Role of Railways in Urban and Regional Development of India

Transport : Powering development

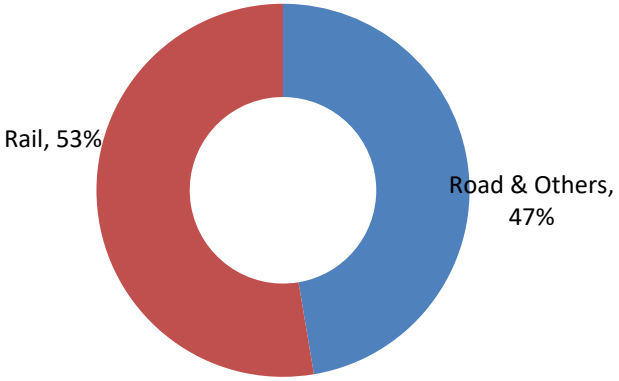
- India's transport sector caters to a population of 1.3 billion people.
- The sector contributes to about 5.5 percent of the nation's GDP.
- Roadways carry almost 90 percent of the country's passenger traffic and 65 percent of its freight.
- For a sustained growth of 7% per year, freight transport would quadruple by 2035 and passenger transport will increase by more than 15 times.

Transport & Environment

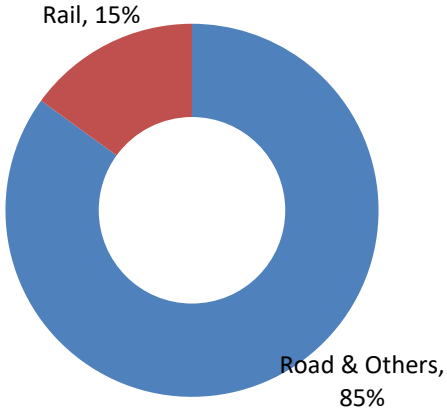
- Transport accounts for about 13% for India's total emissions.
- Govt. as a part of its Nationally Determined Contributions(NDCs) has set a target of 33% reduction in emission intensity by 2030.
- Railways are about 12 times more efficient in freight traffic and 3 times more efficient in passenger traffic as compared to road transport.
- Sustained development, long term reductions in carbon emissions through improved energy efficiency, new power sources and modal shift to predominantly Railways .

Modal Share of Passenger Transport

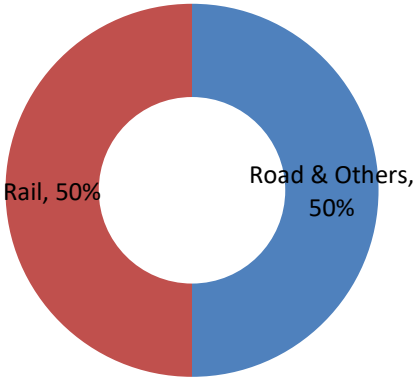
China (People's Republic of)



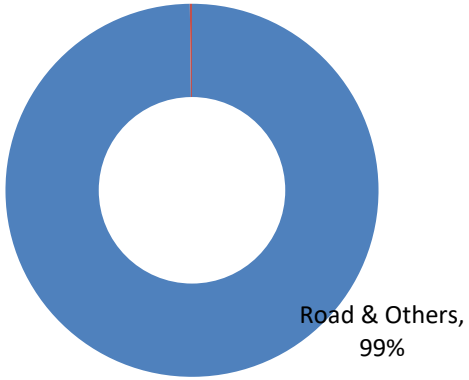
India



Russia

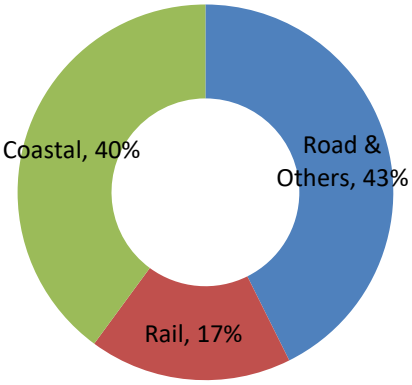


United States

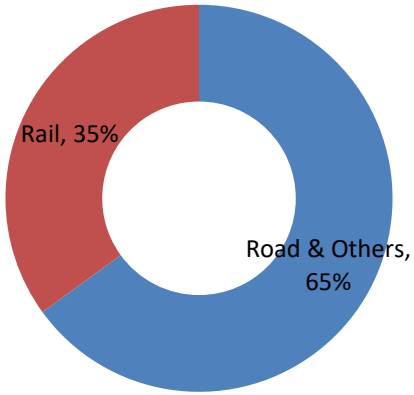


Modal Share of Freight in RUIC

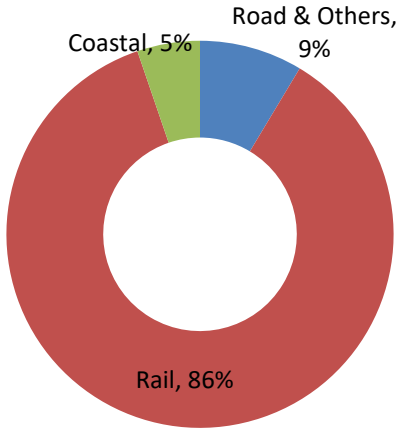
China (People's Republic of)



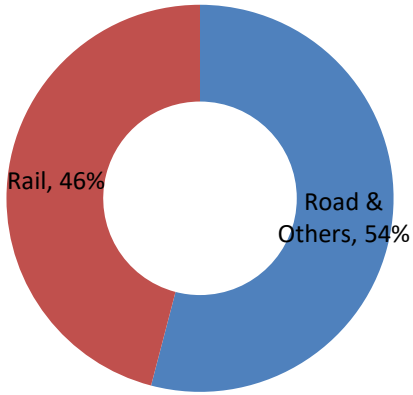
India



Russia

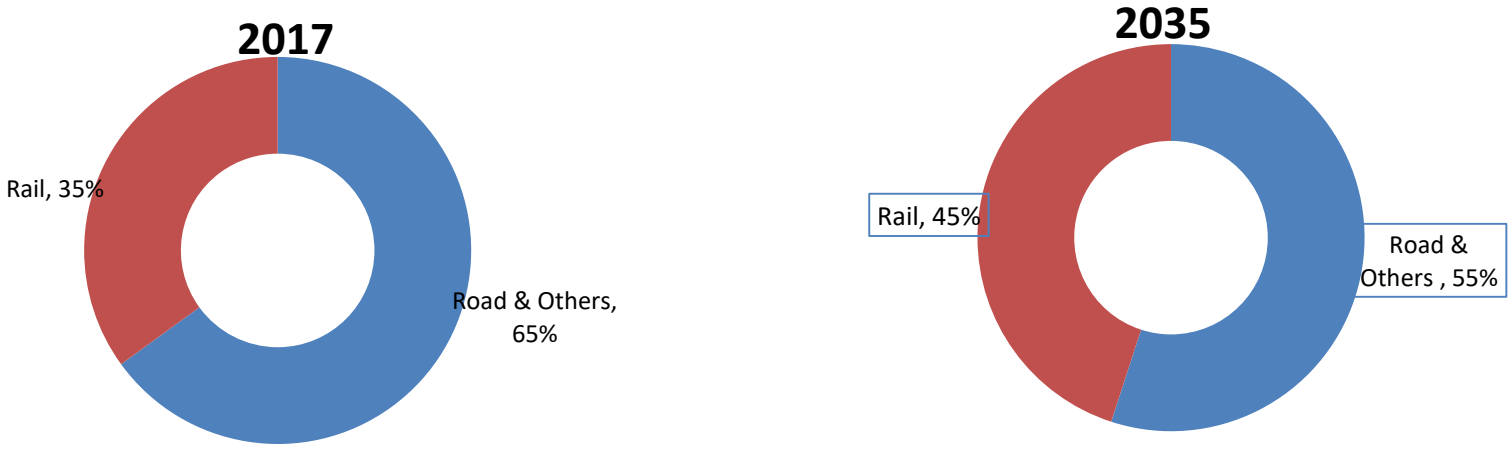


United States



Nationally Determined Contributions

- One of most vital transportation emission mitigation strategies is the targeted increase the freight share of Indian railways from current 35% to 45% by 2030.
- *Targeted Freight Share 2017-2035*



Railway sector : A glimpse of Hope

- Growth elasticity for rail transport in India is likely to increase from 0.79 presently to 1.25 in next 5 years.
- The contribution of railways industry to Indian GDP likely to increase from 1.18% to 2% in next 5 years.
- The railway is a sustainable, integrated transport system that is effective, efficient and environmentally friendly

GROWTH STORY OF LAST FEW DECADES

ITEM	1950-51	2014-15	%VARIATION
Double and multiple route length (Kms)	5127	20,633	302%
Running track Kms (All Gauges)	59,315	90,803	53%
Freight carried (Million Tonnes)	73	1095.26	1400%
Passenger Kms (Millions)	66,517	11,47,190	1625%
Passengers Originating (In Millions)	1,284	8,224	540%
Wagon capacity (Million Tonnes)	4.14	14.33	246%
Wagon Turn around(Days)	11	4.98	(-)55%

Overview of Indian Railways

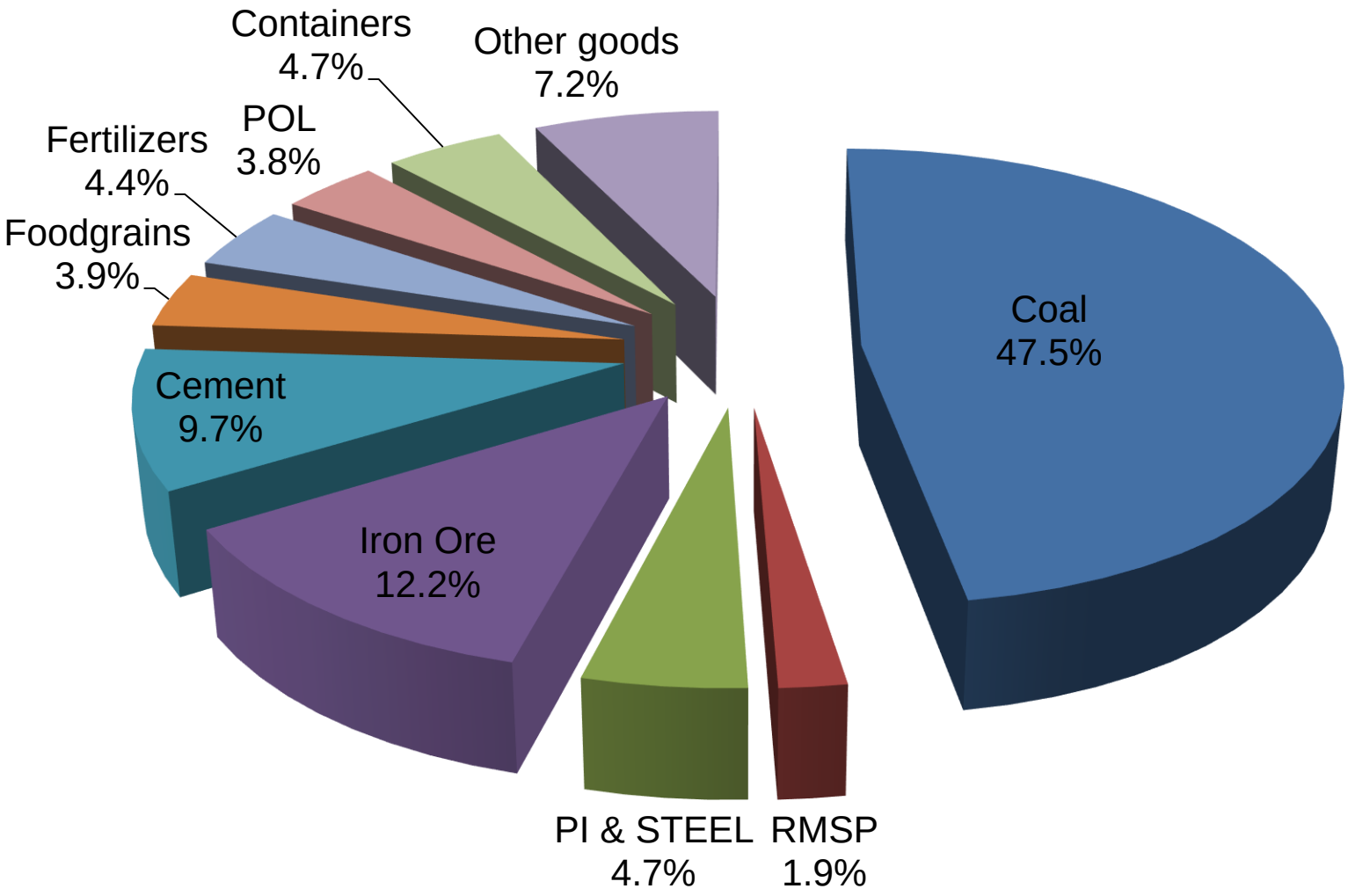
- IR carries more than 23 million passengers per day (equivalent to population of Australia)
- Runs 22,300 trains per day (13,098 passenger +9202 freight)
- Carries more than 3 million tonnes of freight per day
- 1.31 Million Employees.
- Predominantly 1676mm(BG) gauge
- Total track length 1,17,996 km.
- 66,030 Route Km, i.e. circumference of the earth
- 22,224 Electrified Route Km(33.66 % of total route km)
- 7,137 Stations
- 10,773 Locomotives
- More than 2,54,006 wagons & 61,558 passenger coaches

* as on 1.4.2016

Introduction Contd…

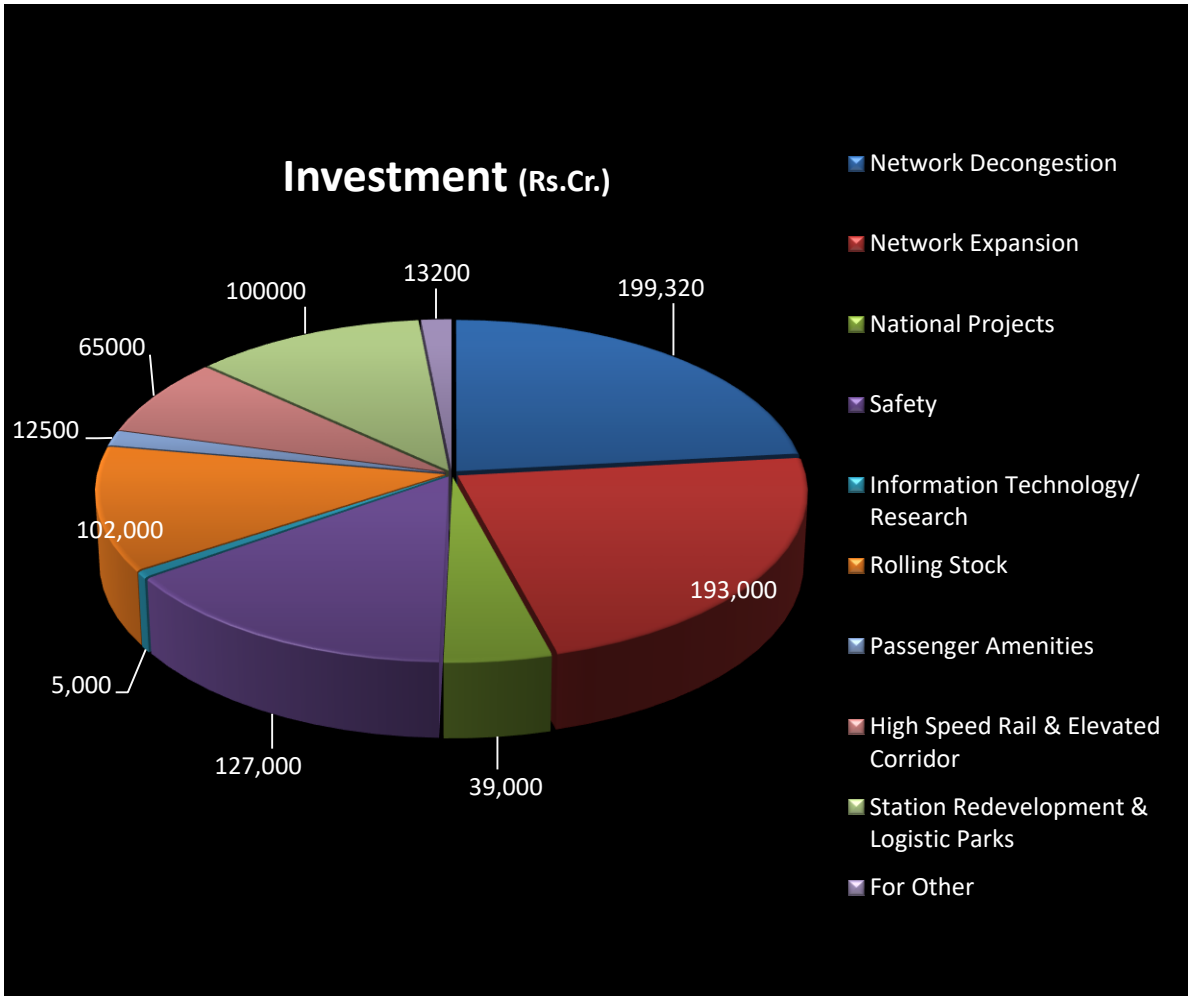
- Indian Railways is one of the largest Railway network in the world.
- Life-line of nation providing transportation facility across length and breadth of the country.
- Provides efficient, affordable, customer-focused, environmentally sustainable transportation facility.
- There are two broad passenger segments on Indian Railways i.e. Suburban and Non-suburban.
- Suburban segment is unreserved segment.
- Non-suburban segment is further categorized into Reserved and Unreserved segment.
- Passenger business contributes about 28% of the revenue of IR.
- Passenger fares are largely subsidized by freight earnings.
- Losses on Passenger & other coaching services during 2015-16 was $ 0.6 billion.

FREIGHT TRAFFIC PROFILE



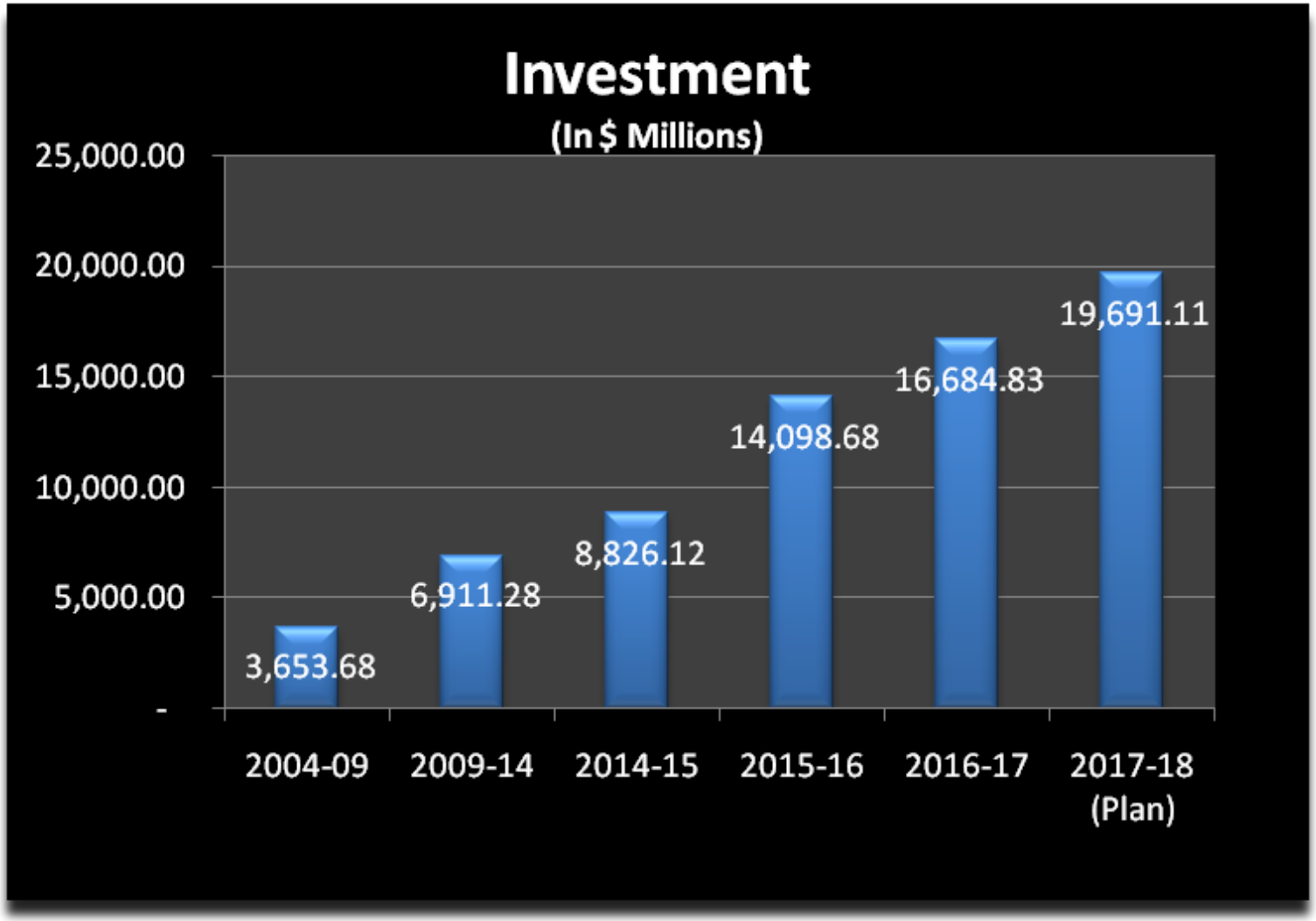
Railway Sector : Planned Investment 2014-19

($ 13 Bn)

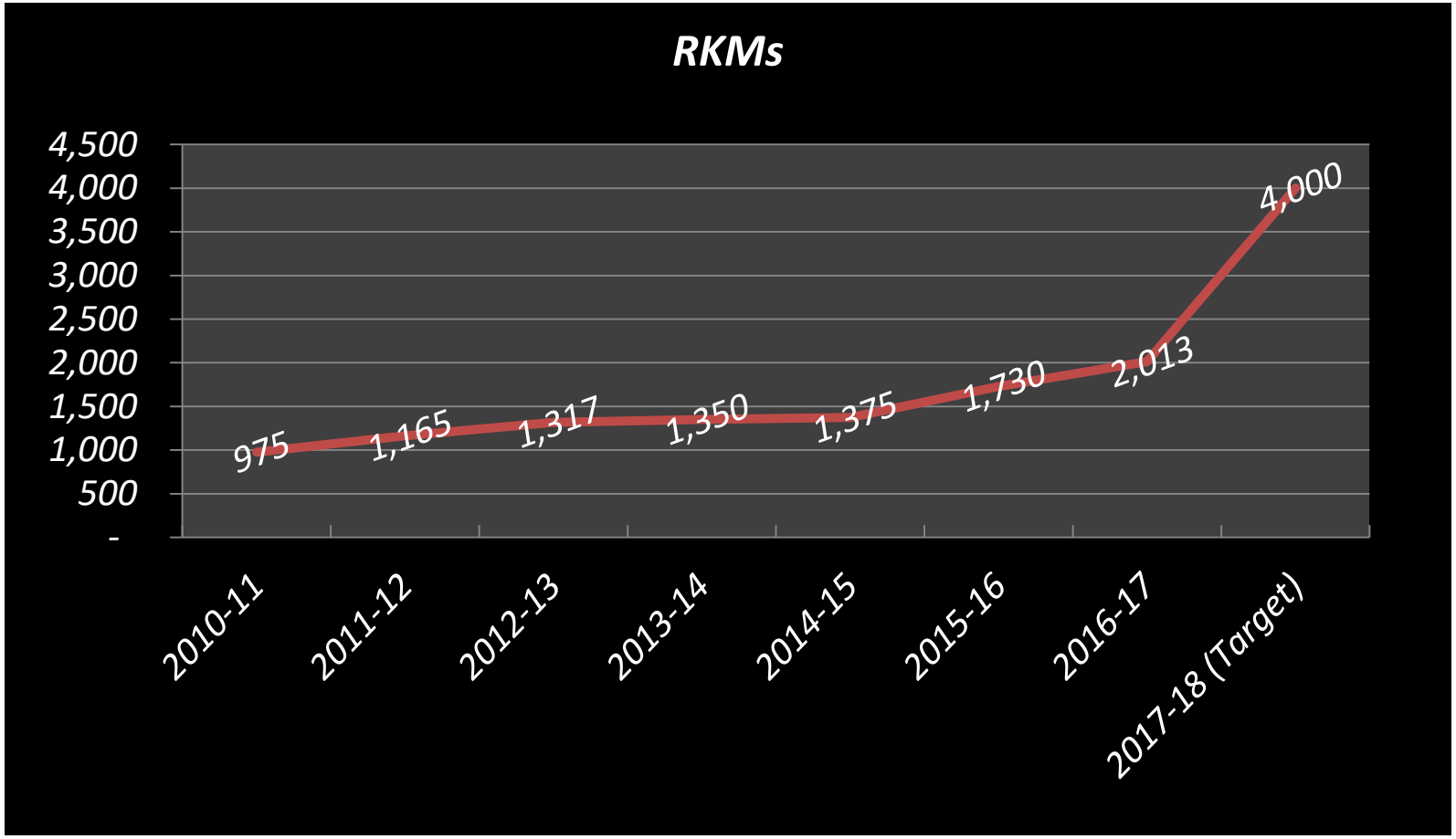


Sector	Investment (Bn $.)
Network Decongestion	3
Network Expansion	3
National Projects	0.6
Safety	2
Information Technology/ Research	0.8
Rolling Stock	1.6
Passenger Amenities	0.2
High Speed Rail & Elevated Corridor	1
Station Redevelopment & Logistic Parks	1.6
For Other	0.2

Annual Outlays of Indian Railways



Railway Electrification



*** Complete Electrification of 65,000 RKMs by 2022**

Present Status of Electrification

Total BG routes of IR including Konkan, Kutch, Pipavav and Baruch Dahej Railways)	63,223 RKM
Routes commissioned on electric traction	25,201 RKM
Sanctioned shelf available as on 01.04.17	24,062 RKM
Balance routes need to be sanctioned	14,013 RKM

Share of Traffic (As on 1.4.16)

	Electric	Diesel
Goods	65.10%	34.90%
Coaching	54.30%	45.70%

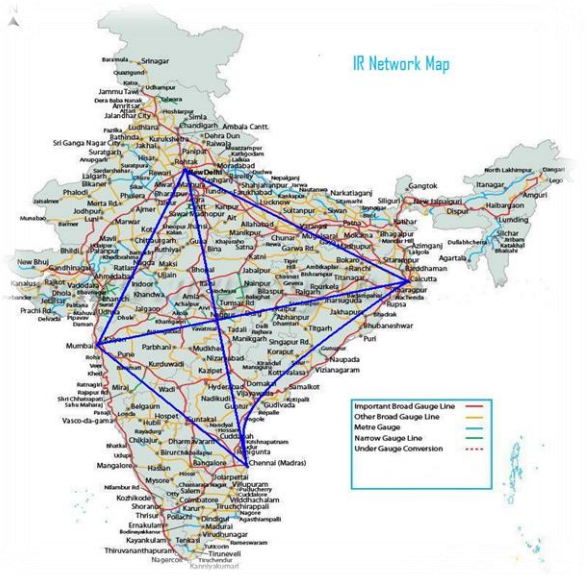
Fuel Bill (in Rs crores)

	Diesel	Electric	Total
Actual Fuel Bill (2016-17)	17100	9700	26800
% age of Share	64%	36%	

OTHER INITIATIVES - DFC

- 2 corridors: Eastern & Western under construction
- Target for commissioning: 2018-20.
- Expected completion cost: US$ 14 billion

FUTURE DEDICATED FREIGHT CORRIDORS



- **Feasibility study for additional four corridors:**
  - North-South corridor (Delhi-Chennai – 2343 km, completion cost USD 17.4 bn)
  - East-West corridor (Howrah-Mumbai) – 2328 km USD 18.42 bn)
  - East Coast corridor (Kharagpur Vijayawada) – 1123 km project report October 2015
  - Southern corridor (Chennai-Goa) – 899 km project report March 2016

Metropolitan Transport Projects in various States

SN	City	Length (km)	Total Cost (Bn $)
1.	**Mumbai**	209	0.33
2.	**Chennai**	5.00	0.011
3.	**Hyderabad**	101.05	0.012
4.	**Kolkata**	116.9	0.34
	Total	431.95	**0.693**

- New Suburban Railway Systems Policy announced in 2016-17
- MOU has been signed with Government of Karnataka for development of Banglore Suburban System
- Eight metro rail networks under covering a length of 370 km are operational in the country, over two dozen more projects are lined up. The cities include Pune, Nagpur, Ahmedabad, Chennai, Vijayawada, Kozhikode, Indore, Bhopal, Patna, Guwahati, Kanpur and Varanasi. These projects are being coordinated by Ministry of Urban Development which has released 0.19 Bn $ for these projects in 2014-17.

MEMU Rakes with IGBT

- **Introduction of rakes with new technology having IGBT based three phase propulsion system with the advantages of lower SEC, low maintenance, higher acceleration/ deceleration and the improved reliability.**
- **In DC EMU, lot of noise (>85 dB) is generated from DC traction motor while Accelerating, from bogie during braking and also from compressor.**

  With the introduction of AC motor driven compressors and IGBT based step-less control system with regenerative braking, the noise level inside the coach has been reduced to 65-70 db.

- **The World Bank has identified this project as CDM project to obtain carbon credit.**

Train 18 : A new Era

- Speed – 160 Kmph
- On board Infotainment and Passenger Information System
- New Generation Bogies with Air suspension for better ride quality
- Plush interiors with LED lights, CCTV Cameras
- Automatic Doors with Retractable Coach footsteps
- Fully sealed gangways
- Paging and talk back with Driver/Guard during emergency
- Zero Discharge Vacuum Based Bio-toilets with touch free fittings
- Advanced Coach Couplers for jerk-free ride
- Intelligent braking system; power regeneration for better energy efficiency
- Manufacture of first train set
  by June 2018.

TRAIN-18 UNDER MANUFACTURE AT ICF

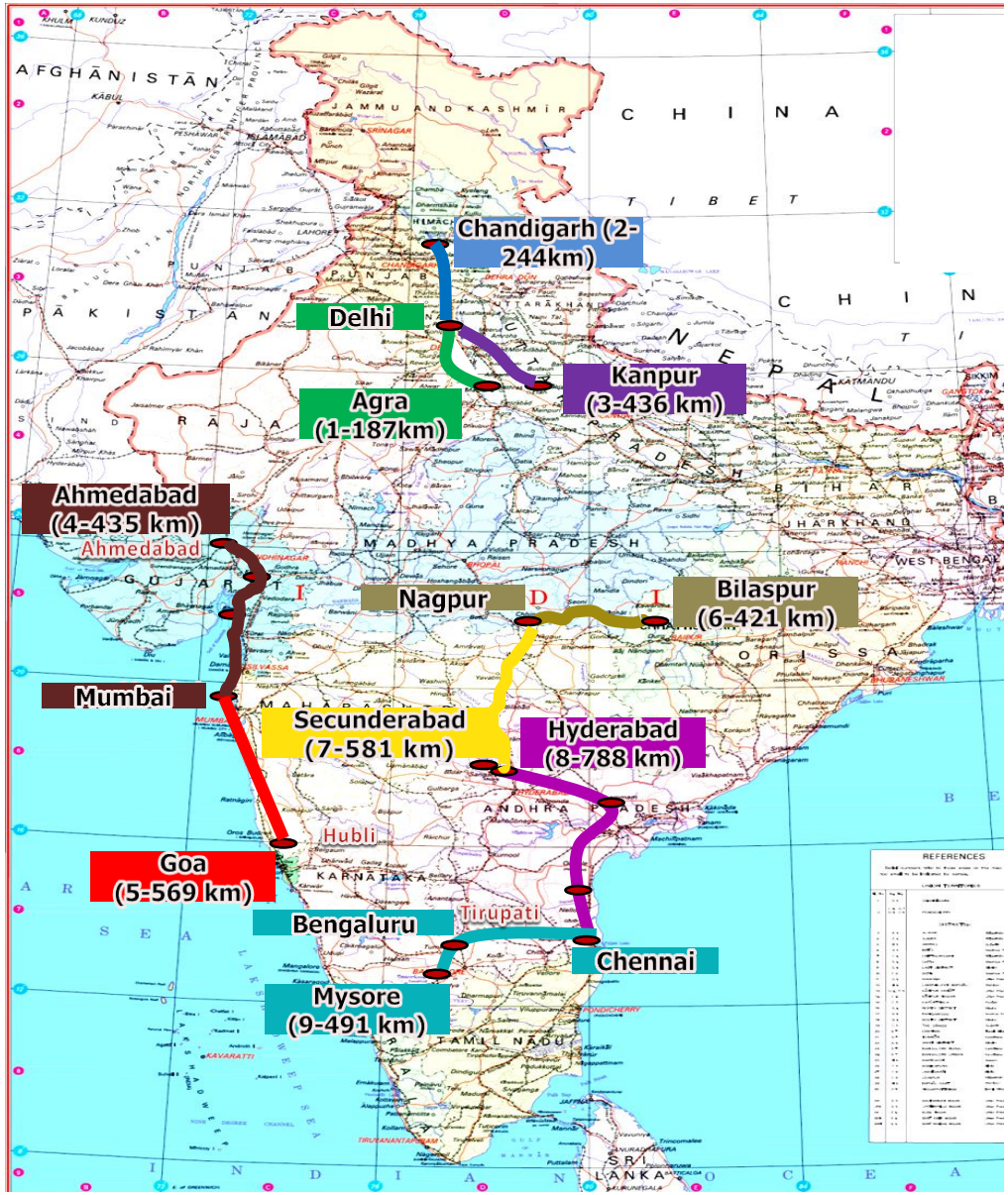
High Speed Era – the Bullet Train

- Mumbai to Ahmedabad - 1st corridor to be implemented at a cost of $ 1.68 Billion.
- Financial & technical partner – Government of Japan
- Targeted to be commissioned by 2022
- Diamond quadrilateral connecting 4 major metros including diagonals, identified for future High Speed Rail Projects.
- Feasibility studies for Delhi- Mumbai, Delhi – Kolkata, Delhi – Nagpur, Mumbai – Nagpur, Mumbai – Chennai and Chennai-Bangalore – Mysore, initiated including 3 through Govt. to Gov.t cooperation with Spain, Germany and China.

Semi High Speed (SHS) Initiatives

- Feasibility for nine Semi High Speed (SHS) corridors with speed of 160-200 kmph .

- Two Semi High Speed corridors under consideration .
  - NDLS-BCT – 1478.4 km - Cost $ 0.17 Bn .
  - NDLS-HWH – 1526 km – Cost $0.11 Bn



THANK YOU