RAILWAYS

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FEBRUARY 2017
World’s third-largest rail network

- As of August 2015, Indian Railways had 12,617 passenger trains carrying over 30 million passengers daily. On the commercial front, 1101 million tonnes of freight was transported via trains in FY15 and the same is targeted to reach 1,186 million tonnes in FY16

Growing public-private partnership

- Private sector companies are being encouraged to participate in rail projects, which were largely in the public domain. The Cabinet approved ‘participative models for rail-connectivity and capacity augmented projects’, which allows private ownership of some railway lines
- Launch of Foreign Rail Technology Cooperation Scheme
- PPP to be revamped to get better results
- Setting up of Joint Ventures with major public sector customers for fulfilling the requirements of new lines

Growth initiatives

- Availability of clean and hygienic drinking water at low cost
- Introduction of e – catering phase-I in 45 railway stations. Meals can be ordered at the time of booking tickets from the IRCTC website
- Number of mobile charging facilities to be increased in sleeper coaches
- Setting up of ‘waste to energy’ conversion plants to dispose off wastes in an environment–friendly manner

Source: Make in India, TechSci Research
EXECUTIVE SUMMARY

• Indian Railways launched mobile ticketing services, which enable customers to receive tickets on Short Message Service (SMS). Additionally, it plans to upgrade its current systems to support bookings of 7,200 tickets per minute compared with the current capacity of 2,000 tickets.

• Funds amounting to USD82.5 billion are expected to be spent on projects in next 10 years.

• Indian Railways is planning to launch an integrated mobile application for availing all travel-related services such as hiring taxis, pre-ordering a meal, requesting for porter services, lodging at a retiring room, etc.

• After the successful trial of Spanish made Talgo train, Indian Railways is considering introduction of light weight aluminium coaches in the rail network to reduce the travelling time between metropolis. The trains are expected to be launched in early 2018.

• Production of old designed conventional coaches to be fully stopped from 2018-19, and manufacturing of Modern Linke Hofmann Busch (LHB) coaches will take place from 2017-018 at Integral Coach Factory near Chennai. The new coaches are equipped with modern technology & during derailment, can prevent capsising of coaches.

Source: Make in India, TechSci Research
Growing demand
- Increasing urbanisation and rising incomes (both urban and rural) are driving growth in the passenger segment
- Growing industrialisation across the country has increased freight traffic over the last decade

Attractive opportunities
- Freight traffic is set to increase significantly due to investments and private sector participation
- Metro rail projects are being envisaged across many cities over the next ten years

Higher investments
- The government has been investing heavily to upgrade railway infrastructure
- Cumulative FDI inflows from April 2000 to September 2016 stood at USD724.03 million
- Private Investment in MRTS is expected to increase from 13 per cent to 42 per cent during 2012-17

Policy support
- The government has increased the scope of PPP to beyond providing maintenance and other such supporting roles
- Government has allowed 100 per cent FDI in the railway sector
- Introducing technology portal that would provide innovative technological solutions

Source: Railway Budget 2014-15, Press Information Bureau, Department of Industrial Policy & Promotion; TechSci Research
Notes: 2017F - MRTS - Mass Rapid Transit System, Forecast 2017, MT - Million Tonnes, FDI - Foreign Direct Investment, FY is Indian Financial Year (April–March), F - Forecast
MARKET OVERVIEW AND TRENDS
**INDIAN RAILWAYS HAS TWO MAJOR SEGMENTS**

- Indian Railways (IR) is:
  - A departmental undertaking of the Government of India (GOI), which owns and operates most of India's rail transport
  - Overseen by the Ministry of Railways
- As of March 2016, IR has a total route network of about 66,030 kilometres spread across 8,500 stations
- It operates more than 22,300 trains daily
- It has 2.45 lakh wagons, 63,045 coaches and 10,773 locomotives

**Passenger**
- As on FY16, over 13,000 passenger trains are in operation
- Over 23 million passengers travel by trains daily in India. The passenger traffic stood at 8151 million in FY16

**Freight**
- Around 1,107 million tonnes of freight was transported via trains in FY16 and 2,165 million tonnes is expected in FY20
- These include a huge variety of goods such as mineral ores, iron and steel, fertilisers, petrochemicals and agricultural produce

*Source: Ministry of Railways, Make In India, Railway Budget FY15-16, Railway Budget FY16-17, TechSci Research*
India has the world's third-largest railway network under single management.

### Evolution of Railways in India

<table>
<thead>
<tr>
<th>Category</th>
<th>FY1951</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total revenues (USD million)</td>
<td>59</td>
<td>25,190</td>
</tr>
<tr>
<td>Passenger revenue earnings (USD million)</td>
<td>22</td>
<td>6,932</td>
</tr>
<tr>
<td>Freight traffic (million tonnes)</td>
<td>73.2</td>
<td>1,107</td>
</tr>
<tr>
<td>Number of stations</td>
<td>5,976</td>
<td>8,500</td>
</tr>
<tr>
<td>Running track (kilometres)</td>
<td>59,315</td>
<td>90,803</td>
</tr>
</tbody>
</table>

*Source: Ministry of Railways, TechSci Research*

Notes:
1. Data for FY15

For updated information, please visit [www.ibef.org](http://www.ibef.org)
STRONG REVENUE GROWTH FOR INDIAN RAILWAYS

Revenue growth has been strong over the years; during FY07–16, revenues increased at a CAGR of 6.4 per cent to USD25.2 billion in FY16

Revenues from the sector are estimated to reach to USD44.5 billion by the end of FY20

Revenues would expand at a CAGR of 9.07 per cent during FY07–20E

Indian Railway sector aims to boost passenger amenities

Gross revenue trends over the years (USD billion)

CAGR: 9.07%

Source: Vision 2020, Ministry of Railways, TechSci Research
Notes: CAGR – Compound Annual Growth Rate, E – Estimates, FY – Indian Financial Year (April–March)
In the last eight years, revenues from the passenger segment expanded at a CAGR of 6.9 per cent, with the total revenue earnings in FY16 totalling to around USD6.9 billion.

Indian Railways generated USD16.9 billion in earnings from commodity freight traffic during FY16.

Increasing carrying capacity, cost effectiveness, improving quality of service will support the increment in the share of Railway in the freight movement from 35 per cent to 50 per cent by 2020.

As of February 2017, Indian Railways to manufacture semi high-speed, 160 kmph “world-class” train under Make in India initiative, comprising 16 fully air-conditioned coaches. The new train will be manufactured at half of the import cost, at the Integral Coach Factory.

<table>
<thead>
<tr>
<th>Passenger earnings (in USD billion)</th>
<th>Earnings from freight (in USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07  3.8</td>
<td>FY07  9.1</td>
</tr>
<tr>
<td>FY08  4.9</td>
<td>FY08  11.5</td>
</tr>
<tr>
<td>FY09  4.7</td>
<td>FY09  11.2</td>
</tr>
<tr>
<td>FY10  4.9</td>
<td>FY10  12.0</td>
</tr>
<tr>
<td>FY11  5.6</td>
<td>FY11  13.3</td>
</tr>
<tr>
<td>FY12  6.0</td>
<td>FY12  14.5</td>
</tr>
<tr>
<td>FY13  5.8</td>
<td>FY13  15.4</td>
</tr>
<tr>
<td>FY14  6.1</td>
<td>FY14  15.2</td>
</tr>
<tr>
<td>FY15  7.1</td>
<td>FY15  17.7</td>
</tr>
<tr>
<td>FY16  6.9</td>
<td>FY16  16.9</td>
</tr>
</tbody>
</table>

Source: Ministry of Railways, TechSci Research
Notes: CAGR – Compound Annual Growth Rate, FY – Indian Financial Year (April–March), F - Forecast

For updated information, please visit www.ibef.org
Freight business for Indian Railway is supported by 9 commodities: coal, iron, steel, iron ore, food grains, fertilizers, petroleum products etc.

Freight remains the major revenue earning segment for the Railways, accounting for 67.09 per cent of total revenues in FY16, followed by the passenger segment.

Profits from the freight segment are used to cross-subsidise the passenger segment.

To achieve targets of Vision 2020, two dedicated freight corridors, Eastern & Western, would be operational by FY20.

Revenue break-up by segment (FY16)

- Freight: 67.09%
- Passenger: 27.52%
- Other Coaching: 2.72%
- Sundry: 2.68%

Source: Railway Budget 2015-16, Railway Budget 2016-17
Ministry of Railways, TechSci Research
Note: Other Coaching includes service coaches such as pantry cars, parcel vans, mail vans, etc.
Train travel remains the preferred means of long-distance travel for majority of Indians, a fact reflected by volume & growth of passengers over the years.

Increase in the demand for passenger trains is supported by urbanisation, improving income standards, etc.

By 2020, Indian Railways plans to achieve speed of 160 to 200 kmph from current level of 130 kmph or 110 kmph to reduce the journey hours between important stations.

India Railways is collaborating with Russian Railways to work on 575-km long stretch between Secunderabad & Nagpur, which would allow the trains to run at speeds of more than 200 km/hr.

In January 2017, the Indian Railways & UNESCO signed an agreement, for setting up a rail link between neighbouring countries like Bhutan, Nepal, Bangladesh & Myanmar.

During 2007-16, passenger volume increased at a CAGR of 3.2 per cent.

During FY16, passenger traffic using Indian Railways reached 8152 million.

Passenger traffic is expected to increase to 15.18 billion by FY20.

Trends in passenger volumes (in billions)

Source: Make In India, Ministry of Railways, TechSci Research
Notes: CAGR – Compound Annual Growth Rate, E – Estimated, FY – Indian Financial Year (April–March)
Suburban passenger booking in FY16 reached 4,459 million from 4,504 million in FY15
Non-suburban passenger volume in FY16 was recorded at 3,693 million
The 12th Five-Year Plan estimates suburban & non-suburban passenger volumes to increase to 5.9 billion & 5.8 billion passengers, by FY17, respectively.
Indian Railways aims to increase passenger boarding of suburban & non – suburban passengers at a CAGR of 6.8 per cent (cumulative) from 6,920 million suburban & non – suburban passengers in FY09 to 11,710 million passengers by FY17.

Number of suburban passengers originating (in millions)

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17E</th>
</tr>
</thead>
<tbody>
<tr>
<td>3802</td>
<td>3876</td>
<td>4061</td>
<td>4449</td>
<td>4473</td>
<td>4550</td>
<td>4504</td>
<td>4459</td>
<td>5917</td>
</tr>
</tbody>
</table>

CAGR: 5.68%

Number of non-suburban passengers originating (in millions)

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17E</th>
</tr>
</thead>
<tbody>
<tr>
<td>3118</td>
<td>3370</td>
<td>3590</td>
<td>3823</td>
<td>4016</td>
<td>3876</td>
<td>3730</td>
<td>3693</td>
<td>5793</td>
</tr>
</tbody>
</table>

CAGR: 8.05%

Source: Vision 2020, Ministry of Railways, TechSci Research
Notes: CAGR – Compound Annual Growth Rate, E- Estimated F – Forecast, FY – Indian Financial Year (April–March)
Indian Railways carried 1,107 million tonnes of revenue-earning freight traffic in FY16, from 1,101.30 million tonnes in FY15.

During FY07-FY16, freight traffic is expected to grow at a CAGR of 4.5 per cent.

Indian Railway estimates originating loading for freight business segment would increase to 2,165 MT by FY20.

Coal is the leading commodity for the freight business segment (49.35 per cent of the total freight in September 2015).


Notes: CAGR – Compound Annual Growth Rate, E- Estimated F – Forecast
FY – Indian Financial Year (April–March)
### Key Players Supporting Indian Railways

<table>
<thead>
<tr>
<th>Company</th>
<th>Business description</th>
</tr>
</thead>
</table>
| [Concor Logo](#) | • Navratna PSU under India’s Ministry of Railways  
• Carrier, terminal operator and warehouse operator |
| [DFCC Logo](#) | • SPV set up under the Ministry of Railways  
• Undertakes planning and development; mobilisation of financial resources; and construction, maintenance and operation of the Dedicated Freight Corridor (DFC) |
| [Rail Vikas Nigam Limited Logo](#) | • SPV created by the Government of India  
• Builds engineering works required by Indian Railways |
| [Railtel Logo](#) | • Mini Ratna PSU with one of the largest neutral telecom infrastructure providers in the country  
• Strives to modernise train control operation and safety system of Indian Railways |

Source: Relevant Company Annual Reports and websites, TechSci Research  
Notes: PSU – Public Sector Undertaking, DFC – Dedicated Freight Corridor, SPV – Special Purpose Vehicle
**RAILWAYS**

**PRIVATE PLAYERS MOVE UP THE VALUE CHAIN**

- Railway projects in India have typically been in the public sector domain
- Private players were involved in allied activities such as track laying and maintenance, maintenance of coaches and wagons, construction of bridges, stations, signalling and telecommunications works

<table>
<thead>
<tr>
<th>Company</th>
<th>Project details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punj Lloyd</td>
<td>• Construction of eight metro stations in Bengaluru</td>
</tr>
<tr>
<td></td>
<td>• Construction of two elevated Metro stations at MG Road and Trinity Circle in Reach-1 (inaugurated in September 2011)</td>
</tr>
<tr>
<td></td>
<td>• Construction of elevated stations at Mysore Road Terminal, Deepanjali Nagar and Magadi Road in Reach – 2 (Completion by December 2014)</td>
</tr>
<tr>
<td>KalinDee</td>
<td>• Gauge conversion of VilluPuram-Mayiladuthurai section</td>
</tr>
<tr>
<td></td>
<td>• Installation and commissioning of signalling and telecommunications facilities at NTPC</td>
</tr>
<tr>
<td></td>
<td>• Design, Manufacture, Supply, Installing, Testing and Commissioning of Automatic Fare collection system for Bangalore Metro Rail Corporation Ltd</td>
</tr>
<tr>
<td>Larsen &amp; Toubro</td>
<td>• Executing an order for development of railway siding, involving engineering, procurement and construction work for a dedicated railway line of 38 km</td>
</tr>
<tr>
<td></td>
<td>• L &amp;T Metro Rail started Mainline Testing of Trains on Stage 2 (from Miyapur to KPHB) of the Hyderabad Metro Rail Project</td>
</tr>
<tr>
<td></td>
<td>• Construction of a six-lane bridge over the Ganges river has been awarded to the joint venture company L&amp;T - Daewoo and the construction begins in 2016</td>
</tr>
</tbody>
</table>

*Source: Relevant Company Annual Reports and websites, TechSci Research*

Notes: NTPC – National Thermal Power Corporation, km – Kilometres; KPHB: Kukatpally Housing Board

**For updated information, please visit** [www.ibef.org](http://www.ibef.org)
In December 2012, the Cabinet approved the new policy of ‘participative models for rail-connectivity and capacity augmented projects’. The policy addressed private investors’ concerns, which included ownership of the railway line and repayment of investment.

The policy led to renewed investor interest in the rail sector. Since then, railway authorities have received various proposals from private investors and have already given approval (can now acquire land and begin construction) for four port connectivity projects, which would ease congestion.

Areas proposed for private investment during this period would include elevated rail corridor in Mumbai, some parts of dedicated freight corridor, freight terminals, redevelopment of stations and power generation/energy saving projects.

Other measures taken/proposed include:
- Setting up of a modern signalling equipment facility at Chandigarh through the PPP route
- Construction of new lines – Bhupdeopur-Raigarh (Mand Colliery) & Gevra Road-Pendara Road – & doubling of Palanpur-Samakhiali section through the PPP route
- Setting up of 2 locomotive plants through PPP route is crucial for the development of infrastructure sector
- Setting up of Joint Ventures with major public sector customers for fulfilling the requirements of new lines

Indian Railways started the PPP mode of funding & has already awarded projects which amounted to around USD1.73 billion in the 1st 7 months of FY16. Moreover, 400 stations are also being planned to be redeveloped by the government, as per the Rail Budget 2016-17.

For FY17, PPP investment is expected to reach USD2.7 billion as per the revised estimates.

Setting up of MUTP-III is expected to begin in FY17 for which government is targeting an investment of USD1.63 billion from the World Bank. The project would be executed by Mumbai Railway Vikas Coorporation (MRVC).

In January 2017, Indian Railways has signed a joint venture agreement with the Government of Jharkhand to develop the state’s railway infrastructure.

Source: Ministry of Railways, Make in India, TechSci Research
Note: PPP – Public Private Partnership; MUTP-III: Mumbai Urban Transport Project-III
For updated information, please visit www.ibef.org
NOTABLE TRENDS IN INDIAN RAILWAYS…(1/2)

**Demand for urban transport**
- There is a rapid increase in demand for urban mass transportation systems in the country
- Several metro rail projects are in progress to improve connectivity within cities; the Delhi Metro has emerged as an internationally acclaimed venture
- Prime Minister Narendra Modi inaugurated Pune Metro Rail project & laid the foundation stone on December 24, 2016. The metro line would have 30 stations & the 1st phase would cover a distance of 31.25 km. The project is estimated to be completed at a cost of USD1.67 billion.

**M-ticketing and e-ticketing**
- In FY15, e–ticketing scheme has been introduced to support 7,200 tickets per minute from the current capacity of 2,000

**International Investment**
- IR has attracted increasing foreign investments through strategic alliances with various countries over the last few years
- In September 2015, Japan has invested USD140 billion to modernise the Indian Railways by 2020
- 6 major global players have shown keen interest in developing ultra high-speed trains in India

**Travel Insurance Scheme**
- Railways has rolled out its insurance scheme for passengers, under which they can buy a premium of 1.52 cents while booking a ticket to get an insurance cover of up to USD 1.5 thousand.

Notes: km/h – kilometre per hour
For updated information, please visit [www.ibef.org](http://www.ibef.org)*
NOTABLE TRENDS IN INDIAN RAILWAYS…(2/2)

High-speed trains projects

- IR plans to build seven high-speed rail corridors to provide faster rail connectivity across the country along with making a provision of USD17 million, for high speed train project.
- As part of Railway Budget 2016-17, the government launched a new train “Mahamana Express” connecting Varanasi & Delhi.
- The government is also considering to increase the average speed of freight trains to 50 km/h and mail or express trains to 80 km/h by the end of 2020.
- In collaboration with the Government of Japan, a high speed passenger train corridor, between Ahmedabad to Mumbai, has been undertaken, as per Railway Budget 2016-17. The construction of the project is likely to start in 2017.

Semi high-speed trains projects

- IR intends to look for cost effective options to increase speed to 160–200 km per hour on existing routes such as Delhi–Chandigarh and Delhi–Agra.
- Companies from France, China and Russian have joined hands with Indian Railways to bring three semi-high speed rail corridor projects on track.

New Services Launched

- Policy providing sub quota of 33 per cent to women within reserved categories for the allotment in catering units.
- Launch of the new “Train at a Glance” & new Time Table effective from 1st October 2016.
- To promote religious tourism in the country, Indian Railways plans to launch the Aastha Circuit Tourist train on February 17, 2017. The train would start its journey from Guwahati covering the shrines in Odisha & West Bengal.
- The Ministry of Railways is planning to build a 240 km broad gauge railway line to connect Port Blair & Diglipur, in Northern Andaman island at an estimated cost of US$ 359.01 million. This proposed line will immensely improve the tourism sector on the island.

Notes: km/h – kilometre per hour
PORTERS FIVE FORCES ANALYSIS
### RAILWAYS

#### PORTER’S FIVE FORCES ANALYSIS

<table>
<thead>
<tr>
<th>Threat of New Entrants</th>
<th>Substitute Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Enormous capital requirements to set up a network, acts as an entry barrier</td>
<td>- Substitutes include road and air transport; however, railways is the cheapest mode of travel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bargaining Power of Suppliers</th>
<th>Bargaining Power of Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Has monopoly and can buy products from any supplier</td>
<td>- Lower bargaining power as no other cheap mode of transport available</td>
</tr>
</tbody>
</table>

**Competitive Rivalry**
- Competitive rivalry is low as any other mode of transportation is significantly expensive
- Rail connectivity is available in remote areas, unlike other transport facilities

**Threat of New Entrants** (Low)

**Substitute Products** (Low)

**Bargaining Power of Customers** (Low)

**Bargaining Power of Suppliers** (Low)
RAILWAYS

STRATEGIES ADOPTED
**Revenue-based strategies**

- Provision of online rail bookings, hotel reservations & retiring rooms by IRCTC adds to revenues of Indian Railways
- Indian Railways are focusing on internal tourists & have also come up with many tour packages for foreigners
- Fare revision in 2014 is expected to bring additional revenue of USD1.3 billion per year
- No fare hikes have been announced so far in the Railway Budget 2016 – 17

**Turnaround strategies for passenger traffic**

- Fare for premium classes were reduced so as to compete with the airlines, luxury buses & personal transport vehicles
- The length of popular trains was increased from 16–18 coaches to 24–26 coaches
- Private participation is encouraged & information technology was used to make ticket reservation more feasible to passengers
- An airline-style upgradation from lower class to higher class has been introduced for passengers
- Increasing speed of the trains in 9 railway corridors to 160 & 200 kmph so that inter-metro journeys be completed overnight
- In January 2017, India Railways awarded a contract to the SBI for installing 10,000 point of sales (POS) machines, at the PRS (Passenger Reservation System) & UTS counters, across India, facilitating cashless payment for ticket booking.

**Turnaround strategies for freight traffic**

- Axle load was increased from 20.3 tonnes to 22.9 tonnes & 25 tonnes for selected routes
- Freight discounts are allowed to customers offering high tariffs
- The average speed of freight trains would increase to 50 km/h & Mail/Express trains to 80 km/h by the end of 2020
- Freight rates on cement, coal, urea, kerosene, LPG & food grain & pulses have been hiked by upto 10 per cent to bring an additional revenue of USD655.1 million per year

*Source: Ministry of Finance, Railway Budget 2016, TechSci Research, News articles
Note: IRCTC – Indian Railway Catering & Tourism Corporation*
For updated information, please visit www.ibef.org
Passenger traffic is expected to increase to 15.18 billion by FY20

Increasing incomes in urban and rural areas have made rail travel affordable to a large number of Indians

Urban population in India grew to 33 per cent of total population in 2015, leading to increase in traffic between urban and rural areas in the country

Improvement of urban-rural connectivity has been another major contributor to the growth of Railways industry in the country

During FY07-FY16, freight traffic is expected to grow by 4.5 per cent

Source: Ministry of Railways; Railway Budget 2015, TechSci Research
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RISING INCOME AND URBANISATION DRIVING PASSENGER TRAFFIC GROWTH … (2/2)

India’s rural & urban population growth (% of total population)

<table>
<thead>
<tr>
<th>Year</th>
<th>Rural Population (in %)</th>
<th>Urban Population (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>2011</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>2012</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>2013</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>2014</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>2015</td>
<td>67%</td>
<td>33%</td>
</tr>
</tbody>
</table>

India’s per capita income at current prices (USD)

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP, per capita, current prices</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1387.9</td>
<td>-5.00%</td>
</tr>
<tr>
<td>2011</td>
<td>1455.7</td>
<td>-3.00%</td>
</tr>
<tr>
<td>2012</td>
<td>1444.3</td>
<td>-1.00%</td>
</tr>
<tr>
<td>2013</td>
<td>1456.2</td>
<td>1.00%</td>
</tr>
<tr>
<td>2014</td>
<td>1576.8</td>
<td>3.00%</td>
</tr>
<tr>
<td>2015</td>
<td>1581.6</td>
<td>5.00%</td>
</tr>
<tr>
<td>2016F</td>
<td>1747.5</td>
<td>7.00%</td>
</tr>
<tr>
<td>2017F</td>
<td>1874.9</td>
<td>9.00%</td>
</tr>
<tr>
<td>2018F</td>
<td>2026.7</td>
<td>11.00%</td>
</tr>
<tr>
<td>2019F</td>
<td>2207.6</td>
<td></td>
</tr>
<tr>
<td>2020F</td>
<td>2402.4</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Railways, World Bank, IMF, TechSci Research
FY – Indian Financial Year (April–March)
Notes: E – Estimates, F – Forecast

For updated information, please visit www.ibef.org
**RAILWAYS**

**PASSENGER SEGMENT OFFERS DIVERSE SERVICES**

<table>
<thead>
<tr>
<th>Train</th>
<th>Description</th>
</tr>
</thead>
</table>
| Duronto Express            | • Non-stop point-to-point rail services  
                              | • Connects metros and major state capitals of India                        |
| Rajdhani Express           | • Air-conditioned trains linking major cities to New Delhi                |
|                            | • One of the fastest trains in India with very few station stops           |
| Shatabdi, Jan Shatabdi Express | • Intercity seater-type trains for travel during day                        |
| Garib Rath                 | • Fully air-conditioned trains designed for those who cannot afford to travel in expensive trains such as Rajdhani and Shatabdi |
| Superfast Mail/Express     | • Trains that have an average speed greater than 55 km per hour           |
|                            | • Additional super-fast surcharge                                        |
| Mail/Express               | • More stops than their superfast counterparts                            |
|                            | • Stops only at relatively important intermediate stations                 |
| Passenger, Fast Passenger  | • Slow trains that stop at most stations along the route                  |
|                            | • Low-cost alternative                                                   |
| Suburban trains            | • Operate in urban areas                                                 |
|                            | • Usually stops at all stations and have unreserved seating accommodation |
**RAILWAYS**

**NEW SERVICES 2015-16**

- **Premium trains**: Premium trains are a type of express trains that connect metros with other important cities. In the Railway Budget 2014–15, five new Premium Trains were announced.

- **Express trains**: Express trains or fast trains make small number of stops unlike other trains. Thirty-three new Express trains were announced in 2014–15, of which six trains would be AC express trains.

- **Passenger trains**: Six new express trains have been introduced under Railway Budget 2015-16.

- **MEMU trains**: Eight new passenger trains were declared in 2014–15.

- **DEMU trains**: These trains are Paradeep-Howrah Express, Gunupur-Visakhapatnam Passenger, Tiruchendur-Tirunelveli Passenger, Hatia-Rourkela Passenger, Mannargudi-Bhagat ki Kothi (Jodhpur) Express, Jaynagar-Mumbai Jansadhran Express, Ferozpur-Chandigarh Express & Byndoor-Kasargod Passenger.

- **Extension of trains**: In 2014-15, two new Mainline Electric Multiple Unit (MEMU) trains were announced.

- **DEMU trains**: In 2014-15, five new Diesel Electric Multiple Unit (DEMU) trains were announced.

- **As of 2016, three new trains were to be extended as per the Railway Budget 2016-16**

*Source: Railway Budget 2014–15 and Railway Budget 2015-16*
Bullet Trains

- Advanced stage of feasibility study is being performed for high – speed rail between Mumbai – Ahmedabad and its report is expected by mid – 2015. The bullet train route proposes to cover Ahmedabad – Vadodara – Surat - Mumbai cities. The project is likely to commence construction in 2017.
- Studies are being commissioned for other high speed routes in the diamond quadrilateral.
- Average speed of faster trains will increase from the existing 110 & 130 kmph to 160 & 200 kmph respectively.
- In February 2017, drilling of the 7 km undersea route of the Mumbai-Ahmedabad rail corridor, for 1st bullet train is underway. The estimated value of the project is US$ 14.52 billion, which will reduce the duration of the journey by 2 hours. Construction of the corridor is expected to complete by 2023.

Train Sets

- Indian Railways have proposed a very modern train system which would save 20 per cent of the journey time and can run without an engine to haul them.
- Similar in design to bullet trains and provides superior riding experience.
- Expected to be running on track by 2017.

Freight Trains

- As per Railway Budget 2016-17, the speed of freight trains would be increased to 50 km/h as well as Mail/Express trains would be increased to 80 km/h.

High Speed Rail

- In coordination with Japanese government, a high speed passenger train corridor, between Ahmedabad to Mumbai, is being undertaken. Construction of the project is likely to commence in 2017.

Source: Railway Budget 2015–16, Railway Budget 2016–17
Notes: km/h – kilometre per hour
The Tatkal Seva Scheme was introduced by Railway Minister Nitish Kumar in December 1997. This scheme benefits those passengers who plan their journeys at a very short notice and to save such passengers from touts.

The scheme was revised in August 2004 and in 2009, 2011 and 2012. As per the Railway Budget FY14, tatkal charges have been revised.

In June 2015, timings for booking of tickets in tatkal in AC and non-AC has been changed in order to reduce the load on the ticketing website and booking window. Reservations for AC and non-AC will open at 10 AM and 11 AM respectively on the previous day.

Tatkal charges have been fixed as a percentage of fare, at 10 per cent of basic fare for second class and 30 per cent for all other classes subject to minimum and maximum levels provided below.

25 per cent of the fare amount will be deducted if cancellations are made 12 to 48 hours prior to departure and 50 per cent will be deducted if cancellations made 4 to 12 hours prior to departure. Waiting list and Reservation against cancellation tickets will not get any refund if cancellations are made 30 minutes prior to departure.

MobiKwik (Mobile payments network) has collaborated with IRCTC to launch e-cash payments for tatkal bookings.

<table>
<thead>
<tr>
<th>Classes of travel</th>
<th>Minimum tatkal charges (USD)</th>
<th>Maximum tatkal charges (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second (sitting)</td>
<td>0.15</td>
<td>0.23</td>
</tr>
<tr>
<td>Sleeper</td>
<td>1.37</td>
<td>2.67</td>
</tr>
<tr>
<td>AC Chair Car</td>
<td>1.53</td>
<td>3.06</td>
</tr>
<tr>
<td>AC 3 Tier</td>
<td>3.82</td>
<td>5.35</td>
</tr>
<tr>
<td>AC 2 Tier</td>
<td>4.58</td>
<td>6.11</td>
</tr>
<tr>
<td>Executive</td>
<td>4.58</td>
<td>6.11</td>
</tr>
</tbody>
</table>

Source: Ministry of Railways
During FY16, freight traffic increased and reached to 1107 million tonnes, portraying a positive and healthier impact in the core sector of the economy. The rise in traffic is due to increasing levels of industrialisation across the country, as is evident from the growth in the Index of Industrial Production (IIP) over the last decade. Indian Railway estimates originating loading for freight business segment would increase to 2,165 MT by FY20. Coal freight rates have increased by 6.3 per cent which is likely to impact power retail tariff and the transportation cost for power producers. According to Ministry of Coal’s vision 2025, coal production is expected to increase to 1,060 MT from 470 MT in FY09. Increasing freight traffic is generated from these industries spread out across India.

Source: Ministry of Railways, Ministry of Coal, TechSci Research
Note: MT - Million Tonnes
RAILWAYS

DEDICATED FREIGHT CORRIDOR … (1/4)

- DFCCIL, a special purpose vehicle, was set up for implementing the DFC project under the administrative control of the Ministry of Railways.
- The plan is to construct dedicated freight lines along the Eastern (1856 km route length) & Western (1504 km route length) parts of India.
- Total length: 3,360 kilometres; total estimated cost: USD12.44 billion as on July 2016.
- According to the 12th Five-Year Plan, the government allocated USD5 million for the 2,700-km Dedicated Rail Freight Corridor Project.
- Total Capital Expenditure incurred was USD1003.97 million during FY15.
- World Bank granted loan of USD1,100 million for EDFC-2 & have sanctioned a loan of USD650 million for EDFC-3 in June, 2015.

Source: Ministry of Railways, TechSci Research

RAILWAYS

DEDICATED FREIGHT CORRIDOR … (2/4)

Objectives

- Increase rail freight share through customised logistic services
- Segregate freight and passenger lines for focused approach
- Create additional freight capacity to meet demand
- Introduce time-tabled freight services to ensure better services
- Reduce unit cost of transportation and increase productivity
- Adopt high-end technology for real-time data analysis

Source: Ministry of Railways, TechSci Research
Freight traffic via DFC would increase at a CAGR of 5.4 per cent to 182 MT in 2021–22 from 140 MT in 2016–17.

Container traffic would probably be an important constituent of the WDFC and is expected to grow to 5.3 million TEUs in 2021–22 from 3.8 million TEUs in 2016–17.

According to the operational strategy as mentioned in the Vision 2020, dedicated freight corridors and speed raising projects would be completed in time bound manner.

By 2020, 30,000 km of route would be double/multiple lines.

As per Railway Budget 2016–17, three dedicated freight corridors, North-South connecting Delhi to Chennai, East-West connecting Kharagpur to Mumbai & East Coast connecting Kharagpur to Vijayawada, will be completed on priority.

Source: KPMG
Notes: CAGR – Compound Annual Growth Rate, DFC – Dedicated Freight Corridor, EDFC – Eastern Dedicated Freight Corridor, WDFC – Western Dedicated Freight Corridor, MT – Million Tonnes
Due to the DFC project, added capacity and efficiency of new infrastructure would result in an increased share of railway network to 87 per cent in 2021–22 from 84 per cent projected in 2016–17.

Dedicated Freight Corridors are expected to come on route of Delhi-Kolkata, Mumbai-Delhi, Kolkata-Mumbai, Delhi-Chennai.

Source: KPMG, TechSci Research
An outlay of USD 95.6 billion has been approved by the Planning Commission for Railways. The Railway Ministry proposed an outlay of USD 100.9 billion.

Details of the outlay are as under:

(i) Gross budgetary support: USD 35.8 billion
(ii) Internal generation: USD 19.3 billion
(iii) Extra budgetary resources: USD 40.5 billion

In the Railway Budget 2015-16, there is a proposal to increase the plan outlay under budgetary sources by USD 16.6 billion.

This policy supersedes the R3i and R2CI policies notified earlier.

The policy provides for supplementing government’s investment in rail infrastructure projects by private capital flows.

The policy contains the following models: non-government railway; joint venture with equity participation by railways; capacity augmentation through funding by customers; capacity augmentation – annuity model applicability; and BOT.

As on August 2015, Indian Railways have undertaken 154 new line projects.

44 new projects worth USD 13.8 billion is likely to be implemented in FY 17.

Source: Ministry of Railways, TechSci Research
Notes: R3i – Railways’ Infrastructure for Industry Initiative, R2CI – Railways Policy for Connectivity to Coal and Iron Ore Mines, BOT – Build Operate and Transfer
To increase its share in automobiles transportation, Indian Railways notified a new scheme in March 2013, Automobile Freight Train Operator (AFTO). The scheme provides logistic service providers & road transporters an opportunity to introduce their own special wagons to run on the railways’ network & avail of freight rebates in return. The requirements for the scheme are laid down as under:

- Companies with minimum net worth of USD3.7 million or annual turnover of USD5.5 million are eligible to participate in this scheme
- A registration fee of USD0.9 million is required to be paid to the Railway Ministry on approval as AFTOs
- Companies are required to introduce at least 3 rakes & make them operational within 6 months from the commissioning of the 1st rake
- The freight rates would be notified from time to time for specific stock to be moved by AFTOs
- The freight rebate would be incorporated in the freight rates specified for transport of automobiles
- Special wagons would be designed & developed by Research, Design & Standards Organisation (RDSO) for induction by 3rd-party logistics providers & road transporters
- Each rake is to have a capacity to carry 318 small cars. The rake should be tested by RDSO
- Maruti Suzuki, the railways’ biggest automotive client, is the only automaker to have placed orders for rakes under this scheme in 2013

Source: Times of India, Ministry of Railways, TechSci Research
## RAILWAYS

### POLICY AND REGULATORY FRAMEWORK … (3/5)

<table>
<thead>
<tr>
<th>Policy/Initiative</th>
<th>Details</th>
</tr>
</thead>
</table>
| R3i policy        | - The policy aims to attract private sector participation in rail connectivity projects to create additional rail transport capacity  
                   - The policy allows for 4 models: (a) Cost Sharing-Freight Rebate (b) Full Contribution-Apportioned Earnings (c) Special Purpose Vehicle (SPV) & (d) Private Line |
| R2CI              | - This new policy was initiated to improve rail connectivity to coal and iron ore mines  
                   - The policy offers the developer involved in the construction of the line to levy a surcharge on the freight over a period of 10–25 years  
                   - The policy has 2 models: Capital Cost & SPV Models. The Capital Cost Model is relevant when there are 2 players, whereas the SPV Model is intended for a large number of players |
| Public Private Partnership (PPP) | - Connectivity to the major ports through PPP funding  
                   - Approval has been granted for 7 ports amounting to USD0.7 billion  
                   - Development of the major stations to equip them with international level of amenities & services |
| Foreign Direct Investment | - 100 per cent FDI under automatic route is permitted for approved list of projects |

Source: Ministry of Railways, Make in India website, TechSci Research  
Notes: R3i – Railways’ Infrastructure for Industry Initiative, SPV – Special Purpose Vehicle, R2CI – Railways Policy for Connectivity to Coal and Iron Ore Mines
Railway Budget 2016–17

- Revenue generation is targeted at USD27.6 billion during FY17
- A fund of USD13.8 billion has been allocated for introduction of 44 new projects covering about 5,300 kms in the budget
- Indian Railways is planning to generate more than 65,000 berths, 2,500 water vending machines, 17,000 bio-toilets in trains along with launching Mahamana Express
- As a part of Budget 2016-17, the Government of India recorded earning from goods at USD17.6 billion, with earnings from sundries & other coaching expected to be USD1.4 billion & USD0.9 billion, respectively
- In FY17, planned outlay of USD18.1 billion has been allocated for the railway sector

Wagon investment scheme

- Indian Railways launched the Wagon Investment Scheme in 2005 to offer freight rebates & supply a guaranteed number of rakes for a period of 7 to 15 years for different types of wagons
- The Ministry of Railways proposed to set up 5 wagon factories in Secunderabad, Bardhaman, Bhubaneswar/Kalahandi, Guwahati and Haldia under the JV/PPP model.
- The Ministry plans to procure 16,800 wagons during FY16
- Under the Railway Budget 2015-16, the scheme is to be reviewed for private investment

Source: Ministry of Railways, Railway Budget 2015-16, Press Information Bureau, TechSci Research
Notes: kms – Kilometers,
Key modernisation initiatives

- Introduced a new scheme for passengers travelling unreserved, ‘Operation 5 minutes’ scheme, which provides the passengers the time to purchase tickets within 5 minutes
- Installing bio – toilets by 2015. So far (till 2016), 37,000 bio – toilets have already been installed
- Introducing 24/7 All – India helpline number through which passengers could address their problems on a real – time basis. Toll free number, 138 has been launched as 24/7 All-India helpline number
- Availability of Toll - free number, 182, for security related complaints
- Development of multi – lingual e – ticketing portal
- Moving towards paperless ticketing and charting. In the coming years, SMS on mobiles would be taken as proof instead of tickets promoting paperless tickets throughout India.
- Train protection warning system and train collision avoidance system have been installed on selective routes
- Setting up a new department that would ensure the railway stations & trains are kept clean. Improving North-East and J&K connectivity.
- Extension of built-in dustbin facility has been approved for non-AC coaches. Setting up of 5 year safety plan
- In an initiative to decarbonize rail transport, Indian Railways will be collaborating with various public sector enterprises to speed up the process of electrification of railway tracks

Source: Ministry of Railways, Railway Budget 2015 – 16, News Articles; Press Information Bureau, TechSci Research
## SIGNIFICANT INVESTMENTS IN RAILWAYS

| Source: Railway Budget 2015 – 16, TechSci Research |
|---|---|---|---|---|---|---|---|---|---|---|

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<tr>
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<tbody>
<tr>
<td></td>
<td>15.8</td>
<td>2.2</td>
<td>2.2</td>
<td>3.7</td>
<td>4.3</td>
<td>4.5</td>
<td>3.9</td>
<td>4.8</td>
<td>5.4</td>
<td>6.6</td>
</tr>
</tbody>
</table>

| Internal Generation | 22.4 | 3.7 | 4.1 | 2.6 | 2.5 | 1.9 | 1.8 | 1.6 | 2.5 | 2.9 |

| Extra Budgetary Resources | 19.8 | 1.3 | 1.6 | 2.1 | 2.1 | 3.5 | 2.8 | 2.5 | 3.0 | 2.9 |

| Total | 58.0 | 7.2 | 7.9 | 8.4 | 8.9 | 9.9 | 9.3 | 9.0 | 10.9 | 12.4 |
Since FY08, cumulative FDI inflows into the sector has increased five-fold

From April 2000 to September 2016, FDI in Railways related components industry stood at USD724.03 million, in India

Cumulative FDI inflows (April 2000 to March 2016) (USD million)

Source: Department of Industrial Policy & Promotion, TechSci Research
Notes: FDI – Foreign Direct Investment
Note: FY17 ¹ – Data Till September 2016
To modernise Indian Railways, the focus is on 2 fundamental drivers, **Safety & Growth &** along with a 5-pronged strategy:

- **Modernise core assets** – They are key revenue generating assets
- **Explore new revenue models** – To meet the funding needs for modernisation & growth
- **Review projects** – To ensure financial viability, social benefits & timely implementation
- **Focus on enablers** – For a holistic & long-term approach to modernisation & execution
- **Mobilise resources** – To capitalise on an opportunity
- **Information Technology** – To improve operational efficiency

### Key focus areas

<table>
<thead>
<tr>
<th>Core assets</th>
<th>Track and bridges</th>
<th>Signalling</th>
<th>Rolling stock</th>
<th>Stations and terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue models</td>
<td>PPPs</td>
<td>Land</td>
<td>Dedicated freight corridors</td>
<td>High-speed trains</td>
</tr>
<tr>
<td>Projects</td>
<td>Review of existing and proposed projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enablers</td>
<td>ICT</td>
<td>Indigenous development</td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td>Funding</td>
<td>Human resource</td>
<td>Organisation</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Ministry of Railways, TechSci Research*

Notes: ICT – Information and Communication Technology, PPP – Public Private Partnership
• Sleepers have been upgraded from wooden, steel and CST-9 to PSC sleepers
• Heavier section and high tensile strength rails are being used (52 kg/60 kg 90 UTS rails are being used in place of 90 R/52 kg 72 UTS rails)
• As on 31.03.2014, total length of welded tracks on IR’s main lines was 81,505 km, of which 70,898 km included long-welded rails and the rest short-welded rails. However, according to the Railway Budget 2015-16, the government has decided to increase track length by 20 per cent over the next five years (by 2020)
• There is a progressive shift to flash butt welding, which is superior in quality to Aluminothermic (AT) welding
• Replacing analogue type machines with digital type machines
• Promotion of better and improved welding techniques

• Adequate capacity for production of concrete sleepers to meet IR’s present requirement has been developed
• During FY12, 6.9 million broad-gauge mono-block concrete sleepers and 10,359 sets of PSC turnout sleepers were manufactured
• Under Railway Budget 2016-17, steel sleepers on steel bridges will be replaced with environment friendly composite sleepers made of recycled plastic waste
• Modern bridge inspection and management system has been adopted, which includes non-destructive testing techniques, under water inspections, fibre composite wrapping and integrity testing

Source: Ministry of Railways, TechSci Research
Notes: Km – Kilometres, IR – Indian Railways, UTS – Ultimate Tensile Strength, CST9 – Central Standard Trial-9, PSC – Pre Stressed Concrete
RAILWAYS

MODERNISATION: NEW THEME OF INDIAN RAILWAYS … (3/3)

Increasing operational efficiency

- Design and development of 5500 HP WDG5 diesel locomotive for faster, longer and heavier trains
- Development of high-sensitivity thermal imaging camera with online scanning facility to improve the reliability of electric traction system
- Development of 25 KV HV connector for multiple operation of WAP5 locomotives with one pantograph in raised condition

Unreserved Ticketing Services (UTS)

- UTS was made functional at 5,778 locations with 10,760 terminals, as of April 2015
- More than 90 per cent of unreserved tickets are now generated through UTS
- The Indian Railways have introduced a mobile app “utsonmobile” in Chennai which would allow the passengers a paperless ticketing system. The Indian Railways are in talks to extend the services in all metros.

Source: Ministry of Railways, TechSci Research
Notes: WDG5 (W – Wide/broad gauge, D – Diesel-powered, G – Made for hauling goods, 5 – above 5000hp); UTS: Unreserved Ticketing Services

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# RAILWAYS

## POLICY FOCUS ON BETTER STATIONS: THE INDIAN RAILWAY STATION DEVELOPMENT CORPORATION

### Salient features

- The corporation was created with the view of making Indian Railways’ stations world class as a Public–Private Partnership venture (PPP)
- A Memorandum of Understanding (MoU) for the SPV was signed between two railway PSUs, the Ircon international Limited (IRCON) and the Rail Land Development Authority (RLDA)
- The SPV has a share capital of USD22.93 billion, with 51:49 equity between IRCON and RLDA
- Total revenues for FY15 earned by the Indian Railway Station Development Corporation Limited stood at USD26.4 billion
- As per Railways Budget 2016-17, EPC implemented 20 projects during FY17, wherein, it endeavours to award EPC contracts of worth USD44.8 million by the end of FY18

### Need and importance

- To meet with the aspirations of rail users and to facilitate them with better facilities
- To augment and improve passenger related amenities at stations to high standards
- To have modern stations that would be functional, customer-oriented and well equipped with proper circulation area and railway operation facilities
- Designed to provide well-designed concourses, high-quality waiting spaces, easy access to the platforms, congestion-free platforms, modern catering facilities, hotels and other facilities

**Source:** Press information Bureau, GOI and News websites  
**Notes:** SPV – Special Purpose Vehicle, PSU – Public Sector Undertaking
RAILWAYS

FREIGHT PROVIDES AN ATTRACTIVE OPPORTUNITY

• The government is investing heavily in building rail infrastructure in the country. The government plans to invest USD153 billion during the 12th Five-Year Plan

• With increasing participation expected from private players, both domestic and foreign, due to favourable policy measures, freight traffic is expected to grow rapidly over the medium to long term

• Railways has set a target of having a freight market share of 50 per cent by 2020 from 35 per cent in FY09

• Freight traffic increased at a CAGR of 8.6 per cent during FY07-20E

• With rapid economic growth and increasing industrialisation, freight traffic reached 1,107 million tonnes in FY16 and is estimated to reach 2,165 million tonnes by FY20

Source: Railway Budget 2016-17, Press Information Bureau
• Investments expected in metro rail networks in India: USD137 billion by 2020
• Amount invested so far: USD16.7 billion
• Budget 2015, anticipating diamond shaped metro projects connecting major metro cities and growth centres
• Prime Minister Narendra Modi inaugurated Pune Metro Rail project and laid the foundation stone on December 24, 2016. The metro line would have 30 stations and the first phase would cover a distance of 31.25 km. The project is estimated to be completed at a cost of USD1.67 billion.

<table>
<thead>
<tr>
<th>Name of project</th>
<th>Estimated cost</th>
<th>Length of project</th>
<th>(Estimated) Date of completion</th>
<th>Undertaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi Mass Rapid Transit System Phase I</td>
<td>2.2</td>
<td>65.1</td>
<td>November 2006</td>
<td>Government of India, Delhi Metro Rail Corporation</td>
</tr>
<tr>
<td>Delhi Mass Rapid Transit System Phase II</td>
<td>1.1</td>
<td>124.6</td>
<td>August 2011</td>
<td>Government of India, Delhi Metro Rail Corporation</td>
</tr>
<tr>
<td>Kolkata Metro Rail Project</td>
<td>1.1</td>
<td>14.7</td>
<td>2014–15</td>
<td>Government of India; Metro Railway, Kolkata</td>
</tr>
<tr>
<td>Bengaluru Metro Rail Project</td>
<td>2.4</td>
<td>42.3</td>
<td>September 2012</td>
<td>Government of India and Karnataka</td>
</tr>
<tr>
<td>Hyderabad Metro Project</td>
<td>2.5</td>
<td>71.2</td>
<td>2013</td>
<td>Government of India-Hyderabad Metro Rail Limited</td>
</tr>
<tr>
<td>Jaipur Metro Phase I</td>
<td>0.5</td>
<td>12.1</td>
<td>2014-21</td>
<td>Jaipur Metro Rail Corporation</td>
</tr>
</tbody>
</table>

Source: Ministry of Urban Development, Concor, TechnSci Research
### GROWING NUMBER OF METRO PROJECTS IN INDIA … (2/2)

<table>
<thead>
<tr>
<th>Name of project</th>
<th>Estimated cost (USD billion)</th>
<th>Length of project (kilometres)</th>
<th>(Estimated) Date of completion</th>
<th>Undertaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chennai Metro Rail Project</td>
<td>2.3</td>
<td>45.1</td>
<td>2014–15</td>
<td>Delhi Metro Rail Corporation Limited, Chennai Metro Rail Limited</td>
</tr>
<tr>
<td>Mumbai Metro Project Phase I</td>
<td>0.5</td>
<td>11.07</td>
<td>2015</td>
<td>Reliance Energy Ltd, Veolia Transport co. &amp; MMRDA</td>
</tr>
<tr>
<td>Mumbai Metro Project Phase II</td>
<td>1.7</td>
<td>40</td>
<td>2016</td>
<td>PPP, MMRDA</td>
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<tr>
<td>Chennai Metro Rail Project</td>
<td>2.3</td>
<td>45.1</td>
<td>2014–15</td>
<td>Delhi Metro Rail Corporation Limited</td>
</tr>
<tr>
<td>Rapid Metro (Gurgaon) Phase I</td>
<td>0.2</td>
<td>5.1</td>
<td>2012</td>
<td>Infrastructure Leasing &amp; Financial Services Ltd</td>
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<tr>
<td>Rapid Metro (Gurgaon) Phase II</td>
<td>-</td>
<td>7.0</td>
<td>2015</td>
<td>Infrastructure Leasing &amp; Financial Services Ltd</td>
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<tr>
<td>Kochi Metro Project</td>
<td>0.7</td>
<td>25.6</td>
<td>2016</td>
<td>Government of India &amp; Government of Kerala</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Urban Development, Concor, TechSci Research

Note: MMRDA - Mumbai Metropolitan Region Development Authority

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CROSS-SUBSIDISING MAKES PASSENGER TRAVEL AFFORDABLE

Freight revenue accounts for major share of total railway revenues in India (67.09 per cent share in FY16)

Major freight Railways such as the US, China and Russia have one-fourth the freight rate compared with India

Indian Railways charges higher freight tariff to cross-subsidise passenger fares and make them affordable to the public. Thus, passenger fares were not increased in tandem with the rising costs over the years; in fact, fares have declined in some cases.

Average rate per passenger kilometre (in Rupees)

<table>
<thead>
<tr>
<th>FY06</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
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</thead>
<tbody>
<tr>
<td>0.245</td>
<td>0.247</td>
<td>0.257</td>
<td>0.261</td>
<td>0.259</td>
<td>0.263</td>
<td>0.270</td>
<td>0.285</td>
<td>0.315</td>
<td>0.368</td>
</tr>
</tbody>
</table>

Average rate per tonne kilometre (in Rupees)

<table>
<thead>
<tr>
<th>FY06</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
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<td>1.0</td>
<td>1.3</td>
<td>1.4</td>
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</table>

Source: Ministry of Railways, TechSci Research
Note: Figures mentioned in the graph is as per latest data available
Revenues from traffic operations increased at a CAGR of 37.9 per cent during FY07–15 to USD583.4 million.

The total ridership in January 2015 was 73.4 million.

During 2012–13, Delhi Metro registered its highest daily ridership of over 2.3 million. In 2015, it carried more than 2.4 million passengers on a single day.

On 17 August, 2016, Delhi metro created a record of highest number of commuters travelling using metro in a day (3.36 million).

Total operational network across Phase I and Phase II spans 190 kilometres and covers 143 stations.

Phase III of the project was approved in August 2011 and covers a route length of 159.33 km and 107 stations.

Finalised Phase IV of the project would cover an area of more than 115 km and it is expected to be completed by 2021.

Automatic Fare Collection Gates have installed an additional 200 gates at various stations.

Average speed of trains have seen a positive growth from 33 kmph to 36 kmph.

Source: Delhi Metro website, Annual Report, TechSci Research

CAGR: 37.94%
RAILWAYS

DELHI METRO: A RUNAWAY PUBLIC SECTOR SUCCESS … (2/2)

Key success factors

- Coordinated and well-collaborated effort from various government agencies for timely completion of the project
- Availed overseas financing to cover 60 per cent of the costs to ensure expedition of the project’s execution
- Involvement of consultants from across the world with extensive experience – both technological and managerial – in the field
- Rapid development of the city, demographic translations such as changing of land use with commercialisation of residential areas and increasing suburbanisation are all crucial factors for the system’s success

Salient features

- The capital cost of completion of Phase III was estimated at USD4.5 billion, saving about USD173 million from the budgeted expenditure
- The phase was completed three years ahead of schedule
- Average duration of major tenders was 19 days compared with the three to nine months, which is the norm

Source: Press information Bureau, Delhi Metro Rail Corporation, GOI and News websites
RAILWAYS

USEFUL INFORMATION
Manufacturers Association for Information Technology (MAIT)
4th Floor, PHD House, Opp. Asian Games Village,
New Delhi 110 016, India
Tel: 91 11 26855487
Fax: 91 11 26851321
E-mail: contact@mait.com
Website: www.mait.com

Consumer Electronics and Appliances Manufacturers
Association (CEAMA)
5th Floor, PHD House
4/2, Siri Institutional Area, August Kranti Marg
New Delhi –110 016
Telefax: 91-11-46070335, 46070336
E-mail: ceama@airtelmail.in
Website: www.ceama.in
CAGR: Compound Annual Growth Rate
FDI: Foreign Direct Investment
FY: Indian Financial Year (April–March)
   ➤ FY12 implies April 2011 to March 2012
DFC: Dedicated Freight Corridor
DFCCIL: Dedicated Freight Corridor Corporation of India Limited
PPP: Public-Private Partnership
IIP: Index of Industrial Production
R2CI: Railways Policy for Connectivity to Coal and Iron Ore Mines
R3i: Railways' Infrastructure for Industry Initiative
CST – 9: Central Standard Trial-9,
SPV: Special Purpose Vehicle
USD: US Dollar
Wherever applicable, numbers have been rounded off to the nearest whole number
### Exchange rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
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<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
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<tr>
<td>2005–06</td>
<td>44.14</td>
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<td>2006–07</td>
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<td>2008–09</td>
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<td>2009–10</td>
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<td>2010–11</td>
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<tr>
<td>2011–12</td>
<td>46.88</td>
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<td>2012–13</td>
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<td>2013–14</td>
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<td>2014–15</td>
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<td>2015–16</td>
<td>65.46</td>
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<tr>
<td>2016-17 (E)</td>
<td>67.23</td>
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</table>

### Exchange rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
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</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
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<td>2013</td>
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<td>2014</td>
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<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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