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EXECUTIVE SUMMARY

Second largest road network

- In FY16, India had the 2nd largest road network globally, measuring a total of 5.23 million kms. Over 64.5 per cent of all goods in India are done by roads, while 85.9 per cent of the total passenger traffic use road to commute.

Rising budget allocation of road sector

- During FY17-18, Government of India allocated USD9.51 billion for development of national highways across the country.

Growing private sector involvement

- As on October 2016, 304 projects were recommended for development by the Public Private Partnership Appraisal Committee.
- Investment of USD31 billion is expected in PPP during the next 5 years (by 2020) for national highways.

Rapid growth in national highways

- Length of national highways in in FY16. As a part of infrastructure reforms, the government plans to double the length of national highways to 2 lakh kms.
- In February 2017, 6604 kms of national highways were constructed, against a target of 15000 kms, under various road transport & highway projects.

Overseas Investment for infrastructure development

- Canada Pension Plan Investment Board plans to invest USD322 million for infrastructural development in India.
- The Government has received public sector undertakings from Malaysia & Japan for funding the upcoming highway projects in India – annuity model 60 per cent of the investment is borne by the private investors 40 per cent by NHAI in 5 equal instalments.
- Japan International Cooperation Agency signed an agreement with the MMRDA to provide official development assistance loan worth US$1.28 billion for the trans-harbour link project in the city, with a 30-year repayment period.
- In November 2016, Union Government & Asian Development Bank signed USD500 million loan agreement to build the longest bridge across river Ganga, in Bihar.
- In April 2017, the Government of India agreed to build world-class road infrastructure in SriLanka for 3 major stretches: Mannar-to-Vavuniya, Dambulla-to-Tricomalee & Jaffna-to-Mannar.

Source: MoRTH Annual Report 2015–16, NHAI, Make in India, TechSci Research

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ROADS

ADVANTAGE INDIA
Robust demand
- Greater connectivity between different cities, towns & villages has led to increased road traffic over the years
- Growth in automobiles & freight movement commands a better road network in India
- Rise in the number of 2 & 4 wheelers, increasing traffic supports the growth

Attractive opportunities
- Roads and bridge infrastructure industry to be worth USD19.2 billion by FY17
- The Central Government has fast tracked at least 24 roads & highways projects
- Government is planning to offer a bonus of 10 per cent of the total project cost to firms that construct & deliver highway projects before deadline

Increasing Investments
- Infrastructure expenditure estimated at USD1 trillion over FY13–17
- Government of India plans to approve almost 10000 kms of national highway in FY17
- Growing participation of the private sector through Public-Private Partnership

Policy Support
- Road infrastructure has been key government priority; sector received strong budgetary support over the years
- Financial institutions received government approval to raise money through tax-free bonds
- 100 per cent FDI is allowed under automatic route subject to applicable laws & regulations

Source: NHAI, Make in India, MoRTH, Business Monitor International, TechSci Research
Notes: NHAI - National Highways Authority of India, MoRTH - Ministry of Road Transport and Highways, E- Estimated

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MARKET OVERVIEW AND TRENDS
ROAD NETWORK IN INDIA IS SUB-DIVIDED INTO THREE CATEGORIES

Roads\(^1\)  
(Total length: 5.47 million Kms)

- **State highways**  
  Total length: 1,61,487 kms  
  Share: 3 per cent of the total roads in India

- **National Highways**  
  Total length: 1,03,933 kms  
  Share: 2 per cent of the total roads in India

- **District & Rural roads**  
  Total length: 52,07,044 kms  
  Share: 95 per cent of the total roads in India

Source: Ministry of Road Transport and Highways (MoRTH) Annual Report 2016-17, TechSci Research, Note: 1- Data as of FY17
**EVOLUTION OF INDIA’S ROAD NETWORK**

- India has the 2nd largest road network in the world (4.87 million kms)
- Roads constitutes about 80 per cent of the country’s passenger traffic & 65 per cent of freight traffic

<table>
<thead>
<tr>
<th>Parameter</th>
<th>FY03</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of National Highways (kms)</td>
<td>58,112</td>
<td>1,00,475</td>
</tr>
<tr>
<td>Passenger vehicle sales (million)</td>
<td>0.71</td>
<td>2.8</td>
</tr>
<tr>
<td>NHDP toll collection (USD million)</td>
<td>64.5</td>
<td>1078.3</td>
</tr>
<tr>
<td>Highway projects awarded (kms) by NHAI</td>
<td>677</td>
<td>6397</td>
</tr>
<tr>
<td>Share of infrastructure in total bank funding (%)</td>
<td>2.3</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: National Highway Authority of India (NHAI), National Highway Builders Foundation, Reserve Bank of India (RBI)

Notes: FY - Indian Financial Year (April-March), NHDP - National Highway Development Project, TechSci Research,
FY16¹: Till December 2015, FY17¹: Till May 2016
STRONG MOMENTUM IN EXPANSION OF ROADWAYS

- Value of total roads & bridges infrastructure in India is expected to expand at a CAGR of 13.6 per cent over FY09–17 to USD19.2 billion
- In FY16, road projects worth USD2.21 billion has been awarded under Public Private Partnership mode
- In April 2017, the National Highways & Infrastructure Development Corp. bagged a project to build 5 tunnels in Jammu & Kashmir worth US$3.42 billion to help in avoiding road accidents due to avalanches.
- Increasing industrial activity, increasing number of 2 & 4 wheelers would support the growth in the road transport infrastructure projects.
- In January 2017, the government proposed to lay down cycle tracks on all highways & major roads pan India, to promote the use of electric cars & public transport.
- In April 2017, Chenani-Nashri tunnels that links Kashmir valley with Jammu was inaugurated. It is the longest road tunnel in the country & US$371.86 million were invested in this project.

Rocks/bridges infrastructure value in India (USD billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY09</td>
<td>6.9</td>
</tr>
<tr>
<td>FY10</td>
<td>6.8</td>
</tr>
<tr>
<td>FY11</td>
<td>8.3</td>
</tr>
<tr>
<td>FY12</td>
<td>8.6</td>
</tr>
<tr>
<td>FY13</td>
<td>8.6</td>
</tr>
<tr>
<td>FY14</td>
<td>11</td>
</tr>
<tr>
<td>FY15E</td>
<td>13.4</td>
</tr>
<tr>
<td>FY16F</td>
<td>16.1</td>
</tr>
<tr>
<td>FY17F</td>
<td>19.2</td>
</tr>
</tbody>
</table>

Source: Business Monitor International (BMI), Ministry of External Affairs, TechSci Research
Notes: CAGR - Compounded Annual Growth Rate, FY - Indian Financial Year (April - March), F - Forecast, NHDP - National Highway Development Project, SARDP-NE: Special Accelerated Road Development Programme for the North Eastern Region and LWE - Left Wing Extremism Programme; Figures are as per latest data available
National highways account for 1.9 per cent of the total road network in India.

NHAI has planned to award projects for 5,300 kms (2800 kms under Engineering, Procurement & Construction mode, 1,000 under Build operate transfer mode & 1,500 kms under hybrid mode in FY16)

Double-lane highways constitute the largest share of highways in India (40658 kms), then followed by single/intermediate-lane (19330 kms) & 4/6/8-lane (19128 kms) highways

The Government has proposed to upgrade 2 lane national highways into 4 lane national highways for which USD65 billion has been allocated. This step is expected to reduce the passenger car units to 10000 per day

The Government of India approved US$1.04 billion project for construction & upgrading 558 kms of roads to link India with Bangladesh, Bhutan & Nepal. The project will ease the movement of passengers, cargo & increase trade by 60 per cent. Around 50 per cent of the project would be funded by Asian Development Bank.

State of Telangana is expected to have a network of national highways of 5,303 kms in length by 2017.

In January 2017, Government of Assam announced investment of US$2.23 billion for developing 1253 kms of roads into national highways

In February 2017 NHAI floated bids to monetise 10 national highway projects in India, in response institutional investors from Canada, Middle East & US

The National Democratic Alliance decided to bring all future road projects: economic corridors & coastal roads under its aegis, to boost the Bharatmala Plan. The project is estimated to cost around US$148.74 billion.

The government is planning to monetise 105 highway projects, worth US$21.57 billion as a part of innovative models of financing. This was declared during an event held on India Integrated Transport & Logistics Summit in Delhi in May 2017.
**ROADS**

**ADOPITION OF NHDP FOR DEVELOPMENT OF HIGHWAYS**

- The National Highway Authority of India (NHAI), a government agency, is responsible for construction, maintenance & development of highways.

- Government of India has formulated a seven-phase programme, ‘National Highway Development Project (NHDP)’, vested with NHAI, for the development of National Highways in the country.

![Map of India with highlighted highways]

- **Golden Quadrilateral (GQ):** It is the highway network that connects 4 major metropolises.
  - Total Length – 5846 km (As of October, 2016)

- **North South & East West Corridor (NS – EW NHDP Phase I & II):** It connects the country’s extreme ends.
  - Total Length(NS & EW) – 7300 kms
  - (As of Oct 2016)

- **NHDP Phase III to VII:** Construction & improvement of roads in the remaining urban & suburban regions.

**Source:** NHAI, TechSci Research

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### NHAI’S SUCCESSFUL IMPLEMENTATION OF PROJECTS … (1/2)

<table>
<thead>
<tr>
<th>NHDP phase/Year of Approval</th>
<th>Project description</th>
<th>Total length (Kms)</th>
<th>Cost</th>
<th>Development model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I / December 2000</td>
<td>Development of Golden Quadrilateral, North South &amp; East West (NS-EW) corridor, port connectivity &amp; other National Highways</td>
<td>13,390</td>
<td>USD5.6 billion</td>
<td>Engineering-Procurement &amp; Construction (EPC)</td>
</tr>
<tr>
<td>Phase II / December 2003</td>
<td>Development of North South &amp; East West (NS-EW) corridor &amp; other National Highways</td>
<td>7,142</td>
<td>USD6.3 billion</td>
<td>EPC</td>
</tr>
<tr>
<td>Phase III / April 2007</td>
<td>Development of 4-lane National Highways</td>
<td>12,109</td>
<td>USD18.5 billion</td>
<td>PPP (Build-Operate-Transfer)</td>
</tr>
<tr>
<td>Phase IV / February 2012</td>
<td>Upgradation of single lane to 2-lane</td>
<td>20,000</td>
<td>USD12 billion</td>
<td>PPP</td>
</tr>
</tbody>
</table>

*Source: NHAI, TechSci Research*

*Note: Data is till December 2015*
NHAIS SUCCESSFUL IMPLEMENTATION OF PROJECTS … (2/2)

<table>
<thead>
<tr>
<th>NHDP phase / Year of Approval</th>
<th>Project description</th>
<th>Total length (Kms)</th>
<th>Cost</th>
<th>Development model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase V / October 2006</td>
<td>Upgradation of 4-lane highways to 6-lane &amp; port connectivity</td>
<td>6,500</td>
<td>USD9.3 billion</td>
<td>PPP</td>
</tr>
<tr>
<td>Phase VI / November 2006</td>
<td>Development of expressway The project is targeted to be completed by December 2015</td>
<td>1,000</td>
<td>USD3.8 billion</td>
<td>PPP-(Design-Build-Finance-Operate)</td>
</tr>
<tr>
<td>Phase VII / December 2007</td>
<td>Development of ring roads, bypasses &amp; flyovers</td>
<td>700</td>
<td>USD4.2 billion</td>
<td>PPP (Build-Operate-Transfer)</td>
</tr>
</tbody>
</table>

In November 2016, under the Ministry of Roads Logistic Efficiency Enhancement Programme, NHAI invited bids for the preparation of detailed project reports for 44 freight corridors, inter-corridors & feeder routes to reduce the cost & time of freight movement across India.

To finance various projects during FY17, NHAI plans to raise USD 2.99 billion through Employees’ Provident Fund Organization, USD 1.27 billion through LIC; USD 746.82 million each through Masala & 54-EC bonds & USD 2.46 billion from the market.

Source: NHAI, TechSci Research
Note: Data is till December 2015
SPECIAL ACCELERATED ROAD DEVELOPMENT PROGRAMME FOR THE NORTH EAST REGION

- The Special Accelerated Road Development Programme for the North Eastern region is aimed at developing road connectivity between remote areas in the North East with state capitals & district headquarters.

- SARDP-NE is vested with the development of double/4 lane national highways of about 7,530 kms & double-laning improving about 2,611 kms of state roads, as on FY16.

- Implementation of the road development programme would facilitate connectivity of 88 district headquarters in North Eastern states to the nearest national highways.

- The 9.5 kms long Dhola–Sadiya Bridge to link Arunahchal Pradesh & Assam has been inaugurated in May 2017 & made accessible to the public.

- The project would be undertaken in following 3 phases:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Project description</th>
<th>Total length (Kms)</th>
<th>Date of completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Improvement of National Highways</td>
<td>3,014</td>
<td>March 2017</td>
</tr>
<tr>
<td></td>
<td>Improvement of state roads</td>
<td>1,085</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Development of double-lane of National Highways</td>
<td>2,392</td>
<td>Investment decision is yet to be taken by government</td>
</tr>
<tr>
<td></td>
<td>Double-laning &amp; improvement of state roads</td>
<td>1,331</td>
<td></td>
</tr>
<tr>
<td>Arunachal Pradesh package of roads and highways</td>
<td>Development of roads</td>
<td>2,319</td>
<td>March 2017</td>
</tr>
</tbody>
</table>

Source: NHAI, MoRTH Annual Report 2015-16, PPP in India, TechSci Research
LEFT WING EXTREMISM (LWE) PROGRAMME

- The government approved a Road Requirement Plan for the development of 1,126 kms of National Highways & 4,351 kms of state roads in Left Wing Extremism affected districts
- The project has been implemented in Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha & Uttar Pradesh at a total cost of USD1.2 billion
- The project would be vested with the Ministry of Road Transport & Highways (MoRTH) & is scheduled for completion by FY17
- Total outlay of USD1.3 billion has been allocated for this programme during FY16

<table>
<thead>
<tr>
<th>Status</th>
<th>Total length (Kms)</th>
<th>Total cost (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved</td>
<td>5,477</td>
<td>USD1.2</td>
</tr>
<tr>
<td>Awarded</td>
<td>5,077</td>
<td>USD1.3</td>
</tr>
<tr>
<td>Completed (in February 2015)</td>
<td>3,471</td>
<td>USD0.8</td>
</tr>
</tbody>
</table>

*Source: NHAI, MoRTH, PPP in India, TechSci Research*
As of 15<sup>th</sup> May, 2017, there were 1,582 PPP projects in India, of which 783 were related to roads & bridges accounting for a value of USD74.63 billion.

Project awarded under BOT is 7.15 per cent of the total awarded projects as of May 2017.
ROADS

DECREASE IN PUBLIC PARTICIPATION IN THE SECTOR … (2/2)

- Road construction projects awarded to BOT companies recorded a CAGR of 1.23 per cent during FY06–17.
- Both NHAI & Ministry of Road Transport & Highways awarded projects of around 6,397 kms in FY16.
- In 2015-16, 7 projects (20 per cent) of the total 4,368 kms of NHAI projects awarded were allocated to BOT mode.
- During FY17, projects of about 422 kms were awarded to BOT players by NHAI, in comparison to 873 kms in FY16.

Source: NHAI, Crisil, ITNL Company Annual Reports, TechSci Research
Note: FY13 - Projects awarded by NHAI, FY16¹ – Till December 2015
¹Data as of February 2017
PRIVATE PLAYERS GAINING TRACTION IN THE ROADS SECTOR

* Until 2005, the road construction market was dominated by public sector companies

* With the emergence of private players over the last decade, the road construction market has become fragmented & competitive; players bidding for projects also vary in terms of size

Major private sector players

**IBR**

Major projects: Mumbai–Pune BOT Project, Pune–Nashik BOT Project, Bharuch–Surat BOT Project, Thane–Bhiwandi by-pass 4 Lane Project, Thane Ghodbunder BOT Project, Ahmedabad–Baroda NH-8, 6 laning of Agra - Etawah bypass

**IL&FS**

Major projects: North Karnataka Expressway, West Gujarat Expressway, Noida Toll Bridge, Ahmedabad - Mehsana Toll Road, East Coast Road, Kotakatta Kurnool Road Project, East Coast Road, Hazaribagh Ranchi Expressway Ltd, Karnataka Toll Bridges

**Ashoka Buildcon Limited**

Major projects: NH6 Dhankuni to Kharagpur, Sambalpur Baragarh, NH4 Belgaum Dharwad, NH-3 Pimpalgaon – Nashik – Gonde Road (JV with L&T), Jaora – Nayagaon Road, Chennai Outer Ring Road, Modhul – Nippani Road, Indore Edalabad Road, Wainganga Bridge, Ahmednagar Aurangabad Road

**HCC**

Major projects: Bandra–Worli Sea Link, Badarpur Elevated Highway Project, Delhi Faridabad Elevated Expressway, Breakwater construction for new port at Ennore, Chennai, New Railway Line Project from Jiribam - Tupul

**GMR**

Major projects: Tuni–Ankapalli Highway, Tambaram–Tindivanam Highway, Ambala–Chandigarh Highway

Source: TechSci Research
Note: NH – National Highway

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**Increasing private sector participation**

- The government’s policy to increase private sector participation has proved to be a boon for the infrastructure industry with a large number of private players entering the business through the Public Private Partnership (PPP) model.
- The type of PPP models used in road projects are Build Operate Transfer (BOT) toll & BOT annuity.
- During the next 5 years, investment through PPP is expected to be USD31 billion.

**Partnerships between Indian and foreign firms**

- With the Government of India permitting 100 per cent FDI in the road sector, most foreign companies have formed partnerships with Indian players to capitalise on the sector’s growth.

**India’s renewed focus on infrastructure**

- Infrastructure is the key to supporting double-digit GDP growth in India during the medium to long term.
- The government has made infrastructure development a key policy issue & has earmarked USD1.0 trillion during FY13–17 for the sector.

**Success of India’s Five-Year Plans**

- The total length of national highways is expected to reach 100,000 kilometres by the end of the 12th Five-Year Plan.
- In September 2015, government set a target of building national highways of 30 km per day.
- By the end of FY16, government constructed 6,029 kms of national highways.
- A total of 50,000 kms of state highways is to be taken up for up-gradation as National Highways.

**Infrastructure initiatives**

- Programmes like “Bharat Nirman”, JNNURM are designed to pursue nation wide rural connectivity, linking all the unconnected villages with fair weather roads.

Source: NHAI, MoRTH, TechSci Research

Note: FDI - Foreign Direct Investment

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PORTER FIVE FORCES ANALYSIS

ROADS
ROADS

PORTERS FIVE FORCES ANALYSIS

Competitive Rivalry
- Competitive rivalry between big players is quite intense as far as winning projects is concerned due to high price sensitivity
- Few large players have the expertise for undertaking bigger projects; hence, competition is higher in case of large infrastructural projects

Threat of New Entrants
- With liberalisation, rules have been eased for the entry
- Big players block the entry of new players in the roads segment, especially in large projects

Substitute Products
- Threat of substitutes is low
- Even if government wants to renovate rather than going for reconstruction, it is highly likely to go to the same players

Bargaining Power of Suppliers
- Bargaining power of suppliers is very low
- Several small players exist in the suppliers section that weaken their power

Bargaining Power of Customers
- Bargaining power is strong due to robust price sensitivity & low costs
- Buyers are government organisations or major agencies that enhance their buying power
**ROADS**

**STRATEGIES ADOPTED**

**Diversification**
- Most players are now opting for inorganic growth routes & are diversifying into other businesses (IIIML, a subsidiary of IL&FS is into private equity business with over USD3.2 billion under management)
- Many players are entering into technical partnerships with foreign players to match their R&D levels with MNCs

**Training of labour**
- Companies are hiring & training staff to reduce the shortage of skilled manpower & focusing on policies to retain labour
- Firms plan to increase minimum wages in the construction sector as well as women participation
- Companies are partnering with technical institutes and colleges such as CSTI (L&T & Govt. of Odisha)
- Roads Ministry will give grant of USD 152765 to private companies & state road transport corporations willing to set up or upgrade driver training schools

**Promotion of R&D**
- Companies are ramping up investment for better & cost effective ways of road construction
- Stepping up R&D to develop better roads in areas which suffer from congestion, delays & accidents, according to World standards
- As of November 2016, 3 MOUs were signed between National Green Highways Mission & ITC Ltd, Yes Bank Ltd & Teri for setting up a Centre for Innovations in Green Pathways in order to enhance research & innovations in the field.

**Geographical expansion**
- Indian companies are increasing their footprints abroad, thus tapping outside market
- IL& FS won a road contract worth USD216.7 million in Botswana, through its subsidiary Elsamex SA
- By December 2016, 4699 km of National Highway was constructed by Ministry of Road Transport & Highways

**JUNE 2017**

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ROADS

GROWTH DRIVERS
ROADS

STRONG DEMAND AND POLICY SUPPORT DRIVING INVESTMENTS

Growing demand

Rise in 2 & 4 wheeler vehicles
Increasing freight traffic
Strong trade & tourist flows between states

Inviting

Policy support

Greater government focus on infrastructure
Standardised processes for bidding & tolling; clear policy framework
Tax sops, FDI, FII encouragement

Increasing investments

NHAI implementing one of the largest road projects
Rising private sector participation
Strong projected demand making returns attractive

Source: Make in India, TechSci Research
Higher individual discretionary spending has led to increased spending on cars, motorbikes & scooters

Growing domestic trade flows have led to a rise in commercial vehicles & freight movement

Increasing financing on vehicle loans

Road’s traffic share of the total traffic\(^1\) in India has grown from 13.8 per cent to 65 per cent in freight traffic & from 32 per cent to 80 per cent in passenger traffic over 1951–2015

Source: MoRTH, World Bank, Make in India, TechSci Research

Note: \(^1\)Including rail and road transport
RISING VEHICULAR TRAFFIC KEY FACTOR FOR EXPANSION OF ROADWAYS

* Sales of passenger vehicles increased at a CAGR of 9.97 per cent during FY06-17 and reached 3.7 million in FY17
* Sales of commercial vehicles in the country increased at a CAGR of 5.21 per cent in FY10-17, with the number reaching 810,286 during FY17
* Rising per capita income & growing middle class coupled with easier access to finance & a wider price range of vehicles have boosted car sales

Trends in passenger vehicle Production (in million)

Trends in commercial vehicle Production (in ’000)

Source: SIAM, TechSci Research

For updated information, please visit www.ibef.org
STRONG GROWTH MOMENTUM IN NATIONAL HIGHWAY CONSTRUCTION

Road additions in the 3rd Five-Year Plan was just 179 kilometres; this increased to 10,228 kms in the 11th Plan

Overall physical target for development of National Highways, as included in the 12th Five-Year Plan

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widening to 2-lane (km)</td>
<td>14,800</td>
</tr>
<tr>
<td>Widening to 4-lane (km)</td>
<td>9,826</td>
</tr>
<tr>
<td>Widening to 6-lane (km)</td>
<td>5,590</td>
</tr>
<tr>
<td>Strengthening / Improvement of Riding Quality Programme (IRQP) (km)</td>
<td>8,500</td>
</tr>
<tr>
<td>Construction of bridges (in No’s)</td>
<td>50</td>
</tr>
<tr>
<td>Construction of bypasses (in No’s)</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: NHAI, MoRTH, TechSci Research  
Note: 12th¹ - Estimated

Length of national highway added under various Five-Year Plans (kms)
INFRASTRUCTURE DEVELOPMENT: A PRIORITY FOR GOVERNMENT

* Infrastructure is a priority for the government’s economic policy; funding from private as well as public sectors is set to increase sharply in the near term

* Infrastructure’s total share in bank funding increased from 3.74 per cent in 2002 to about 9.8 per cent in FY16

* It is estimated that total spending on infrastructure would reach USD19 billion during FY12-17

Roads and Highways Tenders

<table>
<thead>
<tr>
<th>Summary</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Of Road From Umnniya To Khadhakhar Link Road</td>
<td>27-Dec-2016</td>
</tr>
<tr>
<td>Construction Of Road From Girwar To Zinnaveera Link Road</td>
<td>27-Dec-2016</td>
</tr>
<tr>
<td>Widening.upgradation Of Police Lines Sopore Road By Way Of Nallah Muck Filling, P-I Wbm Grade 2ⁿd &amp; Rcc Pipe Crossing. Agg Length 1.00 Km</td>
<td>31 Dec 2016</td>
</tr>
<tr>
<td>Construction Of Road Under Pradhan Mantri Gram Sadak Yojana Including Maintenance For 5 Years After Construction</td>
<td>30 Dec 2016</td>
</tr>
</tbody>
</table>

Source: RBI, TechSci Research

Notes: FY17¹ – Till May 2016
PRIVATE FUNDING BEING ENCOURAGED TO REDUCE FINANCE CONSTRAINTS … (1/3)

- The government has aimed to attract funding from the private sector for infrastructure projects & thereby reduce strains on the budget
- The PPP model has emerged as the favoured one for private sector participation in road projects
- As a result of government’s initiative, India has completed 112 PPP projects & 149 PPP projects are under progress as of December 2016

Notes: PPP - Public Private Partnership, NHDP - National Highway Development Project, BOT - Build Operate Transfer

Combined gross fiscal deficit of the centre and state governments (% of GDP)

Source: RBI, TechSci Research
E – RBI Estimates (Median Forecast)
Cumulative FDI inflows into the construction development sector, including roads & highways, has increased from USD8.06 billion in FY10 to USD24.29 billion till March 2017.

A MoU has been approved by the Union Cabinet between India & the UAE on bilateral cooperation in road, transport & highways sector. The MoU includes collaboration in planning administration & management of road infrastructure, technology & standards for roads/highways construction & maintenance.

Cumulative FDI Inflows (USD billion)

Source: DIPP, TechSci Research
FY17\(^t\) - April 2000 to December 2016
NHDP’s Phase I & Phase II were mostly developed by public funds with BOT’s share at 14.8 per cent & 29.6 per cent, respectively

The PPP model will be the favoured route for executing the remaining phases of NHDP

In May 2017, the Road Ministry signed 34 MoUs with investment potential of around US$ 29.74 billion with private and public companies such as Adani Logistics, Ascendas, Chennai Port Trust, etc., to improve multi-modal logistics.

% of BOT share in different phases of NHDP

<table>
<thead>
<tr>
<th>Phase</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>14.8%</td>
</tr>
<tr>
<td>Phase II</td>
<td>29.6%</td>
</tr>
<tr>
<td>Phase III</td>
<td>95.9%</td>
</tr>
<tr>
<td>Phase IV</td>
<td>83.1%</td>
</tr>
<tr>
<td>Phase V</td>
<td>100.0%</td>
</tr>
<tr>
<td>Phase VI</td>
<td>100.0%</td>
</tr>
<tr>
<td>Phase VII</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: NHAI, MoRTH, TechSci Research
Note: NHDP - National Highway Development Phase,
BOT - Build Operate Transfer
Year of Approvals for Phase I: December 2000
Phase II: December 2003
Phase III: April 2007
Phase IV: February 2012
Phase V: October 2006
Phase VI: November 2006
Phase VII: December 2007
Infrastructure – a key government priority

- Infrastructure investment is a major focus area for the government
- The government earmarked USD500 billion for infrastructure in the 11th Five-Year Plan (FY08–12); the amount is set to double to USD1 trillion in the 12th Five-Year Plan (FY13–17)

Support from the Union Budget

- The planned outlay under the Union Budget 2017-18 for development of road transport & highways is US$9.52 billion
- Moreover, as per Union Budget 2017-18, the government has set targets to develop almost 2,000 kilometres of coastal connectivity roads.

Rural development

- The Prime Minister’s Gram Sadak Yojana (PMGSY) is a scheme for development of rural roads in India
- Under the Union Budget 2016-17, Government of India allocated an investment of USD14.82 billion for the road sector, including a budget for Pradhan Mantri Gram Sadak Yojana (PMGSY)

Taxes and other sops

- Companies enjoy 100 per cent tax exemption in road projects for 5 years & 30 per cent relief over the next 5 years
- Companies have been granted a capital of up to 40 per cent of the total project cost to enhance viability

Source: Make in India, Union Budget 2015-16, Union Budget 2016-17, TechSci Research, Notes: FDI - Foreign Direct Investment, FII - Foreign Institutional Investors
POLICY INITIATIVES IN THE RIGHT DIRECTION … (2/2)

Issue of tax-free infrastructure bonds

- Infrastructure finance companies, such as India Infrastructure Finance Corporation (IIFCL), National Highways Authority of India (NHAI), Housing & Urban Development Corp (HUDCO), Power Finance Corporation (PFC) & India Railway Finance Corporation (IRFC), have been permitted to issue tax-free bonds for a total value of USD3.27 billion for FY15; promotion of infrastructure debt funds is the top agenda
- As a part of Union Budget 2016-17, bonds worth USD2.2 billion are being planned to be raised by National Highway Authority of India (NHAI)

Encouragement of Infrastructure Debt Funds (IDFs)

- Government of India has set up the India Infrastructure Finance Company (IIFCL) to provide long-term funding for infrastructure projects
- Interest payments on External Commercial Borrowings for infrastructure are now subject to a lower withholding tax of 5 per cent vis-à-vis 20 per cent earlier
- IDF income is exempt from income tax

Central Road Fund (CRF)

- The Central Road Fund (CRF) assists the state government & union territories in the development of state roads
- For FY18, USD9.51 billion has been allocated specifically for the development for the national highways in the country

Investment in roads and other infrastructure

- Existing excise duty on petrol & diesel has been changed to road cess to the extent of INR 4 per litre to fund investment in roads & other infrastructure.
- Out of USD33 billion, allocated for the progress of infrastructure, USD14.5 billion has been assigned for the construction sector, including construction of roads and highways in India, as per Union Budget 2016-17
## RECENT BOT PROJECTS AWARDED BY NHAI

<table>
<thead>
<tr>
<th>Project</th>
<th>Length (Km)</th>
<th>Cost (USD million)</th>
<th>Year</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>C &amp; C Constructions</td>
<td>NA</td>
<td>447.87</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>4 laning of Buxar-Patna</td>
<td>25</td>
<td>NA</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>Patna Gaya Dhobi</td>
<td>126</td>
<td>167.95</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>Chardham Highway</td>
<td>NA</td>
<td>1780</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>Jaipur - Ring Road</td>
<td>47</td>
<td>52.06</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>Kundli Manesar Paliwal</td>
<td>83</td>
<td>NA</td>
<td>2017</td>
<td>Easel Construction Ltd and HLS Ltd.</td>
</tr>
<tr>
<td>Gujarat – 8 highways</td>
<td>1200</td>
<td>1780</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>New Delhi – Bharat Mala Programme</td>
<td>NA</td>
<td>5206</td>
<td>2017</td>
<td>Easel Construction Ltd and HLS Ltd.</td>
</tr>
<tr>
<td>4 Laning of Fagne - Mah-Guj Border (PKG-3)</td>
<td>140.79</td>
<td>308.83</td>
<td>2015</td>
<td>M/s IL&amp; FS Transportation Networks Ltd</td>
</tr>
<tr>
<td>8 Laning of Mukarba Chowk to Panipat</td>
<td>69.84</td>
<td>348.63</td>
<td>2015</td>
<td>M/s Essel Infraprojects Ltd</td>
</tr>
<tr>
<td>6 laning of Agra - Etawah bypass</td>
<td>124.5</td>
<td>NA</td>
<td>2015</td>
<td>M/s IRB Infrastructure Developers Ltd</td>
</tr>
<tr>
<td>4 Laning of Solapur - Bijapur</td>
<td>109.8</td>
<td>228.5</td>
<td>2015</td>
<td>Unquest Infra Ventures Pvt Ltd</td>
</tr>
<tr>
<td>4 Laning of Guna to Biaora</td>
<td>93.5</td>
<td>168.03</td>
<td>2015</td>
<td>M/s Dilip Buildcon Ltd</td>
</tr>
<tr>
<td>4 laning of Biaora - Dewas</td>
<td>141.26</td>
<td>262.73</td>
<td>2015</td>
<td>M/s Oriental Structural Engineers Pvt Ltd</td>
</tr>
</tbody>
</table>

Source: NHAI, MoRTH, TechSci Research
Notes: BOT - Build Operate Transfer, UB - Union Budget, Km – Kilometre

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Roadways has been the key focus area for budget allocations over the years

As per Union Budget 2016–17, the government provided an outlay of USD 14.5 billion for the road sector

Between FY09 & FY17, budget outlay for road transport & highways increased at a robust CAGR of 22.8 per cent

Under Union budget 2017-18, GOI is planning to develop 2,000 kilometres of coastal connectivity roads in India.

In April 2017, the Ministry of Road Transport and Highways (MoRTH) plans to seek the central government approval for its Bharatmala project, under which 24,800 Km of highways would be built with investments worth US$ 81.8 billion in the first phase.

Outlay for roads under the respective Union Budgets (USD billion)

Source: Respective Union Budgets, TechSci Research
Note: CAGR - Cumulative Annual Growth Rate, GOI – Government of India, NHAI – National Highway Authority of India
FUTURE PROSPECTS REMAIN BRIGHT FOR THE ROAD SECTOR … (1/3)

- National Highway Development Project (NHDP) is a 7 phase project amounting to USD60 billion. The projects aims to widening, up-gradation & rehabilitation of 47,054 kilometres of national highways
- Ministry of Road Transport & Highways (MoRTH) aims construction of over 10,000 kilometres of road projects during 2016-17
- NHAI awarded 79 road projects covering 6,397 kilometres in FY16

Projects awarded (in kilometres)

<table>
<thead>
<tr>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>6491</td>
<td>1165</td>
<td>1435</td>
<td>5000</td>
<td>6397</td>
</tr>
</tbody>
</table>

Projects awarded (in kilometres) by NHDP as of 28th February 2017

<table>
<thead>
<tr>
<th>NS &amp; EW Ph. I &amp; II</th>
<th>NHDP III</th>
<th>NHDP IV</th>
<th>NHDP V</th>
<th>NHDP VI</th>
<th>NHDP VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>7142</td>
<td>11809</td>
<td>13203</td>
<td>6500</td>
<td>1000</td>
<td>700</td>
</tr>
</tbody>
</table>

Source: NHAI, MoRTH, TechSci Research
Notes: NHDP stands for National Highways Development Project, FY16 – Data till December 2015
Development of National Highways through PPP is expected to remain the key focus area for the government.

During the period FY15 to FY19, investments through PPP are expected to be over USD31 billion for National Highways & around USD10 billion for state highways.

The Central Government is putting special focus to improve road infrastructure in North Eastern part of India & along the same line, the Government of Assam is in consultation with Union Ministry of Highways, Road Transport & Shipping to draw up a roadmap for construction of an international highway connecting India with Bhutan through Bodoland Territorial Autonomous Districts (BTAD).

In March 2017, the government signed the TIR – Transport Internationaux Routiers or International Road Transports, under the United Nations Economic Commission for Europe (UNECE), to ease trade with countries in Asia & Europe and to access transnational multi-modal connectivity.

PPP opportunities over the next five years (2014-15 to 2018–19) (USD billion)

<table>
<thead>
<tr>
<th></th>
<th>National Highways</th>
<th>State Roads and Rural Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD billion</td>
<td>36</td>
<td>84</td>
</tr>
</tbody>
</table>

Source: NHAI, MoRTH, Make In India, TechSci Research
In India, roads remain the most important means of transport, accounting for around 80 per cent of the passenger traffic & 65 per cent of the freight traffic.

Number of total vehicles in India increased at a CAGR of 9.4 per cent during the period of FY06-16, from 9.7 million to 23.9 million.

As of FY16, 2 wheelers accounted for 78.6 per cent of the total number of vehicles in India.

**Bifurcation of vehicles by category: FY16**

*Source: SIAM Report, TechSci Research*  
*Note: SIAM - Society of Indian Automobile Manufacturers*
OPPORTUNITIES AND THE REASSURANCE OF CONTINUED POLICY FOCUS

**Significant potential for construction & EPC companies**
- Under the 12th Five-Year Plan, the government targets to develop national highways at the rate of 20 km per day.
- India’s construction sector is projected to grow at 7 – 8 per cent each year over the next decade (till 2025); the sector is now expected to become the world’s 3rd largest by 2025.
- India’s construction market was USD157 billion for FY14, an increase of USD4 billion over FY13.

**Strong focus on infrastructure**
- Infrastructure spending is expected to reach USD1 trillion in the next 5-Year Plan (FY12–17).
- Under Union Budget 2015 – 16, government plans to connect 1,78,000 unconnected habitations by all weather roads. This would require completion of existing 1,00,000 kms of roads under construction plus sanctioning of additional 1,00,000 kms of roads.

**Major government initiatives to boost private and foreign investment**
- An increase in FII limit in infrastructure corporate bonds from USD5 billion to USD25 billion in FY12 was a step in the right direction.
- Cumulative FDI inflows, from April 2000 to December 2016, in construction development & infrastructure sector (including roads & highways) reached USD24.28 billion.
- New wing to oversee the development of roads in strategic areas.

Source: NHAI, MoRTH, Union Budget, TechSci Research, News articles.
Notes: FDI - Foreign Direct Investment, FII - Foreign Institutional Investor, EPC - Engineering, Procurement and Construction, ECB - External Commercial Borrowings, WHT - Withholding Tax, DDT - Dividend Distribution Tax, BRO-Border Roads Organisation; 1 - Figures mentioned in this slide are as per latest data available.
IRB INFRATESTRUCTURE LIMITED … (1/2)

- IRB Infrastructure is one of the leading BOT operators in India, with a built-length of around 9,846 lane kilometres
- IRB has 20 BOT projects, of which 14 are operational, as on March 2016
- As of 31 March 2016, IRB Infrastructure’s order book aggregated USD1.49 billion
- The company has an 11.07 per cent share in the Golden Quadrilateral project
- During FY10-16, company’s revenue increased at a CAGR of 11.3 per cent

Revenue Trend: IRB Infrastructure Limited (USD million)

Source: Company Annual Report & Corporate Presentation, TechSci Research
Notes: CAGR - Compounded Annual Growth Rate, BOT – Build Operate Transfer
IRB INFRASTRUCTURE LIMITED … (2/2)

- Won the 1st ultra-mega NHAI road project worth USD750 million
- Received financial closure for Ahmedabad Vadodara Project
- Signed contract with NHAI for four-laning of NH-17 from Goa/Karnataka to Kundapur
- Acquired MVR Infrastructure and Tollways Pvt Ltd
- Signed a contract with NHAI for the development of highways in Haryana for USD373 million
- Preferred Bidder for the 6 Laning of Agra – Etawah section of NH – 2 project
- In FY16, the company recorded USD783.7 million revenue from operations

Source: Company Annual Report, News articles, TechSci Research
IL&FS TRANSPORTATION NETWORKS LIMITED (ITNL) … (1/2)

- ITNL has the largest BOT road asset portfolio (in terms of lane kilometres) in India, with presence in 17 states.
- The company has 14,680 lane kilometres under its road asset portfolio, comprising 30 BOT road projects.
- In 2013, ITNL signed a MoU with a Japanese expressway development company, Nippon Expressway Company (NEXCO East) to work on PPP projects.
- ITNL emerged as the lowest bidder for 2 highway projects in Maharashtra worth USD692.43 million in June 2015.
- The company was awarded Global Road Achievement Award for the improvement of Thiruvananthapuram City Roads Project.
- As of September 2016, the company has received in-principle approval from SEBI for registration of IL&FS Transportation Investment Trust.

Revenue trends: IL&FS Transportation Networks Limited (USD million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY09</td>
<td>255</td>
</tr>
<tr>
<td>FY10</td>
<td>502</td>
</tr>
<tr>
<td>FY11</td>
<td>843</td>
</tr>
<tr>
<td>FY12</td>
<td>1222.1</td>
</tr>
<tr>
<td>FY13</td>
<td>1250</td>
</tr>
<tr>
<td>FY14</td>
<td>1128.5</td>
</tr>
<tr>
<td>FY15</td>
<td>1132.7</td>
</tr>
<tr>
<td>FY16</td>
<td>727.5</td>
</tr>
</tbody>
</table>

Source: Company website, Company Annual Report, TechSci Research
Notes: CAGR - Compounded Annual Growth Rate, BOT - Build Operate Transfer, Km – Kilometers
• Was awarded a contract for 1,086 lane kilometres for a total consideration of USD1.5 billion

• Was awarded an order for 1,129 lane kilometres for a total value of USD1.5 billion

• Won a USD312 million contract for the 6 laning Barwa-Adda-Panagarh sector of National Highway 2

• 4 laning of Beawer-Gomti Road Project

• Won a project to widen roads of 127 km long Patna-Gaya-Dobhi section of NH 83 in Bihar for a consideration of USD205 million

• Won a road contract worth USD216.7 million in Botswana, through its subsidiary Elsamex SA

• Commercial operation of Warora Chandrapur Ballarpur Bamni Road Project has been started

• In FY16, company’s revenues stood at USD727.5 million

Source: Company Annual Report, TechSci Research
Infrastructure Leasing & Financial Services Ltd (IL&FS) promoted National Toll Bridge Company Ltd (NTBCL) as a special purpose vehicle (SPV) for the development of the 22-km Delhi-Noida Direct (DND) flyway on a Build Own Operate Transfer (BOOT) basis.

Incorporated in Uttar Pradesh, India, in 1996, NTBCL is a publicly listed company & operates only in the country.

Salient features
- Eight-lane dual carriageway connecting Noida & Delhi
- One major & 3 minor bridges over Yamuna river
- Eight-lane approach road on embankment
- 31-lane, 200m-wide, fully computerised toll plaza
- Extensive tree planting & landscaping
- Noise barriers & river training works

Revenue trends: Noida Toll Bridge (USD million)

CAGR: 2%

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY09</td>
<td>17.2</td>
</tr>
<tr>
<td>FY10</td>
<td>17.9</td>
</tr>
<tr>
<td>FY11</td>
<td>18.9</td>
</tr>
<tr>
<td>FY12</td>
<td>19.9</td>
</tr>
<tr>
<td>FY13</td>
<td>19.8</td>
</tr>
<tr>
<td>FY14</td>
<td>19.4</td>
</tr>
<tr>
<td>FY15</td>
<td>20.4</td>
</tr>
<tr>
<td>FY16</td>
<td>19.7</td>
</tr>
<tr>
<td>FY17</td>
<td>9.92</td>
</tr>
</tbody>
</table>

Source: Company Annual Report, TechSci Research

¹Data for April 2016 – September 2016
Ministry of Roads Transport and Highways
Transport Bhavan
1, Parliament Street
New Delhi – 110001
Phone: 91-11-23719097, 23719955
E-mail: ifcmost@nic.in

National Highway Authority of India
G 5 and 6, Sector 10, Dwarka
New Delhi – 110 075
Phone: 91-11-25074100, 25074200
Fax: 91-11-25093507, 25093514

Indian Roads Congress
Sector 6, (Near RBI Quarters), RK Puram, New Delhi – 110022
Phone: 91-11-26185303
Secretariat: 91-11-26716778, 26183669, 26185273, 26185315,
26185319
Fax: 91-11-26183669
E-mail: secretarygen@irc.org.in
GLOSSARY

- **BOT**: Build Operate Transfer
- **CAGR**: Compound Annual Growth Rate
- **EPC**: Engineering, Procurement and Construction
- **FDI**: Foreign Direct Investment
- **FY**: Indian Financial Year (April to March) – So FY10 implies April 2009 to March 2010
- **GOI**: Government of India
- **INR**: Indian Rupee
- **LCV**: Light Commercial Vehicles
- **MoRTH**: Ministry of Roads Transport and Highways
- **NH**: National Highway
- **NHAI**: National Highway Authority of India
- **NHDP**: National Highway Development Project
- **USD**: US Dollar – Conversion rate used: USD1 = INR54.43

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## Exchange rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
</tr>
<tr>
<td>2006–07</td>
<td>45.14</td>
</tr>
<tr>
<td>2007–08</td>
<td>40.27</td>
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<td>2008–09</td>
<td>46.14</td>
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<td>2009–10</td>
<td>47.42</td>
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<td>2010–11</td>
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<td>2013–14</td>
<td>60.28</td>
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<td>2014–15</td>
<td>61.06</td>
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<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–17 (E)</td>
<td>66.95</td>
</tr>
</tbody>
</table>

## Exchange rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
</tr>
<tr>
<td>2006</td>
<td>45.18</td>
</tr>
<tr>
<td>2007</td>
<td>41.34</td>
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<td>2008</td>
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<td>2009</td>
<td>48.42</td>
</tr>
<tr>
<td>2010</td>
<td>45.72</td>
</tr>
<tr>
<td>2011</td>
<td>46.85</td>
</tr>
<tr>
<td>2012</td>
<td>53.46</td>
</tr>
<tr>
<td>2013</td>
<td>58.44</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015</td>
<td>64.15</td>
</tr>
<tr>
<td>2016 (Expected)</td>
<td>67.22</td>
</tr>
</tbody>
</table>

Source: Reserve bank of India, Average for the year

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