worldwide as well as in the local market. It links provincial India with all the corners of the globe; however an Indian villager may scarcely be mindful of how far the skins of his animals' travel- transformed into chic consumer products. There has been expanding accentuation on its arranged improvement, aimed at better usage of raw materials for amplifying the profits, especially from exports.

The Indian Leather sector contributes almost 13% to the world's leather production of hides along with being the second largest producer of footwear and leather apparel in the globe. Additionally this industry has a distinction of being the fourth biggest exporter of leather products in the world.

MARKET SIZE AND CHARACTERIZATION

It being one of the top 10 foreign exchange earners of the nation; the division has an expected yearly turnover of over US\$ 12.35 billion (exports – US\$ 5.85 billion and domestic market – US\$ 6.5 billion) while providing employment to around 3.09 million individuals, 30% of whom are ladies. Value added products (include finished products) constitute just about 100% of exports from the industry.

The leather sector includes:

- **Tanneries:** here the raw material and skins are turned into leather
- **Manufacturing plants processing calfskin** into an assortment of purchaser items such as footwear, articles of clothing and outerwear, and arranged leather products such as wallets, passport cases, key chains, hand bags and brief cases.

The production facilities are spread over a large number of organized and unorganized players in which the percentage contribution from the unorganized players is almost 80% of the total production in the country. The production of leather and its various products can be inferred from the table below:

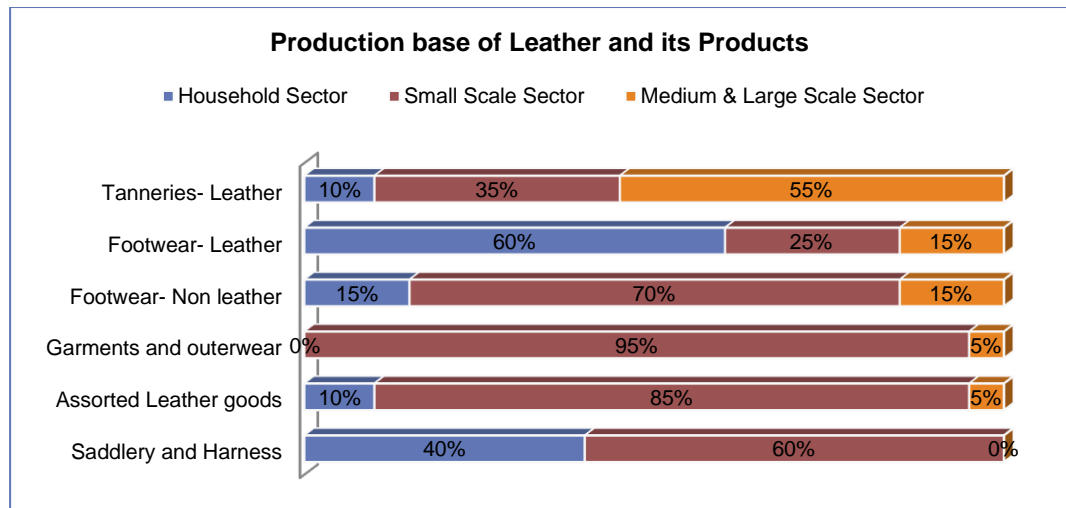


TABLE 13: INDO ITALIAN CHAMBER OF COMMERCE (IICCI)

(Value in Million \$)	2012-13	2013-14	2014-15	2015-16	2016-17
Finished Leather	1093.73	1284.57	1329.05	1046.45	888.89
Footwear	2066.91	2557.66	2945.58	2739.06	2775.77
Leather Garments	563.54	596.15	604.25	553.11	536.57
Leather Goods	1180.82	1353.91	1453.26	1370.04	1321.61
Saddlery & Harness	110.41	145.54	162.7	146.38	143.08
Total	5015.41	5937.97	6494.84	5855.06	5665.91
% Growth	2.91%	18.39%	9.37%	-9.84%	-3.23%

TABLE 14: INDIA'S EXPORT OF LEATHER AND ITS PRODUCTS FOR FIVE YEARS

Leather Industry is broadly spread in four sectors:

- **Footwear Industry:** India being the second largest footwear maker after China boasts of a yearly production of 2065 million sets. Tremendous domestic retail showcase 1950 million sets (95%) which are sold in the domestic arena. Footwear trade represents 49% offer in India's aggregate leather and its products export. The Footwear item blends Gents 55%, Ladies 35% and Children 10%. The major production centres are Chennai,

Delhi, Agra, Kanpur, Mumbai, Kolkata and Jalandhar. The majority of the modern footwear producers in India are now providing to entrenched brands in Europe and USA.

- **Tanneries leather Industry:** the Indian market has been divided with around 2200 tanneries and more than 8000 leather item producing units. The tanning business is amassed in three states viz. Tamil Nadu, West Bengal and Uttar Pradesh. Of the aggregate number of tanneries in India, Tamil Nadu represents 52%, West Bengal 23% and U.P 12%. The other critical states are Maharashtra, Andhra Pradesh and Punjab.
- **Saddlery Industry:** India is one of the biggest manufacturers of saddlery merchandise on the planet. The saddlery industry was built up in the nineteenth century fundamentally to take into account the necessities of military and police. From that point on activities were taken to build up the industry and today there are more than 150 units in the organized sector, among which 105 are fully export oriented units. Kanpur being the prominent in the manufacturing of saddler products in India, representing over 95% of the aggregate export from India. Kanpur gains an advantage because of the manufacturing of Harness leather which is a very important ingredient for this industry. The significant importers of Indian saddlery are spread over USA, Western Europe, Japan, Australia and New Zealand.

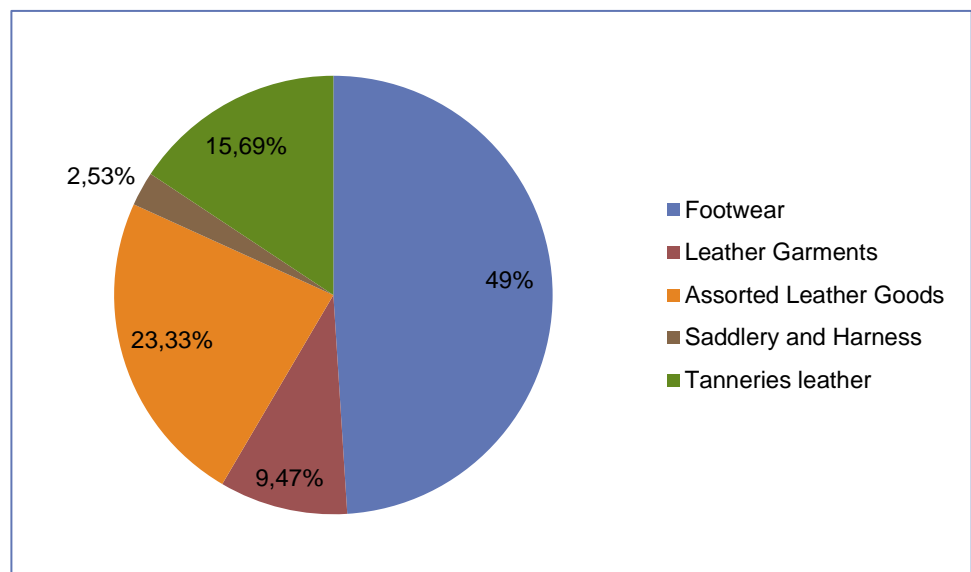
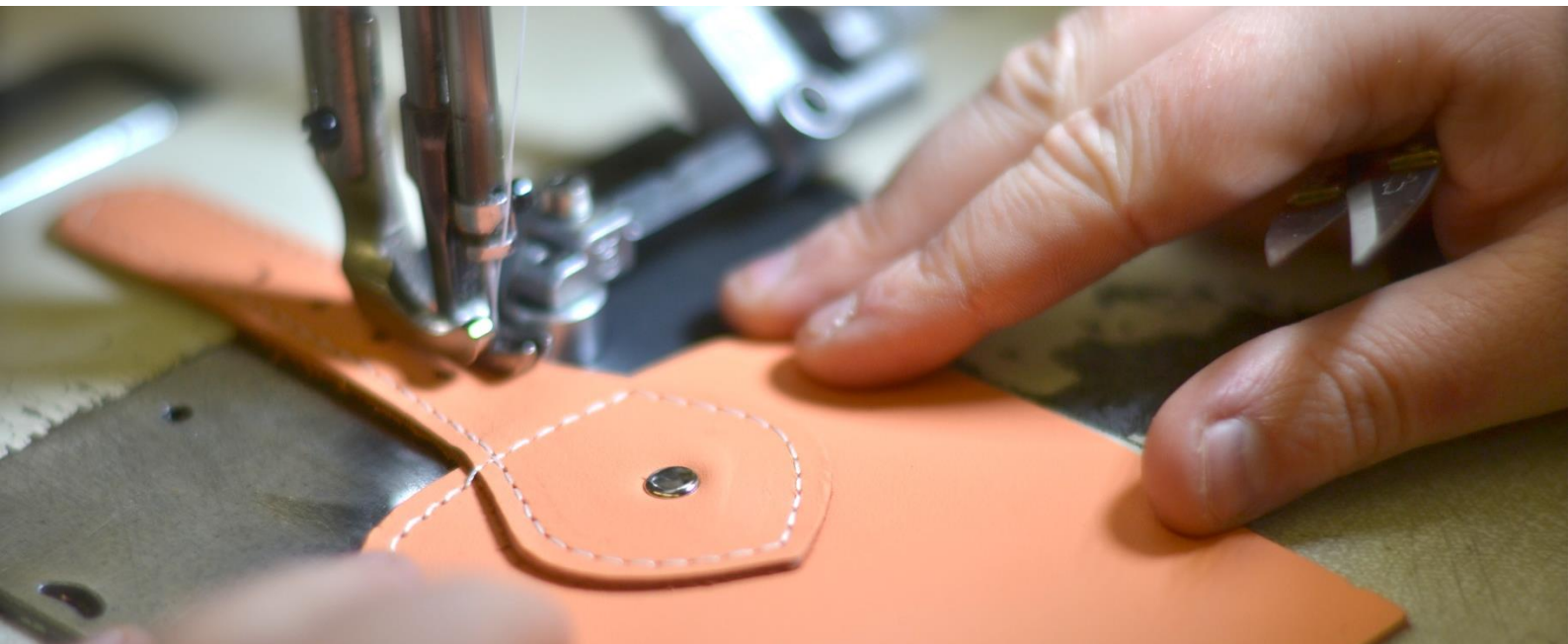


FIGURE 115: INDIAN LEATHER SEGMENTS

Source: Council for Leather Exports

- **Garments and Outerwear Industry:** the Leather Garment Industry possesses a position of unmistakable quality in the Indian cowhide segment. A wide product classification is produced which includes jackets, coats, shirts, pant, children garments, motorbike jackets, aprons and industrial leather garments. Current manufacturing plants have been set up in the small scale, generally in the region of urban ranges of Chennai, Bangalore, Delhi and Hyderabad. Lately a surge in demand has led to the increase in capacity of this industry.
- **Assorted Leather Goods Industry:** this industry produces various bags, gloves, wallets, brief cases, travel ware, belts and sports products. Manufacturing plants set up in Chennai, Kolkata and Kanpur represent an enhanced scope of superlative leather goods. Germany being the major consumer with an off take of around 25 % of the total goods produced by India which is closely followed by a host of countries like the USA, England, Italy and France. As this segment has a wide range of offerings from designer collections to personal leather accessories, this sector contributes almost 21 % in the total leather industry, along with keeping up a modest growth rate of 10 % year on year.



Source: msmeworld.wordpress.com

INVESTMENT

The National Manufacturing Policy identifies leather as a special focus sector, for growth and employment generation. Huge Production Centres in the form of Mega Leather Clusters (MLC) with all required infrastructure for production to be set-up in next 5 years. These include the following projects. Investors can set-up their units in one of these MLCs.

Location of MLCs

Project Approved:

Kothapatnam Village, Kota Mandal, Andhra Pradesh (Area: 537 acres).

Project under consideration:

IMT Rajkot, Mewat, Haryana (Area: 105 acres).

Since this cluster enjoys an advantage of convenient access to raw material, tannery base and port facilities, most firms in this cluster have progressed gradually from exchanging and trading raw material, therefore climbing the value-chain trading semi-finished leather and finally focus on manufacturing itself.

Kolkata Cluster

Situated primarily in **Bantala**, the Kolkata cluster produces finished leather, leather goods which includes hand bags, wallets, purses, pouches, gloves (fashion and industrial), luggage bags and all other small leather goods. Leather goods are manufactures at **Kasba** and **Topsia**, while **Beleghata** is home to glove manufacturing units. Apart from them the Calcutta Leather Complex adds great value to the overall infrastructure of the cluster. This cluster contributes about 60% of the total export of the leather goods and 90% of the leather gloves. It is also known for producing Drum dried mill leather, Natural dried mill leather, Nappa leather and vegetable tanned leather.

As water is an essential requirement in the process of tanning, Kolkata due to its proximity to the delta region of Sunderbans enjoys abundant water supply. Also high density of household units and low salaries of skilled labor, helps the industry maintain its low cost operations and increasing profitability.

Agra Cluster

Agra is the largest footwear manufacturing hub in India with an estimated annual manufacturing value of almost ₹ 10,000 crores. It is a low-tech cluster dominated mostly by small artisan manufacturers, who produce close to 4 lakhs pairs of footwear (all types) per day. A wide range of input industries such as lasts, tools and leather boxes also exist in this cluster. This cluster produces almost 25 % of leather footwear exports from India.

Ambur Cluster

Ambur located in Vellore district of Tamil Nadu, comprises a major part of the nation's leather tanning industry, due to which it is also known as the "Leather City of South India". India's biggest and finest tanneries are located here which makes it one of the leading exporters of leather goods in India. This cluster is home to a large number of tanneries where E.I. tanned goat and sheep skins, S/C and F/C finished leather etc. are produced. The finished and unfinished products like shoes, garments, and gloves are manufactured and exported. In Ambur, 50% of the large scale players have their own design studio and develop their own designs, whereas the remaining manufacture as per the requirements of the foreign buyer.

GOVERNMENT INITIATIVES

The Government has taken a series of steps to bolster the development of the domestic leather industry. A few initiatives that the GoI has taken to enhance the prospects and to encourage rapid development of the leather business are mentioned below:

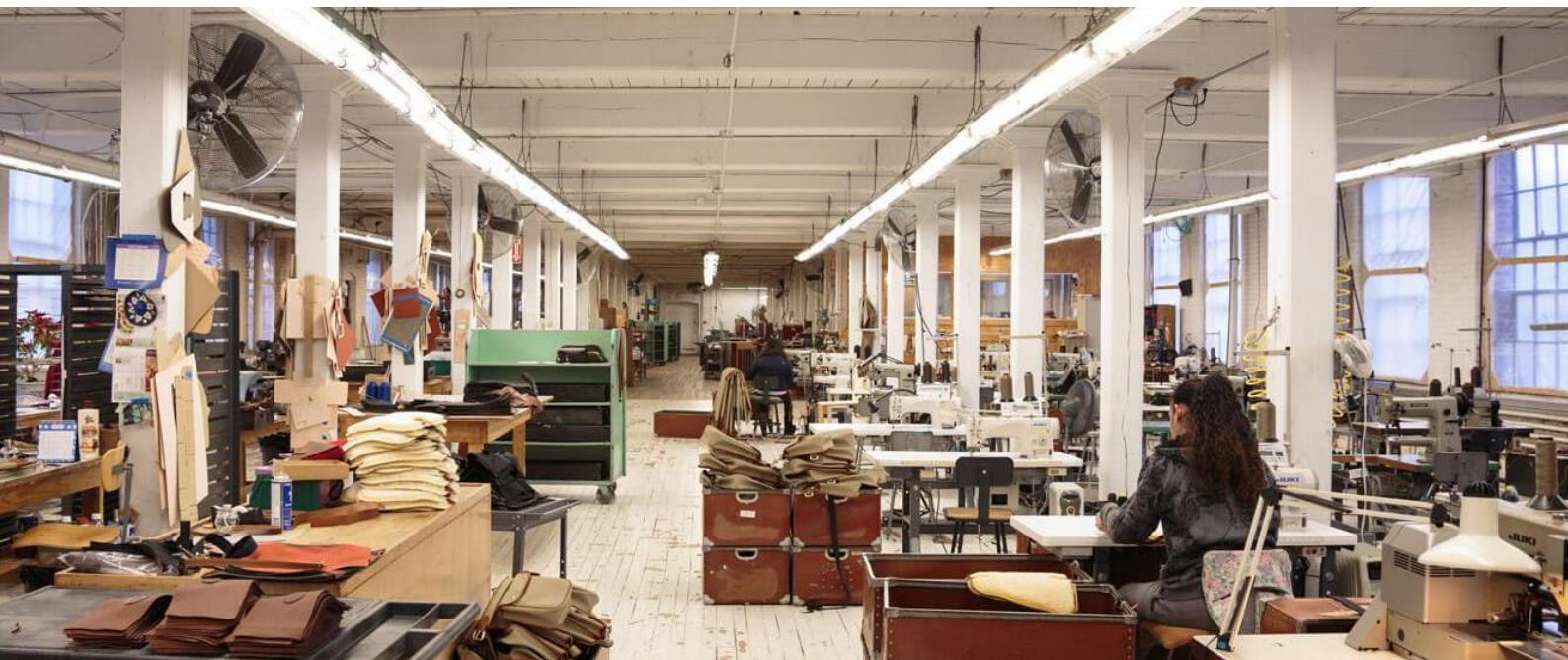
- The entire leather industry is now de-licensed and de-reserved, clearing route for extension on present day lines with cutting edge machinery and equipment.
- 100% Foreign Direct Investment (FDI) and Joint Ventures permitted through the automatic route.
- 100% repatriation of profit and dividends, if investments made in convertible foreign currency.

- Zero import duty on raw hides and skins, semi-processed leathers like wet blue, crust leather or finished leather and tanned fur-skins.
- Approval provided for setting up Mega Leather Clusters at Kota Mandal, Nellore district, Andhra Pradesh with a central government assistance of INR 125 crore. This project is expected to generate employment for 20000 people and leverage and investment of at least ₹ 500 crore in the first phase itself.
- Funding support for setting up World class manufacturing plants and for establishing new design studios.
- Duty neutralization / remission scheme
- 5% Concessional duty on import of specified machinery for use in leather industry
- Excise duty reduced to 6% from 12% on leather footwear with retail sale price of more than ₹ 1000 per pair.
- 3% duty scrip under Merchandise Exports from India Scheme (MEIS) for notified leather products and footwear and 2% duty scrip for finished leather products for export to Group A and B countries.
- Financial assistance is being provided to organize overseas marketing activities to promote exports from the country under Marketing Development Assistance (MDA) scheme and for enhancement of export through accessing new markets or through increasing the share in existing markets under Market Access Initiatives Scheme (MAIS).
- This sector has been identified as a Focus Sector in the Foreign Trade Policy and this sector gets incentives under Focus Product Scheme, Focus Market scheme, EPCG (Export Promotion Capital Goods Scheme) etc. as foreign trade promotion schemes.
- Kanpur, Agra and Ambur have been identified as “Towns of Export Excellence” (TOEE) for leather products.
- To impart skill development and improve the educational infrastructure, the government will introduce 2 new branches of Footwear Design and Development Institute (FDDI) in Punjab (Banur) and Gujarat (Ankleshwar), with an assistance of 100 crore for each.

KEY DRIVERS

The key drivers of cowhide industry include:

- Immense local markets
- Huge overseas demand of leather items
- Abundance of raw material – India is blessed with 20% of world's cattle and 11% of goat and sheep populace.
- 55% of workforce is below 35, so this industry has one of the most youthful and productive workforce.
- Online retailing, both direct and indirect channels such as Amazon and Flipkart, will grow three times by 2020, increasing at 50-55% annually over the next three years.
- Rise in income of the urban and rural population makes India a very good prospect to generate new markets.
- Rising retail opportunities increase the demand of the leather. The government has enabled 51% FDI in multi-brand retail and 100% in single-brand retail to bring in more foreign investment.
-



Source: Softline Brand Partners

SWOT ANALYSIS

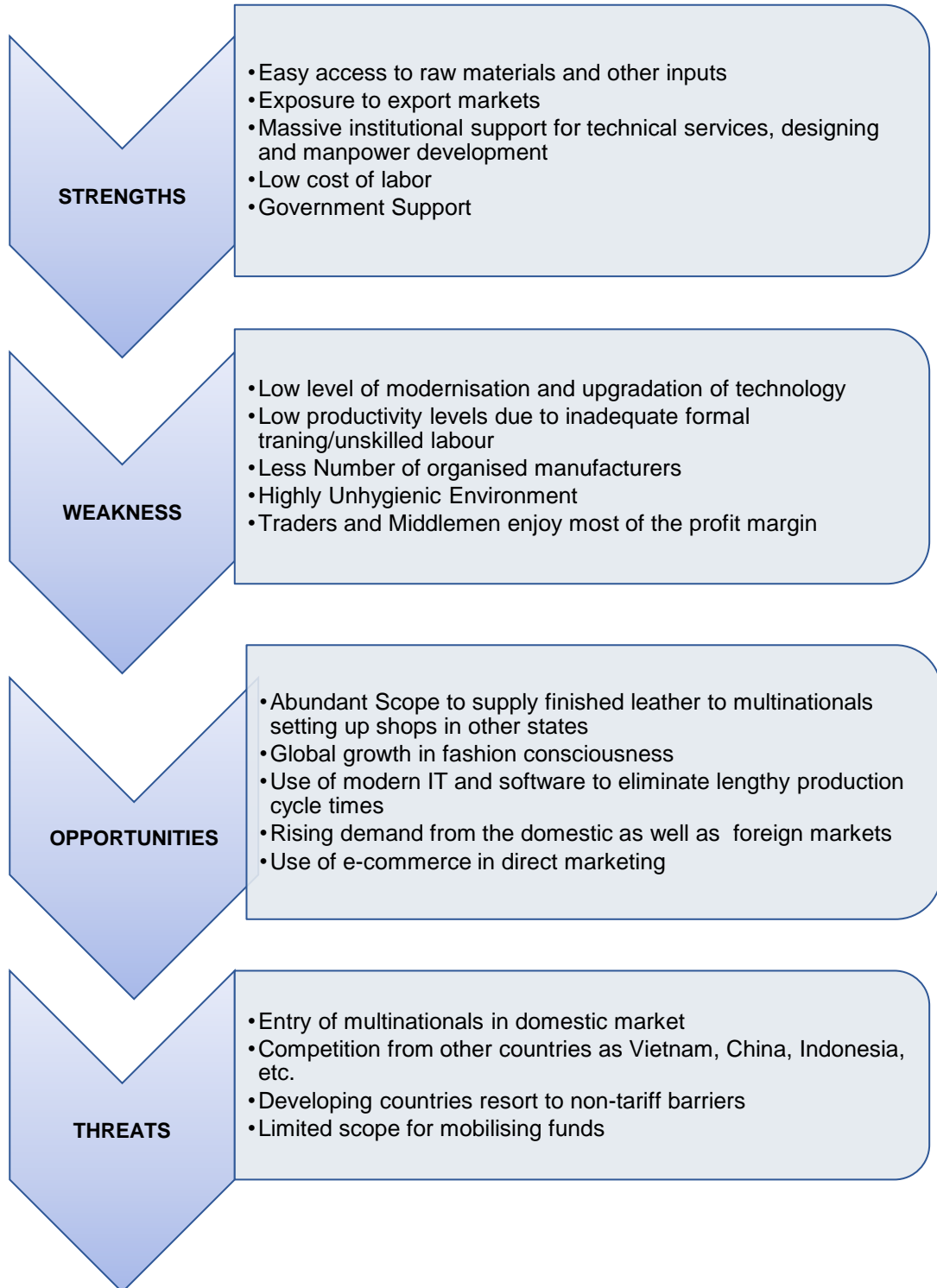


FIGURE 116: SWOT ANALYSIS, INDIAN LEATHER INDUSTRY

LEATHER CLUSTERS IN INDIA

The major leather clusters in India are located in the states of Tamil Nadu (Chennai, Ambur, Ranipet), West Bengal (Kolkata) and Uttar Pradesh (Kanpur, Agra, Noida).

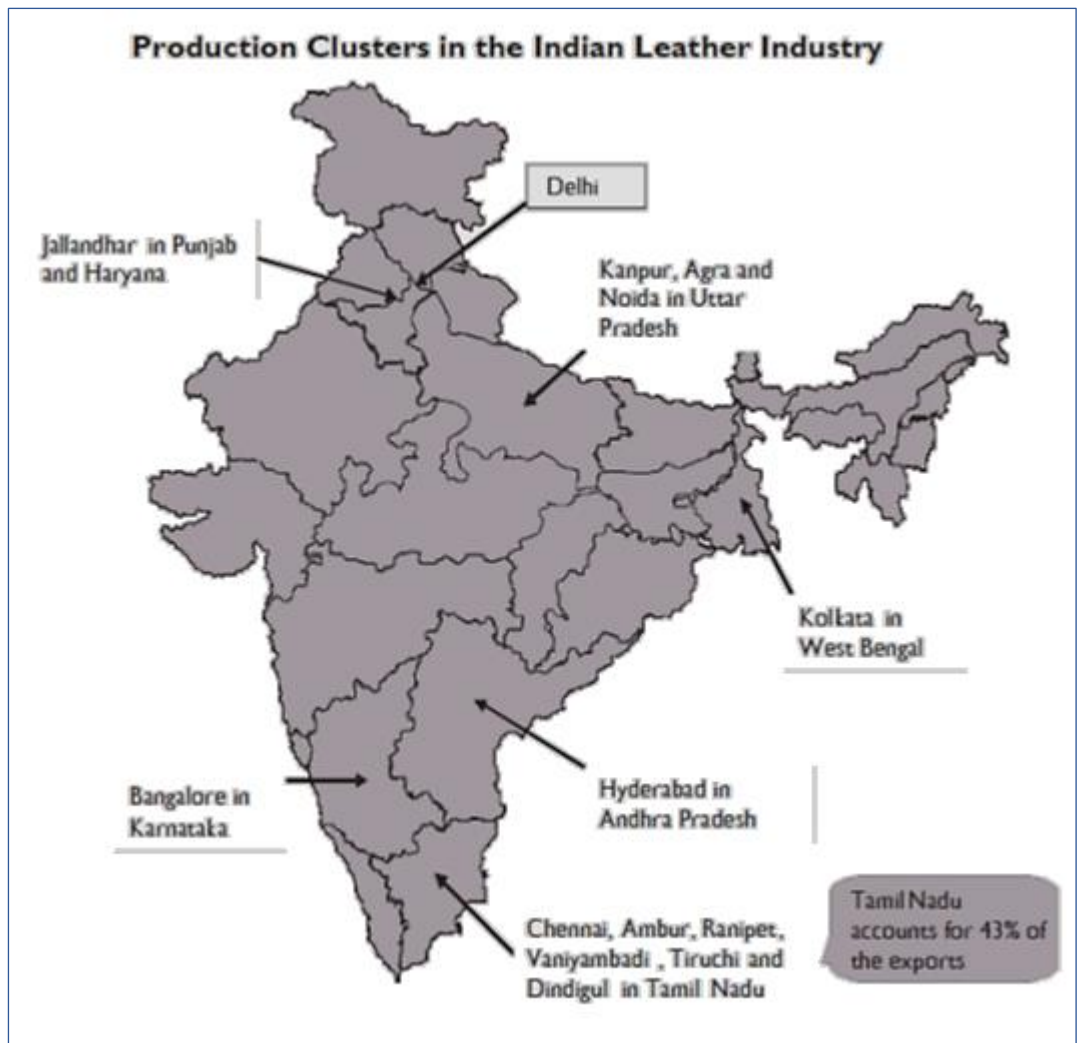


FIGURE 117: PRODUCTION CLUSTERS IN THE INDIAN LEATHER INDUSTRY

Product	Production capacities
Hides	65 million pieces
Skins	170 million pieces
Leather Footwear	776 million pairs
Leather Shoe Uppers	112 million pairs
Non-leather Footwear	960 million pairs
Leather Garments	18 million pieces
Leather Goods	60 million pieces
Industrial Gloves	52 million pairs
Saddlery	0.10 million pieces

Source: http://www.leatherindia.org/ind_at_glance.asp

FIGURE 118: LEATHER PRODUCTS PRODUCTION CAPACITY

MAJOR PLAYERS

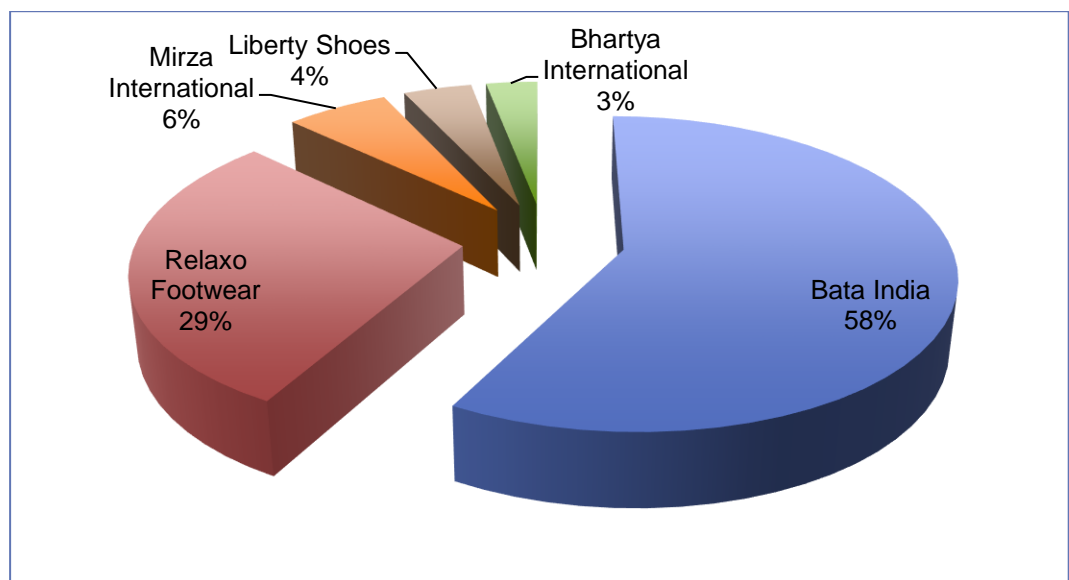


FIGURE 119: COMPANY SHARE IN TURNOVER

- **Bata India:** It is the largest retailer and leading manufacturer of footwear in India. Started in 1932 in Calcutta it was the first manufacturing facility in the Indian footwear industry to receive the ISO: 9001 certification. Bata India has built up itself as India's biggest footwear retailer. Its retail system of more than 1200 stores gives it a compass/scope that no other footwear organization can match. The stores are available in great areas and can be found in all the metros, cities and towns. Bata's brilliant looking new stores upheld by a scope of better quality items are aimed at offering a better shopping experience for its clients. It additionally operates a large non-retail distribution network through its urban wholesale division and caters to millions of customers through over 30,000 dealers.
- **Relaxo Footwear:** Started in 1976, Relaxo has relentlessly settled its manufacturing facilities over the length and breadth of Northern India. Each best in class unit is outfitted with modern foundation fueled by cutting edge innovation and progressive machinery. Today in 10 manufacturing units Relaxo produces 6 lacs pairs of footwear everyday with a significant importance given to comfort, style and quality of the product.
- **Mirza Tanners Ltd.:** Mirza International Limited (formerly known as Mirza Tanners Limited) came into existence in 1979. The organization has its headquarters in Delhi and manufacturing unit in Kanpur. Today, the organization has risen as a leader in the assembling and promoting of leather footwear and accessories.
- **Liberty Shoes:** Set up in 1954, directly delivers 50,000 sets of footwear a day through its six assembling units, sold through 6,000 multi-mark outlets and 350 selective showrooms, and has a presence in 25 nations, with 50 showrooms outside India.
- **Bhartiya International (BIL):** It at first begun with export of carpets and slowly, broadened into the fabrication and export of high-fashion leather clothing. BIL exports 100% of its production of leather garments and carpets to countries like Germany, Austria, Italy, Switzerland, Hungary, the US and Canada. The organization acquires rugs from the primary carpet producing territories in the nation - the Mirzapur/Varanasi belt, Uttar Pradesh, Amritsar and Jaipur.

EASIER MARKET ACCESS

The unhindered trade understandings marked by different nations with the western and regional markets give a simple market access to their export of leather items. The govt. is expected to bring about a Trade and Investment Agreement with European Union, which should provide zero duty access for both India and European manufacturers.

The Government of India has executed the Market Access Initiative Scheme of 765 lakhs for upgrade of export through getting to new markets or through expanding the share in the current markets. Under MAI Scheme, monetary help is accommodated showcasing ventures abroad, capacity building, Market research/overview for advancing appropriate advertising strategies and so forth.



Source: Financial Tribune

COUNCIL FOR LEATHER EXPORTS (CLE)

The Council for Leather Exports is an autonomous non-profit organization, which is entrusted with export promotion activities and the development of the Indian leather industry. About 3,172 companies manufacturing/exporting leather and leather products are members of the Council.

OPPORTUNITIES

The leather business possesses a prominent place in the Indian economy in perspective of its significant export earnings, business potential and development. The Indian leather industry, one the most dynamic division of the nation's economy, is all around organized and traverses different sections, for example, tanning and completing, footwear and footwear segments, leather items of clothing, leather merchandise and outfit.

Very much perceived in the global market, the Indian cowhide products constitute around 7% of India's export profit. Other than being a noteworthy worker of remote trade, the leather industry creates business, guaranteeing employments for more than 2.5 million individuals, with 75% from rural parts of India, while creating markets, for countries like the US who are real buyers. It is presently balanced for a major jump to twofold to its worldwide offer from the present 3%.

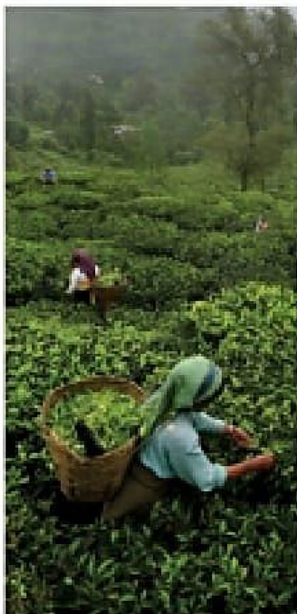
The Indian Leather Industry is developing significantly. One must be asking why India is sending out such a huge amount of leather to western nations. Evidently in light of the fact that Indian leather wear still appreciates an awesome request abroad and now-a-days even the domestic market is creating and devouring the offerings of this industry.



4 / 50 REASONS TO PARTNER WITH INDIA

Source: India Brand Equity Foundation

50 REASONS TO PARTNER WITH INDIA





DEMOGRAPHIC DIVIDEND A YOUNG NATION

INDIA IS A YOUNG NATION OF
1.2 BILLION PEOPLE WITH A
MEDIAN AGE OF 27 YEARS

1



ECONOMY FAST PACED GROWTH

INDIA IS THE WORLD'S
FASTEST GROWING ECONOMY

2



MAKE IN INDIA

PROFITABLE VENTURE

INDIA IS RANKED THE NO.1
INVESTMENT DESTINATION
IN THE WORLD

3

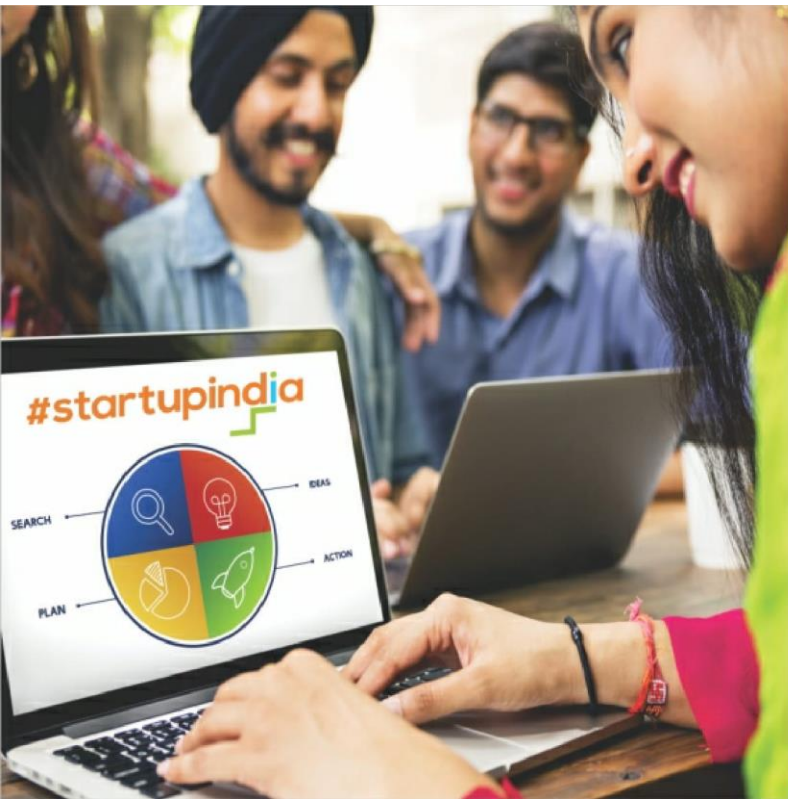


SKILL INDIA

BEING FUTURE-READY

INDIA AIMS TO CREATE
THE WORLD'S LARGEST READY
POOL OF SKILLED MANAGEMENT

4



START-UP INDIA BIG IN TECHNOLOGY

INDIA IS EXPECTED TO
BE HOME TO 11,500 TECH
START-UPS BY 2020

5



FDI TRANSFORMING INDIA

INDIA IS THE MOST OPEN
ECONOMY IN THE WORLD FOR FDI

6



AGRICULTURE

A STRONG STORY

INDIA IS THE SECOND LARGEST PRODUCER OF FRUITS AND VEGETABLES IN THE WORLD

7



BRAND INDIA

A DYNAMIC NATION

INDIA IS WORLD'S SEVENTH MOST VALUED 'NATION BRAND' WITH A TOTAL BRAND VALUE OF US\$ 2.1 BILLION

8



TALENT

THE WORLD LEADER

INDIA IS THE BIGGEST RECIPIENT OF REMITTANCES GLOBALLY

9



DIGITAL PAYMENTS

AN EMERGING GIANT

INDIA'S DIGITAL PAYMENTS SECTOR IS EXPECTED TO BE WORTH US\$ 500 BILLION BY 2020

10



PHARMACEUTICALS

RESPONSIBLE GROWTH

INDIA IS THE LARGEST PROVIDER
OF GENERIC DRUGS GLOBALLY

11



TALENT

HIGH COMPETENCY

INDIA HAS A LARGE POOL OF
SCIENTISTS AND ENGINEERS
WORKING ACROSS THE WORLD

12



AUTOMOBILES IN THE FAST LANE

INDIA HAS EMERGED AS
A GLOBAL AUTOMOBILE HUB

13



SPICES WORLD'S SPICE BOWL

INDIA IS THE WORLD'S LARGEST
PRODUCER, CONSUMER AND
EXPORTER OF SPICES

14



TEA

IN GREAT DEMAND

INDIA IS THE WORLD'S LARGEST
PRODUCER AND CONSUMER
OF BLACK TEA

15



COFFEE

A SHADE BETTER

INDIA IS THE ONLY COUNTRY
THAT GROWS COFFEE UNDER
A WELL DEFINED TWO TIER
MIXED SHADE CANOPY

16



ENGINEERING

A WELL ENGINEERED
GROWTH STORY

INDIA IS A WORLD PIONEER
IN ENGINEERING RESEARCH
AND DEVELOPMENT AND
DESIGN OUTSOURCING

17



PHARMACEUTICALS

IN THE PREMIER LEAGUE

GLOBALLY INDIA RANKS
AMONGST THE TOP EXPORTERS
OF FORMULATIONS IN
VOLUME TERMS

18



MEDIA & ENTERTAINMENT

THE BIG PICTURE

THE INDIAN FILM INDUSTRY IS
THE LARGEST IN THE WORLD

19



TELECOM

WORLD'S LOWEST COST TELEPHONY

INDIA OFFERS THE WORLD'S
LOWEST MOBILE TARIFFS

20



SPACE TECHNOLOGY

THE WORLD LEADER

INDIA IS THE FIRST COUNTRY TO REACH MARS IN FIRST ATTEMPT

21



TELECOM

BOOMING SUBSCRIPTIONS

INDIA HAS OVER ONE BILLION MOBILE PHONE SUBSCRIBERS

22



PHARMACEUTICALS

INOCULATING THE WORLD

INDIAN VACCINES ARE EXPORTED
TO 150 COUNTRIES

23



TRACTORS

FARMING WITH EXCELLENCE

INDIA IS THE WORLD'S LARGEST
MARKET FOR TRACTORS

24



YOGA

THE GIFT OF WELL BEING

YOGA IS INDIA'S GIFT TO
THE WORLD

25



TWO-WHEELERS

A STRONG MARKET

INDIA IS THE WORLD'S SECOND
LARGEST MANUFACTURER
OF TWO-WHEELERS

26



START-UP INDIA

ENTREPRENEURS' PARADISE

INDIA IS HOME TO THE THIRD
LARGEST NUMBER OF
TECHNOLOGY-DRIVEN START-UPS
IN THE WORLD

27



SPACE TECHNOLOGY

TALK OF THE SKIES

INDIA HAS SUCCESSFULLY
LAUNCHED 180 SATELLITES FOR
22 COUNTRIES

28



INTERNET

LEADING THE VIRTUAL ZONE

INDIA IS WORLD'S SECOND-LARGEST
INTERNET MARKET

29



JAN DHAN YOJANA

COMMITTED TO
FINANCIAL INCLUSION

INDIA HOLDS FIRST RANK
IN COMMITMENT TO
FINANCIAL INCLUSION

30



START-UP INDIA THE FASTEST GROWING

INDIA HAS THE FASTEST GROWING
AND THIRD-LARGEST START-UP
ECOSYSTEM IN THE WORLD

31



AVIATION FLYING HIGH

INDIA IS THE FASTEST
GROWING MAJOR AVIATION
MARKET IN THE WORLD

32

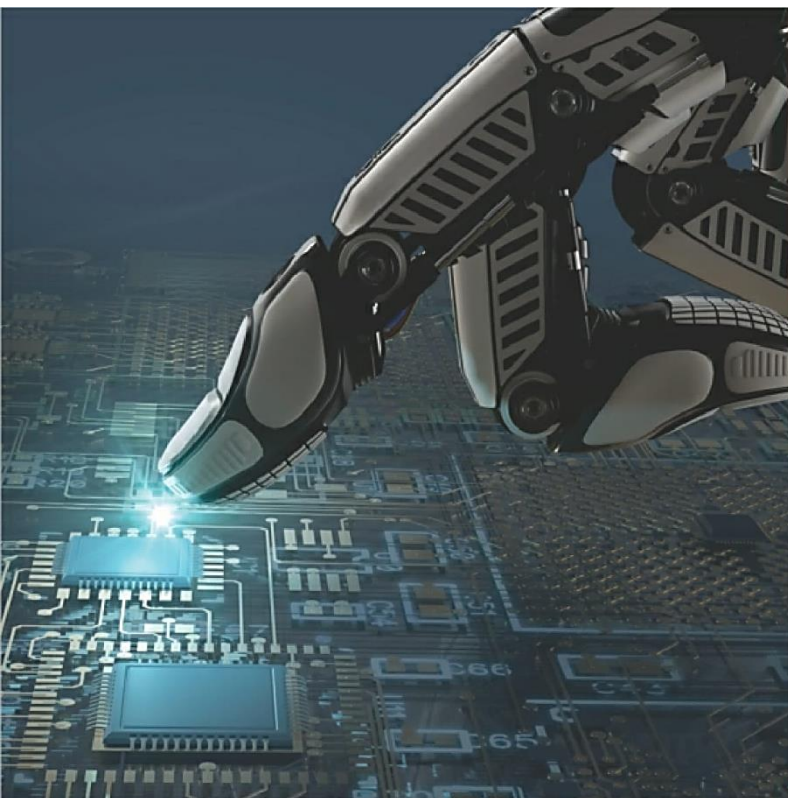


RIGHT TO INFORMATION

A TRANSPARENT SYSTEM

INDIA IS RANKED FOURTH IN A WORLDWIDE COMPARATIVE ASSESSMENT OF NATIONAL LEGAL FRAMEWORKS FOR RTI

33



ENGINEERING

ADAPTING MODERN TECHNOLOGIES

INDIA RANKS THIRD IN THE WORLD IN IMPLEMENTING ROBOTIC AUTOMATION IN ITS CORE BUSINESS PROCESSES

34



MEDICAL TOURISM

HEALING THE WORLD

INDIA'S MEDICAL TOURISM MARKET IS EXPECTED TO MORE THAN DOUBLE IN SIZE TO US\$ 8 BILLION BY 2020

35



TALENT

HOME TO MILLIONAIRES

INDIA WILL BE HOME TO 4.37 LAKH MILLIONAIRES BY 2018

36



RENEWABLE ENERGY

A BIG OPPORTUNITY

INDIA HAS A US\$ 250 BILLION INVESTMENT OPPORTUNITY IN RENEWABLE ENERGY

37

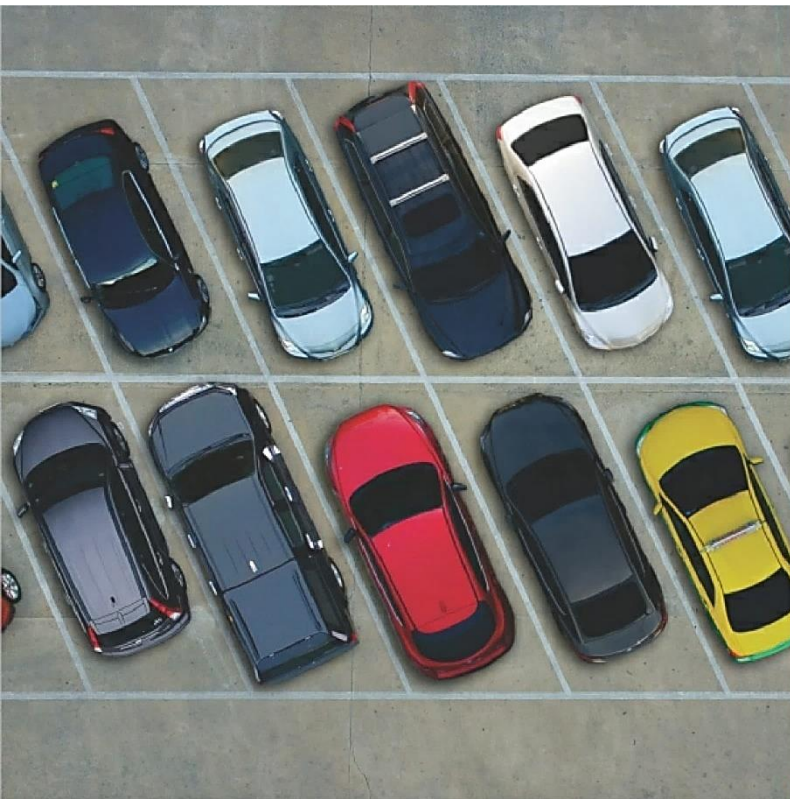


INTERNET

CONNECTING THE DOTS

INDIA'S INTERNET ECONOMY IS EXPECTED TO TOUCH INR 10 TRILLION (US\$ 147.2 BILLION) BY 2018

38



AUTOMOBILES

IN THE FAST LANE

INDIA'S PASSENGER VEHICLES
MARKET TO REACH 9.4 MILLION
UNITS BY 2026

39



E-COMMERCE

DYNAMIC AND GROWING

INDIA'S E-COMMERCE
MARKET IS EXPECTED TO
TOUCH US\$ 200 BILLION IN
TERMS OF GROSS MERCHANDISE
VALUE (GMV) BY 2025

40



PHARMACEUTICALS

CREDIBLE. AFFORDABLE.
SUSTAINABLE

INDIA'S PHARMACEUTICAL
MARKET IS EXPECTED TO GROW
TO US\$ 55 BILLION BY 2020 AND
EMERGE AS THE SIXTH LARGEST
GLOBALLY BY SIZE

41



INFRASTRUCTURE

BUILDING A NATION

INDIA WILL REQUIRE INR 31 TRILLION
(US\$ 456.2 BILLION) FOR
INFRASTRUCTURE DEVELOPMENT
OVER THE NEXT FIVE YEARS

42



RETAIL

A GROWING INDUSTRY

INDIA'S RETAIL SECTOR IS EXPECTED TO DOUBLE TO US\$ 1.2 TRILLION BY 2020

43



AIRPORTS

ENHANCING CONNECTIVITY

INDIA PLANS TO SET UP 50 NEW AIRPORTS IN THE NEXT THREE YEARS

44



CONSUMER SPENDING

VAST POTENTIAL

CONSUMER SPENDING IN INDIA IS EXPECTED TO TOUCH US\$ 3.6 TRILLION BY 2020

45



AUTOMOBILES

RUNNING ON TOP GEAR

INDIA'S PRE-OWNED CAR MARKET IS EXPECTED TO HIT THE 7 MILLION UNITS MARK BY 2020

46

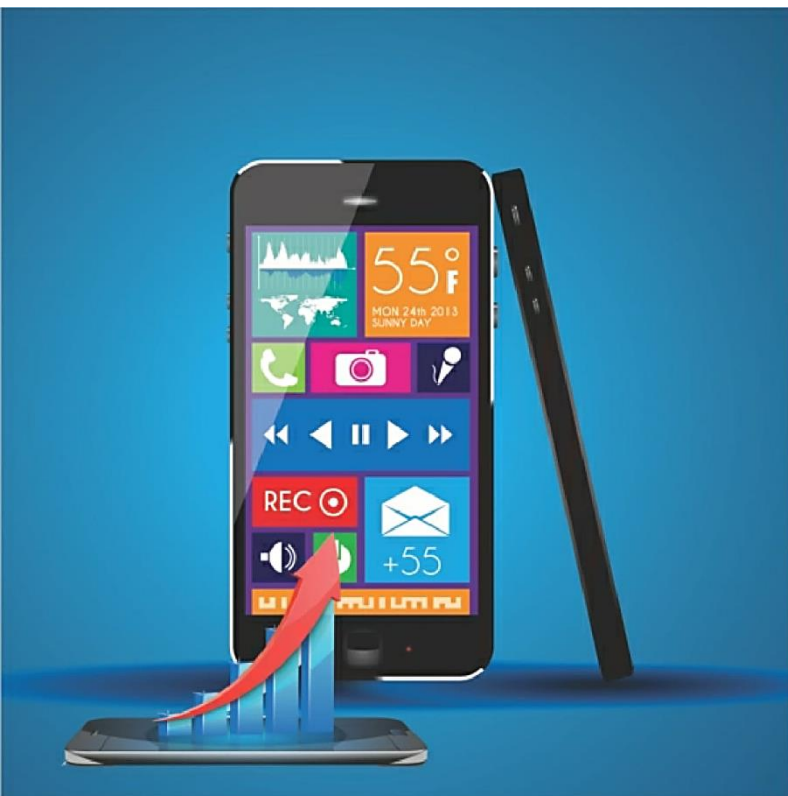


CONSUMER GOODS

SETTING NEW BENCHMARKS

THE PACKAGED CONSUMER GOODS SECTOR IN INDIA IS EXPECTED TO CROSS THE US\$ 100 BILLION MARK BY 2020

47



SMARTPHONES

RINGING IN GROWTH

SMARTPHONE SALES IN INDIA IS EXPECTED TO DOUBLE TO 200 MILLION A YEAR BY 2020

48

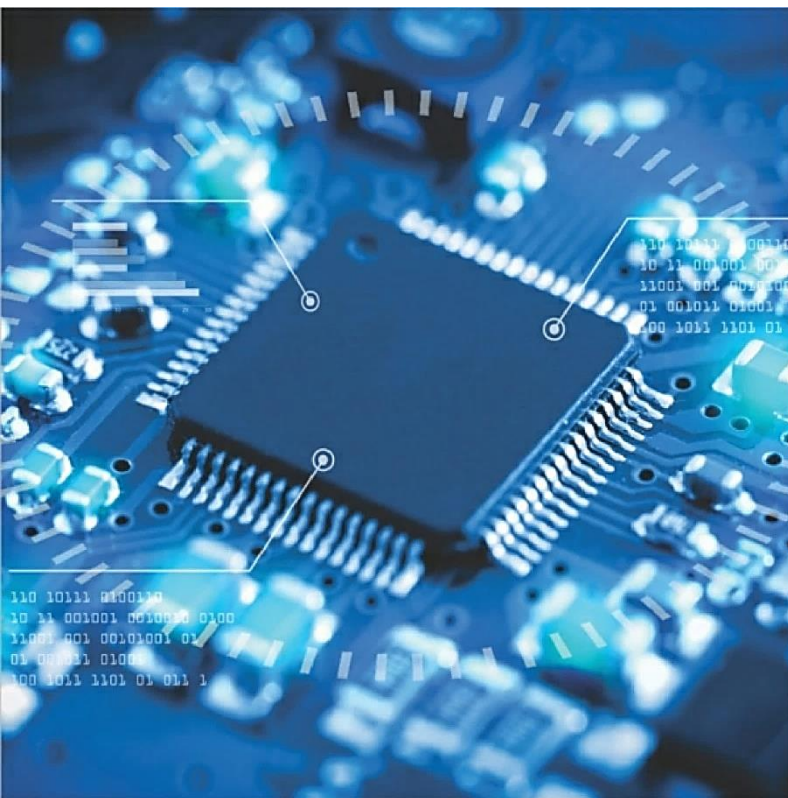


HEALTHCARE

INCREASING ACCESS

GOVERNMENT OF INDIA PLANS
TO OPEN 3000 PRADHAN MANTRI
JAN AUSHADHI KENDRAS
BY MARCH 2017

49



ELECTRONICS

ON THE RIGHT TRACK

INDIA'S ELECTRONIC PRODUCTS
INDUSTRY IS EXPECTED TO REACH
US\$ 75 BILLION BY 2017

50

5 / APPENDIX

APPENDIX 1: STATE WISE LITERACY RATE IN LAST 3 DECADES AND GAPS

Table 1 – Literacy Rates

State/Union Territory	1991			2001			2011		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
A & N Islands	65.5	79.0	73.0	75.2	86.3	81.3	82.4	90.3	86.6
Andhra Pradesh	32.7	55.1	44.1	50.4	70.3	60.5	59.1	74.9	67.0
Arunachal Pradesh	29.7	51.5	41.6	43.5	63.8	54.3	57.7	72.6	65.4
Assam	43.0	61.9	52.9	54.6	71.3	63.3	66.3	77.8	72.2
Bihar	22.0	51.4	37.5	33.1	59.7	47.0	51.5	71.2	61.8
Chandigarh	72.3	82.0	77.8	76.5	86.1	81.9	81.2	90.0	86.0
Chhattisgarh	27.5	58.1	42.9	51.9	77.4	64.7	60.2	80.3	70.3
D & N Haveli	27.0	53.6	40.7	43.0	73.3	60.0	64.3	85.2	76.2
Daman & Diu	59.4	82.7	71.2	70.4	88.4	81.1	79.5	91.5	87.1
Delhi	67.0	82.0	75.3	74.7	87.3	81.7	80.8	90.9	86.2
Goa	67.1	83.6	75.5	75.4	88.4	82.0	84.7	92.6	88.7
Gujarat	48.6	73.1	61.3	58.6	80.5	70.0	69.7	85.8	78.0
Haryana	40.5	69.1	55.9	45.7	78.5	67.9	65.9	84.1	75.6
Himachal Pradesh	52.1	75.4	63.9	67.4	85.4	76.5	75.9	89.5	82.8
Jammu & Kashmir	NA	NA	NA	43.0	66.6	55.5	56.4	76.8	67.2
Jharkhand	-	-	-	38.9	67.3	53.6	55.4	76.8	66.4
Karnataka	44.3	67.3	56.0	56.9	76.1	66.6	68.1	82.5	75.4
Kerala	86.1	93.6	89.8	87.9	94.2	90.9	92.1	96.1	94.0
Lakshadweep	72.9	90.2	81.8	80.5	92.5	86.7	87.9	95.6	91.8
Madhya Pradesh	29.4	58.5	44.7	50.3	76.1	63.7	59.2	78.7	69.3
Maharashtra	52.3	76.6	64.9	67.0	86.0	76.9	75.9	88.4	82.3
Manipur	47.6	71.6	59.9	60.5	80.3	70.5	72.4	86.1	79.2
Meghalaya	44.9	53.1	49.1	59.6	65.4	62.6	72.9	76.0	74.4
Mizoram	78.6	85.6		86.8	90.7	88.8	89.3	93.3	91.3
Nagaland	54.8	67.6	61.7	61.5	71.2	66.6	76.1	82.8	79.6
Odisha	34.7	63.1	49.1	50.5	75.4	63.1	64.0	81.6	72.9
Puducherry	65.6	83.7	74.7	73.9	88.6	81.2	80.7	91.3	85.8
Punjab	50.4	65.7	58.5	63.4	75.2	69.7	70.7	80.4	75.8
Rajasthan	20.4	55.0	38.6	43.9	75.7	60.4	52.1	79.2	66.1

State/Union Territory	1991			2001			2011		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Sikkim	46.7	65.7	56.9	60.4	76.0	68.8	75.6	86.6	81.4
Tamil Nadu	51.3	73.8	62.7	64.4	82.4	73.5	73.4	86.8	80.1
Tripura	49.7	70.6	60.4	64.9	81.0	73.2	82.7	91.5	87.2
Uttar Pradesh	24.4	54.8	40.7	42.2	68.8	56.3	57.2	77.3	67.7
Uttarakhand	41.6	72.8	57.8	59.6	83.3	71.6	70.0	87.4	78.8
West Bengal	46.6	67.8	57.7	59.6	77.0	68.6	70.5	81.7	76.3
India	39.3	64.1	52.2	53.7	75.3	64.8	65.5	82.1	74.0

Source: Office of Registrar General, India

Notes:

1. Literacy rates pertain to the population aged 7 years and above.
2. Literacy rates for 1991 exclude Jammu & Kashmir and for 2001 and 2011 exclude Mao Maram, Paomata and Purul Sub-divisions of Senapat district of Manipur.

APPENDIX 2: SOME IMPORT-EXPORT DATA

Table 2: Region-wise Import Data

S.No.	Region	2015-2016	%Share	2016-2017 (Apr-Feb)	%Share
1.	EU Countries	28,713,330.90	11.5301	25,415,928.14	11.0939
2.	European Free Trade Associatiptn (EFTA)	12,996,746.62	5.2190	10,310,048.01	4.5003
3.	Other European Countries	552,361.29	0.2218	765,307.27	0.3341
4.	Southern African Customs Union	4,269,230.53	1.7143	4,244,667.46	1.8528
5.	Other South African Countries	2,365,561.77	0.9499	2,178,619.66	0.9510
6.	West Africa	10,912,372.68	4.3820	7,871,787.58	3.4360
7.	Central Africa	343,816.77	0.1381	231,575.31	0.1011
8.	East Africa	872,408.23	0.3503	775,436.75	0.3385
9.	North Africa	1,886,409.48	0.7575	1,737,129.54	0.7582
10.	North America	18,537,609.39	7.4439	17,635,670.75	7.6979
11.	Latin America	11,558,695.65	4.6415	10,077,157.25	4.3986
12.	East Asia (Oceania)	6,343,008.80	2.5471	6,987,661.40	3.0501
13.	ASEAN	26,074,356.82	10.4704	24,604,647.84	10.7398
14.	West Asia- GCC	36,414,747.49	14.6226	32,684,680.67	14.2667
15.	Other West Asia	13,117,031.67	5.2673	14,711,856.80	6.4216
16.	NE Asia	61,610,469.35	24.7402	57,405,288.74	25.0571
17.	South Asia	1,945,897.40	0.7814	1,631,484.71	0.7121
18.	CARs Countries	297,994.74	0.1197	256,801.80	0.1121
19.	Other CIS Countries	4,328,893.79	1.7383	5,045,447.32	2.2023
20.	Unspecified	5,888,864.76	2.3647	4,526,657.32	1.9759
India's Total Import		249,029,808.12		229,097,854.31	

Source: Export-Import Data Bank (2017), Department of Commerce, Ministry of commerce and industry, India

Table 3 – Region-wise Export Data

S.No.	Region	2015-2016	%Share	2016-2017(Apr-Feb)	%Share
1.	EU Countries	29,116,372.42	16.9638	28,252,588.05	17.1791
2.	European Free Trade Association (EFTA)	1,004,129.54	0.5850	697,342.02	0.4240
3.	Other European Countries	2,824,457.21	1.6456	2,847,262.41	1.7313
4.	Southern African Customs Union	2,482,005.83	1.4461	2,192,193.99	1.3330
5.	Other South African Countries	1,282,221.39	0.7471	876,461.98	0.5329
6.	West Africa	3,991,082.60	2.3253	3,363,119.28	2.0450
7.	Central Africa	819,370.52	0.4774	628,645.99	0.3823
8.	East Africa	4,777,154.00	2.7833	4,033,280.27	2.4525
9.	North Africa	3,002,208.90	1.7492	2,634,660.96	1.6020
10.	North America	29,585,962.75	17.2374	28,932,820.82	17.5927
11.	Latin America	4,918,308.53	2.8655	4,374,428.23	2.6599
12.	East Asia (Oceania)	2,397,321.27	1.3967	1,994,280.49	1.2126
13.	ASEAN	16,474,619.81	9.5985	18,225,239.19	11.0819
14.	West Asia- GCC	27,266,302.25	15.8860	24,822,244.82	15.0933
15.	Other West Asia	5,156,076.60	3.0040	4,682,130.52	2.8470
16.	NE Asia	20,183,753.99	11.7595	20,530,005.93	12.4834
17.	South Asia	12,186,408.25	7.1001	11,279,429.95	6.8585
18.	CARs Countries	236,845.13	0.1380	194,208.79	0.1181
19.	Other CIS Countries	1,330,158.84	0.7750	1,461,478.53	0.8887
20.	Unspecified	2,603,044.75	1.5166	2,437,121.19	1.4819
India's Total Import		171,637,804.58		164,458,943.40	

Source: Export-Import Data Bank (2017), Department of Commerce, Ministry of commerce and industry, India.

Table 4: Import Data from Portugal (All Commodities)

S. No.	Commodity	2015-2016 (Apr-Feb)	2016-2017 (Apr-Feb)
1.	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof.	12,927.07	9,646.34
2.	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts.	7,106.94	8,231.77
3.	Plastic and articles thereof.	6,093.63	6,208.12
4.	Organic chemicals	3,831.75	10,474.57
5.	Copper and articles thereof.	3,593.44	1,382.47
6.	Paper and paperboard; articles of paper pulp, of paper or of paperboard.	3,338.98	3,067.21
7.	Raw hides and skins (other than furskins) and leather	3,311.60	3,353.74
8.	Project goods; some special uses.	2,991.76	1,221.49
9.	Articles of stone, plaster, cement, asbestos, mica or similar materials.	2,939.63	2,331.39
10.	Salt; sulphur; earths and stone; plastering materials, lime and cement.	2,398.91	2,519.21
11.	Cork and articles of cork.	1,667.95	1,510.13
12.	Iron and steel	1,593.80	2,238.23
13.	Aluminium and articles thereof.	1,536.64	585.03
14.	Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use.	1,063.48	1,020.55
15.	Footwear, gaiters and the like; parts of such articles.	809.57	903.25
16.	Optical, photographic cinematographic measuring, checking precision, medical or surgical inst. and apparatus parts and accessories thereof;	781.86	514.49
17.	Man-made staple fibres.	720.17	595.23
18.	Ceramic products.	685.65	475.73
19.	Miscellaneous chemical products.	634.75	1,574.94
20.	Ores, slag and ash.	615.94	986.64
21.	Wood and articles of wood; wood charcoal.	613.48	530.85
22.	Rubber and articles thereof.	580.50	464.84
23.	Animal or vegetable fats and oils and their cleavage products; pre. edible fats; animal or vegetable waxex.	549.25	463.34

S. No.	Commodity	2015-2016 (Apr-Feb)	2016-2017 (Apr-Feb)
24.	Articles of iron or steel	495.13	395.69
25.	Miscellaneous articles of base metal.	494.45	458.51
26.	Articles of apparel and clothing accessories, not knitted or crocheted.	456.44	341.42
27.	zinc and articles thereof.	442.36	913.06
28.	Tanning or dyeing extracts; tannins and their deri. dyes, pigments and other colouring matter; paints and ver; putty and other mastics; inks.	402.74	229.08
29.	Articles of leather,saddlery and harness;travel goods, handbags and similar cont.articles of animal gut(othr thn silk-wrm)gut.	399.69	235.67
30.	Other made up textile articles; sets; worn clothing and worn textile articles; rags	371.95	214.22
31.	Articles of apparel and clothing accessories, knitted or corcheded.	308.85	303.56
32.	Wadding, felt and nonwovens; spacial yarns; twine, cordage, ropes and cables and articles thereof.	300.27	392.87
33.	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard.	294.17	160.71
34.	Glass and glassware.	281.65	216.94
35.	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishing; lamps and lighting fittings not elsewhere specified or inc	243.01	842.07
36.	Cotton.	232.88	357.18
37.	Toys, games and sports requisites; parts and accessories thereof.	215.08	131.35
38.	Tools implements, cutlery, spoons and forks, of base metal; parts thereof of base metal.	184.66	352.27
39.	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery.	155.48	179.43
40.	Lead and articles thereof.	146.00	
41.	Miscellaneous edible preparations.	143.23	82.16
42.	Nickel and articles thereof.	115.19	0.49

S. No.	Commodity	2015-2016 (Apr-Feb)	2016-2017 (Apr-Feb)
43.	Miscellaneous manufactured articles.	98.52	103.86
44.	Pharmaceutical products	98.13	222.81
45.	Wool, fine or coarse animal hair, horsehair yarn and woven fabric.	94.16	24.62
46.	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof.	88.38	356.71
47.	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial waxes, prepared waxes, polishing or scouring prep.	81.70	83.38
48.	Miscellaneous goods.	69.43	148.21
49.	Beverages, spirits and vinegar.	59.79	64.05
50.	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans.	56.15	7.48
51.	Man-made filaments.	45.23	253.34
52.	Cocoa and cocoa preparations.	36.88	6.42
53.	Headgear and parts thereof.	29.45	7.55
54.	Carpets and other textile floor coverings.	27.83	
55.	Albuminoidal substances; modified starches; glues; enzymes.	26.83	101.68
56.	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, or radi. elem. or of isotopes.	24.21	6.22
57.	Natural or cultured pearls precious or semiprecious stones, pre.metals, clad with pre.metal and artcls thereof; imit. jewelry; coin.	24.01	7.80
58.	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes.	21.75	18,175.47
59.	Clocks and watches and parts thereof.	20.57	1.66
60.	Preparations of vegetables, fruit, nuts or other parts of plants.	18.25	88.33
61.	Essential oils and resinoids; perfumery, cosmetic or toilet preparations.	11.91	90.91
62.	railway or tramway locomotives, rolling-stock and parts thereof; railway or tramway track fixtures and fittings and parts thereof; mechanical	8.49	

S. No.	Commodity	2015-2016 (Apr-Feb)	2016-2017 (Apr-Feb)
63.	ships, boats and floating structures.	8.27	94.03
64.	edible vegetables and certain roots and tubers.	8.20	
65.	tin and articles thereof.	6.38	
66.	furskins and artificial fur, manufactures thereof.	4.74	8.60
67.	knitted or crocheted fabrics.	4.44	9.93
68.	Arms and ammunition; parts and accessories thereof.	3.89	4.16
69.	Aircraft, spacecraft, and parts thereof.	2.06	0.50
70.	Edible fruit and nuts; peel or citrus fruit or melons.	0.32	2.03
71.	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn.	0.31	0.27
72.	Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles of human hair.	0.10	0.71
73.	Vegetable plaiting materials; vegetable products not elsewhere specified or included.	0.01	
74.	Live trees and other plants; bulbs; roots and the like; cut flowers and ornamental foliage.		0.64
75.	Preparations of cereals, flour, starch or milk; pastrycooks products.		2.35
76.	Tobacco and manufactured tobacco substitutes.		0.19
77.	Umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof.		2.37
78.	Works of art collectors' pieces and antiques.		0.51
Total		67,050.41	85,983.06
India's Total		249,029,808.1 1	229,097,854.30
Percentage Share		2,69%	3,75%

Source: Export-Import Data Bank (2017), Department of Commerce, Ministry of commerce and industry, India

APPENDIX 3: ENERGY DATA

Table 5: Total Installed Capacity (As on 31.03.2017)

Sector	MW	% of Total
State Sector	103,967	32.53%
Central Sector	80,257	25.11%
Private Sector	135,382	42.36%
Total	319,606	

Table 6: Fuel Sources

Fuel	MW	% of Total
Total Thermal	218,330	68.3%
Coal	192,163	60.1%
Gas	25,329	7.9%
Oil	838	0.3%
Hydro (Renewable)	44,478	13.9%
Nuclear	6,780	2.1%
RES** (MNRE)	50,018	15.6%
Total	319,606	

APPENDIX 4: LIST OF MAIN INDUSTRIAL EQUIPMENT SUPPLIERS IN INDIA

1. Grind Master

Nano Finish	Deburr	Automation
Super finishing Machines Micro finishing Machines Nano finish - Attachments	Planetary Deburring Machines Gear Deburring & Chamfering Machines Sheet Metal Deburring Machines Special Purpose Deburring Machines	Robotic Deflashing of Aluminium Casting Robotic Iron Casting Fettling Robotic Machining & Sculpting Robotic Grinding & Polishing Robotic Deburring
Metal Finish	Tools	Others
Center-less Grinding and Polishing Machines Flat Part Grinding & Polishing Machines Sheet Metal Polishing and Deburring Machines Cookware Polishing Machines Manual Metal Finishing Machines Special Purpose Metal Finishing Machines	VSM Coated Abrasives Grind Master Premium Coated Abrasives Non-Woven Abrasives Micro finishing Films	Dynamic Balancing Of Crankshaft Mass Centering Machines Retrofitting Of Complex Machines

TABLE 15: PRODUCT PORTFOLIO (GRIND MASTER)

Grind Master offering solutions to (Industry List)

- Automotive
- Metal industry
- Home appliances
- Foundry
- Printing & packaging
- Arts & sculpture
- Training & education
- Defence & aerospace
- Heavy engineering

2. Rohit Polishers

Centerless Polishing Machine for Pipes & Tubes
Heavy Duty Polishing Machines for Bright Bars, Pipes & Tubes
Grinding & Polishing Machines for Flat Parts
Polishing Machine for Automotive Industry
Special Purpose Machines
Special Purpose Machines for SS Angles / Profiles

TABLE 16: PRODUCT PORTFOLIO (ROHIT POLISHERS)

3. CEL

Drying System	Centrifugal High Energy Machines
Rotary Dryer Vibratory Dryer	CHE Series CCF Series CPM Series
Vibratory Systems	Furnace Spares
Vibratory Finishing Machine <ul style="list-style-type: none"> • CM Series • CN Series • CN-S Series 	Oxygen Probe Thermocouple Heaters & Tubes

TABLE 17: PRODUCT PORTFOLIO (CEL)

4. Norton Saint Gobain India

Precision Grinding Wheels
Rolls
Belts
Construction Diamond Tools
Rough Grinding Wheel
Discs
Cut-Off Wheels
Diamond & cBn Wheels
Surface Conditioning Wheels
Flap Wheels & Mops

TABLE 18: PRODUCT PORTFOLIO (NORTON SAINT GOBAIN INDIA)

5. Jyoti

Cnc Turning / Turn Mill Centres	Cnc Vertical Machining	Cnc 5 Axis Machining Centres
<p>Dx 60 & Dx 100 Cnc Turning Center With Linear Tooling Dx Series Cnc Turning/Turn-Mill Centers Ax Series High Precision Turning/Turn-Mill Centers Dxg 100 Cnc Turning Centers With Automation Ts 120 Twin Spindle Twin Turret With Gantry Robot Vtl Series Heavy Duty Vertical Turning Lathes At/Atm 160 Inverted Turning Lathes I-Sect</p>	<p>Centers Tachyon Series High Speed Drill Tap Centers Mill Tap Series C-Frame Mill Tap Centers Px Series C-Frame Vmc Rx/Rax Series C-Frame High Speed Vmc Rdx Series C-Frame Vertical Machining Centers Vmc Performance Series (C-Frame Vmc) Vmc 850 Nvu C-Frame High Performance Vmc Vmc Performance Large Series T-Base Vmc K- Mill Series Bridge Type Vmc Kx /K2x Series Bridge Type Vmc Ex Series Moving Column Vmc Nx Series Double Column Vmc Nx 3222 Nvu Double Column Vmc</p>	<p>Mutech 6 5-Axis Machining Centers U Mill 6 5-Axis Machining Centers Kx Five Series 5-Axis Bridge Type Machining Centers Mx 4 5-Axis High Performance Machining Centers Ex Series 5-Axis Moving Column Machining Centers Kx Large Series 5-Axis Double Column Machining Centers Kxg Series 5-Axis Gantry Type Machining Centers</p>
Cnc Horizontal Machining Centres	Cnc 5 Axis Machining Centres	
<p>Hx Serieshigh Dynamics Hmc Hsx Serieshigh Precision Hmc</p>	<p>Mutech 6 5-Axis Machining Centers U Mill 6 5-Axis Machining Centers Kx Five Series 5-Axis Bridge Type Machining Centers Mx 4 5-Axis High Performance Machining Centers Ex Series 5-Axis Moving Column Machining Centers Kx Large Series 5-Axis Double Column Machining Centers Kxg Series 5-Axis Gantry Type Machining Centers</p>	

TABLE 19: PRODUCT PORTFOLIO (JYOTI)

Jyoti offering solutions to (Industry List)

- | | |
|---------------------|---------------------|
| Aerospace | Medical |
| Agriculture | Oil and gas |
| Automobile | Infrastructure |
| Defense | Power |
| Diamond and jewelry | Tele-communications |
| General engineering | Pumps and valves |
| ▪ | |

6. Okuma

Vertical CNC Lathes
5-Axis Vertical Machining Centre
CNC Cylindrical Grinders
The Next-Generation Intelligent CNC
Intelligent Multitasking Machine
5-Axis Vertical Multitasking Machine
5-Axis Horizontal Machining

TABLE 20: PRODUCT PORTFOLIO (OKUMA)

Okuma offering solutions to (Industry List)

- Automotive/High Performance (Aerospace- shafts)
- Construction
- Farming
- Oil/Energy
- Fluid Power
- Medical
- Mold & Die
- Wheel

7. Macpower

CNC Machine
<ul style="list-style-type: none"> • Turning Center • Twin Spindle • Turn Mill Center • Vertical Turning Lathe • Vertical Machining Center • Horizontal Machining Center • Cylindrical Grinder • Multi-Tasking Machine

TABLE 21: PRODUCT PORTFOLIO (MACPOWER)

8. Micromatic

CNC Turning Solutions	CNC Machining Solutions
<ol style="list-style-type: none"> 1. Small 2. Jobbers 3. Premium 4. Large 5. Flat Bed Chucker 6. Verticals 7. Turnmill 8. Turnmill With Sub Spindle 9. Chucker Series 10. Twin Spindle 11. Sliding Head 	<ol style="list-style-type: none"> 1. Drill Tap Centers 2. Standard VMC 3. Heavy Duty 4. High Speed VMC 5. Twin Spindle VMC 6. Moving Column VMC 7. Moving Column HMC 8. Horizontal Machining Centers 9. High Precision HMC 10. High Precision VMC (DM Series) VMC- Vertical Machine Centers HMC- Horizontal Machine Centers
Grinding Solutions	Manufacturing Intelligence
<ul style="list-style-type: none"> • Hydraulic - Standard • Hydraulic - Heavy Duty • CNC - External • CNC - External Heavy Duty • CNC - Centreless • CNC – Internal <p>Machine Building Partners</p> <ul style="list-style-type: none"> • Automatic Tool Changers • Tool Turrets, Tool Discs & Tool Holders • Indexing Tables • Chucking Cylinders 	<ul style="list-style-type: none"> • TPM Trak • Assembly & Conveyor Monitoring • Online Inspection • Visual Factory & ANDON* • Process Energy Monitoring • OEE** & Production Analytics • Machine Diagnostics

TABLE 22: PRODUCT PORTFOLIO (MICROMATIC)

9. IR (Ingersoll Rand India)

Product Group
Power tools
Compressor systems
Lifting And Material Handling

TABLE 23: PRODUCT GROUP (IR)

IR offering solutions to (Industry List)

- Electronics
- Oil and Gas
- Food Processing
- Aerospace
- Pharmaceutical
- Vehicle Service

10. PACE Assembly Tools

Product Group	
Shutoff Pneumatic Screwdrivers	
Cordless Shutoff Screwdriver	
Oil Pulse Tools	Air Pop Riveter & Nut Riveting Tool
Torero Inline Shut Off Oil Pulse Tools	Bit and Socket
Air Impact Wrench	Industrial Drills
Ratchet Wrench	Pneumatic Shutoff screwdriver
Air Hammer	Battery Tools
Industrial Grinder	Cordless Tools
Belt Sander	Air Drills
Orbital Sander	Air Screwdrivers
Cushion Clutch Screw Driver	
Cordless Battery Screwdrivers	

TABLE 24: PRODUCT PORTFOLIO (PACE ASSEMBLY TOOLS)

11. Malax India

Product Group
Pneumatic Tools for Assembly
Pneumatic Tools for Surface Finishing
Pneumatic Screw Driver Bits
Pneumatic Tool Accessories
Timbermate Wood Filler
Impact Sockets (Single Hex & Double Hex)

TABLE 25: PRODUCT GROUP (MALAX INDIA)

12. Eastman

Products Group	Accessories
Plain Drill	TCT & Jig Saw Blades
Grinder	Hole Saw Sets
Marble Cutter	Cut-Off Wheels
Wood Working	Grinding Wheels
Fabrication	Sanding Discs
	Backing Pads (Hook & Loop)
	Rubber Backing Pads
	Wire Cup Brushes
	Polishing Pads (Hook & Loop)

TABLE 26: PRODUCTS GROUP / ACCESSORIES (EASTMAN)

13. S.S Tool India Pvt. Ltd.

Products	Products
Impact Wrenches	SHINANO Impact Wrenches & Ratchet Wrenches
Air Ratchet Wrenches	SHINANO Impact Screwdrivers
Adjustable Clutch Type Air Screwdrivers	SHINANO Grinders, Sanders and Polishers
Impact Type Pneumatic Screwdrivers	SHINANO Air Drill and Saws
Air Micro % Pneumatic Die Grinders	Fixed Head Digital Torque Wrenches
Industrial Angle Grinders	Mini Digital Torque Wrenches
Pneumatic Sanders	Digital Angle Torque Adaptor
Pneumatic Polishers	Interchangeable Head Torque Wrenches
Air Riveting Tools	HVLP & Gravity Spray Guns
Pneumatic Hammers and Chippers	Fastening Systems
Air Saws & Cutting Tools	Pressure Pots & Pneumatic Mixers
Heavy Duty Pneumatic Staplers	Other Pneumatic Tools & Accessories
Air Braders and Coil Nailers	Spring Balancers and Hose Reels
HVLP Spray Guns & Others	Screwdriver Bits

TABLE 27: PRODUCT PORTFOLIO (TOOL INDIA PVT. LTD.)

14. Makita

Products	Products
Cordless	Sander & Polisher
Angle Drill	Straight Grinder
Impact Driver / Impact Wrench / Shear Wrench	Die Grinder
Impact Drill	Bench Grinder
Diamond Core Drill	Concrete Planer
Screw Driver	Compound Saw
Rotary Hammer	Circular Saw
Combination Hammer	Table Saw
Demolition Hammer	Jig Saw
Metal Cutter	Planer
Wall Chaser	Groove Cutter
Angle Cutter	Plate Joiner
Cutter	Trimmer
Portable Band Saw	Pneumatic Tool
Portable Cut-o-ff	Router
Recipro Saw	Blower
Nibbler	Heat Gun
Angle Grinder	Mixer
Multi Tool	

TABLE 28: PRODUCT PORTFOLIO (MAKITA)

15. Densin

Product Groups
Blue LINE
Merlion
Mermaid
UHP- Ultra high pressure pump
Waterblaster

TABLE 29: PRODUCTS GROUP (DENSIN)

APPENDIX 5: MACHINERY USED IN LEATHER PROCESSING CLUSTERS

A list of machines used in the leather goods industry is:

1	Splitting Machine	25	Sewing M/C Heavy Duty # 10 Thread
2	Skiving Machine Standard	26	Sewing M/C Heavy Duty # 2 Thread
3	Skiving Machine equipped with joint Skiving Kit	27	Sewing M/C Zigzag
4	Computerised skiving machine	28	Stitch Flattening M/C
5	Travel head clicking machine	29	Interlocking Sewing machine
6	Clicking machine	30	Computerised Sewing machine
7	Spray Gluing machine	31	Embroidery Machine
8	Strap Cutting machine	32	Roto press Machine
9	Hydraulic Embossing Machine	33	Heat Setter Machine
10	Logo Stamping/ Embossing Machine	34	Dieless Cutting Machine
11	Straight Edged Folding & Creasing Machine	35	Leather Printing Machine
12	Vertical Edge Dyeing & Polishing Machine	36	Automatic Computerised Rivet Fixing Machine
13	Horizontal Edge Dyeing Machine	37	Laser Machine Multi material
14	Edge Dyeing Machine with dryer	38	Rope Handle Preparing machine
15	Edge Policing Machine	39	Rope Handle Trimming machine
16	Edge Buffing Machine	40	Automatic Cementing, Folding, Pressing machine
17	Edge Folding Machine	41	Roller Gluing machine with Latex
18	Button, Eyelet & Rivet Fixing machine with multiple tooling for different sizes	42	Leather Measuring Machine
19	Frame Fixing machine	43	Flat Plating Machine
20	Piping Machine	44	Brushing and Finishing Machine
21	Sewing M/C Flat bed	45	Dehumidifier
22	Sewing M/C Cylinder bed with attachments	46	Cement Spraying m/c with tank
23	Sewing M/C Post bed	47	High frequency Embossing Machine
24	Sewing M/C Twin Needle (Disengagable)	48	Band Knife Cutting Machine

TABLE 30: MACHINERY USED IN THE LEATHER GOODS INDUSTRY

PRODU[TECH

Associação para as Tecnologias de Produção Sustentável

Rua dos Plátanos, nº 197

4100-414 Porto

Portugal



UNIÃO EUROPEIA

Fundo Europeu
de Desenvolvimento Regional