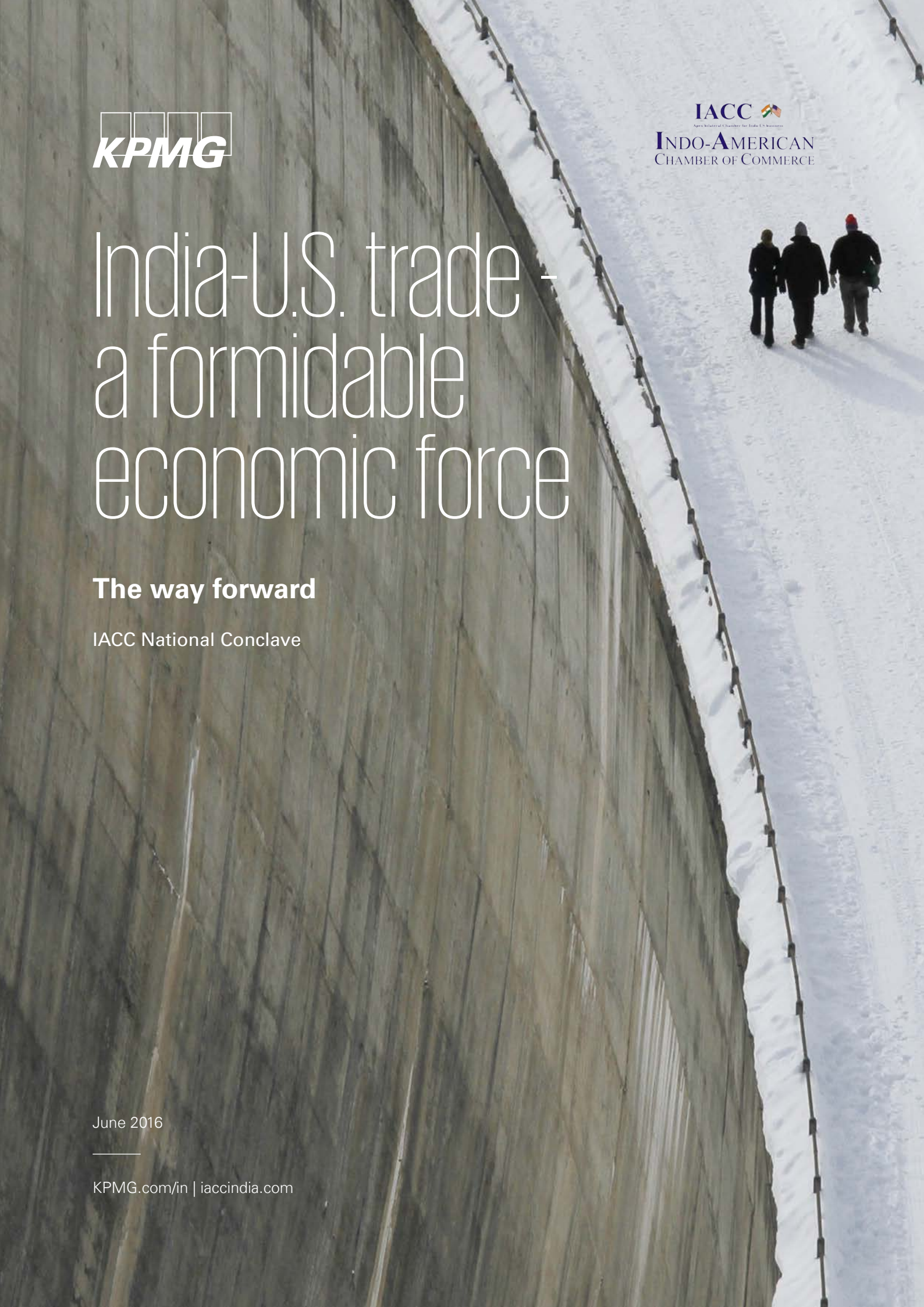


KPMG

IACC
Apex bilateral Chamber for India-US business
INDO-AMERICAN CHAMBER OF COMMERCE

India-U.S. trade - a formidable economic force

The way forward

IACC National Conclave

June 2016

KPMG.com/in | iaccindia.com

Table of contents

Introduction

There is a natural alliance between the world's two large democracies – the U.S. and India. In the last few years, both the nations have taken significant steps to further enhance their political and economic ties. Both the governments have committed to increase the bi-lateral trade through economic co-operation and support.

All the major U.S. conglomerates have significant presence in India, and have been successfully growing their businesses. Similarly, Indian companies are increasing their footprint in the U.S. market. The U.S. offers advantage of cutting edge technology in various fields, whereas India complements by offering skilled manpower.

Various large scale programmes initiated by the Government of India such as the 'Smart Cities Mission', 'Make in India', 'Digital India', 'Start-up India, Stand-up India', etc. offer a unique and huge opportunity for U.S.-India collaboration.

India is transforming at a rapid pace. Today, it is one of the fastest growing large economies in the world. Its commitment to develop and modernise urban infrastructure under the 'Smart Cities Mission', multi-fold increase in capacity for renewable energy, provide healthcare facilities to the masses, encourage manufacturing in India and develop skill sets for millions of youth joining the work force every year; requires multi-billion dollar investment and strong partnership with U.S.

India's IT-ITeS sector has put India on the global map as a shining example of collaborative success between the two nations. Financial inclusion is a pre-requisite for India's economic success. The Indian Financial Services sector, including banking and insurance is going through extensive transformation process and shall continue to expand in the foreseeable future.

Over the next few years, India is likely to be one of the top aviation markets in the world, which offers good opportunity in the aerospace, maintenance, repair and overhaul sectors, and U.S. with its technical prowess can be a major beneficiary.

Though, the future looks very promising, full of hope and opportunity, it is not an easy task. There are various impediments which could derail or prolong the journey of economic success for India. These include, challenging taxation and regulatory policies, slow pace of infrastructure development, issues in the states and at ground level, etc.

It is imperative for the world economy that the U.S. and India join hands for a better and sustainable future. The IACC National Conclave is a good platform for different stake holders to deliberate upon various issues, identify opportunities and build a road map for some concrete action.

KPMG in India is happy to collaborate with IACC as its 'Knowledge Partner' for the conclave and share its perspective on some of the themes covered in the conference.

We wish this collaborative journey is a huge success.

Nitin Atroley

Partner and Head
Sales and Markets
KPMG in India

Vikas Vasal

Partner and Head
India-U.S. Corridor
KPMG in India

Aerospace and Maintenance, Repair and Overhaul

Overview of the sector

Size of the sector

Aerospace and Maintenance, Repair and Overhaul (MRO) is an important part of an economy which facilitates global trade, business and tourism. The demand for air travel has increased steadily over the last fifty years. Global passenger traffic has grown at a CAGR of 5 per cent each year since 1980s. The trend is expected to continue and this has led to an increased demand for aircrafts. Boeing estimates that from 2015 to 2034, number of new aircrafts delivered globally would be 38,050 with 38 per cent of the demand from Asia alone[01].

Currently, India is the ninth largest civil aviation market in the world with a market size of USD16 billion and aims to become the third largest market by 2020[02]. It is also one of the fastest growing aviation markets in the world with a growth of 18 per cent in throughput of international and domestic passengers over the last financial year reaching a total passenger throughput of 224 million. Cargo throughput increased by 7 per cent to 2.7 million tonnes during the same period while air traffic movements for the period was 1.79 million, which is an increase of 12 per cent over the same period last year[03].

The growth in India augurs well for U.S. companies across the aerospace and MRO value chain which can grow in the Indian market or utilise the cost-efficiencies and engineering skills India has to offer. Some of the potential avenues for interaction include U.S. aerospace companies sourcing components and assemblies from India, U.S. airlines increasing connectivity to and from India, MRO companies servicing airlines in India (either within India or from outside hubs), U.S. companies setting up engineering centres in India to tap into the large and relatively cost-effective talent pool available etc.

Recent trends and developments

Newer and more fuel efficient aircraft models are either entering the manufacturing stage or undergoing a production ramp up while older models are being retired. The theatre of demand for new aircrafts has shifted to Asia. This presents significant opportunities for the U.S. companies to utilise the cost-efficiences and engineering manpower of India to produce components for the global aerospace supply chain.

Airlines in India are on a growth path with their fleets being relatively new. Currently, these airlines mostly fly abroad for their MRO requirements – to destinations such as Singapore. Going forward, with the fleet aging, the MRO market has ample scope for the U.S. companies to set up MRO operations in and around India to serve the large market.

Policies and regulations

'Make in India' is a landmark initiative which provides impetus and strategy for the Indian government and private sector to prioritise manufacturing in India. The U.S. companies can identify synergies between the 'Make in India' initiative and their global supply chains to ensure a dovetailing of interests.

The draft National Civil Aviation Policy, released in October 2015, has proposals for growing the aerospace and MRO industry through tax rationalisation, simplification of procedures, encouraging manufacturing and MRO in India etc.

India's new Defence Procurement Procedure 2016 takes some steps in streamlining the defence procurement process and places greater emphasis on indigenous design and manufacturing.

01. Current market outlook 2015-2034, Boeing Forecast, June 11, 2015
02. FICCI KPMG Background Paper for India Aviation 2016
03. Airports Authority of India

The Sector's engagement with the U.S.

Size of the sector's trade with the U.S.

The demand for new aircraft in India is expected to be 1,750 planes over the next 20 years of which 84 per cent would be single-aisle narrow body aircrafts. This translates to USD240 billion of aircraft orders over the next 20 years[04].

India has a relatively young fleet which would require greater maintenance services going forward. The MRO market size of India was USD0.9 billion in 2015 and is expected to grow to USD1.5 billion by 2020[05]. However, the growth of the MRO industry in India is severely restricted due to challenges such as a disadvantageous tax regime and lack of adequate space and infrastructure at airports. Hence, 90 per cent of MRO for airlines in India is done outside India. U.S. manufacturers could set up MRO facilities closer to India or within the country to ensure a greater share in the USD900 million MRO market[06].

The industry bellwether Boeing's market share in India is above 40 per cent and it dominates in the wide-body segment. It sources more than half a billion dollars worth of components and services from 30 direct and over 100 indirect suppliers in India. The value of sourcing is expected to double by 2020.

Recent developments/challenges

There is increasing cooperation between India and the U.S. in the aerospace and MRO sector. The U.S.-India Defence Technology and Partnership Act was introduced in March 2016 in U.S. Congress which, if passed, can elevate the status of the Indo-U.S. defence relationship on par with that of America's closest allies.

Discussions are ongoing for Defence Technology and Trade Initiative (DTTI) and leaders of both the nations are keen to take the ambitious initiative forward in future[07]. Significant progress has been achieved through DTTI on key projects such as the roll on roll off mission modules for C-130J aircraft.

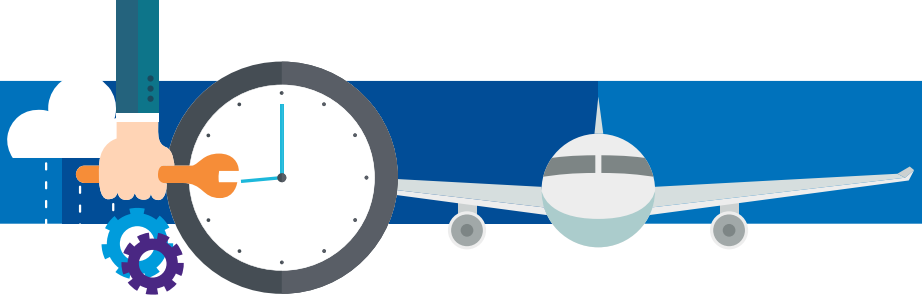
The aerospace manufacturing sector in India faces shortage of skilled manpower and this creates difficulties for it to adhere to strict quality requirements of global aerospace and MRO companies. Governments of both the U.S. and India along with the private sector should work on bridging this skill gap. The Aerospace and Aviation Sector Skill Council, which has been established by the Indian government's National Skill Development Corporation, has been tasked with developing standards for skills in the sector and for establishing delivery mechanisms for the skills.

The MRO sector in India has long suffered due to lack of policy support, excessive taxation, high airport charges, painful procedures for customs clearances for imported parts etc. As a result, nearly 90 per cent of the MRO requirements of Indian carriers is not met within the country.The draft NCAP reforms are expected to ease the bottlenecks in the MRO sector. It proposes 'infrastructure' status for MRO which would make it eligible for easier and cheaper loans and a 10-year waiver of corporate tax. It also proposes zero-rating of service tax on MRO. This is expected to kick-start the revival of MRO in India.

Key opportunities

- American and European suppliers form the majority of global aerospace OEMs and Tier 1 players contributing more than 70 per cent of aircraft systems. In order to de-risk and diversify this concentrated portfolio, system integrators and Tier1 players are developing their suppliers in Asia (especially India and China) which are closer to the demand regions.
- There's also an increasing push from the government to enhance sourcing from India. Accordingly, many global companies are developing their supply chain and increasing their sourcing in India. The benefits of being in a large market, the cost-effciencies and engineering talent available in India make a strong business case for the U.S. companies to be present in India.
- India is one of the fastest growing aviation markets in the world08 and the trend is likely to continue with increasing income, improved connectivity and low oil prices. Airlines in India are placing orders for record number of planes. New airlines are entering the Indian market. The fleet shall require higher MRO services as it ages. This presents a large opportunity space for U.S. manufacturers and MRO providers.
- India is one of the world's largest importers of defence products including aerospace defence products. India's defence budget is nearly USD40 billion for the fiscal year ending in March 2016. India still imports more than 70 per cent of its defence requirements and the government is determined to reduce the same through FDI and local manufacturing09. This presents an opportunity for U.S. companies to enhance their defence manufacturing and component sourcing from India.
- With almost 40 per cent share in the Indian defence market, the U.S. has overtaken Russia (30 per cent), France (14 per cent), and Israel (4 per cent) to become India's largest defence supplier during 2011-201410. The way to enhance this further is by way of joint research and co-development between U.S. and Indian industry and move the relationship from a buyer-seller one to that of a 'strategic partnership'.

04. Current market outlook 2015-2034, Boeing Forecast, June 11, 2015
05. FICCI KPMG Background Paper for India Aviation 2016
06. Draft National Civil Aviation Policy, Ministry of Civil Aviation, India
07. Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, U.S. Government
08. International Civil Aviation Organization
09. Ministry of Defence, Government of India



- The Indian Space Research Organisation (ISRO) is taking giant strides in space research and development, but can do better with technical collaboration with U.S. companies. ISRO has proved its mettle by single-handedly developing and carrying out the moon and Mars missions at low cost and by developing an indigenous navigational system named NAVIC. However, technological co-operation with the U.S. can enrich the systems under development and shorten the development cycle.
- The Defence Research and Development Organisation (DRDO) is the nodal agency for defence related research in India. There is scope for the research institutions, government agencies and companies of the U.S. in collaborating with DRDO for co-development of technology.
- Technology collaborations, joint efforts in research and development and joint ventures in manufacturing can play a vital role in establishing India as a preferred aerospace and MRO destination. It has the potential to boost the Indian government's 'Make in India' initiative, enhance U.S.-India relations and benefit U.S. manufacturers by achieving cost efficiencies, faster discharge of offset obligations and being close to the large, growing market that is India.

Our recommendations

- The U.S., Indian governments and the industry need to co-operate and ideate on steps to address the key challenges facing the aerospace and MRO sector in India and to integrate India with the global aerospace and MRO supply chain. Some of the action steps to achieve this are as follows:

Skill development

The government with the support of global aerospace companies should spearhead structured skill development programmes in the sector and link it more seamlessly to defence offsets.

Developing aerospace clusters

The Indian government should identify the top five aerospace components and assemblies that India wants to focus on during the next 10 years and develop focussed clusters for them to attract global investments. Central and state governments need to work with anchor OEMs to identify the right locations and facilitate its development through fast clearances and fiscal incentives. This can attract global OEMs and Tier1 players to set up their facilities in India which in turn might promote the growth of the aerospace manufacturing ecosystem in India.

Developing common infrastructure

Due to the capital intensive nature of the sector, Indian SMEs are not able to invest in the required infrastructure to compete globally. The government should take the lead in creating common infrastructure that can be shared by the SMEs. This may include special process and testing facilities, warehouse for inventory storage, training centres etc. The government should hold consultations with industry to identify such requirements. Such common infrastructure can be part of specialised SEZs or clusters which can be co-developed with the U.S. government or companies.

Offsets

Defence offsets should be wisely used as an enabler to promote aerospace and MRO sector in the country. The Indian government should allow 100 per cent FDI for investments by OEMs and Tier1 players for setting up their assembly facilities in India. This is likely to encourage local sourcing by global OEMs while also integrating Indian component suppliers with the global supply chain

Offset multipliers should be provided to OEMs for the following:

- sourcing aerospace components and assemblies from Indian companies; and
- if their global Tier1, Tier2 and Tier3 players invest in India on identified aerospace components and assemblies.

Reduction and simplification of taxes

The aerospace and MRO industry should be given 'infrastructure' status. This shall facilitate access to cheaper loans and incentives. Given the huge import dependence of this sector, government should also consider a 'deemed export' status for the industry for a ten year period, extendable in future.

Sustained dialogue

The U.S. government should sustain its dialogue and engagement with India to ensure a competitive advantage in G2G deals.

- Challenges in the aerospace and MRO sector present an opportunity for co-operation between India and the U.S. for jointly solving the issues facing the sector. The size of the Indian market, its high growth rate, its cost efficiencies and ample engineering talent mean that U.S. companies can do well by moving part of their research, design and manufacturing to India and making India part of their global supply chain. It's a classic win-win waiting to happen. All it needs is a leap of faith.

10. Institute of Defence Studies and Analysis

Banking and Insurance

The Indian Banking sector

Size of the sector

- The Indian banking sector mainly represented by Scheduled Commercial Banks (SCBs) has total assets aggregating to INR120 trillion[01] as at the end of fiscal year 2015 (FY15) and reflected a robust growth from INR60 trillion[01] at the end of FY10. Private sector Banks (PVBs) yielded a Return on Assets (ROA) of 1.7 per cent[01] and Return on Equity (ROE) of 15.7 per cent[01] in FY15.
- The services sector's contribution to India's GDP has been growing and stood at 54 per cent[02] in FY15. India is one of the fastest growing economies estimated by the International Monetary Fund (IMF) to grow at 7.5 per cent in FY17 and the banking sector is expected to continue to remain a key driver and catalyst to this growth.
- India's demographics are favourable towards the banking sector's growth. According to the World Bank database a significant population (65 per cent) is in the working age group of 15 to 65 years. This coupled with rising income and consumption and resultant credit and investment needs offer opportunities spanning across the lending, deposits and wealth management space. The 'Skill India' initiative and the 'Pradhan Mantri Kaushal Vikas Yojna' (PMKVY) have been prominent in leading the journey to increase supply of skilled and semi-skilled working population.
- According to the World Bank's database on financial inclusion, 53 per cent of adults over the age of 15 in India held accounts at formal financial institutions in 2014, up from 35 per cent in 2011 and this is estimated to increase further. Of the unbanked population of 415 million[03] in 2014, 218 million accounts[04] were opened till May 2016 owing to several financial inclusion initiatives such as the 'Pradhan Mantri Jan Dhan Yojana' (PMJDY), direct benefit transfers, additional universal and differentiated bank licensing and opening of branches in unbanked areas.
- Favourable demographics and a substantial newly banked population of 218 million[04] and unbanked population of 197 million as of May 2016 is an opportunity for the banking sector (especially on the retail deposit and lending side), Micro Finance Institutions (MFIs), Payment Banks and Prepaid Instrument Issuers (PPIs) with skill to serve small ticket size transactions in a cost efficient manner and Banks ready to invest and grow their network in the rural and semi urban space.
- In light of the urban housing shortage, under the 'Pradhan Mantri Awaas Yojana' (PMAY) the government proposes to build 20 million houses[05] for the urban poor by the year 2022 and this is a significant opportunity to lenders in the housing and infrastructure finance space.
- The government also launched initiatives under 'Indradhanush', to revitalise the Indian banking sector adopting a seven pronged strategy spanning across appointments, bank board bureau, capitalisation, de-stressing, empowerment, framework of accountability and governance reforms at Public Sector Banks (PSBs)[06].
- The emerging economies have been experiencing stress from weakening prospects of growth, falling commodity prices and strengthening of the dollar and India has been no exception to this. However, amidst the stress in the environment, the Indian economy and banking sector have shown resilience with a modest recovery in the economy, declining inflation and buoyant capital flows.
- Stressed asset (non performing assets plus restructured assets classified as standard assets) levels have seen a rise driven by weakness in the global economy, falling commodity prices and stress in the mining, iron and steel, infrastructure, aviation, real estate and manufacturing sectors and stood at INR7.4 trillion (11.3 per cent of total advances[07]) at the end of H1FY16 and credit growth has been muted at 9.4 per cent in H1FY16[07] due to week credit demand and cautious underwriting.
- The government and the regulators have initiated several enablers to assist the banking system manage elevated levels of stressed assets; spanning across framing the insolvency and bankruptcy code, framing the Indian financial code, issuing guidelines on early recognition, management and revitalisation of distressed assets, issuing Strategic Debt Restructuring (SDR) guidelines, increasing the minimum investment in Security Receipts (SRs) required by Asset Reconstruction Companies (ARCs) from 5 per cent earlier to 15 per cent[08], raising the Foreign Direct Investment (FDI) limit in ARCs to 100 per cent[09] and granting ARCs pass through status under tax laws.
- India has been in the forefront in terms of adopting capital adequacy norms as per the Basel III framework and has in fact stipulated a higher Capital to Risk-Weighted Assets Ratio (CRAR) than what is recommended by the Basel Committee on Banking Supervision (BCBS). Though capital requirements of banks are rising driven by adoption of the Basel III framework and rise in stressed assets, the capital adequacy of SCBs stood at 12.7 per cent[07] at the end of H1FY16, well above the regulatorily prescribed requirement of 9 per cent[10].

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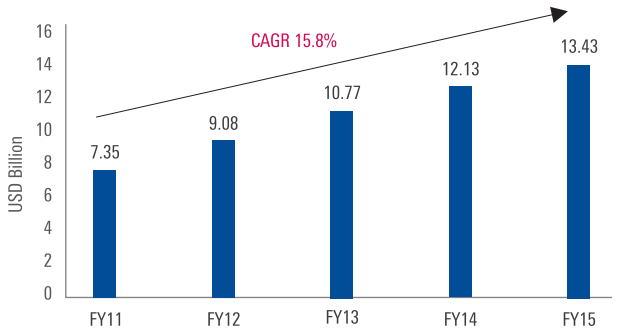
01. RBI release titled "Statistical Tables Relating to Banks in India (STRBI) 2014-15 and Other Tables, 2014-15" published on RBI website on 23 Dec 2015
02. Wikipedia note on Economy of India, https://en.wikipedia.org/wiki/Economy_of_India) & Central Intelligence Agency on "The World Factbook". https://www.cia.gov/library/publications/the-world-factbook/fields/2012.html)
03. CNBC News article titled "One of India PM Modi's biggest achievements, in a chart" dated 15 Oct 2015 published on CNBC website, http://www.cnbc.com/2015/10/15/india-sees-massive-drop-in-unbanked-population.html)
04. Ministry of Finance publication titled "Progress report on Pradhan Mantri Jan - Dhan Yojana (Accounts Opened as on 11.05.2016)" on PMJDY website, http://pmjdy.gov.in/account
05. Publication titled "Pradhan Mantri Awas Yojana Housing for all 2022 Scheme complete details" on Website of PM Jan Dhan Yojana, http://pmjandhanyojana.co.in/awas-yojana-housing-for-all-2022-scheme/
06. Press note titled "Indradhanush – Plan for revamp of Public Sector Banks" dated 14 Aug 2015 released by Department of Financial Services of Ministry of Finance
07. RBI release titled "Financial Stability Report - December 2015" dated 23 Dec 2015
08. RBI Notification titeld "Regulatory framework for SCs/RCs – Certain amendments" dated 5 Aug 2015
09. RBI Notification titled "Foreign Exchange Management (Transfer or Issue of Security by a Person Resident outside India) (Second Amendment) Regulations, 2016" dated 15 Feb 2016
10. RBI Master Circular titled "Basel III Capital Regulations" 1 July 2015

- The additional capital requirement of PSBs up to FY19 is estimated to be INR1.8 trillion, of which the government has committed to fund INR0.7 trillion[11] through budgetary allocations. The government proposes to raise the remaining INR1.1 trillion11 from the markets (including unlocking value from non-core assets) and also working towards consolidation of banks so as to create larger and stronger banks that are capital and cost efficient.
- The aforementioned aspects have spurred investor interest and Merger and Acquisition (M&A) activity in the sector.

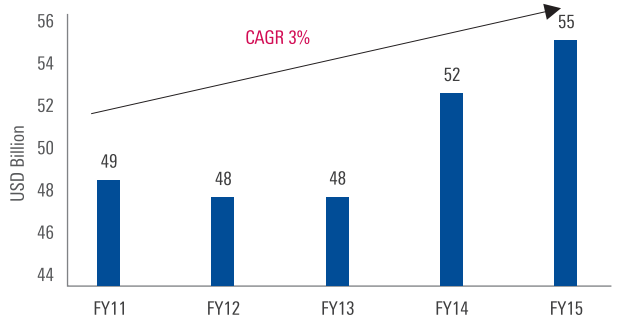
The Indian insurance sector

Gross Direct Premium (GDP) - general insurance



Source: IRDAI Annual Report 2014-15, 19 January 2016

Life insurance industry- total premium



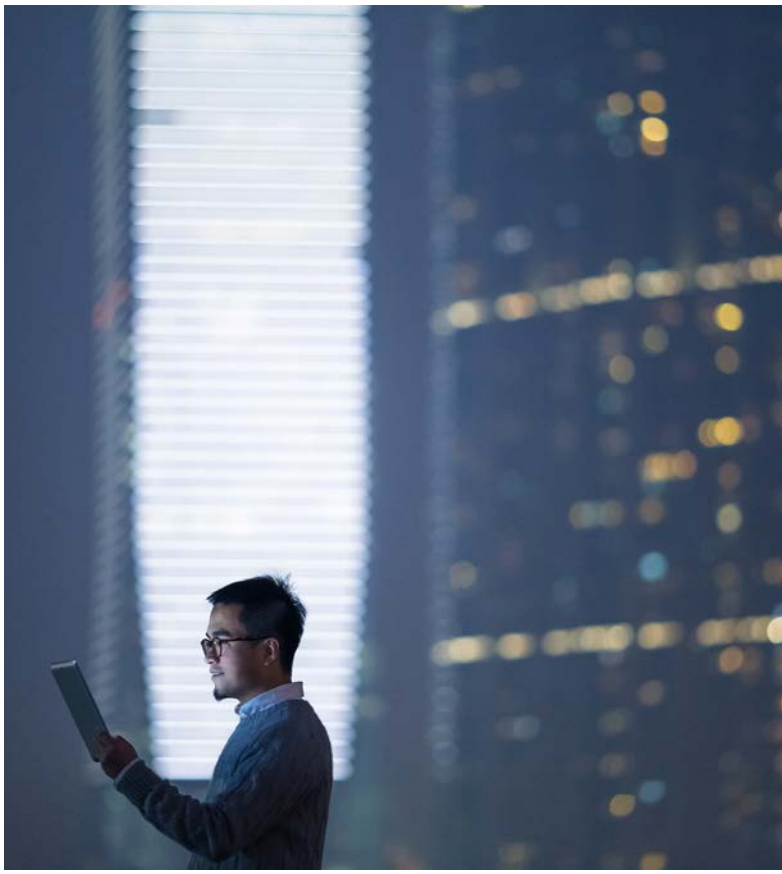
Source: IRDAI Annual Report 2014-15, 19 January 2016

Overview: General insurance industry

- The Indian general insurance industry has grown steadily over the past few years. The size of the industry is currently pegged at USD13.43 billion.
- Increase in motor insurance premium and health insurance business can be the potential growth driver for the industry.
- Motor and health insurance form the largest chunk of the general insurance industry in India, constituting over two thirds of the total premium
- Though the Industry is currently dominated by public sector players, their overall share is coming down rapidly, especially in the retail segment.

Overview: Life insurance industry

- The life insurance industry is currently pegged at USD55 billion.
- Individual new businesses have witnessed a decline over the past few years, though it has turned around and witnessed a modest growth of ~4.7 per cent in FY16.
- The life insurance sector has been plagued by poor business quality which has caused a slight decline in force policy book. Thus, life insurance companies have moved form a pure new customer acquisition focus towards customer retention as well.

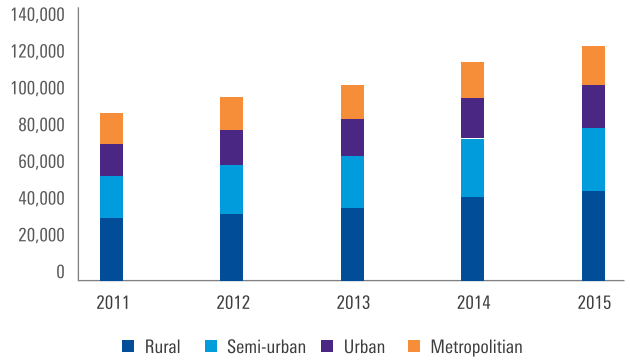


11. Press note titled "Indradhanush – Plan for revamp of Public Sector Banks" dated 14 Aug 2015 released by Department of Financial Services of Ministry of Finance

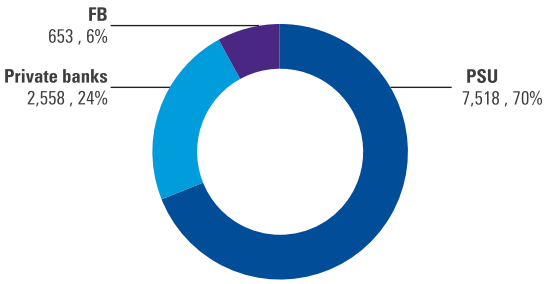
Recent trends and developments in the banking sector

Geographical presence of SCBs

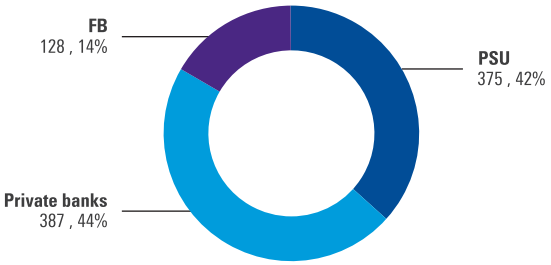
No of offices of SCBs



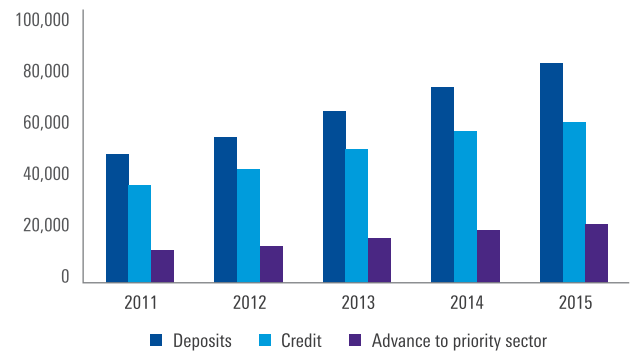
Total revenue (in INR billion)



PAT (in INR billion)



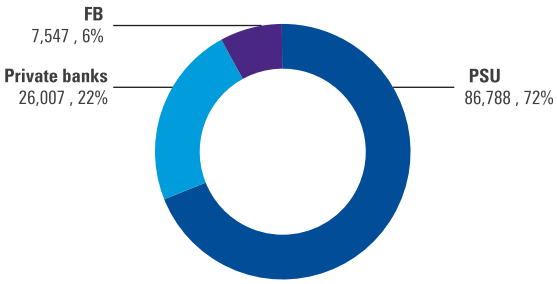
Credit and deposit growth in SCBs (in INR billion)



Size of banking sector

The Indian banking sector is mainly represented by SCBs including 26 PSBs, 25 PVBs and 43 foreign banks. The assets, revenues and profits stood at INR120 trillion, INR10.7 trillion and INR0.9 trillion respectively at the end of and for FY15 with contribution by the aforementioned lender categories as set out below:

Total assets (in INR billion)



PSBs comprised 72 per cent of total assets, 70 per cent of total revenues and 42 per cent of profits as at the end of and for FY15. The disparity in the profit contribution versus the asset contribution of PSBs was driven by lower Net Interest Margins (NIMs) and higher operating and credit costs.

Recent trends in the banking sector

- Credit growth in H1FY16 was muted at 9.4 per cent (well below HIFY12 levels close to 19 per cent) due to week credit demand and cautious underwriting given the stress in the environment.
- Deposit growth was 9.9 per cent in H1FY16 (well below H1FY12 levels close to 17 per cent).
- While credit and deposit growth rates have moderated, both credit and deposits in absolute terms have grown substantially in the last five years as reflected in the adjacent table.

Source: RBI release titled "Statistical Tables Relating to Banks in India (STRBI) 2014-15 and Other Tables, 2014-15" published on RBI website on 23 Dec 2015
RBI release titled "Financial Stability Report - December 2015" dated 23 Dec 2015
RBI Report on Trend and Progress of Banking in India 2014-15 dated 23 Dec 2015

- NIMs marginally declined and stood at 2.6 per cent in FY15.
- Gross Non Performing Assets (GNPA) to total advances ratio consistently grew since FY11 to 5.1 per cent at the end of H1FY16. Stressed asset ratio consistently grew since FY11 to INR7.4 trillion (11.3 per cent of advances at the end of H1FY16, driven by weakness in the global economy, falling commodity prices and stress in the mining, iron and steel, infrastructure, aviation, real estate and manufacturing sectors. Stressed assets at PSBs were much higher at 14.1 per cent of advances.
- RoA declined from 1.1 per cent in FY12 to 0.7 per cent in H1FY16 and RoE declined from 13.4 per cent in FY12 to 8.5 per cent in H1FY16 mainly driven by falling yields, margin compression and credit costs, which was more pronounced at PSBs.
- The decline in ROA and ROE of PVBs was not as sharp as they yielded a ROA of 1.7 per cent and ROE of 15.7 per cent in FY15, driven by cost control measures and relatively contained credit costs as compared to PSBs.
- Total assets of NBFCs and AFIs were INR16 trillion and INR5 trillion at the end of FY15 and in contrast to SCBs, reflected robust credit growth of 13 per cent and 11 per cent in FY15 mainly driven by growth in housing finance, loan against property and micro finance loans.
- Gross NPA ratio of NBFCs stood at 3.9 per cent stood at FY15.
- NBFCs and AFIs yielded ROA of 1.1 per cent and 2 per cent and ROE of 9 per cent and 8 per cent in FY15.

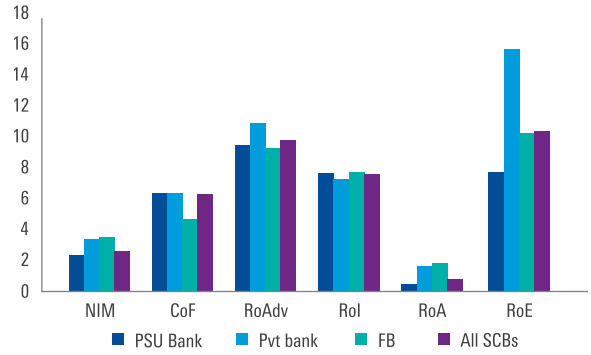
Internet penetration in the Indian market has rapidly risen from 15 per cent in 2013 to 35 per cent in May 2016. This coupled with smart phone penetration is driving customer preference for tech enabled banking services and is a clear opportunity for players with focus and capabilities in tech enabled internet and mobile based financial services offering.

Innovation and tech advancement is disrupting the existing financial services infrastructure; democratising information, unbundling services, causing financial disintermediation and reducing the exclusivity of financial services.

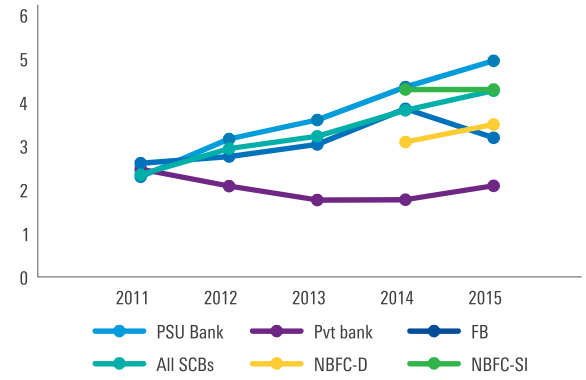
Banks and financial services players are working towards responding to these changes either by themselves or through partnerships; by digitising the service offering, simplifying the customer experience, enhancing security and improving transaction speeds to remain relevant in this environment.

Other indicators

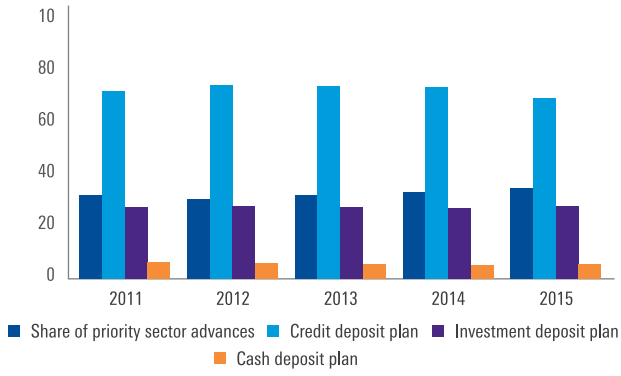
Key ratios[12]



Gross NPA ratio[13]



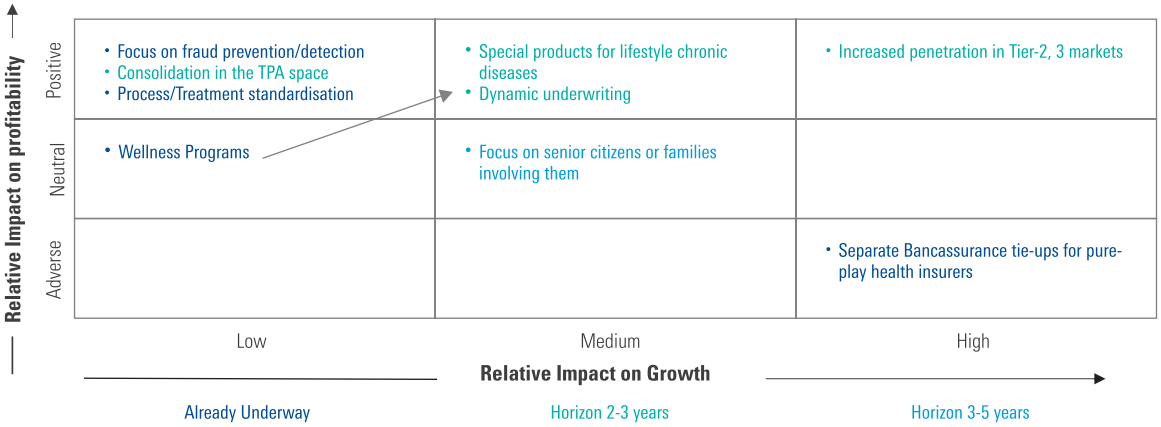
Other ratios[14]



Source: 12. RBI release titled "Statistical Tables Relating to Banks in India (STRBI) 2014-15 and Other Tables, 2014-15" published on RBI website on 23 Dec 2015.
13. RBI release titled "Financial Stability Report - December 2015" dated 23 Dec 2015
14. RBI Report on Trend and Progress of Banking in India 2014-15 dated 23 Dec 2015

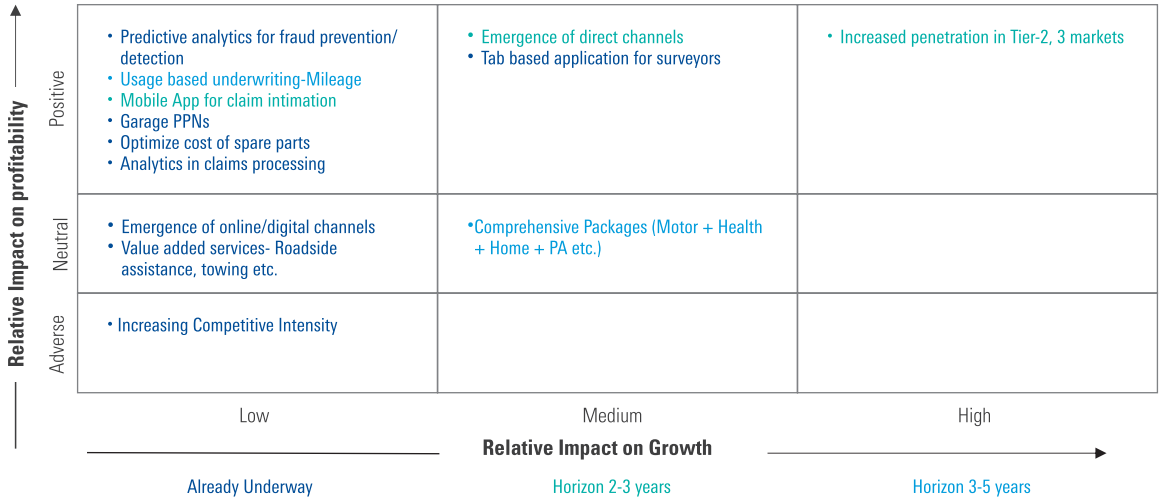
Recent trends in the insurance sector

Trends in health insurance



Source: KPMG Analysis based on industry discussion viz. insurance companies, industry regulator - Insurance Regulatory and Development Authority (IRDA)

Motor insurance trends



Source: KPMG Analysis based on industry discussion viz. insurance companies, industry regulator (IRDA)

- Emergence of direct channels and wellness programmes are likely to be one of the key emerging trends driving growth and profitability for the health insurance industry in the short and medium-term.
- Direct to consumer sales is one of the fastest growing distribution channels across product lines and is expected to contribute an increasingly larger share of total business.
- The life insurance industry is witnessing a shift towards protection products as well as investment products with transparent charge structure.
- The general insurance companies are introducing new products with support from the regulator. Recently, three year two wheeler insurance policies were introduced while earlier only one year policies were allowed. Similarly, health insurance companies are planning to introduce products incorporating health savings. The regulator has also proposed norms for selling simple over the counter products without requiring prior approval from the regulator.

Key policies and regulations

Proactive and prudential regulation and supervision

The RBI continued its approach of proactive prudential regulation and supervision spanning across capital adequacy, liquidity, asset quality, provisioning, valuation Know Your Customer (KYC)/ Anti Money Laundering (AML)/ Combatting Financing of Terrorism (CFT), customer service to name a few; and this enabled the sector remain resilient amidst the stress in the credit environment.

Limits on ownership in PVBs

- The RBI reviewed the extant guidelines on ownership in PVBs in context of the guidelines on licensing of new banks in the private sector, the need for additional capital for the banks consequent to the implementation of Basel III and the need to rationalise the ownership limits.
- Ownership limits for all shareholders are now stipulated under two broad categories: (i) natural persons (individuals) (10 per cent) and (ii) legal persons (entities/ institutions) where separate limits are now stipulated for (i) non-financial institutions (10 per cent) and (ii) financial institutions: non regulated/ non diversified and unlisted (15 per cent) and regulated financial institutions (40 per cent). For existing banks, the permitted promoter/ promoter group shareholding will be in line with what has been permitted in the February 2013 guidelines on licensing of universal banks (15 per cent).[15]

Differentiated bank licensing[16]

- The RBI made the sector more competitive and specialised to further financial inclusion by granting in principle approval to two universal banks in FY15, 11 payment banks and 10 Small Finance Banks (SFBs) in FY16.
- Payment banks were granted in-principle approval with the objective of furthering financial inclusion by providing small savings accounts and payments/ remittance services to migrant labour workforce, low income households, small businesses, other unorganised sector entities and other users.
- SFBs were granted in-principle approval with the objective of furthering financial inclusion by providing of savings vehicles and supply of credit to small business units, small and marginal farmers, micro and small industries and other unorganised sector entities, through high technology-low cost operations.

Financial inclusion by bringing the unbanked under basic financial services[16]

- The financial inclusion measures by the government have been a step towards addressing the specific financial requirement of the low and middle income group particularly with the aim to bring the unbanked and the poor under some basic financial services.
- Opening of no-frills accounts, relaxation on KYC norms, engaging Business Correspondents (BCs), use of technology by banks to provide door step banking services, general purpose credit card (GCC), simplified branch authorisation, opening of branches in unbanked rural centres, PMJDY, and Jan Dhan Aadhaar Mobile (JAM) were key initiatives towards financial inclusion.

Housing for all by 2022[17]

In light of the urban housing shortage, under the PMAY, the government has identified 305 cities and towns in 9 states for construction of houses for urban poor. The scheme proposes to build 20 million houses for the urban poor by the year 2022 and entails a proposed investment of approximately INR2 trillion over the next six years and is a significant opportunity to lenders in the housing and infrastructure finance space.

Stressed asset management enablers

The government and the regulators have initiated the following enablers to assist the banking system manage elevated levels of stressed assets; spanning across the following:

- Framing the insolvency and bankruptcy code that is expected to speed up the recovery process[18]
- Framing the Indian financial code[19]
- Issuing guidelines on early recognition, management and revitalisation of distressed assets[20]
- Issuing SDR guidelines to enable lender control of stressed assets[20]
- Increasing the minimum investment in SRs required by ARCs from 5 per cent earlier to 15 per cent to increase the onus of ARCs in assets managed[21]
- Raising the FDI limit in ARCs to 100 per cent and granting ARCs pass through status under tax laws to enable them widen their funding base and enable them play a larger role in stressed debt resolution.[22]

Indradhanush for revitalisation of PSBs[23]

The government also launched initiatives under Indradhanush to revitalise the Indian banking sector adopting a seven pronged strategy spanning across:

- Appointments
- Bank board bureau
- Capitalisation
- De-stressing

15. RBI Notification titled "Master Direction – Ownership in Private Sector Banks, Directions, 2016" dated 12 May 2016
16. RBI Report on Trend and Progress of Banking in India 2014-15 dated 23 Dec 2015
17. Publication titled "Pradhan Mantri Awas Yojana Housing for all 2022 Scheme complete details" on Website of PM Jan Dhan Yojana, http://pmjandhanyojana.co.in/awas-yojana-housing-for-all-2022-scheme/
18. Ministry of Finance press release titled "Parliament passes The Insolvency and Bankruptcy Code" on the Ministry of Finance website, http://finmin.nic.in/press_room/2016/InsolvencyBankruptcyCode2016.pdf
19. Ministry of finance press release titled "Revised Draft Indian Financial Code" dated 23 July 2015 on the Ministry of Finance website, http://finmin.nic.in/suggestion_comments/Revised_Draft_IFC.pdf
20. RBI circular titled "Review of Prudential Guidelines - Revitalising Stressed Assets in the Economy" dated 25 Feb 2016
21. RBI Notification titled "Regulatory framework for SCs/RCs – Certain amendments" dated 5 Aug 2015
22. RBI Notification titled "Foreign Exchange Management (Transfer or Issue of Security by a Person Resident outside India) (Second Amendment) Regulations, 2016" dated 15 Feb 2016
23. Press note titled "Indradhanush – Plan for revamp of Public Sector Banks" dated 14 Aug 2015 released by Department of Financial Services of Ministry of Finance

- Empowerment
- Framework of accountability
- Governance reforms.

Road map of IndAS converged with IFRS[24]

In a move towards adoption of international practices, in January 2016, the RBI has drawn up the road map for implementation of Indian Accounting Standards (Ind AS) converged with International Financial Reporting Standards (IFRS) for SCBs, insurers/ insurance companies and NBFCs in a phased manner in FY19 and FY20.

Basel III adoption

- India has been in the forefront in terms of adopting capital adequacy norms as per the Basel III framework and according to the RBI, majority of the banks in India already meet the capital requirements prescribed under Basel III ahead of the FY19 deadline.
- The additional capital requirement of PSBs upto FY 19 is estimated to be INR1.8 trillion[25], of which the government has committed to fund INR0.7 trillion[25] through budgetary allocations. The government proposes to raise the remaining INR1.1 trillion[25] from the markets (including unlocking value from non-core assets) and also working towards consolidation of banks so as to create larger and stronger capital and cost efficient banks and this is going to result in M&A activity in this space.

'Game-changer' regulatory reforms

- On the back drop of the problem of growing stress loans, the regulators have proposed some key policy changes which would go a long way in managing the resolution of stressed assets. Some of the proposed changes include:
- Insolvency and Bankruptcy Code, 2016 (IBC) – IBC is a landmark legislation which create common process for all creditors to interact with a company that has defaulted on its obligation and should go a long way in speeding up the resolution process for stressed assets in the country.
- IBC is aimed at creating a deterrent in the system of stressed assets and help in releasing locked resources for productive lending and enhances the rights of a creditor to identify insolvency and initiate resolution proceedings through an ecosystem. It shall also set out a finite time for assessment of recovery of debt and a crystallised recovery process. It is likely to provide results in early recognition and treatment of cases of financial distress. The code will promote cash flow based assessment of insolvency compared to net worth based or balance sheet base approach currently adopted.
- Also, proposed amendments in SARFAESI Act 2002, to make recovery easier for all set of creditors will help in improving management of stressed assets in the banking sector.
- Asset Reconstruction Companies (ARCs) – The FY16 Union Budget's proposition to allow 100 per cent FDI in ARCs will enable ARCs which are struggling for funds play a greater role in stress debt resolution, as higher sponsor stake and the permission granted to Foreign Portfolio Investors (FPIs) to invest in Security receipts (SRs) may lead to higher equity flows and widen the funding base for ARCs.
- Proposed rationalisation of tax regime for securitisation trusts, including trust of ARCs, will provide a complete pass through of income tax of these entities. The restrictive investors in these trusts will become the only point of taxation.

Reforms in the insurance sector

Several regulations have been introduced over the last one year which can enable easier entry of new players in the industry:

- Increase in FDI in Insurance to 49 per cent from 26 per cent through automatic route[26]
- Regulations allowing registration of branch offices for foreign reinsurers to enable them to carry out business in India[27]
- Movement towards open architecture of distribution with permission to corporate agents to tie up with three insurers across life, general and health insurance[28]
- The regulator has also been taking proactive steps towards digitisation and has introduced a pilot project for e- motor insurance policies in the state of Telangana.[29]

The insurance sector's engagement with the U.S.

Currently, there is limited presence of U.S. insurers in the Indian market. There are only few foreign players have entered the insurance industry in India via the Joint Venture route. However, given the growth opportunities of the sector, there is potential for more foreign players to enter the market.

24. Press release by Ministry of Corprate Affairs titled "Roadmap drawn-up for implementation of Indian Accounting Standards (Ind AS) converged with International Financial Reporting Standards (IFRS) for Scheduled Commercial Banks (Excluding Rrbs), Insurers/Insurance Companies and Non-Banking Financial Companies (NBFC's)" dated 18 January 2016
25. Press note titled "Indradhanush – Plan for revamp of Public Sector Banks" dated 14 Aug 2015 released by Department of Financial Services of Ministry of Finance
26. Govt allows 49% FDI in insurance under automatic route, TheHindu, 19 March 2016
27. Final norms for foreign reinsurers to open branch offices in India, Businessline, 30 October 2015
28. Irda issues new norms for corporate agents,Mint, 30 June 2015
29. Telangana become first state to accept e-motor insurance policies, Businessline, 2 January 2016

Key opportunities

Banking sector

Favourable demographics and unbanked/newly banked population – an opportunity for retail banks

Favourable demographics and a substantial newly banked population of 218 million[30] and unbanked population of 197 million as of May 2016 is an opportunity for the banking sector (especially on the retail deposit and lending side), MFIs, Payment Banks and PPIs with skill to serve small ticket size transactions in a cost efficient manner and Banks ready to invest and grow their network in the rural and semi urban space.

Housing for all by 2022 – an opportunity for housing and infrastructure finance company

In light of the urban housing shortage, under the PMAY the government proposes to build 20 million houses for the urban poor by the year 2022[31] and this is a significant opportunity to lenders in the housing and infrastructure finance space.

Disruptive innovation – early movers to have an edge and only players who change would remain relevant

- Innovation and tech advancement is disrupting the existing financial services infrastructure; democratising information, unbundling services, causing financial disintermediation and reducing the exclusivity of financial services.
- Banks and financial services players are working towards responding to these changes either by themselves or through partnerships; by digitising the service offering, simplifying the customer experience, enhancing security and improving transaction speeds to remain relevant in this environment. Early movers will have an edge and only players who change would remain relevant.

Fund raise/investment opportunities at ARCs/SASF

- The rise in stressed assets in the banking system and the substantial supply of such assets in the system (INR7.4 trillion at the end of H1FY16)[32] is likely to drive sale of stressed assets to ARCs/Stressed Asset Stabilisation Funds (SASF) at bargain prices increasing potential yields on investments.
- Such opportunity coupled with the increase in FDI limit in ARC to 100 per cent and grant of pass through status under tax laws would spur investor interest and deal activity in ARCs and SASF and potentially enable ARCs garner more funds and play a larger role in stressed debt resolutions.

Recapitalisation opportunities at Banks upon de-stressing balance sheets

Transfer of stressed assets to ARCs/SASF/stressed debt resolution would de-stress bank balance sheets, enable them recapitalise themselves and regain credit growth in focus sectors and move towards optimal ROA and ROE.

Recapitalisation of PSBs upon de-stressing balance sheets

Transfer of stressed assets to ARCs/SASF/stressed debt resolution, coupled with government committed capital infusion would de-stress bank balance sheets, enable them recapitalise from the markets at better valuations and regain credit growth in focus sectors and move towards optimal ROA and ROE.

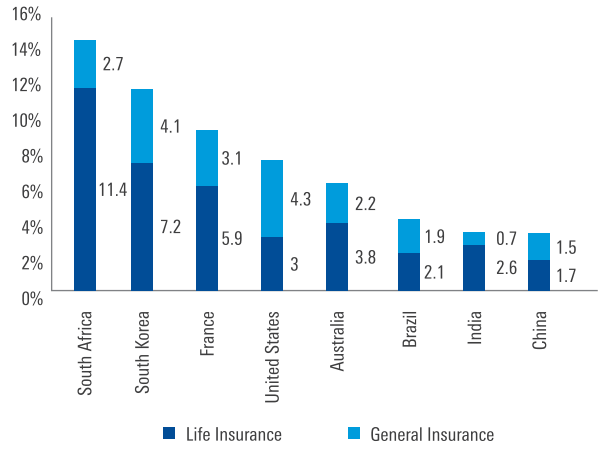
Potential rise in deal activity in the banking sector

Players with opportunities enlisted above can witness investor interest and deal activity in the medium to long run in a wide range of assets with varied funding tenors ranging from Payment Banks of MFIs who typically need medium to long-term funds based on purpose (loan book/ network expansion) to ARCs who typically need long-term funds given the potentially long resolution timlines associated with stressed debt resolution.

30. Ministry of Finance publication titled "Progress report on Pradhan Mantri Jan - Dhan Yojana (Accounts Opened as on 11.05.2016)" on PMJDY website on http://pmjdy.gov.in/account
31. Publication titled "Pradhan Mantri Awas Yojana Housing for all 2022 Scheme complete details" on Website of PM Jan Dhan Yojana http://pmjandhanyojana.co.in/awas-yojana-housing-for-all-2022-scheme/
32. RBI Financial Stability Report December 2015 dated 23 Dec 2015

Insurance sector

Insurance penetration (2014)



Source: IRDAI; Data for calendar year except for India, which is for financial year
Note: Insurance Penetration defined as Insurance premium/GDP

Despite the presence of more than 50 insurance companies, India still remains a highly underinsured country. Relatively low level of insurance penetration presents a significant opportunity for new entrants.

Penetration levels are extremely low across product segments, specially two wheeler and health with substantial scope of improvement.

Insurance lines			Penetration
Motor insurance	Private cars	New car[33]	85-90%
		Old cars[33]	46%[36]
	Two wheelers		25%
	Commercial vehicles	MCVs, HCVs, LCVs and PCVs	70%
Health Insurance	Individual health		12%[34]
	Group health		52%[35]

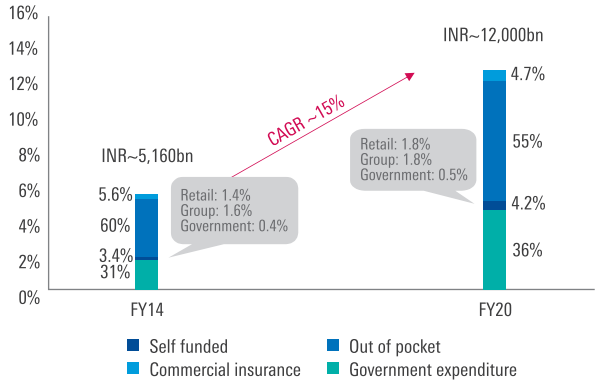
Source: KPMG Analysis based on industry discussion viz. insurance companies

33. New cars: sold at the dealer outlet; Old car: cars more than 1 year old taking insurance renewal;
34. Number calculated as population covered by individual health policy divided by target population (only urban excluding group)
35. Estimated as a ratio of Number of employees covered under group policies AND total number of persons employed in organised sector
36. Estimated basis the vehicle stock (factoring in new additions in the stock and disposals) during the period and insurance penetration thereof Estimated basis the vehicle stock (factoring in new additions in the stock and disposals) during the period and insurance penetration thereof

In terms of healthcare financing, 69 per cent of total spends are done through private sources of funding, with government contributing only 31 per cent. Within the private funding of 69 per cent, 60 per cent is done through Out of Pocket expenses and only 9 per cent is through insurance or self-funded schemes.

The high proportion of out of pocket expenses signify huge potential for conversion to insurance financed healthcare.

Furthermore, it is expected that overall healthcare expenses will grow at a CAGR of 15 per cent over the next five years with health insurance growing at a rate of 18 per cent for the next five years.



Source: Industry Discussions, D&B estimates, WHO, KPMG Analysis based on industry discussion viz. insurance

This represents a significant opportunity for insurance players. Given the right value proposition, a large proportion of the out of pocket expenses could be covered through commercial insurance schemes.

Our outlook

Banking sector

New bank licensees, MFIs, Payment Banks, PPIs, rural/ semi-urban focussed banks

- Given the demographics and unbanked/newly banked population, new bank licensees, MFIs, Payment Banks and PPIs with skill to serve small ticket size transactions, banks focused to grow in rural and semi urban areas would see investor interest and raise funds to build network, technology and people platform.
- In the medium-term these banks are likely to witness a pressure on profitability driven by:
  - High expense ratios driven by branch expansion, technology and people costs as they build their customer franchise, technology and people platform, until they achieve scale
  - NIM compression as they compete with universal banks in certain geographies in lending and borrowing rates
  - Spread drag for maintaining cash and liquidity ratios.
- Only players who achieve substantial scale and low operating costs driven by technology and volume efficient processes would be able to compete effectively.
- Technology innovation can play a pivotal role in distinguishing players and only those adopting technology enabled customer origination, operations and service delivery shall remain relevant given the changing market dynamics and customer preferences.
- Additional bank licensing to exert competitive pressure on existing lenders (both in terms of lending and deposit mobilisation) and drive margin compression.

Housing finance/Loan against property/MFI/Payment banks/rural/semi urban focused banks

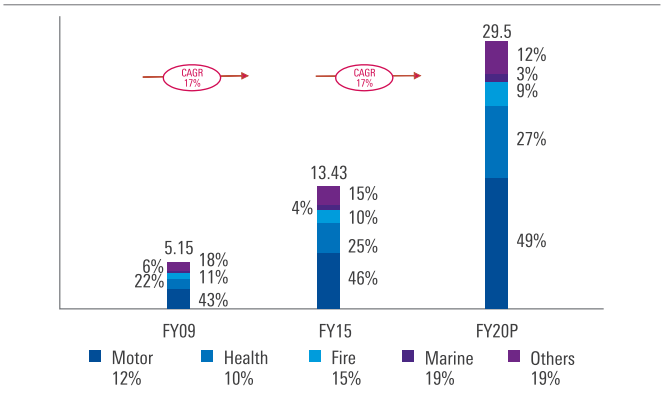
Credit growth (led by Housing finance/Loan against property/ MFI/Payment banks/rural/semi urban focused banks) expected to sustain momentum on the back of housing for all by 2022 financial inclusion and initiatives.

Potential rise in deal activity in the banking sector

Aforesaid banks and banks with opportunities enlisted in the previous section would see investor interest and witness deal activity in the medium to long run in a wide range of assets with varied funding tenors ranging from Payment Banks of MFIs who would typically need medium to long term funds based on purpose (loan book/network expansion) to ARCs who would typically need long-term funds given the potentially long resolution timlines associated with stressed debt resolution.

Insurance sector

Segment Wise Gross Direct Premium (USD billion)



Source: IRDA, KPMG Analysis based on industry discussion viz. insurance companies

The general insurance industry

- The Indian general insurance industry is expected to grow at a CAGR of 17 per cent for the next five years.
- Motor and health insurance constitute over two thirds of the total gross direct premium of General Insurance market in India and are expected to be the highest growth segments till FY20.

Key medium term growth drivers

- Resumption of growth trends in auto, industrial production, infrastructure sectors.
- Incremental penetration into currently uncovered risks, for example tier-2 and tier-3 towns for personal line products.
- Higher compliance for motor vehicle insurance.
- Insurance cover being taken by SMEs, micro enterprises.
- Increase in premium rates in a few segments, e.g. Motor TP, group health insurance.
- Product innovation especially in health insurance.

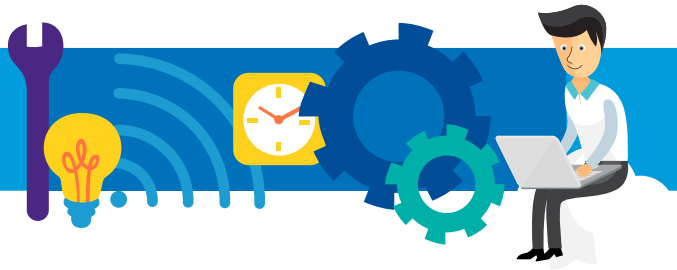
The life insurance industry

Going forward, companies are expected to focus on improving business quality while also leveraging new distribution channels to regain growth.

Key Growth Drivers

- Insurance marketing firms might emerge as alternate distribution channels.
- Product design is expected to be simplified to ease the sales process.
- ULIPs are expected to continue growth trends over the next 2-3 years.
- Annuities and protection oriented products are expected to provide the impetus for higher sales.

IT-ITeS



The IT-ITeS sector in India

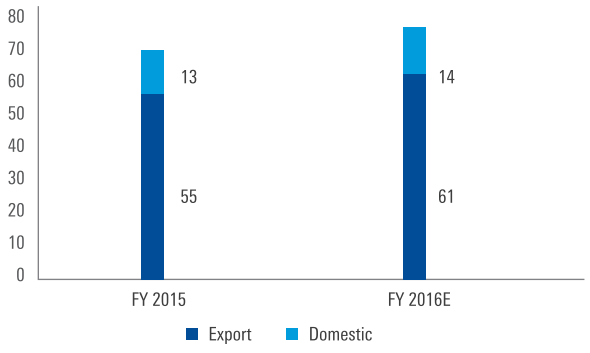
Size of the sector

The IT services sector in India has attained significant growth in the last five years and is projected to achieve revenues worth USD75 billion in 2016, a 9 per cent increase over 2015[01]. The contribution of exports revenue in FY16 is 81 per cent with the domestic market contributing the rest.

There is significant contribution of the IT services employee base, 35 per cent, to the total IT–ITeS employee base. The Indian IT services market is driven by testing services, application development and management, infrastructure services, consulting and system integration, where verticals such as healthcare, retail and utilities, Banking, Financial Services and Insurance (BFSI) continue to be the largest stakeholders . Within IT services, Custom Application Development and Management (CADM) exports is a major contributor and demand is primarily driven by Social, Mobility, Analytics and Cloud (SMAC) technologies, responsible for modernising the legacy systems and causing a transformation in the system[01].

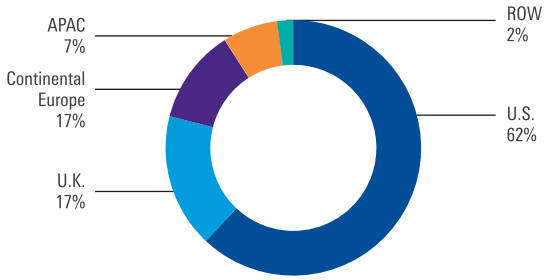
IT outsourcing is the fastest growing service line compared to the rest, where cloud services are the main disruptors. The U.S. is a major demand generator for IT-ITeS services followed by the U.K. and Continental Europe, Asia Pacific (APAC) and Rest of the World (RoW)[01].

IT-ITeS export revenue (USD billion)



Source: NASSCOM strategic report, 2016

IT-ITeS export revenue by geography



Source: NASSCOM strategic report, 2016

Recent trends and developments

India is rapidly moving upwards on the technology adoption curve to innovate and deliver leading IT services. There is increased focus of the IT-ITeS sector on the use of newer and more advanced technologies such as cloud-enabled services and artificial intelligence.

Emergence of digital business

In today's scenario, digital businesses have taken center stage. The focus of IT services has shifted from providing cost arbitrage to providing enterprise digital transformation. Service providers are building customised offerings that cater to the needs of individual business outcomes. Digitisation and automation have penetrated all the key service areas, transforming operations of service providers in the IT-ITeS domain. Example: Indian banks are leveraging SMAC capabilities to explore social banking and self-service options without any security compromise.

Increased focus on automation and disruptive technologies

With the confluence of disruptive technologies and enhanced focus on digital transformation, analytics and automation, traditional IT-ITeS providers are scaling up to develop domain expertise. Also, they are acquiring pure play companies to scale up their operations. Big service providers in the Indian IT-ITeS domain are heavily investing in automation platforms and building capabilities for digital units.

Investments in the 'Digital India' initiative

The domestic sector has received a big push by 'Digital India and the e-governance agenda driven by the government. The investment expected from the government in digitisation and implementation of technology in sectors such as healthcare and manufacturing is projected to create an opportunity of around USD5.9 billion to the IT services sector.

01. The IT-BPM SECTOR IN INDIA: Strategic Review 2016, NASSCOM, 2016.

Cloud offerings in Software-as-a-Service (SaaS) and Platform-as-a-Service (PaaS)

Professional services firms are entering the SaaS arena with service offerings including vendor selection due diligence, business process redesign and application integration. The PaaS domain is emerging as the nexus of disruptive forces (SMAC) open up platform opportunities. Indian service providers are forming strategic alliances with technology companies to build offerings in these two areas.

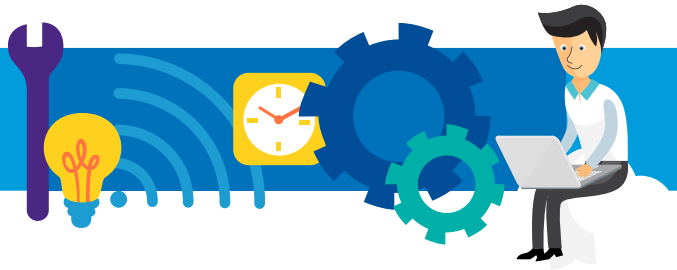
Other factors

Demand for IT-ITeS offerings in India is being driven by an amalgamation of factors that include, growing start-up landscape in the country, Internet of Things (IoT), licenses awarded for payments banks and increase in technology adoption by small and medium enterprises (SMEs).

Policies and regulations

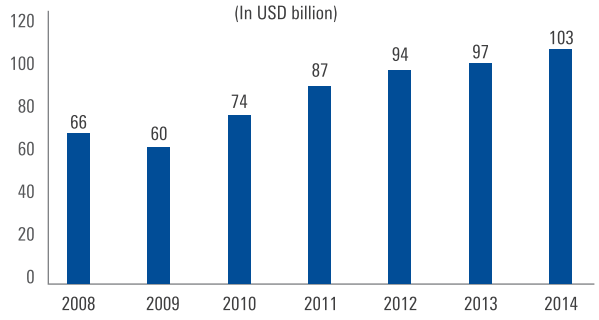
- By 2020, the National Policy on Information Technology 2012 aims to increase revenues of IT and Business Process Management (BPM) industry to USD300 billion, and expand the exports to USD200 billion. The policy also seeks to achieve the two goals- firstly to bring the power of Information and Communication Technology (ICT) within the reach of all citizens; and secondly, to harness the capability and human resources of the country, enabling India to emerge as the global hub and destination for IT and BPM services by 2020[02].
- Under the automatic route, up to 100 per cent Foreign Direct Investment (FDI) is permitted in data processing, software development and computer consultancy services, software supply services, business and management consultancy services, market research services, technical testing and analysis services[02].
- Other key policies[02] are:
  - National Rural Internet mission (2017)
  - Establishment of Software Technology Parks of India (STPIs)
  - Special Economic Zones (SEZ) Policy
  - National e-Governance Plan (NeGP)
  - National Cyber Security Policy 2013
  - 'Digital India' initiative.

02. http://www.makeinindia.com/sector/it-and-bpm, accessed on 10 May 2016



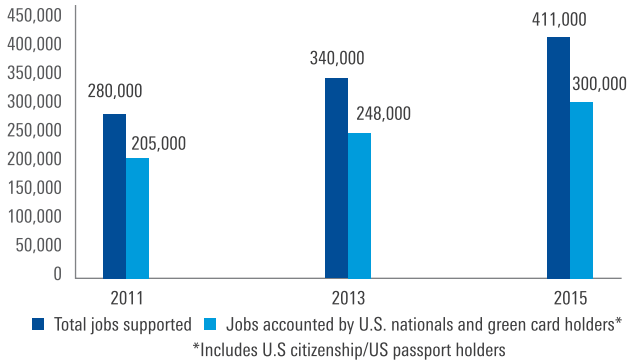
Analysing the sector's engagement with the U.S.

India–U.S. bilateral trade (in USD billion)



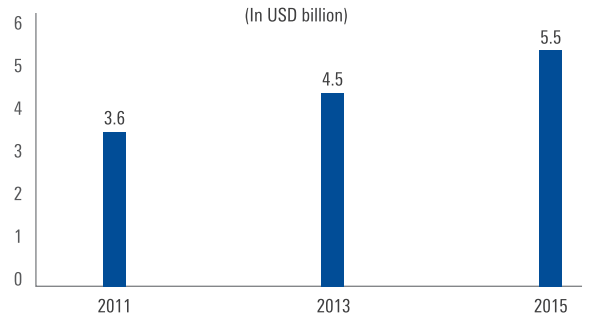
Source: Contributions of India's Tech Industry in the U.S. Economy, NASSCOM Report, 2015

Jobs supported by Indian tech sector in the U.S.



Source: Contributions of India's Tech Industry in the U.S. Economy, NASSCOM Report, 2015

Total taxes paid by the tech sector in the U.S. (in USD billion)



Source: Contributions of India's Tech Industry in the U.S. Economy, NASSCOM Report, 2015

Size of sector's trade with the U.S.

- India is one of the important developing economies and equally significant trading partners for the U.S., which is supported by the fact that Indo-U.S. trade has grown manifold since 2008 to reach to USD103 billion in 2014.[03]
- By setting up offices in the U.S., the Indian technology companies created approximately 411,000 jobs in 2015 and paid USD20 billion as taxes during 2011-15[03]. Additionally, the U.S. firms leveraged Indian tech services to provide innovative and cost-competitive solutions to boost their global market share.
- Indian technology sector invested USD2 billion between FY11 and FY13, and achieve a growth rate of 3.2 per cent[03]. The technology companies had also spent USD8.2 billion in operational expenditure in 2013[03] alone.
- Between 2011 and 2015, the Indian technology sector contributed about USD375 million to the U.S. treasury, including helping the country secure its borders.[03]
- The exchange of specialised knowledge and human talent are the hallmarks of Indo–U.S. relations. Many U.S. organisations send their highly-skilled personnel to India to — a) manage investments and operations; b) install and service specialised equipment; and c) assist with after-sales services/customer support centres having facilities to address queries related to products manufactured in the U.S., such as commercial aircraft and software.
- Indian IT firms provide operational support to over 90 per cent of Fortune 500 firms and thousands of other U.S. businesses with a significant economic value[03]. Hence, these IT firms can create new market opportunities in the U.S. by providing them with innovative and competitive offerings, thus benefitting the users by addressing different aspects of commerce irrespective of the size of business.
- The two-way flow of investments and intellectual talent is central to the growing commercial and strategic relationship between India and the U.S.
- This momentum is surely going to increase manifold with new partnership opportunities with the U.S. technology firms owing to many initiatives taken by the Government of India, such as the 'Digital India' initiative and the Smart Cities Mission.

03. Contributions of India's Tech Industry in the U.S. Economy, NASSCOM Report, 2015, accessed 10 May 2016

Key challenges

Challenges faced by the Indian IT–ITeS in the U.S.

Issuance of visas

The Indian IT–ITeS is one of the largest users of H-1B and L-1 visas, who primarily depend on the. U.S. market for revenue generation. In FY15, the U.S government levied a special fee of up to USD4, 500[04] on H-1B and L-1 visas to fund a 9/11 Health and Compensation Act of 2010 and biometric tracking system. The total spend of USD1.1 trillion was agreed upon by the Congressional leadership while imposing a fee of USD4,000 on certain categories of H-1B visas and USD4,500 on L-1 visas[04]. Currently, India generates more than half of its revenue from the U.S. With increased visa fees, Indian companies are facing challenges.[04]

Social security system

Absence of the 'totalisation agreement' with the U.S. poses a challenge for Indians who work in the U.S. for a term shorter than 10 years since they are not able to enjoy the benefits of repatriation. These workers make a huge yearly contribution towards U.S. social security system, to the effect of USD2 billion[05].

Foreign exchange fluctuation

The Indian IT/ITeS business model is largely export oriented, exposing IT/ITeS companies to currency fluctuation risks. Volatile INR–USD exchange rate has been one of the major challenges for the companies in this sector.

Challenges faced by U.S. technology companies in India

Policy framework

India is a preferred outsourcing destination for U.S. technology companies. However, the Indian policy framework, in terms of tax laws, data privacy laws and intellectual property (IP) protection laws, discourages them to enter the country.

Transfer Pricing

Technology companies confront strict and complex tax regime in India due to controversies on characterisation of income and Transfer Pricing (TP). According to a recent government statement, India and the U.S. have signed an agreement to resolve more than 100[06] pending transfer pricing cases, one of the biggest reasons for foreign investors averting India foray.

Data privacy laws

India's data privacy policy for cloud services is not very clear as it has a few undefined elements such as lack of a formal data breach notification rule.[07]

Key opportunities

Digital transformation

In a bid to support innovative operating models, significant investment is being made in digital transformation technologies by global enterprises. According to International Data Corporation (IDC), the spending on digital transformation technologies in the United States would reach nearly USD732 billion in 2019.[08] The increase in digital spend by American companies can be leveraged by Indian companies operating in the IT-ITeS space for driving disruptive changes. Also, Indian companies can offer innovative solutions for business models.

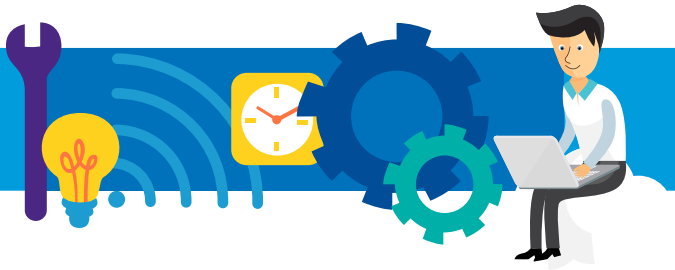
Data analytics

The U.S. accounts for the biggest share in big-data spending worldwide, with more than 50 per cent share in the revenue.[09] The Federal Government is one of the largest users and producers of data, spending USD5 billion on big data in 2014.[09] The U.S. is expected to remain the primary demand driver for spending on analytics solutions, thus providing a clear opportunity to the Indian ITeS players.

New government initiatives

The Indian government's initiatives, such as 'Digital India', 'Make in India' and 'Smart Cities Mission', present both the U.S. and Indian technology companies a good opportunity to sell high-tech products and services in India. Further, the Digital India initiative is expected to create an environment of high-speed internet and improved digital infrastructure, presenting the U.S. businesses with an opportunity to sell their products in India.

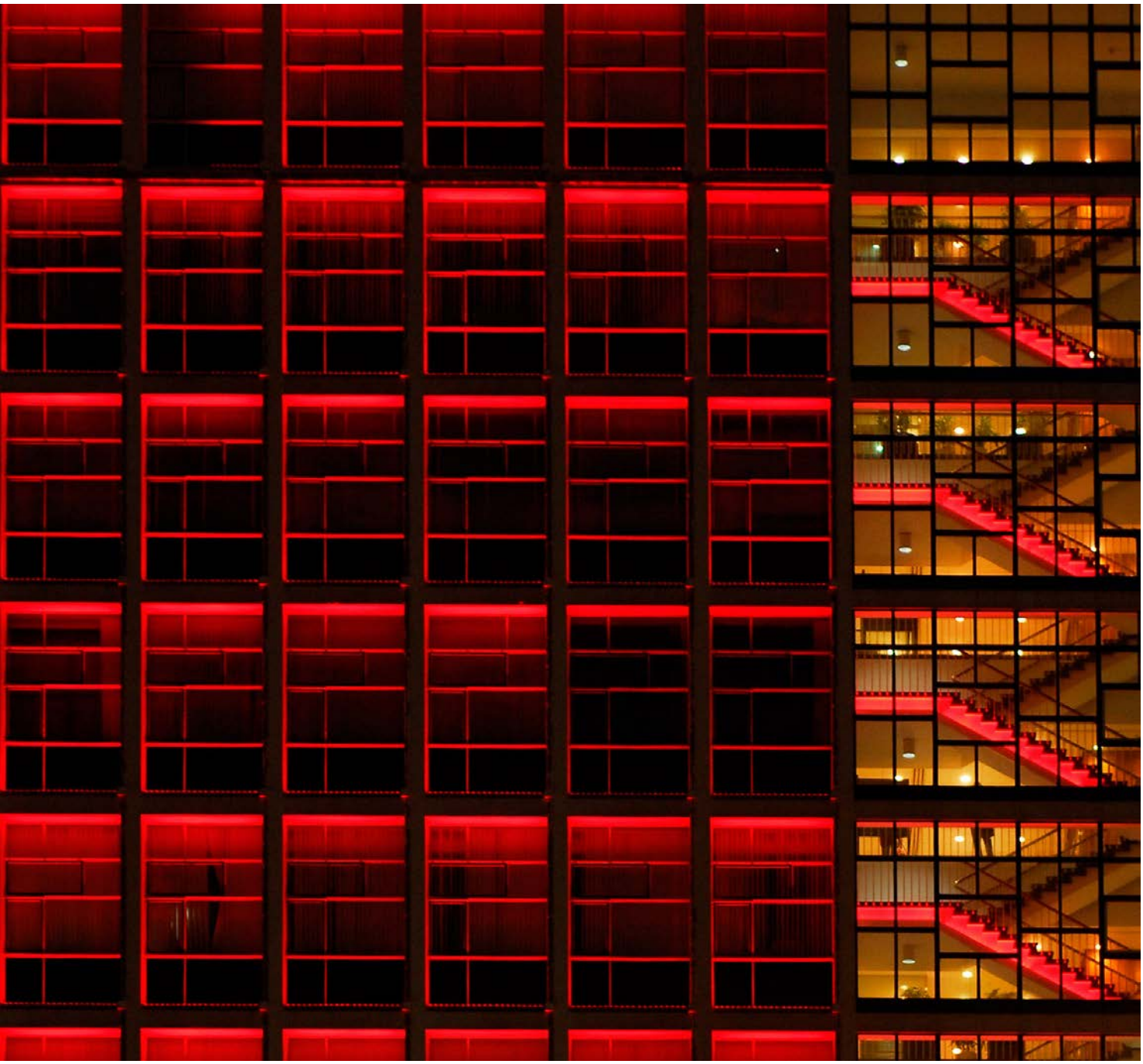
04. http://www.thehindu.com/news/international/us-to-double-h1b-l1-visa-fee/article7999294.ece, accessed on 10 May 2016;
05. http://www.business-standard.com/article/economy-policy/india-us-totalization-agreement-on-the-right-track-115101300626_1.html, accessed on 18 May 2016;
06. http://www.thehindu.com/business/india-us-clear-100-transfer-pricing-cases/article8163757.ece,, accessed on 18 May 2016
07. 2016 Top Markets Report Cloud Computing, http://trade.gov/topmarkets/pdf/Cloud_Computing_India.pdf,, accessed on 18 May 2016
08. https://www.idc.com/getdoc.jsp?containerId=prUS40978116, accessed on 16 May 2016
09. http://businesswireindia.com/news/news-details/global-expansion-opportunities-us-indian-companies/45033, accessed on 16 May 2016



Way forward

To build a robust association between India and the U.S., and a healthy commercial and strategic relationship, it is imperative that there is a two-way flow of investments and intellectual talent. Both the nations have to move forward together to boost opportunities for their citizens.

The Indian government is extending its support in setting up information and technology parks, and in establishing Information Technology Investment Regions (ITIRs). In a progressive step, the U.S. government has proposed to relax the visa norms for Indian professionals. The amalgamation of these factors is expected to trigger innovation, stimulate growth and bring maturity to the ITeS ecosystem, created by the partnership between the two nations.

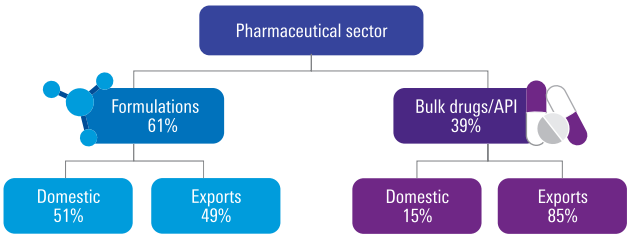


Pharmaceuticals

The Indian pharmaceutical sector

- The Indian pharmaceutical sector has come a long way, having evolved from being a relatively small player to emerge as one of the prominent drug producers in the world. Currently, the sector not only exports affordable and quality generics, but also intermediates and active pharmaceutical ingredients (APIs) to both regulated and semi-regulated markets.
- The sector has witnessed an era of high growth in the past two decades. It is among the largest players in the global pharmaceutical market, and is ranked third by volume and 14th by value, and is likely to enter the top-10 ranking,[01] by value, by 2020.
- The Indian pharmaceutical sector is estimated at USD36.8 billion (including exports) as of 2014–15.[02] Of this, the formulations market accounted for about USD12.2 billion (or INR746 billion) and constituted about 1.1 per cent of the global market in value terms[02].
- The sector is expected to grow at a compound annual growth rate (CAGR) of 15 per cent[02] driven by domestic demand, expanding its global presence in contract manufacturing of finished formulations, high-quality APIs and complex formulations, increasing the numbers of products driven by research and development (R&D), and a robust Abbreviated New Drug Application (ANDA) pipeline, among others.
- The organised market of the Indian pharmaceutical sector involves 250–300 companies that constitutes around 70 per cent of products in the market, with the top-10 firms captures 30 per cent of the overall market size[03].
- The sector is strongly emphasising on creating robust research pipelines as the scope for mergers, acquisitions and marketing agreements has increased to strengthen existing portfolios.
- The sector has been able to create an ecosystem that fosters innovation while focussing on process development skills, building quality infrastructure and nurturing its talent pool to create a firm academic base.

The structure of the Indian pharmaceutical product market



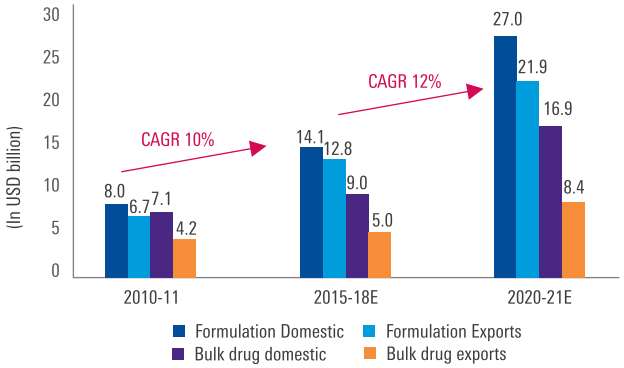
Source: Bulk drugs - Raw materials for formulations, Crisil Research, 10 August 2015, accessed May 2016
Note: Data for 2014-15

Size of the pharmaceutical sector and trends that can shape the future

Market growth

- The growth of the Indian pharmaceutical sector outpaces global growth estimates.[04]
- Drugs for treating acute diseases have been a major demand driver. However, a changing disease profile of the global population is tilting the balance toward chronic care drugs, such as cardiovascular and anti-diabetic.
- With rising incidences of chronic illnesses that are driving the consumption of drugs used in the treatment of cancers, cardiovascular ailments, respiratory diseases and diabetes, the domestic market is expected to grow from current 13 per cent to 15 per cent in the near future[02].
- Over the next five years, exports are expected to grow at a CAGR of 10-12 per cent.[02] The growth is likely be led by the demand for generic formulations in developed markets.

Sector sales by key segments



Source: "Indian pharmaceutical manufacturers' growth to remain healthy", CRISIL research, accessed May 2016

01. Indian pharma ranks third in volume and 14th value globally: Vardhan, Drug Today online website, 4 December 2014;
02. Indian pharmaceutical manufacturers' growth to remain healthy, CRISIL research, accessed May 2016
03. The Indian Pharmaceutical Industry: Collaboration for Growth, KPMG in India
04. India's pharma sector pips global growth: report, Livemint, 2 Dec 2015

- Further, there is a strong generic market opportunity as the patent period of many drugs are expected to be expiring in developed markets over the next five years[05] up to 2020-21.
- India's share within the global bulk drug Active Pharmaceutical Ingredients (API) market is estimated to increase to 22 per cent by 2015 from 12 per cent in 2010.[06] The availability of strong chemistry skills, coupled with comparatively low cost of R&D, is likely to help India strengthen its position further.
- Within the presence of regulated markets, patent expiry and a pro-generic stand in markets are expected to drive the growth of API exports.
- Further, it is expected that large pharmaceutical companies would continue to outsource API manufacturing in order to focus on their core priorities, either for Research and Development (R&D), building new technologies or preserving capital. The demand momentum is likely to be maintained by the availability of cost-effective quality bulk drugs from India.
- India's contribution to the global generic pharmaceutical industry is expected to increase from 28.5 per cent in 2012–13 to 36 per cent in 2016–17.[07] The Indian export drugs contribute to about five per cent of the total global consumption of generic drugs.
- The U.S. is the top-export destination for the Indian pharmaceutical medicines followed by the EU and Africa.[08]

Trends and developments

Increase in outbound Mergers and Acquisitions (M&A) activities

- In the last few years, medium-to-large pharmaceutical companies are pursuing international acquisition to strengthen their foothold in developed and emerging markets. The outbound deals worth USD1.5 billion were reported in CY2015 as compared to USD251 million[09] in CY2014.
- Since the U.S. is the largest export market for many Indian pharma companies, they are acquiring many U.S.-based companies to strengthen their off shore presence.[10] Moreover, it is getting harder to get a U.S. Food and Drug Administration (USFDA) approval for a new manufacturing plant, so time to reach a market is quite long. Therefore, inorganic growth is another way to expand in the U.S. market.

Moving up the value chain

- A lot of Indian pharma companies are looking to move up the value chain and have significantly increased the spending on R&D in the last five years. They are targeting high-entry barrier segments and complex generics for future growth.
- Moreover, strong approval rate by USFDA could benefit many Indian companies owing to strong pipeline of pending Abbreviated New Drug Applications (ANDAs). FDA is tracking a run-rate of 700+ final approvals versus historical range of 400–500 per year.[11]

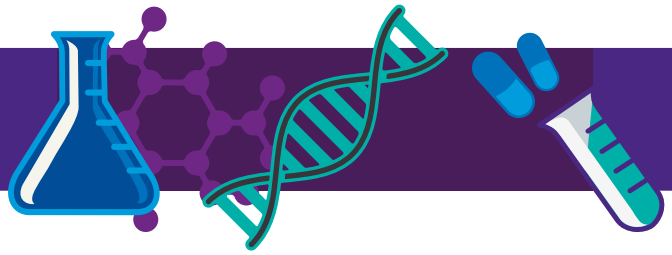
Substantial FDI inflows

Cumulative FDI inflow in the drugs and pharmaceuticals sector from April 2000 to January 2015 was reported to be USD13.4 billion.[12]

Expanding reach to nullify risks

Indian pharma companies are diversifying export markets to ease the pressure of increasing USFDA scrutiny.

05. Generic drug industry to touch $27.9 billion by 2020: Study, DNA, 9 September 2015;
06. Agenda for the Pharmaceutical Industry in India, KPMG in India, February 2015;
07. Indian pharmaceutical exports: The growth story, Business Standard, 6 January 2016;
08. India's export of Drugs, Pharmaceutical and fine chemicals for financial year 2014-2015, Pharmexcil, 2015;
09. Overseas M&A deals at 5-year high in pharma, healthcare, Livemint, 21 December 2015;
10. Pharma firms to go for more big buys in US, Business Standard, 12 September 2015:
11. India Pharma Sector - Approvals in the US should further accelerate as FDA is tracking ahead of Generic User Fees goals, Asian Daily, Credit Suisse via Thomson Research accessed May 2016;
12. Fact sheet on foreign direct investment (FDI) from April, 2000 to December, 2015, DIPP, December 2015



The government is steadily working towards eliminating challenges that the sector faces

Challenges

Complex regulatory structure

- The drug approval process has been stretched to a longer period of time in India owing to the multiplicity of regulatory bodies and limited capacity within the regulatory system.
- Low transparency in regulatory system delays the drug approval process.
- Lack of alignment in regulatory measures between the centre and states creates challenges for the manufacturing process. Further, single-window clearance for regulatory approvals does not exist for the manufacturing plants.
- Complex approval processes and tough guidelines to conduct clinical trials are impacting the growth of pharmaceutical sector.
- Low harmonisation on quality standards with various regulators, along with lack of stringent regulation to oversee the quality, is impacting the image as a quality supplier.
- Inverted duty structure, multiple taxes at the centre and state levels, and proposed withdrawal of tax exemption on R&D are impacting the manufacturers.

Infrastructural challenges

- There is a lack of infrastructure development in the form of clusters and mega API/pharma parks.
- Further, the sector lacks R&D infrastructure, such as incubation centres, technology development centres and data centres.

Challenges related to IP laws

Owing to enforcement issues around intellectual property (IP) protection, due to the usage of compulsory licencing in the past, investors' confidence is shaken that hampers the investment inflows into the sector. India remains on the Priority Watch List in 2016 Special 301 report owing to the lack of sufficient measurable improvements.[13]

Recent developments in policy and regulations

Implementation of uniform code of marketing practices (UCPMP)

- The Department of Pharmaceuticals (DoP) launched a voluntary UCPMP in 2015 for improved adherence to ethical practices by the sector in promoting sales.[14]
- The government is planning to implement a mandatory code that is expected to replace the current voluntary UCPMP for increased adherence.[15]

Drug price control regime

- The National Pharmaceuticals Pricing Authority (NPPA) had a fixed price ceiling of 530 essential medicines under the Drug Price Control Order 2013.[16] Further, the NPPA is planning to additionally fix prices for 799 formulations in coming months.[17]

Steps toward increasing medicine access

The government plans to expand 'Jan Aushadhi' scheme to offer more medicines and medical devices at affordable prices, by opening 3,000 'Jan Aushadhi' stores[17] by 2017, from the current number of 121.

Amendments in insurance bill

The amendments in insurance bill has increased foreign investment cap from 26 per cent to 49 per cent.[18] This measure could help the insurance segment to penetrate further into the country and ultimately encourage uptake of pharma products.

Regulations for online pharmacies

The Drug Controller General of India constituted a committee to frame regulations for online pharmacies. The government is expected to introduce amendments in Drugs and Cosmetics Act, 1940 and Drugs and Cosmetics Rules, 1945 to facilitate online sales of drugs.[19]

Cap on trade margins

- A high level panel has recommended to the government to cap the trade margins in the pharmaceutical sector. It has recommended capping the trade margins at 35 per cent8 for drugs with MRP of INR50.
- For drugs in the price range of INR20–50, the margin could be capped at 40 per cent. Similarly, for drugs priced in the range of INR2–20, the margin could be capped[20] at 50 per cent.

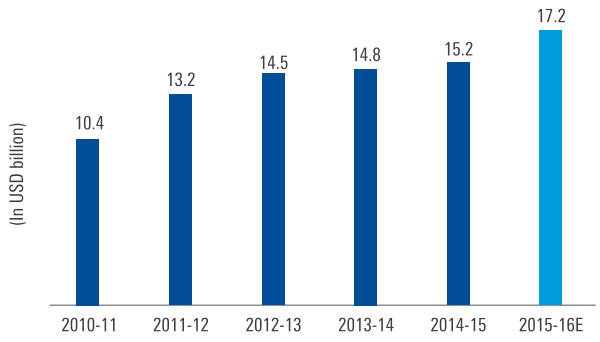
13. US continues to keep India on intellectual property priority watch list, Economic Times, 27 April 2016;
14. UCPMP: 'Code' word for pharma industry, Financial Expres, 9 June 2015
15. Govt plans mandatory marketing code for pharmaceutical firms, Livemint, 29 September 2015;
16. Sanofi India hits out at govt for bringing more drugs under price control, ibtimes, 3 May 2016;
17. Pharmaceuticals – Union Budget 2016, KPMG in India, March 2016;
18. More than Rs 12,000 cr. FDI likely to come in insurance sector in 2016: ASSOCHAM, ASSOCHAM, 25 January 2016;
19. With PM's push, 1940 Cosmetics Act likely to be revamped, The Asia age, 16 April 2016
20. Cap trade margins to reduce drug prices, says a committee, Economic Times, 9 March 2016

The sector's engagement with the U.S.

Growing pharma exports to the U.S.

- Traditionally, the semi-regulated markets, such as Africa, Asia, the Confederation of Independent States (CIS), accounted for the majority of exports from India. However, in the last 10 years a gradual shift has been observed toward regulated markets, such as the U.S. and the U.K.
- Indian pharmaceutical exports primarily comprise formulations, bulk drugs and herbal products. The export market is expected to grow at 10–12 per cent for the next 1–2 years.[21]
- In FY15, formulations constituted nearly 71 per cent of the total exports, whereas API and others accounted for the remaining 29 per cent.[22]
- The major therapeutic categories of export are anti-asthmatic, anti-infective and anti-hypertensive.[23]
- The U.S. is the single largest export destination for India. The percentage share of total exports to the U.S. has increased from 25.4 per cent in FY13 to 27.9 per cent in FY15.[21]
- The use of generic drugs in the U.S. is rising, so the generic drugs share has increased from 18 per cent in 1984 to about 80 per cent in FY15 out of all the prescriptions filled in the U.S.[24]
- The USFDA is tracking ahead of Generic User Fees target and it could translate into faster approvals for the pharma sector. Of the total 688 Drug Master Files (DMFs) filed in the U.S. in 2015, approximately 307 (45 per cent of the total) DMFs were filed by Indian companies.[25] As the pace of approvals accelerate, this could help Indian companies achieve higher sales growth in the U.S.
- Further, out of 151 DMF filings in the first quarter of 2016, approximately 83 (55 per cent of the total) were filed by Indian companies.[26]
- To expand presence in the U.S., the Indian pharma companies have set up regional offices, subsidiary companies, joined hands with and acquired local companies to strengthen their presence.
- The size of the U.S. generic market is expected to increase from USD50 billion in FY13 to USD81 billion in FY18.[27] The share of Indian companies in the U.S. generic market is expected to increase from 10 per cent in FY13 to 16 per cent in FY18.[27]
- The pharma exports to other countries, such as France, Canada, Brazil, Germany and Japan has also been increasing.[22]

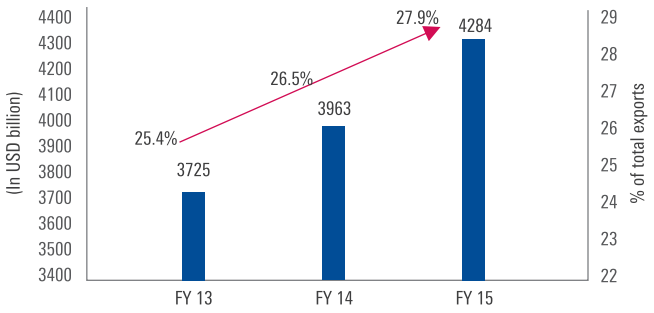
India's pharmaceutical exports*



Source: India's export of Drugs, Pharmaceutical and fine chemicals for financial year 2014-2015, 2013-14, 2012-13, Pharmexcil website http://www.pharmexcil.com/trade-statistics, accessed may 2016

***Note:** It includes drugs, pharmaceuticals and fine chemicals

Pharmaceutical exports to the U.S.



Source: India's export of Drugs, Pharmaceutical and fine chemicals for financial year 2014-2015, Pharmexcil website http://www.pharmexcil.com/trade-statistics, accessed May 2016.

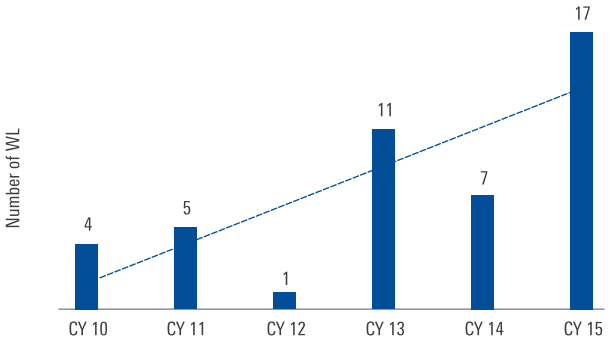
21. India's export of Drugs, Pharmaceutical and fine chemicals for financial year 2014-2015, Pharmexcil http://www.pharmexcil.com/trade-statistics, accessed may 2016;
22. Indian pharmaceutical exports: The growth story, Business Standard, 6 January 2016;
23. Executive Summary: India pharma industry, Planning Commission of India, Feb 2012;
24. Why Are Generic Drug Prices Shooting Up?Forbes, 27 Feb 2015;
25. "Q4 DMF Filings, Mix of Respiratory, Emkay, 25 January 2016;
26. India filings rise, multiple exciting, Emkay, 6 May 2016;
27. Pharmaceuticals – Initiating Coverage products in the pipeline, Spark Capital report, accessed via Thomson research, May 2016

Key U.S. regulations and industry trends impacting Indian exports

Increase in quality challenges[28]

- Following USFDA's increased focus on current Good Manufacturing Practice (cGMP) guidelines, the Indian companies have witnessed a rise in the number of warning letters (WL) being issued against them and import alerts in the last few years for their manufacturing facilities.
- These regulatory actions have emerged as key challenges for the Indian pharma companies as they are likely to adversely impact the product approvals and products being launched in the U.S.
- The most common reasons for the WLs by USFDA are:
  - Insufficient systems and controls to check alteration in laboratory test results and associated documentation
  - Slippages related to adherence of cGMP guidelines during R&D, validation and manufacturing stages
  - Absence of robust manpower training programmes and management systems.
- Of all the WLs issued in the last 5–6 years, approximately 40 per cent of these were converted into import alerts.
- However, about one-third of the WLs issued in the last five to six years have been resolved, as the bulk of them belonged to large pharma companies.

Trends in issuance of Warning Letters (WLs)



Source: Indian Pharmaceutical Sector - Greater scrutiny by US FDA is emerging as a key challenge for Pharmaceutical sector, ICRA, January 2016

Delay in drug approvals[29]

- In the last few years, there has been a delay in drug approvals for new generics by USFDA, resulting in a decrease in export revenues from the largest market for the Indian sector.
- This delay has emerged due to an ongoing overhaul review process by FDA. Further, FDA had also stepped up inspections of manufacturing plants before giving approval for the drugs, resulting in a long waiting period.

Consolidation of pharmacy players[30]

- The recent trend of consolidation of big pharmacies in the U.S. has affected the profit margins of Indian players exporting to the country.
- This has resulted in increase in the monopolisation of pharmacy buyers leading to hard bargaining and hence, increase in price pressure among the generic drug exporters.
- As a result of this trend, the generic drugs price in the U.S. has declined by about 20 to 30 per cent in the last two years.

New rule on procurement of APIs[31]

- The new mandate for drugs to be procured by the U.S. Government necessitates that APIs used in the formulations are manufactured locally within the U.S. geography.
- Although this move does not affect Indian formulation companies directly, as they are not allowed to bid for government contracts, it does impact Indian API players supplying to the U.S. companies, both subsidiaries of Indian pharma and U.S. companies.
- This mandate could potentially impact the availability of affordable generics in the U.S.

28. Indian Pharmaceutical Sector - Greater scrutiny by US FDA is emerging as a key challenge for Pharmaceutical sector, ICRA, January 2016;
29. A strict FDA, competition may slow pharma growth; export may halve to 8 per cent by 2020: Study, Economic Times, 19 January 2016;
30. Trends in Retail Prices of Generic Prescription Drugs Widely Used by Older Americans, 2006 to 2013, AARP research report, May 2015;
31. New U.S. rule a blow to Indian pharma exporters, The Hindu, 3 Feb 2016

Key opportunities

Key opportunities for Indian companies in the U.S.

Opportunity in biosimilar space in the U.S.

- The growing acceptance of biosimilars in the U.S. provide significant opportunities for the Indian pharmaceutical companies. In March 2015, the USFDA approved for the first time a biosimilar drug from a Swiss pharmaceutical company in the U.S.[32] Following this, in December 2015, the USFDA approved a new insulin — the first biosimilar insulin in the U.S.[33]
- As many biologic drugs are going off-patent in the U.S., the biosimilar opportunity is estimated to reach USD44 billion[34] by 2018.

Patent cliff in the U.S.

- Indian pharma companies have an opportunity to benefit from the patent cliff in the U.S.
- From 2015 to 2020, about USD115 billion[33] worth of patented drugs are likely to go off patent in the U.S.

Increasing demand of generics in the U.S.

- The use of generic drugs in the U.S. is increasing, and its share has increased from 18 per cent in 1984 to about 88 per cent in FY14 out of all the prescriptions filed in the U.S.[35]
- As the complex generics segment is growing at twice the pace of simple to manufacture generics, Indian pharma companies are moving up the value chain to manufacture complex molecules. This segment has limited competition and provides scope for higher margins in the U.S.[36]

Key opportunities for U.S. companies in India

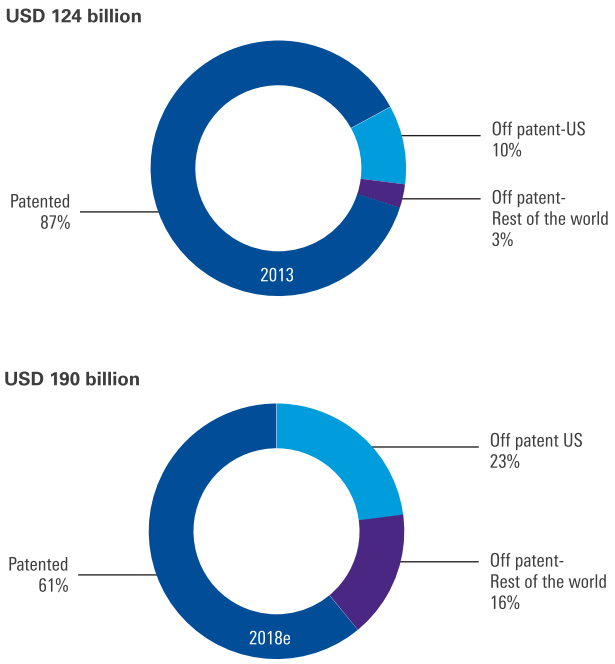
Large domestic market

- Emerging economies like India are expected to drive the future growth as sales in developed economies slow down. The key growth driver in India are growing population, increasing incidence of chronic diseases, growing per capita income and increasing insurance penetration.

Low cost Research and Development

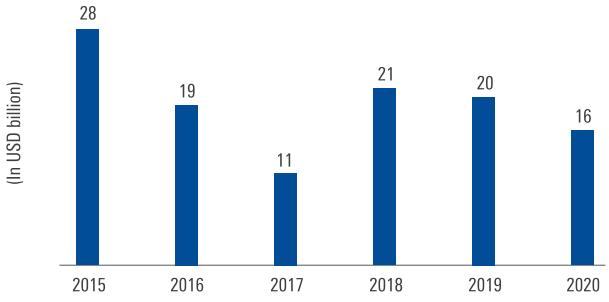
- Rising R&D costs in developed nations is compelling organisations to look for new R&D destinations such as India.
- India has a well developed scientific base with large number of researchers and scientists. Further, the country's relatively liberal regulatory regime creates a promising location for cell engineering, stem cell research, and cell-based therapeutic R&D.

Biosimilar opportunity in the U.S.



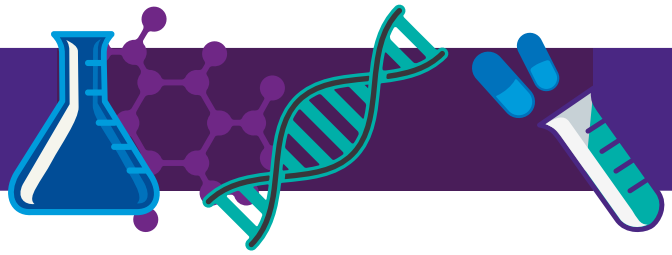
Source: Pharmaceuticals – Initiating Coverage, Spack Capital report, accessed via Thomson Research, May 2016

Expiration of patents in the U.S.



Source: Pharmaceuticals – Initiating Coverage, Spack Capital report, accessed via Thomson Research, May 2016

32. FDA approves first biosimilar product Zarxio, FDA news, 6 March 2015;
33. FDA approves Basaglar, the first "follow-on" insulin glargine product to treat diabetes, FDA, 16 December 2015;
34. Pharmaceuticals – Initiating Coverage, Spack Capital report, accessed via Thomson Research, May 2016;
35. Generic Drug Savings In The U.S., Generic Pharmaceutical Association, 2015;
36. Pharma companies eye US complex generics market, The Financial Express, 13 April 2015



Our outlook and way forward

With increasing demand for generics in the U.S. to reduce the healthcare cost, a steady growth in exports of pharmaceutical products from India is expected in future. The Indian pharmaceutical exports to the U.S. is forecast to reach USD25billion by the end of the current decade.[37]

Collaborations to supply quality generics

- The healthcare spending in the U.S. is among the highest in the world; the country had spent about USD2.7 trillion (17.1 per cent of its GDP) on healthcare[38] in 2014–15. The spending on prescription drug reached USD457 billion2 (16.7 per cent of the total healthcare expenditure in 2015), and is expected to continue to grow in future.
- Out of 4.8 billion prescriptions dispensed in the U.S. in 2014, approximately 3.8 billion (88 per cent) were filed with generic drugs.[39] India could play a greater role in controlling cost measures in the U.S. by supplying competitive high-quality generic drugs.
- In 2014, the usage of generic drugs has led to USD254 billion health savings in the U.S. The total saving during 2005–14 was USD1.68 trillion with the usage of generic drugs.[39] The increase in usage of generic drugs could increase patient access and create savings for patients, providers and payers.
- The recent upsurge in USFDA warning letters and quality concerns toward drugs manufactured in India have created a need for harmonised quality standards. Both the countries need to work together, may be in the form of continuous training, to increase and share knowledge and skills. This step is expected to help both the countries in keeping pace with the rapid developments and novelties experienced in the sector.

Policy and procedural changes in India

To increase trade opportunities between India and the U.S., both countries need to improvise on the current rules and regulations. India needs to focus on its IPR regime to foster innovation and gain confidence of MNCs. It also needs to streamline its drug approval process so that new innovative drugs can be launched easily. Simultaneously, the U.S. needs to accelerate the drug approval process so that Indian exporters can launch new generic drugs without a long time lag.

Strengthening IPR in India

- The Government is taking robust steps on IP protection and enforcement in India. The country has launched the new Intellectual Property Right (IPR) policy in May 2016 to foster innovation, increase predictability, clarity and transparency in India's IP regime. The key objectives of the policy are to create public awareness, stimulate the generation of IPRs, strong and effective IPR laws, get value for IPRs through commercialisation, strengthen the enforcement etc.
- The new National Intellectual Property Rights Policy retains the right to allow compulsory licensing. However, its usage is restricted in case of a public health emergency such as epidemics.
- The new IPR policy is a welcome step towards legislation related to IP laws in India. The government has taken a balanced approach towards innovation and public health.
- The new IPR policy is expected to help in effective protection of patents that can encourage MNCs to launch their products in India and further boost trade between India and the U.S. However, to further boost trade, the country needs stronger protection of patents for pharma MNCs i.e. patent linkage, patent-term extension and data exclusivity.

Track and trace for exports

- The government has mandated the use of track and trace technology for exports of drugs from 1 April 2016 for large companies and 1 April 2017 for small and medium enterprises.[40]
- This step is expected to control counterfeits and boost quality. This can help in strengthening trade relations with the U.S.

Amendments in clinical trial regulations

- In 2015, the regulatory amendments in clinical trials regulations have provided some clarity to put India on the global clinical research map.[41]
- This step is expected to spur the innovation climate in the country so that MNCs can conduct clinical trials and launch innovative products.

New bulk drug manufacturing policy

- The Department of Pharmaceuticals is planning to launch a new bulk drug manufacturing policy to increase the domestic bulk drug production, focus on quality and reduce the dependence on Chinese imports.[42]
- With renewed focus on API industry, the sector is destined to move up the value chain even further. This becomes essential in time when U.S. is looking for a partner for high quality APIs.

37. KPMG in India analysis 2016 based on the Pharmexcil data;
38. U.S. health agency estimates 2015 prescription drug spend rose to $457 billion, Reuters, 8 MARH 2016;
39. Generic Drug Savings In The U.S., Generic Pharmaceutical Association, 2015;
40. Indian pharma to comply with track & trace technology as EMA mandates total adherence by April 2019, Pharmabiz, 19 April 2016;
41. ICSR welcomes Health Ministrys notification on clinical, India Today, 20 April 2016;
42. Govt may come out with new bulk drug policy in a month: Minister Hansraj Ahir, Economic Times, 16 Feb 2016;

Unified ministry and single window clearance for pharma sector

- The government is planning to create a new ministry for pharmaceuticals and medical devices.[43] A unified ministry of pharmaceuticals is required to establish efficiency, streamline regulatory approval processes, and improve transparency and predictability.
- The government is also planning a single-window clearance system[44] in pharmaceuticals sector as various important aspects such as licensing, patents etc. are with different departments
- This could help U.S. companies in getting clearances and permits from a single entity faster and hence decreasing time required in establishing business in India. Further, with single unified body, companies can expect an accelerated approval of drugs.

Goods and Services Tax (GST) implementation

- The Indian pharmaceutical and biotechnology sector, like others, are eyeing GST as a favourable tax regime which would eliminate the cascading effect of taxes and other anomalies of the present indirect tax structure in the country. The government is planning to implement GST from 1 April 2017.[45] GST is expected to reduce burden by way of considerable reduction in tax cost by removing the anomalies of the current indirect tax structure, reduce compliance hassles, etc.
- Further, with the advent of GST, the supply chain of the pharmaceutical sector would be impacted by the availability of input tax credit of interstate trade GST (IGST) on interstate transactions, eliminating the need for carry forward agent (CFA) in each state.
- The implementation of GST is expected to increase the Ease of Doing business (EoDB) in India for the U.S. companies.

43. Separate ministry for pharma in next one year: Ananth Kumar, Economic Times, 10 Dec 2015;
44. Single-window clearance for pharma sector on anvil: Ananth Kumar, Economic Times, 22 June 2015;
45. Govt signals GST may be implemented from 1 April 2017, Livemint, 8 March 2016

Renewable Energy

Walking the line

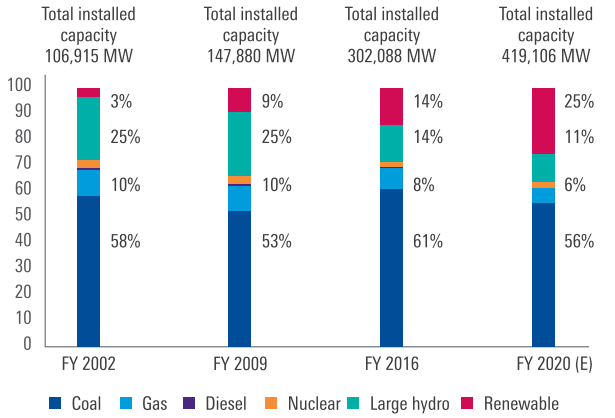
India's transforming energy space and role of renewable energy (RE)

The Indian central government has set an RE target for itself, which if delivered, would cause a significant shift in the structure of energy sector in India. When viewed in the context of a country with 1,114 billion units of electricity requirement[01], growing at approximately 6 to 7 per cent per annum[02], the opportunities arising out of the imminent power sector transformation is staggering. The scale and diversity of opportunities could provide enough play for domestic as well as foreign entrants across the value chain including manufacturing, engineering, procurement and construction (EPC), development, financing, technology in core RE sector, with a likely spill over effect in areas such as storage, electric vehicles, etc.

In 2015, the Government of India announced an RE capacity target of 175 GW by 2022, including 100 GW to be contributed by solar. In a country where solar installations had merely reached 3.7 GW by the end of FY 2015 (from the days of early activity in 2009-2010) and where the maximum annual capacity installed had not crossed 1.2 GW till then, setting an implied annual capacity addition rate of 13-14 GW elicited deep skepticism. However, in the year FY 15-16, nearly 8.5 GW of solar capacity was auctioned[03]. Additionally, as per Solar Energy Corporation of India (SECI)[04], 33 solar parks across 21 states representing a potential capacity of close to 20 GW were approved.

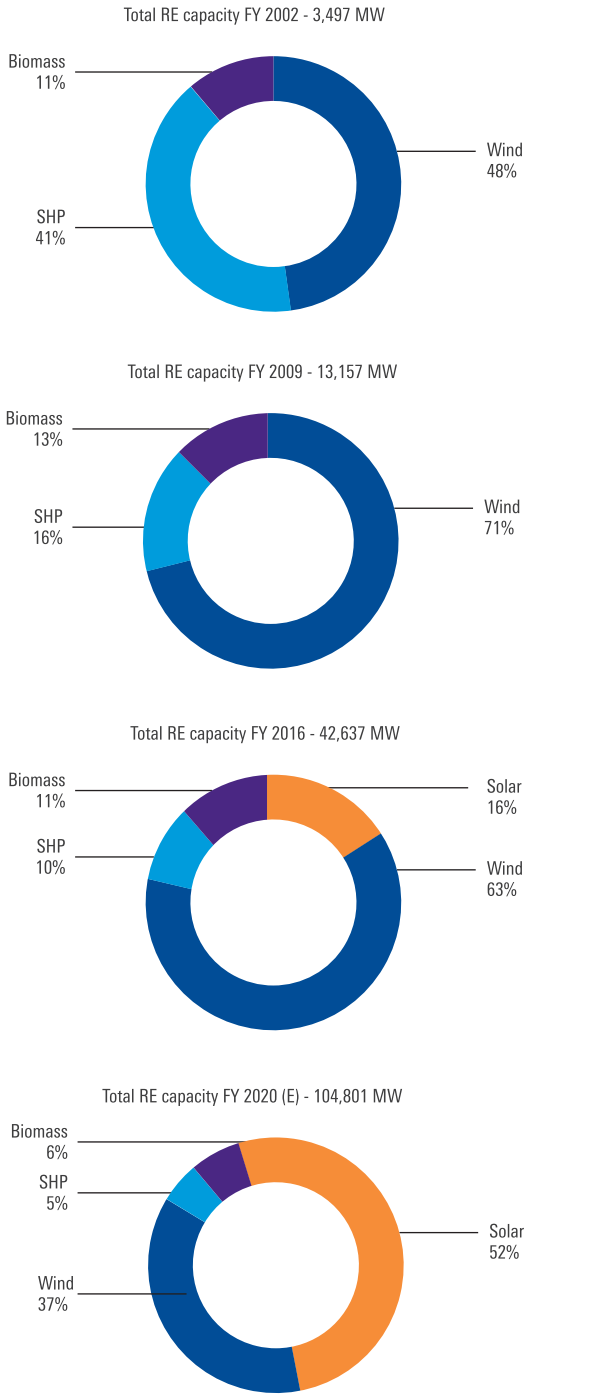
On-ground challenges point at possible slippages in areas such as solar roof top, solar park development, wind installations and other RE segments such as biomass and small hydro. Given that most of these are important constituents of the sector plan, there could be some delays in achieving the overall target. However, even with more conservative estimates, profile of the country's power mix is likely to change considerably as is evident from the following graphs.

Installed capacity mix (in per cent)



Source: KPMG in India's Analysis 2016 based on data collected from "Growth of Electricity Sector in India from 1947-2015" released by Ministry of Power in April 2015, " Strategic Plan for New and Renewable Energy Sector for the Period 2011-17" published by MNRE in February 2011, Annual Report of CEA (2009), CEA website, http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed_capacity-03.pdf, accessed on 23rd May 2016, MNRE website, http://mnre.gov.in/mission-and-vision-2/achievements/, accessed on 21st May 2016, Ground level plant by plant assessment of progress in installation, State and National RE targets and RPO targets

RE installed capacity mix (in per cent)



Source: KPMG in India's Analysis 2016 based on data collected from "Growth of Electricity Sector in India from 1947-2015" released by Ministry of Power in April 2015, " Strategic Plan for New and Renewable Energy Sector for the Period 2011-17" published by MNRE in February 2011, Annual Report of CEA (2009), CEA website, http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed_capacity-03.pdf, accessed on 23rd May 2016, MNRE website, http://mnre.gov.in/mission-and-vision-2/achievements/, accessed on 21st May 2016, Ground level plant by plant assessment of progress in installation, State and National RE targets and RPO targets

01. http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_energy-03.pdf accessed on 24th May 2016
02. 18th Electric Power Survey released by Central Electricity Authority (CEA)
03. KPMG analysis based on data collected from Ministry of New and Renewable Energy (MNRE) website, mnre.gov.in, accessed on 13th March 2016 which includes tariff based bids till January 2015. Data for bids beyond January 2015 has been collected from articles published from time to time on websites such as Bridgetoindia.com, economictimes. Indiatimes.com and eqmagpro.com
04. SECI website, http://seci.gov.in/content/innerpage/statewise-solar-parks.php, accessed on16th May 2016

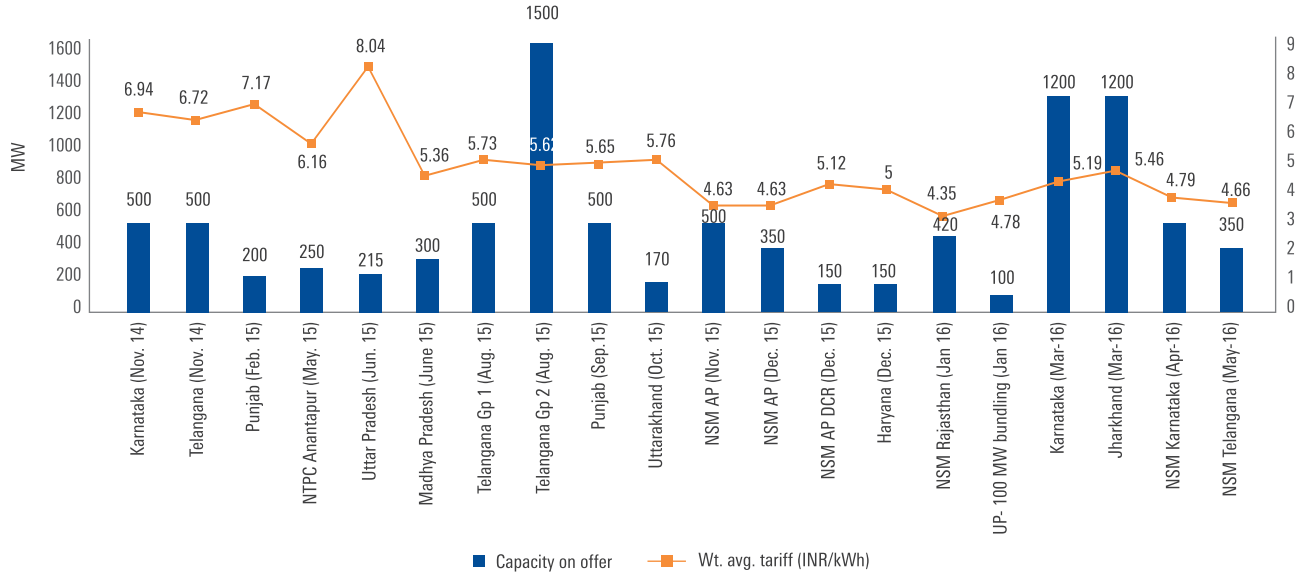
Recent trends and emerging environment

Along with the announcement of the ambitious target, last year has also seen some key sectoral trends which are worth mentioning.

Solar

- Intense competition in solar auctions is driving tariffs down sharply. A 30-35 per cent reduction in tariffs was witnessed in solar auctions in FY 2015-16[05] (see Figure: Trends in recent solar bids). Bids under the central scheme, i.e. JNNSM[06] (where counterparty risk is perceived to be lower by the industry) were especially deeply contested. This sector also witnessed the entry of large foreign players with sizable business plans who have led the price competition backed by varying strategies available with them. The debate is still on around the viability of these tariffs from returns perspective, and the outcome will be known in some time. Notwithstanding the bidding dynamics, even if we were to base our assumptions on the future technology road map for solar, we expect solar prices would be lower than coal by up to 10 per cent by 2020 (see Figure: Levelised cost of energy (LCOE) at the consumers' end in 2020 (INR/kWh)) which is set to change the way electricity is produced and consumed.
- The scale of projects is increasing with large solar tenders being issued by states, for e.g., last year the state of Andhra Pradesh awarded tenders for two projects of 350 MW and 500 MW each, where power was procured under the JNNSM scheme.
- The National Tariff Policy (2016), which was announced in January 2016[07], seeks to spur the prospects for RE and especially solar. The policy has waived off interstate transmission charges and losses for wind and solar. This considerably increases the market opportunity for grid scale solar, by opening new markets, such as states with low irradiation, which need to procure solar to fulfil their solar power purchase obligations (Solar RPO). Additionally, the policy has increased the Solar RPO to 8 per cent and also stipulated mandatory RE generation/ procurement conditions on the new conventional energy generators.

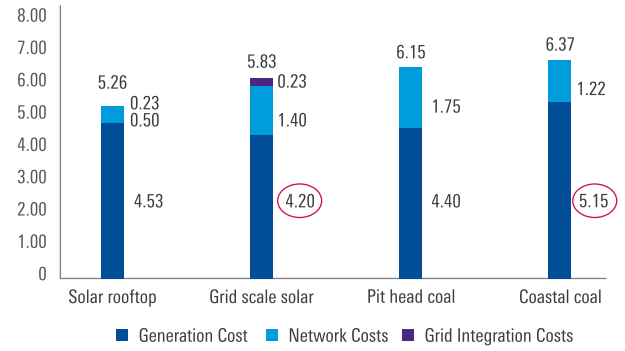
Trends in recent solar bids



Source: KPMG in India's Analysis 2016, KPMG analysis based on data collected from Ministry of New and Renewable Energy (MNRE) website, mnre.gov.in, accessed on 13th March 2016 which includes tariff based bids till January 2015. Data for bids beyond January 2015 has been collected from articles published from time to time on websites such as Bridgetoindia.com, economictimes. Indiatimes.com and eqmagpro.com

05. KPMG in India's Analysis 2016 based on data collected from Ministry of New and Renewable Energy (MNRE) website, mnre.gov.in, accessed on 13th March 2016 which includes tariff based bids till January 2015. Data for bids beyond January 2015 has been collected from articles published from time to time on websites such as Bridgetoindia.com, Economictimes.com, Indiatimes.com and Eqmagpro.com
06. JNNSM – Jawaharlal Nehru National Solar Mission
07. Published through a notification in the Gazette of India, dated January 28, 2016, http://powermin.nic.in/sites/default/files/webform/notices/Tariff_Policy-Resolution_Dated_28012016.pdf

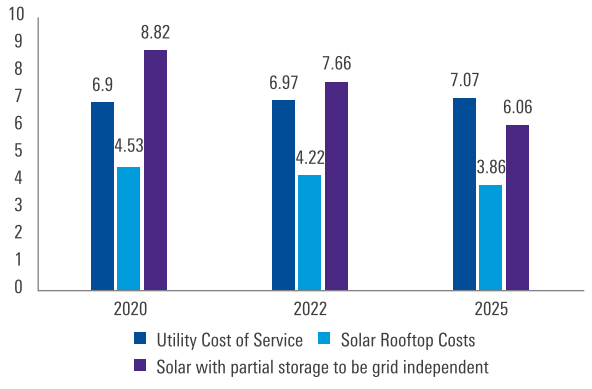
Levelised cost of energy (LCOE) at the consumers' end in 2020 (INR/kWh)



Source: KPMG: The Rising Sun, 2015 published in November 2015

- The sharply falling cost curve has made solar rooftop competitive for many industrial, commercial and some residential customers compared to grid power. The compelling economics is likely to drive growth in this market and we estimate that the solar rooftop segment will reach 10 GW by 2020. The growth trajectory thereafter is likely to be steeper once storage solutions become more economical. In our 2015 publication, the Rising Sun, 'Disruption on the Horizon', we have forecasted that solar rooftop power combined with storage will be cheaper than grid power after 2022 for a large section of consumers which would enable the emergence of a grid independent 'solar house'[08].

A grid independent solar house is likely to be a reality after 2022: LCOE in INR/kWh



Source: Tariff order of various states during 2015-16, KPMG in India's analysis October 2015, KPMG: The Rising Sun, 2015 published in November 2015

While there has been support for this segment from state governments through the net metering policy[09], etc., the segment is still to gather momentum. Reasons can be attributed to aspects ranging from the lack of scalable business models, awareness, financing- both at enterprise and consumer end, with the absence of innovative solutions and implementation challenges, some of which are possibly addressable through appropriate business strategies.

Efforts are underway through various multilateral funded initiatives for creating a conducive policy and regulatory environment for roof top growth in India, including appropriate capacity building of stakeholders such as discoms. The World Bank has recently approved USD625 million in financial support for the roof top segment in India, which is expected to spur the market considerably[10].

- Several established grid scale solar players as well as new entrants such as module suppliers/EPC players are at various stages of entry planning with respect to the segment. Unlike the grid scale solar, the roof top space presents opportunities for differentiated business models which can help in developing a competitive edge. Aspects such as branding, quality of channel strategy, financing innovation, etc. would need to be carefully planned.
- Solar parks have enabled economies of scale to emerge as is witnessed by the more competitive pricing associated with tenders related to power procurement from solar parks. However, implementation challenges such as the evacuation infrastructure, concentration of projects and associated grid integration challenges, acquisition of contiguous land, etc. are slowing the progress in a few states.
- As highlighted earlier, at this stage, investors and lenders are concerned about the viability of the tariffs witnessed in the current auction process, and therefore, projects are taking a little longer to achieve closures.

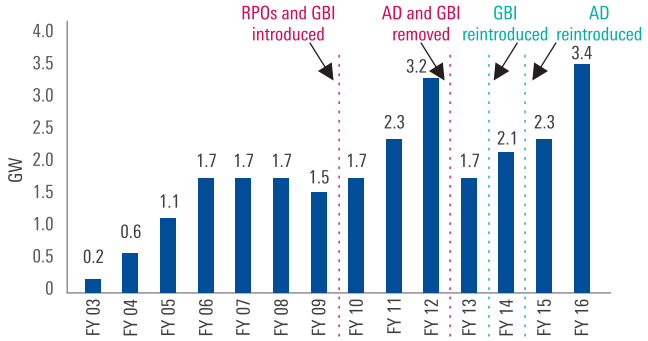
Wind

- India has a high wind power potential of 302 GW[11]. At 27 GW installed capacity today, wind is the third largest contributor to installed capacity in India after coal and hydro[12]. India has seen installations of approximately 2-3 GW per year over the last five to six years, with the highest ever capacity addition of 3.4 GW last year[13]. In the past we have witnessed that the government policy on accelerated depreciation (AD) and other fiscal benefits have had a direct bearing on capacity additions as shown in the Figure: Year-on-year wind power capacity addition. With the announcement by Finance Minister in the Union budget 2016[14] regarding reduction in AD benefits by half to 40 per cent, we anticipate some fallout on the capacity development momentum.
- With some wind states exhibiting constraining conditions such as an increasing wind penetration resulting in concerns over curtailment, surplus power situation fulfillment of RPO obligations, saturation in good wind sites, etc. greenfield activity is moving to select states.

08. KPMG in India Analysis October 2015 based on tariff orders of state distribution licensees in India, Tesla Motors, U.S. Department of Energy's EV Everywhere Grand Challenge
09. Net metering allows the consumer to offset the units procured from the grid against those supplied to the grid through its own generation source and pay for the net units consumed or earn for the net units sold
10. World Bank Website, http://www.worldbank.org/en/news/press-release/2016/05/13/world-bank-approves-625-million-to-support-grid-connected-rooftop-solar-program-in-india, accessed on 17th May 2016
11. NIWE website, http://niwe.res.in/department_wra_100m%20agl.php, accessed on 10th May 2016
12. CEA website, http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed_capacity-04.pdf, accessed on 24th May 2016, MNRE website, http://mnre.gov.in/mission-and-vision-2/achievements/, accessed on 24th May 2016
13. MNRE website, http://mnre.gov.in/mission-and-vision-2/achievements/, accessed on 24th May 2016
14. Union Budget 2016, Finance Minister's budget speech available at http://indiabudget.nic.in/ub2016-17/bs/bs.pdf, accessed on 24th May 2016

- Further, with the objective to encourage activity in this space, the government has widened its focus to include areas such as solar wind hybrid, off shore wind, re-powering of old turbines, etc. and the respective policies are under different stages of development. The government has also issued draft guidelines for development of wind power projects which aims to facilitate the development of such projects in "an efficient, cost effective and environmentally benign manner"[15]. The draft introduces significant changes such as the need for a quality certification of turbines by an internationally recognised body, stipulation of an annual average CUF from a wind turbine at 20 per cent, etc.

Year-on-year wind power capacity addition



Source: KPMG in India's Analysis 2016, Based on data collected from a. MNRE website, mnre.gov.in, accessed on 5th May 2016, CAG report available at http://www.cag.gov.in/sites/default/files/audit_report_files/Union_Civil_Performance_Renewable_Energy_Report_34_2015_chap_4.pdf accessed o 19th May 2016

Hydro power

- India has approximately 150 GW total hydroelectric power potential[16]. With only close to 30 per cent of the potential tapped by March 2016[17], there is ample requirement for growth. However, the hydro power sector has been largely stagnant over the past few years owing to land acquisition issues, environmental and forest clearances, rehabilitation and resettlement issues, natural calamities, law and order problems, etc. The government is refocusing efforts on hydro power, and policy initiatives for promoting the segment are being considered.
- With activity coming to a virtual standstill in the green field space, the last couple of years have seen an increasing focus on the M&A route for entry/expansion. We expect this trend to continue, especially with large conglomerates looking to deleverage through the sale of assets.

RE ancillary and new focus areas

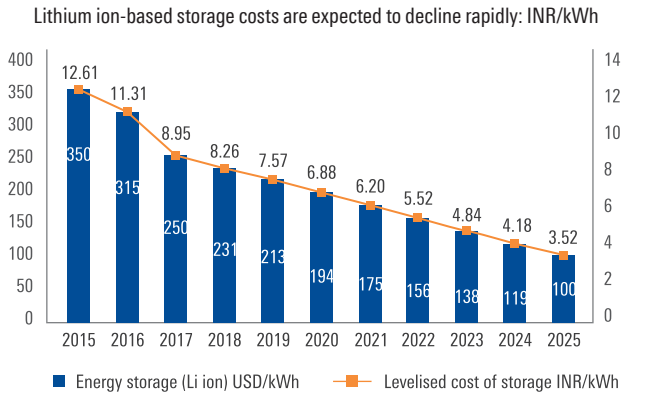
Storage

With an increase in RE penetration, India may experience grid integration pains especially post 2020. This would lead to the emergence of new focus areas such as ancillary services including storage and demand response. Significant investments are taking place in storage technologies. Battery storage costs over the last few years have dropped from over USD1000 per kWh to about USD350 per kWh which has made storage deployment along with RE solutions a distinct reality[18].

Initiatives are being taken at the policy level to promote this segment. India is set to tender a pilot programme which would entail bidders to provide 100 MW of storage out of 750 MW of solar capacity to be set up in the state of Andhra Pradesh[19]. The central electricity regulator has recently issued regulations[20] on ancillary services which envisage such services moving to market based mechanism from a regulated mechanism in the foreseeable future.

With increasing scale, battery costs are expected to reduce further. Storage will then have a considerable role to play in the roof top space as discussed earlier.

Expected decline in storage costs



Source: KPMG: The Rising Sun, 2015 published in November 2015

Further, storage is already playing a critical role in India's off-grid/distributed RE market. The government's 24x7 Power for All objective along with cost reductions in storage is likely to make this application an important enabler in bringing electricity to almost 240 million[21] people in India (almost 20 per cent of the Indian population[22]) who presently lack electricity provisioning. A strong market is also emerging for RE powered solutions (with storage), for addressing commercial loads, such as telecom towers, in rural areas.

15. As per the stated objective in the Draft Guidelines for Development of Onshore Wind Power Projects release by MNRE in May 2016
16. "World Energy Resource: Hydro" published by World Energy Council in 2013, accessed on 17th May 2016
17. KPMG in India's Analysis 2016 based on national hydro installations available at CEA website, http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed_capacity-03.pdf and MNRE's website http://mnre.gov.in/mission-and-vision-2/achievements/, accessed on 17th May 2016
18. Chapter 3 of "Global Trends in Renewable Energy Investment 2016" published by Frankfurt School's FS-UNEP Collaborating Centre for Climate & Sustainability Energy Finance
19. Managing Director of SECI, quoted in Economic Times on 10th February 2016, http://articles.economictimes.indiatimes.com/2016-02-10/news/70509643_1_storage-facility-storage-capacity-pwc-india
20. Central Electricity Regulatory Commission Notification dated 13th August 2015
21. International Energy Agency, World Energy Outlook 2015 database, accessed on 17th May 2016
22. KPMG analysis based on Indian population(approximately 1.28 billion) as provided in World bank database, http://data.worldbank.org/indicator/SP.POP.TOTL

Electric vehicles (EV)

Technology spill over effects of growth of PV and evolution in storage is set to support the growth of EVs. India has been swift to recognise the potential that EVs offer in the reduction of fossil fuel dependence. The National Electric Policy Mobility Mission has been launched with a target to introduce 6-7 million storage based vehicles by 2020[23]. The Indian power minister has recently stated[24] that the government is assessing whether India could become a 100 per cent electric vehicle nation by 2030. Towards this end, it is working on innovative financing schemes where cars are offered on zero down payment. People can pay for the vehicles out of the savings due to avoidance of consumption of fossil fuels such as petrol, gas, etc.

The solution that will weave these applications (solar PV, storage, electric vehicles) together, i.e. smart grids is also set to come into sharp focus. This will help manage the dynamic nature of power generation and loads.

Opportunities for U.S. companies

Grid Scale Solar offering opportunities across the value chain

Good irradiation in many states, relatively lower levels of RE penetration, strong central and state government policy and regulatory support to this sector, makes it an attractive investment consideration. Nearly 8.5 GW capacity was tendered out in the last year itself. Another 18 GW of solar tenders are expected over the next couple of years. With tenders increasing in size and more bids expected under the state as well as centre programmes, significant opportunities exist for participation by developers, EPC companies, financiers, etc.

Additionally, we see a rising play in the inorganic acquisition route as well, with non pure play solar developers such as EPC companies/module suppliers, infrastructure conglomerates looking to monetise their holdings and developers looking for partners to execute projects at hand.

Roof top:Offering a prime share to first movers

We consider the time to be opportune for the entry of experienced roof top players, who, through their experience, business strategies and financing solutions, could capture a large share of the nascent but promising market.

We believe that a well fleshed-out business strategy that gives adequate consideration to aspects such as geography selection, customer selection, product offering (including financing solutions such as leasing etc.), a well-defined channel strategy, will have an early mover advantage in this space.

Electricity access and the role of development agencies

The underserved rural population can gain significantly from efforts and support of philanthropic organisations in promoting off-grid and distributed RE solutions. Development agencies such as USAID, various foundations and other organisations working actively in the field of electricity access have already made their presence felt through pioneering work ranging from policy development assistance, to providing concessional loans/grants, capacity building, business model development, etc. in this segment.

Wind: Opportunities can be tapped into with careful entry planning:

Based on recently observed annual capacity additions, we estimate greenfield opportunities in the wind sector to represent a 2-3 GW annual market. Other than sale to distribution licensees[25], opportunities for sale under open access to third parties are also available.

The wind sector has been witnessing an intense consolidation phase since the last few years. Opportunities are mushrooming owing to the sale of assets by AD investors or infrastructure conglomerates looking to refocus their businesses or private equity investors seeking to realise the value of their investments through suitable exit strategies including sale to strategic buyers. However, entry through the organic or inorganic route would need a careful state evaluation for aspects such as dispatch risks, etc.

Hydro, offering a brownfield entry

Sale of existing assets by companies looking to de-leverage may throw open attractive prospects in this segment. There are several hydro plants which are near completion but due to overruns face cost escalations. These plants are looking at entering into long term Power Purchase Agreements (PPAs). Assets which are able to execute PPAs which provide adequate returns despite the cost escalations, may be an immediate investment target. The attractiveness of some of these plants can increase significantly if they have the ability to act as a balancing resource for a state or a region.

Storage: A new dimension to closely evaluate

Storage presents an immense opportunity for U.S. players in India. The market for the sale of products is set to evolve as costs come down and a higher penetration of RE manifests itself through associated issues of grid integration etc. We believe that U.S. companies need to explore innovative business models such as that of Energy Service Companies which can offer a compelling value proposition to customers by reducing upfront costs.

Along with storage, the government's efforts in the EV space need to be closely watched as this can give rise to considerable opportunities for EV manufacturers in the country.

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23. Department of Heavy Industries Website, http://dhi.nic.in/UserView/index?mid=1347, accessed on 18th May 2016
24. Union power minister quoted in Economic Times on 25th March 2016, http://economictimes.indiatimes.com/industry/auto/news/industry/india-aims-to-become-100-e-vehicle-nation-by-2030-piyush-goyal/articleshow/51551706.cms
25. As per Electricity Act 2003, distribution licensee refers to a licensee authorized to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply.

A USD50-60 billion opportunity for financiers over the next four to five years

We expect at least a USD185 billion financing requirement (equity and debt) to support power sector growth (including RE of approximately USD50-60 billion) till FY 19-20. Corresponding debt requirement would be approximately USD140 billion. Based on the trends observed in availability of capital to the power sector, we estimate that around USD100 to 110 billion[26] will be available in conventional debt over the corresponding period leading to a shortfall from domestic sources and there will be opportunities for alternative sources such as international capital. Longer tenure debt (17-18 years and above) at attractive costs offering value enhancement opportunities to sponsors would have an edge. To this extent, the lines of credit to Indian RE financiers, support in developing new products that allow access to lower cost of capital would be important.

On the equity side, there are considerable opportunities for investments in green field as well as in brownfield projects where sponsors are looking to partially or fully monetise their holdings. Further, there is significant potential for Indian RE businesses to raise capital in the U.S.

26. KPMG in India's Analysis 2015 based on expected future capacity additions

Conclusion

In October 2015, India submitted its Intended Nationally Determined Contribution, pledging a reduction in the carbon emissions intensity of GDP by 33 per cent to 35 per cent below 2005 levels by 2030 and an increase in the share of non-fossil based power generation capacity to 40 per cent of installed electric power capacity by 2030.

This gave a whole new credence to the government's vision for an RE rich future in India and its conviction to walk the line.

While the sector presents an enormous opportunity, a nuanced approach is required to be taken by U.S. companies evaluating opportunities in India.

State diversity implies that market, regulatory, commercial and technical risks are wide ranging across Indian states. Further, dynamic factors at work could change the future outlook towards a state and these need to be continuously watched. Some such aspects are:

- The easing energy and peak deficit situation in many states could change the state's willingness to enter into incremental RE contracts.
- Fulfillment of renewable purchase obligations could also reduce the availability of tenders/PPAs.
- Given sensitivities related to high tariff increases and weak financial position of several discoms, the commercial impact of procurement of RE on the discom's financials will be a critical element which would need to be evaluated.
- The recently announced central government programme for power sector reform 'UDAY' which provides for a revival of discoms through actions such as state takeover of discom debt, measures for improvement of operational efficiency, etc., could potentially result in turnaround of struggling discoms. This could considerably reduce the commercial risks associated with setting up RE projects in the concerned states.
- With high levels of RE penetration, current and future technical risks affecting dispatch would need consideration along with the state's ability to deal with the same (through the presence of flexible loads or balancing resources, enhancement of transmission capacity, etc.). While investments are being made in the transmission infrastructure at the national level, the timely execution of these projects, especially at the state level, is an important factor for ensuring the smooth pace of RE capacity additions.
- Incentive structures offered by different states to attract investments in their arena need to be looked at.

On the whole, there is an enticing role for American investors and companies to play in India's unfolding RE story- opportunities exist across the value chain. While the sector is still young, there are complexities driven by a diverse set of dynamics. In such a situation, a judiciously planned entry strategy needs to be adopted to find a value accretive role in the RE sector.

Smart Cities

Overview of the sector

Urbanisation is now a universal manifestation and by 2050, an estimated 65 per cent of the developing world and 86 per cent of the developed world is expected to be urbanised[01]. India has 7933 urban settlements (4093 statutory towns and 3892 census towns) with a total urban population of 377.1 million (Census of India, 2011). An estimated 60 per cent of India's total urban population resides in 496 Class 1[02]cities. The significant pace of urbanisation has induced immense pressure on India's urban governance, infrastructure, finance, natural resources and quality of urban life. Critical challenges in the Indian cities range from air pollution, waste management, poor water and electricity supply, ageing infrastructure and traffic congestion. Smarter measures are thus imminent to react to ongoing changes, manage the dynamic challenges of urbanisation and create value for public investment through effective utilisation of intelligent, integrated and optimised systems.

The transformational shift of Indian cities through the Government of India's (GoI), 'Smart Cities Mission', focusses on redefining urban development initiatives that make cities more livable, inclusive, and centres of economic growth. In this regard, the 'Mission Statement and Guidelines[03]' for the 'Smart Cities Mission' was released by the Ministry of Urban Development (MoUD), on June 25, 2015. Its key focus is on 'sustainable and inclusive development and the idea is to look at compact areas, creating a replicable model which can act like a light house to other aspiring cities.'

Under the 'Smart Cities Mission', GoI proposes to offer financial support to the mission to the extent of USD7.1 Billion[04] over five years i.e. on an average USD15 Million per city per year. An equal amount, on a matching basis, will have to be contributed by the State/ULB (Urban Local Body). The GoI funds and the matching contribution by the States/ULB is expected to meet only part of the project cost of individual cities. Balance funds are expected to be mobilised from:

a. States/ULBs own resources from collection of user fees, beneficiary charges and impact fees, land monetisation, debt, loans, etc.

b. Additional resources transferred due to acceptance of the recommendations of the Fourteenth Finance Commission (FFC).

c. Innovative finance mechanisms such as municipal bonds with credit rating of ULBs, Pooled Finance Mechanism, Tax Increment Financing (TIF).

d. Other central government initiatives such as 'Swachh Bharat', 'AMRUT', 'National Heritage City Development and Augmentation Yojana' (HRIDAY).

e. Leverage borrowings from financial institutions, including bilateral and multilateral institutions, both domestic and external sources.

f. National Investment and Infrastructure Fund (NIIF)[05] .

g. Private sector through PPPs.

As part of the 'Smart Cities' Challenge organised by MoUD, 20 cities were selected in January 2016, during Round 1 from a total of 97 cities across India[06].

Size of the sector

Indian cities are the drivers of economic growth with current contribution of 60 per cent to GDP and is expected to increase by nearly 75 per cent by 2030. The switch to 'Smart Cities' will entail substantial investments for a long-term, and in turn shape India's urban future. Investments estimated at USD1.2 trillion are required over the next 20 years across areas such as transportation, energy and public security to build smart cities in India. Apart from the Smart Cities Mission of the Government of India, several additional inititiaves have been ongoing as below:

- The Gujarat International Finance Tec-City (GIFT City)[07] to be developed over 900 acres at an estimated cost of USD10.4 billion, is billed to be one of the country's first greenfield smart cities.
- Smart City Kochi[08] is another such greenfield initiative, over an area of 250 acres with an estimated cost of USD223 million. It has a Special Economic Zone (SEZ) that seeks to replicate Dubai's smart city project.
- 'Naya Raipur'[09] is being developed as a greenfield smart city initiative by the Government of Chhattisgarh at an estimated cost of USD2.4 billion. The initiative is envisaged to be developed in phases for an estimated population of 5.6 lakh by the year 2031
- The Delhi Mumbai Industrial Corridor Development Corporation Ltd (DMICDC)[10] plans seven smart cities along the 1,500 km industrial corridor across six states with a total investment of USD100 billion. Work on five smart industrial townships in DMICDC has been initiated (Dholera in Gujarat, Shendra-Bidkin in Maharashtra, Greater Noida in UP, Ujjain in MP and Gurgaon in Haryana).
- Wave City[11], with an area of 4,500 acres is located in the NCR region.
- Lavasa City[12], is being developed near Pune, with an investment of nearly USD594 million
- Palava City[13] is being developed within the Mumbai Metropolitan Region by the Lodha Group at an estimated cost of USD2.1 billion.

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01. Global Report on Urban Health, World Health Organisation (WHO), May 2016
02. Cities with population of more than 1 lakh population (Census of India)
03. Smart Cities Mission Statement & Guidelines, Ministry of Urban Development, Government of India, May 2016, http://smartcities.gov.in/writereaddata/SmartCityGuidelines.pdf
04. Currency Conversion 1USD=INR67.33
05. NIIF, Ministry of Finance, Government of India, http://finmin.nic.in/the_ministry/dept_eco_affairs/investment_division/NIIF24082015.pdf
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07. GIFT City website, accessed on 9 May, http://giftgujarat.in/
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11. Wave City website, accessed on 10 may 2016, http://wavecity.org.in/IBM-Smart-City.html
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13. Palava Smart City website, accessed on 9 May 2016, http://www.palava.in/overview/evolution

Recent trends and developments

- International cooperation in the form of technical and financial assistance from several countries including Singapore, U.K., Japan, France, Germany, Taiwan and the U.S. has been finalised.
- Bilateral and multilateral institutions including the World Bank, Asian Development Bank (ADB), Japan International Cooperation Agency (JICA), United States Trade and Development Agency (USTDA), French Development Agency (AFD), Kreditanstalt für Wiederaufbau (KfW) and Department for International Development (DfID), have also offered support.
- The GoI approved USD4.1 billion plan to spur electric and hybrid vehicle production by setting up an ambitious target of 6 million vehicles by 2020[14].
- MoUD plans to invest more than USD20 billion on the metro rail projects in the coming years[14].
- The Power Grid Corporation of India plans to invest USD26 billion in the next five years; about 130 million smart meters would be installed by 2021[14].
- Certain sectors of urban infrastructure such as Power, Information & Communications Technology (ICT) and integrated townships are expected to bear the maximum impact of transformation. Both in terms of requirement (resources) and impact, these sectors are expected to play vital roles, and thus warrant conceptualisation of focused financing mechanisms.

Policies and regulations

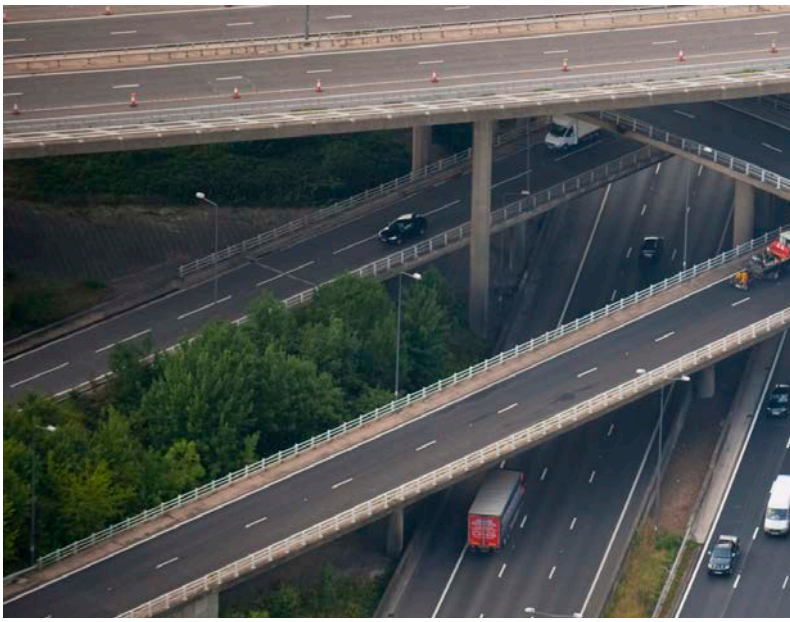
The '100 Smart Cities Mission' shall be implemented through area-based and pan-city developments. According to the Mission Statement & Guidelines[15] prescribed by MoUD for Smart Cities, the area-based developments would include the following:

- Retrofitting - Existing developed area in a city with minimum 500 acres in size
- Redevelopment - Existing urban sprawl with minimum 50 acres in size
- Green Field development – Vacant land with minimum 250 acres in size

In addition to the above, pan-city developments would aim to enable the application of identified smart solutions to existing infrastructure across the cities. The application would leverage state-of-the-art Information and Communication Technology (ICT) tools to improve the living conditions and governance. (e.g. intelligent traffic management systems, waste water recycling, smart metering, etc.). Additionally, key points elaborated in the guidelines include:

- Creation of a Special Purpose Vehicle (SPV)[15] - The implementation of the mission at the city level will be undertaken by a SPV created for the purpose. The SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the 'Smart City' development projects.
- Convergence with other government schemes - Cities are expected to incorporate convergence in their respective Smart City Proposals (SCPs) with key initiatives such as 'Atal Mission For Rejuvenation And Urban Transformation' (AMRUT), 'Swachh Bharat Mission' (SBM), 'National Heritage City Development and Augmentation Yojana' (HRIDAY), 'Digital India', 'Skill India', 'Housing for All by 2020' and other programmes connected to social infrastructure such as health, education and culture.

To encourage the development of smart cities providing habitation for the neo-middle class, the requirement for the built up area and capital conditions for FDI have been reduced from 50,000 sq m to 20,000 sq m and from USD10 million to USD5 million, respectively. As a further impetus, projects that commit at least 30 per cent of the total project cost for low cost affordable housing would be exempted from the minimum built-up area and capitalisation requirements[16].



14. Make in India website, accessed on 10 May 2016, http://www.makeinindia.com/article/-/v/internet-of-things
15. Smart Cities Mission Statement & Guidelines, Ministry of Urban Development, Government of India, May 2016, http://smartcities.gov.in/writereaddata/SmartCityGuidelines.pdf
16. India Soars High, KPMG in India, May 2016

The sector's engagement with the U.S.

Size of sector's trade with the U.S.

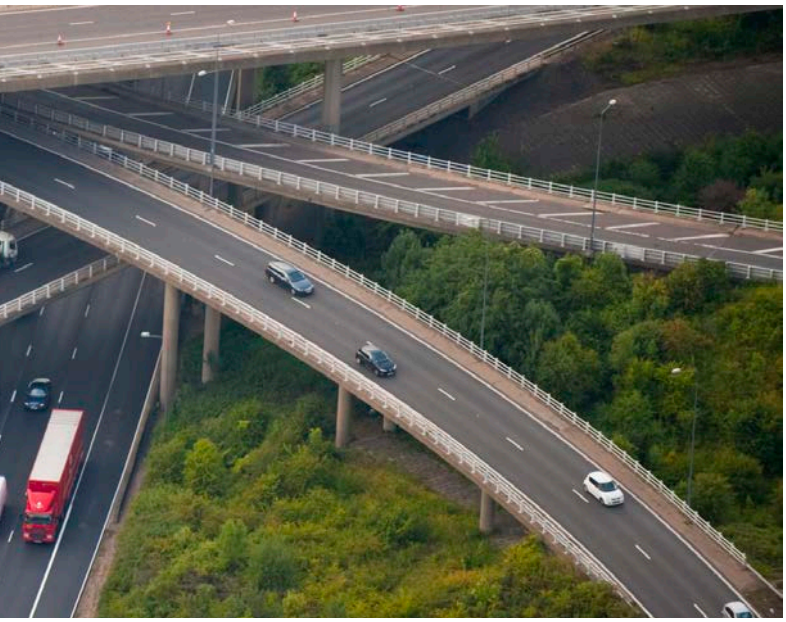
The 100 Smart Cities initiative by the GoI presents tremendous opportunities for the U.S. companies. By August 2016, a total of 83 cities would be selected by MoUD for the implementation of the Smart Cities Mission, which are as below[17] :

- 20 Round 1 Lighthouse Cities (selected on January 2016)
- 23 Fast Track Cities (to be selected in 2016)
- 40 Round 2 Cities (to be selected in 2016)

The 20 winning cities and towns have outlined a total investment of USD8 billion over five years. This translates to an estimated USD385 million of investment per city. Thus, the total size of the the smart city trade is estimated at USD32 billion for the next five years (2016 – 2020)[18].

Recent developments

- Bloomberg Philanthropies, Headquartered in the U.S., partnered with GoI for assisting the government in the 100 Smart Cities Mission[19].
- U.S. has taken the lead in driving the initiatives for three Inidan cities: Ajmer (Rajasthan), Allahabad (Uttar Pradesh) and Vizag (Andhra Pradesh). Three separate bilateral MoUs have been signed for each of these cities by which the U.S. will assist the cities at various stages including project planning, infrastructure development, feasibility studies and capacity building[20].



- Memorandum of Understanding between the United States Trade and Development Agency (USTDA) and the Government of Andhra Pradesh of the Republic of India on Cooperation to support the development of smart cities in Andhra Pradesh-namely Visakhapatnam.
- Memorandum of Understanding between the United States Trade and Development Agency (USTDA) and the Government of Rajasthan of the Republic of India on Cooperation to support the development of Smart Cities in Rajasthan- namely Ajmer.
- Memorandum of Understanding between the United States Trade and Development Agency (USTDA) and the Government of Uttar Pradesh of the Republic of India on Cooperation to support the development of Smart Cities in Uttar Pradesh- namely Allahabad.

The U.S. based companies plan to provide the aforementioned cities assistance in technical capabilities and planning through the U.S. Trade and Development Agency (USTDA). The objective of the Mission include:

- To boost the energy efficiency of India's infrastructure
- To support efforts to build the commercial relationship in sectors that contribute to shared environmental objectives.

The U.S. government agencies such as the U.S Trade and Development Agency, Department of Commerce, U.S. Export-Import Bank and other trade and economic agencies aim to collaborate for promoting greater U.S.-India infrastructure development cooperation and to support development of smart cities. The initiative undertaken is expected to be replicable all over India.

Challenges

- Medium to long-term gestation period on investment - Returns on infrastructure projects tend to be 'slow and steady', averaging about 7 per cent annually over 30 years.
- Social impact – All solutions would need to highlight the social impact and degree of inclusivity.
- City specific customised solutions – Tailor made solutions addressing the needs and concerns of each city.
- Project delays – Decision making processes between the state government and the ULB might result in project delays.
- PPP success stories in urban infrastructure are rare in India mainly because of inadequate cost recovery and associated political sensitivity.

17. Smart Cities Mission, Ministry of Urban Development, Government of India, May 2016, http://smartcities.gov.in
18. 19 (a) KPMG in India's analysis based on the 'Top 20 Smart City Proposals' (SCPs) selected in Round 1 of the 'Smart Cities' challenge
19. Bloomberg Philanthropies Website, accessed on 11 May 2016, http://www.bloomberg.org/program/government-innovation/india-smart-cities-mission/
20. USTDA signs MoUs for development of Allahabad, Ajmer, Visakhapatnam as smart cities, January 2016, http://www.aninews.in/newsdetail2/story201314/ustda-signs-mous-for-development-of-allahabad-ajmer-visakhapatnam-as-smart-cities.html

Opportunities

The Smart city plan is perceived as an opportunity to treat cities as spaces; it is meant to be one common plan for the city, encompassing both spatial and non-spatial aspects covering attributes such as land-use plan and a socio-economic-environmental sustainability plan.

The global market for smart city products and services is forecast to be more than USD1.5 trillion by 2020, equivalent to 12th largest nation on earth, in terms of GDP[21]. Further, it is estimated that the top 750 smart cities will generate two-thirds of the world's GDP by 2030. Based on the 'Smart Cities Mission' of the GoI, the estimated size of the smart city market in India during the period 2016-2020 is USD32 billion[22].

The opportunities for the U.S. within the smart city domain in India are as below:

Sectors	Utilities	Urban mobility	Energy	Spatial	Social	Governance	Safety	Innovation
	Water management	Integrated mobility solutions (Multimodal hub)	Smart grid	Placemaking for heritage conservation	E-learning and smart classrooms	E-services transactions and payments	Command and control	IoT and Big Data analytics
	Sewage & Wastewater management	Sensor based parking infrastructure	Solar energy and renewables	Lake/ Riverfront development	e-health	Broadband access and WiFi hotspots	City surveillance	Digital signages
	Rainwater harvesting	Non Motorized Transport (NMT)	Smart street lighting	Underground wiring	Affordable housing	E-administration	Biometrics	Incubation centers for start-ups
	Municipal waste management	Electric vehicles for last mile connectivity	Waste to energy plants	Common utility duct	Slum redevelopment	M-governance	Cybersecurity	Infrastructure access for disabled
	Smart toilets	Intelligent traffic management	Sensors and smart devices	Landscaping of public open spaces		Identity management/Smart cards		City cloud based services
	City wide optical fibre network	Smart bus stops	Smart buildings	Redevelopment of public land		Public Wi-Fi	Disaster management	Crowd sourcing platforms

Source: KPMG in India's analysis based on the 'Top 20 Smart City Proposals' (SCPs) selected in Round 1 of the 'Smart Cities' challenge.

Outlook

The smart cities market in India offers a significant opportunity for the U.S. for the next five years. In our opinion, majority of the funding is expected to be spent in the 83 cities in the next five years. Additionally, there are significant adjacency opportunities related to industrial corridors, semi-urban areas, railway hubs and port cities. The manufacturing infrastructure and innovation capacity are expected to witness growth owing to the development of smart cities and industrial clusters across different regions identified as potential investment destinations.

The convergence of the 'Smart Cities Mission' with several GoI initiatives such as 'AMRUT', 'Swachh Bharat Mission' (SBM), 'National Heritage City Development and Augmentation Yojana' (HRIDAY), 'Digital India', 'Skill India' and 'Housing for All by 2020', is expected to accelerate growth in the above sectors. Furthermore, the 'Smart Cities Mission' is also expected to deliver substantial opportunities for growth in key sectors such as automobiles, hard/soft furnishings, consumer finance and the service sector.

21. Frost & Sullivan Analysis- Connectivity and the Emergence of Smart Cities at GIL 2014 Australia

22. 22 (a) KPMG in India's analysis based on the 'Top 20 Smart City Proposals' (SCPs) selected in Round 1 of the 'Smart Cities' challenge

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