## EXECUTIVE SUMMARY

### World’s 3rd largest rail network
- Indian Railways has 12,617 passenger trains carrying over 23 million passengers daily. On the commercial front, freight traffic of Indian Railways increased to 1,159.57 million tonnes in FY18 from 1,106.58 million tonnes in FY17.

### 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 along with revamping of PPP for better results.
- Setting up of JVs with major public sector customers for fulfilling the requirements of new lines.

### Growth initiatives
- Indian Railways is planning to invest Rs 1,000 crore (US$ 155.16 million) for setting up 11 new units to double the capacity of its bottled water brand.
- Indian Railways is targeting to triple their freight traffic from current 1.1 billion tonnes* in 2017 to 3.3 billion tonnes by 2030.
- Indian Railways has planned completion of electrification in next 4-5 years (from October 2017), which will lead to energy savings worth Rs 10,000 crore (US$ 1.55 billion).
- As of April 2017, Indian Railways plans to introduce dedicated trains for domestic and international tourists, catering to customers belonging to all income groups.
- 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.

### Modernisation/Technology upgradation
- India Railways as undertaken modernisation of railway stations under the Adarsh station scheme. Out of the total 1,253 railway stations identified under the scheme, over 1,050 railway stations have already been modernised.
- Various technologies such as electronic interlocking at all interlocked Broad Gauge stations, Automatic Train Protection (ATP) system have been introduced by Indian Railways.
- All electric locomotives have been provided with Vigilance Control Devices (VCD) which helps in checking the alertness of Loco Pilots (LPs).
- The government has decided to manufacture only Linke Hoffman Bushche (LHB) type coaches from 2018-19 onwards.

*Note:* Approximate  
**Source:** Make in India, Indian Railways, News Articles
ADVANTAGE INDIA
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.

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.

The government has been investing heavily to upgrade railway infrastructure.

Cumulative FDI Inflows in Railway Related Components from April 2000 to December 2017 stood at US$ 897.09 million.

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.

**Note:** FDI - Foreign Direct Investment

**Source:** Railway Budget 2014-15, Press Information Bureau, Department of Industrial Policy and Promotion; Aranca Research
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 2016-17, IR has a total route network of about 67,368 kms.
- It operates more than 22,300 trains daily
- It has 0.278 million wagons, 69,322 coaches and 11,461 locomotives

- Over 23 million passengers travel by trains daily in India. The passenger traffic stood at 8,219 million in FY17

- Around 1,110.95 million tonnes of freight was transported via trains in FY17 and 2,165 million tonnes is expected in FY20
- These include a huge variety of goods such as mineral ores, iron, steel, fertilisers, petrochemicals and agricultural produce

Source: Ministry of Railways, Make In India, Railway Budget FY16-17, Aranca Research
Revenue growth has been strong over the years. Indian Railways’ revenues increased at a CAGR of 9.66 per cent to US$ 27.71 billion during FY07-FY18.

- Revenues from the sector are estimated to reach to US$ 44.5 billion by the end of FY20.
- Indian Railway sector aims to boost passenger amenities.

**Note:** CAGR – Compound Annual Growth Rate, E – Estimates, FY – Indian Financial Year (April–March), RE – Revised Estimate

**Source:** Vision 2020, Ministry of Railways, Aranca Research
SEGMENT-WISE REVENUE GROWTH FOR INDIAN RAILWAYS

- Revenues from the passenger segment of Indian Railways have increased at a CAGR of 9.88 per cent to US$ 7.55 billion in FY18 from US$ 3.79 billion in FY07.
- Freight earnings of Indian Railways have grown at a CAGR of 3.71 per cent to US$ 15.70 billion in FY18 from US$ 10.51 billion in FY07.
- 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.
- With eight metro rail networks spread over a length of 370 kilometres (km) and over two dozen metro projects lined up, India’s metro rail network is expanding at a fast pace. The Government of India has allocated US$ 2.21 billion for metro projects in Budget 2018-19.

Notes: CAGR – Compound Annual Growth Rate, FY – Indian Financial Year (April–March), F – Forecast, Exchange Rates used are provided on page 48
Source: Ministry of Railways, Aranca Research
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 65.52 per cent of total revenues in FY18, 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 and Western, would be operational by FY20.

Note: Other Coaching includes service coaches such as pantry cars, parcel vans, mail vans, etc

Source: Railway Budget 2015-16, Railway Budget 2016-17 Ministry of Railways, Aranca Research
Train travel remains the preferred means of long-distance travel for majority of Indians.

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

During FY18, passenger traffic in the country increased to 8.29 billion and is further expected to advance to 15.20 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.

In May 2018, IRCTC introduced Alternate Train Accommodation Scheme (ATAS) which aims to provide confirmed berths in alternate trains to waitlisted passengers. The scheme is expected to improve the experience of passengers of Indian Railways.

Note: CAGR – Compound Annual Growth Rate, E – Estimate, FY – Indian Financial Year (April–March)
Source: Make In India, Ministry of Railways, Aranca Research
PASSENGER VOLUMES WITNESS HEALTHY GROWTH … (2/2)

- Suburban passenger booking grew at a CAGR of 2.31 per cent year-on-year to 4,661.68 million in FY18 from 2,000 million in FY81.
- Non-suburban passenger booking increased at a CAGR of 2.21 per cent from 1,613 million in FY81 to 3,625.27 million in FY18.

Notes: CAGR – Compound Annual Growth Rate, FY – Indian Financial Year (April–March)
Source: Vision 2020, Ministry of Railways, Aranca Research
STRONG GROWTH IN FREIGHT TRAFFIC

- The government is investing heavily in building rail infrastructure in the country.
- 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.
- Freight traffic carried by Indian Railways increased from 744.56 million tonnes in FY07 to 1,159.57 million tonnes in FY18.
- Indian Railway estimates originating loading for freight business segment would increase to 2,165 MT by FY20.

Note: CAGR – Compound Annual Growth Rate, E- Estimated F – Forecast, FY – Indian Financial Year (April–March)
Source: Ministry of Railways, Vision 2020, Press Information Bureau, Aranca Research
## Private Equity Deals

<table>
<thead>
<tr>
<th>Company</th>
<th>Business description</th>
</tr>
</thead>
</table>
| ![CONCOR](image) **Navratna PSU under India’s Ministry of Railways**
- Carrier, terminal operator and warehouse operator |
| ![DFCC](image) **SPV set up under the Ministry of Railways**
- Undertakes planning and development; mobilisation of financial resources; construction, maintenance and operation of the Dedicated Freight Corridor (DFC) |
| ![RailTel](image) **SPV created by the Government of India**
- Builds engineering works required by Indian Railways |
| ![RailTel](image) **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 |

**Notes:** PSU – Public Sector Undertaking, DFC – Dedicated Freight Corridor, SPV – Special Purpose Vehicle  
**Source:** Relevant Company Annual Reports and websites, Aranca Research
EXPANDING SCOPE OF PPP

- In December 2012, the Cabinet approved the new policy of 'participative models for rail-connectivity and capacity augmented projects'. The policy addressed the issues of ownership of the railway line and repayment of investment.

- Since the launch of the policy, 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, to 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) and Gevra Road-Pendara Road – and 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.

- As per Budget 2018-19, PPP investments are expected to increased to Rs 27,000 crore (US$ 4.19 billion) from Rs 24,000 crore (US$ 3.72 billion) in 2017-18 (Revised Estimates).

- Ministry of Railways has jointly set up factories with Alstom and General Electric (GE) at Madhepura and Marhowra to manufacture 800 electric locomotives and 1000 diesel locomotives. The ministry has 26 per cent stake in both the Joint Ventures (JVs). In addition to manufacturing of locomotives, the companies will also have to undertake maintenance of the first 500 units by setting up manufacturing facilities by establishing maintenance facilities at Saharanpur, Nagpur, Roza and Gandhidham. In March 2018, Alstom completed production of the first all-electric locomotive at the manufacturing facility in Madhepura, Bihar.

**Notes:** PPP – Public Private Partnership; MUTP-III: Mumbai Urban Transport Project-III

**Source:** Ministry of Railways, Make in India, Aranca Research
<table>
<thead>
<tr>
<th>Force</th>
<th>Impact</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threat of Substitutes</td>
<td>Low</td>
<td>Substitutes include road and air transport; however, railways is the cheapest mode of travel</td>
</tr>
<tr>
<td>Bargaining Power of Suppliers</td>
<td>Low</td>
<td>Has monopoly and can buy products from any supplier&lt;br&gt;Uses contracts which are large-sized, giving suppliers less bargaining power</td>
</tr>
<tr>
<td>Competitive Rivalry</td>
<td>Low</td>
<td>Competitive rivalry is low as any other mode of transportation is significantly expensive&lt;br&gt;Rail connectivity available in remote areas, unlike other transport facilities</td>
</tr>
<tr>
<td>Bargaining Power of Buyers</td>
<td>Low</td>
<td>Lower bargaining power as no other cheap mode of transport available</td>
</tr>
<tr>
<td>Threat of New Entrants</td>
<td>Low</td>
<td>Enormous capital requirements to set up a network acts as an entry barrier</td>
</tr>
</tbody>
</table>

**Source:** Aranca Research
RECENT TRENDS AND STRATEGIES
### 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.
- The central government inaugurated the Pune Metro Rail project on December 24, 2016. The metro line would have 30 stations and the 1st phase would cover a distance of 31.25 km. The project is estimated to be completed at a cost of US$ 1.67 billion.

### M-ticketing and e-ticketing
- In FY15, e-ticketing scheme was introduced to support 7,200 tickets per minute, increased from earlier capacity of 2,000.
- In May 2018, IRCTC introduced its mobile android app which can be utilised by IRCTC e-wallet users to book e-rail tickets.

### International Investment
- IR has attracted increasing foreign investments through strategic alliances with various countries over the last few years.
- Foreign Direct Investments (FDI) in railway related components reached US$ 897.09 million during April 2000 – December 2017.
- 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 US$ 1.5 thousand.

### 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 3 semi-high speed rail corridor projects on track.

**Notes:** km/h – kilometre per hour  
**Source:** Ministry of Railways, Railway Budget 2015–16, Railway Budget 2016–17, Aranca Research
### High-speed trains projects

- Indian Railways plans to build 7 high-speed rail corridors to provide faster rail connectivity across the country, for high speed train project, at a cost of US$ 17 million
- As part of Railway Budget 2016-17, the government had launched a new train “Mahamana Express” connecting Varanasi and Delhi and is 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
- The Indian Railways has collaborated with the government of Japan for the construction of a high speed passenger train corridor between Ahmedabad and Mumbai. The project is expected to commence in 2017.
- In April 2017, the government announced intentions to develop 180Kms Delhi-Rewari-Alwar Regional Rapid Transport System with an investment of around US$5.5 billion. The project would enable passengers to travel from Delhi to Alwar in just 104 mins.

### New Services Launched

- In April 2018, Indian Railways decided to launch 10 new summer special trains that will operate between Mumbai and Varanasi.
- Under Budget 2018-19, railway lines of 4,100 kms will be commissioned and 600 stations will be targeted to be redeveloped during the year.
- In November 2017, Indian Railways introduced facility of informing passengers about status of trains running late through Short Messaging Service (SMS).
- In May 2017, the government decided to fast-track its project to connect Kashmir to the rest of the country by rail. The project is worth US$ 1.49 billion and will enable trains to operate between New Delhi and Kashmir in 14 hours.
- Indian Railway Catering and Tourism Corporation Ltd (IRCTC) has decided to launch two new circuits of its flagship luxury train Maharajas’ Express in 2017. These 2 new trips, which are named as “Southern Jewels” and “Southern Sojourn”, will cover prominent destinations in South and West India.

*Notes: km/h – kilometre per hour

*Source: Ministry of Railways, Railway Budget 2015–16, Railway Budget 2016–17, Aranca Research*
STRATEGIES ADOPTED BY INDIAN RAILWAYS

Revenue-based strategies

- Provision of online rail bookings, hotel reservations and retiring rooms by IRCTC adds to revenues of Indian Railways and are focusing on international tourists and have also come up with many tour packages for foreigners
- Indian Railways has set a target of US$ 5.95 billion revenues from monetising railways in the next 10 years. By doing so, the railways aims to increase earnings through traditional as well as non-traditional sources, and reduce expenditure.

Turnaround strategies for passenger traffic

- Fare for premium classes were reduced so as to compete with the airlines, luxury buses and personal transport vehicles
- The length of popular trains was increased from 16–18 coaches to 24–26 coaches
- Private participation is encouraged and information technology was used to make ticket reservation more feasible to passengers along with 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 and 200 kmph, to reduce the time of inter-metro journeys
- In January 2017, Indian Railways awarded a contract to the SBI for installing 10,000 point of sales (POS) machines, at the PRS (Passenger Reservation System) and 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 and 25 tonnes for selected routes and freight discounts are allowed to customers offering high tariffs
- The average speed of freight trains would increase to 50 km/h and Mail/Express trains to 80 km/h by the end of 2020
- Freight rates on cement, coal, urea, kerosene, LPG and food grain and pulses have been hiked by upto 10 per cent to bring an additional revenue of US$ 655.1 million per year

Notes: IRCTC – Indian Railway Catering and Tourism Corporation
Source: Ministry of Finance, Railway Budget 2016, Aranca Research, News articles
GROWTH DRIVERS AND OPPORTUNITIES
STRONG DEMAND AND POLICY SUPPORT DRIVING INVESTMENTS

Government focus on infrastructure building

- Increasing private sector participation
- Growth of freight traffic due to industrialisation
- Improved safety and modernisation
- Rising demand for urban mass transportation
RISING INCOME AND URBANISATION DRIVING PASSENGER TRAFFIC GROWTH

- 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
- Improvement of urban-rural connectivity has been another major contributor to the growth of Railways industry in the country
- During 2017-18, passenger traffic of Indian Railways increased 0.82 per cent year-on-year to 8,286.95 million.
- Ministry of Railways have launched Smart Freight Operation Optimisation & Real Time Information (SFOORTI) App for Freight Managers which provides features for monitoring and managing freight business using Geographic Information System (GIS) Views and Dashboard.
- Indian Railways launched transparent and efficient "New Online Vendor Registration System" in its research arm RDSO
- Indian Railways is planning to standardize the number of coaches in trains to 22 or less so as to make them suitable for running on any route.

Source: Ministry of Railways; Railway Budget 2015, Aranca Research
### PASSENGER SEGMENT OFFERS DIVERSE SERVICES

<table>
<thead>
<tr>
<th>Company</th>
<th>Business 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                                                                                     |
# NEW SERVICES

<table>
<thead>
<tr>
<th>Service</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superfast trains</td>
<td>In March 2018, Mr Narendra Modi, Prime Minister of India, launched the third Mahamana Express from Varanasi to Patna. The train will cover a distance of 234 km in each direction.</td>
</tr>
<tr>
<td>Express trains</td>
<td>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</td>
</tr>
<tr>
<td>Bio Toilets</td>
<td>By 2019, all coaches of Indian Railways are to be fitted with bio-toilets</td>
</tr>
<tr>
<td>Cashless Transaction</td>
<td>E-ticket bookings have increased to 70 per cent from 58 per cent during demonetisation</td>
</tr>
<tr>
<td>Railway Lines</td>
<td>Around 4,100 km of Railway lines are expected to be commissioned in 2018-19</td>
</tr>
<tr>
<td>Railway Stations</td>
<td>As per Union Budget 2018-19, 600 stations will be redeveloped in the financial year. 7000 stations to be fed with solar power in the medium term as proposed under the Railway Budget 2017-18</td>
</tr>
<tr>
<td>New Trains launched</td>
<td>In November 2017, the Prime Minister of India and Prime Minister of Bangladesh, along with Chief Minister of West Bengal, launched a new cross border train - Kolkata-Khulna Bandhan Express.</td>
</tr>
</tbody>
</table>

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

Bullet Trains
- Studies are being commissioned for other high speed routes in the diamond quadrilateral.
- Average speed of faster trains will increase from the existing 110 and 130 kmph to 160 and 200 kmph respectively.
- 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.
- In Union Budget 2018-19, an amount of Rs 7,000 crore (US$ 1,081.25 million) was allocated for the bullet train project.

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
- In May 2018, Parcel Cargo Express Train (PCET) commenced operations. The train connects the North-Eastern region with the coast as its initial and penultimate stops are New Guwahati in Assam and Kalyan in Maharashtra. A single PCET is able to carry consignments equivalent to 52 trucks and thus ensures less carbon emissions.

High Speed Rail
- In coordination with Japanese government, a high speed passenger train corridor, between Ahmedabad to Mumbai, is being undertaken.

Notes: km/h – kilometre per hour
Source: Railway Budget 2015–16, Railway Budget 2016–17
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 2nd 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 (US$)</th>
<th>Maximum Tatkal charges (US$)</th>
<th>Minimum Distance for charge (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserved Second Sitting (R2S)</td>
<td>0.16</td>
<td>0.23</td>
<td>100</td>
</tr>
<tr>
<td>Sleeper</td>
<td>1.55</td>
<td>3.10</td>
<td>500</td>
</tr>
<tr>
<td>AC Chair Car</td>
<td>1.94</td>
<td>3.49</td>
<td>250</td>
</tr>
<tr>
<td>AC 3 Tier</td>
<td>4.65</td>
<td>6.21</td>
<td>500</td>
</tr>
<tr>
<td>AC 2 Tier</td>
<td>6.21</td>
<td>7.76</td>
<td>500</td>
</tr>
<tr>
<td>Executive</td>
<td>6.21</td>
<td>7.76</td>
<td>250</td>
</tr>
</tbody>
</table>

Source: Ministry of Railways
- 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) and Western (1504 km route length) parts of India.
- Total length: 3,360 kms; total estimated cost: US$ 12.44 billion as on July 2016; of which US$ 5.41 billion has already been spent by the Government as of January 2018. The physical progress of the project upto January 2018 was 40.3 per cent.
- World Bank granted loan of US$ 1,100 million for EDFC-2 and have sanctioned a loan of US$ 650 million for EDFC-3 in June, 2015.

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

**Source:** Ministry of Railways, Aranca Research
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

Note: Ministry of Railways, Aranca 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.

**Note:** 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, Aranca Research
INCREASING FDI INFLOWS

- From April 2000 to December 2017, FDI in Railways related components industry stood at US$ 897.09 million, in India

**Note:** FDI – Foreign Direct Investment, FY18* - up to December
**Source:** Department of Industrial Policy and Promotion, Aranca Research
To modernise Indian Railways, the focus is on 2 fundamental drivers, Safety and Growth and 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 and growth
- **Review projects** – To ensure financial viability, social benefits and timely implementation
- **Focus on enablers** – For a holistic and long-term approach to modernisation and execution
- **Mobilise resources** – To capitalise on an opportunity

Information Technology – To improve operational efficiency

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### Key focus areas

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

... (2/2)

**Track upgradation and welded rails**

- 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 of FY17, there were 93,902 kms of running track. In Union Budget 2018-19, construction target of new railway lines increased to 1,000 km from 800 km, which was set under the Budget 2017-18
- Replacing analogue type machines with digital type machines and promotion of better and 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 and management system has been adopted, which includes non-destructive testing techniques, under water inspections, fibre composite wrapping and integrity testing

**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 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. Currently, 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 and have considered to extend the services in all metros

**Note:** Km – Kilometres, IR – Indian Railways, UTS – Ultimate Tensile Strength, CST9 – Central Standard Trial-9, PSC – Pre Stressed Concrete

**Source:** Ministry of Railways, Aranca Research
POLICIES AND REGULATORY FRAMEWORK
### POLICY AND REGULATORY FRAMEWORK … (1/4)

**Automobile Freight Train Operator Scheme 2013**

- **100 per cent FDI under automatic route is permitted for approved list of projects**

- To increase its share in automobiles transportation, Indian Railways notified a new scheme in March 2013, Automobile Freight Train Operator. The scheme provides logistic service providers and road transporters an opportunity to introduce their own special wagons to run on the railways’ network and avail of freight rebates in return. The requirements for the scheme are laid down as under:
  - Companies with minimum net worth of US$ 3.7 million or annual turnover of US$ 5.5 million are eligible to participate in this scheme
  - A registration fee of US$ 0.9 million is required to be paid to the Railway Ministry on approval as AFTOs
  - Companies are required to introduce at least 3 rakes and 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 and developed by Research, Design and Standards Organisation (RDSO) for induction by 3rd party logistics providers and road transporters
  - Each rake is to have a capacity to carry 318 small cars. The rake should be tested by RDSO

- Railways was the preferred carrier of automobiles in the country with loading from automobiles traffic growing 16 per cent in 2017-18

- To make the policy more effective, Ministry of Railways liberalised the AFTO policy by reducing registration fees from Rs 5 crore (US$ 0.78 million) to Rs 3 crore (US$ 0.47 million). Also, the requirement of minimum procurement of at least 3 rakes under the scheme has been relaxed to 1 rake.

*Source: Times of India, Ministry of Railways, Aranca 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) and (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 two models: Capital Cost and 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 US$ 0.7 billion  
▪ Development of the major stations to equip them with international level of amenities and services |
| Wagon investment scheme | ▪ Indian Railways launched the Wagon Investment Scheme in 2005 to offer freight rebates and 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.  
▪ 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. |

**Note:** R3i – Railways’ Infrastructure for Industry Initiative, SPV – Special Purpose Vehicle, R2CI – Railways Policy for Connectivity to Coal and Iron Ore Mines  
**Source:** Ministry of Railways, Make in India website, Aranca Research
For 2018-19, the total capital and development expenditure of Railways has been pegged at Rs 148,000 crore (US$ 22.86 billion).

For passenger safety, a Rashtriya Rail Sanraksha Kosh will be created with a corpus of Rs 1 lakh crore (US$ 15.61 billion) over a period of 5 years.

It is proposed to feed about 7,000 stations with solar power in the medium term.

The Government of India is going to come up with a ‘National Rail Plan’ which will enable the country to integrate its rail network with other modes of transport and develop a multi-modal transportation network.

A new Metro Rail Policy will be announced with focus on innovative models of implementation and financing, as well as standardisation and indigenisation of hardware and software.

By 2019, all coaches of Indian Railways will be fitted with bio toilets.

In the next 3 years, the throughput is proposed to be enhanced by 10 per cent.

500 stations will be made differently abled friendly by providing lifts and escalators.

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; JV with equity participation by railways; capacity augmentation through funding by customers; capacity augmentation – annuity model applicability; and BOT

A few projects undertaken under the participative policy of Ministry of Railways include Jaigarh Port-Digni Port, Hamarpur-Rewas Port, Chipun-Karad, Vaibhavwadi-Kolhapur and Indore-Mammad.

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

- As per Budget 2018-19, Northern Railways Department of Indian Railways is going to undertake modernisation of its entire signalling system with an estimated investment of Rs 9,000 crore (US$ 1.40 billion).
- Government of India has preponed its target of install bio-toilets in the entire fleet of coaches by 2019. As of March 2018, bio-toilets have been installed in around 60 per cent of all passenger-carrying coaches of Indian Railways.
- Introduced ‘Operation 5 minutes’ scheme for passengers travelling unreserved, which provides the passengers the time to purchase tickets within 5 minutes.
- 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 and availability of Toll-free number, 182, for security related complaints.
- Moving towards paperless ticketing and charting by development of multi – lingual e – ticketing portal. In the coming years, SMS on mobiles would be taken as proof instead of tickets promoting paperless tickets throughout India.
- 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. Electrification of 6,000 km of routes has been planned for 2018-19.
- As of June 2017, the Indian Railways is preparing to acquire 25 E5 Shinkasen series bullet trains from Japan for an estimated cost of US$743.71 million. The high speed corridor will have urinals, western style toilets with hot water and washing closet seat facility, separate washrooms for men and women equipped with triple mirrors for make-up and many other facilities.

Source: Ministry of Railways, Railway Budget 2015 – 16, News Articles; Press Information Bureau, Aranca Research
### Salient features

- The corporation was created with the view of making Indian Railways’ stations world class as a Public–Private Partnership venture (PPP)
- A MoU for the SPV was signed between 2 railway PSUs: Ircon International Ltd. and the Rail Land Development Authority
- The SPV has a share capital of US$ 22.93 billion, with 51:49 equity between IRCON and RLDA
- Total revenues for FY17 earned by the Indian Railway Station Development Corporation Ltd. stood at US$ 0.31 million
- As per Union Budget 2018, redevelopment of 600 major railway stations will be undertaken in 2018-19. Also, all stations which have footfall of more than 25,000 will be installed with escalators.

### 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

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**Note:** SPV – Special Purpose Vehicle, PSU – Public Sector Undertaking  
**Source:** Press information Bureau, GOI and News websites
CASE STUDIES
DELI METRO: A RUNAWAY PUBLIC SECTOR SUCCESS

- Revenues from operations increased at a CAGR of 34.09 per cent during FY07–17 to US$ 836.29 million
- The total ridership in FY17 and first quarter of FY18 stood at 1,001.65 million and 248.1 million respectively.
- On 17th 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 kms 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
- The capital cost of completion of Phase III was estimated at US$ 4.5 billion, saving about US$ 173 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: Delhi Metro website, Annual Report, Aranca Research
Indian Railways

Address: Rail Bhavan, Raisina Road
New Delhi-110001
Tel: 91 11 23411173
Website: www.indianrail.gov.in
USEFUL INFORMATION
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
- US$: US Dollar
- Wherever applicable, numbers have been rounded off to the nearest whole number
## EXCHANGE RATES

### Exchange Rates (Fiscal Year)

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### Exchange Rates (Calendar Year)

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*Source: Reserve Bank of India, Average for the year*
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