RAILWAYS

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EXECUTIVE SUMMARY

World’s 3rd 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 & 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 & 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 & hygienic drinking water at low cost, in March 2017, to save & cut down on water bill by up to US$59.5 million, Indian Railways announced its plans to buy recycled water from private companies for non drinking purposes, so as to reduce its consumption & conserve water.
- 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 waste in an environment–friendly manner
- As of April 2017, Indian Railways plans to introduce dedicated trains for domestic & international tourists, catering to customers belonging to all income groups. The decision is a part of the draft tourism policy which Indian Railways plans to introduce for the first time with an aim to increase private partnership in running tourist trains.

Source: Make in India, TechSci Research
Modernisation/Technology upgradation

- 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 lightweight aluminium coaches in the rail network to reduce the travelling time between metropolises. The trains are expected to be launched in early 2018.

- Production of old designed conventional coaches to be fully stopped from 2018-19 & 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
RAILWAYS

ADVANTAGE INDIA
Growing demand
- Increasing urbanisation & rising incomes (both urban & 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 & private sector participation
- Metro rail projects are being envisaged across many cities over the next ten years

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

Higher investments
- The government has been investing heavily to upgrade railway infrastructure
- Cumulative FDI Inflows in Railway Related Components from April 2000 to December 2016 stood at USD 789.03 million
- Private Investment in MRTS is expected to increase from 13 per cent to 42 per cent during 2012-17

Source: Railway Budget 2014-15, Press Information Bureau, Department of Industrial Policy & Promotion; TechSci Research

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

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.

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, steel, fertilisers, petrochemicals & agricultural produce.

Source: Ministry of Railways, Make In India, Railway Budget FY15-16, Railway Budget FY16-17, TechSci Research
### EVOLUTION OF RAILWAYS IN INDIA

- India has the world's 3rd largest railway network under single management.

<table>
<thead>
<tr>
<th></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>117,996¹</td>
</tr>
</tbody>
</table>

*Source: Ministry of Railways, TechSci Research*

Notes: ¹ – Data for FY17

For updated information, please visit [www.ibef.org](http://www.ibef.org)
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.

In March 2017, Railways started a new segment of revenue generation channel through auctioning for advertising & branding contracts on 1000 trains. The front running brands are to sign this contract for 5 years.

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, Chennai, Tamil Nadu.

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, 2 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

During 2007-16, passenger volume increased at a CAGR of 2.58 per cent

- During FY16, passenger traffic using Indian Railways reached 8152 million
- Passenger traffic is expected to increase to 15.18 billion by FY20

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.

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 other countries.

Trends in passenger volumes (in billions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Passengers (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>6.12</td>
</tr>
<tr>
<td>FY08</td>
<td>6.52</td>
</tr>
<tr>
<td>FY09</td>
<td>6.92</td>
</tr>
<tr>
<td>FY10</td>
<td>7.24</td>
</tr>
<tr>
<td>FY11</td>
<td>7.65</td>
</tr>
<tr>
<td>FY12</td>
<td>8.22</td>
</tr>
<tr>
<td>FY13</td>
<td>8.42</td>
</tr>
<tr>
<td>FY14</td>
<td>8.39</td>
</tr>
<tr>
<td>FY15</td>
<td>8.22</td>
</tr>
<tr>
<td>FY16</td>
<td>8.1</td>
</tr>
<tr>
<td>FY20</td>
<td>15.2</td>
</tr>
</tbody>
</table>

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.

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)
## Company

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

<table>
<thead>
<tr>
<th>Company</th>
<th>Project details</th>
</tr>
</thead>
</table>
| **Punj Lloyd**               | • Construction of 8 metro stations in Bengaluru  
                                • Construction of 2 elevated Metro stations at MG Road & Trinity Circle in Reach-1 (inaugurated in September 2011)  
                                • Construction of elevated stations at Mysore Road Terminal, Deepanjali Nagar and Magadi Road in Reach – 2 (Completion by December 2014) |
| **KalinDee**                 | • Gauge conversion of VilluPuram-Mayiladuthurai section  
                                • Installation & commissioning of signalling and telecommunications facilities at NTPC  
                                • Design, Manufacture, Supply, Installing, Testing & Commissioning of Automatic Fare collection system for Bangalore Metro Rail Corporation Ltd |
| **Larsen & Toubro**          | • Executing an order for development of railway siding, involving engineering, procurement & construction work for a dedicated railway line of 38 km  
                                • L &T Metro Rail started Mainline Testing of Trains on Stage 2 (from Miyapur to KPHB) of the Hyderabad Metro Rail Project  
                                • Construction of a 6-lane bridge over the Ganges river has been awarded to the joint venture company L&T - Daewoo & the construction begins in 2016 |

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

Notes: NTPC – National Thermal Power Corporation, km – Kilometres; KPHB: Kukatpally Housing Board
In December 2012, the Cabinet approved the new policy of ‘participative models for rail-connectivity & capacity augmented projects’. The policy addressed private investors’ concerns, which included ownership of the railway line & 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 & have already given approval (can now acquire land & begin construction) for 4 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 & 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
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.

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

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.

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
NOTABLE TRENDS IN INDIAN RAILWAYS…(2/2)

High-speed trains projects

- IR plans to build 7 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 & 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 & Delhi–Agra.
- Companies from France, China & Russian have joined hands with Indian Railways to bring 3 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
RAILWAYS

PORTERS FIVE FORCES ANALYSIS
RAILWAYS

PORTERS FIVE FORCES ANALYSIS

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
- Enormous capital requirements to set up a network, acts as an entry barrier

Substitute Products
- Substitutes include road and air transport; however, railways is the cheapest mode of travel

Bargaining Power of Suppliers
- Has monopoly and can buy products from any supplier
- Usually contracts are large-sized, which gives suppliers less bargaining power

Bargaining Power of Customers
- Lower bargaining power as no other cheap mode of transport available

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

GROWTH DRIVERS
RAILWAYS

STRONG DEMAND AND POLICY SUPPORT DRIVING INVESTMENTS

- Government focus on infrastructure building
- Growth of freight traffic due to industrialisation
- Increasing private sector participation
- Improved safety and modernisation
- Rising demand for urban mass transportation

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

**RISING INCOME AND URBANISATION DRIVING PASSENGER TRAFFIC GROWTH … (1/2)**

- Passenger traffic is expected to increase to 15.18 billion by FY20
- Increasing incomes in urban & 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 & 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 grew at a CAGR of 4.5 per cent. Indian Railways carried 1,107 million tonnes of revenue-earning freight traffic in FY16, as compared to 1,101.30 million tonnes in FY15

*Source: Ministry of Railways; Railway Budget 2015, TechSci Research*
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)

Source: Ministry of Railways, World Bank, IMF, TechSci Research
FY – Indian Financial Year (April–March)
Notes: E – Estimates, F – Forecast
### 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 & 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 & 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 & have unreserved seating accommodation                                                                   |
# RAILWAYS

## New Services

- **Premium trains**
  - Premium trains are a type of express trains that connect metros with other important cities. In the Railway Budget 2014–15, 5 new Premium Trains were announced.

- **Express trains**
  - Express trains or fast trains make small number of stops unlike other trains. 33 new Express trains were announced in 2014–15, of which 6 trains would be AC express trains.
  - 6 new express trains have been introduced under Railway Budget 2015-16.

- **Bio Toilets**
  - Under the rail budget 2017-18, It is targeted that By 2019, All Indian Railway coaches will be fitted with Bio-Toilets.

- **Cashless Transaction**
  - In the rail budget 2017-18, cashless Railway Bookings have moved up to 68%.

- **Railway Lines**
  - 3500 Kms of Railway lines will be commissioned in 2017-18.

- **Railway Stations**
  - Under Railway Budget 2017-18, 500 stations will be Modernized by providing lifts and escalators.
  - 7000 stations to be feed with solar power in the medium term as proposed under the Railway Budget 2017-18.

- **Extension of trains**
  - As of 2016, 3 new trains were to be extended as per the Railway Budget 2016-16.

*Source: Railway Budget 2014–15 and Railway Budget 2015-16*
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NEW SERVICES

Bullet Trains

- Advanced stage of feasibility study is being performed for high-speed rail between Mumbai – Ahmedabad & 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
For updated information, please visit www.ibef.org
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 & to save such passengers from touts.

The scheme was revised in August 2004 & 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 & non-AC has been changed in order to reduce the load on the ticketing website & booking window. Reservations for AC & non-AC will open at 10 AM & 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 2nd class & 30 per cent for all other classes subject to minimum & 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 & 50 per cent will be deducted if cancellations made 4 to 12 hours prior to departure. Waiting list & 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
**RAILWAYS**

**INCREASING INDUSTRIALISATION LEADING TO HIGHER FREIGHT TRAFFIC**

- During FY16, freight traffic increased and reached to 1107 million tonnes, portraying a positive & 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 & 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

**Notes:** DFC – Dedicated Freight Corridor, DFCCIL – Dedicated Freight Corridor, Corporation of India Limited, JV – Joint Venture, EDFC – Eastern Dedicated Freight Corridor
RAILWAYS

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
- Adopt high-end technology for real-time data analysis
- Reduce unit cost of transportation and increase productivity

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 & 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 & 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, 3 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 & 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
12th Five-Year Plan

**Participative models for rail connectivity and capacity augmented projects**

**POLICY AND REGULATORY FRAMEWORK … (1/5)**

- An outlay of USD95.6 billion has been approved by the Planning Commission for Railways. The Railway Ministry proposed an outlay of USD100.9 billion.

- Details of the outlay are as under:
  1. Gross budgetary support: USD35.8 billion
  2. Internal generation: USD19.3 billion
  3. Extra budgetary resources: USD40.5 billion

- In the Railway Budget 2015-16, there is a proposal to increase the plan outlay under budgetary sources by USD16.6 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.

- In FY17, Port-Rail Connectivity Projects worth more than USD2.97 billion approved by the Ministry of Railways.

- 44 new projects worth USD13.8 billion is likely to be implemented in FY17.

*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
### 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.

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 & Haldia under the JV/PPP model.
- Under the Railway Budget 2015-16, the scheme is to be reviewed for private investment
- In FY16 Two companies have been registered as wagon leasing company.
- Approval for 4 new BLC and 2 BTAP rakes have been granted and 12 rakes of BLC wagons were procured in FY16.

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 2016. So far (till October 2016), Indian Railways have installed more 49,000 bio–toilets in passenger coaches.
- 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.
- 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 & 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 & 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.

## SIGNIFICANT INVESTMENTS IN RAILWAYS

**Source:** Railway Budget 2015 – 16, TechSci Research

<table>
<thead>
<tr>
<th></th>
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<tr>
<td><strong>Approved outlay</strong></td>
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<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>
</tr>
<tr>
<td>Internal Generation</td>
<td>22.4</td>
<td>3.7</td>
<td>4.1</td>
<td>2.6</td>
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<td>1.9</td>
<td>1.8</td>
<td>1.6</td>
<td>2.5</td>
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<tr>
<td>Extra Budgetary Resources</td>
<td>19.8</td>
<td>1.3</td>
<td>1.6</td>
<td>2.1</td>
<td>2.1</td>
<td>3.5</td>
<td>2.8</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>58.0</td>
<td>7.2</td>
<td>7.9</td>
<td>8.4</td>
<td>8.9</td>
<td>9.9</td>
<td>9.3</td>
<td>9.0</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Source: Railway Budget 2015 – 16, TechSci Research
From April 2000 to December 2016, FDI in Railways related components industry stood at USD789.03 million, in India.
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>
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<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*
### MODERNISATION: NEW THEME OF INDIAN RAILWAYS … (2/3)

#### Track upgradation and welded rails

- Sleepers have been upgraded from wooden, steel & CST-9 to PSC sleepers
- Heavier section & 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 of FY16, there were 92,081 kms of Running Track. In Railway Budget 2017-18, railway line construction target increased to 3,500 km from 2,800 km, which was set under the budget 2016-18
- Replacing analogue type machines with digital type machines
- Promotion of better & improved welding techniques

#### Sleepers and bridges

- 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 & management system has been adopted, which includes non-destructive testing techniques, under water inspections, fibre composite wrapping & 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
Increasing operational efficiency

- Design & development of 5500 HP WDG5 diesel locomotive for faster, longer & 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 1 pantograph in raised condition

Unreserved Ticketing Services (UTS)

- In February 2017, Railways mobile app allows payments through apps such as Paytm and MobiKwik for unreserved tickets.
- 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
RAILWAYS

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

<table>
<thead>
<tr>
<th>Salient features</th>
<th>Need and importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The corporation was created with the view of making Indian Railways’ stations world class as a Public–Private Partnership venture (PPP)</td>
<td>• To meet with the aspirations of rail users &amp; to facilitate them with better facilities</td>
</tr>
<tr>
<td>• A Memorandum of Understanding (MoU) for the SPV was signed between 2 railway PSUs, the Ircon international Ltd. (IRCON) &amp; the Rail Land Development Authority (RLDA)</td>
<td>• To augment &amp; improve passenger related amenities at stations to high standards</td>
</tr>
<tr>
<td>• The SPV has a share capital of USD22.93 billion, with 51:49 equity between IRCON &amp; RLDA</td>
<td>• To have modern stations that would be functional, customer-oriented &amp; well equipped with proper circulation area &amp; railway operation facilities</td>
</tr>
<tr>
<td>• Total revenues for FY15 earned by the Indian Railway Station Development Corporation Ltd. stood at USD26.4 billion</td>
<td>• Designed to provide well-designed concourses, high-quality waiting spaces, easy access to the platforms, congestion-free platforms, modern catering facilities, hotels &amp; other facilities</td>
</tr>
<tr>
<td>• 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</td>
<td></td>
</tr>
</tbody>
</table>

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 & 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 (million tonnes)

- Freight traffic increased at a CAGR of 4.51 per cent during FY07-16
- With rapid economic growth & 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
GROWING NUMBER OF METRO PROJECTS IN INDIA … (1/2)

- 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 & growth centres
- Prime Minister Narendra Modi inaugurated Pune Metro Rail project & 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 (USD billion)</th>
<th>Length of project (kilometres)</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>
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<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>
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<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>
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<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, TechSci Research

For updated information, please visit www.ibef.org
### 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>
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<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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<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>
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<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>
</tr>
<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
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 & Russia have one-fourth the freight rate compared with India

Indian Railways charges higher freight tariff to cross-subsidise passenger fares & 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

Public as well as private companies are in favour of Indian Railways’ decision to sign long-term tariff contracts with consumers in cement, steel and fertiliser sectors, with numerous companies willing to bring in more freight traffic to the national transporter.

The share of non-fare revenue (NFR) in total revenue of Indian Railways has increased to 6.17 per cent in FY17, from 3.62 per cent in the last year. In absolute terms, the NFR was around US$24.55 billion in 2016-17, wherein around US$15.52 billion and US$6.88 billion was generated from the goods and passenger segments, respectively.

Source: Ministry of Railways, TechSci Research
Note: Figures mentioned in the graph is as per latest data available
Revenues from operations increased at a CAGR of 34.62 per cent during FY07–16 to USD647.17 million.

The total ridership in FY16 was 946.9 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 & Phase II spans 190 kilometres & 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 & 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.

Revenues from operations (USD million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenues (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>44.5</td>
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<tr>
<td>FY08</td>
<td>63.4</td>
</tr>
<tr>
<td>FY09</td>
<td>78.6</td>
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<tr>
<td>FY10</td>
<td>105.4</td>
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<tr>
<td>FY11</td>
<td>187.7</td>
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<td>FY12</td>
<td>415.4</td>
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<tr>
<td>FY13</td>
<td>494.8</td>
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<tr>
<td>FY14</td>
<td>530.5</td>
</tr>
<tr>
<td>FY15</td>
<td>583.4</td>
</tr>
<tr>
<td>FY16</td>
<td>646.17</td>
</tr>
</tbody>
</table>

CAGR: 34.62%

Source: Delhi Metro website, Annual Report, TechSci Research
### Key success factors

- Coordinated & 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 & managerial – in the field

- Rapid development of the city, demographic translations such as changing of land use with commercialisation of residential areas & 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 3 years ahead of schedule

- Average duration of major tenders was 19 days compared with the 3 to 9 months, which is the norm

*Source: Press information Bureau, Delhi Metro Rail Corporation, GOI and News websites*
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
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E-mail: ceama@airtelmail.in
Website: www.ceama.in
GLOSSARY

- **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

### 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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<tr>
<td>2008–09</td>
<td>46.14</td>
</tr>
<tr>
<td>2009–10</td>
<td>47.42</td>
</tr>
<tr>
<td>2010–11</td>
<td>45.62</td>
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<tr>
<td>2011–12</td>
<td>46.88</td>
</tr>
<tr>
<td>2012–13</td>
<td>54.31</td>
</tr>
<tr>
<td>2013–14</td>
<td>60.28</td>
</tr>
<tr>
<td>2014–15</td>
<td>61.06</td>
</tr>
<tr>
<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–17 (E)</td>
<td>67.23</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>
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<tr>
<td>2007</td>
<td>41.34</td>
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<tr>
<td>2008</td>
<td>43.62</td>
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<tr>
<td>2009</td>
<td>48.42</td>
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<td>2010</td>
<td>45.72</td>
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<td>2011</td>
<td>46.85</td>
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<td>2012</td>
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<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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