

CHAPTER 19

RAILWAYS

19.1 Railways in the World : Statistics from International Union of Railways, UIC members does not indicate much change in both passenger & freight traffic (in terms of passenger/tonnes kilometres) during 2013 compared to the year before. Though the decrease in freight traffic at 9789 billion tonnes Km(from 9807 billion tonnes km during 2012) was somewhat significant (about 0.2 % decline), the passenger traffic decreased by marginal amount of about 1 billion passenger Kms to reach 9865 billion passenger Km during 2013. Bleak European scenario continued to manifest itself through decline in movement of both goods and passengers. Asia Oceania & Middle East which comprises bulk of the passenger traffic stagnated whereas contraction in freight was largely on account of contraction in Europe. Growth in freight traffic in 2012 was led by Russia's extremely dynamic freight sector. (The analysis for 2013 is however constrained by data availability for the recent year and use of previous years data for large entities is likely introduces the effect of no change in annual comparisons).

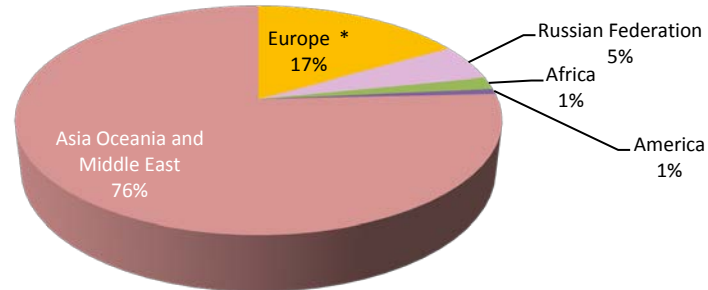
19.2 Asia Oceania & Middle East Accounts for about three quarters of railway passenger traffic (in terms of passenger Kms) and within the group, India accounts for about half the share (45 % approx).Out of the total passenger traffic in the world , India comprises about one third (34%) whereas share of China , Japan & Russia is also significant at about 28 % , 8 % and 5 % respectively . However in terms of freight traffic as measured by tonnes kilometers, USA, China & Russian Federation each account for about quarter (26, 26 & 23% respectively) of world freight traffic whereas share of India is about 6 per cent.

19.3 USA leads in rail network, in terms of length of lines, accounting for about a fifth of total rail network. Russia with about 8 % share and China and India with about 5-6 % share each also contribute significantly to world rail network.

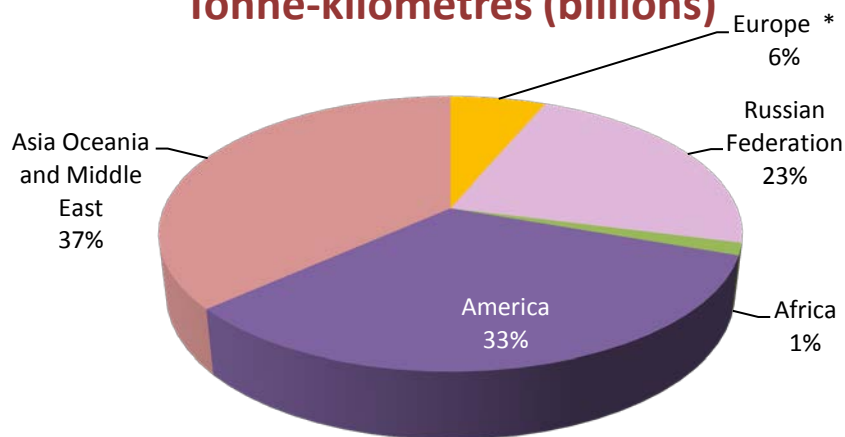
International Railway Statistics : Synopsis (Source : International Union of Railways, UIC)

Passenger Kms (billions)	2006	2007	2008	2009	2010	2011	2012	2013	Δ%
Europe *	464.5	469.2	483.8	470.5	472.8	485.6	480.0	476.1	-0.8%
Russian Federation	177.6	173.4	175.9	153.6	139.0	139.8	144.6	144.6	0.0%
Africa	61.5	61.6	62.0	62.2	62.3	49.3	49.3	49.3	0%
America	12.8	13.3	14.0	13.5	12.0	20.8	20.9	22.3	6.6%
Asia Oceania and Middle East	1,646.0	1,788.6	1,950.9	2,012.0	2,079.3	2,187.8	2,171.7	2,173.0	0.1%
WORLD estimates	2,362.4	2,506.1	2,686.6	2,711.9	2,765.4	2,883.4	2,866.6	2,865.3	0.0%
Tonne-kms (billions)	2006	2007	2008	2009	2010	2011	2012	2013	Δ%
Europe *	695.8	723.2	986.8	546.0	700.6	648.6	621.4	604.1	-2.8%
Russian Federation	1,950.8	2,090.3	2,116.2	1,865.3	1,903.2	2,127.2	2,222.4	2,222.4	0.0%
Africa	142.2	139.2	138.4	137.1	139.2	139.1	139.1	139.4	0%
America	3,519.5	3,540.2	3,513.8	2,973.2	3,076.1	3,132.6	3,231.0	3,231.0	0.0%
Asia Oceania and Middle East	2,872.6	3,095.9	3,452.7	3,466.2	3,462.0	3,621.2	3,593.1	3,592.3	0.0%
WORLD estimates	9,180.9	9,588.9	10,207.9	8,987.9	9,281.2	9,668.6	9,807.0	9,789.2	-0.2%
Length of lines(kms)	2006	2007	2008	2009	2010	2011	2012	2013	Δ%
Europe *	2,64,204.9	2,64,630.4	2,63,805.8	2,68,465.9	2,85,408.3	2,70,341.9	2,65,115.6	2,65,231.0	0.0%
Russian Federation	85,253.0	84,158.0	85,194.0	85,281.0	85,292.0	85,167.0	84,249.0	84,249.0	0.0%
Africa	52,159.0	52,400.0	52,482.0	52,299.0	50,274.5	70,505.1	70,504.6	70,505.0	0%
America	3,85,272.2	3,89,862.8	3,86,772.8	3,83,079.2	3,75,773.6	3,69,222.0	3,69,222.0	3,81,538.0	3.3%
Asia Oceania & Mid East	2,21,788.0	2,22,644.5	2,21,827.0	2,24,151.0	2,24,204.9	2,33,570.4	2,32,365.9	2,27,707.0	-2.0%
WORLD estimates	10,08,677.1	10,13,695.7	10,10,081.6	10,13,276.1	10,20,953.2	10,28,806.4	10,21,457.1	10,29,230.0	0.8%

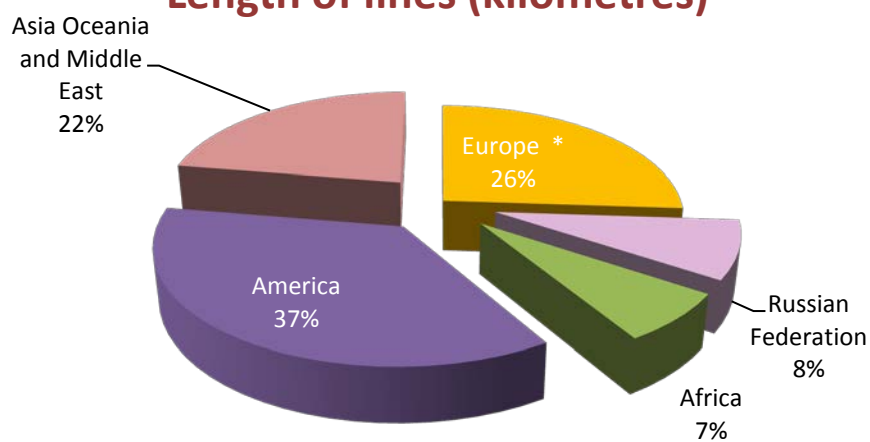
Passenger-kilometres (billions)



Tonne-kilometres (billions)



Length of lines (kilometres)



* including Turkey

Source : International Union of Railways, UIC

19.4 Indian Railways : Indian Railways have a history and rich heritage spanning over 150 years. IR is a state owned public utility of Government of India under the Ministry of Railways. As a national common carrier transporting passenger and goods over vast network of 65,436 kms route lengths, it has played a key role in India's social and economic development. It is a cheap and affordable means of transportation for millions of passengers. As a carrier of bulk freight namely ores and minerals, iron and steel, Cement, mineral oils, food grains and fertilizers etc, the importance of Indian Railways for development of Agriculture, Industry and for the benefit of common men is well recognized.

19.5 For Administrative purposes Indian Railways is divided into 17 zones which includes Metro Railway, Kolkata. These zones are further sub divided into 68 operating Division. IR has 1,36,286 bridges, out of which 733 are important, 11,039 are major and 1,24,514 are minor bridges. In 2012-13, 806 bridges including 8 distressed bridges were rehabilitated/rebuilt.

19.6 Presently, Indian Railways are engaged in a most challenging work at constructing a new broad gauge 240 km long Kashmir rail link, in the mountainous Himalayan terrain having 37 tunnels, including the largest tunnel of 11 km and 69 bridges upto 105 meter long. Katra-Banihal track, is now due to be completed by 2018. Quazigund -Banihal , Katra-Udhampur sections were completed during 2013. Quazigund -Baramulla section measuring about 119 Kms was completed in 2009.

19.7 The world's highest railway bridge-five times the height of Qutub Minar and 35 meters taller than Eiffel Tower-will come up over the Chenab river on the under construction rail link to the Kashmir Valley. The bridge will rise 359 meters over the Chenab, 65 km from Katra, on the 73-km Katra-Dharam section of the ambitious Udhampur-Srinagar-Baramulla Rail Link Project. The 1,315-metre bridge will use up to 25,000 million tonnes of steel and will be an engineering marvel and work is going on in full swing. The world's tallest rail bridge is France's Tarn river when completed, the Chenab bridge will be the highest in the world.

19.8 Four sites of Indian Railways have been declared as "World Heritage site" by the UNESCO. These are Darjeeling, Himalayan Railway inscribed in 1999, Mumbai CST Building inscribed in 2004, Neelgiri Mountain Railways inscribed in 2005 and Kalka-Shimla Railways inscribed in 2008.

19.9 At present 5 luxury tourist trains are run by Indian Railways which are "Palace on Wheels" in a circuit covering Rajasthan, Delhi and Agra, "Royal Rajasthan on Wheels" in a circuit covering Rajasthan, Delhi, Agra, Khujrao and Varanasi, "Deccan Odyssey", "Golden Chariot and "Maharajas"s Express

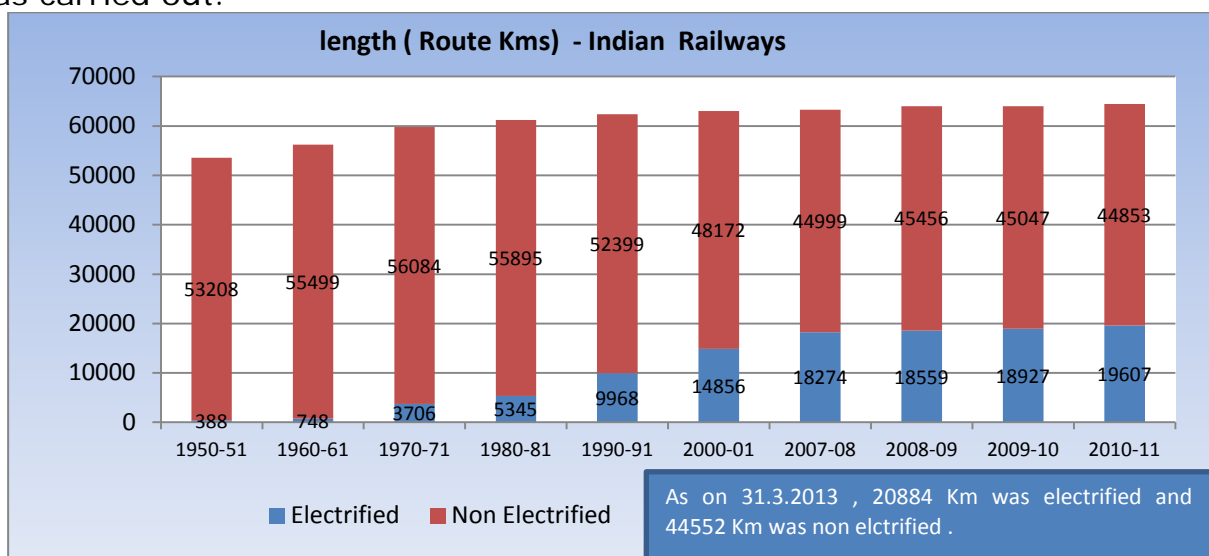
covering various tourist destinations spread across the country. Besides, Indian Railways also operate "Fairy Queen" the Heritage Steam Train between Delhi and Alwar offering weekend package to Buddhist special train in the popular Buddhist circuit and "Bharat Darshan" trains for the common man.

19.10 The Indian Railways are also classified by Gauges as Broad (1.676m.), Meter (1.000m) and Narrow (0.762m. & 0.610m) according to the minimum distance between two rails in meters mentioned in brackets. Indian Railways carried 23.07 million passengers and 2.77 million tonnes of freight each day during 2012-13.

Performance of Indian Railways :

19.11 **Rail Network** : As on 31.03.2013, the route length of Indian Railways covered 65,436 kms. with running track length of 89,236 kms. The total trackage including yards, sidings etc. stood at 1,15,833 kms.

19.12 During 2012-13, 501 kms. of new lines were constructed, 605 kms. of track has been converted from MG/NG to BG , 705 kms. of track has been doubled from single line to double line and 3,296 kms. of track renewal was carried out.



Year	Route Kms.		Running track Kms.		Total track Kms.	
	Electrified	Total	Electrified	Total	Electrified	Total
1950-51	388	53,596	937	59,315	1,253	77,609
1960-61	748	56,247	1,752	63,602	2,259	83,706
1970-71	3,706	59,790	7,447	71,669	9,586	98,546
1980-81	5,345	61,240	10,474	75,860	13,448	104,480
1990-91	9,968	62,367	18,954	78,607	25,305	108,858
2000-01	14,856	63,028	27,937	81,865	36,950	108,706
2009-10	18,927	63,974	35,811	87,087	48,639	113,617
2010-11	19,607	64,460	36,000	87,040	49,489	113,993
2011-12	20,275	64,600	38,775	89,910	51,198	115,171
2012-13	20,884	65,436	38,236	89,236	52,101	1,15,833

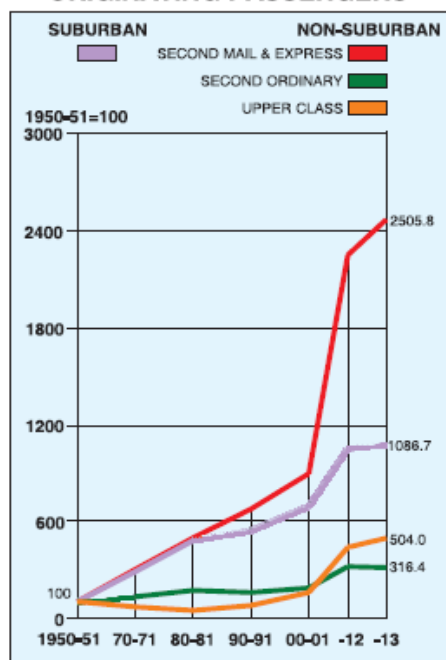
Includes track in yards, sidings, crossings at stations, etc.

Rail Transport :

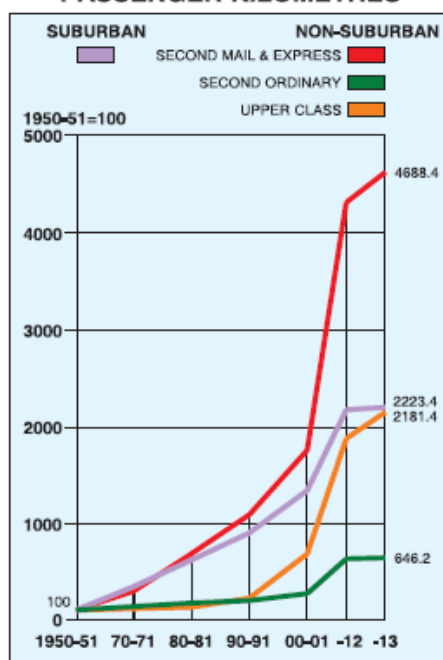
19.13 **Passenger Business:** Indian Railways is a commonly used mode of public transportation in the country. During 2012-13, it carried 8,421 million passengers as against 8,224 million in 2011-12 thus registering a volume growth of 2.4%. Passenger kilometres, which calculated by multiplying the number of journeys by mean kilometric distance was 1098 billion, up by 4.87% from 1,047 billion in the previous year. Passenger earnings also increased by Rs 3,076.41 crore (10.89%) in comparison with 2011-12.

Year	No. of Passengers Originating (Millions)	Passenger Km (Millions)	Average Lead (Kms)	Proportion to Total Traffic (2012-13)		
					No. of Passenger	Passenger Kms
1950-51	1,284	66,517	51.8	Non-Suburban:		
1960-61	1,594	77,665	48.7	Second Class	29.87	25.68
1970-71	2,431	118,120	48.6	Ordinary		
1980-81	3,613	208,558	57.7	Second Class	15.48	53.53
1990-91	3,858	295,644	76.6	Mail/Express#		
2000-01	4,833	457,022	94.6	Upper Class	1.49	7.53
2009-10	7,246	903,465	124.7	Total	46.84	86.74
2010-11	7,651	978,508	127.9	Suburban(all classes)		
2011-12	8,224	1,046,522	127.2		53.16	13.26
2012-13	8,421	1,098,103	130.4	# Includes sleeper class		

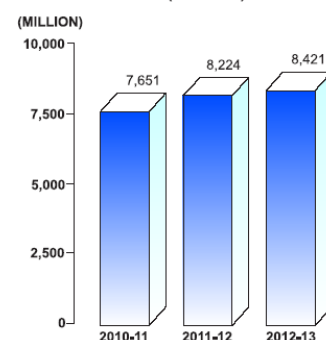
INDEX OF GROWTH OF ORIGINATING PASSENGERS



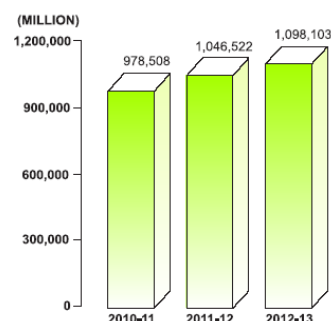
INDEX OF GROWTH OF PASSENGER KILOMETRES



PASSENGER JOURNEYS (NUMBER)

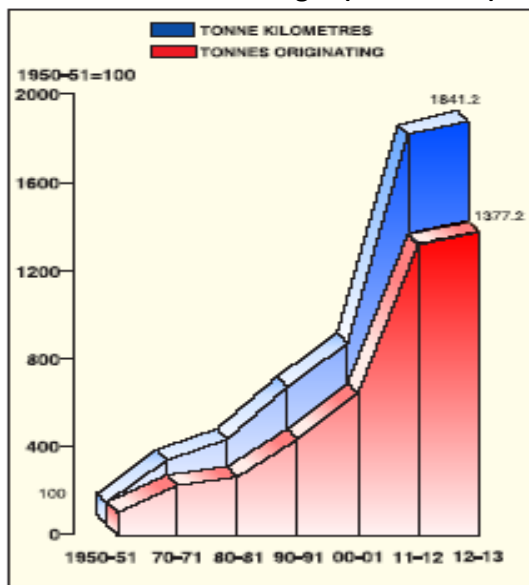


PASSENGER KILOMETRES

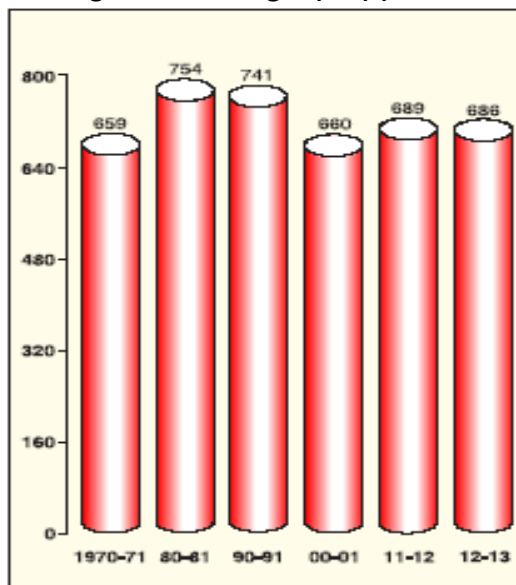


19.14 **Freight** : In 2012-13, IR loaded 1,014.15 million tonnes of which 1,008.09 million tonnes was revenue-earning and 6.06 million tonnes non-revenue-earning, and achieved total Net Tonne Kilometres (NTKMs) of 692 billion as against 668 billion in 2011-12. The freight earnings went up from Rs 67,743.62 crore in 2011-12 to Rs 83,478.83 crore in 2012-13, registering a growth of 23.23%.

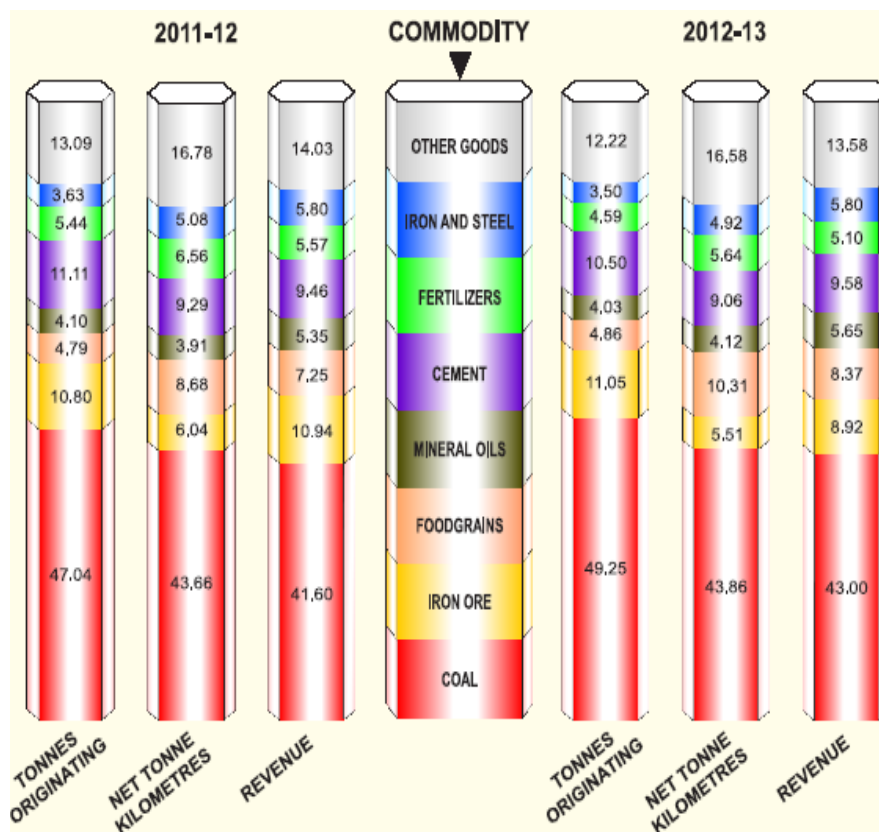
Index of Growth of Freight (Rev. Traffic)



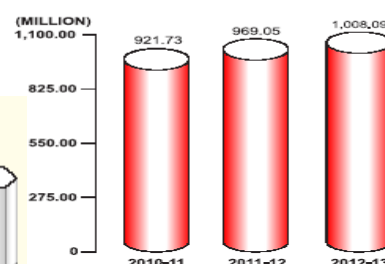
Average Lead of Freight (Km) (Rev. Traffic)



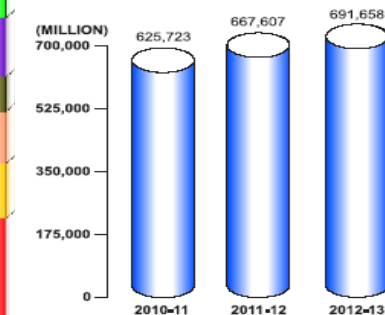
Pattern of Revenue Earning Freight Traffic (Percent to Total)



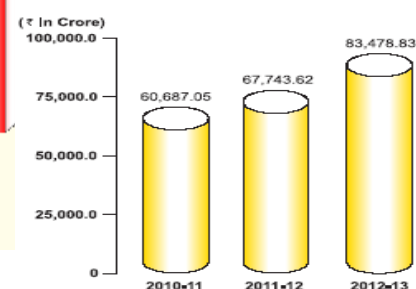
TONNES ORIGINATING (REVENUE-EARNING)



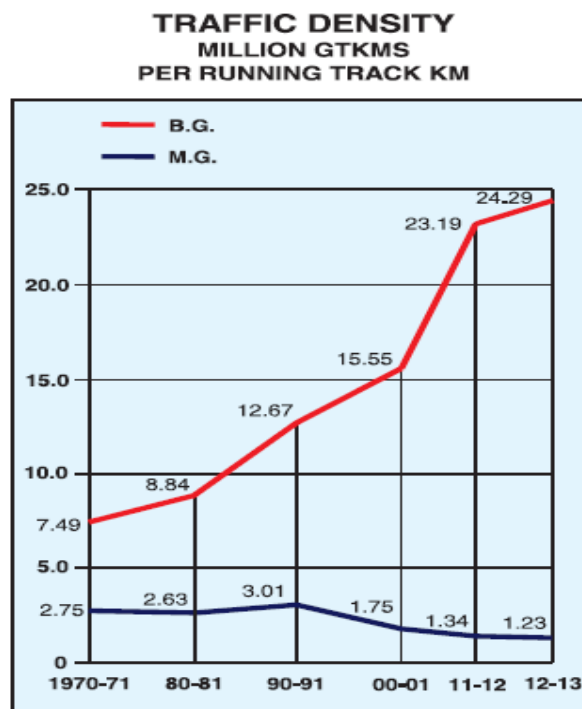
NET TONNE KILOMETRES (REVENUE-EARNING)



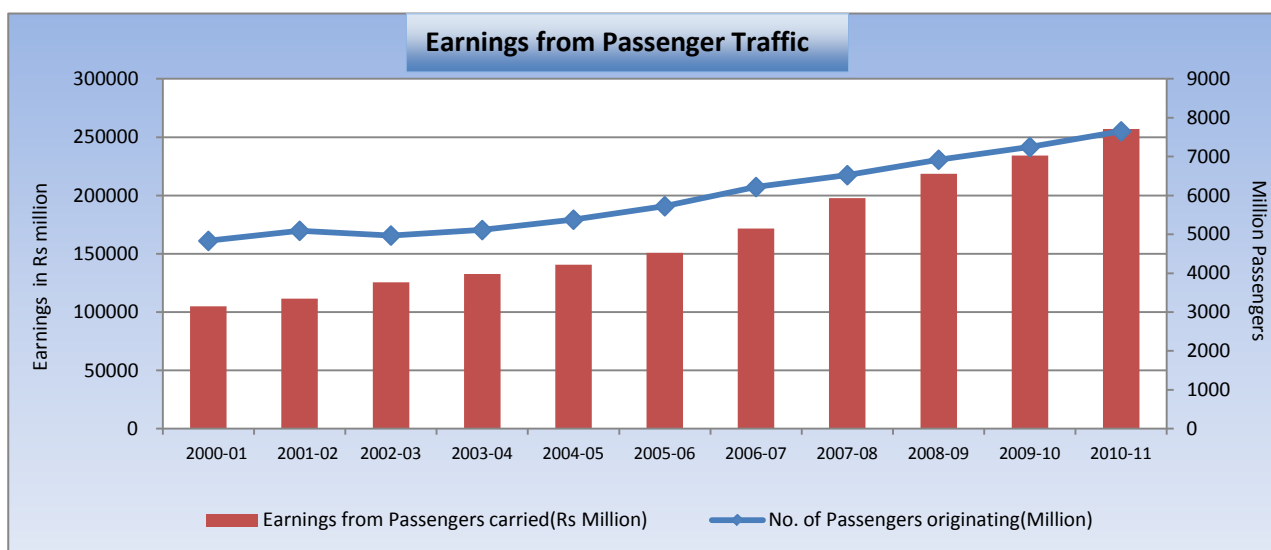
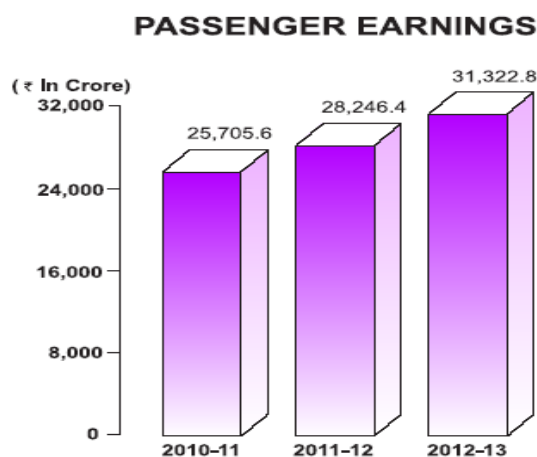
GOODS EARNINGS

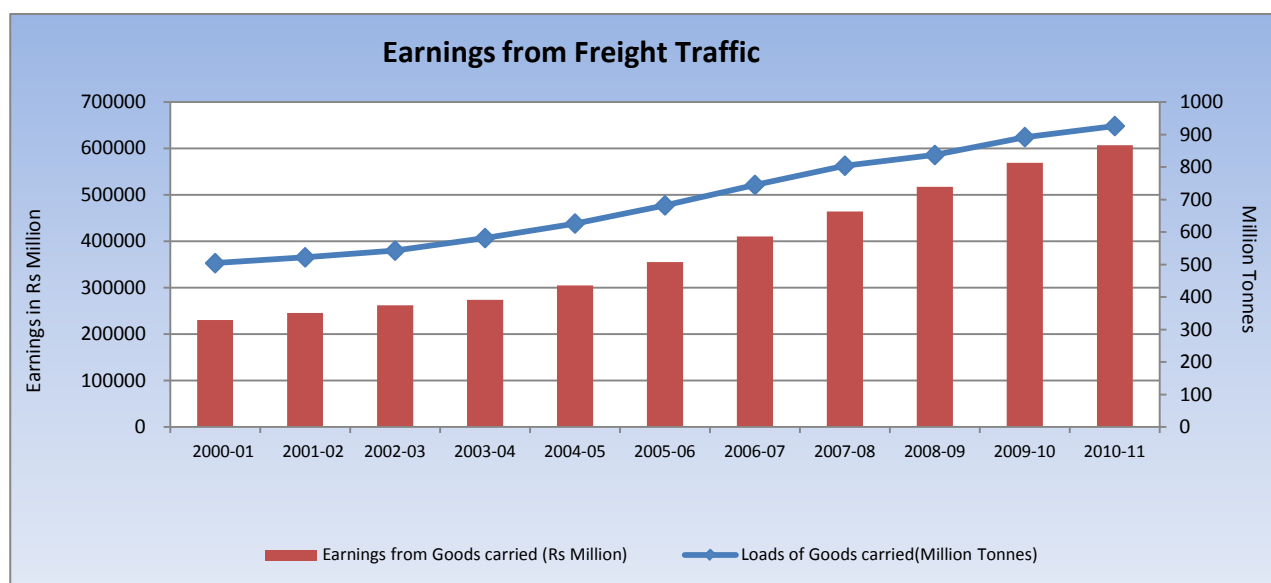


19.15 Traffic Density: Huge increase in traffic, both passenger & freight, has been observed in case of Indian Railways. Growth in traffic has outpaced the growth in infrastructure, resulting in increased traffic density. Railways has been converting more & more Narrow gauge and Meter Gauge lines into Broad Gauge increasing its share from about 72 % in 2002-03 to 87% in 2012-13. Between 1950-51 and 2010-11, traffic density (million GTKMs. per running track km.) increased from 4.29 to 24.29 on Broad Gauge. Broad gauge, though forming 87.3 % of the route, generated 99.9% of the freight output (NTKMs) and 98.3 % of the passenger output (PKMs).



19.16 Earnings: Passenger earnings in 2012-13 were Rs 31,322.84 crore. This was Rs 3,076.41 (10.89%) higher than the earnings in 2011-12. Suburban traffic contributed 6.42% to the total earnings. The remaining 93.58% came from non-suburban passengers. Earnings from Second and Sleeper Class Mail/Express passengers comprised 51.54% of the total passenger earnings. The freight earnings went up from Rs 67,743.62 crore in 2011-12 to Rs 83,478.83 crore in 2012-13, registering a growth of 23.23%





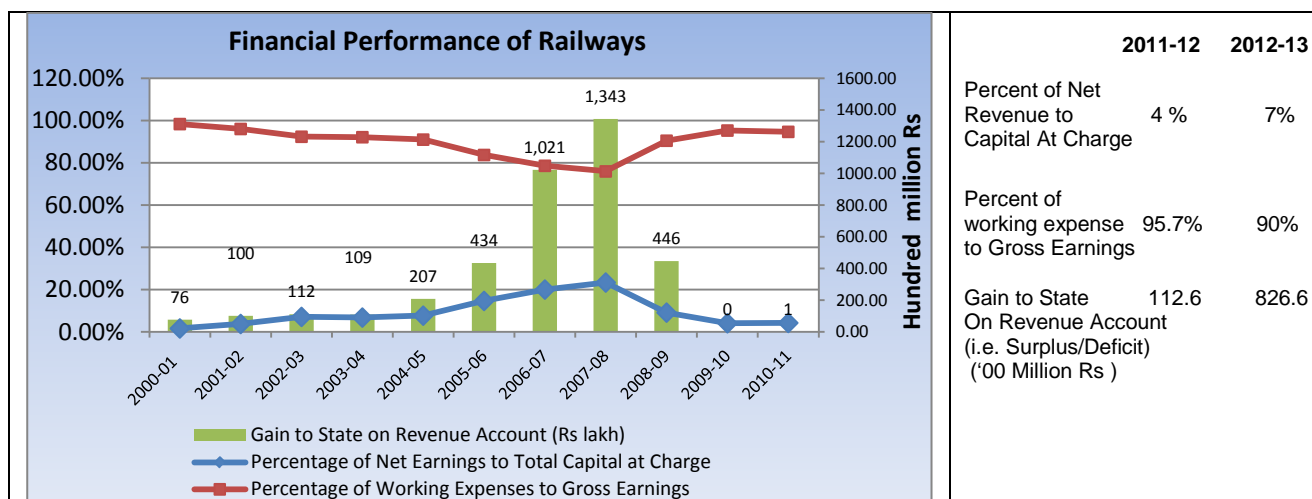
19.17 There was no proposal for any across the board increase in freight rates in the Railway Budget for 2012-13. However, measures were taken to rationalize the freight structure. Nevertheless, average rate charged per tonne km increased from 101.5 paise during 2011-12 to 120.7 paise during 2012-13. W.e.f 1st April 2012, the passenger fares of first class, Ac 2 Tier and First AC/Executive Classes were increased by 10, 15 and 30 paise per kilometre, respectively. During 2012-13, the average earning per passenger kilometre was 28.52 paise in 2012-13 as against 27 paise in 2011-12.

Performance Parameters

19.18 **Productivity:** The following table shows the indices of growth of traffic output vis-à-vis inputs:

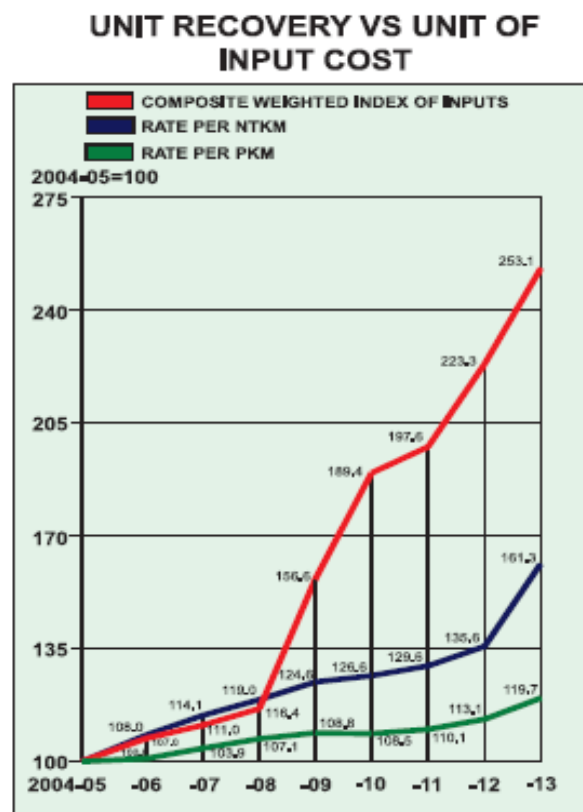
Year	Indices of Growth of Traffic Output and Inputs (1950-51=100)						
	Traffic Output Indices		Investment Input Indices				
	Freight traffic (NTKms) (Rev+ Non rev.)	Passenger traffic (Non-suburban passenger Kms.)	Wagon capacity	Passenger coaches	Route Kms.	Running track Kms.	Tractive effort of locos
1950-51	100	100	100	100	100	100	100
1960-61	199	110	152	154	105	107	144
1970-71	289	159	226	188	112	121	178
1980-81	359	279	269	210	114	128	201
1990-91	550	394	278	219	116	133	192
2000-01	715	614	246	254	118	138	233
2009-10	1,363	1,288	299	332	119	147	322
2010-11	1,420	1,403	294	344	120	147	343
2011-12	1,516	1,505	311	356	121	151	362
2012-13	1,570	1,588	325	367	122	153	389

19.19 Financial Performance: Revenue from Freight accounted for 68.82% of Gross Earnings. Passenger Earnings constituted 25.28% of the Gross Earnings, of which 6.42% was from Suburban Services, 80.49 % from Express Long distance and 13.09 % from Ordinary Short Distance traffic. Bulk freight like coal, ores, iron & steel, cement, foodgrains, fertilizers, POL products, limestone, dolomite, stones other than marble, salt and sugar contributed 88.87 % of the total goods earnings, while commodities other than the above accounted for 9.04%. Various parameters like percentage of Net Earnings to Total Capital at Charge, Percentage of Working Expenses to Gross Earnings & Gain to State on Revenue Account indicated significant improvement during 2004-05 to 2007-08 and a decline thereafter. However, during 2012-13 railways again recorded excess of Rs 8266 Cr as its earnings far exceeded its total working expenses.



With a view to reduce the burden on common man passenger fares and freight rates on products for mass consumption were kept low.

(Base 2004-05=100)	2011-12		2012-13	
	Revenue Index	Cost Index	Revenue Index	Cost Index
Unit Revenue:				
Average receipt per pkm	113.1		119.7	
Average receipt per ntkm	135.6		161.3	
Inputs:				
Average annual wage per employee @		288.6*		333.4
Diesel (H.S.D.)		164.5		183.6
Electricity (Railway traction)		116.2		125.2
Transport equipment and parts		124.6		129.8
Non ferrous metals		157.1		160.9
Electrical machinery, equipment & battery		129.7		133.0
Lub. Oil		230.4		244.6
Manufactured products		139.5		147.1
Ferrous metals (Ferro Alloys)		147.7		156.3
Composite weighted index of inputs		223.3		253.1



19.20 **Terms & Definitions:**

- **Capital at Charge:** Book value of the capital assets of Railways.
- **Route Kilometers:** This represents the length of the railway routes open for traffic at the end of each year. In calculating the length of the route, double or more than double lines are counted only once.
- **Gross Earnings and Working Expenses:** This represents total earnings and expenses of Railways in an accounting period irrespective of whether or not the earnings have been realised or expenses paid. Gross earnings include all earnings from passenger traffic, goods traffic, parcels, luggage and other miscellaneous sources of revenue, while working expenses include all expenses incurred for maintenance of structural works, supply of loco power, carriage and wagon stock, ferry steamers and harbors as well as the expenses of traffic departments, general electric service departments and other miscellaneous expenses.
- **Train Kilometers:** This represents the kilometers run by trains carrying passengers or goods or both as well as the kilometers run by empty trains. No deduction is made for departmental trains.
- **Number of Passengers and Metric Tonne carried:** The figures represent the number of passengers and weight in metric tonne of goods, originating on all Railways, treating passengers traveling or goods carried over two or more Railways as single journey.
- **Passenger Kilometers and Net Tonne Kilometers:** These figures represent the real indices of the volume of passengers and goods traffic handled. These are arrived at by multiplying the total number of passengers carried and the total tonnage of goods carried by the respective number of kilometers, over which they are moved.

19.21 **Source of Railway Statistics :** Indian Railway is a state owned public utility of Government of India under the Ministry of Railways. The Ministry brings out various publications including the Indian Railways Year Book which contains information on railway network- zone wise and all India, railway infrastructure & expenditure thereon -track & bridges, electrification, signal & telecom, rolling stock, traction etc , passenger business & freight operations, asset utilization etc.

References:

- International Union of Railways, UIC Website (Online Statistics -Synopsis 2013).
- Indian railways Year Book 2012-13