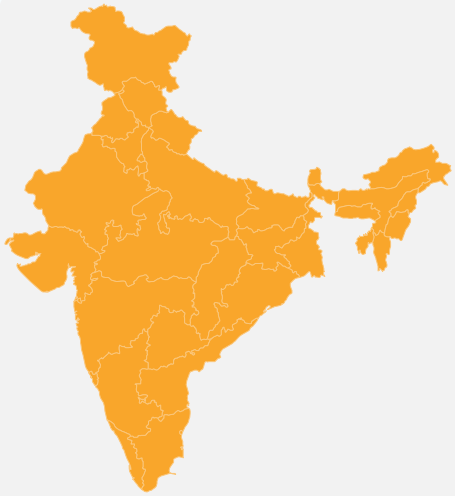


RAILWAYS



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September 2017

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EXECUTIVE SUMMARY

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World's 3rd largest rail network	▪ Indian Railways has 12,617 passenger trains carrying over 23 million passengers daily. On the commercial front, 1107.1 million tonnes of freight was transported via trains 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	▪ In March 2017, Indian Railways announced its plans to buy recycled water from private companies for non drinking purposes, so as to reduce its consumption and conserve water and reduce the bill up by US$59.5 million ▪ 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 and international tourists, catering to customers belonging to all income groups.
Modernisation/ Technology upgradation	▪ Indian Railways launched mobile ticketing services, enabling customers to receive tickets on Short Message Service (SMS). ▪ 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. ▪ Indian Railways is considering introduction of light weight aluminium coaches in the rail network to reduce the travelling time between metropolis by 2018 ▪ Manufacturing of Modern Linke Hofmann Busch coaches has started in 2017 in India. These coaches are equipped with modern technology and can prevent capsizing during derailment.

Source: *Make in India, Aranca Research*

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ADVANTAGE INDIA

ADVANTAGE INDIA

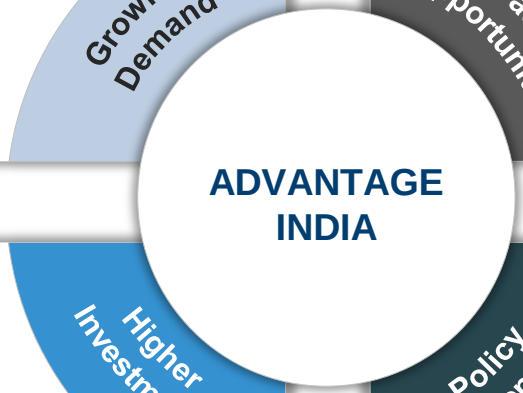
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Growing Demand

- Increasing urbanisation and rising incomes (both urban and rural) are driving growth in the passenger segment
- Growing industrialisation across the country has increased freight traffic over the last decade

Attractive Opportunities

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



Higher Investments

- The government has been investing heavily to upgrade railway infrastructure
- Cumulative FDI Inflows in Railway Related Components from April 2000 to June 2017 stood at US$ 812.21 million

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

Notes: *2017F – MRTS - Mass Rapid Transit System, Forecast 2017, MT - Million Tonnes, FDI - Foreign Direct Investment, FY is Indian Financial Year (April–March), F – Forecast*
Source: *Railway Budget 2014-15, Press Information Bureau, Department of Industrial Policy and Promotion; Aranca Research*

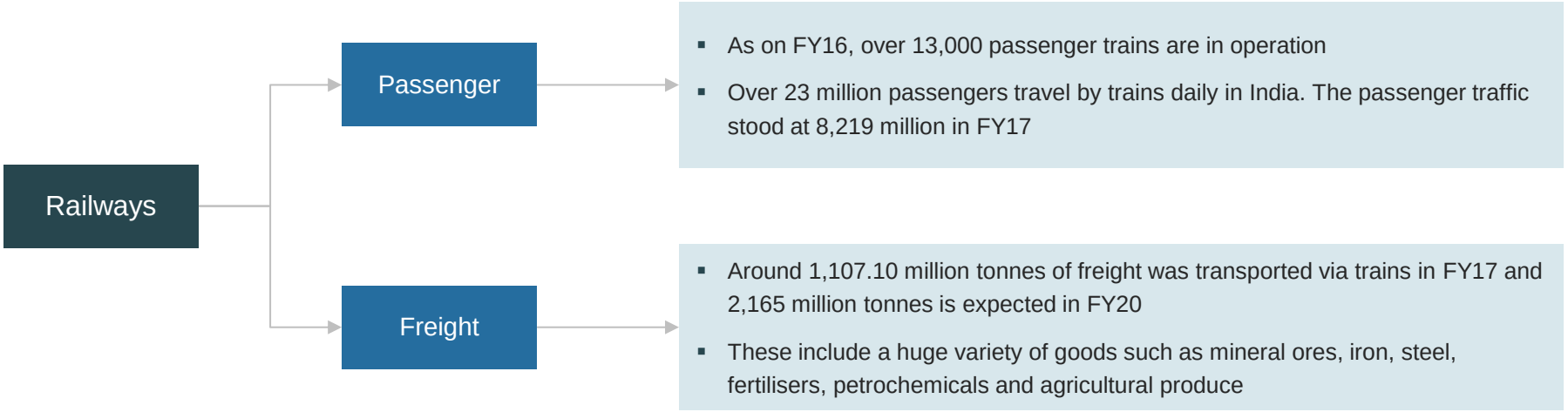
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MARKET OVERVIEW

INDIAN RAILWAYS HAS TWO MAJOR SEGMENTS

- Indian Railways (IR) is:
  - A departmental undertaking of the Government of India (GOI), which owns and operates most of India's rail transport
  - Overseen by the Ministry of Railways
- As of March 2016, IR has a total route network of about 66,687 kms spread across 8,500 stations
- It operates more than 22,300 trains daily
- It has 2.61 lakh wagons, 63,045 coaches and 10,773 locomotives

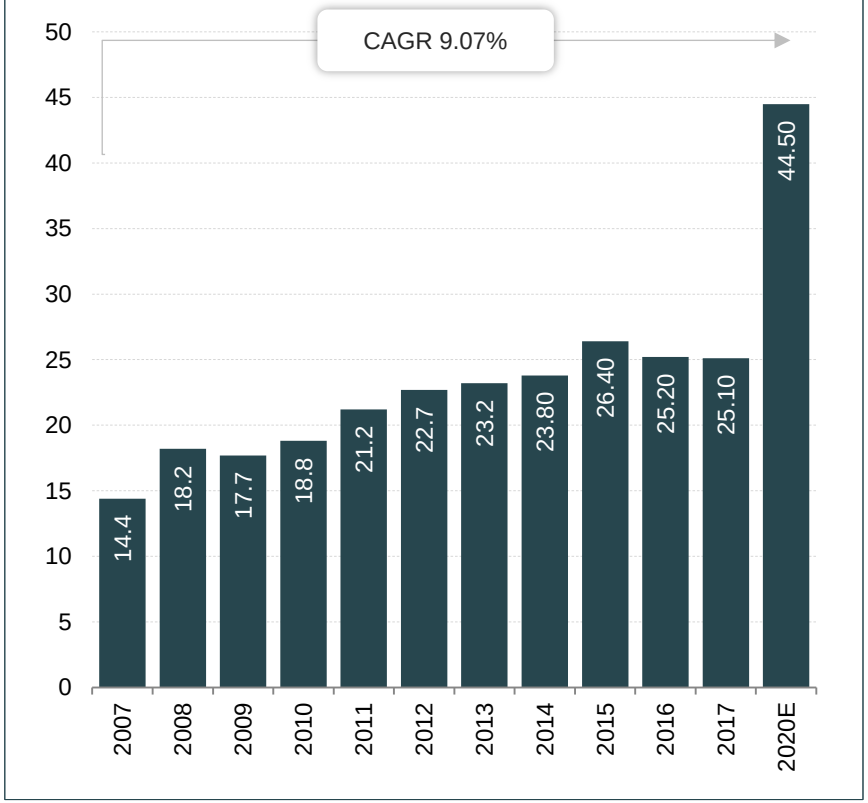


Source: *Ministry of Railways, Make In India, Railway Budget FY15-16, Railway Budget FY16-17, Aranca Research*

STRONG REVENUE GROWTH FOR INDIAN RAILWAYS

- Revenue growth has been strong over the years; during FY07–17, revenues increased at a CAGR of 5.7 per cent to US$ 25.1 billion in FY17
- Revenues from the sector are estimated to reach to US$ 44.5 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 and branding contracts on 1000 trains. The front running brands are to sign this contract for 5 years.

Gross revenue trends over the years (US$ billion)

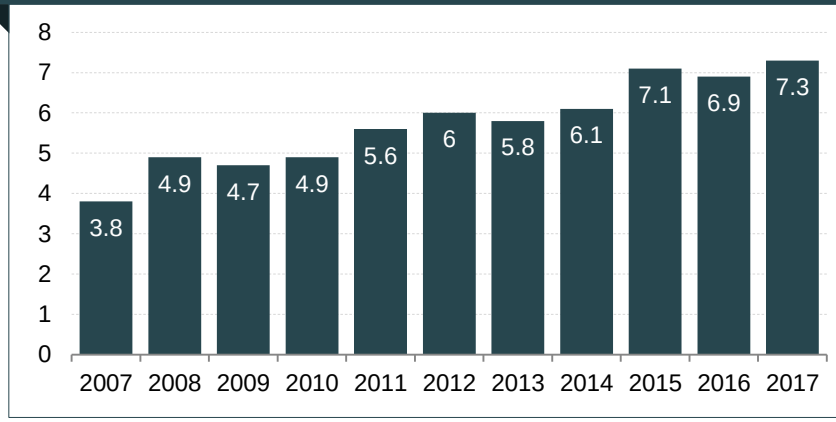


Note: *CAGR – Compound Annual Growth Rate, E – Estimates, FY – Indian Financial Year (April–March)*
Source: *Vision 2020, Ministry of Railways, Aranca Research*

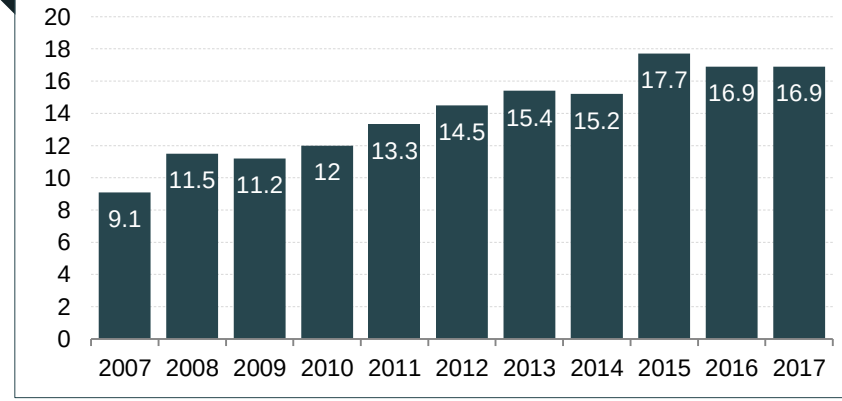
SEGMENT-WISE REVENUE GROWTH FOR INDIAN RAILWAYS

- In the last 10 years, revenues from the passenger segment expanded at a CAGR of 6.9 per cent, with the total revenue earnings in FY17 totalling to around US$ 7.3 billion
- Indian Railways generated US$ 16.15 billion in earnings from commodity freight traffic during FY17
- 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.
- 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$ 2.75 billion for metro rail companies in FY 2017-18.

Passenger earnings (in US$ billion)



Earnings from freight (in US$ billion)



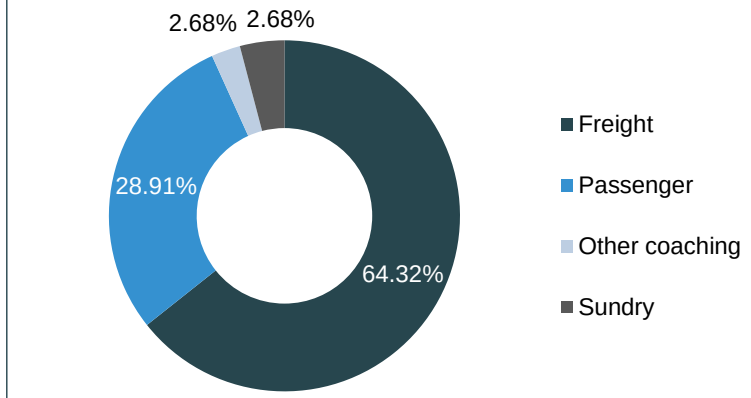
Notes: *CAGR – Compound Annual Growth Rate, FY – Indian Financial Year (April–March), F - Forecast*
Source: *Ministry of Railways, Aranca Research*

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FREIGHT ACCOUNTS FOR MORE THAN TWO-THIRDS OF RAILWAY'S REVENUES

- 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 64.32 per cent of total revenues in FY17, 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 and Western, would be operational by FY20

Revenue break-up by segment (FY17)

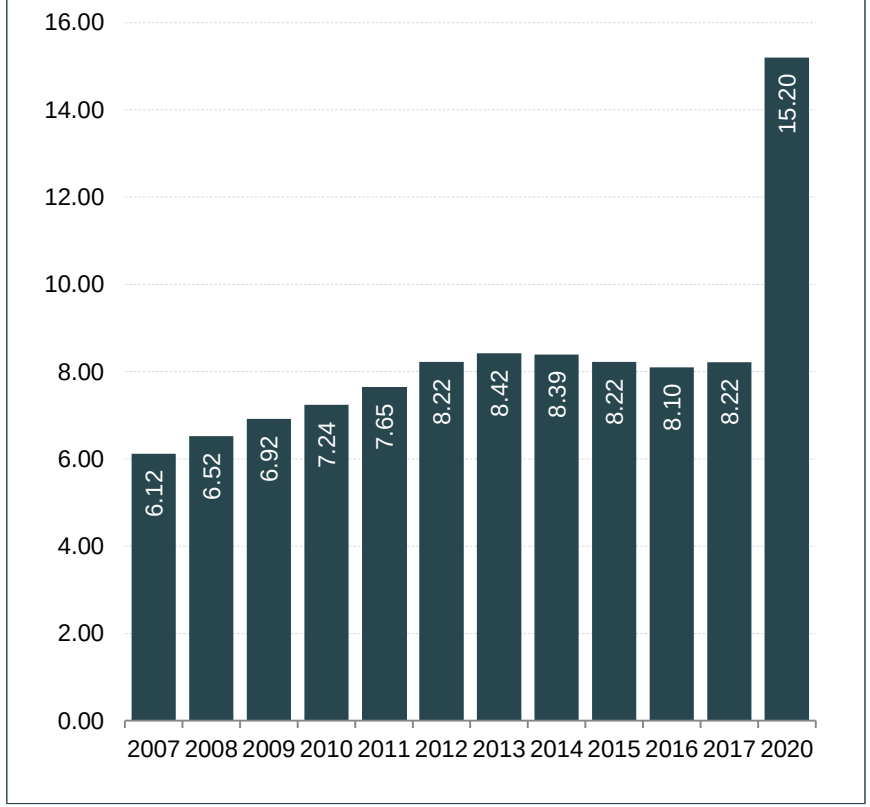


Note: *Other Coaching includes service coaches such as pantry cars, parcel vans, mail vans, etc*
Source: *Railway Budget 2015-16, Railway Budget 2016-17 Ministry of Railways, Aranca Research*

PASSENGER VOLUMES WITNESS HEALTHY GROWTH … (1/2)

- 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 FY17, passenger traffic using Indian Railways reached 8.22 billion and 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.
- India Railways is collaborating with Russian Railways to work on 575-km long stretch between Secunderabad and Nagpur, which would allow the trains to run at speeds of more than 200 km/hr
- In January 2017, the Indian Railways and UNESCO signed an agreement, for setting up a rail link between neighbouring countries like Bhutan, Nepal, Bangladesh and 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)

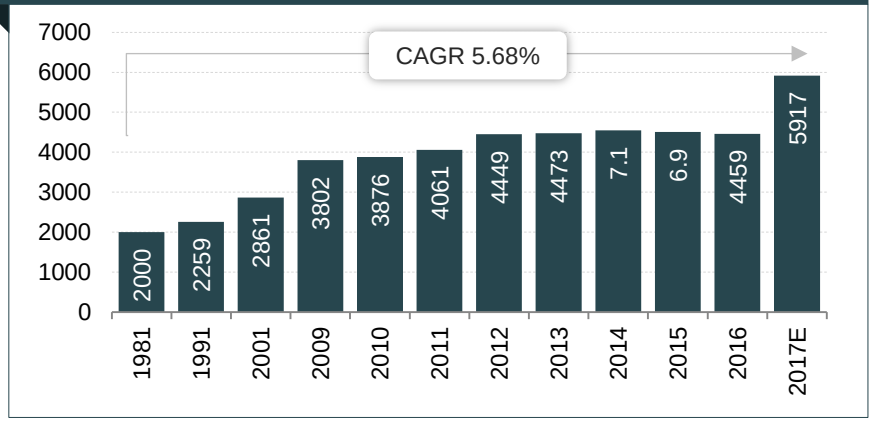


Note: *CAGR – Compound Annual Growth Rate, E – Estimated, FY – Indian Financial Year (April–March)*
Source: *Make In India, Ministry of Railways, Aranca Research*

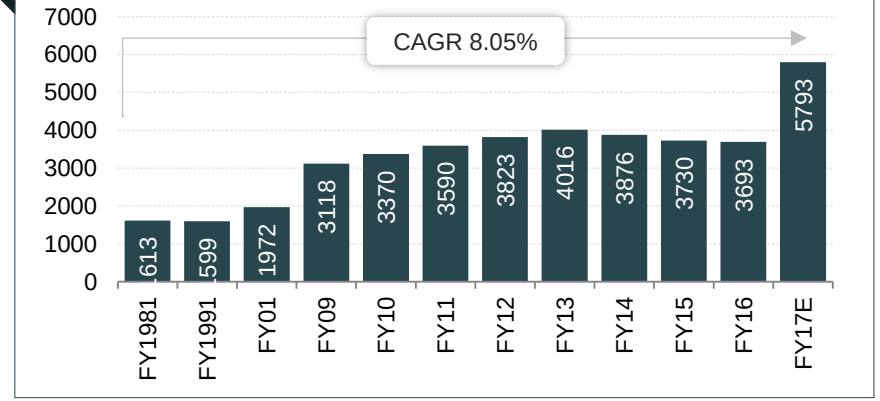
PASSENGER VOLUMES WITNESS HEALTHY GROWTH … (2/2)

- Suburban passenger booking 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 and non-suburban passenger volumes to increase to 5.9 billion and 5.8 billion passengers, by FY17, respectively.
- Indian Railways aims to increase passenger boarding of suburban and non – suburban passengers at a CAGR of 6.8 per cent (cumulative) from 6,920 million suburban and non – suburban passengers in FY09 to 11,710 million passengers by FY17.

Number of suburban passengers originating (in millions)



Number of non-suburban passengers originating (in millions)



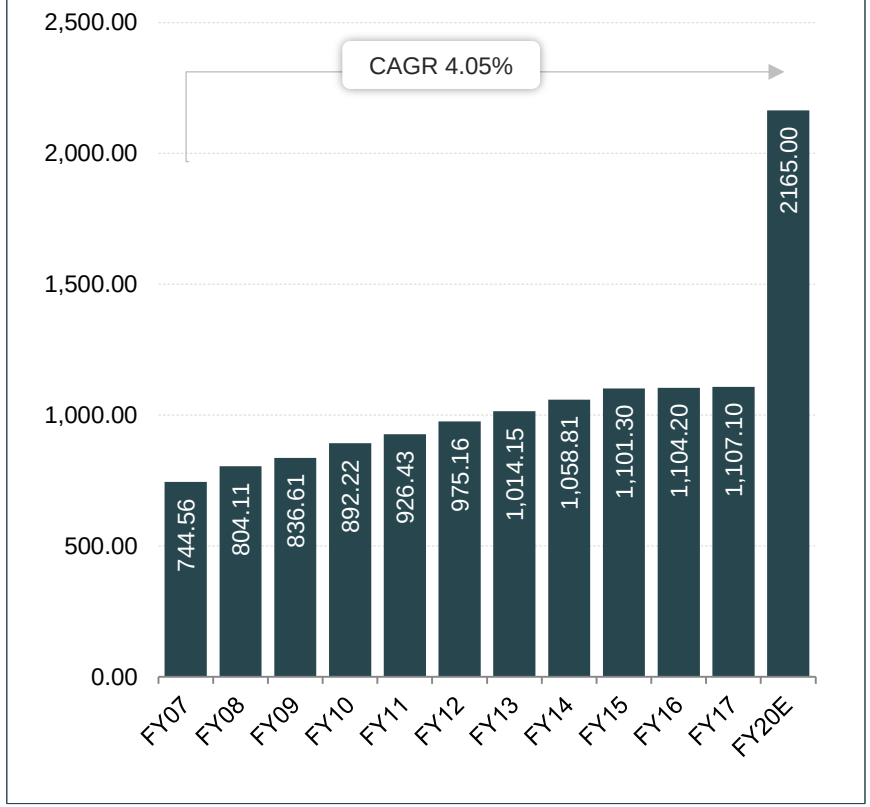
Notes: *CAGR – Compound Annual Growth Rate, E- Estimated F – Forecast, FY – Indian Financial Year (April–March)*
Source: *Vision 2020, Ministry of Railways, Aranca Research*

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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
- Railways has set a target of having a freight market share of 50 per cent by 2020 from 35 per cent in FY09
- Indian Railways carried 1,107.1 million tonnes of revenue-earning freight traffic in FY17, from 1,104.2 million tonnes in FY16
- During FY07-FY17, freight traffic grew at a CAGR of 4.05 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)

Freight traffic (million tonnes)



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*

KEY PLAYERS SUPPORTING INDIAN RAILWAYS

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Private Equity Deals

Company	Business description
कॉनकॉर CONCOR	▪ Navratna PSU under India's Ministry of Railways ▪ Carrier, terminal operator and warehouse operator
DFCC डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन	▪ 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)
रेल विकास निगम लिमिटेड (भारत सरकार का उपक्रम) Rail Vikas Nigam Limited (A Government of India Enterprise)	▪ SPV created by the Government of India ▪ Builds engineering works required by Indian Railways
रेलटेल RAILTEL	▪ 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*

PRIVATE PLAYERS MOVE UP THE VALUE CHAIN

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Private Equity Deals

Company	Business description
Punj Lloyd	▪ Construction of eight metro stations in Bengaluru ▪ Construction of two elevated Metro stations at MG Road and 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 RAIL NIRMAN (ENGINEERS) LIMITED	▪ Gauge conversion of VilluPuram-Mayiladuthurai section ▪ Installation and commissioning of signalling and telecommunications facilities at NTPC ▪ Design, Manufacture, Supply, Installing, Testing and Commissioning of Automatic Fare collection system for Bangalore Metro Rail Corporation Ltd
LARSEN & TOUBRO It's all about Imagineering	▪ Executing an order for development of railway siding, involving engineering, procurement and 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 six-lane bridge over the Ganges river has been awarded to the joint venture company LandT - Daewoo and the construction begins in 2016

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

Source: *Relevant Company Annual Reports and websites, Aranca Research*
Notes: *NTPC – National Thermal Power Corporation, km – Kilometres; KPHB: Kukatpally Housing Board*

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
- Indian Railways started the PPP mode of funding and has already awarded projects which amounted to around US$ 1.73 billion in the first seven months of FY16. For FY17, PPP investment is estimated to reach US$ 2.7 billion as per the revised estimates
- The Cabinet has approved the MUTP – III and as of March 2017, the World Bank has agreed to invest more than US$ 1 billion in the project. The project would be executed by Mumbai Railway Vikas Coorporation (MRVC).
- In January 2017, Indian Railways has signed a JV agreement with the Government of Jharkhand to develop the state's railway infrastructure.

Notes: *PPP – Public Private Partnership; MUTP-III: Mumbai Urban Transport Project-III*
Source: *Ministry of Railways, Make in India, Aranca Research*

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Porter's Five Forces Framework Analysis

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Threat of Substitutes

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

Bargaining Power of Suppliers

- **Low -** Has monopoly and can buy products from any supplier
- Usually contracts are large-sized, which gives suppliers less bargaining power

Competitive Rivalry

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

Bargaining Power of Buyers

- **Low -** Lower bargaining power as no other cheap mode of transport available

Threat of New Entrants

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

Positive Impact
Neutral Impact
Negative Impact

Source: *Aranca Research*

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RECENT TRENDS AND STRATEGIES

NOTABLE TRENDS IN INDIAN RAILWAYS…(1/2)

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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 has been introduced to support 7,200 tickets per minute from the current capacity of 2,000
International Investment	▪ IR has attracted increasing foreign investments through strategic alliances with various countries over the last few years ▪ Indian railways received foreign investments worth Rs 42,000 crore (US$ 6.59 billion) in May 2016 over two contracts with one European and one American company. ▪ 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*

STRATEGIES ADOPTED

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 internatonal tourists and have also come up with many tour packages for foreigners ▪ No fare hikes have been announced so far in the Railway Budget 2016 – 17 ▪ 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, India 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*

NOTABLE TRENDS IN INDIAN RAILWAYS…(2/2)

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High-speed trains projects	▪ IR 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 launched a new train “Mahamana Express” connecting Varanasi and Delhi and are 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$5.5 billion. The project would enable passengers to travel from Delhi to Alwar in just 104 mins.
New Services Launched	▪ In February 2017, the government planned to launch the Aastha Circuit Tourist train, to promote religious tourism in the country. The train would start its journey from Guwahati covering the shrines in Odisha and West Bengal. ▪ In May 2017, the government decided to fast-track its project to connect Kashmir to the rest of the country by rail. The project is worth US$ 1.49 billion and will enable trains to operate between New Delhi and Kashmir in 14 hours. ▪ As of July 2017, the Ministry of Railways, Government of India, has been able to reduce the time taken for recruitment process from two months to one day per test (for two tests), through the use of digital technology. ▪ 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. ▪ Under Budget 2017-18, railway lines of 3,500 kms will be commissioned and at least 25 stations will be awarded for station redevelopment during the year

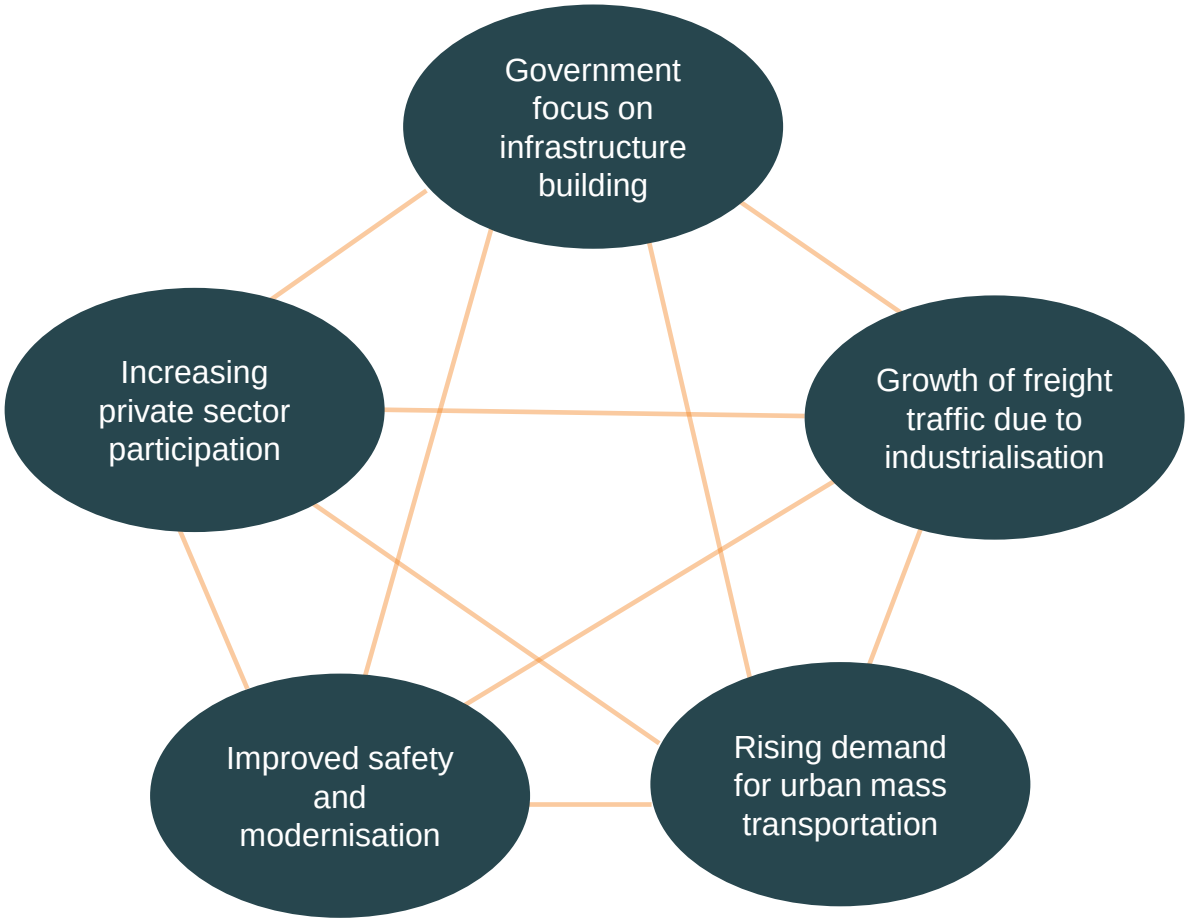
Notes: *km/h – kilometre per hour*

Source: *Ministry of Railways, Railway Budget 2015–16, Railway Budget 2016–17, Aranca Research*



GROWTH DRIVERS AND OPPORTUNITIES

STRONG DEMAND AND POLICY SUPPORT DRIVING INVESTMENTS



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
- Urban population in India grew to 33 per cent of total population in 2015, leading to increase in traffic between urban and rural areas in the country
- Improvement of urban-rural connectivity has been another major contributor to the growth of Railways industry in the country
- In 2016-17, Indian Railways carried around 8.22 billion passengers. During April to July 2017, passenger traffic stood at 2.79 billion, showing an increase of 2 per cent from 2.74 billion during the corresponding period in 2016.

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

PASSENGER SEGMENT OFFERS DIVERSE SERVICES

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Company	Business description
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

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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, five 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	▪ By 2019, all coaches of Indian Railways are to be fitted with bio-toilets
Cashless Transaction	▪ In the Rail Budget 2017-18, cashless railway bookings have moved up to 68 per cent
Railway Lines	▪ 3500 kms of Railway lines will be commissioned in 2017-18
Railway Stations	▪ Under Railway Budget 2017-18, 500 stations will be modernised 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, three new trains were to be extended as per the Railway Budget 2016-17

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 and its report is expected by mid 2015. The bullet train route proposes to cover Ahmedabad, Vadodara, Surat and Mumbai. 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 and 130 kmph to 160 and 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

Notes: *km/h – kilometre per hour*
Source: *Railway Budget 2015–16, Railway Budget 2016–17*

TATKAL SEVA SCHEME

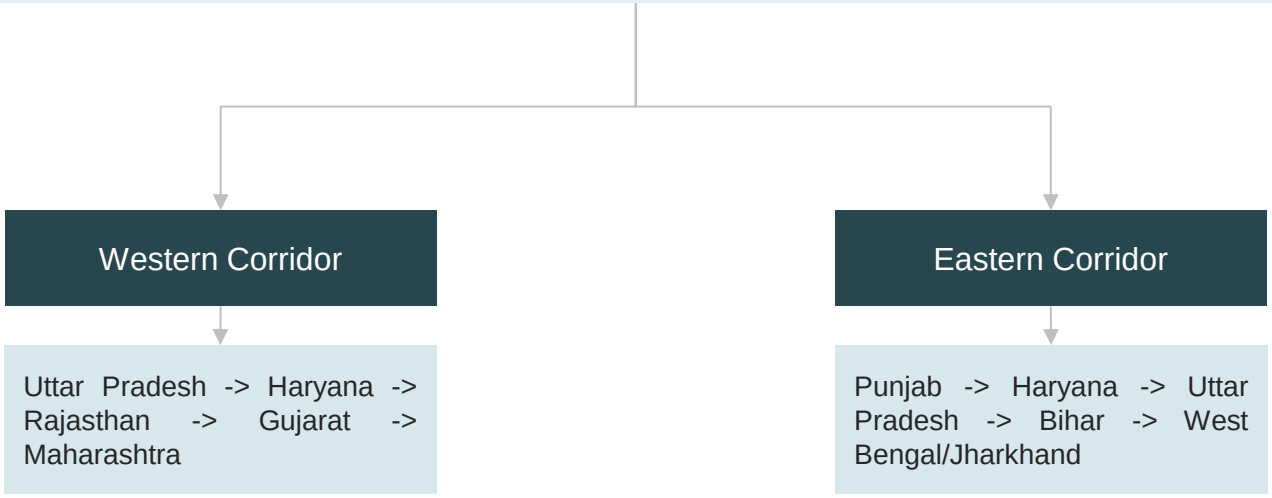
- The Tatkal Seva Scheme was introduced by Railway Minister Nitish Kumar in December 1997. This scheme benefits those passengers who plan their journeys at a very short notice and to save such passengers from touts
- The scheme was revised in August 2004 and in 2009, 2011 and 2012. As per the Railway 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

Classes of travel	Minimum Tatkal charges (US$)	Maximum Tatkal charges (US$)
Second (sitting)	0.15	0.23
Sleeper	1.37	2.67
AC Chair Car	1.53	3.06
AC 3 Tier	3.82	5.35
AC 2 Tier	4.58	6.11

Source: *Ministry of Railways*

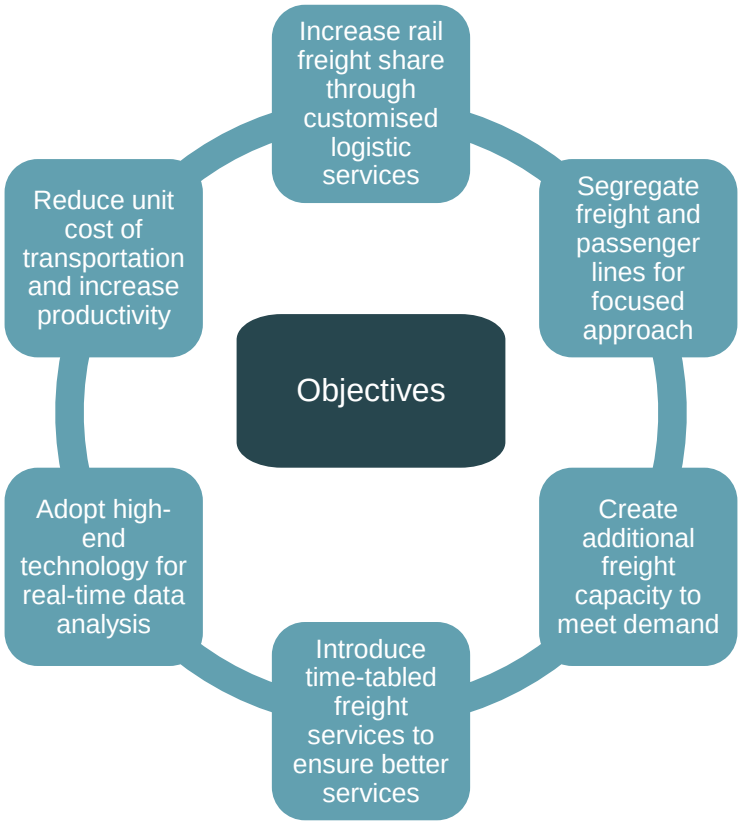
DEDICATED FREIGHT CORRIDOR … (1/4)

- 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) 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$ 4.43 billion has already been spent by the Government as on January 2017. The physical progress of the project upto January 2017 was 37.1 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*

DEDICATED FREIGHT CORRIDOR … (2/4)



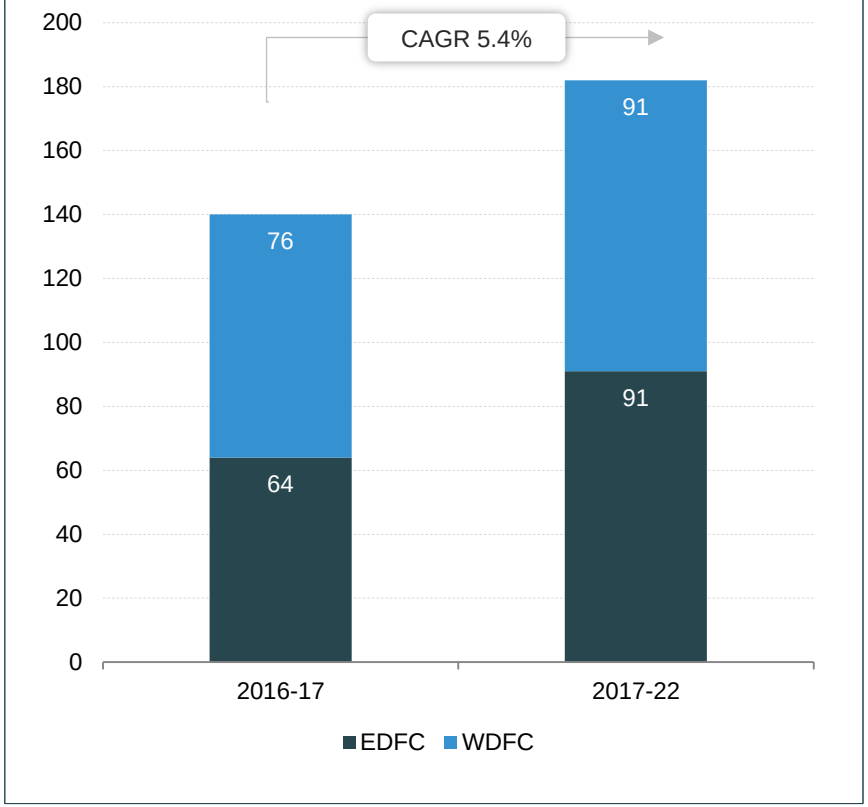
Note: *Ministry of Railways, Aranca Research*

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DEDICATED FREIGHT CORRIDOR … (3/4)

- Freight traffic via DFC would increase at a CAGR of 5.4 per cent to 182 MT in 2021–22 from 140 MT in 2016–17
- Container traffic would probably be an important constituent of the WDFC and is expected to grow to 5.3 million TEUs in 2021–22 from 3.8 million TEUs in 2016–17
- According to the operational strategy as mentioned in the Vision 2020, dedicated freight corridors and speed raising projects would be completed in time bound manner
- By 2020, 30,000 km of route would be double/multiple lines
- As per Railway Budget 2016–17, three dedicated freight corridors, North-South connecting Delhi to Chennai, East-West connecting Kharagpur to Mumbai and East Coast connecting Kharagpur to Vijayawada, will be completed on priority

Freight traffic projections on DFC (in MT)



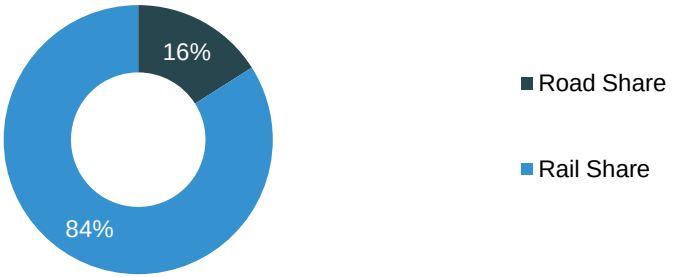
Note: *CAGR – Compound Annual Growth Rate, DFC – Dedicated Freight Corridor, EDFC – Eastern Dedicated Freight Corridor, WDFC – Western Dedicated Freight Corridor, MT – Million Tonnes*

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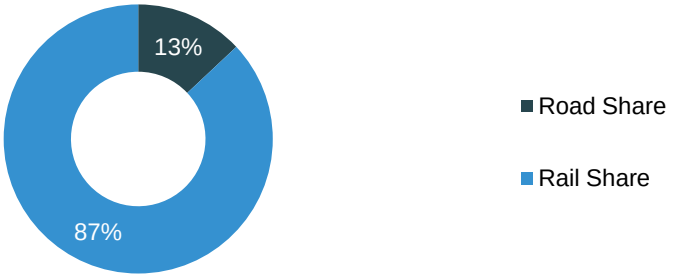
DEDICATED FREIGHT CORRIDOR … (4/4)

- 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

DFC model mix (2016–17)



DFC model mix (2017–22)



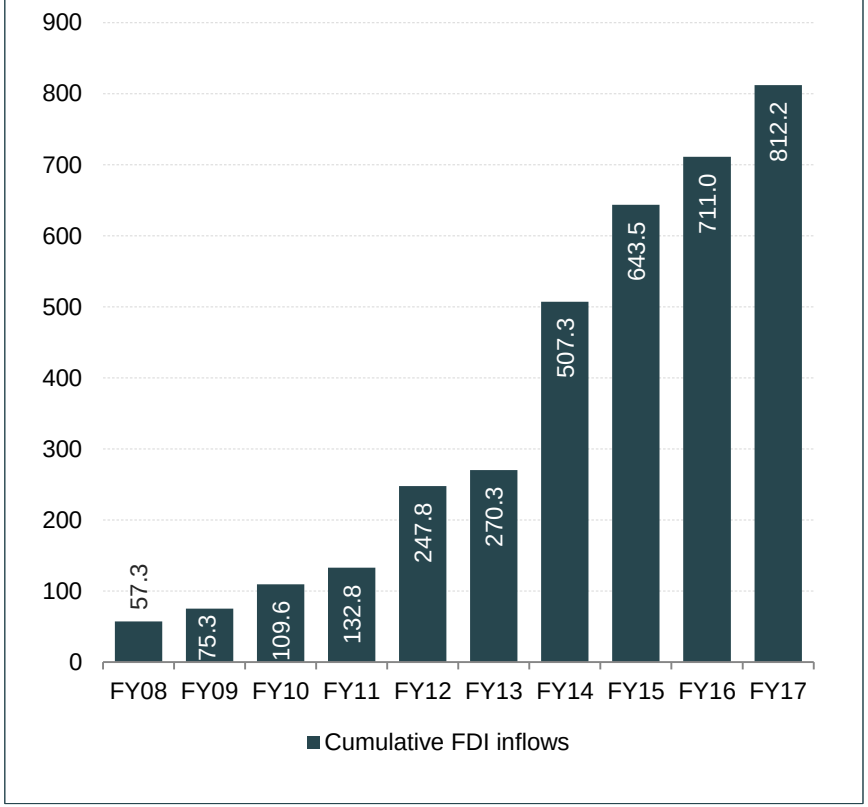
Source: *KPMG, Aranca Research*

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INCREASING FDI INFLOWS

- From April 2000 to June 2017, FDI in Railways related components industry stood at US$ 812.21 million, in India

Cumulative FDI inflows (April 2000 to June 2017) (US$ million)



Note: *FDI – Foreign Direct Investment*
Source: *:Department of Industrial Policy and Promotion, Aranca Research*

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MODERNISATION STRATEGY … (1/2)

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

Key focus areas

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

Note: *ICT – Information and Communication Technology, PPP – Public Private Partnership*
Source: *:Ministry of Railways, Aranca Research*

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MODERNISATION: NEW THEME OF INDIAN RAILWAYS … (2/2)

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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 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 2016-17
- 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 MobiKwikfor 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*

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POLICIES AND REGULATORY FRAMEWORK



POLICY AND REGULATORY FRAMEWORK … (1/4)

Foreign Direct Investment	▪ 100 per cent FDI under automatic route is permitted for approved list of projects
Automobile Freight Train Operator Scheme 2013	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 ▪ Maruti Suzuki, the railways' biggest automotive client, is the only automaker to have placed orders for rakes under this scheme in 2013 ▪ By 2020, speed and punctuality of trains is expected to improve significantly as the tracks would be decongested after the completion of freight corridors.

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

POLICY AND REGULATORY FRAMEWORK … (2/4)

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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*

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POLICY AND REGULATORY FRAMEWORK … (3/4)

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Railway Budget 2017–18	▪ For 2017-18, the total capital and development expenditure of Railways has been pegged at Rs 131,000 crore (US$ 20.44 billion) . This includes Rs 55,000 crore (US$ 8.58 billion) provided by the Government. ▪ 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. ▪ Railway lines of 3,500 kms will be commissioned in 2017-18. ▪ It is proposed to feed about 7,000 stations with solar power in the medium term. ▪ A new Metro Rail Act will be enacted by rationalising the existing laws. This will facilitate greater private participation and investment in construction and operation. ▪ 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.
Participative models for rail connectivity and capacity augmented projects	▪ 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 ▪ In FY17, Port-Rail Connectivity Projects worth more than US$ 2.97 approved by The Ministry of Railways ▪ 44 new projects worth US$ 13.8 billion is likely to be implemented in FY17

Note: *kms – Kilometers*

Source: *Ministry of Railways, Railway Budget 2015-16, Press Information Bureau, Aranca Research*

POLICY AND REGULATORY FRAMEWORK … (4/4)

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Key modernisation initiatives

- Introduced ‘Operation 5 minutes’ scheme for passengers travelling unreserved, 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, extension of built-in dustbin facility has been approved for non-AC coaches. Setting up of 5 year safety plan
- 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.
- Train protection warning system and train collision avoidance system have been installed on selective routes
- Setting up a new department that would ensure the railway stations and trains are kept clean. Improving North-East and JandK connectivity.
- 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
- 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*

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

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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 FY15 earned by the Indian Railway Station Development Corporation Ltd. stood at US$ 26.4 billion
- As per Railways Budget 2016-17, EPC implemented 20 projects during FY17, wherein, it endeavours to award EPC contracts of worth US$ 44.8 million by the end of FY18

Need and importance

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

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

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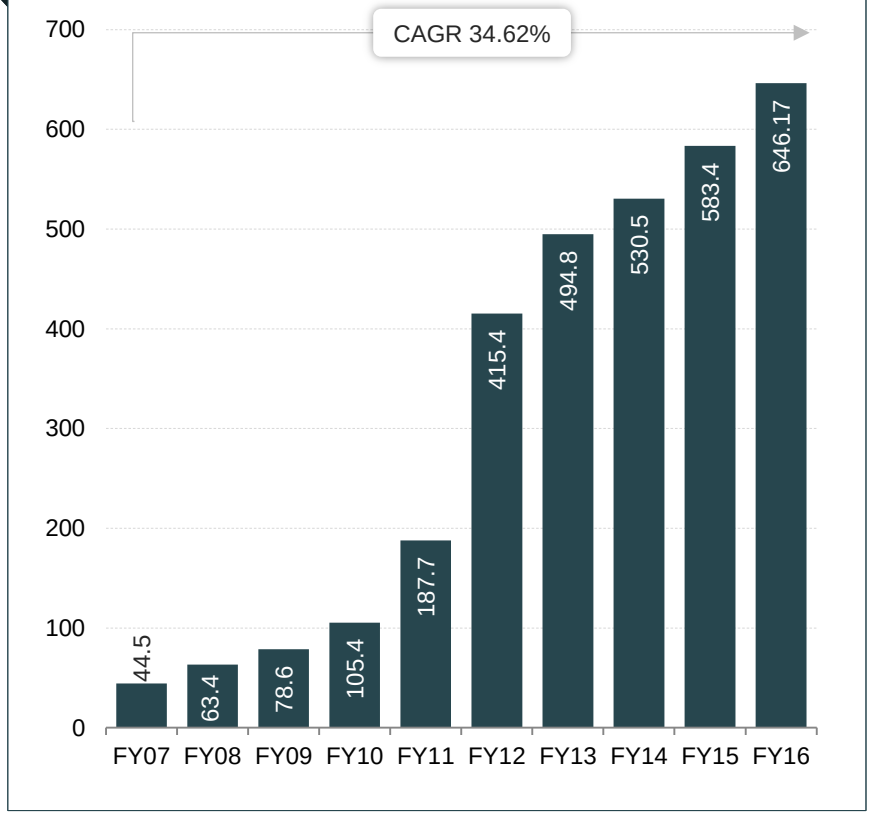


CASE STUDIES

DELHI METRO: A RUNAWAY PUBLIC SECTOR SUCCESS

- Revenues from operations increased at a CAGR of 34.62 per cent during FY07–16 to US$ 647.17 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

Revenues from operations (US$ million)



Source: *:Delhi Metro website, Annual Report,Aranca Research*

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INDUSTRY ORGANISATIONS

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Manufacturers Association for Information Technology (MAIT)

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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)

Address: 5th Floor, PHD House
4/2, Siri Institutional Area, August Kranti Marg
New Delhi –110 016
Telefax: 91-11-46070335, 46070336
E-mail: ceama@airtelmail.in
Website: www.ceama.in



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

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Exchange Rates (Fiscal Year)

Year	INR Equivalent of one US$
2004–05	44.81
2005–06	44.14
2006–07	45.14
2007–08	40.27
2008–09	46.14
2009–10	47.42
2010–11	45.62
2011–12	46.88
2012–13	54.31
2013–14	60.28
2014-15	61.06
2015-16	65.46
2016-17E	67.23

Exchange Rates (Calendar Year)

Year	INR Equivalent of one US$
2005	43.98
2006	45.18
2007	41.34
2008	43.62
2009	48.42
2010	45.72
2011	46.85
2012	53.46
2013	58.44
2014	61.03
2015	64.15
2016E	67.22

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

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