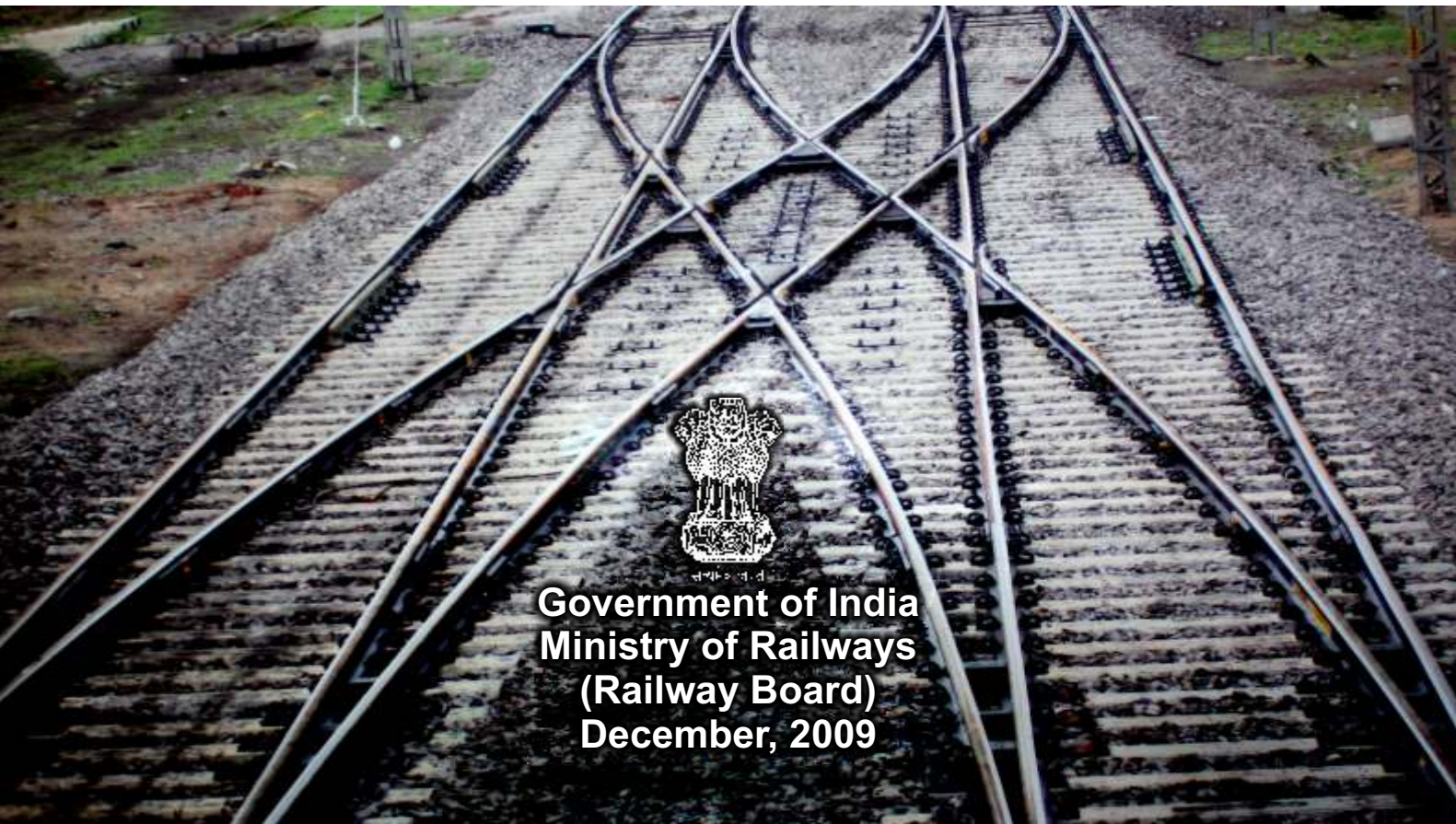
WHITE PAPER
ON
INDIAN RAILWAYS



Government of India
Ministry of Railways
(Railway Board)
December, 2009

WHITE PAPER
ON
INDIAN RAILWAYS

Government of India
Ministry of Railways
(Railway Board)
December, 2009

FOREWORD

At the time of presenting the Railway Budget for 2009-10, I had assured the Honourable Members of Parliament that I would place before the House a White Paper indicating the Railways' present organizational, operational and financial status based on its performance in the last 5 years.

As promised, I am presenting this White Paper to the House.

This Paper is not a mere status document. Besides giving the basic information on the organizational, operational and financial performance of the Railways from 2003-04 to 2008-09, the document incorporates an analysis of the performance, highlighting the achievements and shortcomings. A strengths, weaknesses, opportunities and threats (SWOT) analysis has been drawn upon conceptually, leading to a useful comparison between Railways globally, allowing benchmarks to be identified against which the Indian Railways' performance can be judged.

As will be seen from this Paper, my intention has been to introspect and analyze. The infirmities that have shown up as a result of the analysis have been outlined in this document.

Our biggest concern today is the financial health of the Railways and the need to generate resources for development and growth of capacity in an inclusive manner. Strategies for upgradation and growth of railway infrastructure as well as improvement of service to the customer, especially for the vast mass of common citizens of our nation whose prime mode of transport is the railways, will be formulated based on the findings of this Paper.

In recent times, financial turnaround of the Railways has been a topic of discussion and debate. An attempt has been made in this Paper to take a dispassionate look at the issue. Honourable Members, and through this august institution the people of the country, can draw their own conclusions from this robust and analytical document.

I hope that this White Paper will help all of us to understand the health of the Indian Railways better so that plans for corrective and constructive action for the future can be drawn.

MAMATA BANERJEE
Minister of Railways

Contents

AT A GLANCE

CHAPTER I

- This chapter gives the basic data relating to the performance of the Railways in the five years from 2004-05 to 2008-09.
- It includes information on the growth in traffic and in infrastructure, on safety, security, punctuality, passenger amenities/services, financial performance and scrap disposal.
- The main finding is that if the generally accepted growth elasticity for transport of 1.25 is applied, the traffic growth performance has been below par for the entire five-year period.
- The rail GDP elasticity achieved has been hovering around only 0.79.
- Contribution of railway industry to the national GDP has remained stagnant at 1.18 during this period.

CHAPTER II

- This chapter undertakes a careful analysis and review of the performance areas covered in Chapter I, among others.
- For the very first time, an attempt has been made to do a SWOT analysis (strengths, weaknesses, opportunities and threats) in a railway performance review.
- In freight, while growth was mainly on account of the boom in the economy, the carrying capacity (CC) of wagons was increased which has a bearing on the wear and tear of track and rolling stock.
- Reducing terminal detention and increasing the maintenance cycles led to better asset utilization but IR was still far from optimizing the operational and efficiency parameters compared to global benchmarks.
- Augmentation of trains and increase in maintenance cycle of passenger rakes enabled capacity creation, but the railways were still unable to meet the additional demand generated by the rapid economic growth.
- There were significant increases in freight rates, including a compounded increase of 44% in food-grains and 35% in fertilizers.

- Even in passenger earnings per passenger-km, there was a compounded growth of 1.27% despite no formal fare increase announcements.
- Losses in passenger operations grew steadily and were almost Rs 14,000 crore in the terminal year of the period.

CHAPTER III

- This chapter addresses the changes in accounting norms and presentation initiated during the last five financial years and analyses implications of these changes on the financial parameters of the Railways.
- The accounts of the Railways of the past five years were intensively studied and analysed with the help of a consultant, who also gave suggestions on making the financial reporting more transparent.
- Though there were only two accounting changes during the last five years, these have contributed significantly in increasing the figures of "cash surplus before dividend".
- These, together with other factors such as inclusion of interest on fund balances and treatment of Special Railway Safety Fund (SRSF), resulted in the cash surplus before dividend getting inflated by Rs 17,006 crore. Reversing these two factors and the accounting changes along with assigning VI Central Pay Commission arrears to appropriate years, the Cash and Investible Surplus before Dividend would appear as under:

	As Presented Earlier	*After Appropriate Adjustments*
Cumulative cash surplus before Dividend	*Rs 88,669 crore*	*Rs 62,364 crore*
Investible surplus	*Rs 66,804 crore*	*Rs 43,221 crore*

- The detailed study and analysis of the accounts by the consultant brought out certain “inadequacies and weaknesses” in the existing accounting system.
- As suggested by the consultant, if appropriation to DRF is taken as part of working expenses, the Cash and Investible Surplus will get modified further as below:

	As presented earlier	*After accounting for appropriation to DRF*
Cumulative cash surplus before Dividend	*Rs 88,669 crore*	*Rs 39,412 crore*
Investible surplus	*Rs 66,804 crore*	*Rs 20,269 crore*

- The consultant has worked out a few new financial ratios using commercial principles which reveal that the best period for Indian Railways financially in the last two decades was not the last five years, but the period 1991-96.

CHAPTER IV

- This chapter discusses the important issues facing the Railways and the options available to tackle them.
- The issues primarily relate to falling market share of the railways, pricing of passenger and freight services and cross-subsidization, capacity creation for moving the traffic likely to be offered by a booming economy and organizational changes.
- Global bench-marks bring out the need for improved efficiency and productivity.
- The large shelf of sanctioned projects and cost escalation continues to be major areas of concern.

CHAPTER I

An Overview of Five Years: 2004-05 to 2008-09

This chapter gives the basic data relating to the performance of the Railways in the five years from 2004-05 to 2008-09. It includes information on the growth of traffic and in infrastructure, on safety, security, punctuality, passenger amenities/services, financial performance, scrap disposal and organizational structure. The main point that comes to the fore is that if a growth elasticity for transport of 1.25[1] is applied, ***the traffic growth performance has been below par for the entire period.*** *The elasticity achieved has been hovering around only 0.79, and the contribution of railway industry to the national GDP has remained stagnant at 1.18.*

1.0 Background

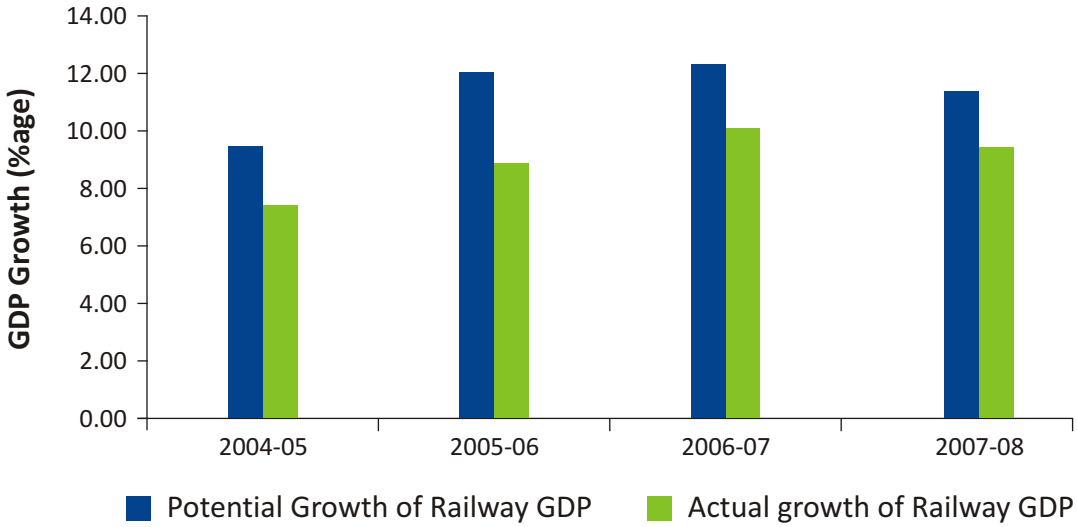
1.1 The Indian Railways, as one of the pillars of India's infrastructure, has a symbiotic relationship with the country's industry and economy. The Railways play a crucial role in the transport of coal, iron ore and raw materials for the manufacturing industry, fertilizers, cement and steel products and food-grain, and in the movement to and from the major ports, as well as the transportation of people. Transport being a derived demand, any growth in the economy fuels the demand for transport.

1.2 Rail transport demand is thus inter-linked with the growth in GDP, especially of those sectors which generate transport volumes through their forward and backward linkages. The Railways' share in the country's GDP, however, has been more or less constant at a level of 1.18 from 2003-04 onwards till 2007-08. The percentage shortfall in railway GDP growth in comparison to the potential growth of railway GDP (based on an expected railway elasticity of 1.25[1]) is shown in the table below:

Table 1: GDP Growth Rates

Year	National GDP growth	Potential Growth of Railway GDP	Actual growth of Railway GDP	Percentage shortfall as per expected elasticity
2004-05	7.47	9.34	7.29	21.9%
2005-06	9.52	11.90	8.76	26.4%
2006-07	9.75	12.19	9.99	18.0%
2007-08	29.01	11.26	9.29	17.5%
2008-09	6.70	8.38	-	-

[1] *World Bank: India's Transport Sector: The Challenges Ahead. Volume II Background Papers, May 2002.*



1.3 The above table and bar diagram suggests that there is a significant gap between the actual growth of railway GDP and the potential growth of railway GDP based on an elasticity of 1.25.

1.4 Empirically, countries like India show a transport elasticity exceeding 1. The elasticity of rail transport to overall GDP for the period from 1970-71 till 2008-09 has been assessed, however, at 0.79.

1.5 The performance of the Indian Railways in the last five years, therefore, has to be seen in the backdrop of the high growth of the Indian economy during the period and the challenges faced by the transportation sector in meeting the accelerated increase in transportation demand. There was much higher demand during the period for both passenger and freight traffic and this demand had to be met largely with the existing infrastructure and resources since rail infrastructure creation, being capital intensive and time consuming, is a long gestation activity. Steps to increase capacity utilization and assets optimization were a logical strategy. The growth in rail traffic led to a significant increase in both passenger and freight revenues during the period which enabled planning for increased investments in infrastructure creation and rolling stock procurement. The Railways also initiated a programme of network capacity augmentation in an attempt to respond to the pressures of the significant growth of GDP.

2.0 Review

2.1 A review of the performance of the last five years from the operational, financial and organizational angles requires a careful analysis not only of the figures but also of the strategies adopted and their efficacy. For an overall appreciation of the current status and the trends, the performance figures of the past five years in traffic, infrastructure creation, safety, financial results and other key areas are detailed below.

3.0 Growth in Traffic

3.1 The figures for freight and passenger traffic, the two major revenue streams of the Railways, are:

Table 2 : Growth in Traffic

	2004-05	2005-06	2006-07	2007-08	2008-09	CAGR (2004-09)
Freight Loading (million tonnes)	**602.12**	**666.51**	**727.75**	**793.89**	**833.31**	
YOY growth	8.02%	10.69%	9.19%	9.09%	4.97%	8.38%
NTKM (in millions)	**407398**	**439596**	**480993**	**521372**	**538226**	
YOY growth	6.9%	7.9%	9.4%	8.39%	3.23%	7.14%
Originating Passengers	**5475.50**	**5832.39**	**6333.73**	**6645.00**	**7046.91**	
YOY growth	5.24%	6.52%	8.60%	4.91%	6.05%	6.26%
Passenger Kilometres	**576608**	**616632**	**695821**	**771070**	**839296**	
YOY growth	6.38%	6.94%	12.84%	10.81%	8.85%	9.14%

The YOY growth of both freight and passenger traffic has to be seen against the shortfall in achieving the expected growth based on accepted transport elasticity norms.

4.0 Growth in Infrastructure

4.1 Capacity augmentation is an on-going process. The figures of expansion of fixed infrastructure and addition to rolling stock are:-

Table 3: Fixed Infrastructure

	Year	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1	**New Lines (km)**	150	180	250	156	357	**1093**
2	**Gauge Conversion (km)**	779	744	1082	1549	563	**4717**
3	**Doubling(km)**	282	231	386	426	363	**1687**
4	**Railway Electrification(km)**	320	170	361	502	797	**2150**

The addition of new lines has averaged a mere 220 kms per year, as compared to the Chinese Railways which has achieved over 1,000 kms per annum.

Table 4 : Rolling Stock **

	Year	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1	Wagons (Four -wheeler units)	19992	18681	21933	22753	24115	**107474**
2	DMUs	36	27	57	33	38	**191**
3	EMUs	145	176	251	193	535	**1300**
4	MEMUs	88	88	64	33	64	**337**
5	Coaches	2623	2684	2881	3101	3193	**14482**
6	Electric Locos (CLW)	90	129	150	200	220	**789**
7	Diesel Locos (DLW)	121	148	186	222	257	**934**

*** Includes figures of replacement of rolling stock*

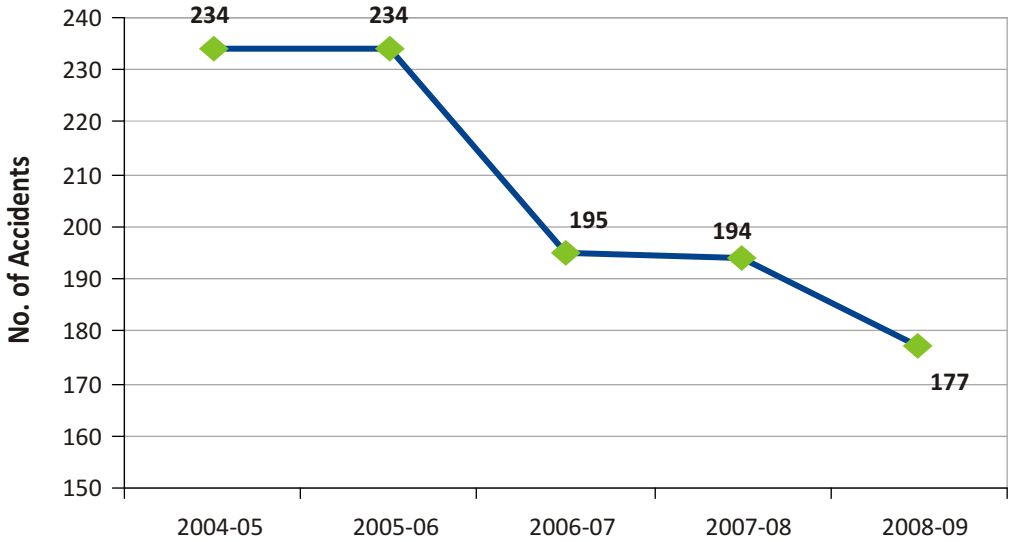
5.0 Safety

5.1 Safety record of the railways in the last five years is:

Table 5: Train Accident Statistics

Year	Collisions	Derailments	LC Accidents		Fire	Misc.	Total	Accidents per Million TKMs**
			Manned	Unmanned				
2004-05	13	138	5	65	10	3	234	0.29
2005-06	9	131	10	65	15	4	234	0.28
2006-07	8	96	7	72	4	8	195	0.22
2007-08	8	100	12	65	5	4	194	0.21
2008-09*	13	85	7	62	3	7	177	0.20

** Provisional ** TKMs – Train Kilometres*



6.0 Security

6.1 Railway Protection Force (RPF) Act and the Railways Act were amended in 2003 for improving passenger security by bringing security of passengers and passenger area at stations within the charter of duties of the RPF. The details of security incidents and action taken during the period are:

Table 6 : Details of cognizable crimes and cases under RP (UP) Act

	2004-05	2005-06	2006-07	2007-08	2008-09
No. of cognizable crimes in trains/railway premises under IPC	20623	18620	17721	18337	15336
No. of Cases under RP(UP) Act	7418	7077	7432	7292	6841
No. of persons arrested	10483	10076	9532	9378	8961

6.2 About 1.4 million offenders were prosecuted under the Railways Act and approximately Rs 30 crore was realized as fines in the year 2008.

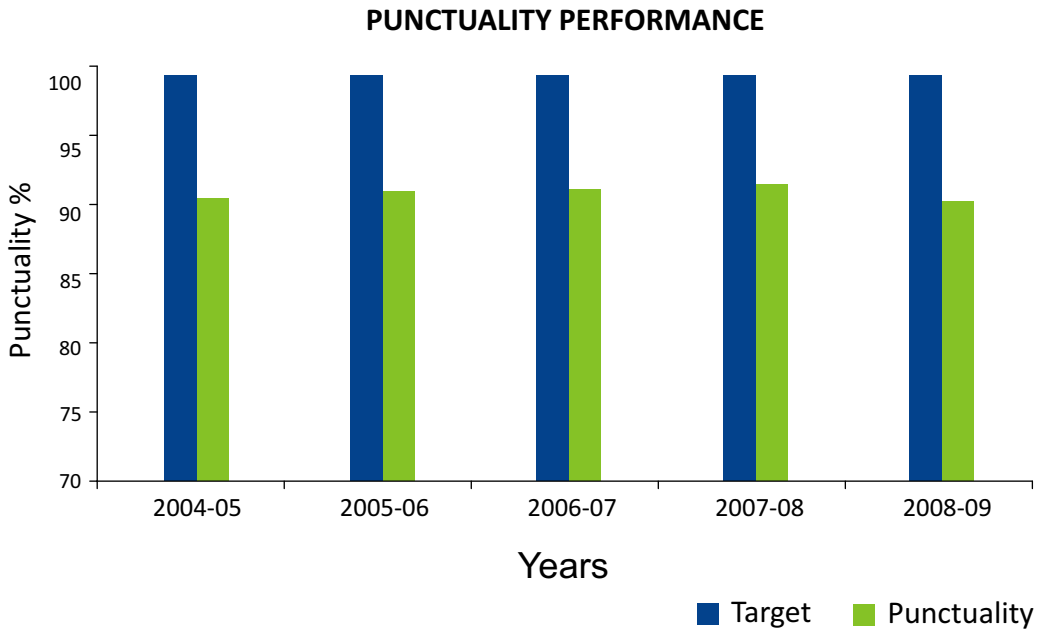
7.0 Punctuality

7.1 The punctuality performance of the Railways during the last 5 years calculated on 'right time terminating' basis and NLT (not lost time) basis is as under:

Table 7 : Punctuality Performance

Year	2004-05	2005-06	2006-07	2007-08	2008-09*
Punctuality Percentage	90.8%	91.2%	91.5%	91.9%	90.6%

** Figures are for April to December 2008 only*



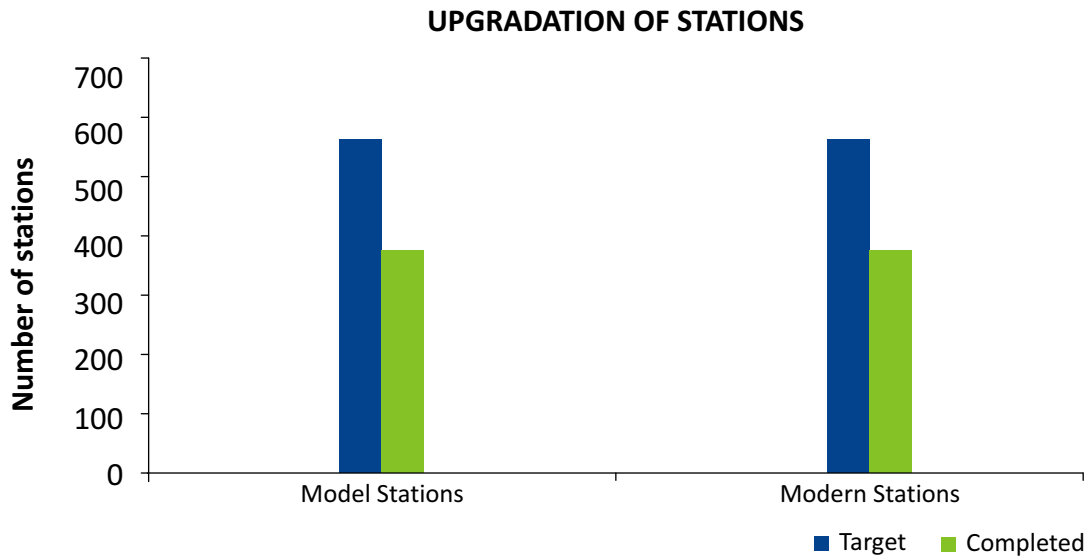
The above data and bar diagram demonstrates that the railways have not been able to achieve significant improvements in the punctuality parameter.

8.0 Passenger Amenities/Services

8.1 Provision of improved and higher level of passenger amenities at stations was planned through identification and development of model and modern stations. All 'A' and 'B' category stations were selected as model stations and out of the 594 such stations identified, upgraded passenger amenities were provided at 373 stations. Out of 637 stations identified to be developed as modern stations, 426 stations have already been modernized. Increase in the number of PRS (passenger reservation system) and UTS (unreserved ticketing system) locations and facility of internet ticketing have also provided benefits to passengers. The year-wise position of passenger amenities/services provided is:

Table 8: Passenger Amenities/Services

	2004-05	2005-06	2006-07	2007-08	2008-09	Total	%age completed
No. of Model Stations	16	24	50	113	81	373	62.8%
No. of Modern Stations			86	169	171	426	66.9%
New PRS Locations	115	101	52	60	27	355	-
UTS locations added	51	405	140	269	358	1223	-
E-tickets/i-tickets issued (in millions)	12.8	25.7	68.2	189.1	439.4		
E-tickets/i-tickets as % of total tickets issued	1.32%	2.44%	5.31%	12.79%	25.57%		

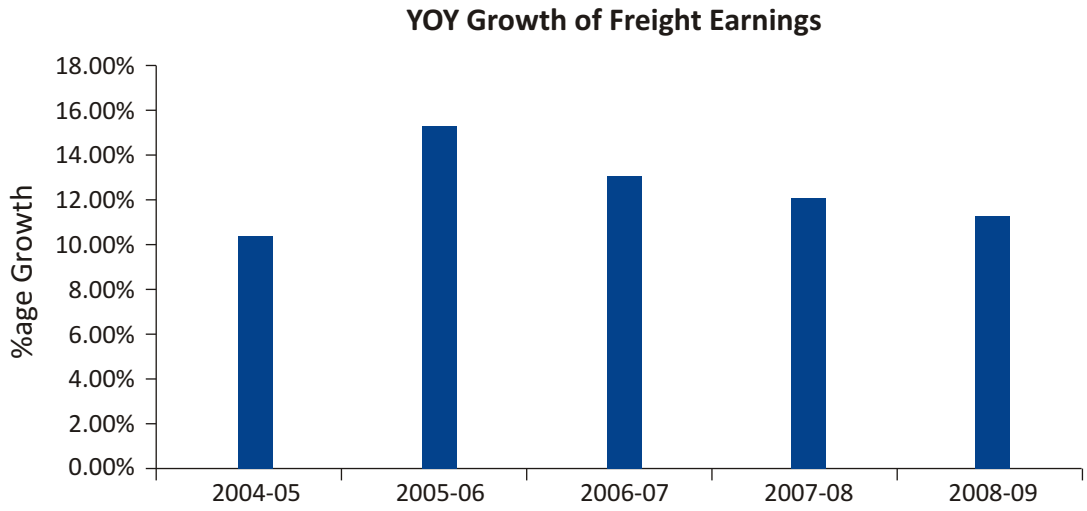


8.2 The above data and bar diagram suggests that there is a shortfall in the completion of upgradation of stations compared to targets. Even if one were to assume a proportion of this target would fall under 'work in progress', there is still a reason for concern.

9.0 Financial Performance

Table 9 : Earnings & Expenditure (Rs in crore)

	2004-05	2005-06	2006-07	2007-08	2008-09	CAGR (2004-09)
Freight Earnings	**30778**	**36287**	**41716**	**47435**	**53434**	
YOY growth	11.44%	17.90%	14.96%	13.71%	12.65%	14.11%
Passenger Earnings	**14113**	**15126**	**17225**	**19844**	**21931**	
YOY growth	6.12%	7.18%	13.87%	15.21%	10.52%	10.52%
Other Coaching	990	1153	1718	1801	1972	16.4%
YOY Growth	7.4%	16.4%	49.0%	4.8%	9.5%	16.4%
Sundry Earnings	1157	1839	1711	2565	2500	20.0%
YOY Growth	15.3%	58.9%	-6.9%	49.9%	-2.5%	20.0%
Total Earnings	**47038**	**54405**	**62370**	**71645**	**79837**	
YOY growth	9.79%	15.66%	14.64%	14.87%	11.43%	13.26%
Ordinary Working Expenses including Pension	**40059**	**41970**	**44849**	**49012**	**64839**	
YOY growth	8.59%	4.77%	6.86%	9.28%	32.29%	11.94%
Plan Expenditure	**15422**	**18838**	**25002**	**28980**	**36336**	
YOY growth (in%)	15.14	22.15	32.72	15.91	25.38	22.09%
Operating Ratio	**91.0**	**83.2**	**78.7**	**75.9**	**90.5**	



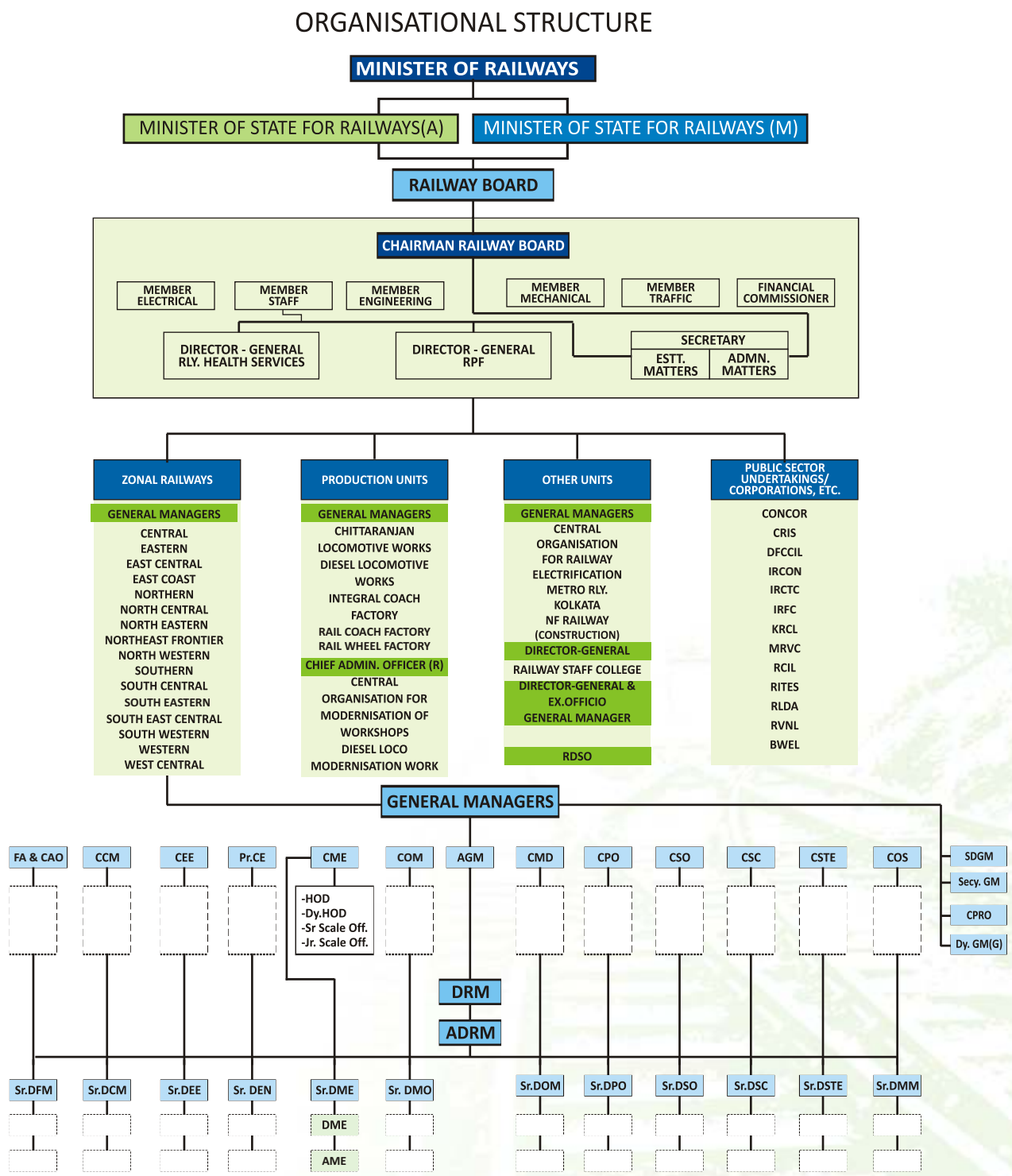
9.1 It will be seen from the above bar graphs that after a sharp rise in 2005-06, growth of freight earnings has declined from year to year, while passenger growth showed a decline in 2008-09.

10.0 Summary of Scrap Disposal 2004-05 to 2008-09

Table 10 : Details of Scrap Disposal

	Category	2004-05	2005-06	2006-07	2007-08	2008-09
Rails	Quantity in MT	70615	5361.00	276576	445793	364344
	Value in Rs. cr .	120.38	5.90	466	863.62	887.92
	Average rate Rs. Per MT	17047.37	11005.40	16848.89	19372.66	24370.37
P.Way	Quantity in MT	204061	341061.00	279506	366880	376418
	Value in Rs. cr.	290.51	495.50	429.5	663.58	832.67
	Average rate Rs. Per MT	14236.43	14528.19	15366.39	18087.11	22120.88
Other Ferrous	Quantity in MT	166742	345684	320656	335063	315598
	Value in Rs. cr.	244.87	540.23	495.59	638.2	709.2
	Average rate Rs. Per MT	14685.56	15627.85	15455.50	19047.16	22471.62
Non Ferrous	Quantity in MT	12757.00	15249	16216.00	15467.2	15496
	Value in Rs. cr.	65.68	98.1	117.00	161.01	134.69
	Average rate Rs. Per MT	51485.46	64332.08	72150.96	104097.70	86919.20
Wagons	Quantity in FWU	16091	14121	14073	19415.70	15453.00
	Value in Rs. cr.	188.35	144	178	239.61	212.86
	Average rate RS. Per FWU	117053.01	101975.78	126483.34	123410.43	137746.71
Coaches	Quantity in No.	1196.00	1023	1304	1492	1121
	Value in Rs. cr.	32.86	19.2	26.7	36.98	44.72
	Average rate Rs. Per No.	274749.16	187683.28	204754.60	247855.22	398929.52
Locos	Quantity in No.	129.00	102	123.00	150	142
	Value in Rs. cr.	10.19	6.2	9.03	22.65	14.28
	Average rate Rs. Per No.	789922.48	607843.14	734146.34	1510000.00	1005633.80
Misc	Value in Rs. cr.	79.16	54.87	110.18	110.35	168.39
Total Value in Rs. Cr.		**1032.00**	**1364**	**1832.00**	**2736**	**3004.73**

11.0 Organizational Chart



CHAPTER II

An Analysis of the Years 2004-05 to 2008-09

This chapter undertakes a detailed analysis and review of the performance areas covered in Chapter I and attempts to examine the strategies followed to achieve growth in traffic. For the very first time, an attempt has been made to do a SWOT analysis (strength, weaknesses, opportunities and threat) in a railway performance review. In freight, while growth was mainly on account of the boom in the economy, an effort was made to translate this natural stimulus into growth by increasing the carrying capacity (CC) of wagons. This, of course, has a bearing on the wear and tear of track and rolling stock. Reducing terminal detention and increasing the maintenance cycles led to better asset utilization but IR was still to fully optimize the operational parameters.In passenger traffic, augmentation of trains and increase in maintenance cycle of passenger rakes enabled capacity creation, but the railways were unable still to meet the demand generated by the unprecedented economic growth.During the five year period, there were significant increases in freight rates including a compounded increase of 44% in foodgrains and 35% in fertilizers. Even in passenger earnings per passenger-km, there was a compounded growth of 1.27% despite no formal fare increase.

Losses in coaching operations grew steadily and were almost Rs 14,000 crore in the terminal year of the period.

1.0 Background

1.1 There has been an impression in recent years that a significant "turn-around" in railway finances has taken place during the last five years. As seen earlier, a significant part of the increase in freight and passenger earnings was due to the unprecedented growth in the economy. The GDP growth of the economy is once again picking up momentum. Therefore, the Railways will have to be ready to perform their pivotal role as the country's premier mode of transport. The objective of this detailed evaluation, therefore, is to assess the state of readiness of the Railways. Such a review of past performance is necessary to gain insights into railway working and the present state of the network and business. It also throws light on the various issues facing the Railways today, and possible solutions. This review has been done by adopting the method of strengths, weaknesses, opportunities and threats (SWOT) analysis.

1.2 The last five years have been marked by high growth in traffic, both passenger and freight, pushed by the overall economic boom. Freight traffic grew at a CAGR (compounded annual growth rate) of 8.38% and passenger traffic grew at 6.26%. The transportation output by way of net tonne kms and passenger kms

grew at a CAGR of 7.14% and 9.14% respectively during the same period. However, these achievements fall short of the potential arising from the growth momentum. The high growth in traffic led to a 14.16% CAGR growth in freight earnings and 10.92% CAGR growth in passenger earnings. The perception of a "turnaround" during this period emanates from these growth figures. This chapter will analyze these and other performance figures in greater depth.

2.0 Analysis of Freight Traffic Growth

2.1 Freight traffic grew from a level of 557.4 MT in 2003-04 to a level of 833.3 MT in 2008-09, an increase of 276 MT. The main growth was in coal, iron ore and cement traffic. There was a dip in the growth curve in 2008-09 caused by the economic slowdown when the target of 850 MT could not be met and consequently growth was only 4.97% against the 5-year CAGR of 8.38%.

2.2 In meeting the demands generated by the economic upturn, the main challenges faced by the Railways were the constraints of infrastructure, particularly line capacity on busy routes, and terminal detentions. As capacity augmentation is a long gestation exercise, Railways adopted the strategy of intensive utilization of its existing assets and resources and improvisation of its operational and maintenance practices.

3.0 Operational Strategy for Freight Traffic

3.1 The strategies adopted were:

a. Improving wagon mobility and availability by

i. reducing terminal detentions by increasing goods sheds working hours

ii. improving the infrastructure at the goods sheds;

iii. rationalizing maintenance practices by extending the maintenance cycle of closed circuit rakes (CC Rakes) to 35 days/7500 kms from 15 days/4500 kms; introducing "premium" examination at nominated depots with a validity of 15 days

iv. using FOIS (freight operations information system) for better monitoring; complete roll-out of rake management system module enabling on-line monitoring of freight train operations

The above steps resulted in a reduction of average terminal detentions at loading points from 23.17 hrs per rake in 2004-05 to 16.21 hrs in 2008-09. Similarly, terminal detentions for unloading improved from 25.13 hrs per rake in 2006-07 to 18.36 hrs in 2008-09. The average number of trains examined per day reduced from 340 in March 2006 to 238 in March 2009, generating additional rolling stock availability, which helped capture incremental loading of 12 to 15 MT, in a year.

Consequently, the wagon turn-round improved significantly by 18%, i.e. from 6.4 days in 2004-05 to 5.2 days in 2007-08. In other words, the same freight rake was available for loading 70 times per year in 2007-08 compared to 57 times in 2004-05. However, these measures were not able to realize the true potential of the system, commensurate with the growth dynamics.

b. Increasing lengths of trains - BOX-N rake lengths were increased from 58 to 59 wagons and BCN rake length from 40 to 41/42. No significant move, however, was made to operationalise long length freight trains as run in countries such as Australia, Canada and other countries.

c. Increasing the carrying capacity of wagons by:

   i. Increasing axle-load from 20.3 to 22.9, thereby increasing loadability by 10 tonnes per wagon

   ii. Universalizing CC+6 loading except on certain branch lines

   iii. Upgrading 26,000 kms of important routes to CC+8 standard

   iv. Upgrading approximately 4,800 kms of track to 25-tonne axle-load

   v. Inducting new BOXNHL and BCNHL wagons with axle-load of 22.9 tonnes

   Increasing the CC no doubt brought in extra earnings but it exposed the track and rolling stock to the risk of premature deterioration.

   Railways also took a number of preventive measures to ensure that overloading did not take place, including installation of electronic in-motion weigh-bridges for weighing all rakes and wheel impact load detection (WILD) systems to monitor axle loads being exerted by wagons in dynamic conditions. Systems were put in place to ensure that a maximum number of loaded rakes were weighed to detect overloading. Monitoring of track behavior by recording track geometry parameters using track recording cars (TRCs) at least once in four months, procurement and installation of acoustic bearing detectors and finally levy of heavy penalties on customers to discourage overloading were some of the other steps taken.

d. Phasing out of vacuum brake wagons. During the period 2004-09, around 30,000 vacuum brake wagons were condemned, leaving about 33,400 wagons to be condemned in a phased manner.

e. Running of double-stack container trains from 2006 onwards

f. Implementation of a number of identified low-cost high return works such as IBSs, by-passes, electrification of sidings and upgradation of goods sheds.

g. Use of IT in freight operations

   i. Terminal management system (TMS) introduced at 560 locations accounting for more than 75% of originating loading and online generation of RR

ii. Expansion of e-payment facility to cover more than 227 customers accounting for over 30% of freight earnings

h. Opening of the container sector to private players bringing investment in container rakes and in container depots

3.2 That the strategy achieved its goal of using the existing assets more effectively is borne out by the improvement seen in critical efficiency parameters for freight operations like wagon utilization, NTKM per wagon day and wagon turnround (Table 11). Wagon turn-round (WTR), the single measure that encapsulates the overall operating efficiency of the freight system, improved by a CAGR of over 6% per annum. There were several critical parameters, however, such as average speeds of freight trains, locomotive utilization and terminal detention where substantial scope for improvement remained.

Table 11 : Efficiency Parameters

Year	2003-04	2004-05	2005-06	2006-07	2007-08	CAGR (2003-08)
NTKM per Wagon day	**2574**	**2677**	**2960**	**3238**	**3539**	
YOY growth	4.29%	4.00%	10.57%	9.39%	9.30%	7.47%
Wagon Kilometre per Wagon day	**187.8**	**204.4**	**217.5**	**230.1**	**248.9**	
YOY growth	-8.21%	8.84%	6.41%	5.79%	8.17%	3.98%
WTR (in Days)	**6.7**	**6.4**	**6.1**	**5.5**	**5.2**	
YOY improvement	4.48%	4.69%	4.92%	10.91%	5.77%	6.13%

4.0 Commercial Strategy for Freight Traffic

4.1 While the operational strategy was based on increasing the availability of rolling stock to achieve higher loading, the commercial strategy was designed to improve the realization per net tonne kilometre of freight traffic. A number of steps were taken to increase earnings which included simplification of the tariff structure, dynamic demand-based pricing and charging of tariffs which the commodity could bear.

a. **Rationalisation of Freight Tariff structure:** A thorough overhaul of the tariff structure was undertaken including :

i. Reduction in the number of Classes from 59 to 15, with a uniform interval of 'tens' between successive Classes.

ii. Highest Class reduced from Class 300 to Class 200, in stages. For light weight commodities, new Classes LR1, LR2, LR3 and LR4 introduced so as to levy more appropriate rates to lighter goods.

iii. Rationalisation of freight for all traffic booked up to 100 kms.

iv. To-pay surcharge on freight reduced from 10% to 5% for all commodities except coal, for which it was reduced from 15% to 10% with effect from 01.04.2003.

v. Goods Tariff with more than 4,000 commodities was reduced to 21 commodity groups and 4 divisions under a new low-rated tariff line. All commodities, which were earlier having only a wagonload Class, were assigned trainload Class.

vi. The concept of Minimum Weight Condition was abolished and freight charged uniformly on the basis of the notified standardized permissible carrying capacity (PCC) of the wagon.

b. **Dynamic Pricing Policy:** A policy was introduced through which differential tariff was charged to take care of skewed demands during different periods of the year, as well as in different regions. Particularly in the case of iron ore export traffic, this policy led to revisions of freight rates closely linked to market dynamics. As freight constituted only a small part of the total cost of iron ore, this did not affect the consignors/consignees too much, but the railways gained considerably through higher earnings.

c. **Freight Incentive Schemes:** A slew of freight incentive schemes were launched to attract traffic, particularly in traditional empty flow direction and during the lean season. Mini rakes and schemes to facilitate aggregation of traffic into train loads were also introduced. The response by trade and industry to these incentives, however, was not as buoyant as expected.

d. **Additional Charges:** In addition to the freight charges, a number of additional charges such as busy season charge, busy route/congestion charge, development charge and terminal charges were levied on the customers. These charges varied from time to time, and on date they are as under:

i. Busy Season Charge: 5% surcharge on coal and coke group; all other commodities 7%.

ii. Congestion Charge: 20% on traffic to Bangladesh and Pakistan. (This charge, in case of iron ore varied from 21% to 100% between 2006 and 2008).

iii. Development Charge: 2% on all traffic from 1.07.2007.

iv. Terminal Charge: Iron ore traffic, Rs.40 per tonne per terminal; all other traffic Rs 20 per tonne per terminal for traffic handled at railway goods sheds.

e. **Wagon Investment Schemes:** In 2005 Indian Railways introduced the Wagon Investment Scheme (WIS) to encourage Public Private Partnership in procurement of wagons to meet the future growth of traffic. The investor was free to procure even general purpose wagons like BCN, BOXN, BTPN, BRN, BOST, BOBRN and there was no restriction on commodities that could be transported. The scheme envisaged guaranteed supply of certain number of rakes every month to the investors besides giving a concession in freight varying from 7 to 15 years depending on type of stock. In addition, provision for supply of bonus rakes without freight concession was also proposed under the scheme.

The response was encouraging and during the period 2005-08 approval for procurement of 140 rakes was given. So far 93 rakes have already been inducted. Interestingly, more than 99% of the rakes for which permission was granted was for BOXN wagons meant for loading of iron ore in three major clusters on three railways viz., South Eastern, East Coast and South Western Railways. Such large scale induction of rakes under the scheme for a single commodity confined to few iron ore loading points with provision of assured supply put tremendous pressure on the railways making it virtually impossible for the railways to fulfill its commitment of assured supply to WIS customers on the one hand and moving programmed traffic on the other.

Despite the favourable response, Indian Railways were forced to withdraw the scheme without prejudice to all those who had either procured the wagons or had been granted approval. This episode clearly brought out the fact that without resolving its major constraints of line capacity and terminal capacity, railways could not hope to launch a popular scheme and sustain it.

It was not surprising to note that the Liberalised Wagon Investment Scheme which replaced the WIS w.e.f. April, 2008 has its scope restricted to special purpose wagons and high capacity wagons and excludes commodities like coal, coke, ores and minerals including iron ore from the purview of the scheme. The focus is on non-conventional traffic moving in special purpose wagons like bulk cement, alumina and fly ash etc. Though this scheme provides for freight concessions, there being no assurance of guaranteed supply, the response has been tepid with approvals being accorded for only 10 rakes.

f. **Terminal Incentive-cum-Engine on Load Scheme (TIELS):** In order to reduce terminal detentions to rolling stocks at the existing sidings and goods shed by way of investment by the terminal user for augmenting infrastructure like mechanized loading/ unloading, improvement in yard lay out, introduction of round the clock working, etc, this scheme prescribed "engine on load" free time for loading/ unloading operations by providing freight rebate for a period of 10 years to the customers opting for this scheme.

However, after implementation of this scheme, at few locations it was found by audit that the desired result of reduction in detention did not materialize despite the financial incentives given to the customers. In view of the audit observation, the implementation of this scheme has been kept on hold since November 2008.

4.2 As a consequence of these levies, the increase in total freight charges was higher than what was reflected in the rates table, giving customers the feeling that they were being overcharged.

4.3 The commercial strategy gave the desired results as freight earnings grew at a much higher CAGR of 14.16% against the 8.38% growth in loading. Except for POL, the realization per NTKM for all commodities went up considerably. In the case of iron ore, the variation in the earnings per NTKM was as high as 160% between 2003-04 and 2008-09. Even in the case of foodgrains and fertilizers, there was an

increase of 44% and 35% respectively over the period. Overall, freight earnings per NTKM grew at a CAGR of 6.55% during the same period. The commodity-wise details are given in Table 12 below.

Table 12 : Earnings Per NTKM (in paise): 2004-09

	Commodity	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	% var over 03-04
1.	Coal	74.06	81.12	84.68	82.94	84.26	93.78	27%
2.	RMSP	80.27	82.19	97.17	112.59	97.01	101.72	27%
3.	PI & Steel	97.82	99.13	97.85	100.89	104.80	110.96	13%
4.	Iron Ore	70.26	81.74	106.11	126.80	132.98	182.48	160%
5.	Cement	82.93	80.83	86.02	88.80	90.27	95.79	16%
6.	Foodgrains	51.54	47.37	54.55	64.19	68.55	74.36	44%
7.	Fertilizers	58.99	54.93	58.75	70.35	73.47	79.92	35%
8.	P.O.L.	135.55	127.59	126.41	122.90	125.46	128.69	-5%
9.	Other Goods	58.89	62.99	66.82	76.30	76.50	77.27	31%
	Total	71.88	74.84	80.83	85.39	89.04	98.73	37%

4.4 In order to be comparable with the major freight railways like the Chinese Railways, Russian Railways and US Railroads, the Indian Railways need to improve on parameters such as NTKM per wagon day, leads of traffic and productivity indices (see Table in Chapter IV). Even so, IR's strength is in the carriage of bulk cargo over long distances. Coal and iron ore were the major commodities in which there was increased loading and the Railways were able to handle this increase. The fact remains though that IR's poor market share and inadequate total transport output will need to be further addressed.

4.5 In non-bulk goods and in traffic that is time-sensitive, IR was unable to develop more business friendly strategies to attract traffic and cater to it efficiently. Though the container sector was opened to private players, the traffic volumes did not increase to their full potential. There were issues regarding use of Railways' existing sidings, haulage charges and tariff, besides lack of cargo aggregation by the operators and cases of diverting existing traffic of Railways like steel and cement. These factors combined with the general recession led to less than anticipated level of private investment in procurement of new rolling stock and terminals. On the operations front, improvement of carrying capacity of wagons, payload to tare ratio and terminal handling time, continued to be weak areas with scope for improvement.

5.6 In the past 5 years, the Railways were able to use up whatever slack capacity was available in the system and reach a stage where there is now a need to develop additional capacity to handle further incremental traffic. Therefore, capacity on busy freight routes, which are unable to fully cater to the movement requirements, needs to be augmented on an urgent basis and terminals infrastructure further strengthened.

5.0 Analysis of Passenger Traffic Growth

5.1 Passenger traffic grew from a level of 5202.91 millions in 2003-04 to 7,046.91 millions in 2008-09, an increase of 1844.00 millions. Suburban traffic grew by 851.95 millions and non-suburban traffic by 992.05 millions. There was a drop in the growth rate in the year 2007-08. Another significant feature during the five years is the growth in PKMs which was at a CAGR of 9.14% essentially due to an increase in lead of non-suburban traffic from a level of 214 kms in 2004-05 to 229 kms in 2008-09. Passenger earnings during the period grew at a CAGR of 10.52%.

5.2 The main growth in passenger traffic has been in suburban second class passengers, second class mail/express passengers and in second class ordinary. Just as in the case of freight traffic, line capacity constraints and terminal constraints were also felt in passenger train operations. The strategy of intensive utilization of rolling stock and terminals, besides improvising on operational maintenance practices had to be adopted in passenger operations also as capacity creation takes time.

6.0 Operational Strategy for Passenger Traffic

In addition to introduction of new train services, and extensions and increases in frequency of existing train services, the strategies adopted were:

a. Increasing the length of trains up to 24 coaches: 135 pairs of trains were augmented to 23/24 coaches. The overall augmentation of 1,177 pairs of trains generated on an average 2.38 lakh additional berths/seats per day.

b. Extending platform lengths, loop lines and maintenance pit lines for 24/26 coaches.

c. Using PRS system data analysis to reduce coaches from less patronized trains and attaching extra coaches to trains with long waiting lists.

d. Increasing the interval between two examinations of passenger rakes from 2,500 kms to 3,500 kms to release capacity at maintenance depots and make coaches available to traffic for a longer period.

e. Running higher number of special trains to meet temporary increase in demand

f. Introducing new trains like Garib Rath in 2006-07 with higher capacity AC coaches and charging 25% lower fare. So far, 24 pairs of Garib Rath trains have been introduced.

g. Introduction of middle berth in conventional AC 3-Tier and Sleeper coaches of mail/express trains. This has, however, been discontinued due to passenger complaints.

Despite all these measures, the demand for passenger rail transport continued to far outstrip availability of capacity. No strategy was put in place to fully meet this demand in a definite time frame.

7.0 Commercial Strategy for Passenger Traffic

a. **Tariff Policy:** The thrust of the tariff policy during the period was to keep the fares stable, with certain reductions and minimal changes. Some changes made in the fare structure were:

i. Downward revision and rationalization of Rajdhani and Shatabdi Express trains fares in 2003-04 by fixing basic fares at 15% higher than the corresponding class of Superfast Mail/Express trains.

ii. Reduction in Jan Shatabdi Express trains fares in 2003-04 by fixing basic fares at 5% instead of 10% higher than the corresponding class of Superfast Mail/Express trains.

iii. Reduction in Second Class fares by Re 1 both for suburban and non-suburban passenger in 2005-06. Further reduction by another Rupee in 2007 for non-suburban ordinary trains and non-Superfast Mail/Express trains for daily tickets.

iv. Reduction in 2008-09 by another Re. 1 per passenger for non-suburban ordinary trains and non-suburban Mail/Express trains including superfast trains for basic fare up to Rs. 50 and 5% reduction beyond Rs. 50.

v. Re-classification of a number of trains as Superfast resulting in levy of superfast surcharge, although no reduction in running time was achieved for 19 trains. In 2005-06, 13 trains were declared Superfast, 170 trains in 2006-07, 4 trains in 2007-08 and 2 trains in 2008-09.

b. **Tatkal scheme** introduced in 1997 was revised in 2004. The scheme was further revised in 2009 allowing a reduced advance reservation period of 2 days. The Tatkal charges were fixed as a percentage of the fare at the rate of 10% of basic fare for second class and 30% of basic fare for all other classes subject to minimum and maximum charges. In 2008-09, the Tatkal scheme earned Rs 605 crore. Number of seats under the Tatkal scheme increased from 5.6% of the total reserved seats in 2005-06 to 14.2% in 2008-09. This had the effect of reducing seat availability through the normal route inconveniencing the public, but at the same time enhancing passenger earnings without increasing fares.

Table 13 : Tatkal Scheme Statistics

Year	2005-06	2006-07	2007-08	2008-09
Daily Average Passenger Potential (Reserved)	766598	847088	908576	949470
Daily Average Tatkal Passenger Potential	42818	57672	98866	134962
Percentage Tatkal seats to Total Reserved seats	5.6%	6.80%	10.90%	14.20%
Daily Average Tatkal Earning (Rs in crore)	0.34	0.57	1.08	1.66

c. **Dynamic pricing policy** was introduced on 1.04.2007 for passenger fares through which varying discounts were given for busy and lean seasons to attract traffic especially in the upper classes. In popular trains, class-wise discounts indicated for the busy season were applicable throughout the year

d. **Upgradation Scheme:** With a view to optimising the utilisation of available accommodation in trains, a scheme was launched in 2006 to upgrade full fare paying passengers to higher class against available vacant accommodation in all Mail/Express trains having sleeping accommodation.

e. **Frequent Travellers Scheme:** To encourage passengers of higher class to undertake journey by rail, a Frequent Travellers scheme was launched whereby a Frequent Traveller could redeem points earned to get a complementary train trip after a certain number of reward points had accumulated. Till 30th April 2009, 86,348 passengers had registered themselves under this scheme, out of which 47,649 were active users.

f. Expansion of the computerized PRS and the Unreserved Ticketing System (UTS), along with i-ticketing and e-ticketing have been a great convenience to passengers.

g. Launch of the 139 global enquiry system all over India has been a major passenger friendly initiative. With the spread of the coaching information system, it has been possible to provide updated information regarding running of trains. Public grievances, however, continued to be aired regarding inaccurate information being given, especially with regard to the late running of trains.

h. Under Station modernization (Touch & Feel scheme) station have been beautified by improvements to circulating area, façade of station buildings and better lighting at platforms, concourses etc.

7.1 While passenger earnings grew at a CAGR of 10.92% during the period, the tariff policy adopted spared a majority of passengers from any significant increase. It can be seen from Table 14 that in the case of suburban passengers, second class ordinary passengers constituting 93.83% of the originating passengers saw fares decline at a CAGR of 0.32%. In the non-suburban segment, fares for second class (M&E) which account for 35.07% of the PKMs, declined at a CAGR of 1.74%. The fares of second class ordinary segment (34.21% of the PKMs) also declined at a CAGR of 0.53%. The Sleeper Class Mail/Express category (23.37% of the PKMs) fares grew at a CAGR of 3.57%. Thus the fares for an overwhelming majority of passengers rose very minimally or declined.

7.2 A positive step was that the Railways were able to tap the AC-3 tier category for fare increase, where despite an increase in the fare by 10.17% (CAGR), the category grew at a rate of 15% (CAGR).

Table 14 : Growth in Earnings per Passenger kilometre class-wise				
CLASS	Proportion in No. of originating Passenger 08-09	Proportion in Passenger Kilometers 08-09	Proportion in Earning 08-09	CAGR Earning per PKM 2004-05 to 2008-09
Suburban				
First Class	6.15%	6.47%	14.63%	0.77%
Second Class (M&E)	0.02%	0.04%	0.10%	1.55%
Second Class (Ordinary)	93.83%	93.49%	85.27%	-0.32%
Non-Suburban				
AC Ist Class	0.06%	0.17%	1.39%	-0.42%
AC Sleeper	0.50%	1.80%	7.13%	-1.35%
First Class (M&E)	0.04%	0.12%	0.41%	1.95%
First Class (Ordinary)	0.16%	0.08%	0.12%	6.47%
AC 3 Tier	1.24%	4.04%	13.92%	10.17%
Sleeper Class (M&E)	7.48%	23.37%	28.02%	3.57%
Second Class (M&E)	20.96%	35.07%	28.41%	-1.74%
Sleeper Class (Ordinary)	0.25%	0.41%	0.36%	6.50%
Second Class (Ordinary)	68.86%	34.21%	17.88%	-0.53%
AC Chair Car	0.43%	0.73%	2.36%	8.77%

The year-wise details of earnings per PKM are:

Table 15 : Realisation per PKM							
	2004-05	2005-06	2006-07	2007-08	2008-09	CAGR 2004-09	CAGR 1999-2004
Earnings per PKM (Paise)	**24.52**	**24.53**	**24.75**	**25.74**	**26.13**		
YOY growth	-0.04%	0.04%	0.90%	4.00%	1.52%	1.27%	3.03%

7.3 The CAGR of 1.27% increase in passenger fares (Table 14) was despite no direct increase in fares in most classes. This growth, in fact, came from reclassification of trains as superfast, as well as from the Tatkal charges, among others.

8.0 Passenger Security

8.1 The security of passengers on trains and in railway premises is a matter of priority and concern to the Railways, particularly in view of the security situation and law and order environment in different parts of the country. The details of cognizable offences under Indian Penal Code in trains and railway premises and details of the cases and arrests under RP(UP) Act have already been given in Table 5 of Chapter I. It will be seen that there has been a decline in the number of cognizable offences registered as well as the cases and arrests under RP(UP) Act.

8.2 To tackle security threats in trains and railway premises, particularly following the terrorist incident of 26/11 in Mumbai CST, Railways have decided to implement an integrated security system to strengthen surveillance and control of important stations of Indian Railways. This system covers IP-based CCTV surveillance system, access control, personnel and baggage screening system and bomb detection and disposal system. Action for procurement of modern security-related equipment, based on the recommendations of a 'Norms Committee' constituted by Railway Board, was also initiated.

8.3 In addition to the new technology inputs for better security, the system of armed escorts on trains is also being continued and reinforced. On an average, 1257 important mail/express trains and 2329 trains are escorted by RPF and GRP respectively out of a total of over 10,600 passenger carrying trains run daily.

9.0 Catering

9.1 The quality of catering services provided on trains and at stations is very important for the passengers' overall satisfaction and perception of the railway experience. A new catering policy was introduced in June 2004 and further amended twice in 2005 covering stalls, refreshment rooms and onboard services. An important feature of this policy was allotment of minor catering units at important stations through open two-packet competitive bidding system, while at less important stations and stalls reserved for weaker sections of society, the earlier system based on 'calling of applications' was retained.

9.2 The Indian Railway Catering and Tourism Corporation (IRCTC) set up in 2001 launched a number of initiatives during the last 5 years to improve catering services including:

i. Allotment of a total of 697 minor catering units through tendering system.

ii. Setting up of 803 AVM dispensing kiosks to sell branded snacks/beverages.

iii. Setting up of 46 food plazas/fast food units

iv. Commissioning of 17 cell kitchens and 241 new milk stalls

v. Round-the-clock control office for monitoring catering services/complaint redressal. National toll-free number and SMS facilities for launching of complaints.

vi. ISO certification of catering units, professional food safety audits and customer satisfaction surveys.

9.3 There is a wide spread perception that the quality of catering services at present is not up to the expectations of the passengers. The catering policy of the Railways has in the recent years focused on revenue generation and service to the upper class passengers losing sight of the common passengers who constitute more than 95% of the travelling public. Further, the recent policy regarding reduction in the menu and quantities of food served to the passengers, notified in March 2009, was another manifestation of this approach. It is imperative that these policies are reoriented towards providing good quality and affordable food for the common passengers. The earlier practice of making Janta khana and other economy food easily available has to be strengthened.

9.4 The hiving off of the management of catering services to IRCTC has created a duality in the roles and responsibilities in this regards. While passengers expect the Indian Railways to be responsible for all services including catering, Railways do not have any effective say in the fulfillment of these expectations. In order that the catering services are put on a proper keel, the role and responsibilities of the IRCTC vis-a-vis the Indian Railways may have to be redefined.

9.5 There are also issues regarding the cornering of catering licences by a few operators. In order to promote equity and broader participation in the award of catering licences, there is need for a comprehensive review of the existing system.

10.0 Safe, comfortable and environment-friendly passenger coaches

10.1 To enhance the crashworthiness of coaches and to impart anti-climbing features in the event of accidents/collisions, tight lock centre buffer couplers (CBC) have been introduced in about 670 LHB design passenger coaches and 1510 ICF design coaches so far. Besides CBC, other major design features were also conceived for developing a crashworthy coach design following a project study by RDSO and M/s TTCI and from 2007-08 onwards, 430 such coaches have been manufactured. In addition, a number of preliminary remedial measures were initiated to arrest/lower the magnitude of jerks on CBC coach trains.

10.2 Fire prevention measures introduced in coaches include upgraded fire retardant furnishing materials for seats/berths, wall and partition paneling, roof and flooring. A pilot project, automatic fire alarm systems has been provided in one rake of Rajdhani Express for conducting field trials. RDSO has also acquired from French National Railways (SNCF) fire simulation software to provide inputs for further improving safety in coaches.

10.3 Sanitation within the Railway station premises and particularly in the railway platform tracks is an area which has not received adequate attention. One fundamental problem coming in the way of any lasting solution is the toilet discharge on to the station tracks during the halts of the trains. In most advanced railway systems, coaches are designed to prevent any discharge on to the tracks, particularly at stations.

10.4 During the period under review a special initiative to improve cleanliness on trains has been the introduction of a concept of Clean Train Stations. At these identified 27 stations, long distance mail/express trains were given halts of about 20 minutes and cleaned by special mechanized cleaning equipment. Another effort for more effective cleaning of stations has been out-sourcing of station cleaning activities at certain important stations. While these initiatives have made a positive impact for the identified trains/stations, a much wider and comprehensive coverage would be needed to make a visible impact on the entire system.

10.5 Controlled discharged toilet system (CDTS) designed to prevent discharge on track in platform area when train speed is below 30 kmph, was adopted in LHB design of coaches through transfer of technology and has been provided on about 1300 coaches and these will be fitted in all coaches turned out in dedicated rake formations from railway production units. Zero discharge toilet system, including bio-degradation type toilets, retention type toilets and vacuum toilets, are also being procured for conducting field trials to decide the type of environment-friendly toilets to be adopted on coaches of the Indian Railways.

11.0 Losses in Passenger Operations

11.1 Passenger segment is one of the two major streams of business and significant efforts of the Railways are devoted to the satisfactory delivery of passenger services. Despite the outlined strategy and initiatives taken, revenues from passenger services were insufficient to meet the cost of operations and the Railways suffered heavy losses (Table 16). It is through cross-subsidy from freight traffic that the losses in the passenger segment are compensated.

Table 16 : Loss on Coaching Operations

(Rs in crore)

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Earnings	15045.62	15896.26	17420.34	20419.14	22722.01	26088.09
Expenditure	20826.46	23829.47	23986.47	26711.34	30244.46	40045.88
Profit/Loss	-5780.84	-7933.21	-6566.13	-6292.2	-7522.45	-13957.79

12.0 Shortcomings in Passenger Service

12.1 Despite the best efforts of the Railways to provide efficient train services along with several passenger friendly initiatives, a number of problems that are a cause for concern:

a. Punctuality and re-scheduling of trains

b. Congestion at station platforms/concourses/circulating areas/FOBs in spite of expansion/ modernization of stations

c. Constraints of platform length and width particularly of the old stations

d. Slow progress of increasing platform height and cover over platforms

e. Unsatisfactory on-board catering services and lack of good quality bed-roll/linen

f. Lack of cleanliness of trains, platforms and station tracks

g. Ticketless travel and touting

h. Overcrowding on trains especially suburban

i. Security of passengers on trains

j. Slow speed of trains and excess journey time

12.2 Addressing the above weaknesses through new initiatives and higher investments in passenger amenities would, to a certain extent, mitigate the problems.

12.3 The passenger segment is facing increasing competition from better roads and low-cost, no-frills airlines. Railways need to provide an adequate number of faster intercity and medium distance services to face the competition and win back business.

13.0 Infrastructure Augmentation

13.1 Considering the growth in both passenger and freight traffic over the last five years, the biggest constraint that railways face today is of inadequate network capacity and infrastructure. In fact, capacity creation on Railways over the years has not kept pace with the transport output. This is brought out clearly in Table 17. Since 1950-51, route-kilometers has increased by just 18% and track-kilometers by 41% even though in the same period freight and passenger output had gone up by more than 12 and 11 times respectively. As shown in this Table, the increase in infrastructure during the last five years has also been minimal compared to the growth in transport output.

Table 17 : Growth Index of Traffic Output and Inputs

1950-51 (Base year)

	Output		Input				
Year	NTKMs (Rev.+Non Rev.)	PKMs (Non-Sub)	Wagon Capacity	Passenger Coaches	Route Kms.	Running track Kms.	Tractive efforts of Locos
1950-51	100	100	100	100	100	100	100
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
2003-04	871	728	257	272	118	141	252
2007-08	1185	1084	247	311	118	144	292

13.2 During the last 5 years, even though there was an emphasis on expansion of the BG network and line capacity augmentation, the addition by way of new lines, doubling and gauge conversion was a total of only 7,497 kms with the major component being of gauge conversion (4,717 kms). The addition in doubling and new lines has not been very significant and has been below the plan targets set by the Railways. In the case of electrification, the performance was better with 2150 kms of track being electrified during the period. For line capacity augmentation on busy routes, automatic signalling was introduced on 654 route-kms and 128 IBSs were installed.

13.3 Besides the fact that additional infrastructure of track and rolling stock has not kept pace with the increase in traffic output, the other limiting factors are :-

a. Common corridor for both freight and passenger traffic. With freight trains and slow moving passenger trains on the same corridor, it is extremely difficult to run fast passenger services. Further, with the emphasis on passenger traffic (presently 60% of the total train-kms), passenger trains take precedence over running of freight trains. On some of the major trunk routes, introduction of new passenger trains directly affect freight train movement. It is no surprise, therefore, that the average speed of freight trains was only 25.7 kmph in 2008-09.

b. The metre gauge and narrow gauge network, though accounting for 19.2% of the total route kms, contribute only 2% and 0.2% respectively of the total passenger and freight traffic output of IR.

c. Skewed traffic patterns on the Railways, with more than 55% of the traffic moving on the golden quadrilateral and its diagonals, connecting the four metropolitan cities of Delhi, Kolkata, Mumbai and Chennai, and the Delhi-Guwahati route, which form less than 20% of the total IR network. This has saturated the HDN with over two-thirds of the sections showing a utilization of over 100% as shown in Table below.

Table 18 : Line Capacity Utilisation on HDN routes (2007-08)

HDN Route	No. of Sections	Sections having Line Capacity Utilisation			Critical Sections$ (%)
		More than 80%	More than 100%	More than 120%	
Delhi-Howrah	41	11	12	17	**70%**
Mumbai-Howrah	42	10	17	13	**71%**
Delhi-Mumbai	28	5	5	15	**71%**
Delhi-Guwahati via Sitapur-Gorakhpur-Barauni-Katihar	24	12	5	5	**42%**
Delhi-Chennai via Jhansi, Nagpur-Ballarshah	24	2	5	16	**88%**
Howrah-Chennai	17	5	6	5	**65%**
Mumbai-Chennai	25	6	5	10	**60%**
Total	**201**	**51**	**55**	**81**	**67%**

$ Sections having line capacity utilization of 100% or more have been assumed to be critical sections.

d. Limited capacity for production of rolling stock, particularly locomotives and EMUs, which are largely produced in-house.

13.4 Given the highly saturated network and the long leads needed for the creation of capacity through network expansion in new lines or doubling of existing lines, the immediate needs of traffic cannot be met by long-gestation assets creation. Further, the limited resources available for creation of network as well as expansion of traffic facility works has always been a big constraint.

14.0 Renewal and replacement of assets

14.1 Timely renewal and replacement of assets is necessary to ensure that the network works efficiently, with safety and reliability being maintained at high levels. Among the fixed infrastructural assets, track, bridges and signaling equipment are the critical ones.

14.2 Railways in this period cleared most of the backlog of asset replacement using the non-lapsable Special Railway Safety Fund (SRSF) of Rs.17,000 crore set up in 2001 with a view to pulling up the backlog of renewals of track, bridges, rolling stock and signaling gear within a fixed time frame of 6 years. Except for a few works related to replacement/renewal of over-aged bridges, signaling gears and replacement of narrow gauge locomotives, most of the works were completed within the currency of SRSF, the details of which are in Table below.

Table 19 : Renewal and Replacement of Assets

	Year	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1	**Track Renewals (CTR units in kms)**	5566	4725	4686	4002	3841	**22820**
2	**Bridge Rehabilitation (nos.)**	1579	1431	1114	1208	1388	**6720**
3	**RRI/PI/SSI (nos.)**	342	402	411	407	416	**1978**
4	**LED Signals (nos.)**	45	353	440	389	910	**2137**
5	**MACLS (Stations) (nos.)**	323	383	221	249	298	**1474**

14.3 In addition to wiping out the arrears of renewals, modernization of track structure has been achieved by providing 60 kg and 52 kg 90 UTS rails (84% of track), PSC sleepers (82%) and long-welded rails and long rail panels (260 metre length). Further, 12 track-mounted electrically operated lubricators have been procured and 2 rail grinding machines have been ordered for taking action to reduce the wear and tear of rail and wheels. Other measures include development of digital rail testers in place of existing analogue machines and mobile flash butt welding instead of AT welding. Decisions have also been taken to gradually replace switches and crossings by thick web switches (TWS) and weldable cast manganese steel CMS crossings.

14.4 As regards bridges, the progress during the last 5 years in rehabilitation of bridges including distressed bridges is as under:

Table 20 : Rehabilitation of Bridges

Year	Total no. of bridges rehabilitated	No. of distressed bridges completed
04-05	1579	142
05-06	1431	38
06-07	1114	34
07-08	1208	29
08-09	1388	36
Total	6720	279

As a result of the rehabilitation, the number of distressed bridges declined from 228 as on 31.3.2004 to 48 at the end of March 2009.

14.5 Modern technologies have been adopted and pilot projects undertaken for health monitoring of bridges with the assistance of specialized foreign agencies. Two each of mobile bridge inspection units (MBIUs) and non-destructive testing (NDT) equipment have also been given to railways for better inspection and maintenance of bridges. Instrumentation of 85 bridges has been taken up as part of a pilot project to assess the capacity of bridges to carry heavy axle loads in the context of CC+8+2/CC+6+2 tonne wagon movements. In fact, with universalisation of CC+6+2 tonne axle load trains (barring a few sections) and CC+8+2 tonne trains permitted on 26000 route kilometers, many precautions/steps have been taken on these routes. These include initial speed restrictions, physical inspection of all bridges and instrumentation of selected bridges, USFD examination of rails and other machine-based monitoring of track behaviour, use of long rail panels, better welding technologies and monitoring health of wagons through wheel impact load detection (WILD) systems.

15.0 Safety

15.1 Safety record of the railways improved during the last five years. The number of accidents declined from 234 in 2004-05 to 177 in 2008-09 and the number of accidents per million train-kilometers declined from 0.29 to 0.20, details of which are given in Table 5 of Chapter I.

15.2 An analysis of the cause-wise details of the accidents (table below) reveal that the major cause of accidents continue to be human failure, be it failure of railway staff or of the public, particularly at level crossings. The number of cases on account of sabotage has gone up during the period. The setting up of Special Railway Safety Fund (SRSF) of Rs. 17,000 crore in October 2001 was useful for clearing the backlog of renewals of track, bridges, signaling gear and rolling stock. During the 5-year period under review, an expenditure of Rs 9,814 crore was made from SRSF. Significantly, the percentage of accidents due to failure of equipment has gone down during the period.

Table 21 : Details of causes for train accidents

Causes	2004-05	2005-06	2006-07	2007-08	2008-09
Failure of Rly. Staff	119	120	85	87	73
	50.9%	51.3%	43.6%	44.8%	41.2%
Failure of other than Rly. Staff	78	86	84	81	75
	33.3%	36.8%	43.1%	41.8%	42.4%
Failure of equipment	14	8	9	9	0
	6%	3.4%	4.6%	4.6%	0%
Sabotage	4	5	8	7	13
	1.7%	2.1%	4.1%	3.6%	7.3%
Misc.	19	15	9	10	16
	8.1%	6.4%	4.6%	5.2%	9.0%
Total	234	234	195	194	177

15.3 The department-wise responsibility is as under :-

Table 22 : Consequential train accidents (Responsibility)

(Responsibility)	2004-05	2005-06	2006-07	2007-08	2008-09
Traffic	10	5	8	11	11
Mechanical	35	32	23	29.5	28
Engineering	40	43	36	33.5	20
Electrical	9	10	3	4	8
Signal & Telecom	2	3		1	
Combination of Staff	37	35	24	17	6
Other than Railway Staff	78	86	84	81	75
Sabotage	4	5	8	7	13
Combination of Factors	1		1		3
Incidental	16	11	7	8	4
Cause could not be established	2	3	1	2	4
Under Investigation		1			5
Total	**234**	**234**	**195**	**194**	**177**

15.4 A number of steps directly related to improving safety were taken, including track circuiting, installation of block proving axle counters and data loggers, interlocking of level-crossing gates, manning of level-crossing gates, construction of road over bridges etc., during the five-year period, as shown in Table below.

Table 23 : Safety Measures

	Year	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1	Track Circuiting (Locations)	1529	1948	1430	1340	1654	**7901**
2	Data Loggers (no. of stations)	318	455	435	510	574	**2292**
3	BPAC (no. of stations)	199	234	341	357	492	**1623**
4	Interlocking at LC Gate	325	392	366	338	475	**1896**
5	Provision of Telephone LC Gate	380	295	423	212	289	**1599**
6	Manning of LC Gate	190	291	236	227	259	**1203**
7	ROB	19	21	35	34	38	**147**

15.5 An analysis of the accidents at level crossings reveals that 90% of such accidents take place at unmanned level crossings. These account for nearly 70% of all fatalities in train accidents. Railways have taken a number of steps to increase public awareness to avoid such accidents. Railways have taken a number of steps to increase public awareness to avoid such accidents.

15.6 There are 16,976 unmanned level crossings as on 1.4.2009, the State-wise break-up being as under:

Table 24 : Statewise break-up of unmanned level crossings

S.No	States	Number of Manned LCs	Number of Unmanned LCs
1	Assam	409	562
2	Andhra Pradesh	1295	1164
3	Bihar	1010	1012
4	Chhatisgarh	253	228
5	Delhi	52	1
6	Gujarat	1517	2621
7	Haryana	621	305
8	Himachal Pradesh	50	55
9	Jammu & Kashmir	21	11
10	Jharkhand	368	435
11	Karnataka	620	789
12	Kerala	415	98
13	Madhya Pradesh	1207	929
14	Maharashtra	1130	822
15	Manipur	1	0
16	Mizoram	0	0
17	Nagaland	2	0
18	Orissa	400	752
19	Punjab	832	787
20	Rajasthan	1491	1425
21	Tamil Nadu	1291	1156
22	Tripura	16	16
23	Uttar Pradesh	2978	2538
24	Uttarakhand	82	94
25	West Bengal	1157	1167
26	Chandigarh	6	0
27	Pondicherry	9	9
28	Goa	11	0
	Total	17244	16976

During the last ten years, about 3,000 unmanned LC gates have been manned. State Governments' participate in funding of ROBs/RUBs to replace LCs with TVUs more than 1 lakh. The problem of unmanned LCs also needs to be jointly tackled by the State Governments and the Railways.

15.7 The anti collision device (ACD), developed by Konkan Railway Corporation Ltd. (KRCL) was approved as a pilot project for Northeast frontier Railway in 2000-01. It was installed on 1736 route kilometers of NF Railway in July 2006. Based on the experience over NF Railway, revised specifications for ACD have been framed. Improved ACD system to the revised specifications is to be developed by KRCL and this is planned to be installed for trial on three Railway Zones (Southern, South Central and South Western Railways) covering 1600 route kilometers. Further proliferation of ACD on Indian Railways will be planned based on performance evaluation of the equipment with improved specifications on the Southern, South Central and South Western Railways.

15.8 The details of asset failures that have safety implications, but have not caused accidents, during the period are given below:

Table 25 : Asset failure

S.No.	Asset Failure	2004-05	2005-06	2006-07	2007-08	2008-09
1.	Rail fracture	2331	2338	1986	1848	1739
2.	Weld failure	4812	4293	3419	3370	3614
3a.	Hot axle (Wagon)	591	527	509	567	592
3b.	Hot axle (Coaches)	40	45	34	40	53
4.	Signal failure	123752	114587	147966	167831	140852
5a.	$Communication failure (OFC)	0.88	0.70	0.64	0.58	0.77
5b.	$Communication failure (Cable and Overhead Alignment)	1.17	2.33	1.67	3.20	1.27

$ Figures are for Control Circuit Failures expressed as percentage downtime.

15.9 Even though the creation of SRSF to wipe out the arrears of renewal of assets enabled renewals to be more or less current, the above table shows a significant number of asset failures which is a cause of concern. These are indicative of poor maintenance of equipment and installations, lack of adequate training for technical staff, shortage of skilled manpower and inability to adapt to new technology, particularly imported technology. Failure in proper installation of imported equipment and lack of training to operate and maintain the same can also contribute to asset failures and delays in restoration.

16.0 Railway Safety Fund

16.1 A major area of concern continues to be unmanned level crossings and the poor rate of provision of ROBs/RUBs to replace busy level crossings. A Railway Safety Fund (RSF) was created on 1st April 2001 to finance "construction of roads either under or over the railways by means of a bridge and erection of safety works at unmanned level crossings". The RSF is exclusively used for funding construction of ROB/RUBs, manning of unmanned level crossings, inter-locking/provision of telephones at manned gates.

16.2 The position of appropriation to and withdrawal from the Fund since the beginning is as below -

Table 26 : Railway Safety Fund (Rs in crore)

Year	Appropriation	Withdrawal from Fund	Closing balance
2001-02	305	140	392
2002-03	267	164	495
2003-04	436	166	764
2004-05	536	201	1099
2005-06	781	262	1557
2006-07	713	360	1911
2007-08	727	533	2105
2008-09 (Prov)	776	565	2316

16.3 The details of works completed during the past 5 years is as under -

Table 27 : No. of ROB/RUB & LCs

Year	ROB/RUB	LCs manned/upgraded
2004-05	19	190
2005-06	21	291
2006-07	35	236
2007-08	28	227
2008-09	38	259

16.4 With the limited provision of ROB/RUBs as above, a substantial portion of the Fund remains unutilized which is a cause for concern. The slow progress of works of ROB/RUBs and level crossing upgradation/manning despite availability of funds is an unsatisfactory situation which needs to be remedied.

16.5 Even though this is followed up with the State Governments, the progress of provision of ROBs/RUBs is far from satisfactory.

17.0 Financial Status

17.1 As the Railways' finances are separated from general finances, Railways are expected to not only meet its operational expenses along with ever increasing pension commitments but also generate adequate resources for meeting plan investment requirement including asset renewal. Finding resources to finance rail infrastructure has been a subject of several reviews and expert committee reports. A common theme has been that Railways must increasingly rely on internal generation of resources, market borrowing and PPP initiatives since there are limitations on the extent to which the General Exchequer can support Railways infrastructure expansion. A bold new approach for resource mobilization is needed.

17.2 Railways' finances have been through several vicissitudes over the decades. There have been phases of relative buoyancy as well as of insufficiencies. A sustained sound financial performance over a period helps the Railways to not only discharge its dividend liability towards the General Exchequer, after meeting working expenses and pension payments, but also plough back the surplus funds for plan investment in the system.

17.3 Several factors govern the financial health of Indian Railways whose principal revenue earners are freight and passenger business. While a booming economy generating unprecedented demand for rail transport both in freight and passenger movements has been a major contributor to the upswing in earnings in the last 4-5 years, Railway finances have suffered a decline as a consequence of the global slowdown having implications in India, and also with the implementation of the recommendations of the VI Pay Commission and the ever increasing pension bill.

18.0 Earnings of the Indian Railways

18.1 While freight and passenger traffic generate the major portion of earnings, they are supplemented by parcels, luggage and non-traditional sources of earnings such as lease of land, advertisement revenues and other sundries.

18.2 The years spanning 2003-04 to 2007-08 saw unprecedented growth, led by strong economic fundamentals. GDP growth averaged 8.8%, bolstered by a strong growth of plus 9% in the manufacturing, industrial and services sectors. The farm sector too did well. A robust 9.5% growth in mining, electricity and utilities and construction was particularly helpful. These factors reflected in the boom in traffic carried by the railways. Freight earnings are the backbone of IR's revenues, accounting for almost two-thirds of the total earnings. Freight earnings during the period grew at more than 14% per annum.

Table 28 : Freight Earnings and Realisation per NTKM

	2004-05	2005-06	2006-07	2007-08	2008-09	CAGR 2004-09	CAGR 1999-2004
Freight Earnings (Cr)	30778	36287	41716	47435	53433		
YOY Growth	11.44%	17.90%	14.96%	13.71%	12.65%	14.11%	6.71%
Earnings per NTKM (Paise)	75.55	82.55	86.73	90.98	99.28		
YOY growth	4.29%	9.27%	5.06%	4.90%	9.12%	6.51%	0.43%

18.3 Passenger earnings exceeded the growth in passenger kilometers. The passenger earnings grew at a CAGR of 10.52% in the period under review as compared to 9.24% during the period 1999-2004, while passenger kms grew by 9.13%.

Table 29 : Growth in Passenger Earnings and Realisation per PKM

	2004-05	2005-06	2006-07	2007-08	2008-09	CAGR 2004-09	CAGR 1999-2004
Passenger Earnings (Cr)	14113	15126	17225	19844	21931		
YOY Growth	6.12%	7.18%	13.87%	15.21%	10.52%	**10.52%**	**9.24%**
PKMs	**575608**	616632	695821	771070	839159		
YOY Growth	6.19%	7.13%	12.84%	10.81%	8.83%	**9.13%**	**6.02%**
Earnings per PKM (Paise)	**24.52**	**24.53**	**24.75**	**25.74**	**26.13**		
YOY growth	-0.04%	0.04%	0.90%	4.00%	1.52%	**1.27%**	**3.03%**

18.4 The lower CAGR of 1.27% in earnings per PKM during the period under review compared to 3.03% in the previous five-year period is primarily because of no direct increase in fares and in fact reduction in some classes. The higher passenger earnings have resulted inter alia due to increase in passenger capacity in the form of new and longer trains, running of special trains to capture seasonal requirements, longer lead, better passenger services, enhanced reservation fee, realization from Tatkal charges and increase in the period of advance reservation from two months to three months and customer friendly initiatives. However, contrary to impressions, there have been increases in some levies on passengers which have brought in a significant quantum of additional earnings.

18.5 Other Coaching earnings registered a CAGR of 16.4% in the five years ending 2008-09 against a CAGR of 7.3% during the previous five years. Sundry earnings during the period achieved a CAGR of 20%, against 8.6% in the previous five years. The growth in 2005-06 was significantly higher at 58.9% because Rs.500 cr. was realized through a one-time receipt of registration fees for container routes from private firms. The annual growth in 2007-08 had also been high at 49.9% as reimbursement of losses on strategic lines was made a part of sundry earnings from this year, as directed by CAG adding an amount of Rs 637 crore to the year's earnings.

18.6 Sundry earnings represent realizations from advertisement & publicity, lease of railways' land, catering, parking facilities, dividend from Railways' PSUs, re-imbursement of operating losses on strategic lines by MOF, profits earned from works executed for private parties and leasing of optical fibre among others.

18.7 Of the above, there is enormous potential of earnings from utilization of surplus railway land, leasing of Railways' OFC capacity and commercial publicity.

18.8 RLDA was constituted to generate revenues through commercial development of vacant land/air space not required by Railways for its immediate future operational needs. It became functional in January 2007. During the period under review, 129 sites totaling 3,568 acres of railway land were entrusted to the Authority for this purpose. RLDA awarded consultancy contracts for 62 sites to

assess their commercial potential and the optimum product mix. Out of these, reports for eleven sites were finalized and contracts awarded for two sites i.e Sarai Rohilla (Delhi) and Gwalior with an expected realization of Rs 1,052 crore. However, due to economic meltdown, Sarai Rohilla project (which was to yield Rs 1,026 crore) did not take off and Railways have only been able to realize Rs 26 crore from Gwalior. Tenders for another site at Bandra having a potential of more than Rs 3,000 crore had also been invited. However, due to litigation over title of the land, the tender had to be discharged.

18.9 RailTel was setup in the year 2000 to modernize Railway communications network and to commercially exploit surplus capacity in optical fibre. The generation of revenues by RailTel has been much lesser than expectation. Railways have invested more than Rs 320.94 crore as equity and received a dividend of only Rs 8 crore for 2008-09. The full potential of the 10 pairs of fibres which have been earmarked for commercial exploitation, each having bandwidth capacity in excess terabits, has not been achieved. Some of the key areas which RailTel should have leveraged for boosting its revenues are tower business, enterprises VPN business and e-governance projects of Govt. of India. RailTel has not been able to partner with system integrators for providing end to end solutions by utilizing OFC network. It is a service organization but is yet to become market centric.

18.10 Earnings through commercial publicity account for a very small percentage of Indian Railways' earnings. New initiatives taken during the period include publicity in the exterior of Rajdhani/Shatabdi/Mail/Express and EMU trains, in the interiors of trains, and at stations through glow-signs. New concepts of bulk advertising contracts for an entire station/section/division and First-Cum-First-Serve (FCFS) for a short period in the case of new media have been tried out. A new concept of infotainment wherein railway information and entertainment facility are provided to passengers through audio/video CDs/cassettes has also been introduced.

18.11 However, the earnings from commercial publicity have not been significant and are only in the range of Rs 150-160 crore per year. The new initiatives of bulk right contracts and FCFS options have not been successful and generally the extant rules of commercial publicity leave little room for innovation. World over and particularly in urban rail systems, commercial publicity earnings account for a very significant percentage of railways' earnings.

18.12 This untapped potential requires unlocking.

19.0 Working Expenses

19.1 Working expenses are directly related to the running of the railways and represent mainly the expenditure on operating expenses, repairs and maintenance of railway infrastructure, staff welfare and expenses relating to security and payment of interest component of lease charges. These are the first charge on railways revenues.

19.2 During the period under consideration, working expenses of the Railways grew at a lower rate in comparison to earnings except in 2008-09 when there was a considerable jump in expenditure on account of the disbursement of 6th Pay Commission arrears and increased salaries and wages and rates of allowances. This enabled the Railways to generate substantial internal resources to finance plan expenditure after meeting its dividend liability to General Revenues.

Table 30 : Growth in components of Ordinary Working Expenses (Rs in crore)								
	2004-05	2005-06	2006-07	2007-08	2008-09 (Prov)	CAGR 2004-09	CAGR 1999-2004	2009-10 (BE)
Staff Cost	14667	15630	16557	18108	28029	15.6	3.1	33168
Fuel Cost	8763	10201	11258	12122	13847	11.9	10.2	14608
Material Costs	2317	2676	2892	2978	3449	10.1	0.8	4253
Lease Charges	3592	1979	2099	2366	3168	-0.5	7.2	3322
Other Costs	4050	4544	4627	5459	5856	9.1	9.1	7549
Total (Rs in Cr)	33389	35030	37433	41033	54349	12.1	5.7	62900

19.3 With the implementation of the VI CPC, despite all measures to control expenditure, staff costs have increased substantially. The rates of various allowances to the staff have more than doubled. The result has been a significant increase in the percentage of staff costs' share in working expenses from 44% to 53%.

19.4 The additional expenditure on account of payment of arrears of VI CPC, both for wages and pensioners, is estimated at Rs 15,500 crore. With new pay-bands and rates of allowances coming into force, the annual recurring additional expenditure on staff related expenses and pension is estimated at around Rs 12,700 crore.

19.5 There has been a 140% increase in wages and pension liabilities, from Rs. 19,595 crore in 2003-04 to Rs. 47,168 crore in 2009-10. As Government accounts are not maintained on accrual basis, provision for enhanced salaries and pensions as a result of VI CPC though applicable from 1.1.2006, were not made in the accounts of 2005-06 to 2007-08. The implementation of the recommendations for the VI CPC began from 1st September 2008 and the impact of enhanced payment of salaries and pensions along with arrears had to be absorbed in the years 2008-09 and 2009-10.

19.6 During the period under review, the productivity of the employees measured in terms of NTKMs plus PKMs per employee was as follows:-

Table 31 : Employee Productivity					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
PKMs + NTKMs per employee	0.69	0.75	0.84	0.93	1.01

19.7 While man-power productivity has steadily improved over the years, the challenges of the coming years would necessitate much higher levels of productivity.

19.8 Lease Charges during the period shows a decline as principal component of lease charges was separated and taken out of working expenses in 2005-06 to be paid through the capital Demand No 16. However, with the increasing market borrowings through IRFC, the quantum of lease rentals continues to rise at a great pace. The payment of lease charges including repayment of principal component along with the yearly borrowings through IRFC and other sources is:

Table 32 : Lease Payments		
Year	Total Borrowings	Total Lease Payments
2004-05	3041	3592
2005-06	3731	3595
2006-07	4855	3819
2007-08	5364	4043
2008-09	7284	4923

19.9 Fuel bill of the Railways has grown with the increase in traffic output. Major thrust on improvement in passenger amenities during the period led to higher expenditure on electricity, maintenance, cleanliness and operating expenses.

20.0 Pension Liabilities

20.1 The number of pensioners of Indian Railways is around 11.5 lakh, and the pension bill continues to rise every year. The pension liabilities of the Railways are being met through a separate Pension Fund. With the implementation of the recommendations of VI CPC, the requirement of funds for meeting the enhanced liabilities has also increased. Audit had also commented in its Report No. CA-19 of 2008-09 that "appropriation to Pension Fund was not being done on actuarial calculation and appropriation was being made depending upon the likely withdrawal and also the financial position of the Railways."

20.2 According to an actuarial study conducted in 2005, the actual requirement of funds in the Pension Fund was estimated at Rs 5,41,948 crore to make it self-sustaining. As this is a very large sum which is not available for appropriation, Railways have not taken follow-up action on this study. However, appropriate provisioning is being done on an annual basis to meet the yearly liabilities.

20.3 All employees recruited on or after 1.1.2004, however, will be governed by the New Pension System (NPS) that is expected to gradually reduce future pension liabilities.

21.0 Dividend Payment to General Revenues

21.1 During this period, Railways regularly paid their annual dividend dues. It also redeemed the entire deferred dividend liability of Rs 2,473 crore. Cumulative dividend paid in the period spanning 2004-05 to 2008-09 was Rs 20,735 crore, including the deferred dividend.

22.0 Railway Funds

22.1 Even after meeting the increasing dividend liability, the Railways were able to step up appropriation to the Railway funds including Capital Fund (CF), Development Fund (DF) and Depreciation Reserve Fund (DRF).

Table 33 : Appropriation to Railway Funds (Rs in crore)						
	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Appropriation to DRF including interest	2893	3843	4446	5703	7260	24145
Appropriation to DF including interest	1944	2039	2129	2630	1631	10373
Appropriation to Capital Fund including interest	1	4086	8541	11593	3616	27837
***OLWR**	38	43	51	47	48	227
Appropriation to SRSF from Rly Revenues	779	749	818	0	0	2346
Appropriation to RSF from Rly Revenues	132	68	0	0	0	200
Total	5787	10828	15985	19973	12555	65128

**Not a part of Railway Funds but a component of plan expenditure*

22.2 This enabled deployment of internally generated resources of Rs 56,873 crore for plan expenditure between 2004-05 and 2008-09. With the improvement in receipts, funds available with Railways after meeting the working expenses and Pension Fund requirement were much higher during the period under review. The balances increased from Rs 7,785 crore in 2004-05 to Rs 22,279 crore in 2007-08, but came down by Rs 6,625 crore in 2008-09.

22.3 The combined effect of the increase in expenditure on staff and pensioners and shortfall in freight earnings in 2008-09 has led to a depression in the resource generation capacity of the Railways by about Rs. 13,700 crore, thus eroding the profitability of the system severely.

23.0 Plan Expenditure

23.1 Railway Plan expenditure is financed mainly through money from the General Exchequer extended as gross budgetary support (GBS), Railways' internal resources which are transferred to various Railway Funds, namely Depreciation Reserve Fund (DRF), Development Fund (DF) and Capital Fund (CF) maintained in the Public Accounts, and Market borrowings.

23.2 IR has managed to sustain an increase in the Plan size year-on-year, with considerable step-up in the last few years. From the period 1995-96 to 2003-04 the Plan size increased from Rs 6,468 crore to Rs 13,394 crore, an increase of Rs 6,926 crore (107%). However, in the period 2004-05 to 2008-09, the Plan outlay increased from Rs 15,422 crore to Rs 36,336 crore i.e by Rs 20,914 crore (135.6%).

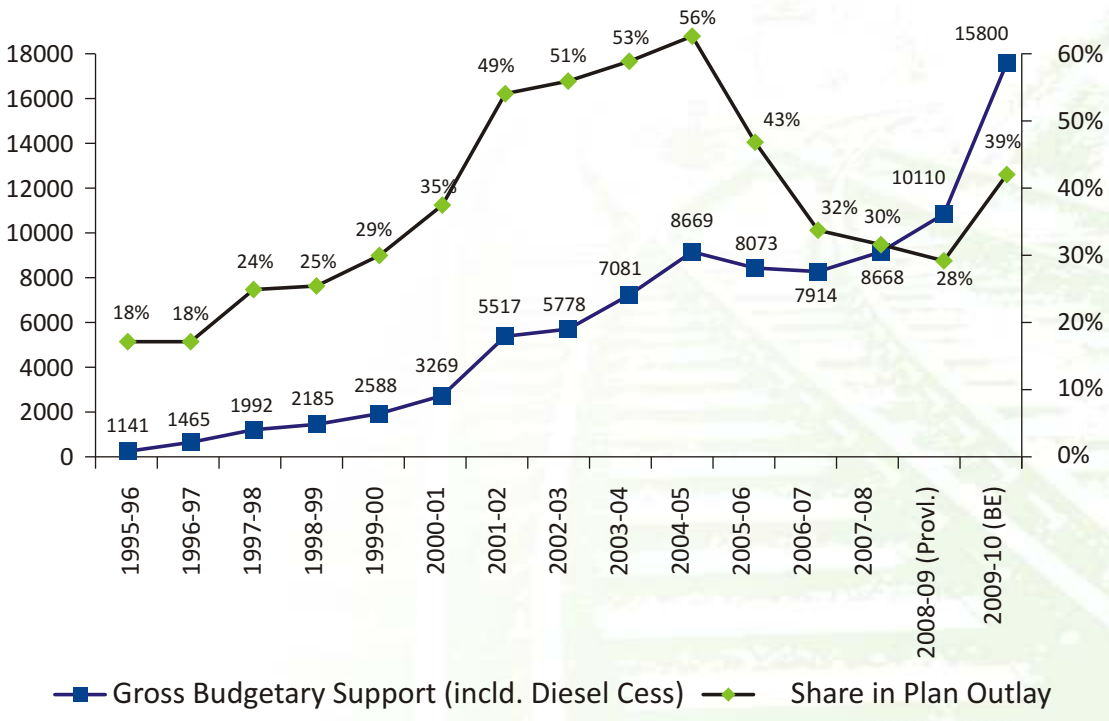
23.3 During the period from 2004-05 to 2008-09, Railways total plan expenditure was Rs 124,578 crore out of which, Rs 43,436 crore was sourced through GBS (35%), Rs 56,868 crore from internal generation (46%) and Rs 24,275 crore (19%) was raised through market borrowings and investments by private players in wagon leasing schemes like WIS.

Table 34 : Source-wise Plan outlay		
Source (Rs in crore)	**1995-96 to 2003-04**	**2004-05 to 2008-09**
GBS including Diesel Cess	31016	43436
Internal Resources	31432	56868
Extra Budgetary Resources	22857	24275
Total	85304	124578

23.4 The share of various sources of financing the plan has varied over the years. During 1995-96 to 2000-01, the share of internal resources and market borrowing dominated plan financing, with GBS at a low level. From 2001-02 onwards till 2004-05, GBS contributed the larger share in Railways' Plan finances. During this period, internal generation levels dwindled and Railways were not able to contribute and spend from the Capital Fund. This was also the period in which the Special Railway Safety Fund (SRSF) was established to infuse funds for replacement of over-aged assets on railways. Starting from Rs 1,000 crore in 2001-2002, total contribution from General Exchequer during this period i.e. 2001-02 to 2004-05 on account of SRSF was Rs 6,925 crore.

23.5 This was followed by the period 2005-06 to 2008-09 when once again internal resources were an important source of financing Railways' Plan outlays. Capital Fund was revived and became a major source of financing capacity augmentation projects including doubling and gauge conversion.

23.6 The trend of GBS since 1995-96 is presented below:



24.0 External Funding of Railway Projects

24.1 Traditionally all external loans for Railway projects from multi-lateral and bilateral sources are received by GOI in the Ministry of Finance, who act as the borrower. The proceeds of the loans are passed on to Ministry of Railways as part of Gross Budgetary Support (GBS), carrying normal dividend liability.

24.2 The ongoing ADB loan of US$ 212.3 million for Rail Sector Improvement Project also follows the GBS route. As the subprojects under ADB funding (except the Accounting Reform project) are implemented by RVNL, loan funds are passed on by MOR to RVNL in the form of equity. The ongoing bilateral KfW/German loan of €94.5 million for Signalling Project (Delhi-Kanpur) is received as GBS through MoF. In the case of World Bank loan of US$ 304.5 for rail projects under Mumbai Urban Transport Project, funds are received through GBS, but instead of dividend liability, surcharge collection on suburban tickets is remitted to MOF towards servicing the WB loan. The utilization of external borrowing component in the past five years is as below:-

Table 35 : GBS & External Component (Rs in cr)

Year	GBS	External Component	EB as %age of GBS
2004-05	8669	13.78	0.16%
2005-06	8073	211.22	2.62%
2006-07	7914	164.81	2.08%
2007-08	8668	299.60	3.46%
2008-09	10110	620.37	6.14%

The above table indicates the increasing share of external component as part of the GBS in the last five years. It also shows that external multi-lateral/bilateral funding can meet only a small part of IR's resource needs, and cannot be the mainstay of IR's growth strategy.

25.0 Market Borrowings

25.1 Out of the total extra budgetary resources of Rs 24,275 crore, raised during 2004-05 to 2008-09, market borrowing through Indian Railway Finance Corporation (IRFC) accounted for Rs 23,461 crore mainly for rolling stock assets. Besides this, limited infusion of funds has taken place through wagon leasing schemes like BOLT, WIS etc. IRFC has so far borrowed Rs. 52,957 crore from the market for creation of rail infrastructure. Interest cost to Railways on their cumulative total outstanding payables to IRFC was a very competitive 9.13% during 2008-09. Besides, the Company has paid dividend of Rs. 1,368 crore to Railways so far. IRFC's borrowings have consistently set benchmarks in low interest cost achieved, equally in domestic and overseas markets. Its business model fully complements requirements of Railways both in terms of tenor and margin charged.

25.2 The level of annual investment by IRFC in rolling stock assets has risen steadily over the years. As a result, lease rentals paid by Railways to IRFC (including the capital repayment component) has gone

up from Rs 3,340 crore in 2004-05 to 4,674.50 crore in 2008-09. Rising cost of borrowing on a growing base of borrowed funds poses a risk factor that could have an adverse impact on the capacity for internal generation of the Railways. In this scenario, higher capital investment in the rail sector calls for higher budgetary support in view of massive investments in the road sector.

26.0 Organisational Structure

26.1 A chart of the organizational structure has been given at para 11 of Chapter I. The Railways are organized on functional/departmental lines. Department-wise details of managerial level posts and total number of officers and staff are given in the Table below:

Table 36 : Departments & Staffing on Indian Railways

Department	Railway Board	Zone	Division	Officers*	Staff**
Civil	Additional Member/Adviser/ Executive Director/Directors/ Jt. Directors	PCE/HODs/Dy.HODs/ Sr. Scale & Jr. Scale Officers	Sr.DEN/DEN/AEN	3450	339034
Traffic	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	COM/CCM/HODs/Dy.HODs/ Sr. Scale & Jr. Scale Officers	Sr.DOM/Sr.DCM/DOM/ DCM/AOM/ACM	1710	266712
Mechanical	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	CME/HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	Sr.DME/DME/AME	1855	322059
Electrical	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	CEE /HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	Sr.DEE/DEE/AEE	1547	162232
Sig. & Tele.	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	CSTE/HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	Sr.DSTE/DSTE/ASTE	1538	66819
Stores	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	COS/HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	Sr.DMM/DMM	975	28219
Accounts	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	FA&CAO/HODs/Dy.HODs/ Sr. Scale & Jr. Scale Officers	Sr.DFM/DFM/ADFM	1419	28209
Personnel	Additional Member/Adviser/ Executive Director/Directors/ Jt.Directors	CPO/HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	Sr.DPO/DPO/APO	815	21916
Medical	DG(RHS)/Executive Director/ Directors/Jt.Directors	CMD/HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	CMS/Sr.DMO/DMO/ ADMO	2557	44348
RPF	DG/RPF/IGRPF/DIG/Director	CSC/HODs/Dy.HODs/Sr.Scale & Jr. Scale Officers	Sr. Commandant (Sr.DSC)/DSC/ASC	422	53537
General				687	21538
Misc.				705	17380
Total				17680	1372003

** sanctioned strength as on 1.1.2009 ** actual strength as on 1.4.2009*

26.2 In the period under review no major organisational changes have taken place except for the creation of two new entities, viz. Rail Land Development Authority (RLDA) and Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL) and the induction of the sick unit, Bharat Wagon & Engineering Ltd., as a railway PSU. Four Special Purpose Vehicles (SPVs) were formed for construction and operations of the following new lines:

i. Angul - Sukinda

ii. Haridaspur - Paradeep

iii. Bharuch - Dahej

iv. Obulvaripallem - Krishnapatnam

In addition, some delegation of powers have been made empowering General Managers and DRMs in the areas of project execution and, purchases. Before further delegation can be considered, it is necessary to review how far have the present delegations been utilised and has helped to speed up project execution and purchases.

27.0 Scrap Disposal

27.1 A summary of the performance of scrap disposal has been given at paragraph 10 of Chapter 1.

27.2 It will be seen that while the earnings from scrap disposal has steadily risen from Rs.1032 crore in 2004-05 to Rs.3004.73 crore in 2008-09, there have been major fluctuations in the average rate obtained for different categories of scrap from year to year. For example, there has been a sudden drop in the value realized for rails, wagons, coaches and locomotives in the year 2005-06 compared to 2004-05. In the case of coaches, the value realized per coach in 2007-08 was lower than three years back in 2004-05. This is an area of concern which needs to be tackled.

CHAPTER III

Modification of accounting norms and presentation: 2004-09

This chapter discusses the changes in accounting norms and presentation that have taken place in the last five financial years and whether the status of finances of the railways was satisfactory or not. It also presents the findings of a reputed consultant from the list of empanelled audit firms of the C&AG, who examined the accounts of these five years and recommended that changes were required in the accounting systems of the railways to make the financial reporting more transparent.

There were only two accounting changes during the last five years, these have contributed significantly in inflating the figures of "cash surplus before dividend", a new way of portraying surpluses generated, introduced in 2007-08. These, together with other factors such as interest on fund balances and treatment of SRSF, inflated the cash surplus before dividend by Rs 17,006 crore. If the pay-outs for the 6th Pay Commission were also to be reckoned on accrual basis, the cumulative cash surplus before dividend would come down from the Rs 88,669 crore claimed to Rs 62,363 crore. Furthermore, in terms of investible surplus, a concept also introduced in 2007-08, the figure would come down from Rs 66,804 crore to Rs 43,220 crore.

The consultant, has brought out certain "inadequacies and weaknesses" in the existing accounting system and have recommended that these be considered at the time of the accounting reforms now underway. One of their recommendations is that appropriation to DRF should be part of the working expenses. Considering this, the cash and investible surplus get reduced to Rs 39,411 crore and Rs 20,268 crore respectively.

Interestingly, the consultant has worked out a few new financial ratios using commercial principles which reveal that the best period for Indian Railways financially in the last two decades was not the last five years, but the period 1991-96.

1.0 Accounting systems on the Indian Railways have evolved over the years along with has the organization. Evolution and improvements of these systems have taken place down the years in the interest of greater transparency and accuracy in the presentation of transactions.

2.0 Examples of such changes include the treatment of subsidy being received on dividend payable by Railways to the General Exchequer and the introduction of the head Demands Recoverable under Traffic Suspense. In the period under review, railway accounts underwent modifications on another two counts.

2.1 Capitalization of the principal component of lease charges paid to IRFC.

2.1.1 Indian Railways borrows money through the IRFC for acquiring rolling stock by the financial lease route. These lease payments have two components, viz principal repayment and interest. Prior to 2005-06, these payments were fully expensed through the Ordinary Working Expenses (OWE). In 2005, Audit observed that Railways should capitalize the principal component of lease charges paid to IRFC under the financial lease arrangement for acquisition of rolling stock as this would correctly add the capital component of the lease charges to the Block Account of the Indian Railways. This change was carried out with the approval of C&AG[2], CGA[3], Ministry of Finance[4] and RCC[5].

2.1.2 Accordingly, the accounts of 2005-06 reflected expenditure on lease payments under two heads - interest component charged to Revenue Grant No. 9 and capital component charged to Grant 16, under a new plan head "Leased Assets - Payment of Capital Component" financed from Capital Fund. The Appropriation Accounts of the Railways from 2005-06 onwards indicate the capital component of lease charges as a part of the total investment on the Liabilities side of the balance sheet and as a part of fixed and floating assets on the Assets side[6]. This resulted in an improvement of Operating Ratio by about 3%. The proposal to modify accounting treatment for lease charges payable to IRFC for rolling stock was indicated in the Budget Speech of Minister of Railways for 2005-06.

2.2 Accountal of re-imbursement of Operating Losses on Strategic Lines

2.2.1 Indian Railways undertakes construction of some railway lines on strategic considerations. These lines are located in the border areas of the country and are critical from the point of view of defense of our borders. Considering that these lines have virtually no scope for earning revenues commensurate with expenditure on operation and maintenance, Railways have been permitted to deduct losses on operation of these lines from the dividend payable to General Exchequer.

2.2.2 Prior to 2006-07, losses incurred by Railways on the working of strategic lines were being deducted from dividend payable to General Exchequer. Keeping in view the need for transparently reflecting the exemption in payment of dividend, in railways' accounts, it was decided that the reimbursed amount will be reflected separately in the accounts of the Railways and Ministry of Finance. The reimbursement amount for these losses is now included as a part of the sundry earnings of the railways and dividend is shown on a gross basis.

2.2.3 This entailed some accounting changes. As the matter was still under deliberation during 2006-07, the amount was taken as a reduction in ordinary working expenses in 2006-07 accounts. This

[2] *Audit's D.O. no. 70-RAIII/12-8/97 dated 17.2.2006.*
[3] *CGA's U.O. notes no. T-14018/18/2005 - Codes/565 dated 6.2.2006 and 21.12.2006.*
[4] *Fifth Report of RCC (2004) on rate of Dividend for 2006-07*
[5] *Fifth and sixth Reports of RCC (2004) on rate of Dividend for 2006-07 and 2007-08 respectively*
[6] *Appropriation Accounts Part I - Review 2005-06*

accounting change led to an increase of Rs 309 crore in the dividend liability of the Railways in 2006-07, with a corresponding reduction in working expenses. This was commented upon in CAG's Report No. CA6 of 2008 (Railways) for 2006-07[7]. Therefore, with effect from 2007-08, it is being credited to sundry other earnings as advised by Audit. The impact of this change on the Operating Ratio of IR was about 0.5%.

2.3 Change in presentation of Financial Performance

2.3.1 In 2007-08, a new page titled 'Statement of Cash and Investible Surplus'-was introduced in the Explanatory Memorandum, in juxtaposition with 'Budget at a Glance'. This was not an accounting change but more in the nature of presentation of financial projections from a different perspective. The background for it is given hereunder.

2.3.2 The dual role of the Indian Railways as a Government Department and a commercial undertaking requires bridging the gap between commercial and government accounting for non-government entities to understand railways' financial health. With the rail sector opening up increasingly for external investment, IR's financial status and strengths needed to be reflected, at least in some measure, also in terms of commercial accounting terminologies. Multi-lateral/bilateral lending organizations, investors, consultants appraising projects offered for public private partnership, credit rating agencies, international lending agencies from whom IRFC raises external commercial borrowing and other entities would then appreciate railways' financial condition.

2.3.3 Accounts of the Indian Railways maintained as per the requirement of Government accounting do not reflect the earnings before interest, taxes, depreciation and amortization (EBITDA), interest earned on Fund balances, subsidy from General Exchequer etc. in a clearly understandable format. It was in this context that the accounting reforms project was proposed under the ADB loan negotiated in 2002 for financing important Railway projects. International consultants appointed for this project pointed out that the Railways' accounts lacked transparency and readability from a commercial point of view[8].

2.3.4 Therefore, in an attempt to reflect railways' finances in commercial accounting terms, it was decided to introduce a new format of presentation of Railway finances indicating the **Cash Surplus before Dividend** and **Investible Surplus** in the Explanatory Memorandum at the time of presentation of the Budget from 2007-08 onwards. It must be mentioned that both these are derived performance indicators. Like EBITDA, the cash surplus before dividend indicates the cash generated by the Railways from operations and other activities including interest earned on Fund balances, reflecting the cash available for making payment of dividend, appropriation to DRF and other funds for investment purposes. The investible surplus was expected to indicate resources generated annually for capex purposes, after fulfilling the dividend liability. A 5-year summary of this new statement is given below:

[7] *Audit's report No. CA 6 of 2008 (Railways) for 2006-07 (pages 3&4).*

[8] *Current state report, Indian Railways Accounting Reforms Project, SFA & Co; E&Y;SR Batliboi & Co; SNCFI; Wipro; S. Murali*

Table 37 : Statement of Cash Surplus and Investible Surplus : 2004-05 to 2008-09 (Rs in cr)

		2004-05	2005-06	2006-07	2007-08	2008-09	Total
1.	Gross Traffic Receipts	47370	54491	62732	71720	79862	316175
1a.	*Add Operating Losses on Strategic Lines*	291	282	309	..	..	882
2.	Misc. Receipts	1676	1824	2054	1557	1797	8908
3.	Total Receipts (1 + 1a + 2)	49337	56597	65095	73277	81659	325965
4.	Ordinary Working Expenses	33389	35030	37433	41033	54349	201234
4a.	*Less Cap. Component of Lease Charges*	-1678	..	..	..	..	-1678
4b.	*Add Operating Losses on Strategic Lines*	..	..	309	..	..	309
5.	Appropriation to Pension Fund	6670	6940	7416	7979	10490	39495
6.	Misc. Expenditure	297	329	417	434	597	2074
7.	Total Expenditure (4 + 4a + 5 + 6)	38678	42299	45575	49446	65436	241434
8.	Interest on Fund Balances	392	580	819	1175	1172	4138
9.	Cash Surplus before Dividend	11051	14878	20339	25006	17395	88669
10.	Dividend Payment	2716	3005	3584	4239	4718	18262
10a.	Add Operating Losses on Strategic Lines	291	282	..	..	..	573
11.	Payment of deferred dividend	483	663	663	664	..	2473
12.	Total dividend payment (10 + 10a + 11)	3490	3950	4247	4903	4718	21308
13.	Less Interest on Pension Fund	96	102	108	131	121	557
14.	Investible Surplus (9 - 12 -13)	7465	10826	15984	19972	12556	66804

Accounting Changes carried out from 2004 to 2008 have been applied in the above table uniformly in all years under consideration to make the figures comparable.

(a) Reimbursement of Operating Losses on Strategic Lines in the year 2004-05 and 2005-06 have been added to Dividend payment to arrive at the Gross Dividend payable in terms of accounting changes indicated at para 2.2 above. Simultaneously,

the corresponding figures have been added to Gross Traffic Receipts as part of Sundry earnings. In the year 2006-07, the reimbursement of Operating Losses on Strategic Lines was credited to Ordinary Working Expenses (OWE). To bring it at par with the change in treatment of operating losses from 2007-08 onwards, the same has been added to OWE with corresponding addition to Gross Traffic Receipts.

(b) The principal component of lease charges payable to IRFC was part of OWE in 2004-05. This element has been deducted from OWE so as to form part of Cash Surplus before Dividend and Investible Surplus in terms of accounting change indicated at para 2.1 above.

(c) As detailed in Appendix XI of Explanatory Memorandum on Railway Budget, Miscellaneous Expenditure also includes expenditure on Open Line Works Revenue and Appropriation to Special Railway Safety Fund. Since these two elements are part of investment expenditure, they have been excluded from the above table and have the effect of increasing the cash surplus before dividend.

(d) Interest earned on Fund balances have been taken as part of the Cash Surplus before Dividend.

2.3.5 As is seen from the table, a cumulative amount of Rs 88,669 crore **Cash Surplus before Dividend** was accrued from 2004-05 to 2008-09. After adjusting Rs 21,308 crore as Gross Dividend to General Exchequer, Railways' **Investible Surplus** worked out to Rs 66,804 crore.

2.3.6 The so-called "turnaround'' of the Indian Railways in recent times has been a subject matter of considerable interest and deliberations both in India and outside. The Investible Surplus generated by the Railways during the period from 2004-05 to 2008-09 has laid to rest the sustained campaign in different quarters for ''unbundling"/privatization of the Railways. While the operational as well as financial performance of the Railways in the past five years period has been satisfactory, doubts have been expressed about the quantum of "cash surplus". Issues which are relevant are:

i. The concept of 'Cash Surplus before Dividend' itself requires a review as dividend is a committed liability of the Railways towards the General Exchequer. Investible Surplus is a better measure of profitability.

ii. Should the interest generated on the Fund balances be part of cash surplus before payment of dividend? Audit in its Report No. CA-6 of 2008 has pointed out the inaccuracy in the Railway accounts for 2006-07 when the interest generated on fund balances was taken as part of Miscellaneous Receipts. This was considered inappropriate by Audit and a 'note of error' was inserted in the Union Government Finance Accounts for the year 2007-08. Though interest is available for plan investments, but so are the fund balances. These are, however, not generated by business operations during the budget year. Hence, inclusion of the interest inflated the cash surplus.

iii. SRSF was created with major funding from General Exchequer and part contribution by Railways through levy of a safety surcharge as Railways were not able to generate adequate resources to meet the urgent renewal requirement normally met from Depreciation Reserve Fund. By excluding appropriation to SRSF from Misc Expenditure, the Cash Surplus before Dividend and Investible Surplus were enhanced to that extent.

iv. Capitalization of principal component of lease charges was introduced at the instance of Audit. However, by excluding it from OWE, it had the effect of increasing the Cash Surplus as well as Investible Surplus to that extent.

2.3.7 Taking into consideration the above points, and if the accounting changes discussed in paras 2.1 and 2.2 above had not taken place, the statement in Table 37 may be presented in a modified form as follows:

Table 38							
		2004-05	2005-06	2006-07	2007-08	2008-09	TOTAL
1.	Gross Traffic Receipts	47370	54491	62732	71720	79862	316175
1a.	*$ Less Operating Losses on Strategic Lines*	..	..	..	-637	-646	-1283
2.	Misc. Receipts	1676	1824	2054	1556	1797	8907
3.	Total Receipts (1 + 1a + 2)	49046	56315	64786	72639	81013	323799
4.	Ordinary Working Expenses	33330	35030	37433	41033	54349	201234
4a.	*@ Add Principal Component of Lease Charges*	..	1616	1720	1677	1765	6778
4b.	*$ Add Operating Losses on Strategic Lines*	..	..	309	..	..	309
5.	Appropriation to Pension Fund	6670	6940	7416	7979	10490	39495
6.	# Misc. Expenditure including appropriation to SRSF	977	1077	1235	434	597	4320
7.	Total Expenditure (4+4a+4b+5+6)	41036	44663	48113	51123	67201	252136
8.	Cash Surplus before Dividend	8010	11652	16673	21516	13812	71663
9.	Dividend Payment	2716	3005	3584	4239	4718	18262
9a.	*$ Less Operating Losses on Strategic Lines*	..	..	-309	-637	-646	-1592
10.	Payment of deferred dividend	483	663	663	664	..	2473
11.	Total dividend payment (9+9a+10)	3199	3668	3938	4266	4072	19143
12.	Investible Surplus (9-11)	4811	7984	12735	17250	9740	52520

N.B. @ By adding back of principal component of lease charges to Ordinary Working Expenses, Investible Surplus decreases correspondingly.
By adding back of safety surcharge to Misc Expenditure, Investible Surplus decreases correspondingly.
$ Change in accountal of reimbursement of the operating losses on strategic lines do not affect the Investible Surplus but increases the Cash Surplus before Dividend.

2.3.8 Government accounting is cash based and not accrual based. The additional financial burden on Railways in the form of enhanced salaries and pension as a result of the implementation of the recommendations of the VI Central Pay Commission do not, therefore, get reflected in the years the liability had actually accrued. The entire impact of arrears of enhanced salaries and pension was borne during 2008-09 and 2009-10. If we take back the impact of these payments to the years they belong, as is done in accrual based accounting, the surplus figures in the above table change as follows:

Table 39

	Rs in crore	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1.	Total Receipts	49046	56315	64786	72639	81013	323799
2.	Total Expenditure	41036	44663	48113	51123	67201	252136
2a.	+/- proportionate share of VI CPC arrears for salaries		1031	4125	4125	-2681	6600
2b.	+/- proportionate share of VI CPC arrears for pension		422	1688	1688	-1098	2700
3.	Revised Total Expenditure (2+2a+2b)	41036	46116	53926	56936	63422	261436
4.	Cash Surplus before Dividend	8010	10199	10860	15703	17591	62363
5.	Total dividend payment	3199	3668	3938	4266	4072	19143
6.	Investible Surplus	4811	6531	6922	11437	13519	43220

2.3.9 With the depletion in the internal resources as a result of the additional financial burden of VI CPC and slow-down in economy, the thrust of the Railways now would be on raising internal resources through improved operating performance, focusing on non-traditional sources of revenue, marketing efforts, cutting down working expenses through austerity measures and avoiding wastages.

3.0 Review of Accounting Structure & Financial Analysis

3.1 As already discussed, accounting in the railways is cash-based, in consonance with Government Accounting Rules (GAR), unlike commercial accounting which is accrual-based. Consequently, in the final presentation of accounts and accounting statements, Railways' accounts do not give a clear picture of current liabilities and assets, in a manner which is transparent and understandable to those outside the Government.

3.2 The demands of the changed traffic scenario in the country, and competition from other modes of transport, necessitated a more market-based approach by the Railways to sell its transportation services to the general public. A need was, therefore, felt to make tariffs competitive, and based on

accurate costs of providing different types of services. Besides, the need was also felt for cost controls to be able to produce transport services at the lowest cost to remain competitive in the market. Both these requirements pointed to the need for changing the existing accounting systems to gear them up to produce cost data required both for tariff fixing and cost controls.

3.3 ADB too felt the need for similar accounting reforms when examining the works financed by their loan for "Rail sector improvement project". They were willing to finance an accounting reforms project from this loan. The basic objective was to modify the accounting structure of the Railways to make the presentation of accounts more transparent and readable by entities such as multilateral lending agencies, credit rating agencies and financial institutions through which IRFC raises funds, which would facilitate Public Private Partnerships in railway projects. This reforms project was, however, required to take into account the changes that would be brought in by the recommendations of the Government Accounting Standards Advisory Board (GASAB), which had been set up in pursuance of the recommendation of the 12th Finance Commission.

3.4 The changes to be brought about through the accounting reforms project and GASAB will, however, take place in the future. Till date, accounting structure and presentation continues to be as in the past.

3.5 Therefore, in order to have a better appreciation of railway accounts so as to ensure appropriate disclosures and consequent transparency in the financial statements of the Railways, and to study the financial performance of the past five years, a reputed consultant from the C&AG's panel of audit firms was appointed.

3.6 Based on their examination of the accounts and accounting systems, the consultant has made the following suggestions:

a) The liability for increased pay is determined as and when the Pay Commission award is declared; but it accrues from a prior date; only its payment stands deferred to facilitate payment. In this regard it was advised:

i. Year-wise adjustments should be made for arrears of VI Pay Commission; thus not in the year in which it is paid but the year to which it relates has been recognized as the charging years (2005-06 to 2008-09) and appropriate disclosure should be made in a transparent manner.

ii. In future, Railways should set up a new fund for salary and pension arrears "Salary and Pension Arrears Fund" and transfer an estimated amount every year from the year in which the Pay Commission is set up and till the time the Pay Commission award is declared. The difference between the amount appropriated to the fund and actual amount payable towards arrears of Salary and Pension should be adjusted in the year in which the award is declared and a proper disclosure in a transparent manner should be made on the lines mentioned in (i) above.

b) To migrate the accounting from hybrid system to accrual system as currently being followed by commercial enterprises. The present hybrid system of accounting does not depict a true and fair view of Income & Expenditure and Balance Sheet items.

c) Currently, provision for depreciation is made by way of Appropriation to Depreciation Reserve Fund, depending upon the likely expenditure on renewals/replacements during the year. This is not a provision for depreciation in the classical sense of the term. The provision for depreciation should be made on scientific and mathematical basis depending upon the assets owned by the Railways. It may be by applying slightly higher rate of depreciation to assets accumulated before 31.03.2000 and a lower rate on all assets from 01.04.2000. A scientific basis should be developed.

d) In case there is any efficiency improvement on renewals/replacements of block assets, the efficiency improvement component is capitalized by Railways. It is generally expected that the efficiency component should only be 10-15% in case of renewals/replacements otherwise, the expenditure is of capital nature and the funds should be drawn from Capital Fund. However, such a criterion or any other scientific criterion is not being currently followed by the Railways. It was observed that efficiency improvement component was on an average 61.2% on the block assets replaced/renewed funded out of DRF during 2001-02 to 2007-08 as against average of 49.7% in 1991-92 to 2000-01. The basis needs to be re-examined for accounting in future.

e) Appropriation to DRF should also be shown as an item of Total Expenses in the Statement of Cash & Investible Surplus in Explanatory Memorandum in the same way as shown in Budget at a Glance.

Considering this suggestion, the derived Cash and Investible Surplus as depicted in modified Table 39 above would be:

Table 40 (Rs in crore)

		2004-05	2005-06	2006-07	2007-08	2008-09	Total
1.	Total Receipts	49046	56315	64786	72639	81013	323799
2.	Total Expenditure	41036	44663	48113	51123	67201	252136
3.	Add Appropriation to DRF	2700	3604	4198	5450	7000	22952
4a.	+/- proportionate share of VI CPC arrears for salaries		1031	4125	4125	-2681	6600
4b.	+/- proportionate share of VI CPC arrears for pension		422	1688	1688	-1098	2700
5.	Revised Total Expenditure (2+3+4a+4b)	43736	49720	58124	62386	70422	284388
6.	Cash Surplus before Dividend	5310	6595	6662	10253	10591	39411
7.	Total dividend payment	3199	3668	3938	4266	4072	19143
8.	Revised Investible Surplus	2111	2927	2724	5987	6519	20268

f) Appropriation to Pension Fund should be on actuarial basis, not on the basis of likely expenditure as is being currently done; it is very substantially underprovided for. It should be disclosed as a "Significant Disclosure Note" until funding is done.

g) Since the dividend payment is akin to payment of interest on capital funds provided by the Central Government, it should be shown as expenditure before arriving at the Net Revenue.

h) The current practice (followed since 2005-06) of capitalizing full principal component only of annual lease rentals to Block Assets Account by withdrawing equivalent amount from Capital Fund should be reviewed in the light of the following:

i. Dichotomy of accounts on accrual basis in IRFC and cash basis in Railways. Whereby the gross value of the asset does not appear in the books of either IRFC or Railways where only installments are booked on payment.

ii. Principal amount of lease rentals are added to Block Assets Accounts irrespective of the fact that rolling stock acquired under lease are being used for renewals/replacements as well as to augment the capacity.

Therefore, it was advised that principal amount of lease rentals that were acquired to augment the capacity should only be added to Block Assets Account and equivalent amount should be drawn from Capital Reserve. Further, principal component of lease rental that are towards renewals/replacements should be forming part of Ordinary Working Expenses.

The past practice (followed until 2004-05) of charging the principal component of lease rentals to Income & Expenditure account was also inappropriate without this bifurcation.

It was advised to work out net impact of not bifurcating this expenditure into capital and revenue, followed with regard to principal component of lease rentals on Income and Expenditure Account and Block Assets Account, and an appropriate disclosure should be made in a transparent manner.

It was also advised that the system of accounting for wagons from IRFC be reviewed as this is a receipt in kind.

3.7 The consultant also suggested that there was a need to use some ratios utilised for analysing the financial performance of commercial entities in order to better appreciate the Railways' performance in the past years. Using the methodology adopted by the consultants, the following ratios based on the financial data of the Railways from 1990-91 onwards, in four block periods, have been worked out.

Table 41 : List of Ratios		
S.No.	Ratio	Formula
I.	Operating Profit Margin	[(Total Earnings) - (Total Working Expenses+/- OWE Suspense)]/Total earnings
ii.	Dividend (to Exchequer) Coverage Ratio (times)	(Net Revenue +/- Traffic suspense & OWE Suspense)/ Current year's dividend Payable
iii.	Return on Capital Employed	[Total Earnings - (Total Working Expenses +/- OWE Suspense)]/Average Capital Employed
iv.	Block Asset Turnover Ratio (times)	Total Earnings/Average Block Account
v.	Employee Cost Turnover Ratio	Total Earnings/Employee cost (times)
vi.	Employee Cost Coverage Ratio (times)	(Net Revenue +/- Traffic suspense & OWE Suspense + Employee cost)/Employee Cost

a. *Total earnings = (Gross traffic receipt +/- Traffic suspense)*

b. *Employee cost = (Staff cost + Appropriation to Pension Fund)*

c. *Average Block Account = Average block account has been computed by summing up opening block account at the start of the block period and at the end of the block period and the arrived sum is divided by 2. Similarly, Average Capital employed is computed.*

Table 42 : Block period-wise Ratios				
	1991-96	**1996-99**	**1999-2004**	**2004-09***
Average Operating Profit Margin	15.47%	9.59%	5.69%	13.66%
Average Dividend (to Exchequer) Coverage Ratio (times)	2.50	1.88	1.24	2.83
Average Return on Capital Employed	8.63%	5.40%	2.94%	6.26%
Average Block Asset Turnover Ratio (times)	0.56	0.56	0.52	0.46
Average Employee Cost Turnover Ratio (times)	2.53	2.13	2.09	2.37
Average Employee Cost Coverage Ratio (times)	1.43	1.23	1.16	1.36

** Accounting changes during the period have been reversed to make them comparable with earlier block periods. Figures for 2008-09 are provisional.*

The above Table reveals that the best period for Indian Railways financially in the last two decades was not the past five years, but the period 1991-96.

CHAPTER IV

Issues and Options

This Chapter discusses the main issues facing the Railways and the options available to tackle them. The issues primarily relate to falling market share of the railways, pricing of passenger and freight services and cross-subsidization, capacity creation for moving the traffic likely to be offered by a booming economy and quality of service. The global bench-marks bring out the need for improved productivity. The large shelf of sanctioned projects and cost escalation continues to be major areas of concern.

1.1 Indian Railways, like other railways in the world, and particularly the major railways, has been facing the problem of declining market share in comparison with other transportation modes. With growing traffic volumes, the issues generally faced by many railways have been the need to provide new types of services in freight and passenger segments, augmentation of the network, provision of higher capacity/high speed rolling stock, reduction of unit cost of transportation and provision of better quality service.

1.2 While critically assessing Indian Railways' performance and considering the options for the future, a comparison with global benchmarks would indicate the ground that the Indian Railways has to cover. A global comparison also brings into focus the critical issues of low fare-freight ratio and cross-subsidisation of passenger traffic by freight on Indian Railways. Funding of a large number of projects that are socially desirable but economically unviable is also an important issue to be addressed. Capacity for speedy implementation of mega projects like the dedicated freight corridor (DFC) project and setting up of new manufacturing units with private investment are also areas of priority for the Railways.

1.3 Before presenting a more in-depth analysis of some of these key areas of concern, a look at the full range of issues faced by the Railways and possible options available would give a better appreciation of the enormous challenges that need to be faced and overcome:

2.0 Issues

2.1 Freight business

- Rail share in freight transport has declined and roadways are a serious threat to railways, particularly with the expansion of the national highway network through the NHDP.
- There is a decline in high return, non-bulk traffic because of the Railways' suitability and focus on train-load traffic.

- Railways are not able to provide time-tabled freight services as available in some countries, thereby not being able to attract traffic that requires guaranteed transit times or fixed schedule transit such as overnight delivery for special consignments.
- Railways have not been able to develop multi-modal logistics parks that could provide aggregation of cargo and door-to-door service; it has not been able to put in place a policy to encourage/facilitate setting up of multimodal logistics parks as in other countries in Europe, Southeast Asia and China.
- Containerised cargo movement by rail is still at a fairly low level of about 25 million tonnes annually and rail share in international container cargo is only about 25%. Consequently, there is regular hold-up of containers in ports.
- Overdependence on a few bulk commodities, which is also facing competition from multi-axle higher capacity trucks. Railways have not been able to adapt efficiently to business other than movement of bulk cargo over long distances.
- Payload to tare ratio of wagons needs to be improved significantly even in its main business of bulk cargo transportation.
- High pricing of freight transport and subsidy for passenger transport.
- Compared to railways which carry larger volumes of cargo than Indian Railways, such as the Chinese Railways, Russian Railways and US Railroads, Indian Railways' average lead of freight traffic, its asset utilization figures like NTKM per wagon day, its manpower productivity figures like NTKM per employee are much lower.

2.2 Passenger business

- Competition from road for shorter journeys and low-cost airlines for upper class travel.
- Lack of a policy for introducing high speed passenger services or separate high speed corridors as in other countries.
- Highly subsidised suburban transport.
- 90% of non-suburban passengers are low-fare paying second class unreserved travellers where Railways does not recover even the basic costs.
- Improvement in speeds of a large number of slow moving passenger trains on main routes which seriously hamper line capacity and affect the running of express trains and freight trains. Such trains account for 70% of non-suburban passengers.
- Capacity constraints in the introduction of trains on popular routes.
- Inadequacy and poor quality of terminal infrastructure. Globally, most countries have modern passenger terminals with excellent passenger amenities.

- Unsatisfactory on-board services, including catering, on trains. Poor condition and cleanliness of passenger coaches.
- Punctuality of trains.

2.3 Infrastructure creation

- Slow progress of network augmentation, including doubling of congested routes.
- Large shelf of sanctioned projects and inadequate funding for time-bound completion. Large number of economically unviable but socially desirable projects on hand.
- Challenges of implementation of national projects in J&K and the north-east region.
- Capacity constraints for implementation of mega rail projects - inability to speedily expand rail infrastructure on a massive scale as in the Chinese Railways.
- Limitation in the capacity of rolling stock manufacturing units. Need for expeditious expansion of capacity and setting up of new manufacturing units to augment capacity.

3.0 Options

3.1 Freight business

- Induction of high capacity and high-speed wagons to reduce unit cost of operations. Present payload to tare ratio which is 2 - 2.5 needs to be increased to at least over 3.5.
- Setting up of private freight terminals and commodity specific terminals by adequate incentivisation.
- Liberalisation of private siding rules to establish multi-user sidings and incentivisation of private sidings through freight concessions, preference in allotment and supply of wagons and revenue sharing.
- Induction of special types of wagons for bulk movement of commodities such as cement, fly-ash and food-grains.
- Incentives for promoting port connectivity.
- Attracting new streams of traffic like fly-ash, exploiting the full potential for automobile traffic by design and development of special types of wagons.
- Incentivising private sector for ownership of wagons and terminals and warehousing.
- Operation of scheduled freight services and value added services for high-end customers. This is particularly applicable to container traffic and commodities like FMCG and white goods that are highly time sensitive and are not moving by railways today.

3.2 Passenger business

- Segregation of suburban business in Mumbai, Kolkata and Chennai by creating a separate administrative unit.
- Developing day-time inter-city trains as a separate business with low-cost, no-frills terminals and separate tariff.
- An overhaul of slow-moving, all-stopping passenger services that account for 70% of non-suburban traffic - replacement by fast DMUs/MEMUs.
- Modernization and development of passenger terminals through private investment.
- Developing separate terminals in major cities for running of special trains - summer and winter specials, festival season specials and trains on full tariff rate (FTR).
- Passenger tariff subsidy burden to be borne by local governments/employers.
- Rationalisation of passenger tariff for upper class passengers.
- Mechanism for tariff regulation - independent Rail Tariff Regulatory body.

3.3 Infrastructure Creation

- Construction of dedicated freight corridors on all trunk routes. In view of the high cost of construction, long period of construction and funding issues, if private sector has to be involved, issues of revenue sharing.
- Network and line capacity augmentation
    - Setting up of non-lapsable dedicated fund outside the normal budget for lines sanctioned on socio-economic lines.
    - State Governments to share the cost/losses in the operation and maintenance of socio economic lines.
    - Allowing railway projects to be included under National Rural employment guarantee scheme.
    - Investment by municipal bodies/State governments for development of suburban rail network.
    - Policy initiatives/incentives for construction of rail lines by private sector.
    - Route-wise sanction of projects instead of project-wise sanctions.
    - Private sector incentivisation for uneconomic branch line rehabilitation/operations.

4.0 Key Issues

Some of the key issues facing the Railways, as listed above, are discussed below.

4.1 Market share of Indian Railways

4.1.1 Even though traffic volumes on Indian Railways have gone up over the years, rail share, particularly in freight transport, has gone down steadily over the past few decades. There is unfortunately no fully authentic data on the market share of rail transport. However, a study conducted by Rail India Transport and Economic Services (RITES) for the Planning Commission in 2009 called the 'Total transport system study on traffic flows and modal costs' gave a historical overview of the share of different transport modes in India as shown below:

Table 43: Historical Overview of Operational Performance of different Modes of Transport

		Mode-wise Traffic in Million Tonnes and Percentage Share in Total Traffic					
Year	Total Originating Inter Regional Traffic	Railways	Highways	Coastal Shipping	Airlines	Pipelines	Inland water transport
1950-51	82.2	73.2 (89%)	9.0 (11%)	NA	NA	NA	NA
1978-79	283.4	184.7 (65%)	95.6 (34%)	3.1 (1%)	NA	NA	NA
1986-87	484.9	255.4 (53%)	224.0 (46%)	5.5 (1%)	NA	NA	NA
2007-08	2555.35	768.7 (30.08%)	1558.9 (61%)	59.1 (2.31%)	0.28 (0.01%)	113.5 (4.44%)	54.9(2.15%)

Source: RITES Draft Final Report 2009: "Total Transport System Study on Traffic Flows and Modal Costs"

4.1.2 It will be seen that the market share of rail transport has reduced drastically from 89% in 1950-51 to 30% in 2007-08. The road sector has been the biggest gainer and pipelines also have gained share by 4.5%. Comparison of tonne kilometers for different modes for the year 2007-08 indicates share of railways at 36.06% (against 30% if compared in tonnes), highways 50.12%, coastal shipping 6.08%, airlines 0.02%, pipelines 7.48% and inland water transport 0.24%. The Railways have, however, maintained their traditional dominance in the carriage of bulk commodities as is brought out from the figures in table below:

Table 44 : Rail coefficient of major commodities

Year	Coal	Iron Ore	Cement	Food grains	Fertilizers	POL
2004-05	65.94%	63.05%	40.87%	23.29%	74.17%	24.68%
2005-06	66.03%	65.39%	41.40%	19.80%	74.01%	25.04%
2006-07	66.12%	61.12%	45.28%	18.54%	72.51%	22.73%
2007-08	66.46%	66.11%	45.16%	16.25%	75.30%	21.14%

4.1.3 Of the railways' freight traffic in 2008-09, 88% was accounted for by eight bulk commodities. The share of non-bulk traffic is 12% of the total traffic, a small decline of 1% compared to 2003-04, but compared to 1978-79 the decline is a significant 10%. There is good potential, therefore, to increase the share and thereby the volumes of non-bulk traffic.

4.1.4 For increasing the market share of the Railways, non-bulk traffic would need to be attracted to rail through a focused strategy aimed at providing better services at competitive tariffs. This is especially important because of the increasing share of the manufacturing sector in the GDP. There is also further potential for increase in the share of bulk goods by providing better services such as faster transit and efficient handling at terminals. A policy to encourage and incentivise bulk customers to be committed to rail movement, e.g. by their participation in rail connectivity works, would also help.

4.2 Global Benchmarks

4.2.1 A comparison of the essential features of important world railways including those that carry more passenger and freight traffic than IR, is given in the two tables below. The figures of efficiency parameters in the second table are derived figures. In terms of route length, IR is fourth largest in the world after US Railroads and Russian and Chinese Railways. As regards freight traffic, again it is fourth but substantially behind these three railway systems. In passenger traffic, even though Japan carries more passengers, Indian Railways is the highest in terms of passenger kilometres.

Table 45 : Comparison with World Railways*

S.No.	Country	Network length (kms)	Number of Employees	Passengers carried (millions)	Passengers (kms) (millions)	Freight Tonne carried (millions)	Tonne (kms) (millions)	No. of Locos	No. of Coaches	No. of Wagon
1	France	29488	166000	1097	83299	106	42435	4289	15973	33238
2	Germany	33897	231000	1835	74740	273	91013	4128	17537	95595
3	Russia	84158	1128000	1280	173411	1344	2090337	12063	33955	566802
4	USA**	226706	187000	26	9059	1775	2820061	23990	1186	475416
5	Canada	57042	34000	4	1451	313	353227	2947	595	97836
6	South Africa	24487	36000	533	14856	181	108513	3301	1723	112417
7	Australia	9639	13000	54	1309	177	46036	509	663	10889
8	India	63327	1406000	6219	694764	728	480993	8110	43124	207719
9	China	63637	2067000	1287	689618	2624	2211246	17222	42471	571078
10	Japan	20050	132000	8907	252579	36	23145	1170	25224	9067

** Source : UIC 2007 ** AAR Class I and Amtrack*

Table 46 : World Railways Efficiency Parameters *									
Countries	**Freight Lead (km)**	**Passenger Lead (km)**	**NTKM / Employee (millions)**	**PKM / Employee (millions)**	**(NTKM+ PKM)/ Employee (millions)**	**NTKM/ route length (millions)**	**PKM/ route length (millions)**	**(NTKM + PKM)/ route Length (millions)**	**NTKM/ Wagon/day (millions)**
France	400	76	0.26	0.5	0.76	1.44	2.82	4.26	3498
Germany	333	41	0.39	0.32	0.72	2.68	2.20	4.89	2608
Russia	1555	135	1.85	0.15	2.01	24.84	2.06	26.90	10104
USA	1589	348	15.08	0.05	15.13	12.44	0.04	12.48	16251
Canada	1129	363	10.39	0.04	10.43	6.19	0.03	6.22	9892
South Africa	600	28	3.01	0.41	3.43	4.43	0.61	5.04	2645
Australia	260	24	3.54	0.10	3.64	4.78	0.14	4.91	11583
India	661	112	0.34	0.49	0.84	7.60	10.97	18.57	6344
China	843	536	1.07	0.33	1.40	34.75	10.84	45.58	10608
Japan	643	28	0.18	1.91	2.09	1.15	12.60	13.75	6994

* Derived from UIC 2007 data

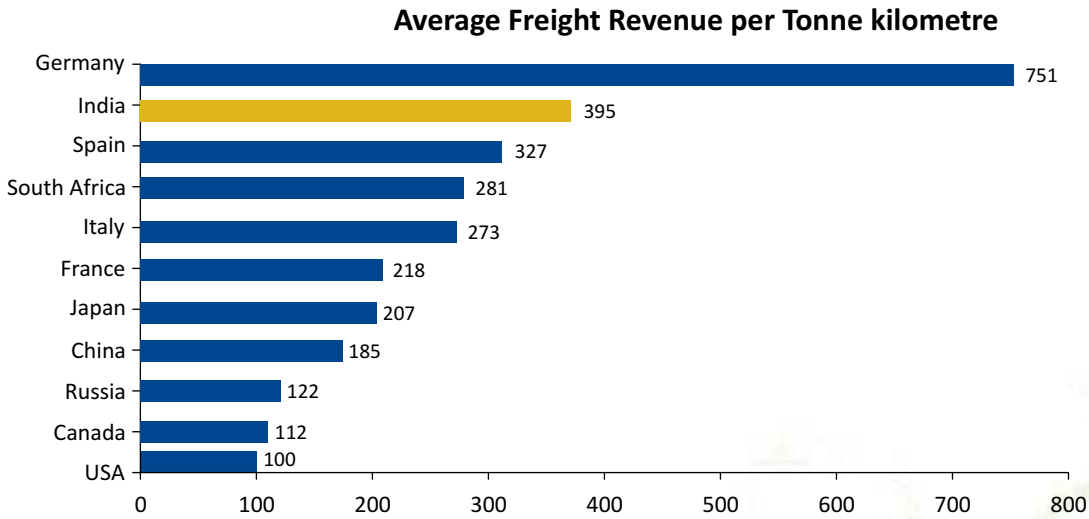
4.2.2 The efficiency and productivity figures reveal that

- Leads in freight are substantially higher on US Railroads, Russian Railways and Canadian Railways compared to IR. The average lead on Chinese Railways is 843 against IR's 661. The NTKM/route kilometer of Russian, US and Chinese railways are much higher than that of IR's.
- Passenger leads are much higher on Russian Railways, US Railroads and Chinese Railways. The PKMs/route kilometer of IR compares well with the other railways like the Chinese and Japanese Railways.
- The productivity figures of NTKM/employee are much higher in case of US Railroads, Canadian Railways, South African and Australian Railways, which carry heavy-haul traffic and have much less number of employees. The figures of Chinese Railways and Russian Railways make a better comparison with IR's performance as they have comparably high staff strengths (Russian Railways – 11.28 lakh, Chinese Railways – 20.67 lakh, Indian Railways – 13.95 lakh). IR should aim to reach the NTKM productivity figures of these two Railways.
- IR's productivity figures of PKM/employee are second only to Japan which, however, has very less number of employees. Compared to Railways like Chinese Railway and Russian Railways, IR's figures are much higher.
- NTKM/wagon day figures of IR are much lesser than that of US Railroads, Russian Railways, Canadian Railway, Australian Railways and Chinese Railways. IR should aim to achieve the figures of Russian and Chinese Railways.

4.2.3 An analysis of the comparative figures reveals that in respect of route- kilometers, number of employees and freight traffic, IR should aim to achieve the figures of Russian Railways (84,158 kms, 11.28 lakh employees and 1344 million tonnes). For passenger traffic, IR's figures are not strictly comparable since it does not have high speed passenger services as in Japan, China and the European railways.

4.3 Cross-Subsidization

4.3.1 Freight earnings today account for over 66% of the total traffic earnings of IR. Freight tariff on Indian Railways is among the highest in the world as would be seen by a comparison with the freight rates per tonne kilometer of the other world railways. Particularly, as compared to the major freight railways like US Railroads, Chinese and Russian Railways, the freight rates of Indian Railways are extremely high. In fact, the rates on US Railroads are one-fourth that of IR's as seen below.

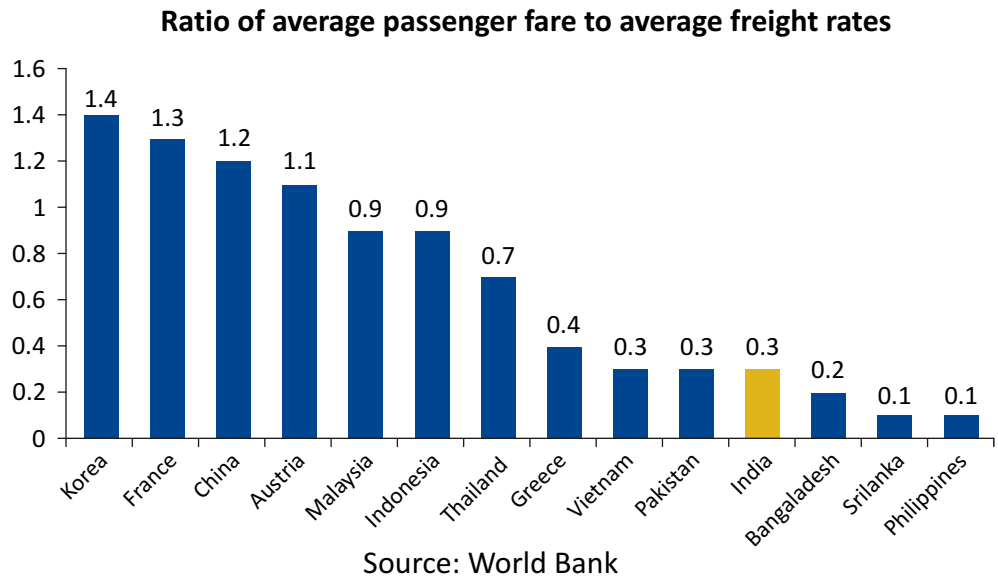


Source: World Bank

4.3.2 On account of the large volume of passenger traffic in India and the inevitable financial impact on them of any fare increase, increasing passenger fares has always been a sensitive issue, particularly for second class passengers. As a result, passenger fares in India are low compared to most foreign railways. The high freight rates and low passenger fares make the fare-freight ratio of Indian Railways one of the lowest in the world. Over the past 5 years, it reduced from a level of 0.32 to 0.26 (Table below). The fare-freight ratio in case of China is 1.2 and that of Korea is 1.4.

Table 47 : Fare Freight Ratio

	2004-05	2005-06	2006-07	2007-08	2008-09
a. Earnings per NTKM (Paise)	74.84	80.83	85.39	90.98	98.73
b. Earnings per PKM (Paise)	24.52	24.53	24.75	25.74	25.93
Fare-Freight Ratio (b/a)	0.32	0.30	0.29	0.28	0.26

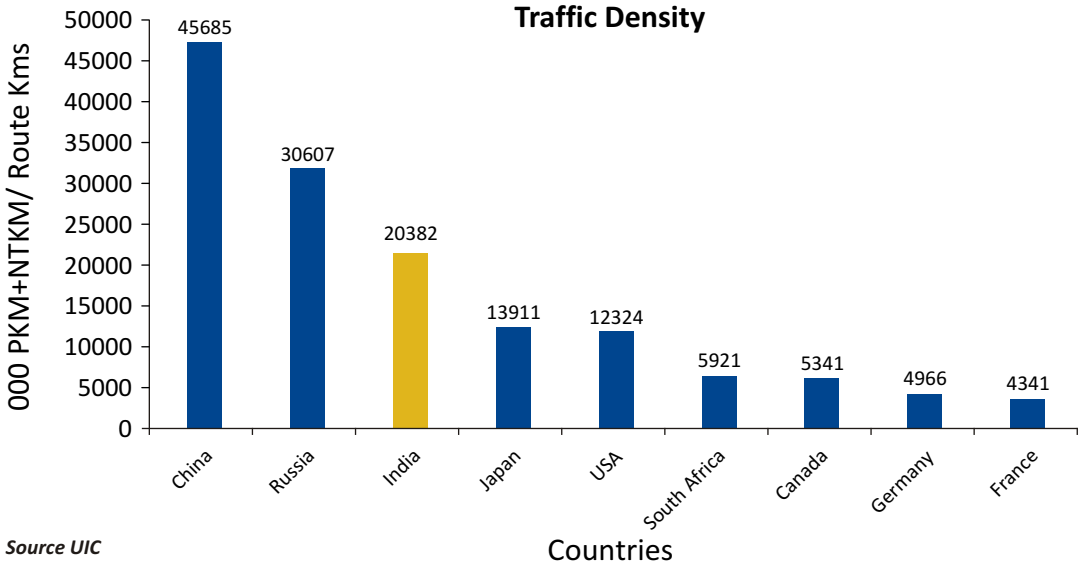


Source: World Bank

4.4 Network Capacity Expansion and Line Capacity Augmentation

4.4.1 This is the biggest challenge facing the railways today and can affect the future growth of railways if not addressed satisfactorily. The issues essentially are:

- The seven major routes that carry around two-thirds of the passenger and freight traffic, viz. the golden quadrilateral routes and diagonals and Delhi-Guwahati, have line capacity utilization well above 100% which severely affect freight transit times. A number of mineral and port routes are also severely congested. Most of the likely increase of future traffic is also expected to be only on these corridors.
- Approximately 19% of IR's network is metre and narrow gauge but contribute a mere 0.2% of freight and 2% of passenger traffic and their conversion to BG could ease the pressure on the existing BG network by providing alternative routes.
- Passenger trains utilize nearly 60% of network capacity even though they contribute only 33% of traffic earnings. This affects the scope for running more freight trains on trunk routes. A shared network for both passenger and freight services makes traffic density of our network quite low compared to countries of comparable networks like China and Russia.



Source UIC

- The congestion in the system comes in the way of providing guaranteed transit times and scheduled services to freight customers and also prevents running of high speed passenger services, thereby depriving premium customers, both freight and passenger.

4.4.2 Despite these issues, IR has been unable to prioritize project investment on account of having to balance between viable projects required on operational/traffic considerations and unviable but socially desirable projects. If the role of IR in providing connectivity to the entire population and across far flung areas is considered, then both types of projects have to be taken up and one cannot be at the cost of the other.

4.4.3 As on 1.04.2009, IR had the following throw-forward (balance funds required to complete the projects) of new line/gauge conversion/doubling projects.

Table 48 : Sanctioned Projects in Progress as on 1.04.2009

Plan Head	No. of Projects	Throw-forward (Balance funds required)
New Lines*	109	50405
Gauge conversion	51	17309
Doubling	126	11748
Total	**286**	**79462**

* excludes DFC Project

4.4.4 The average annual plan expenditure under these categories of projects in the last two years was about Rs 9,000 crore. At the current rate it will take about 9 years to complete the projects on hand. However, the actual funds required would be much higher as the figures assessed above are based on sanctioned estimates which were themselves based on rough abstract estimates and, therefore, are likely to be revised upwards.

4.4.5 Out of the total projects sanctioned on date, 123 projects have been identified by IR to be taken up on priority on the criteria of growth in traffic/operational considerations.

Table 49 : Sanctioned Projects in Progress as on 1.04.2009 - Prioritized List

Plan Head	No. of Projects	Throw-forward (Balance funds required) (Rs. crore)
New Lines	19	8261
Gauge conversion	15	4594
Doubling	89	8650
Total	123	21505

4.4.6 If funds were to be allocated for the prioritized works only, based on past experience, it will take 3 to 4 years to complete all of them and this would be at the cost of projects sanctioned on socio-economic grounds. Further, demands for new projects are regularly raised in Parliament. In the last 5 years alone, 42 new lines of a total length of 4,060 kms at a cost of Rs 16,693 crore were included in successive railway budgets.

4.4.7 The severe scarcity of funds against the requirement has led to the spreading of resources thinly over a large number of projects, and all these projects are delayed due to shortages and uncertainty in the availability of funds, leading inevitably to time and cost over-runs.

4.4.8 Even though Government has declared J&K and north-eastern region projects as National Projects, more needs to be done if the large shelf of railway projects is to be completed. IR has already approached the Central Government for creation of a non-lapsable "Socio-economic Railway Lines Fund" for completing 97 new line projects over a period of 7-8 years through a mix of additional Gross Budgetary Support and dividend waiver.

4.4.9 Other options that could lead to faster expansion of network are:

- Utilization of funds allocated to rural sector under NREGS for railway projects
- Development of suburban rail network through cost sharing with local bodies and state governments
- State Government participation on cost sharing basis in railway projects. Even though some States have come forward with projects, there is more scope for partnership here.
- Participation of industry and major railway customers in rail connectivity works through an appropriate incentive framework.

4.5 Project Cost Escalation

4.5.1 A matter of serious concern is the issue of cost overruns. The reasons for cost escalations are several. These include:

i. Escalation due to price rise during the execution of the project.

ii. Material modification (addition or reduction in the quantum and scope of the project) as dictated by site conditions, change in requirements, technology changes/enhancements, etc. Frequently, material modification is required because initially at the abstract estimate stage, assessments are wrong on account of inadequate survey, wrong appraisal of needs and incorrect specifications.

iii. Cost escalations are compounded by the long gestation period of many infrastructure projects, mainly on account of inadequate funds allotment from year to year and weaknesses in project management.

iv. In rare cases, abstract estimate is based on wrong premises because of reasons which are not apparent at the time of making the proposal.

4.5.2 Cost escalations on various counts make it difficult to accurately assess the value of the throw-forward for the works in progress. To tackle this and other project management issues, including reducing the gestation period of works, a Standing High Powered Committee on Infrastructure Planning, Business Development and Project Monitoring has been set up recently. The Committee is expected to get realistic assessments of costs done for better management of funds.

4.6 Organisational Changes

4.6.1 The organizational structure and functioning of Indian Railways is closely related to many of its core historical features and developments which include:

- Infrastructure and operations with the same entity
- Single ownership of network, terminals, maintenance and production units
- Freight and passenger services including suburban services operating on a common network
- No organizational differentiation of suburban, intercity and long-distance service streams from a business point of view.
- No segregation of services for different types of freight customers.
- Government ownership and rules and regulations based on government norms.
- Railway finances separated from general exchequer with a separate budget and Parliamentary sanction of expenditure.

4.6.2 After the merger of the company railways and reorganization following independence, the railway system in India has been organized on zonal and divisional lines with Railway Board at the apex, performing the role and functions of the Ministry of Railways. The day-to-day functioning and roles are organized on departmental lines.

4.6.3 The railways worldwide have undergone, particularly in the last 30 years, a number of changes with most of them moving from being state-owned entities to a number of corporate/private entities with infrastructure separated from operations and based on lines of business. The main organizational changes on Indian Railways during this period have only been the creation of new zonal railways and divisions for operational and administrative convenience and formation of state-owned corporate entities to hive off non-core activities.

4.6.4 The need for changes in Indian Railways' organizational structure and functioning for it to become more business and commercial oriented, and meet the challenges of an economy growing at a fast pace, has been examined in the past. The options that have been debated include:

- Corporatization of IR to create an arm's length relationship with the government.
- Reorganization of IR on business lines instead of the present functional structure.
- Creation of customer-focused units for different streams of business.
- Outsourcing of activities like maintenance and manufacturing, as done on other railways.
- Separation of infrastructure from operations.
- The apex levels, such as the Railway Board, to be restructured on business lines.

4.6.5 With the general trend of major structural and organizational changes taking place in other infrastructure sectors like power, airports, telecom and ports, the case of railway reorganization/restructuring is raised periodically, particularly when the IR faces financial difficulties or a drop in business. The time for change has certainly arrived. However, with its role and size, any changes made in the Railways would need to be only after considerable discussion and debate.

5.0 Conclusion

5.1 Most of the issues raised and the options spelt out above are not new to the Railways and have in varying degrees been discussed and debated from time to time. However, if the Railways are to break from its past and move forward rapidly to meet the challenges of a growing India, these issues would need to be addressed boldly.