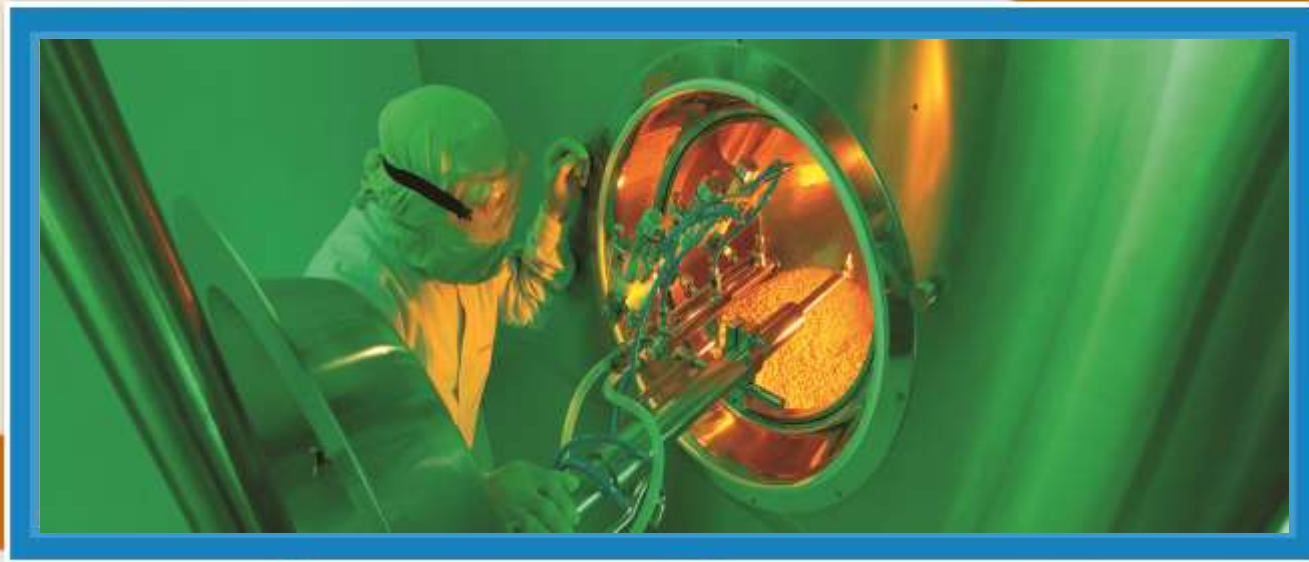


PHARMACEUTICALS



NOVEMBER 2016

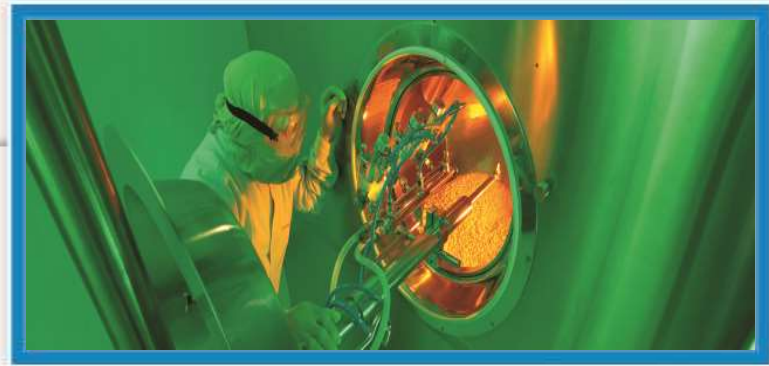
For updated information, please visit www.ibef.org

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EXECUTIVE SUMMARY

Leading pharma producer

- Indian pharmaceutical sector accounts for about 2.4 per cent of the global pharmaceutical industry in value terms and 10 per cent in volume terms

One of the highest exports

- India accounts for 20 per cent of global exports in generics. In FY16, India exported pharmaceutical products worth USD16.89 billion, with the number expected to reach USD40 billion by 2020

Among fastest growing industries

- The country's pharmaceutical industry is expected to expand at a CAGR of 12.89 per cent over 2015–20 to reach USD55 billion

Rapidly growing healthcare sector

- Indian healthcare sector, one of the fastest growing sectors, is expected to advance at a CAGR of 17 per cent to reach USD250 billion over 2008–20

Growing generics market

- The generics market stood at USD26.1 billion in 2016 from USD21 billion in 2015. India's generics market has immense potential for growth

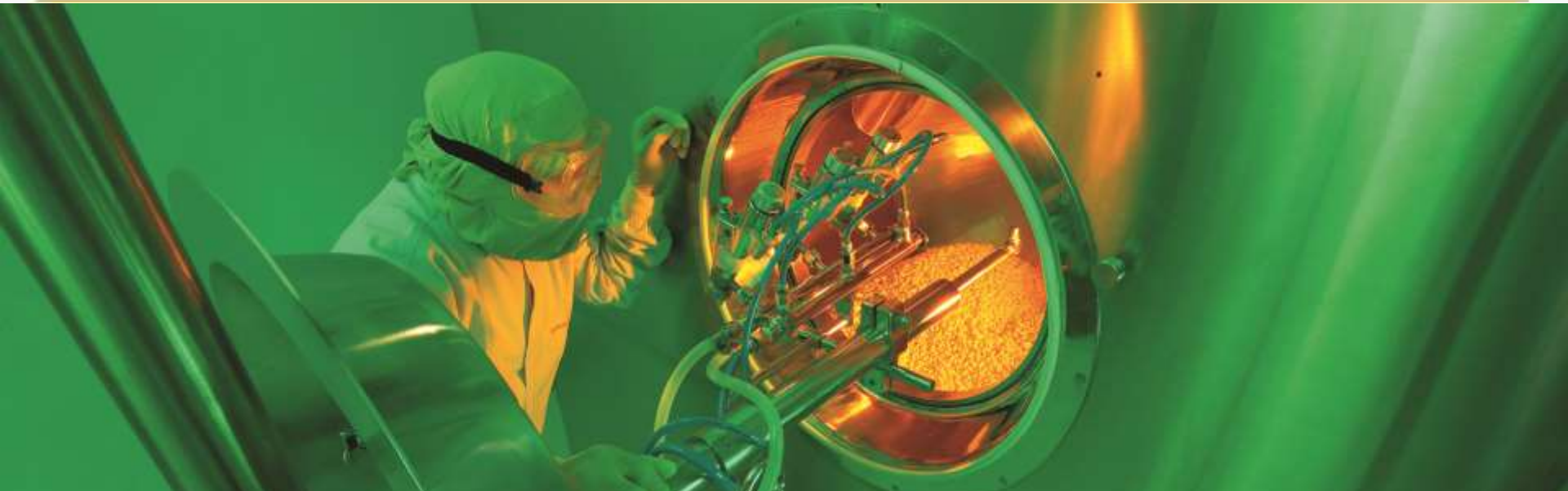
Ranked 5th in terms of attracting FDI

- Pharmaceutical sector in India attracted 5 per cent of the total FDIs into India from April 2000 to March 16
- Cumulative FDI inflows worth USD13.85 billion were made during April 2000 to March 16

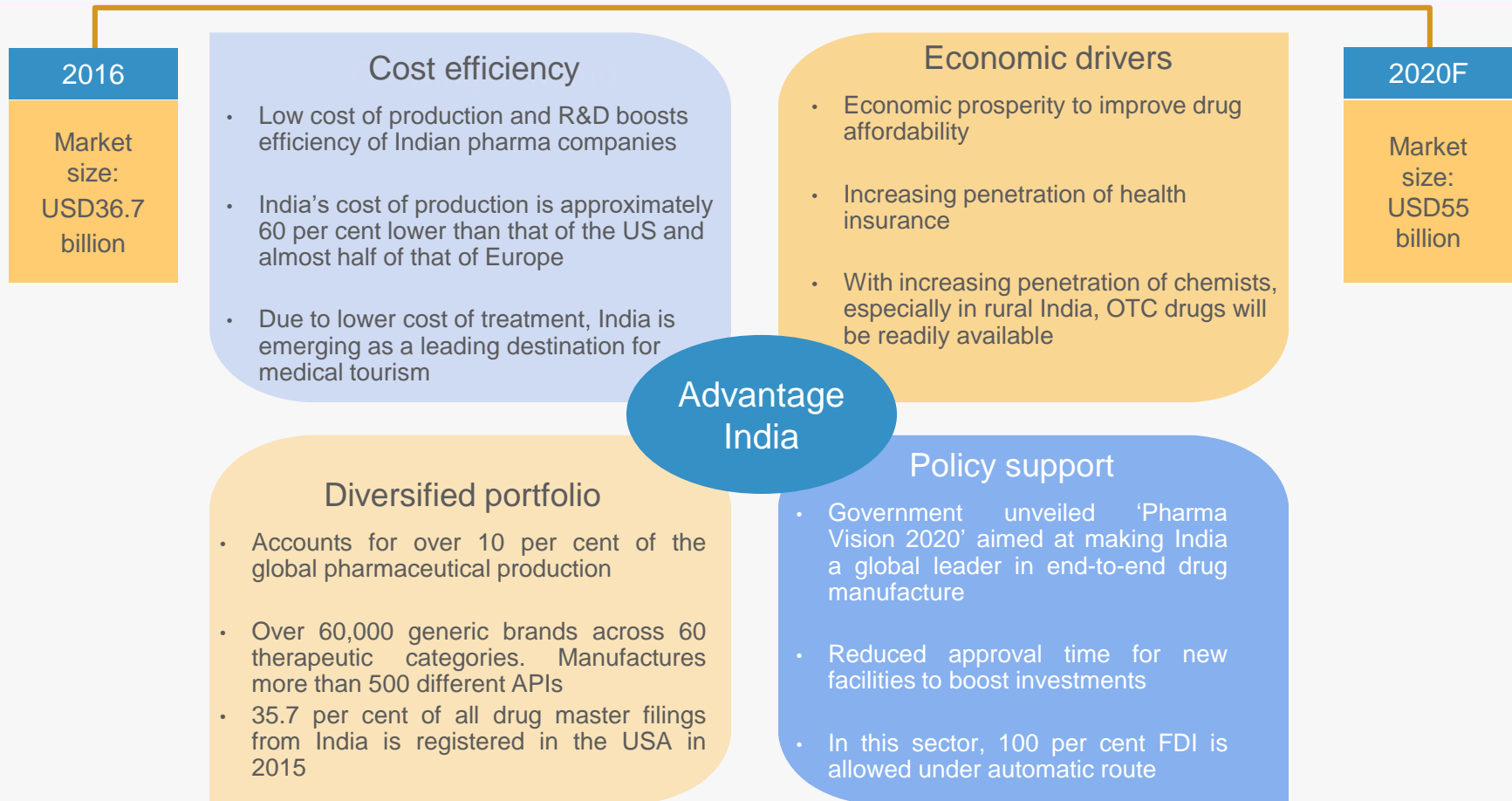
Source: India Biz, PWC, Department of Industrial Policy and Promotion, Deloitte, PharmaBiz, Frost and Sullivan Report on Indian Pharmaceutical Market, McKinsey, TechSci Research

Notes: API - Active Pharmaceutical Ingredient, USFDA - United States Food and Drug Administration, CAGR - Compound Annual Growth Rate

PHARMACEUTICALS



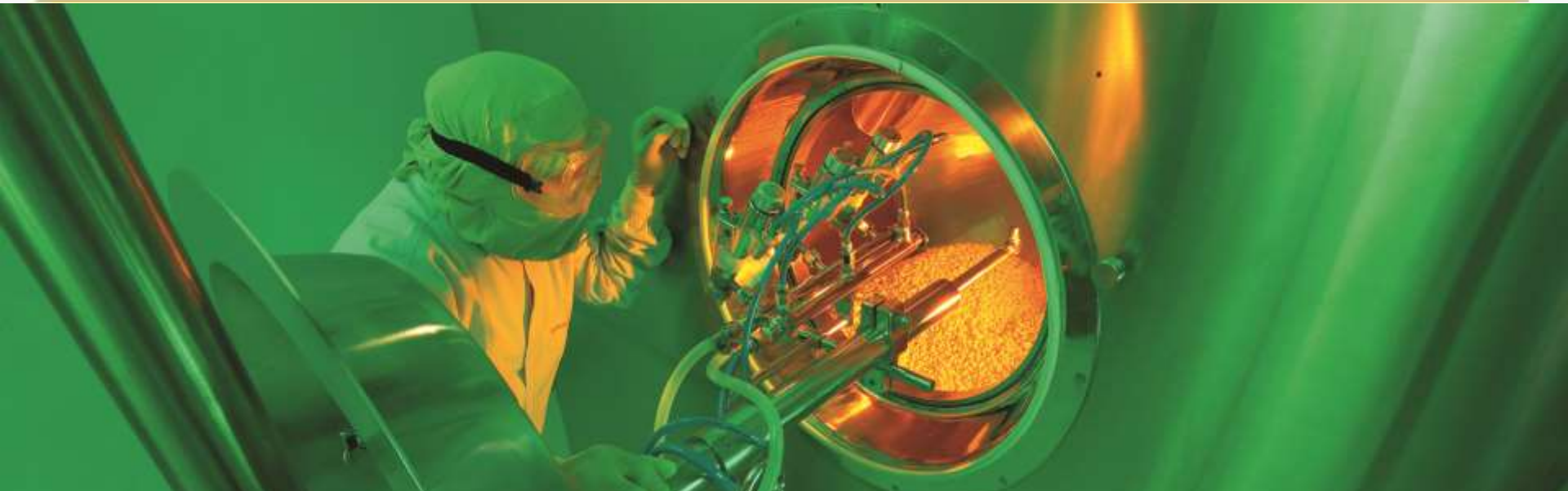
ADVANTAGE INDIA



Source: PwC, McKinsey, Pharmaceuticals Exports Promotion Council of India, TechSci Research

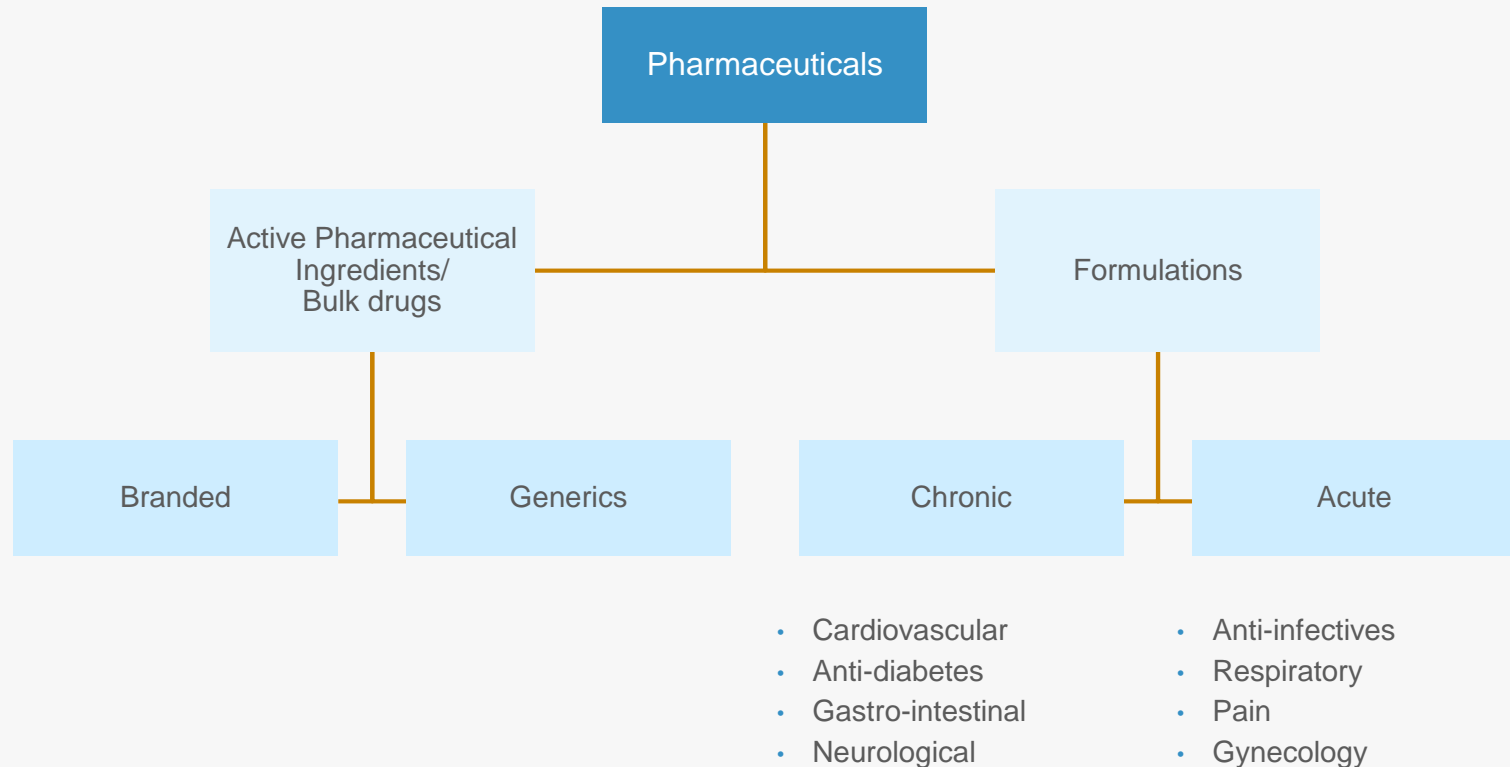
Notes: 2020 revenue forecasts are estimates of McKinsey, API - Active Pharmaceutical Ingredients, F - Forecast, OTC - Over-The-Counter

PHARMACEUTICALS



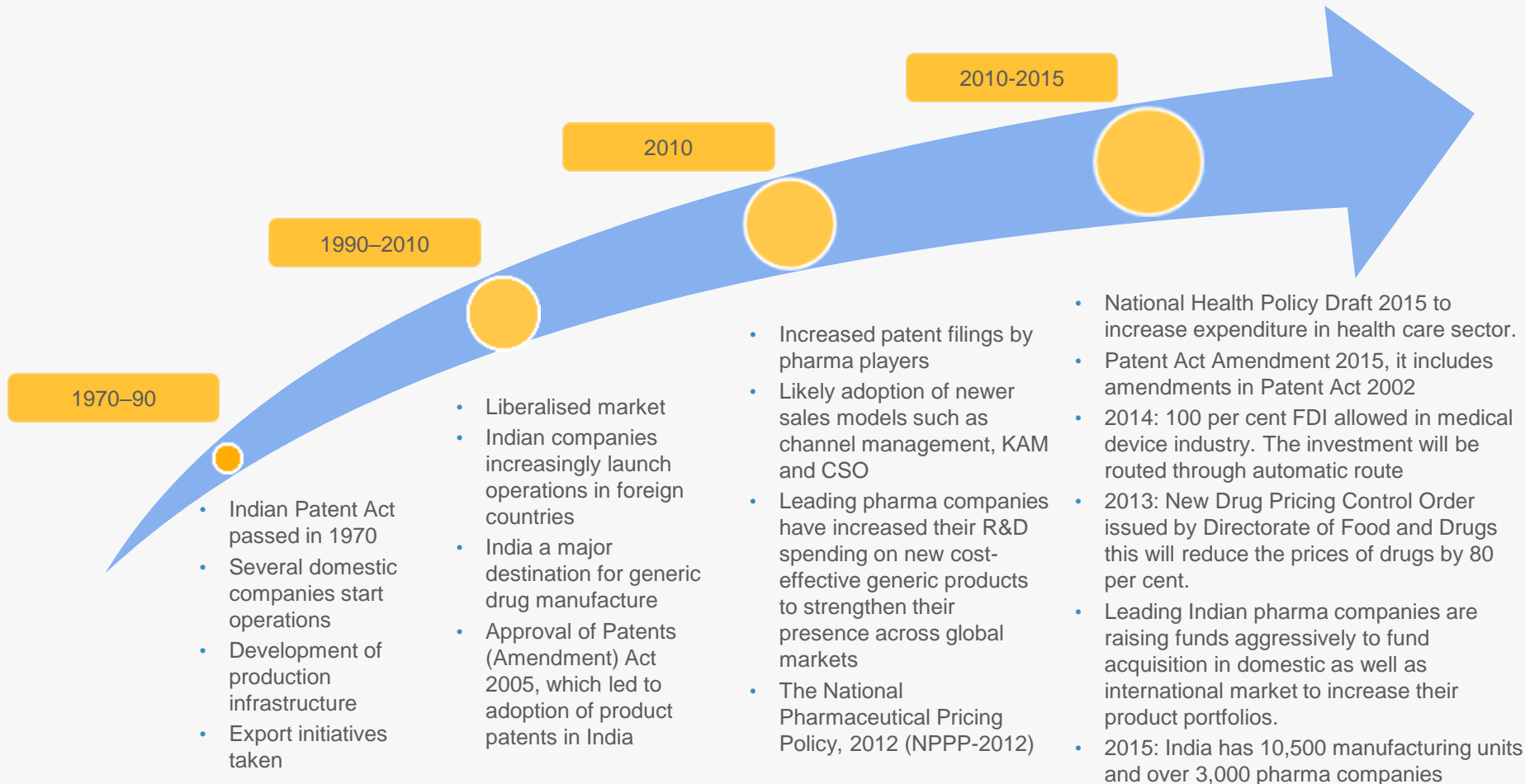
MARKET OVERVIEW AND TRENDS

STRUCTURE OF PHARMA SECTOR IN INDIA



Source: Dun & Bradstreet, TechSci Research

EVOLUTION OF INDIAN PHARMACEUTICAL SECTOR



Source: TechSci Research

Notes: KAM - Key Account Management, CSO - Contract Sales Organisation

API IS THE LARGEST SEGMENT OF THE INDIAN PHARMACEUTICALS SECTOR

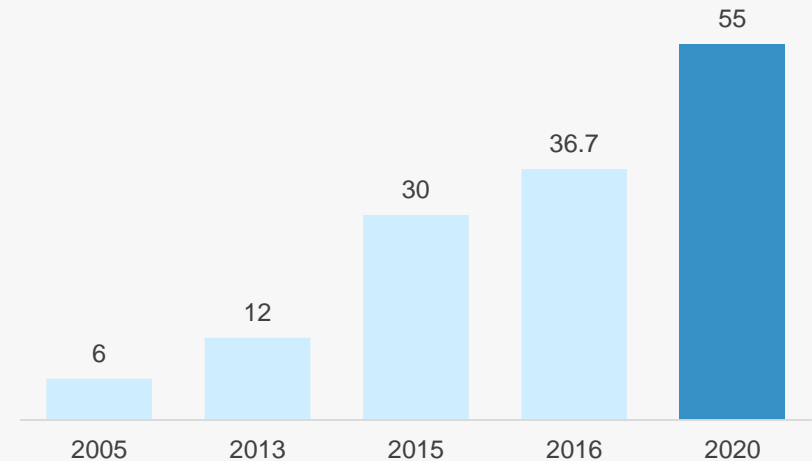


Source: BMI, Datamonitor, Kemwell Biopharma, Chemical Pharmaceutical Generic Association, ICRA Report estimates, TechSci Research, pharmanewspw.com
Note: OTC - Over The Counter

INDIAN PHARMA SECTOR REVENUES TRENDING NORTH

- * The Indian pharmaceuticals market increased at a CAGR of 17.46 per cent in 2015 from USD6 billion in 2005 and is expected to expand at a CAGR of 15.92 per cent to USD55 billion by 2020
- * By 2020, India is likely to be among the top three pharmaceutical markets by incremental growth and sixth largest market globally in absolute size
- * India's cost of production is significantly lower than that of the US and almost half of that of Europe. It gives a competitive edge to India over others.
- * Increase in the size of middle class households coupled with the improvement in medical infrastructure and increase in the penetration of health insurance in the country will also influence in the growth of pharmaceuticals sector.
- * The Indian pharmaceuticals market witnessed growth at a CAGR of 17.90 per cent, during 2005-16, with the market increasing from USD6 billion in 2005 to USD36.7 billion in 2016.

Revenue of Indian pharmaceutical sector
(USD billion)



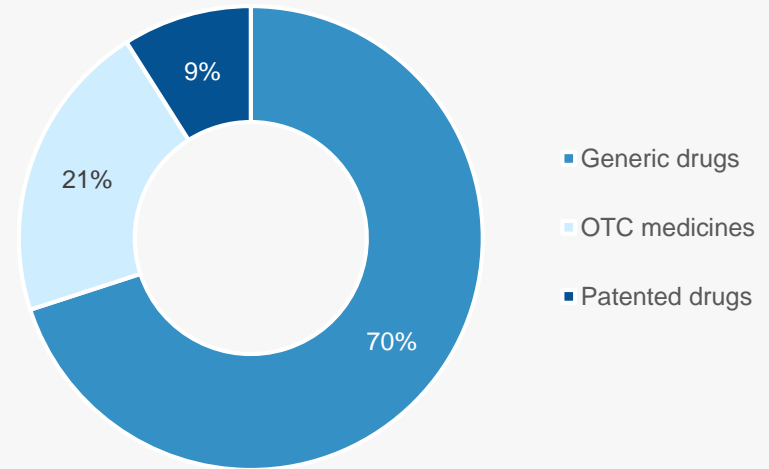
Source: Department of Pharmaceuticals, PwC, McKinsey, TechSci Research

Notes: F - Forecast, CAGR - Compound Annual Growth Rate

GENERIC DRUGS FORM THE LARGEST SEGMENT OF INDIAN PHARMA MARKET

- * With 70 per cent of market share (in terms of revenues), generic drugs form the largest segment of the Indian pharmaceutical sector
- * India supplies 20 per cent of global generic medicines market exports, in terms of volume, making the country the largest provider of generic medicines globally and expected to expand even further in coming years
- * Over the Counter (OTC) medicines and patented drugs constitute 21 per cent and 9 per cent, respectively, of total market revenues of USD20 billion

Revenue share of Indian pharmaceutical sub-segments in 2015 (%)

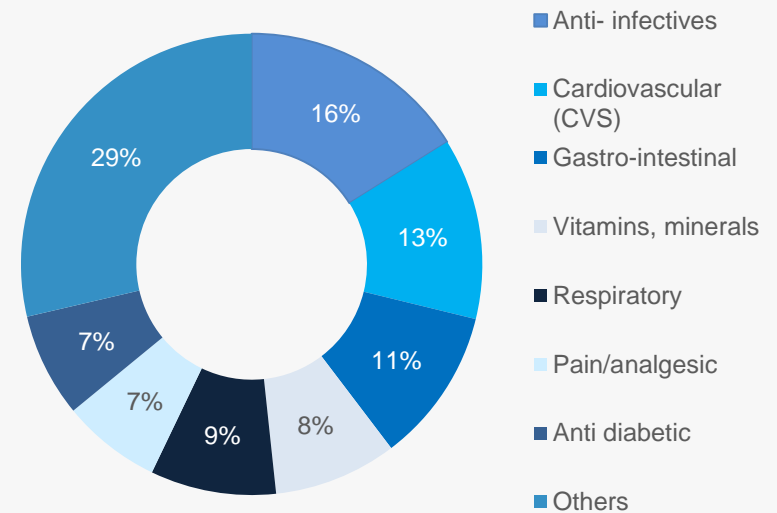


Source: Business Monitor International, FCCI Indian Pharma Summit 2014-15, TechSci Research

ANTI-INFECTIVE DRUGS LEAD THE PHARMA MARKET

- * Anti-infective drugs command the largest share (16 per cent) in the Indian pharma market
- * The cardiovascular segment represents 13 per cent of the market share; its contribution is likely to rise due to the growing number of cardiac cases in India
- * Gastro-intestinal contributes around 11 per cent of the total value of pharma industry in India. With increasing number of research in gastroenterology, segment is going to grow at significant pace in coming years
- * Top five segments contribute nearly 57 per cent to the total drugs consumption
- * In FY15, anti-infectives grew at 22 per cent, gastrointestinal at 23.4 per cent, pain & analgesics at 16.5 per cent, cardiovascular at 19.1 per cent, anti-diabetic grew at 32.9 per cent, respiratory segment grew at 27.8 per cent, derma market grew by 19.2 per cent and urology by 29.5 per cent

Indian pharmaceutical market segments by value (FY15)

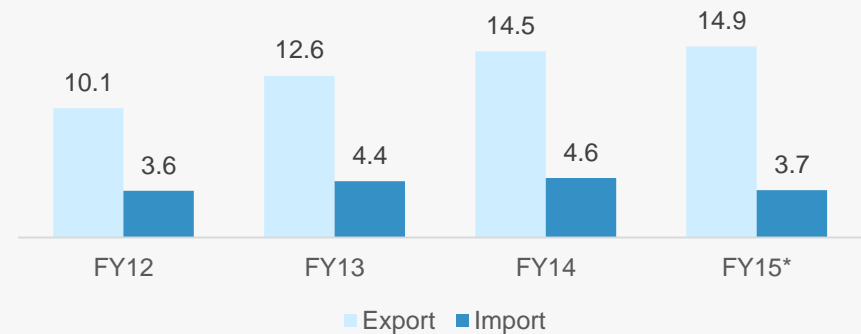


Source: All Indian Origin Chemists & Distributors, Department of Pharmaceuticals, TechSci Research

PHARMA EXPORT TO CONTINUE WITNESSING HIGH GROWTH

- * Indian pharma companies are capitalising on export opportunities in regulated and semi-regulated markets
- * 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)
- * In terms of value, exports of pharmaceutical products increased at a CAGR of 14 per cent during FY12–15
- * US is the largest export market for India
- * During FY12-14, imports of pharmaceutical products rose at a CAGR of 13.04 per cent to USD4.6 billion

Trade data of Indian pharma sector (USD billion)

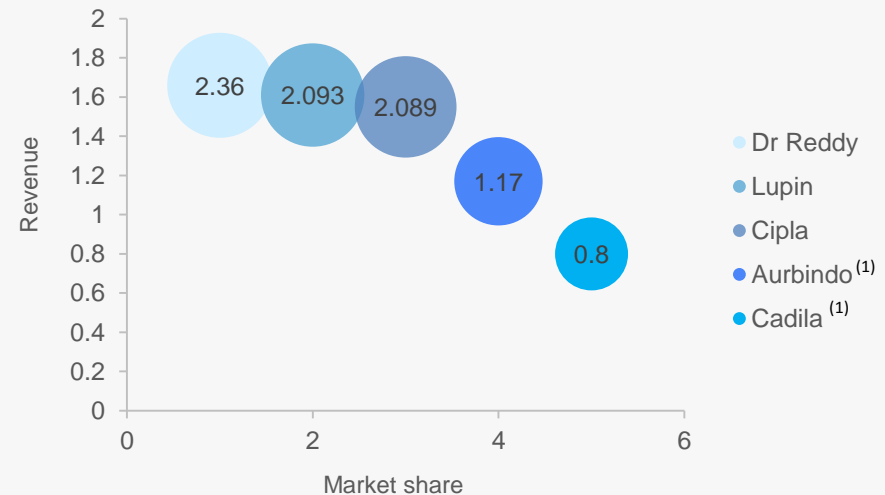


Source: Department of Commerce India, Department of Pharmaceuticals, India Business News, BMI, TechSci Research
Notes: CAGR - Compound Annual Growth Rate,
*Import - From April 2014 to Dec 2014
* Export – From April 2014 to Dec 2014

COMPETITIVE MARKET; TOP FOUR FIRMS ACCOUNT FOR OVER 20 PER CENT MARKET SHARE

- * Dr Reddy's accounted for the largest share in the Indian pharma market, with sales of USD2.36 billion during March 2016
- * Lupin had the second largest share in the Indian pharma market with sales of USD2.09 billion in FY16
- * Cipla, with a revenue base of USD2.089 billion for March 2016 sales, ranked third in the market
- * Aurobindo ranked fourth in the market, with a revenue base of USD 1.17 billion for March 2015 sales
- * While these top four companies garnering 20 per cent market share, top 10 companies accounted for nearly 39 per cent of the market share in 2015

Market share, revenue, growth rates of leading companies (%), FY16



Note: The bubbles denote MAT March 2014 sales in USD million

Source: All Indian Origin Chemists & Distributors, Equity Master, BMI, TechSci Research

Notes: Market share is in terms of revenue,

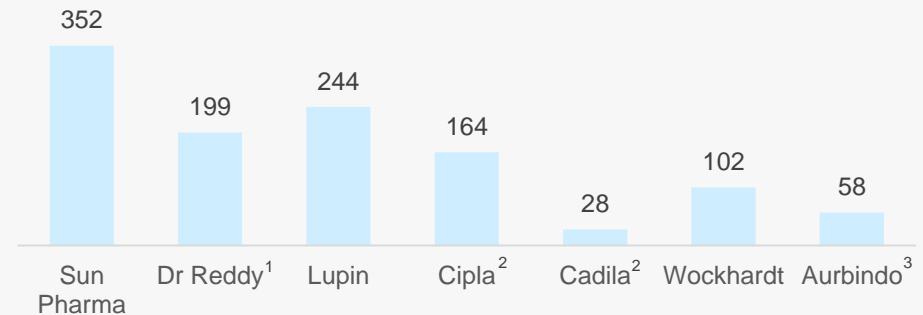
⁽¹⁾ Data is for March 2015

Market share is being calculated on the basis of FY15 revenue

PHARMA GIANTS RAISE THEIR R&D SPENDING

- * In FY16, highest expenditure on research and development has been done by Sun Pharma, followed by Dr. Reddy
- * By 2020, the Indian healthcare sector is expected to reach USD280 billion from USD70 billion currently

R&D spending by top six pharma giant FY16
(USD million)



Source: Company websites TechSci Research

Notes: R&D - Research and Development

¹ - Data is up to Dec 2015,

² - Data is up to September 2015,

³ - Data is for FY15

NOTABLE TRENDS IN THE INDIAN PHARMACEUTICALS SECTOR ... (1/2)

Research and development

- Indian pharma companies spend 8-11 per cent of their total turnover on R&D
- Expenditure on R&D is likely to increase due to the introduction of product patents; companies need to develop new drugs to boost sales

Export revenue

- India's pharmaceutical export market is thriving due to strong presence in the generics space
- Pharmaceuticals Exports Promotion Council expects pharma exports exceeded USD15 billion in 2015 and reached USD16.89 billion in 2016

Joint Ventures

- Multinational companies are collaborating with Indian pharma firms to develop new drugs\
- Cipla formed an exclusive partnership with Serum Institute of India to sell vaccines in South Africa
- Six leading pharmaceutical companies have formed an alliance 'LAZOR' to share their best practices, so as to improve efficiency and reduce operating costs

Expansion by Indian players abroad

- Cipla, the largest supplier of anti-malarial drugs to Africa, set up a USD32 billion plant in Africa for the production of anti-retroviral and anti-malarial drugs
- In March 2015, Sun Pharma, became the world's fifth largest company worldwide having 48 manufacturing sites more than 3000 marketed product

Source: TechSci Research
Note: R&D - Research and Development

NOTABLE TRENDS IN THE INDIAN PHARMACEUTICALS SECTOR ... (2/2)

PPP in R&D

- Indian Government plans to involve the private sector in R&D mainly for sectors such as vaccines, drugs and pharmaceuticals, super computing, solar energy and electronic hardware
- As on January 2016, the total project cost of healthcare infrastructure project is USD151.91 million and there are five healthcare projects under PPP. Green Field Super Specialty Hospital (Bathinda), Green Field Super Specialty Hospital (Mohali), Indira Gandhi Government Medical College Complex (Maharashtra), Nephrology and Dialysis unit at Coronation Hospital (Uttarakhand), Nephrology Dialysis unit at Base Hospital (Uttarakhand)

Draft Patents (Amendment) Rules, 2015

- The time limit given for submitting the application for grant has been reduced to 4 months from 12 months, providing an extension of 2 months
- Necessary permissions to be taken from the concerned authority before the grant of patents

Product Patents

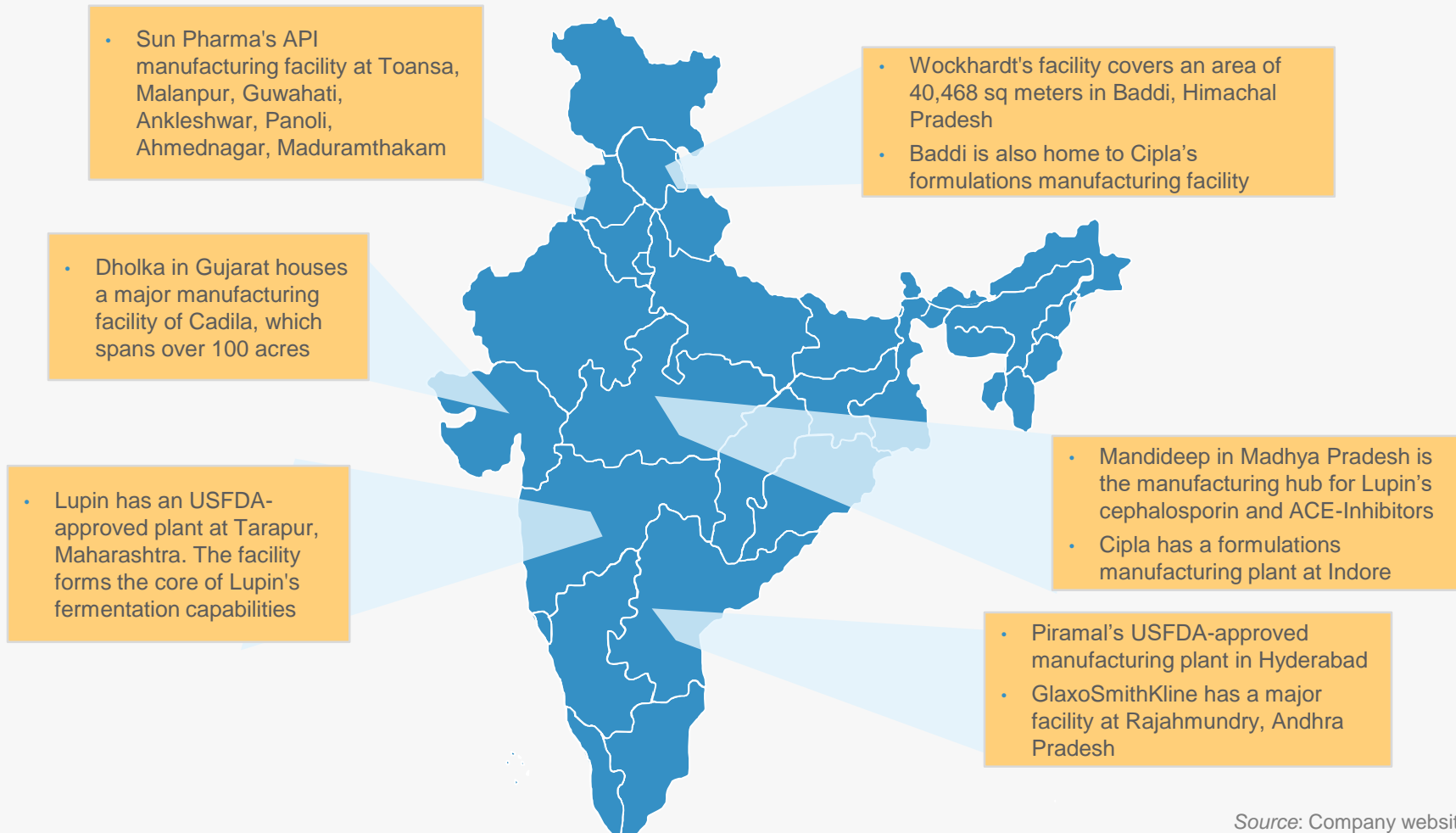
- The introduction of product patents in India in 2005 gave a boost to the discovery of new drugs
- India reiterated its commitment to IP protection following the introduction of product patents

Less time for approval

- In order to compete with global players in pharmaceutical industries, approval process of drugs have been simplified by the authorities and approval time for new facilities has been drastically reduced

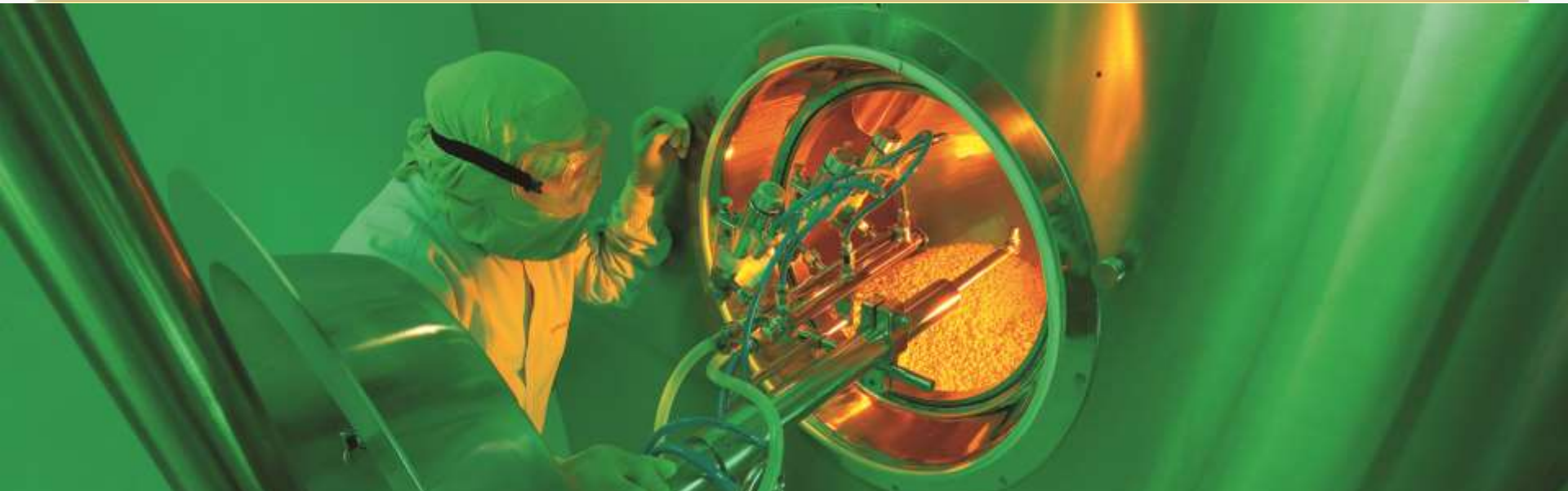
Source: TechSci Research
Note: R&D - Research and Development

STATES HOSTING KEY PHARMACEUTICAL VENTURES



Source: Company websites

PHARMACEUTICALS



PORTERS FIVE FORCES ANALYSIS

PORTER'S FIVE FORCES ANALYSIS

Competitive Rivalry

- 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

- Strict government regulations thwart entry of new players
- Difficult to survive because of high gestation period

Substitute Products

- Threat to substitute products is low; however, homeopathy and Ayurvedic medicines can act as substitute

Bargaining Power of Suppliers

- 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

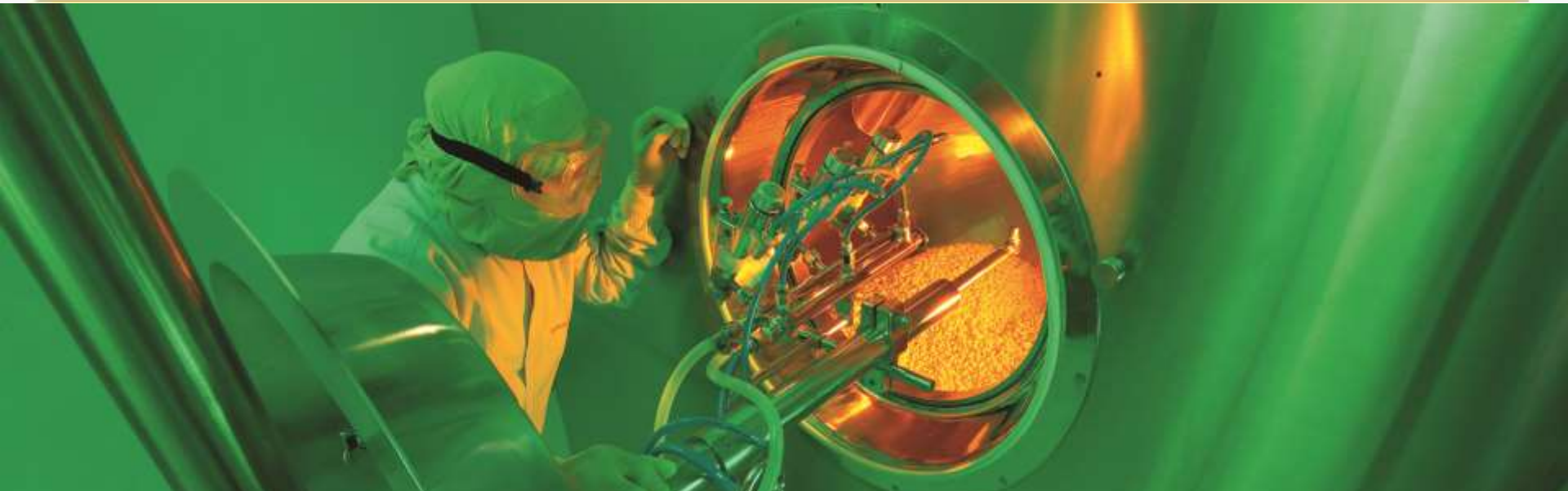
Bargaining Power of Customers

- 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



Source: TechSci Research

PHARMACEUTICALS



STRATEGIES ADOPTED

STRATEGIES ADOPTED

Cost leadership

- Players in the sector are trying to achieve cost leadership in various ways. For example, Sun Pharma is trying to achieve the same by
 - Vertical Integration: Complex API, which require special skills and technology, are developed and scaled up for both API and dosage forms

Differentiation

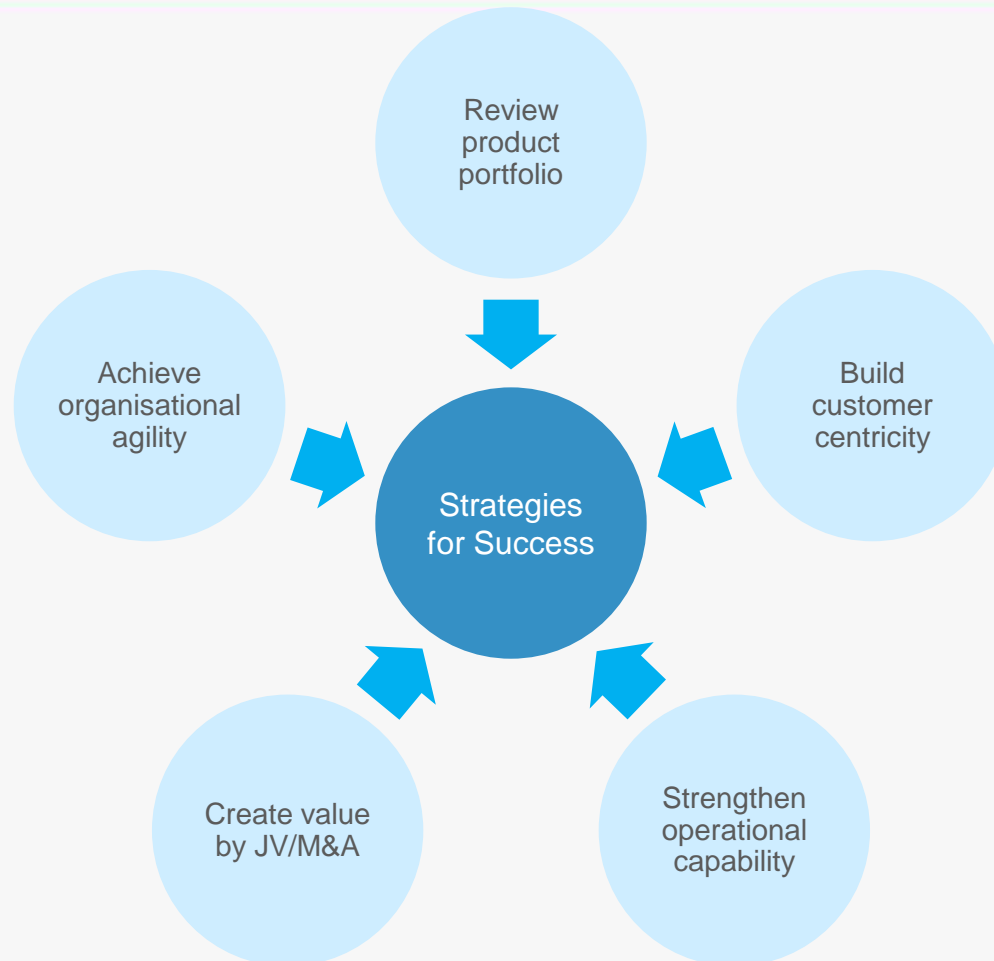
- Players in the sector are trying to differentiate themselves by investing heavily on R&D efforts. For example,
 - In 2015, Lupin opened a research and development centre for inhalation products in Florida, US
 - Sun Pharma is trying to develop technically complex APIs, such as steroids, sex hormones, peptides, carbohydrates and taxanes, which require special skills and technology
 - Dr Reddy's is investing in technology platforms. It acquired OctoPlus N.V, a Netherlands-based company, to get access to the Poly Lactic-Co-Glycolic Acid (PLGA) technology for the formulation of complex injectables

Focus on new markets

- Certain players in the sector are focussing on entering new markets with new opportunities. For example, Lupin is making inroads into new markets such as Latin America, Russia and other East European countries
- Sun Pharma decided to focus on specialty and chronic therapies such as neurology, oncology, dermatology segments

Source: Company websites, TechSci Research
Note: R&D – Research and Development

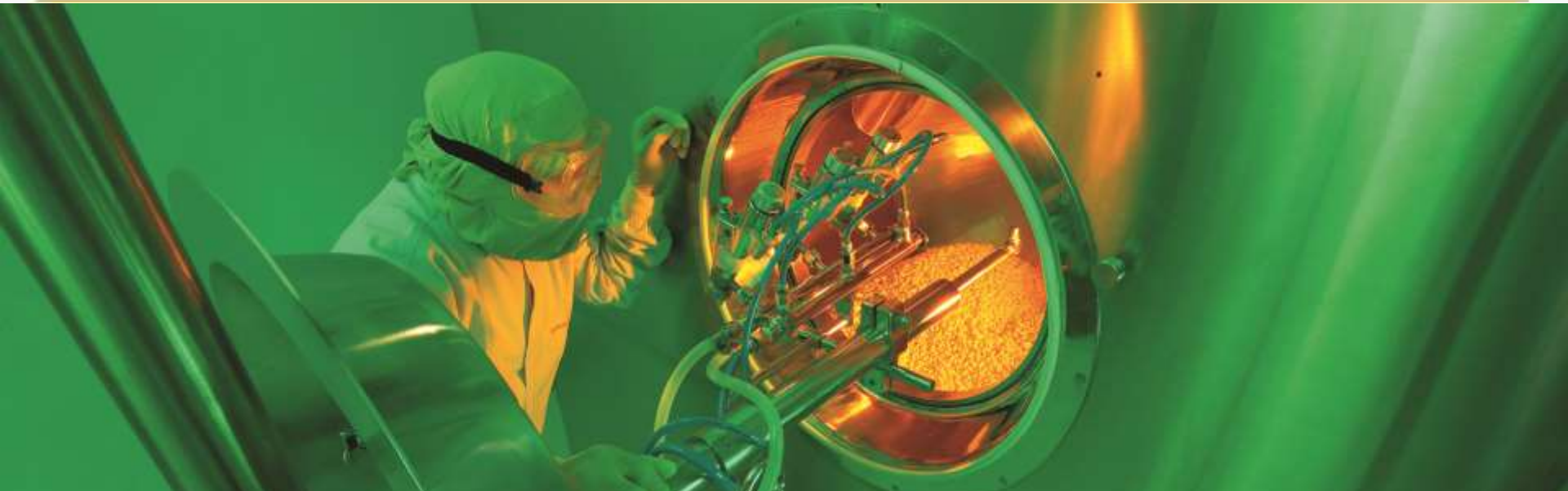
LEVERS FOR SUCCESS



Source: TechSci Research

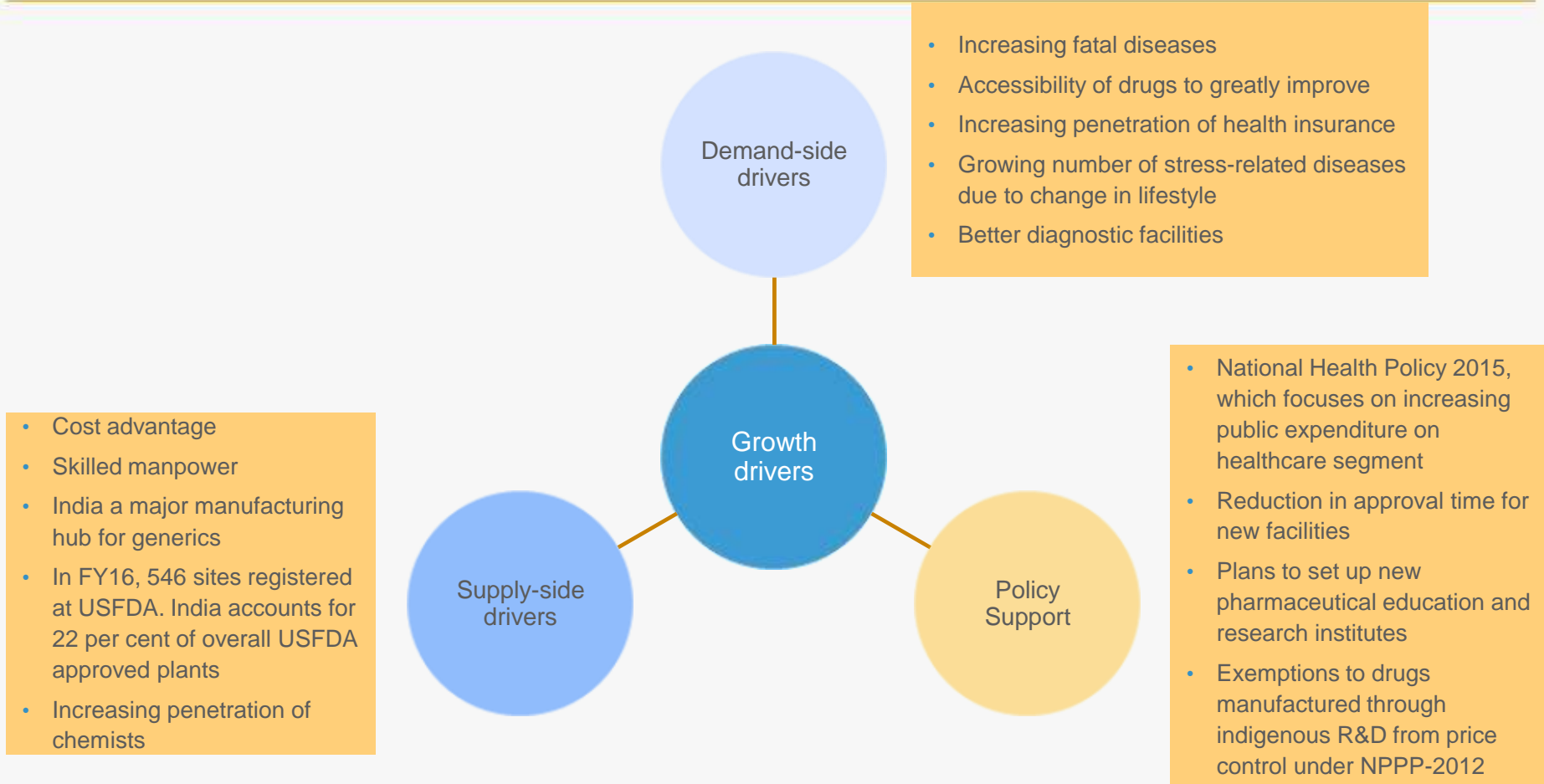
Notes: R&D – Research and Development, JV – Joint Venture, M&A – Mergers and Acquisitions

PHARMACEUTICALS



GROWTH DRIVERS

SECTOR DRIVEN BY CONFLUENCE OF DEMAND, CAPABILITIES AND POLICY



Source: Pharmaceutical Export Promotion Council

Notes: BPL - Below Poverty Line, USFDA - United States Food and Drug Administration, NPPP-2012--The National Pharmaceutical Pricing Policy, 2012

SUPPLY-SIDE DRIVERS OF INDIAN PHARMA SECTOR

Launch of patented drugs

- Following the introduction of product patents, several multinational companies are expected to launch patented drugs in India
- Growth in the number of lifestyle diseases in India could boost the sale of drugs in this segment

Medical infrastructure

- Pharma companies have increased spending to tap rural markets and develop better medical infrastructure
- In 2015, Indo-UK healthcare agreed to invest USD1.63 billion to set up hospitals and the first hospital will set up in Punjab
- Hospitals' market size is expected to increase by USD200 billion by 2024
- In 2015, government approved setting up of six pharma parks at an estimated investment of USD27.5 million in order to encourage pharmaceuticals manufacturing across the country
- In October 2016, the government gave a nod to set up the country's first medical devices manufacturing park in Chennai

Scope in generics market

- India's generic drugs account for 20 per cent of global exports in terms of volume, making the country the largest provider of generic medicines globally
- India's generics drug market accounts for around 70 per cent of the India pharmaceutical industry and it is expected to reach USD27.9 billion by 2020

Over-The-Counter (OTC) drugs

- India's OTC drugs market is expected to rise at a CAGR of 16.3 per cent to USD6.6 billion over 2008–16
- Increased penetration of chemists, especially in rural regions, would increase the availability of OTC drugs in the country

Patent expiry

- The total sales value of the drugs with expiring patent in 2015 is USD66 billion and drugs with expiry protection in 2014 valued around USD34 billion
- The newly available market will be filled by generics, which would provide great opportunity to Indian companies

COST EFFICIENCY AND COMPETENCY CONTINUE TO BE INDIA'S FORTE

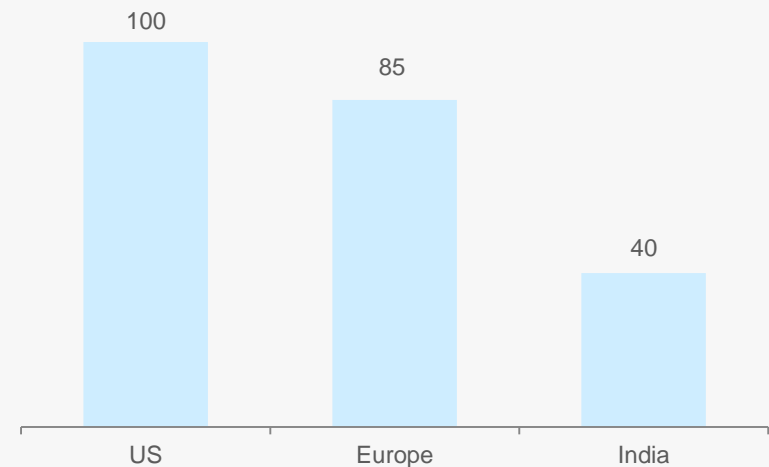
Cost efficiency

- * India's cost of production is nearly 60 per cent lower than that of the US and almost half of that of Europe
 - * Labour costs are 50–55 per cent cheaper than in Western countries
 - * The cost of setting up a production plant in India is 40 per cent lower than in Western countries
- * Cost-efficiency continues to create opportunities for Indian companies in emerging markets and Africa

Competency

- * India has a skilled workforce as well as high managerial and technical competence in comparison to its peers in Asia
- * India has the second largest number of USFDA-approved manufacturing plants outside the US
- * India has 2,633 FDA-approved drug products
- * India has over 546 USFDA-approved company sites, the highest number outside the US

Relative cost of production with US cost as base as on March 2014



Source: Frost and Sullivan Report on Indian Generic Pharmaceuticals Market, BMI, Financial Express, TechSci Research
Note: USFDA - United States Food and Drug Administration

DEMAND DRIVERS OF INDIAN PHARMA SECTOR

Accessibility

- Over USD200 billion to be spent on medical infrastructure in the next decade
- New business models expected to penetrate tier-2 and tier-3 cities
- Over 160,000 hospital beds expected to be added each year in the next decade
- India's generic drugs account for 20 per cent of global exports in terms of volume, making the country the largest provider of generic medicines globally

Acceptability

- Rising levels of education to increase acceptability of pharmaceuticals
- Patients to show greater propensity to self-medicate, boosting the OTC market
- Acceptance of biologics and preventive medicines to rise
- A skilled workforce as well as high managerial and technical competence
- Surge in medical tourism due to increased patient inflow from other countries

Demand drivers

Affordability

- Rising income could drive 73 million households to the middle class over the next 10 years
- Over 650 million people expected to be covered by health insurance by 2020
- Government-sponsored programmes set to provide health benefits to over 380 million BPL people by 2017
- By 2017, the government plans to provide free generic medicines to half the population at an estimated cost of USD5.4 billion

Epidemiological factors

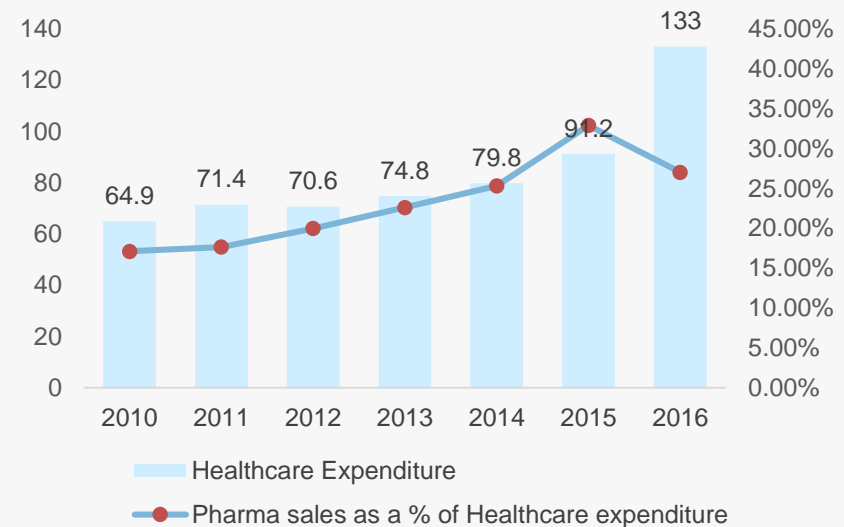
- Patient pool expected to increase over 20 per cent in the next 10 years, mainly due to rise in population
- New diseases and lifestyle changes to boost demand
- Increasing prevalence of lifestyle diseases

Source: ICRA Report on Indian Pharmaceutical Sector, Pharmaceutical Industry: Developments in India- Deloitte, McKinsey Pharma Report 2020, TechSci Research
Note: RSBY - Rashtriya Swasthya Bima Yojna

ANTICIPATED STEEP GROWTH IN EXPENDITURE ON PHARMACEUTICALS

- * During 2010-16, total healthcare spending is expected to increase at a CAGR of 12.70 per cent to USD133 billion
- * Pharmaceutical sales, as a percentage of total healthcare spending, are expected to increase to 32.88 per cent by 2016 from 25.30 per cent in 2014
- * Moreover, pharmaceutical sales, as a percentage of total healthcare expenditure, are likely to reach 27 per cent by 2016 from 32.88 per cent in 2015 owing to increased healthcare expenditure on research and development of patented drugs

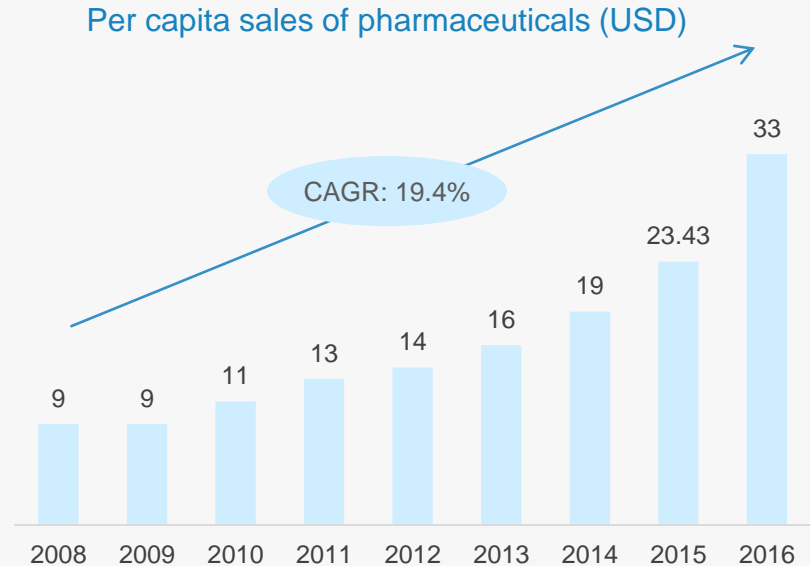
Pharma sales as a per cent of total health care spending



Source: Deloitte, BMI, PWC, TechSci Research
Notes: CAGR - Compound Annual Growth Rate

GROWING PER CAPITA SALES OF PHARMACEUTICALS

- * Growing per capita sales of pharmaceuticals in India offers ample opportunities for players in this market
- * Per capita sales of pharmaceuticals is expected to expand at a CAGR of 19.4 per cent to USD33 by 2016
- * Economic prosperity would improve affordability for generic drugs in the market and improve per capita sales of pharmaceuticals in India



Source: BMI, TechSci Research
Notes: CAGR - Compound Annual Growth Rate

FAVOURABLE POLICY MEASURES SUPPORT GROWTH

Reduction in approval time for new facilities

- Steps taken to reduce approval time for new facilities
- NOC for export licence issued in two weeks compared to 12 weeks earlier

Collaborations

- MoUs with USFDA, WHO, Health Canada, etc. to boost growth in the Indian Pharma sector by benefiting from their expertise. In 2015, NIPER (Mohali) signed MoUs with pharmaceutical industry leaders Bharat Biotech, Dr Reddy, Cadila Healthcare, Sun Pharma and Panacea Biotech.
- In 2016, Strides Arcolab and US-based Gilead Sciences Inc. entered into a licensing agreement for manufacturing and distributing Gilead Sciences' cost-efficient TenofovirAlafenamide (TAF) product in order to treat HIV patients in developing economies

Support for technology upgrades and FDIs

- Zero duty for technology upgrades in the pharmaceutical sector through the Export Promotion Capital Goods (EPCG) Scheme
- Permission for 100 per cent Foreign Direct Investment (FDI)
- Government is planning to relax FDI norms in the pharmaceutical sector

Industry infrastructure

- Under the Union Budget 2015-16, government has announced to set up 3 new National Institute of Pharmaceuticals Education and Research in Maharashtra, Rajasthan & Chhattisgarh and government is also planning to set up one institute of Science and Education Research in Nagaland & Orissa each. In 2016, the government has planned to set up six pharma parks at an investment of about USD27 million

Pharma Vision 2020

- Pharma Vision 2020 by the government's Department of Pharmaceuticals aims to make India a major hub for end-to-end drug discovery

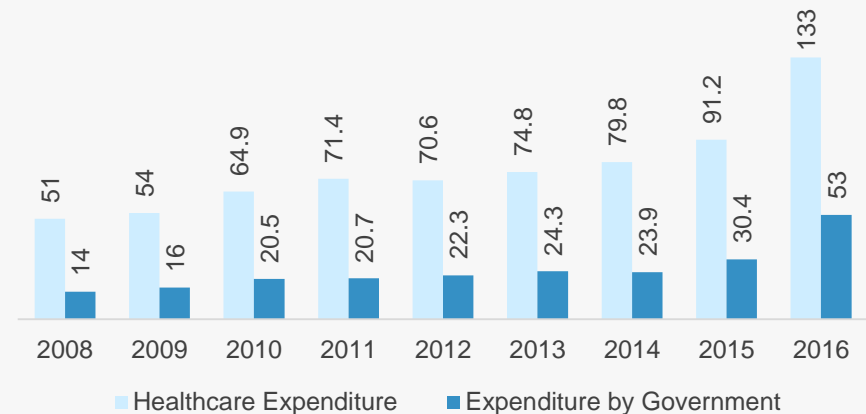
Exceptions

- Full exemption from excise duty is being provided for HIV/AIDS drugs and diagnostic kits supplied under National AIDS Control Programme funded by the Global Fund to fight AIDS, TB and Malaria (GFATM)
- The customs duties on the said drugs are also being exempted

GOVERNMENT EXPENDITURE IN THE PHARMA SECTOR ON AN UPTREND

- * Government expenditure on health in the country increased from USD14 billion in 2008 to USD53 billion in 2016
- * The expenditure is expected to expand at a CAGR of 18.1 per cent over 2008–16 to USD53 billion
- * Under Union Budget 2015-16, USD243.86 million has been allocated to set up medical institutions and six more institutions of the stature of AIIMS in J&K, Punjab, Tamil Nadu, Himachal Pradesh and Assam & Bihar.

Rising share of government expenditure
(USD billion)

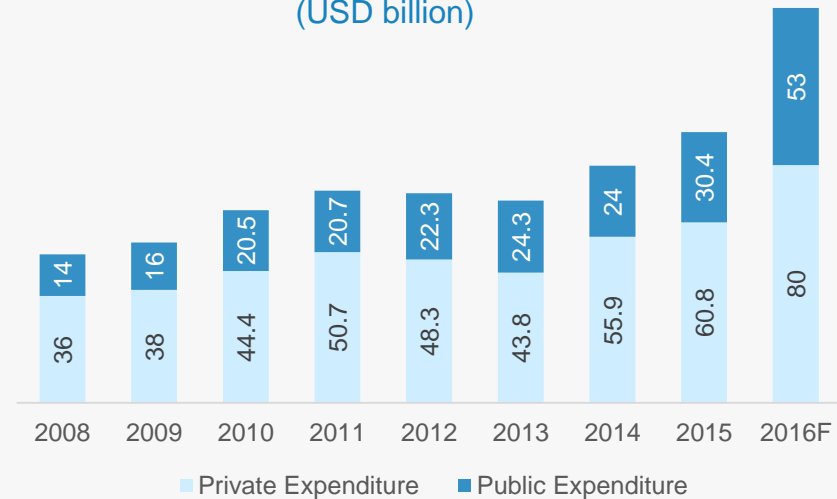


Source: Business Monitor International, Union Budget 2015-16,
TechSci Research
Notes: CAGR - Compound Annual Growth Rate

RISING EXPENDITURE SHARE BY PRIVATE SECTOR

- * The share of private sector spending increased from USD36 billion in 2008 to USD60.8 billion in 2015
- * Supported by favourable government policies, the private sector's share is expected to reach USD80 billion by 2016
- * With increasing urbanisation and problems related to modern-day living in urban settings, currently, about 50 per cent of spending on in-patient beds is for lifestyle diseases; this has increased the demand for specialised care
- * To standardise the quality of service delivery, control cost and enhance patient engagement, healthcare providers are focusing on the technological aspect of healthcare delivery
- * Digital Health Knowledge Resources, Electronic Medical Record, Mobile Healthcare, Electronic Health Record, Hospital Information System and PRACTO are some of the technologies gaining wide acceptance in the sector
- * A new trend is emerging as luxury offerings in healthcare sector. More than essential requirements, healthcare providers are making offerings of luxurious services. For example: pick and drop services for patient by private helicopters and luxurious arrangements for visitors to patient in hospital

Public and private expenditure on healthcare (USD billion)

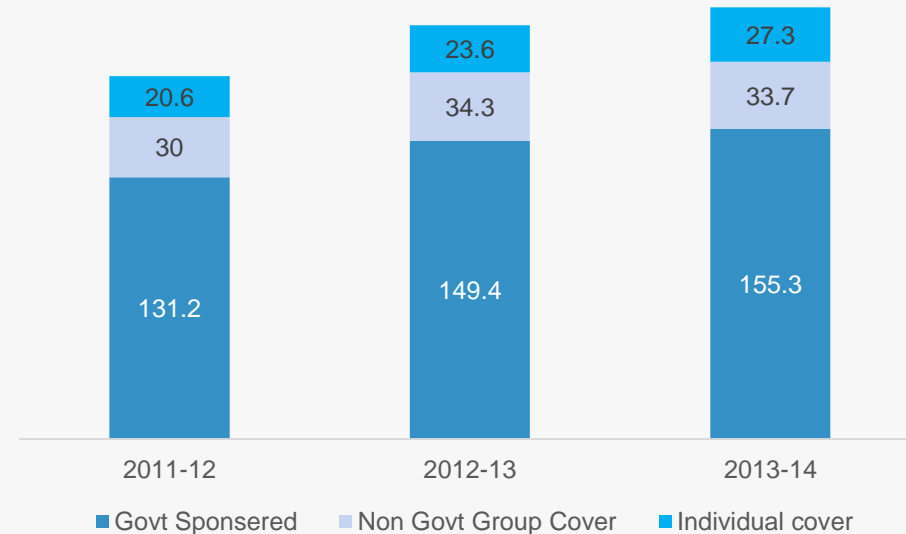


Source: Business Monitor International, TechSci Research

HEALTH INSURANCE PENETRATION EXPECTED TO SURGE

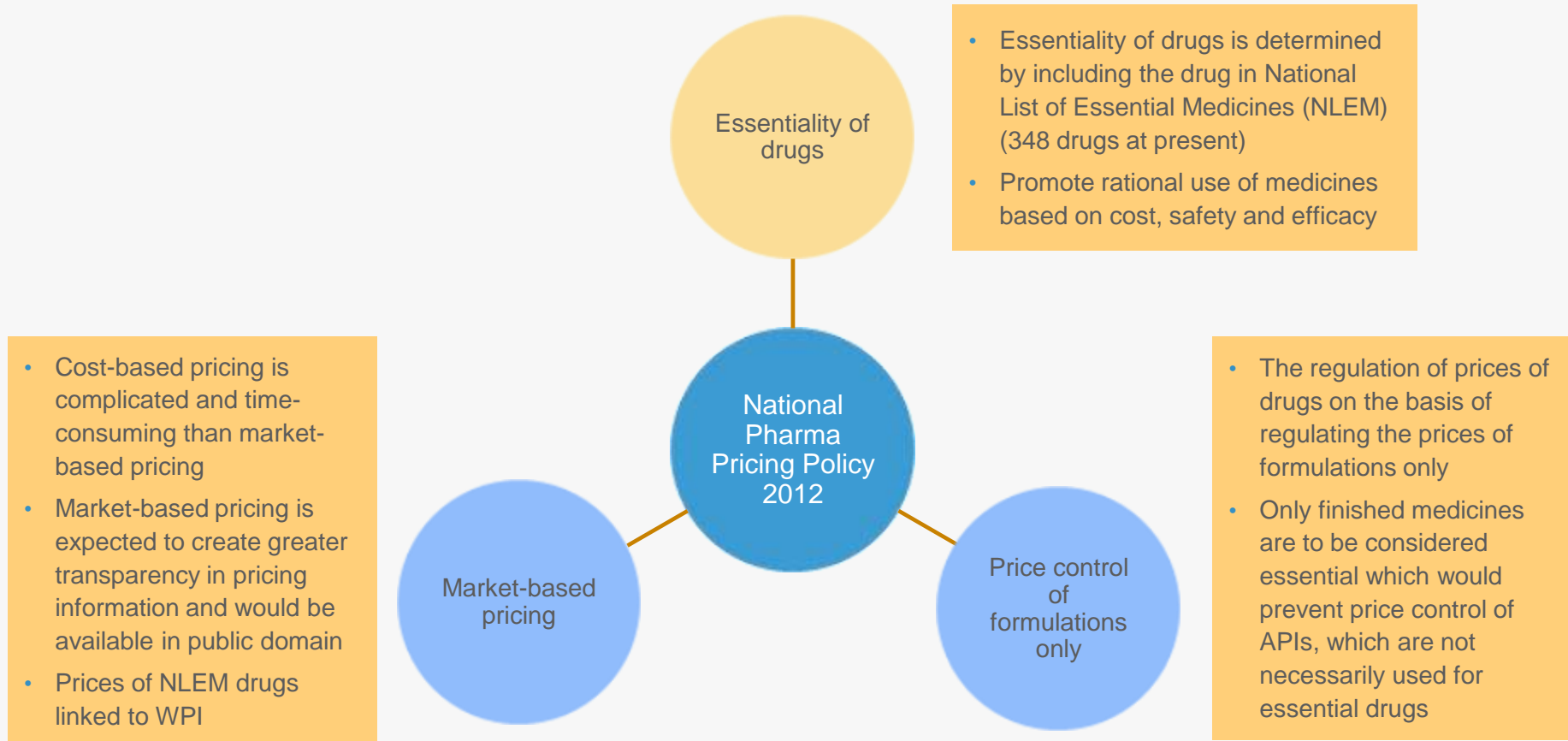
- * Penetration of health insurance is expected to more than double by 2020. Around 439.5 million population has been covered by 2014
- * Increasing penetration of health insurance is likely to be driven by government-sponsored initiatives such as RSBY and ESIC
- * Government-sponsored programmes expected to provide coverage to nearly 380 million people by 2020
- * Private insurance coverage would increase nearly 15 per cent annually till 2020
- * In FY15, 27 per cent of the total population has been covered under government sponsored health insurance schemes
- * From March to November 2015, gross direct premium income for health insurance segment reached USD2.58 billion. Private sector accounted for 36.3 percent of the total gross direct premium income (March to November 2015)
- * Increase in private sector insurance would play an important role in affordability for high cost

Population with health cover⁽¹⁾ (In Million)



Source: IRDA, Mckinsey estimates, TechSci Research, World Bank
 Notes: RSBY - Rashtriya Swasthya Bima Yojna,
 ESIC - Employees State Insurance Corporation;
 (1) -Figures mentioned are as per latest data available

NATIONAL PHARMA POLICY TO BRING GREATER TRANSPARENCY



Source: National Pharmaceuticals Pricing Policy 2012

INVESTMENTS, JVs INFUSING SUPERIOR CAPABILITIES IN INDIAN FIRMS ... (1/2)

- * Pharma, healthcare and biotech have witnessed significant increases in M&A activities over the years; over the last three years, pharmaceuticals segment has accounted for more than 70 per cent of M&A deals
- * In 2015, mergers and acquisitions deals in pharmaceuticals sector accounted for USD3.2 billion in India, with the number increasing to USD0.74 billion in 2016 (till July 2016)

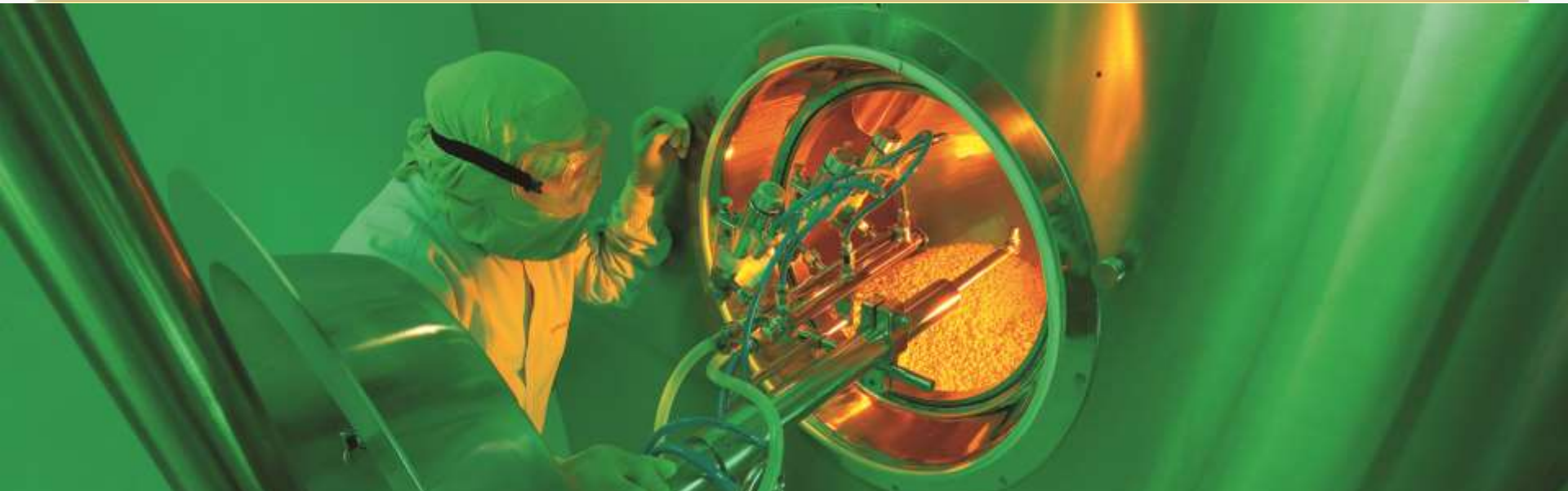
Date announced	Indian company	Foreign company	Value (USD million)	Type
July 2016	Continental Hospitals Limited	HH Healthcare Berhad	192.84	73.4% Stake
February 2016	Cipla	InvaGen Pharmaceuticals Inc. and Exelan Pharmaceuticals Inc.	550	100% Stake
November 2015	Famy Care Ltd	Mylan Inc – Mylan Laboratories Limited	750	100% Stake
October 2015	Nitin Lifesciences	Recipharm	109.8	75% stakes in equity
July 2015	Lupin	Temmler	Not disclosed	Acquisition
May 2015	Cadila Healthcare	Claris Lifesciences	556.8	To be acquired
July 2015	Lupin	Gavis & Novel Laboratories	880	Acquisition
April 2014	Sun Pharma	Ranbaxy	320	Acquisition
November, 2014	Curatio Healthcare	Sequoia Capital	15.8	Acquisition
July, 2013	Cipla	Cipla Medpro	512	Acquisition
January, 2013	GlaxoSmithkLine Consumer	GlaxoSmithkLine Plc.	1,088	Acquisition
September, 2011	Natco Pharma	Litha	NA	JV
May, 2010	Glenmark	Sanofi	615	JV
March, 2011	Dr Reddy's	Iso Ray	NA	Licensing rights
April, 2011	Sun Pharma	Merck	NA	Marketing
September, 2010	Piramal	Abbot	3,720	Business buyout
December, 2012	Shantha Biotech	Sanofi Aventis	783	Acquisition

INVESTMENTS, JVs INFUSING SUPERIOR CAPABILITIES IN INDIAN FIRMS ... (2/2)

Date announced	Indian company	Foreign company	Value (USD million)	Type
December, 2014	Panacea Biotec Ltd	Apotex Inc	NA	JV
August, 2012	Strides Arcolab Ltd	Gilead Sciences Inc	NA	Licensing agreement
July, 2011	Ranbaxy	Gilead Sciences Inc	NA	Licensing agreement
August, 2013	Jubilant Biosys	Endo Pharmaceuticals	NA	Drug development
October, 2012	Piramal Healthcare Ltd	Fujifilm Diosynth Biotechnologies	NA	Drug development
March, 2009	Biocon	Bristol-Myers Squibb	NA	Exclusive marketing
March, 2013	Unichem Laboratories	Mylan	30	Acquisition
October, 2012	SMS Pharmaceuticals	Mylan	33	Acquisition of manufacturing unit
March, 2012	Biocon	Abbott Laboratories	NA	Contract research
September, 2012	Agila Specialties	Mylan, A Canonsburg	1,850	Acquisition
February, 2012	Jubilant Biosys	Mnemosyne Pharmaceuticals Inc	NA	Drug development
January, 2011	Zydus Cadila Healthcare	Bayer	NA	Marketing arrangement
December, 2012	Claris Lifesciences	Otsuka Pharmaceutical	250	JV
November, 2012	Zydus Cadila Healthcare	Abbot Laboratories	NA	Licensing agreement
July, 2011	Lupin	Eli Lilly	NA	Marketing arrangement

Source: ICRA Research on Indian Pharmaceutical Sector, India Ratings Research Outlook on Indian Pharmaceutical, BMI, TechSci Research
Notes: JV - Joint Venture, ADC - Antibody Drug Conjugates

PHARMACEUTICALS



OPPORTUNITIES

OPPORTUNITIES ABOUND IN CLINICAL TRIALS AND HIGH-END DRUGS

Clinical trials market

- India is among the leaders in the clinical trial market
- Due to a genetically diverse population and availability of skilled doctors, India has the potential to attract huge investments to its clinical trial market
- From 2009 to 2015, 3043 clinical trial has been carried out in India

High-end drugs

- Due to increasing population and income levels, demand for high-end drugs is expected to rise
- Demand for high-end drugs could reached USD7.5 billion in 2015
- Growing demand could open up the market for production of high-end drugs in India

Penetration in rural market

- With 70 per cent of India's population residing in rural areas, pharma companies have immense opportunities to tap this market
- Demand for generic medicines in rural markets has seen a sharp growth. Various companies are investing in the distribution network in rural areas

CRAMS

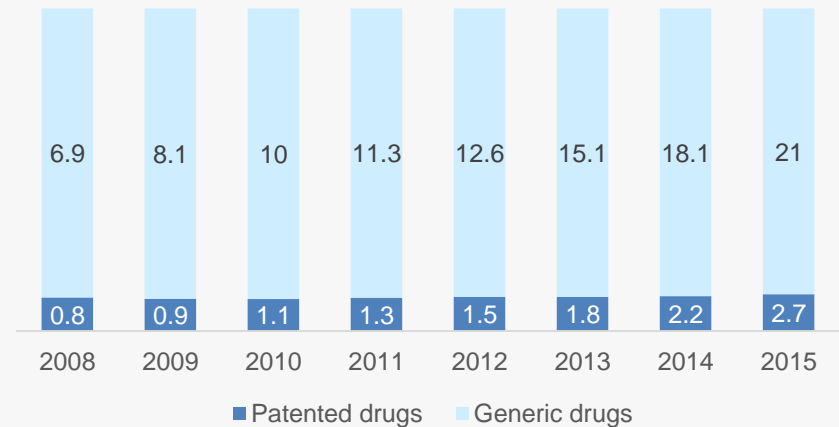
- The Contract Research and Manufacturing Services industry (CRAMS) – estimated at USD8 billion in 2015, up from USD3.8 billion in 2012 has a huge potential for investments
- The market has more than 1,000 players

Source: BMI, TechSci Research

DRUG SALES TO MORE THAN DOUBLE BY 2015 ACROSS SEGMENTS

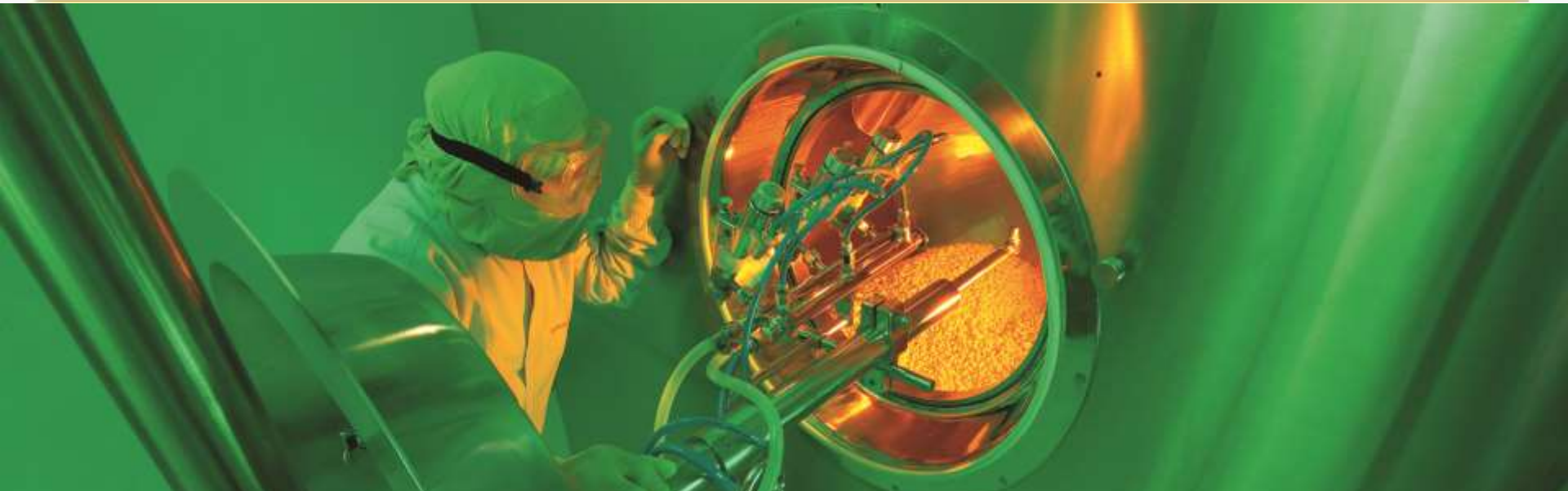
- * The share of generic drugs is expected to continue increasing; it could represent about 85 per cent of the prescription drug market by 2016
- * Domestic generic drug market is expected to reach USD27.9 billion in 2020
- * Due to their competence in generic drugs, growth in this market offers a great opportunity for Indian firms
- * Generic drug market is expected to grow in the next few years, with many drugs going off-patent in the US and other countries
- * Domestic generic drug market has reached USD26.1 billion in 2016

Share of patented and generic drugs in prescribed drug market (USD billion)



Source: BMI, TechSci Research
Note: F - Forecast

PHARMACEUTICALS

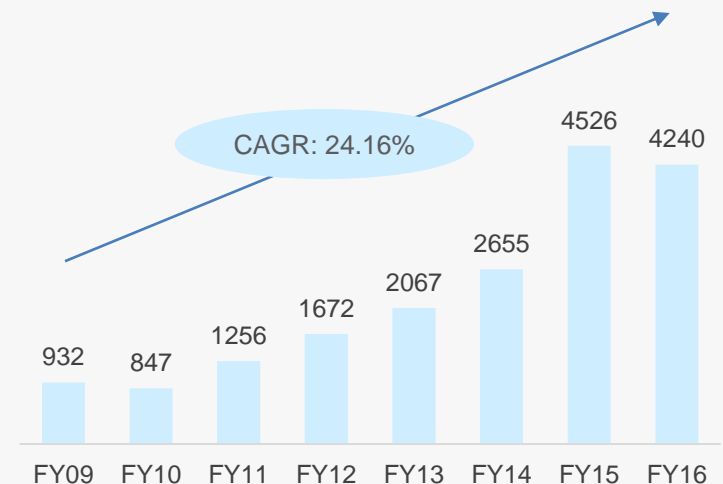


SUCCESS STORIES

SUN PHARMA: LEVERAGING ITS GENERICS MARKET CAPABILITIES ... (1/2)

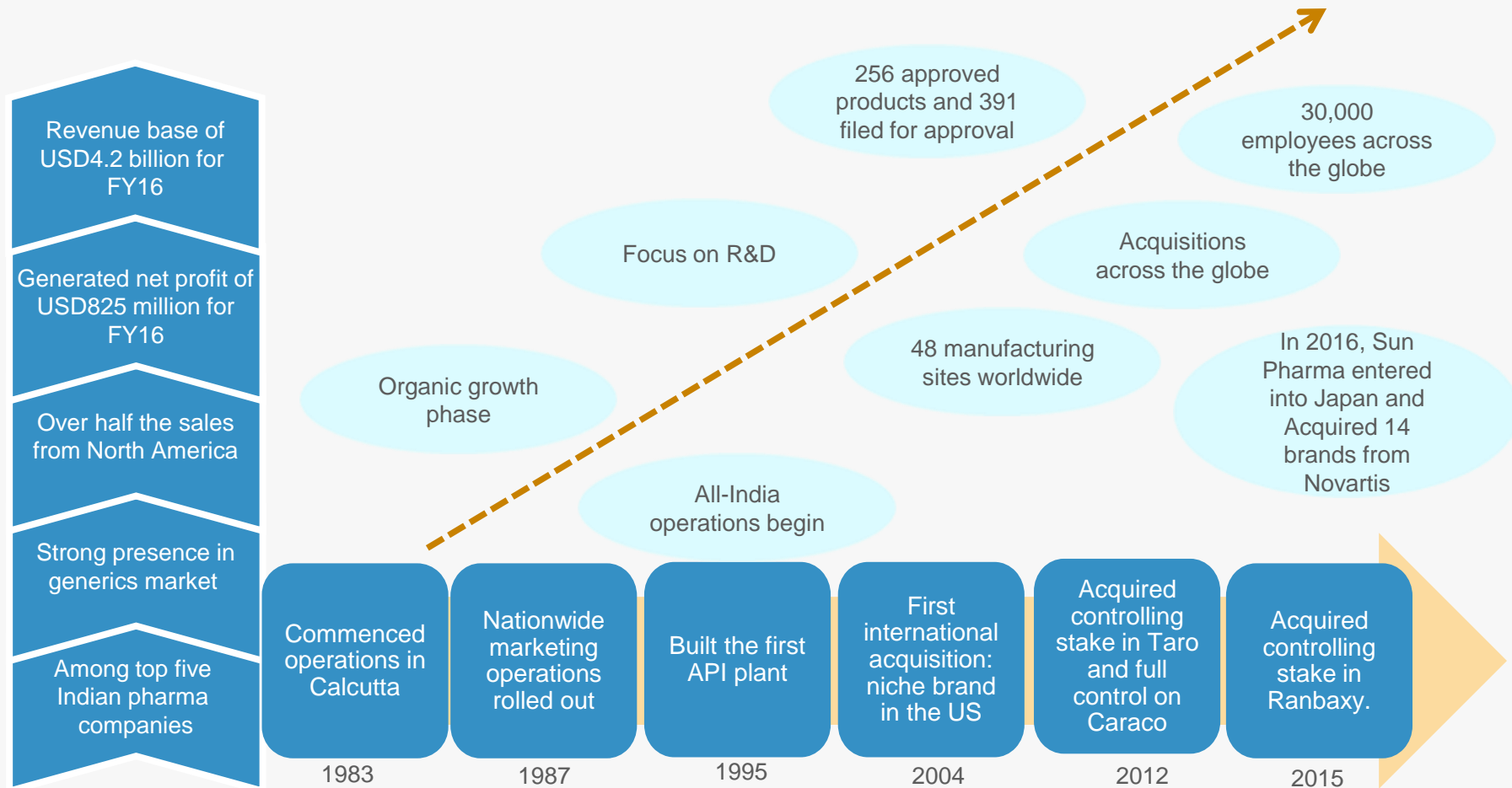
- * Sun Pharma was set up in 1983, with a compact manufacturing facility for tablets and capsules
- * It set up its first API plant at Panoli in 1995
- * It has 48 manufacturing facilities across five continents and employs more than 30,000 people as on FY16
- * Nearly 74 per cent of its sales came from international markets in 2016
- * Revenues of Sun Pharma increased from USD932 million in FY09 to USD 4.2 billion in FY16, witnessing growth at a CAGR of 24.16 per cent over FY09-16
- * In March 2015, Sun Pharma completed the acquisition of Ranbaxy Laboratories Ltd to become the fifth largest global specialty pharma company, No 1 pharma company in India, and ensure a strong positioning in emerging markets
- * The company reported net profit of USD 335.8 million for the period July2016 - September 2016
- * As of October 2016, the company acquired 100 per cent equity in the US-based eye care specialist 'Ocular Technologies Sarl' for USD 40 million

Sun Pharma net sales (USD million)



Source: Sun Pharma website, TechSci Research
CAGR - Compound Annual Growth Rate

SUN PHARMA: LEVERAGING ITS GENERICS MARKET CAPABILITIES ... (2/2)

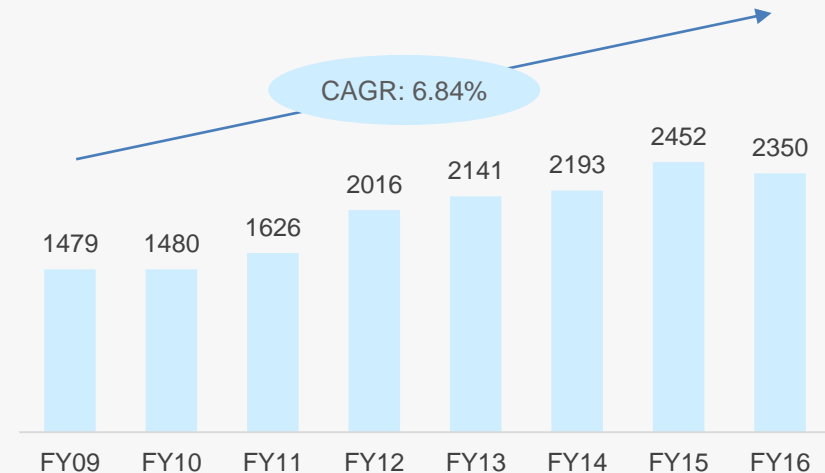


Source: Sun Pharma website

DR REDDY'S: PROVIDING AFFORDABLE AND INNOVATIVE HEALTHCARE ... (1/2)

- * Dr Reddy's began as an API manufacturer in 1984, producing high-quality APIs for the Indian domestic market
- * It has presence in almost all therapeutic segments
- * It has an integrated business model in three segments: Pharmaceutical Services & Active Ingredients (PSAI), Global generics and Proprietary products
- * Dr Reddy's has access to numerous emerging markets through partnerships with GlaxoSmithKline (GSK)
- * Its product offering spans the entire value chain, from process development of APIs to submission of the finished dosage dossier to regulatory agencies
- * The company's revenues increased from USD1.5 billion in FY09 to USD2.4 billion in FY16, at a CAGR of 6.84 per cent over FY09-16
- * Global generics comprised over 81 per cent of its revenue mix in FY15
- * Dr Reddy's is investing heavily on R&D to differentiate itself in the market. In FY15 - 16 Dr Reddy's spent around 13.8 per cent of sales on R&D

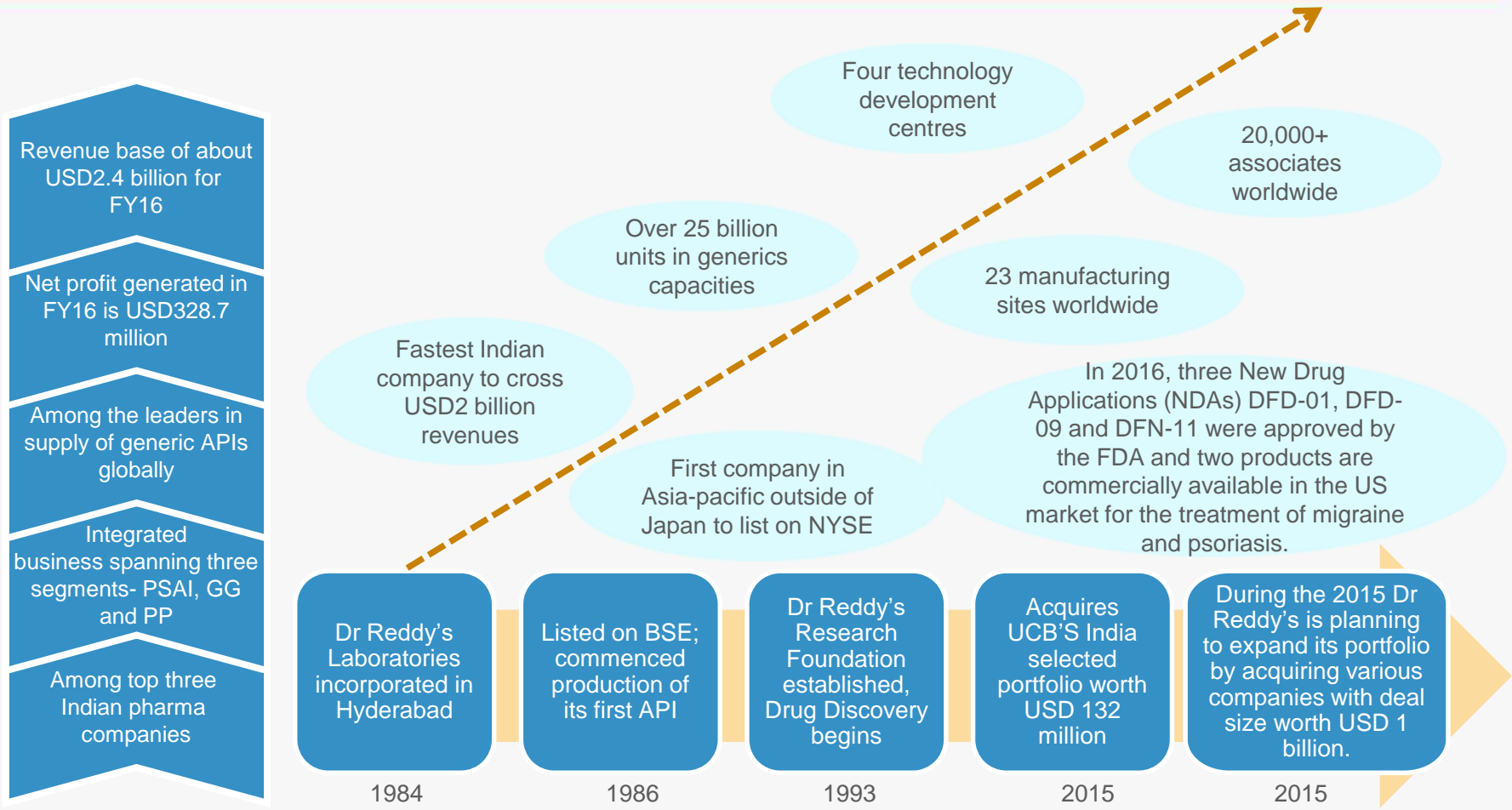
Dr Reddy's net sales (USD million)



Source: Dr Reddy's website,
Notes: FY16* (April to September 2015)
CAGR - Compound Annual Growth Rate,
R&D - Research and Development

PHARMACEUTICALS

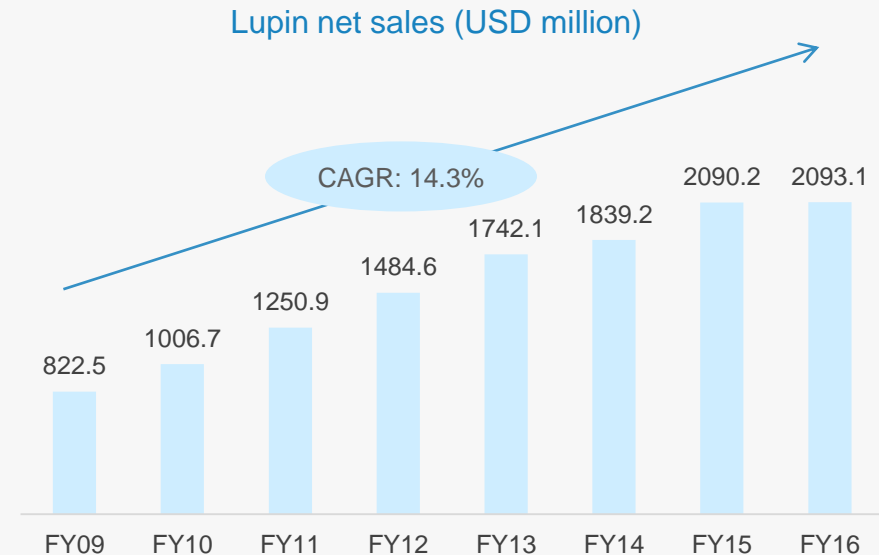
DR REDDY'S: PROVIDING AFFORDABLE AND INNOVATIVE HEALTHCARE ... (2/2)



Source: Dr Reddy's website, Annual Report
Notes: PSAI - Pharmaceutical Services and Active Ingredients, GG - Global Generics, PP - Proprietary Products, JV - Joint Venture

LUPIN: ON A HIGH GROWTH PATH ... (1/2)

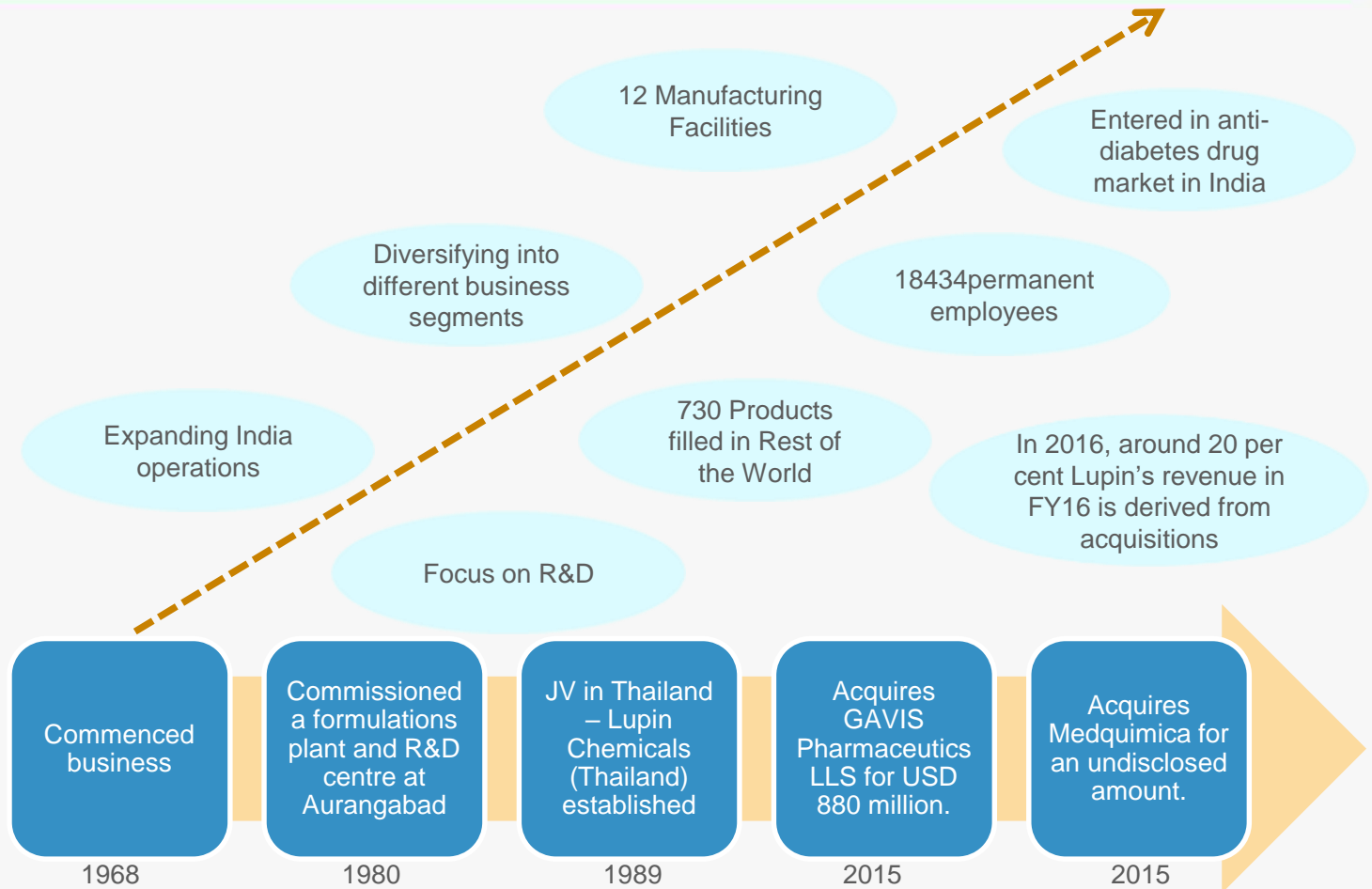
- * Lupin is a renowned pharma player producing a wide range of quality, affordable generic and branded formulations and APIs
- * It is one of the world's largest manufacturers of TB drugs and has significant market share in the cardiovascular, diabetology, asthma, paediatrics, CNS, Anti-infectives and NSAIDs therapy segments
- * Lupin is the seventh largest generic pharmaceutical company globally in terms of market capitalization
- * Its revenues increased from USD822.5 million in FY09 to USD2.1 billion in FY16, witnessing growth at a CAGR of 14.3 per cent over FY09-16
- * Advanced market formulations comprised nearly 46 per cent of its revenues in FY16
- * Specialty generic player across the globe, including emerging markets
- * Lupin is third largest drug manufacturer in India by sales



Source: Lupin website
Notes: CAGR - Compound Annual Growth Rate,
API - Active Pharmaceutical Ingredient, CNS - Central Nervous System,
NSAIDS - Non-Steroidal Anti-inflammatory Drugs, TB - Tuberculosis

PHARMACEUTICALS

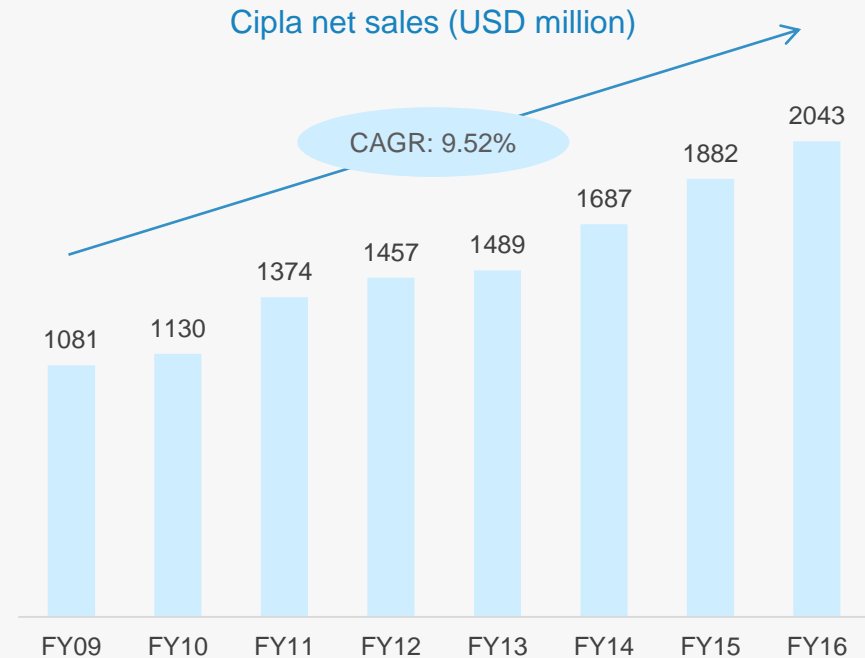
LUPIN: ON A HIGH GROWTH PATH ... (2/2)



Source: Lupin website, Annual Report
Notes: ANDAS - Abbreviated New Drug Application, DMFs - Drug Master Files, * - As of Half Year Ended September 2015

CIPLA: MAKING HEALTHCARE ACCESSIBLE ... (1/2)

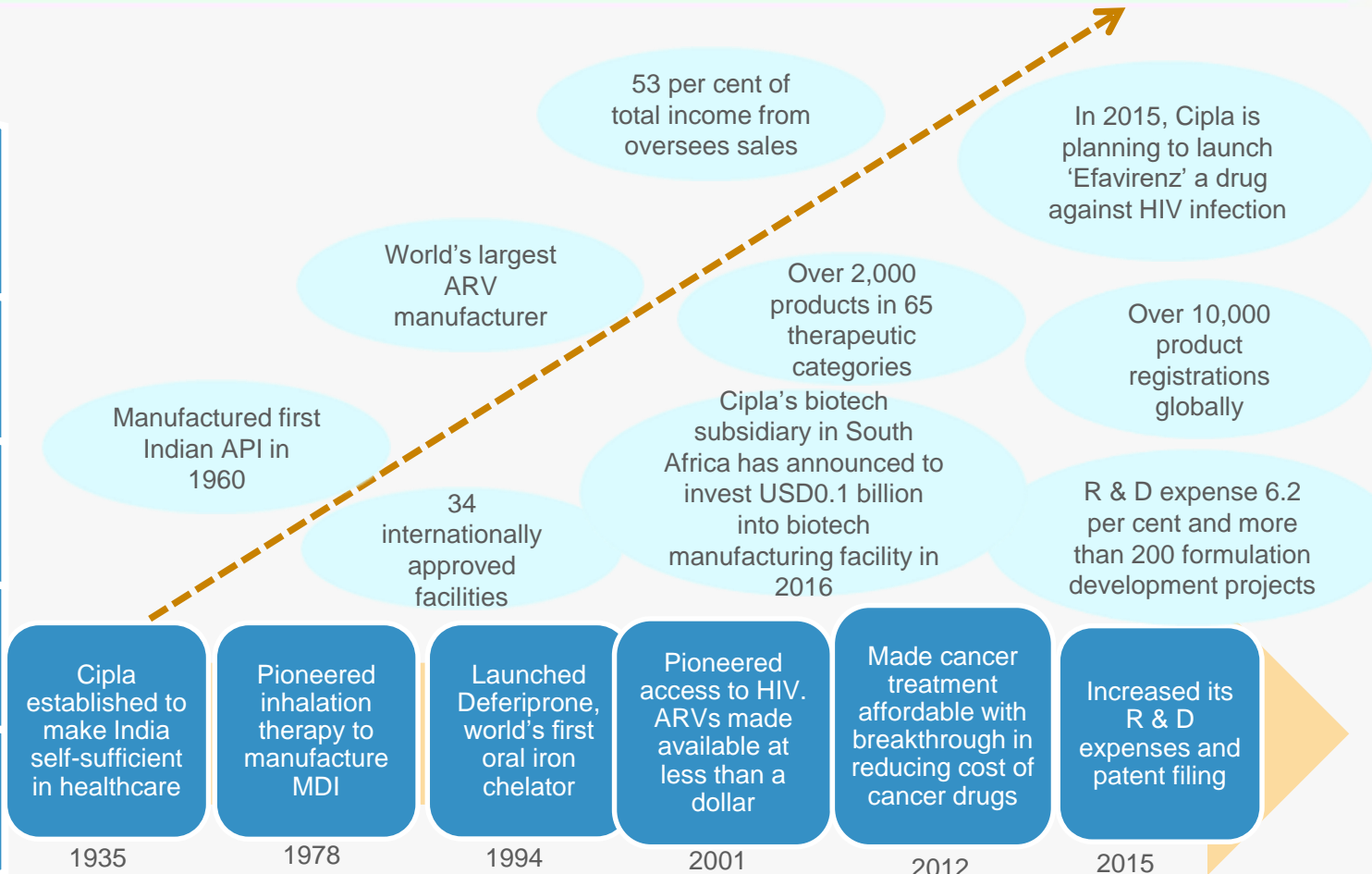
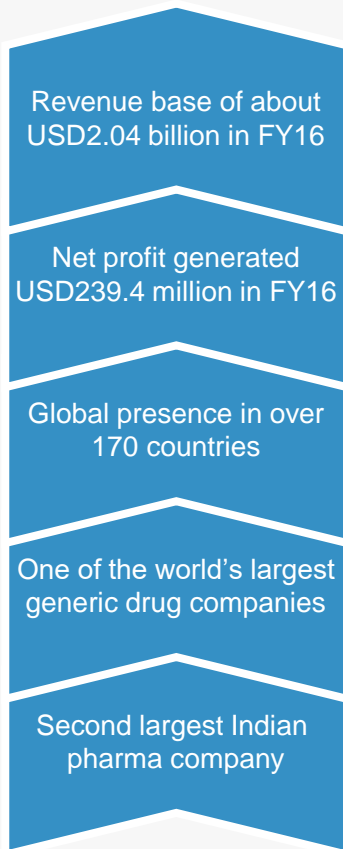
- * Established in 1935, Cipla has over 34 state-of-the-art manufacturing units. Cipla's R&D division focuses on new product development and new drug delivery systems across a range of therapies
- * It is one of the few companies producing medicines for rare diseases such as Idiopathic Pulmonary Fibrosis, Pulmonary Arterial Hypertension, Thalassaemia and Multiple Sclerosis
- * Cipla outperformed other global pharma majors by offering patented anti-AIDS drugs at affordable prices
- * It has presence in over 170 countries, with an employee strength of over 20,000; moreover, it is the sixth-largest player in South Africa
- * Its revenues increased from USD1.11 billion in FY09 to USD2.04 billion in FY16, at a CAGR of 9.52 per cent over FY09-16
- * It is the first company to develop drug for the treatment of H1N1 flu
- * Cipla has entered into an agreement to acquire two US based pharmaceutical companies InvaGen Pharmaceuticals Inc., and Exelan Pharmaceuticals Inc. for USD500 million



Source: Cipla website, Cipla brochure, Cipla corporate profile

Notes: CAGR - Compound Annual Growth Rate,
API - Active Pharmaceutical Ingredient, OTC - Over The Counter

CIPLA: MAKING HEALTHCARE ACCESSIBLE ... (2/2)

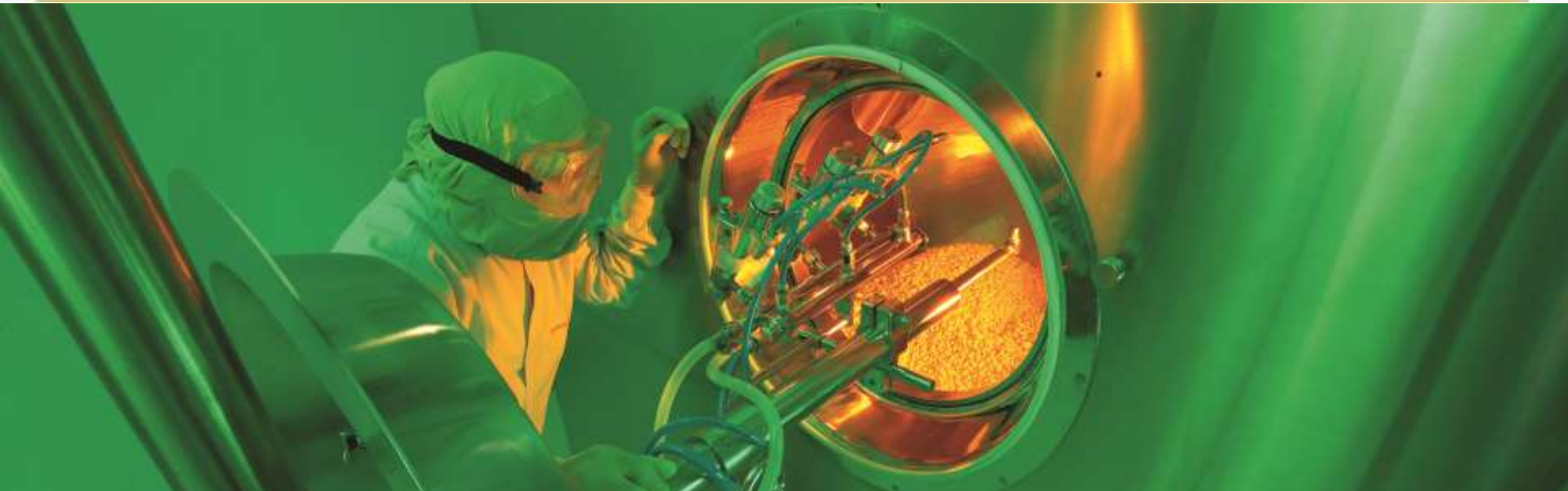


Source: Cipla website, Annual Report Note; FY16* (Up to September 2015)

Notes: MDI - Metered Dose Inhaler, ARV - Anti-retroviral

For updated information, please visit www.ibef.org 49

PHARMACEUTICALS



USEFUL INFORMATION

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www.idma-assn.org

Organisation of Pharmaceutical Producers of India

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INDUSTRY ASSOCIATIONS ... (2/2)

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Fax: 91 40 23704804

E-mail: info@bdmai.org

www.bdmai.org

- * **CRAMS:** Contract Research and Manufacturing Services
- * **API:** Active Pharmaceutical Ingredients
- * **FDI:** Foreign Direct Investment
- * **GOI:** Government of India
- * **INR:** Indian Rupee
- * **USD:** US Dollar
- * **BPL:** Below Poverty Line
- * **RSBY:** Rashtriya Swastha Bima Yojna
- * **ESIC:** Employees State Insurance Corporation
- * Wherever applicable, numbers have been rounded off to the nearest whole number

EXCHANGE RATES

Exchange rates (Fiscal Year)

Year	INR equivalent of one USD
2004-05	44.81
2005-06	44.14
2006-07	45.14
2007-08	40.27
2008-09	46.14
2009-10	47.42
2010-11	45.62
2011-12	46.88
2012-13	54.31
2013-14	60.28
2014-15	61.06
2015-16	65.46
2016-2017E	66.95

Exchange rates (Calendar Year)

Year	INR equivalent of one USD
2005	43.98
2006	45.18
2007	41.34
2008	43.62
2009	48.42
2010	45.72
2011	46.85
2012	53.46
2013	58.44
2014	61.03
2015	64.15
2016 (Expected)	67.22

Source: Reserve bank of India,
Average for the year

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