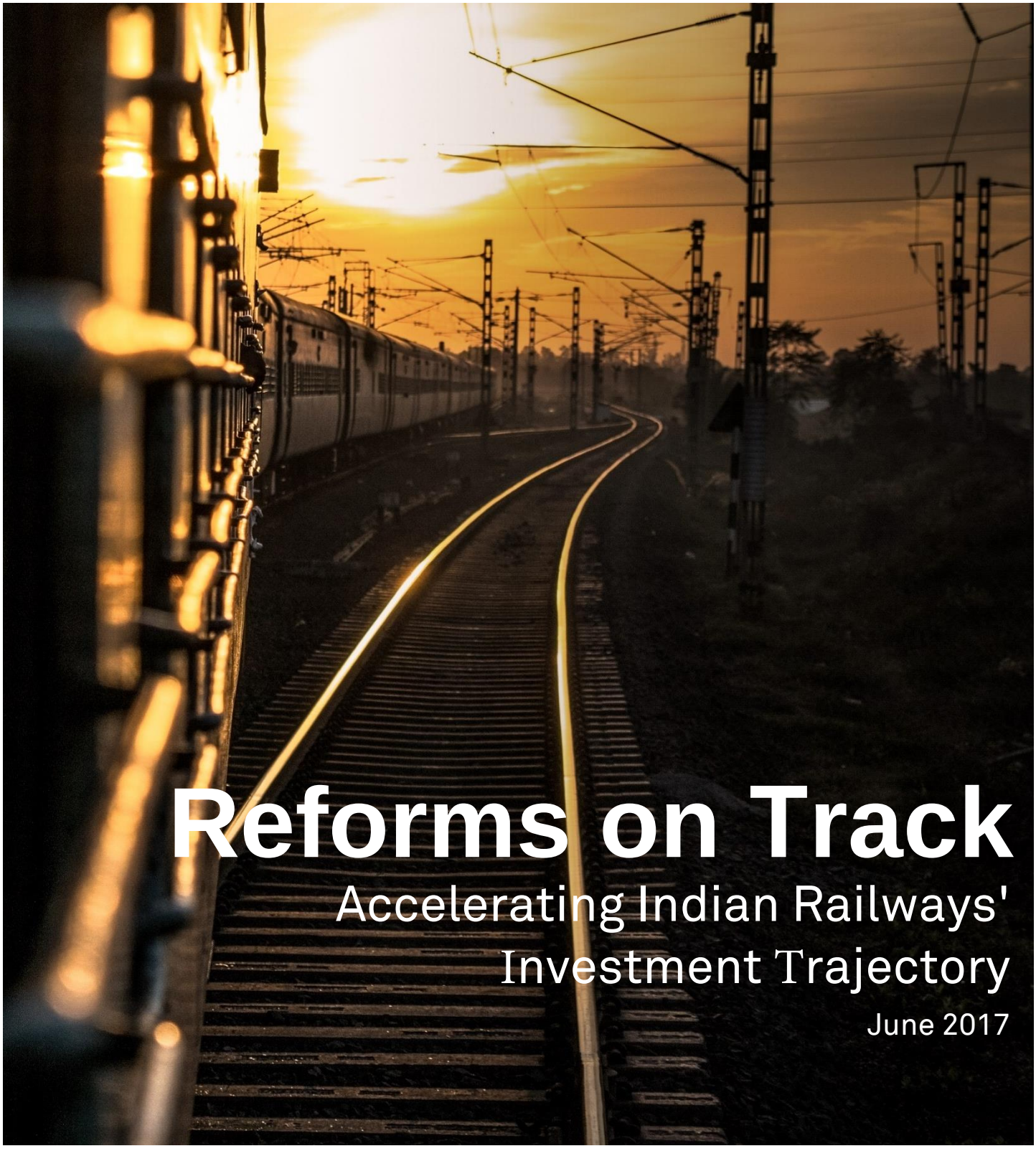


Reforms on Track

Accelerating Indian Railways' Investment Trajectory

June 2017

Infrastructure Advisory

Knowledge partner

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Foreword from Indian Railways

सुरेश प्रभु
SURESH PRABHU

सत्यमेव जयते

रेल मंत्री
भारत सरकार, नई दिल्ली
MINISTER OF RAILWAYS
GOVERNMENT OF INDIA
NEW DELHI

स्वच्छ भारत
एक कदम स्वच्छता की ओर

Foreword

Report on "Reforms on Track" *Accelerating Indian Railways' Investment Trajectory*
SMART Railways Conclave
JUNE 06, 2017



Shri Suresh Prabhakar Prabhu
Hon'ble Minister for Railways
Government of India

Government is following an approach on 'Reform, Transform and Perform' to foster strong and sustainable growth of the Railways. On a track of Innovation Railways is moving towards high speed trains, non-fare revenue stream, freight efficiency, capital and development works and cleanliness, modernization by digitization & cutting edge technology.

The Indian Railways has embarked on transforming its energy mix by using renewal energy sources of solar and wind energy and is undertaking energy audits to improve efficiency to meet its sustainability targets.

Significant initiatives are underway in areas of Station redevelopment, adding tracks, enhancing signaling and electrification, building logistics parks, dedicated freight corridors and lines connecting ports, mines, and industrial facilities.

Recognizing the need for substantial financial and managerial capital, the Railways have been actively seeking and encouraging increased private sector participation in this massive exercise.

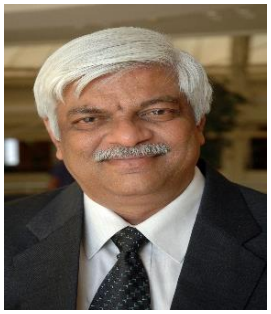
I congratulate Federation of Indian Chambers of Commerce and Industry for organizing the SMART Railways Conclave. SMART Railways Conclave will highlight SMART initiatives of Railways focusing on Smart Bullet Trains, Smart Railway Station via Railway Station Redevelopment, Smart safety solutions, Smart customer interaction & services, Smart Financing, and Smart Sustainability. I am sure, the deliberations and exchange of views during the conclave would help in accomplishing the goals for reinvigorating Indian Railways.

I wish the SMART Railways Conclave all the success.

(Suresh Prabhu)

239, रेल मंत्रालय, रेल भवन, नई दिल्ली-110001
239, Ministry of Railways, Rail Bhawan, New Delhi-110001

Foreword from FICCI



Mr. K Ramchand
Chairman, FICCI National Committee on Infrastructure and Managing Director
IL&FS Transportation Networks Ltd

Indian Railways is on a path of transformation with significant initiatives underway in enhancing safety, freight efficiency, augmentation speed of train, capital and development works, cleanliness, sustainability and better connectivity across the country. The Indian Railways has achieved significant growth in both, freight as well as passenger traffic, and is now focusing towards enhancing customer experience.

It is encouraging to see Railways bringing in new perspectives and insights in planning for future transportation growth in the country. It is accelerating the development agenda with increased focus on innovative financing solutions, transformation on energy mix, efficient technologies, world class business analytics and automated data collection. The transformation initiatives have rather been impressive.

The sector offers immense investment opportunities across all elements including capacity augmentation, de-bottlenecking, redevelopment and improving passenger amenities. The infusion of foreign equity and technology are leading to significant growth in manufacturing and enhancing competitiveness.

The FICCI – CRISIL report on **"Reforms on Track" Accelerating Indian Railways' Investment Trajectory** highlights the potential areas of private sector participation, access to finance and recommendations for further fast-tracking growth in this sector.

I hope this report will help analyze the potential business and investment opportunities for private sector in the Indian Railways.

Foreword from FICCI



Mr. Nalin Jain
Co-Chairman, FICCI National Committee on Infrastructure and
President & Chief Executive Officer, Asia Pacific
GE Transportation

I am happy to share with you the **FICCI-CRISIL** Report on **'Reforms in Indian Railways'** to be released at the **SMART Railways Conclave** organized by Federation of Indian Chambers of Commerce and Industry.

The Indian Railways is a symbol of a nation on the move. It is in a dynamic phase of growth with new initiatives offering world-class services in both freight and passenger transportation. The integrated approach involving modernization & expansion of railways infrastructure, exploring multiple financing options, innovation and use of technology will foster strong and sustainable growth. The PPP models being adopted by the Indian Railways are opening new avenues of investment and modernization. This will also bring in productivity and efficiency to the deployed capital.

In virtue of this, FICCI – CRISIL has prepared a comprehensive background paper on **"Indian Railways – Reforms on Track"**. The objective of this report is to study SMART initiatives of Indian Railways for identifying investment opportunities in areas of Railway Station Redevelopment, High Speed Rail Corridors, Safety, Technology, Customer Interaction & Services, and sustainability to enhance operational efficiency, safety and passenger comfort.

I hope you will find this report useful and as always, your suggestions and feedback are welcome.

Foreword from CRISIL



Mr. Jagannarayan Padmanabhan
Director, Transport, CRISIL Infrastructure Advisory

India is going through the changing times like never before. Transport infrastructure upgradation remains one of the key agenda of the government towards achieving economic growth.

Railways has been facing enormous challenges for past several decades mainly due to underinvestment in infrastructure augmentation and cross-subsidisation in fares. While there have been these internal factors negatively impacting rail revenue, the external environment also has substantially changed and impacted rail traffic. The roads and aviation sectors pose competition w.r.t. freight as well as passenger traffic.

In this backdrop, Indian Railways has taken up charge and last three years have been uplifting with infrastructure development and reforms in railways being the key agenda. There has been substantial capital investment made and outlays for coming year are also generous (Rs. 263,513 crore from FY 2015-2017; Rs. 131,000 crore for FY 2018). Some major policy initiatives and reforms laid out towards addressing issues related to freight traffic, financing, and regulatory framework for orderly development of infrastructure, enable competition and setting standards.

In this report, we have highlighted on the railway reforms and initiatives being taken to enhance customer experience, financial instruments being employed to achieve financial sustainability and potential areas for private sector participation. We believe that the catch would now lie in executing these reforms at war mode. Also, greater emphasis should be given on the public – private collaboration to bring in efficiency and promote healthy competition for setting up and maintaining world-class infrastructure.

I hope you will find the report an interesting read.

Executive summary

Indian Railways is considered the country's lifeline, transporting passengers as well as cargo. To remain competitive vis-à-vis other transportation modes and provide optimum level of service to passengers and for freight, there is acute need to upgrade and expand the railway infrastructure.

As part of this push, the Indian Railways has outlined a capital investment of Rs 856,000 crore between 2015-16 and 2019-20.

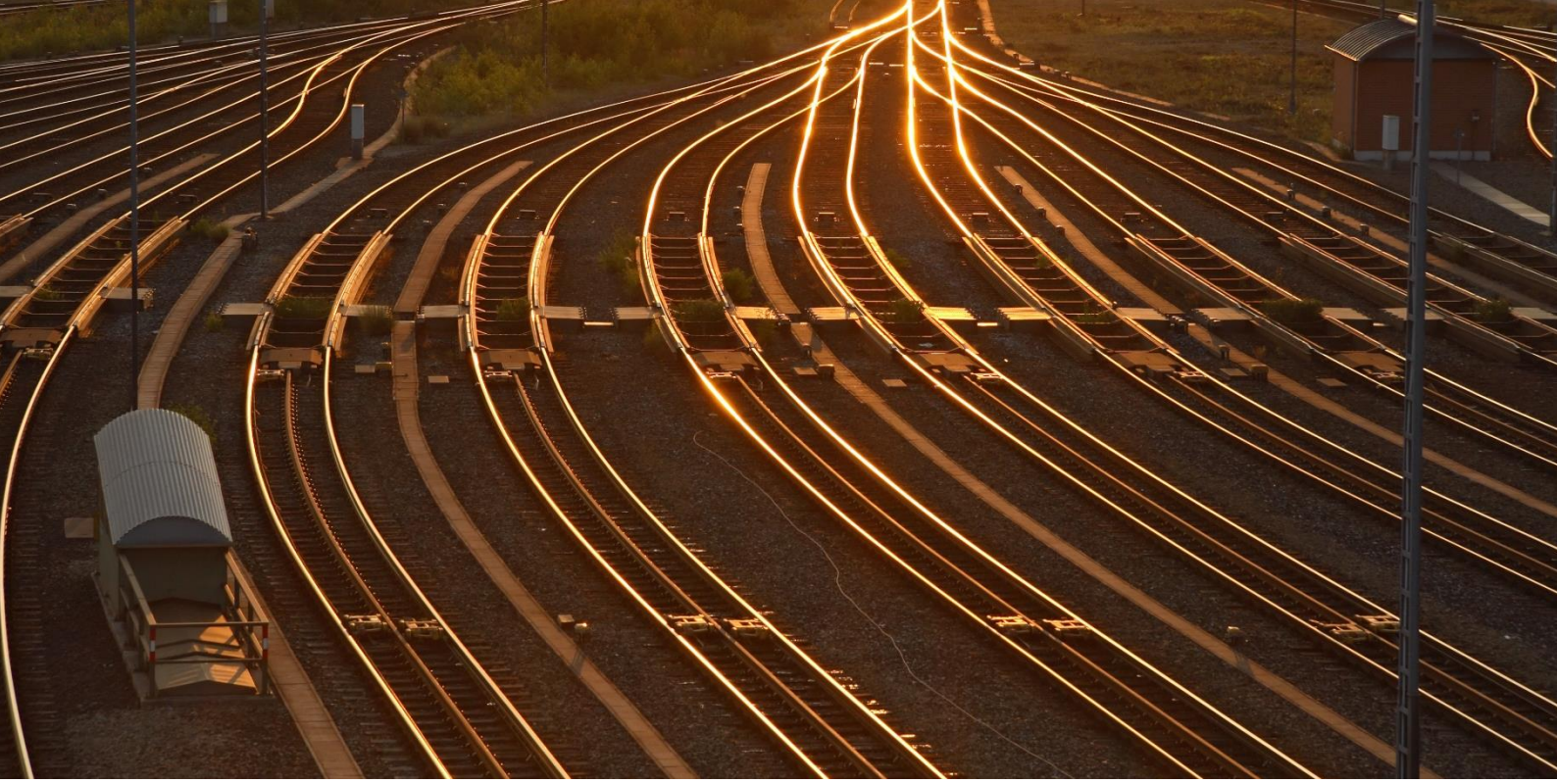
Railway reforms are addressing a wide range of challenges: Customer experience and faster/timely delivery of cargo [introduction of high-technology trains, locomotives, improved terminals, construction of Dedicated Freight Corridors (DFCs), policy initiatives to increase freight traffic], customer safety (elimination of unmanned crossings, and construction of railway over-bridges/ under-bridges), financing mechanisms [Railways of India Development Fund (RIDF), engaging state governments, participative models for rail connectivity, attracting foreign direct investment (FDI)] and financial sustainability (non-fare revenues). The focus is on engaging with the private sector in infrastructure upgradation.

All this comes in the backdrop of a fast changing external environment. The Railways is facing competition from roads in freight transportation and airlines in passenger transportation. In fact, while growth in passenger traffic travelling by rail has been steady, airline traffic has seen impressive growth. Regional connectivity scheme such as UDAN (Ude Desh ka Aam Naagrik) and subsidy by the government to promote air connectivity has affected growth of AC class rail passengers.

Also stunting the Indian Railways is the concentration of risk, with the government involved in all phases of customer engagement, while in roads and airlines the risk is spread, as the private sector is involved in provisioning of core infrastructure as well as transportation vehicles.

Clearly, Indian Railways faces multiple headwinds. It would be important to engage the private sector; in operation and maintenance and even running of trains and terminals, funding and improving efficiency. The priority projects should be taken up in totality to reap maximum benefits; for instance simultaneous completion of feeder lines and multi-modal logistics parks should happen with the DFCs. Ultimately, focus on customer experience is important – in routine interfaces from ticketing, station touch points, cleanliness, food and beverage, in-train entertainment facilities, etc.

The need of the hour is to have a national transport policy with the aim to promote regional development. The policy should include a clear roadmap for ensuring uniform connectivity to all parts of the country. There should be short-, medium- and long-term plans for involving the private sector in building, operating and maintaining infrastructure assets (covering passenger as well as freight).

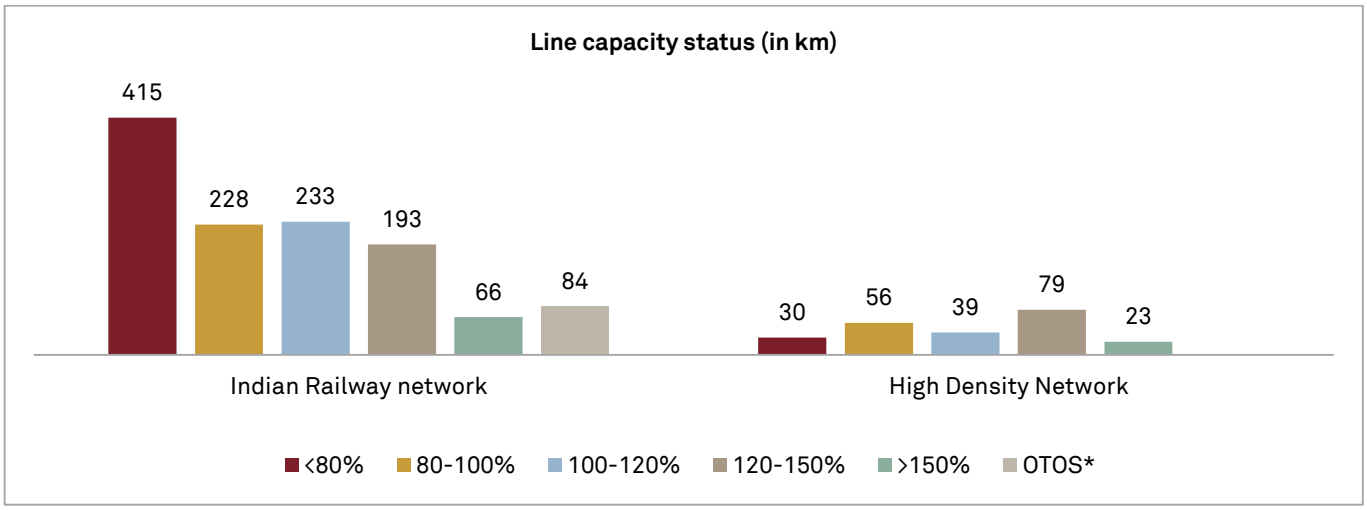


Introduction

The Indian Railways network is the fourth largest in the world, after US, Russia and China, and is considered the backbone of the Indian economy. In 2015-16, Indian Railways transported 8.1 billion passengers and is among the world's largest freight carriers (1.1 billion tonnes).

Situation up till 2014-15

Of the Indian Railways network, 40% of the sections (492 out of 1,219 sections) were running at 100% or above line capacity. For high density network routes the situation is severe, with -45% (102 out of 227 sections) operating at above 120% line capacity utilisation [1].



[1] *Source: "Indian Railways: Lifeline of the Nation"; White paper, February 2015*

Also, till 2015 while freight loading grew 1,344% and passenger km 1,642%, route km increased only 23%.

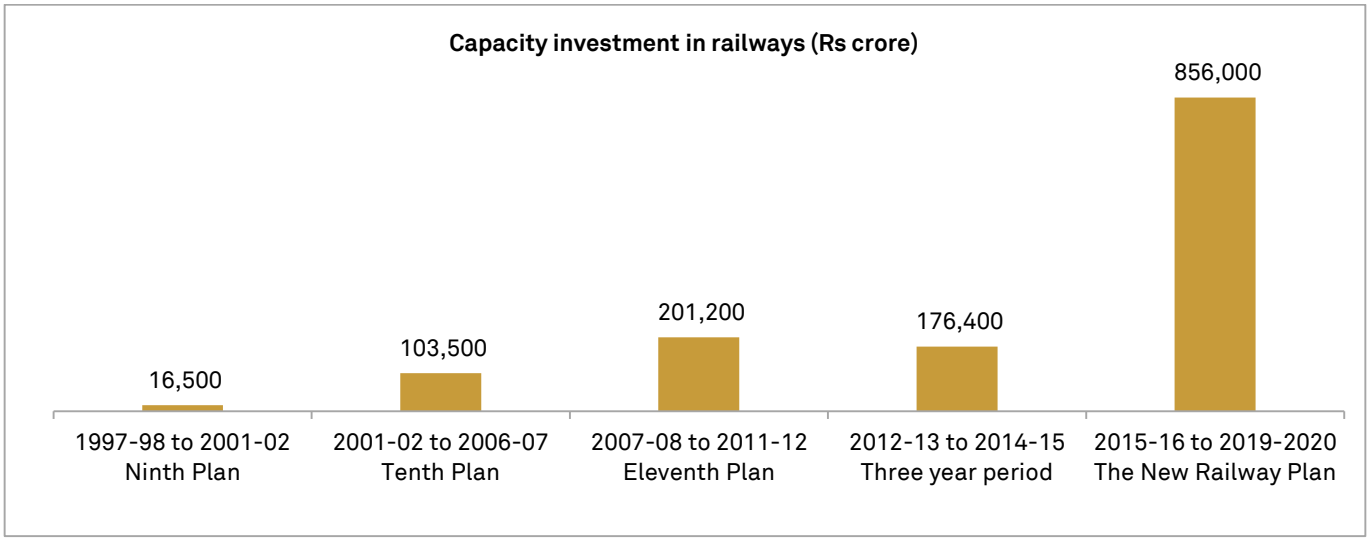
	1950-51	2013-14	% variation
Route km	53,596	65,806	23%
Freight carried (million ton)	73	1054	1344%
Passenger km (in million)	66,517	11,58,742	1642%

This shortfall in carrying capacity decreased the Indian Railways' modal share in freight and passenger traffic. Additionally, passenger trains utilised two-thirds of the capacity and generated one-third of the revenue due to cross-subsidisation between passenger and freight tariffs[2]. High freight tariff also led to a shift in traffic to other modes of transport.

Apart from capacity constraints and tariff related issues, another key reason for declining freight traffic is because freight traffic is confined to a select group of bulk commodities, i.e. cement, coal, ore, steel, etc, with coal alone constituting 45-50% share. The effect of commodity concentration was seen when low demand for coal by the power sector impacted rail traffic in FY 2017[3].

Railways accelerating the development agenda

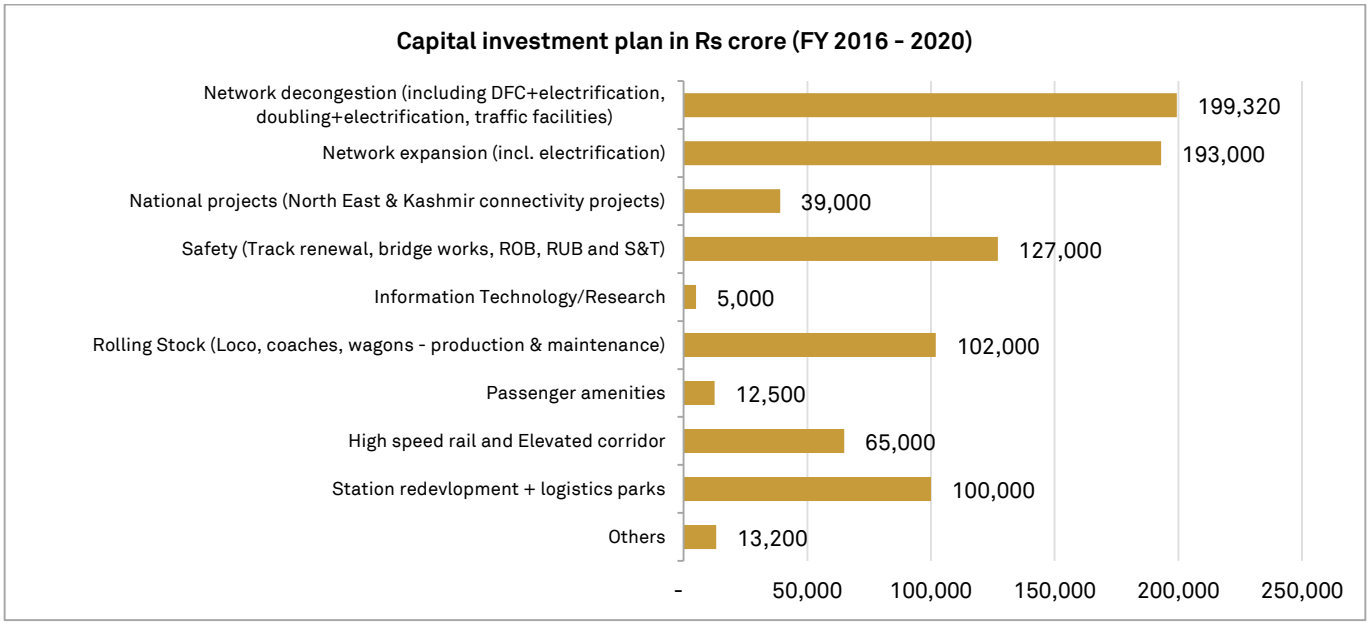
In this backdrop, Indian Railways put an ambitious target towards augmenting rail infrastructure, earmarking investment of Rs 856,000 crore between 2015-16 and 2019- 20.



Source: Indian Railways, CRISIL Research

Network decongestion and expansion, and safety comprise ~60% share of the overall capital expenditure.

[2] *Source: "Indian Railways: Lifeline of the Nation"; White paper, February 2015*
**OTOS – One Train Only System*
[3] *Source: https://www.pressreader.com/india/business-standard/20170315/282235190466910*



The capital investment on infrastructure creation is expected to sustain at high levels on the back of long-term financing via Life Insurance Corporation of India, funding by multilateral agencies, and building relationships and partnering with the private sector.[4]

Over the last three years, 33% of the total capital investment was towards construction of new lines, track renewal works, gauge conversion and safety works. Likewise, broad gauge line and electrification projects gather momentum. The commissioning of both in the last three years almost doubled, from~1,500 km during 2008-09 to 2013-14 to ~3,000 km in 2016-17 for broad gauge, and ~1,100 km to 2,000 km for electrification.

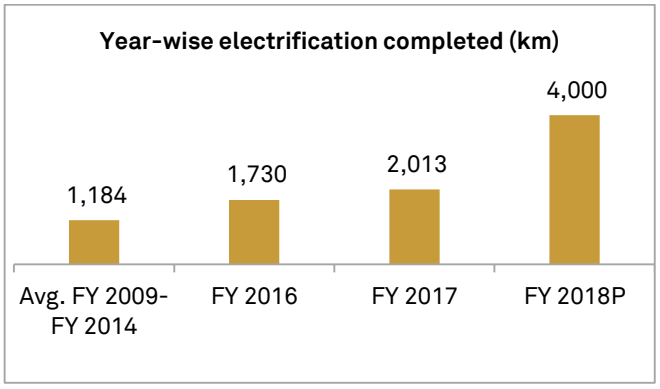
Capital expenditure (Rs crore)						
	Budget FY 2015	Actual FY 2015	Budget FY 2016	Actual FY 2016	Budget FY 2017	Actual FY 2017
New line construction	8,973	7,107	13,467	13,209	11,963	13,660
Track renewal	3,736	3,734	3,901	4,367	4,000	6,740
Gauge conversion	3,228	3,520	4,089	3,615	3,276	3,721
Doubling	4,028	3,859	8,989	10,472	4,782	1,423
Road safety works - level crossing & under bridge	459	441	517	468	2,998	3,745
Bridge works	452	413	485	517	589	592
Signalling & telecommunication	1,027	1,002	843	892	958	954
Total of above	21,903	20,076	32,291	33,540	28,566	30,835
Total capital expenditure		58,718		93,795		111,000

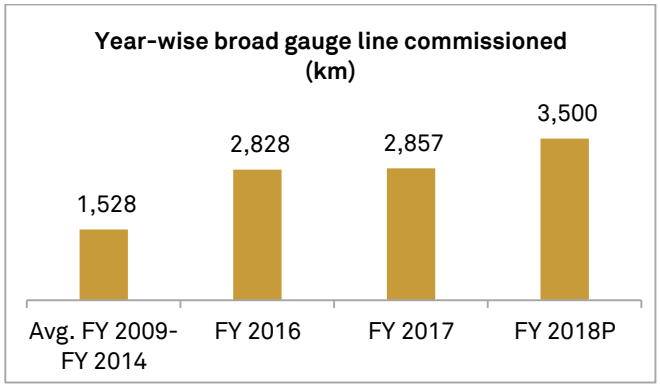
[4] *Source: Indian Railways – Three Year Performance Report 2017*

For 2017-18, the planned expenditure is 18% higher than 2016-17 capital expenditure[5] at Rs 131,000 crore. While broad gauge commissioning target for 2017-18 is 25% higher than the previous year, the targets for electrification is double at 4,000 km.[6]

The subsequent sections of this report discuss:

- Railway reforms w.r.t. products being offered, financing structures being looked at
- How the external environment is fast changing and posing a threat
- Recommendations on way forward





[5] *Source: Railway Budget, 2017-18*
[6] *Source: Indian Railways – Three Year Performance Report 2017*



Railway reforms

Faster passenger commute with A-class travel experience

The Indian Railways is working towards increasing the speed of trains by removing level crossings, reducing permanent speed restrictions and replacing loco-hauled commuter trains. The efforts are also being put towards improving customer experience by way of improved facilities inside trains.

Faster trains

'Mission Raftaar' announced in Railway Budget 2016-17 aims to increase the average speed of all non-suburban passenger trains by 25 km per hour (kmph) in five years. To achieve this, loco-hauled commuter trains will be replaced with main line electric multiple unit /diesel electric multiple unit trains (can operate at speeds of 130 kmph and above), twin pipe air brake systems will be introduced on freight trains, powering arrangement for freight trains with a ratio of 1.5-2.0 (international ratio is 2.0-2.5) will be implemented, timetables reviewed, and constraints in fixed infrastructure on routes removed[7].

Also, a high speed[8] rail project from Mumbai to Ahmedabad has been sanctioned, which involves laying of a high speed track. A special purpose vehicle (SPV), National High Speed Rail Corporation Ltd, has been incorporated to execute the project. Financial and technical assistance is being provided by the Government of Japan (using Shinkansen technology). The project is proposed to be commissioned by 2023.

Gatiman Express, a semi-high speed train capable to travelling at a maximum speed of 160 kmph was introduced in April 2016. This is the fastest passenger train currently in India, which runs between Agra and Delhi.

Also, several other super-fast trains, namely Uday (super-fast[9] overnight trains on busy routes), Tejas (running at 130-200 kmph with wi-fi), Antyodaya (unreserved super-fast train for poor) and Humsafar (super-fast fully third-AC train) trains were announced in 2016-17.

[7] *Some of the stated initiatives have already seen some action being taken.*
[8] *High speed train run at a speed of 200-350km/hour.*
[99] *Superfast trains run at a speed of 55 km/hour to 130 km/hour.*

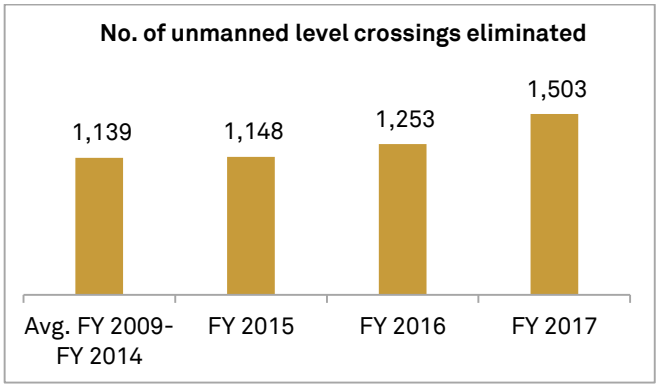
The first Tejas Express between Mumbai and Goa was inaugurated by Mr Suresh Prabhu, Railways Minister, in May 2017. This 15-coach express train, which can operate at 200 kmph, is manufactured at Indian Railways' Kapurthala factory. It is equipped with wi-fi, LCD screens, tea/coffee vending machine, bio-toilets, magazines and leather seats.

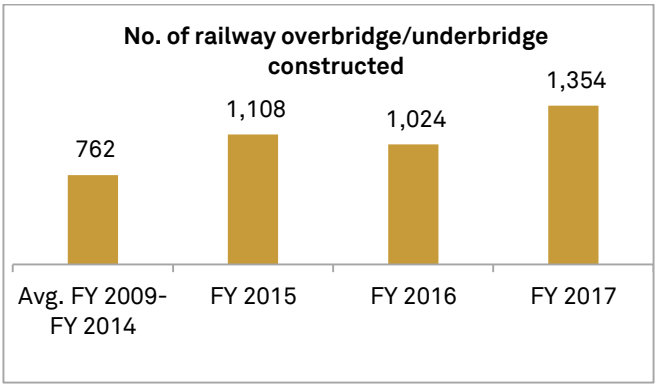
Better railway stations

As part of the initiative of serving passengers with best-in-class amenities, Indian Railway Stations Development Corporation Ltd has been entrusted to take up station redevelopment on public-private partnership (PPP) basis. This will be done by leasing out railway land to private developers for 45 years, who will commercialise the land parcels and in turn redevelop stations and maintain them for 15 years. Under this initiative, the plan is to modernise 400 railway stations.

Measures for safety systems

Strengthening safety systems for passengers has been one of the focus areas for Indian Railways. 40% of accidents and 68% of deaths on Indian Railways take place at level crossings[10]. Efforts are to reduce accidents due to unmanned level crossings. Efforts are also being made to build safety-related infrastructure.[11]



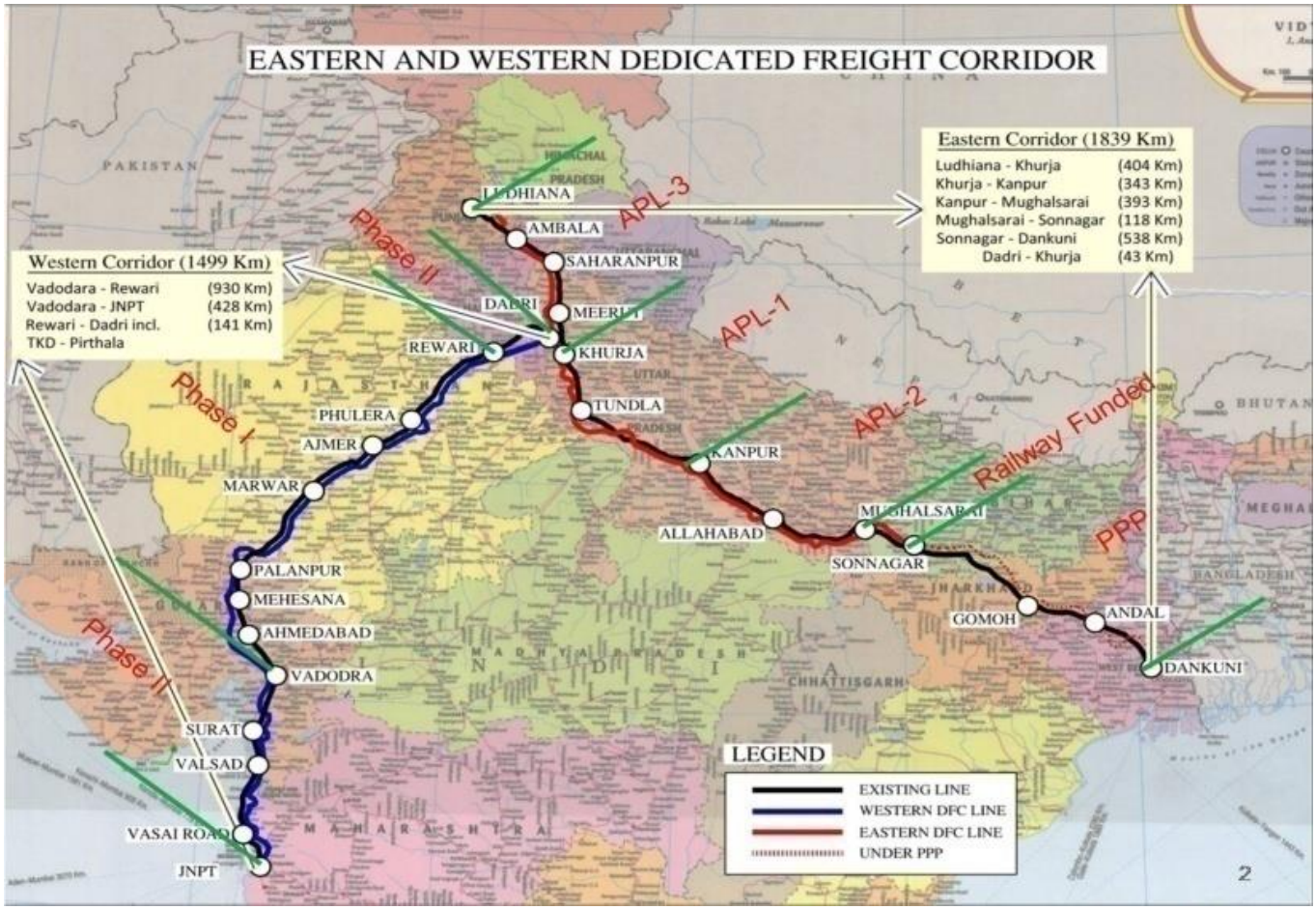


Seamless freight movement

For faster freight movement, DFCs are conceived, which is an alternate to the conventional route, reserved entirely for freight transport. Indian Railways' share in freight traffic has been affected mainly because of capacity constraints on existing lines, increasing freight fares, delays in schedule of cargo trains, etc.

Hence, the western and eastern DFCs were approved and sanctioned in Railway Budget 2014-15; encompasses length of 1,504 km and 1,856 km, respectively.

[10] *Report titled, "Indian Railways to eliminate all Umannned Level Crossings by 2019", Ministry of Railways, July 2016*
[11] *Source: Indian Railways – Three Year Performance Report 2017*



The Western DFC (WDFC) is planned from Dadri in Uttar Pradesh to Jawaharlal Nehru Port in Mumbai through important stations in Uttar Pradesh, Haryana, Rajasthan, Gujarat and Maharashtra; and the Eastern DFC (EDFC) from Ludhiana in Punjab to Dankuni in West Bengal through important stations in Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand and West Bengal. The stretch from Sonnagar in Bihar to Dankuni (part of EDFC) has been undertaken on public-private partnership (PPP) basis.[12]

For WDFC, financial progress is at 36.2% and physical progress at 37.9% while for EDFC, financial progress is at 37.6% and physical progress at 39.5%[13]. The two DFCs were earlier expected to be commissioned by 2018-19 phase-wise.

Earlier, freight share depended on eight commodities, including coal, iron ore, cement, fertiliser and food grains, with excessive dependence on coal (~50%). The freight basket has now expanded, with the addition of many more items, such as plastics, tiles, sandstones, bamboo, etc.

Also, Indian Railways is not just restricting itself to long distance cargo movement, but has taken policy initiatives towards capturing short distance cargo as well. Some of the other initiatives taken towards increasing freight traffic are:

Withdrawal of dual pricing policy for iron ore – The erstwhile policy, where tariff for transporting iron ore for exports was three times the rate charged for domestic use (mainly for cement and steel industries), was removed and rates kept same for exports and domestic use.

New Merry-Go-Round (MGR) policy with rationalised rates – MGR system mainly operated between coal

[12] *There are other DFCs planned in the country - East-West Dedicated Freight Corridor connecting Kolkata and Mumbai (2,000 km long), North-South Dedicated Freight Corridor connecting Delhi and Chennai (2,173 km), and East Coast Dedicated Freight Corridor connecting Kharagpur with Vijayawada (1,100 km)*

[13] *Source: Presentation by Chief Commercial Manager, Freight Marketing, Southern Railways, March 2017*

mines and thermal plants, and between ports and coastal thermal plants. These are reliable alternative for short lead/distance traffic. The revised scheme has rationalised lump-sum rates for MGR (rates would depend on number of rake loaded per day and the lead of traffic).

Time-tabled freight services – Indian Railways plans to introduce time-tabled container trains, Cargo Express, in order to bring predictability in goods trains' timings. It is currently being taken up on pilot basis on certain routes.

Allowing two-point/ multi-point/ mini-rake loading in all kinds of covered wagons. Earlier, there was restriction on BCN wagons.

Minimum distance for mini-rakes has been increased from 400 km to 600 km.

Indian Railways plans to expand the commodity basket by opening up container traffic for 43 additional commodities.

Financial sustainability

As discussed, sizeable investment in railway infrastructure is required to modernise and augment the railway network, and deploy the latest technology. Also, the projects have long gestation periods. Cognisant of this, the railways ministry has taken several initiatives to improve its finances and access outside funding.

Non-fare revenue (NFR) push

Non-fare revenue is non-tariff earnings, garnered by monetising physical assets such as railway stations, trains, and other infrastructure available with Indian Railways. Indian Railways' non-fare revenue is less than 5% of overall revenue, against range of 10-30% in developed countries.

Comparative percentage of total revenue generated through non-fare revenue in various countries

Country	Major operations (national level)	Indicative NFR percentage
Germany	Deutshe Bahn	34
Japan	Japan Railway Company	30
Hong Kong	MTR Corporation Ltd	29
Russia	Russian Railways	12
France	French national Railway Company	10
Spain	Renfe Operadora	7
India	Indian Railways	< 5

Source: "Indian Railways: Lifeline of the Nation"; White paper, February 2015

Indian Railways has identified following areas to earn non-fare revenue:

- Out-of-home advertising – Involves monetisation of all advertising assets apart from the station area such as circulating areas of Class A1-F stations, road over-bridges, roads under bridges,

level-crossing gates, railway colonies, railway workshops, railway production units, and railway land along tracks

- Train branding - Internal and external advertisements of all trains
- Rail display network - Centrally controlled network of digital screens to be set up at 2,000+ stations, disseminating railway information and advertisement content in various languages at the same time.
- Content on demand and rail radio - Entertainment content which can be utilised by passengers and shall be offered at stations and in trains
- QSRs, MPSs, ATMs at stations – Setting up of quick service restaurants (QSR), multi-purpose stalls (MPS) and automatic teller machines (ATM) at railway stations
- Integrated mobile application - new mobile application to be launched by Indian Railways, creating a one-stop solution for provision ticketing and affiliated services
- Railway land licensing – monetisation of railway land by way of licensing

The above steps would benefit in the following ways:

- Lead to increase in private sector participation in infrastructure creation
- Help in better upkeep of assets with minimum investments
- Aid operation and maintenance of non-core assets, as they are steadily transferred to the private sector which can bring in better productivity
- Better customer experience
- Allow pay per use facilities for customers – similar to those in other competitor segments

Financing mechanisms

Railways of India Development Fund

Government of India requested World Bank to design a railway investment fund to attract private investors to commercially viable projects in the railway sector. There is a proposal for Railways of India Development Fund (RIDF). This instrument is envisaged as a fund with long-term exposure to India's core infrastructure sector, through investments in mature transportation sub-sector (railways) with a strong long-term development pipeline. RIDF will invest in commercially-viable railway projects via equity, debt and leasing products, and will have a strong sponsor and an independent fund manager.

RIDF aims to mobilise ~$5 billion in non-government funding from domestic and international institutional investors. RIDF will be institutionally independent from the Ministry of Railways, and execute an investment strategy that incorporates commercial risk-reward frameworks.

Benefits to railways

- Establishes railway infrastructure as an investable asset class for domestic and foreign institutional investors, giving fair risk-adjusted returns
- Expands financing options for Indian Railways sector; complements and does not compete with other channels of railways financing
- Creates commercial investment discipline for a portion of the railway investment programme: projects will pay for themselves and generate surpluses for Indian Railways, allowing Indian Railways to accelerate profitable expansion

Projects to be financed through RIDF

Potential pipeline of close to $18-billion-worth or ~Rs 1,160 billion[14] has been identified after initial screening of Indian Railways' five-year investment plan, filtered for project-financeable infrastructure

[14] *1USD = Rs. 64.47*

projects with commercial return-generating capability (as per World Bank estimates).

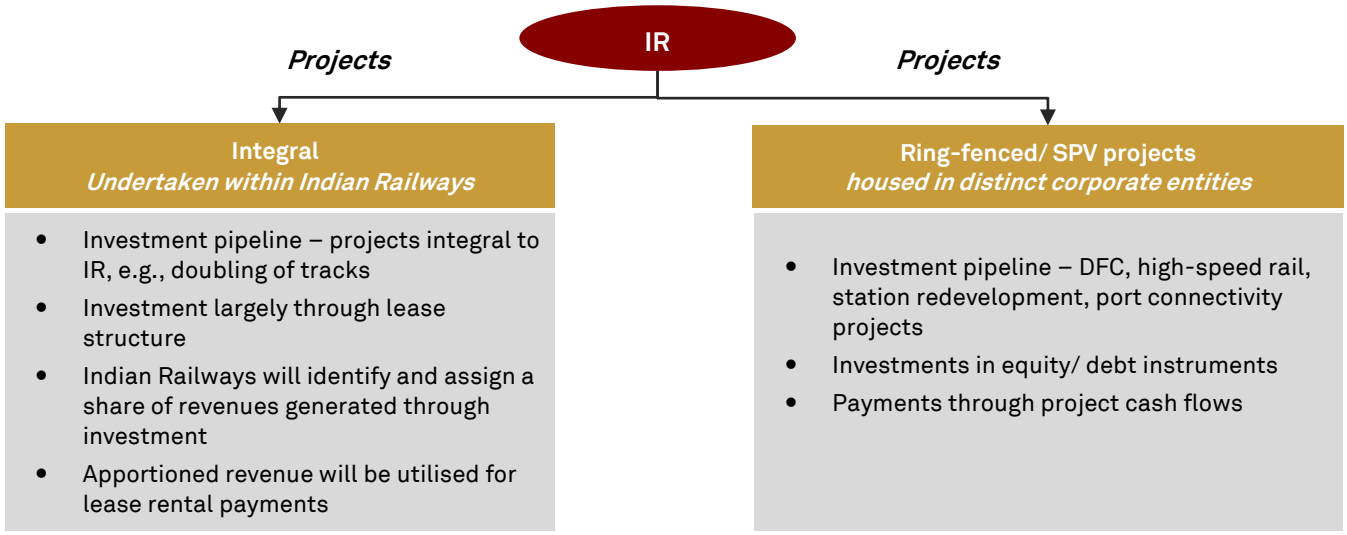
- **Integral projects**

  RIDF's investment in these projects will be through a financial lease structure. Indian Railways will identify and assign a share of revenue generated by the integral projects, which will be used for lease payments to RIDF.

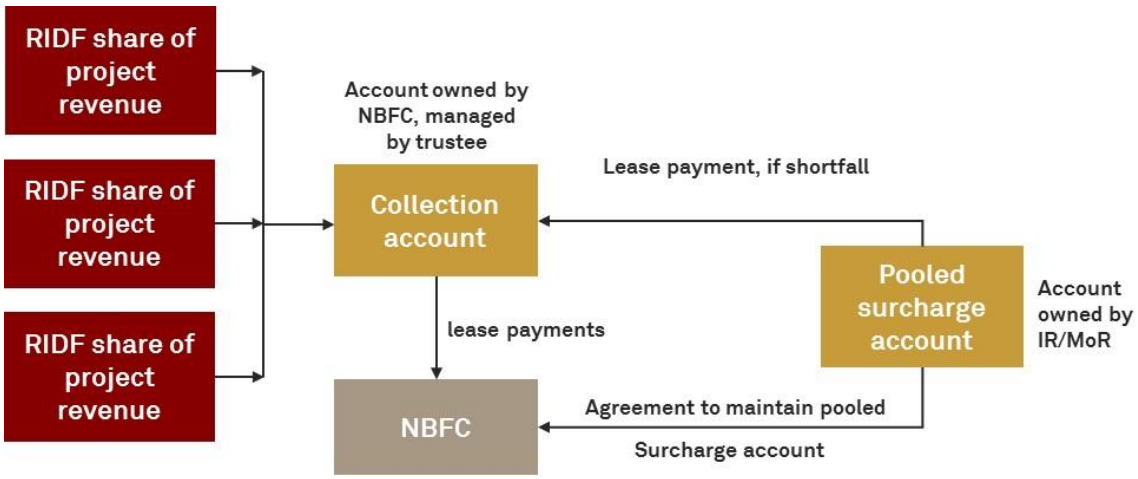
- **Ring-fenced corporate projects / PPP projects**

  These projects are housed in distinct corporate entities (port / mine connectivity projects, DFC projects, station redevelopment, logistics parks, etc). These entities have proper corporate governance arrangements, operate at arm's length with Indian Railways and their finances are segregated from Indian Railways.[15]

Projects envisaged to be funded by RIDF



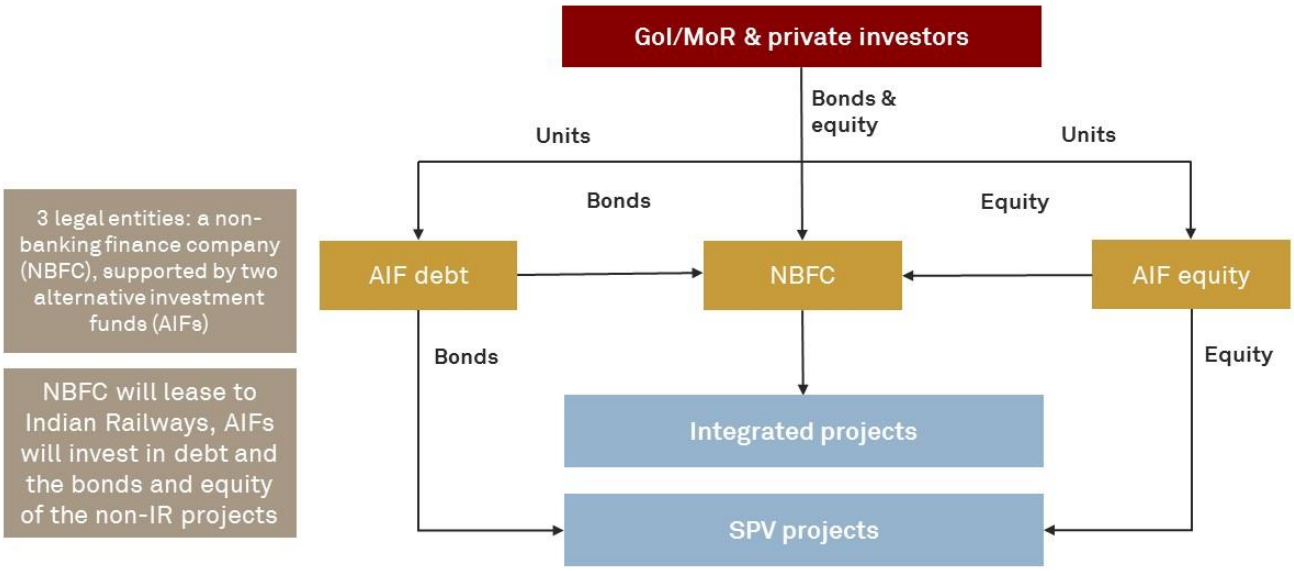
RIDF's investment modality – security mechanism



In all cases, RIDF will be the financing entity and will not directly manage asset construction or operation.[16]

[15] *Source: Presentation by Indian Railways on Railways of India Development Fund, March 2017*
[16] *Source: Presentation by Indian Railways on Railways of India Development Fund, March 2017*

Structure of RIDF



Until recently, mechanisms available for channeling private investments in building the railway network have been limited to ring-fenced entities / SPVs. RIDF will facilitate investment in integral projects, apart from ring-fenced entities.

Why invest in RIDF:

- Get exposure to a key infrastructure sector in world's fastest-growing large economy
- Gain early mover advantage -- India's railways sector is significantly ramping up commercially-oriented private funding, basing itself on strong learning from other successful transport infra programmes
- RIDF will allow financial institutions unique access to India's rail sector, to earn long-term risk-adjusted returns through contracted revenue streams – with independent governance

Availing of institutional finance for funding of railway projects

Availability of commensurate funding resources is a necessity to ensure seamless implementation of railway projects. Sanctioned projects are often not able to take off due to unavailability of adequate funding. Therefore, in budget year 2015-16, the Ministry of Railways decided to borrow funds from institutions for the next five years to implement projects that are critical for railways' revenue generation. This source of funding was named as Extra Budgetary Resources (Institutional Finance) or EBR-IF.

Projects financed through EBR-IF mechanism

Funds under EBR-IF are utilised for priority works under plan heads, including new lines, gauge conversion, doubling, tripling, electrification, signaling, telecom, etc. As cost of funds from institutional financing is market-linked, their utilisation will be for projects that will help Indian Railways enhance throughput in congested corridors.

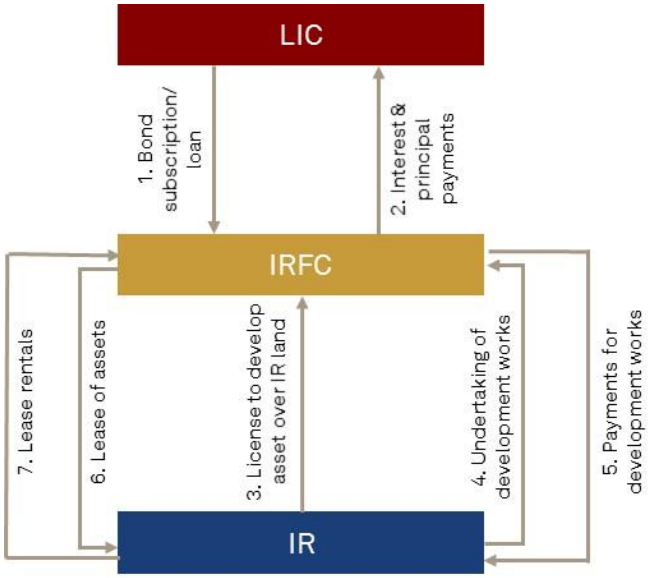
Life Insurance Corporation of India (LIC) – first institutional financer under EBR-IF facility

The first financial institution that has provided funding for implementation of railways projects is LIC. A memorandum of understanding was signed between LIC and the railways ministry in March 2015, with LIC committing funding assistance for identified projects to the tune of Rs 1,50,000 crore over a five-year period.

LIC funds have been drawn initially by Indian Railway Finance Corporation (IRFC) by issuing bonds to which LIC has subscribed. The amount raised by IRFC through these bonds is provided to Indian Railways as

pre-lease disbursement towards execution of identified projects. Indian Railways executes the projects and IRFC owns the project assets to the extent funded by it on pro-rata basis. For example, project length is determined in proportion to total length of a new line/doubling/gauge conversion project. The project assets owned by IRFC are leased back to Indian Railways. The railway land underlying the project is licensed to IRFC for the duration of the lease.

Funding structure and process for LIC EBR-IF funding



The lease charges are payable by Indian Railways to IRFC, which enables IRFC to redeem the bonds issued to LIC. The lease charges have a capital repayment component and interest component. Broadly, this funding arrangement between IRFC and Indian Railways is governed by three key agreements:

I. *Development agency agreement*

Under this agreement, Indian Railways undertakes to develop the infrastructure assets. The projects to be developed are to be decided and declared in the annual budget by the Ministry of Railways. The funds raised by IRFC through issuance of bonds to LIC will be utilised by Indian Railways for arranging payments, including advances, as per requirement of construction/development of infrastructure assets.

II. *Licensing agreement*

Under this agreement, Indian Railways licenses railway land to IRFC for construction and development of infrastructure assets.

III. *Lease agreement*

Under this agreement, IRFC enters into a lease agreement with Indian Railways, which operates and maintains the infrastructure assets. Indian Railways has the right to retain the revenue generated from such assets. In lieu of using the infrastructure assets, Indian Railways pays IRFC semi-annual lease rentals at a pre-determined rate.

As of 2015-16, IRFC raised Rs ~7,000 crore from LIC for implementation of priority railway projects under the EBR-IF mechanism.

Joint venture with states to implement critical connectivity/ capacity enhancement projects

The railways ministry has introduced an innovative model to develop critical connectivity and capacity augmentation projects. Under the model, the railways ministry will form a joint venture (JV) company with state governments, with equity share of 49:51. This model has been devised to enhance the role of the states in rail infrastructure development and attract private sector investment in critical projects.

Key dynamics of the JV model

Under this model, a JV company will be formed by the railways ministry and the state government. The primary objective of the JV company will be to develop, implement and finance viable railway projects. However, the JV company will participate in the projects indirectly through individual project SPVs, in which the JV will have minimum equity of 26%. The roles and responsibilities of the JV and the project SPV are defined below.

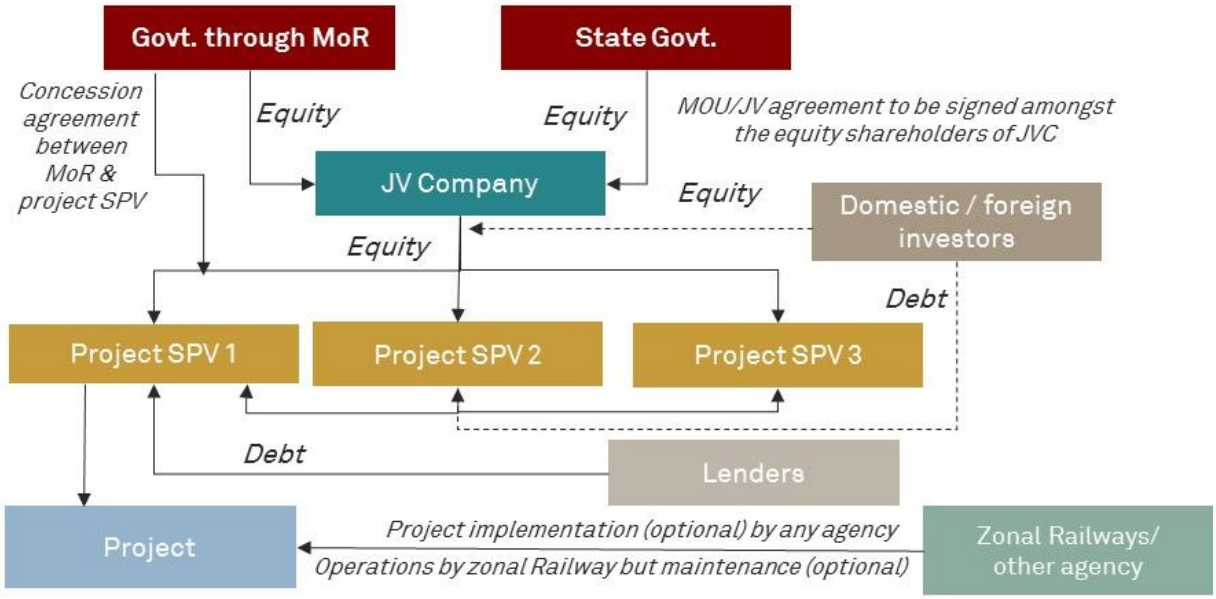
Role of JV company:

- Identify initial basket of projects to be undertaken
- Undertake survey and prepare detailed project report to examine feasibility of projects
- Incorporate and fund subsidiaries/SPVs to undertake projects
- Decide process for sanctioning of the railways projects

Role of project SPVs:

- Project implementation by specialised agency or by zonal railway, as decided by the project SPV in consultation with the railways ministry
- Maintenance of the project (optional, can be entrusted with Indian Railways)
- Arranging funds for implementation of projects
- Ownership of land (for securing debt and generating non-fare revenue wherever possible)

Arrangement and structure of JV model



Key advantages of the model:

- Viability can be enhanced by provision of land free of cost by the state government
- The project can be structured to leverage non-fare box revenue for achieving viability
- Individual project SPVs may attract equity participation from private sector investors, leading to lower cost of development for the government
- Land to be acquired by the state government
- The model could be utilised for projects that are critical but are comparatively less financially viable

Participative models for rail connectivity and capacity augmentation

One of the major sources of funding for railway projects could be private sector investment. To attract private capital for accelerated construction of fixed rail infrastructure, the railways ministry has formulated participative investment models for its existing shelf of projects. The policy pertaining to these models was promulgated by the railways ministry in December 2012.

Key features of the prescribed models

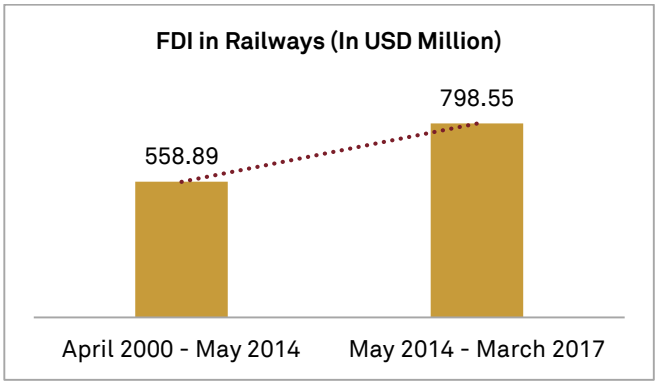
Particulars	Non-government railway model	Joint venture model	Build, operate and transfer (BOT) model	Customer-funded model	BOT annuity model
Project development and structuring	*By developer and examined by Indian Railways*	*By Indian Railways or its PSU*	*By the railways ministry /zonal railways (appraisal as PPP project)*	*By Indian Railways*	*By Indian Railways*
Project participation	*Developer to enter into an agreement with Indian Railways on its own or as a JV with infra finance and development institutions*	*Indian Railways or its PSU to hold minimum 26% of equity* *Selection of JV partners through issue of EOI*	*Developer will enter into concession agreement with railways ministry*	*Customers to provide advance payment for project cost*	*The developer will enter into a concession agreement with railways ministry*
Funds	*Mobilised by project proponent*	*Debt to be raised through project finance route without any guarantee from central government*	*Mobilised by the concessionaire*	*Customer to provide advance to Indian Railways*	*Mobilised by the concessionaire*
Land	*Acquired by developer, railway land may be provided on lease/licence basis* *Ownership of land will rest with developer*	*Acquired by Indian Railways at JV's cost or by JV itself* *Ownership of land to be with Indian Railways*	*Land acquisition to be done by Indian Railways at its own cost*	*Land acquisition to be done by Indian Railways at own cost*	*Land acquisition to be done by Indian Railways at own cost*
Construction	*By developer with certification from Indian Railways*	*By JV with certification from Indian Railways*	*By concessionaire with certification from Indian Railways*	*By Indian Railways*	*By concessionaire with certification from Indian Railways*
Operations and revenue collection	*By Indian Railways*	*By Indian Railways*	*By Indian Railways*	*By Indian Railways*	*By Indian Railways*
Revenue model	*Indian Railways to pay user fee for using the infrastructure;* *95% of the revenue to be shared after deduction of operation and maintenance costs*	*Revenue stream of JV to be established through revenue apportionment from freight operation*	*Base tariff applicable at RFQ stage, to be escalated at a rate linked to WPI* *Railways ministry to pay 50% of apportionment freight revenue as user fee. Ministry will guarantee 80% of projected revenue during any year. In case actual user fee in particular year is in excess of*	*Indian Railways will pay up to 7% of the amount invested through freight* *Rebate on freight volume moved on the project every year till the funds provided by the project beneficiary are recovered with interest at a rate*	*Payment to concessionaire will be through annuity, which is determined through competitive bidding*

Particulars	Non-government railway model	Joint venture model	Build, operate and transfer (BOT) model	Customer-funded model	BOT annuity model
			120% or 150% of projected revenue, 50% or 75% of excess revenue, respectively, will be paid to ministry by the concessionaire. This system has inbuilt incentive for the concessionaire to bring more traffic	*equal to the prevailing rate of dividend payable by Indian Railways to general exchequer at the time of signing of the agreement*	
Concession period	No concession period and transfer of assets	30 years, subject to both upward and downward reduction depending on shortfall/excess of traffic	25 years, may be extended up to 30 years in case of revenue shortfall	15-20 years, depending on feasibility	

FDI in Railways

To strengthen, modernise and expand the railway network, the investment requirement is huge. Hence, private sector participation is required for accelerated construction of fixed rail infrastructure. Indian Railways has formulated participative investment models for its existing shelf of projects and new projects. These models have general provisions, while specific issues are decided on a case-to-case basis. Depending on the model, the railways ministry will either grant direct permission or opt for competitive bidding.

There has been a quantum jump in foreign direct investment (FDI) in railways in the last three years. From April 2000 to May 2014, FDI inflow into the sector was USD 558.89 million; the figure has increased to USD 798.55 million (CAGR of 13%) currently.[17] The Government of India has listed 17 areas for private and foreign investment, besides identifying 38 specific projects which could attract FDI worth Rs 90,000 crore.[18]



100% FDI via automatic route is allowed in[19]:

- Construction, operation and maintenance of suburban corridor projects through PPP
- High-speed train projects
- DFCs
- Railway electrification
- Signaling systems
- Freight terminals
- Passenger terminals

[17] *Department of Industrial policy & promotion http://dipp.nic.in/English/Publications/FDI_Statistics/2016/FDI_FactSheet_April_Sep_2016.pdf*
[18] *Newspaper articles, http://www.livemint.com/Politics/1li6TeBNhtBuHWe5EMuB4M/Govt-outlines-areas-open-for-FDI-in-railways.html*
[19] *Make in India website*

- Infrastructure in industrial parks pertaining to railway line/siding, including electrified railways lines and connectivity to main railway line
- Mass rapid transport systems

Financial support in railway sector (for manufacturing)[20]

- **State incentives**

  State governments offer additional incentives for industrial projects. Incentives include rebates in land cost, relaxation in stamp duty on sale or lease of land, power tariff incentives, concessional rates of interest on loans, investment subsidies/tax incentives, backward areas' subsidies and special incentive packages for mega projects.

- **Export incentives**

  Various kinds of incentives on exports are available under foreign trade policy.

- **Area-based incentives**

  Incentives for units in special economic zones / national investment and manufacturing zones or setting up of projects in special areas, such as the north-east, Jammu & Kashmir, Himachal Pradesh and Uttarakhand.

- **Tax incentives for R&D:**
  - Weighted deduction of 200% is granted under Section 35 (2AA) of the Income Tax Act, on sums paid to a national laboratory, university or Institute of technology, or specified persons with a specific direction, provided that the sum is used for scientific research within a programme approved by the prescribed authority.
  - Weighted tax deduction of 200% is granted under Section 35 (2AB) of the Income Tax Act, to manufacturing companies with in-house research and development (R&D) centres, for capital as well as revenue expenditure incurred on scientific research and development. Expenditure on land and buildings is not eligible for deduction.

Potential areas for involvement of private sector participation

Some of the potential areas for involvement of private sector are as follows:[21]

Suburban corridor projects through PPP (Mumbai Elevated Rail Corridor project and other similar standalone corridors)	• **Government will acquire land and will provide right of way** • **Design Freedom** • **Tariff flexibility with upper cap by Government** • **Real estate development permissible**
High speed train projects (Both Infrastructure and Operating Companies can seek FDI)	• Assistance of Government in land acquisition • Design freedom • Tariff flexibility with upper cap by Government • Real estate development permissible
Dedicated freight lines (Port/Mining lines can be developed)	• Private lines with Ports/ Mines/ Logistic parks/ Industrial Cluster can be built on private land • Tariff as determined by Government

[20] *Make in India website*
[21] *Source: Presentation by Indian Railways – Connectivity projects, by Executive Director PPP (Traffic), March 2017*

	• 95% of the Revenue from the line to accrue to private developer • Developer undertakes construction and maintenance of Rail System including station management • Even operation on private line can be permitted on private basis
Rolling stock manufacturing and maintenance facilities can be set up outside Indian Railways	• Set up manufacturing facility; land acquisition assistance by Government • Revenue from open market sales and exports • Maintenance facilities on BOT/ Annuity
Railway Electrification (Manufacturing companies of such systems including power transmission companies)	• Such Projects can be done through annuity or BOT
Signaling systems (Manufacturing companies of such systems and companies specializing in installation of signaling solutions)	• Manufacturing units can generate revenue through open market sales/ export • Construction and Operation of Signaling projects on Indian Railways can be undertaken through annuity/ BOT
Concessioning of Branch lines	• Transfer of existing assets at nominal rates • Flexibility to concessionaire in managing assets
Testing facilities & Laboratories	• Construction and Maintenance and Operation of any testing labs/facility
Technical Training Institutes	• Setting up of Training Institutes
Technological Solutions for safety enhancement at Level Crossing Gates	• Construction of ROB/RUB or automatic gates through BOT/ Annuity
Technological Solutions for Safety Enhancement	• Asset failure detection systems, Automatic self-propelled parameter recording cars etc.

Setting up of Rail Development Authority

An expert committee set up under the chairmanship of Rakesh Mohan, first recommended creation of an independent regulator in 2001. This proposal was repeated by several others in later years, such as by Bibek Debroy's Committee in 2015. Finally, the cabinet approved the proposal in April 2017. This is a major reform that will help orderly development of infrastructure, enable competition and protect customer interest.

The railway regulator will mainly have three functions:

- **Tariff determination -** Will recommend tariffs and principles for classification of commodities, and frame principles for social service obligations and guidelines for track access charges on dedicated freight corridors

- **Ensuring fair play -** Will ensure level playing field for all stakeholders; help propose modifications and send suggestions or advisory notes on investment in railways by the Indian Railways; and make suggestions regarding policies for private investment, to ensure reasonable safeguards to PPP investors and to resolve disputes regarding future concession agreements
- **Setting standards -** Will help set efficiency and performance standards, and disseminate information in line with global best practices and benchmarking



Changing external environment

India became the third-largest aviation market in the world[22], overtaking Japan and is currently only next to China and USA. The Indian domestic passenger segment grew an impressive 15.5% in April 2017; the first four months of this year saw 17.7% increase over the corresponding period of 2016, despite a fairly large base. It is expected that total passengers carried by airlines will cross total number of AC Class passengers in 2017-18, even as railways continue to record a steady 120-125 million passengers per year. With the new regional connectivity scheme UDAN and government subsidy to promote air connectivity and growth in airlines, flight passenger throughput is expected to be in healthy double digits in near future. This growth will be at the cost of AC Class passengers of railways and will negatively impact Indian Railways' revenue.

Clearly, the railways face multiple headwinds, and the irony is that many of these emanate from its owner's actions and disproportionate influence. Government is a part of all phases of customer engagement by the railways – be it providing core infrastructure and its operation and maintenance, providing wagons and engines and their operation and maintenance, and lastly, bearing the financial risk.

In the case of roads and airlines, the government is more involved in financing than in construction and operation and maintenance. Also, private sector entities are involved in the provision of core facilities and the transportation vehicle – hence, risk sharing is lot more spread.

The private sector's participation is not as extensive in the railways as in the other two modes of transport.

[22] *Source:http://timesofindia.indiatimes.com/business/india-business/india-replaces-japan-for-3rd-spot-in-domestic-air-travel/articleshow/57834063.cms*



Recommendations on way forward

Substantial efforts are being made towards infrastructure augmentation by railways. The ultimate aim is to provide timely service, at a reasonable cost yielding good customer experience which will ultimately result in better financial performance.

Some of the recommendations towards this end are:

- **To have less skin in the play – involve private sector**
    a. Railways must focus on setting up core infrastructure and disengage itself from ancillary functions. Encourage private sector participation in operation and maintenance, and in even running of trains and terminals
    b. Engage private sector in funding railway infrastructure
    c. Of railways' total operating expenses, ~68% is devoted to wages, pension and energy; this component has risen at CAGR of 12-13% over last five years. It is important to plan growth without increasing costs. This could be realised by engaging the private sector more and thereby bringing in greater efficiency, and also by redeploying existing staff through upskilling.
- **Divert funds to priority projects**
    a. Take up doubling, electrification, signaling and telecommunication projects and new line expansion projects simultaneously (Railways to identify those new lines which have higher traffic)
    b. Take up first projects which have higher traffic (passenger and freight) or can garner more fare such as DFC and high-speed trains,
    c. Prioritise projects focused on achieving connectivity to even the remotest parts of the country
- **Complete the projects fully and in mission mode**
    a. While upgradation efforts are being made, the full effect will not be seen unless all all aspects are accorded adequate attention.
        i. For instance, the Tejas passenger train from Mumbai to Goa has state-of-the-art locomotives and train vehicles, but the tracks have not been renovated to handle such a superfast

train[23] (which can operate at 200 kmph). Tejas takes 8.5 hours as compared to Shatabdi which takes 10.5 hours. Therefore, unless the time advantage is seen, it will not be possible to attract passengers.

ii. In case of DFC, while attracting or retaining freight traffic, important factors will be time, cost and reach. Since cost of multiple handling is a big cost in overall freight cost for any cargo, it would be critical to develop feeder lines and multi-modal logistics parks simultaneously. Investment in technology to ensure service predictability and cargo control to the last mile would be important.

- **Customer is the king – focus on customer experience**

  a. Create more pay-per-use ecosystems. While passengers buying second-class tickets dominate in number, about 28% of passenger revenue comes from those that buy sleeper-class tickets. The railways can charge them by offering more facilities, in-train entertainment, station refurbishment and a material leap in punctuality.

  b. Provide superior customer experience in all interfaces -- ticketing, station touch points and on-board travel engagement (cleanliness, food and beverage, in-coach facilities, etc).

- **National transport policy to be framed**

  a. It will aim to promote regional development and avoid over-investment in certain pockets of the country.

  b. Policy should include clear road map for ensuring uniform connectivity to all parts of the country.

  c. It should include short-term, medium-term and long-term plans, to involve private sector in building, operation and maintenance of infrastructure assets (covering both passenger as well as freight)

Indian Railways is at an inflection point. The challenges are being tackled head-on with right focus on network expansion and upgradation, customer safety, customer experience and financial sustainability. Strategic execution of plans in war mode, through engagement of private sector, could fast-track growth of railways.

[23] *Source: http://www.financialexpress.com/india-news/mumbai-goa-passengers-set-to-travel-at-160-kmph-as-rcf-rolls-out-coaches-for-tejas-express/675428/*

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