Indian Railways

overpowering story

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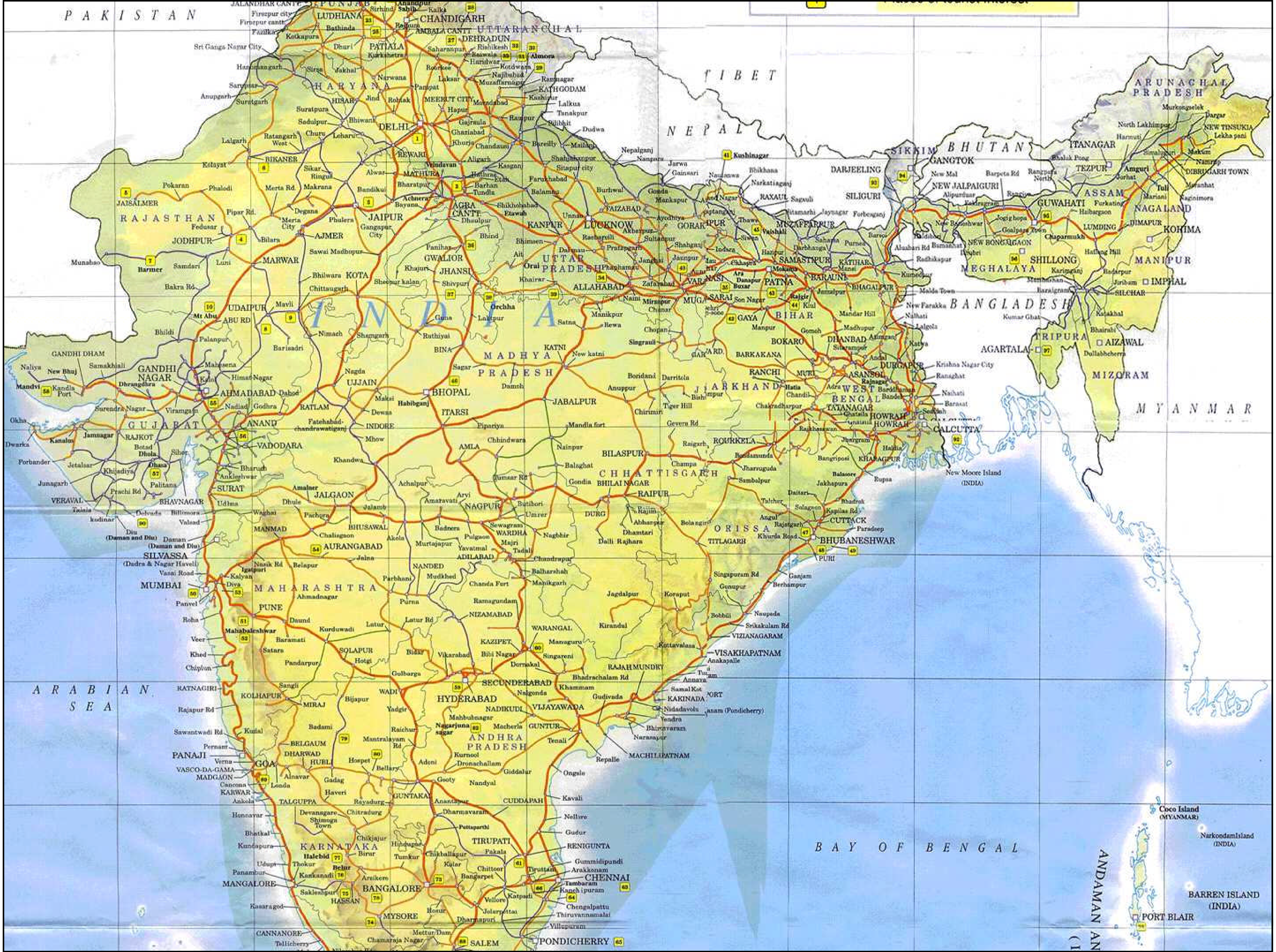
An Introduction to India and Indian Railways

- About India
  - Physical territory of 1.2 million square miles
  - A population of 1.1 billion people
  - $1 trillion GDP; 4x based on PPP

- About Indian Railways
  - 40k miles of 5’6” broad gauge; 11k miles 25 kV A/C
  - 3,000 double power 25kV locomotives haul 60%; rest 6,000 Diesels; Steam phased out
  - 30,000 coaches and 200,000 wagons
  - 1.5 million employees



PAKISTAN
TIBET
NEPAL
BHUTAN
BANGLADESH
MYANMAR
INDIA
ARABIAN SEA
BAY OF BENGAL
PUNJAB
HARYANA
UTTARANCHAL
RAJASTHAN
UTTAR PRADESH
BIHAR
SIKKIM
ARUNACHAL PRADESH
ASSAM
NAGALAND
MANIPUR
MEGHALAYA
TRIPURA
MIZORAM
GUJARAT
MADHYA PRADESH
JHARKHAND
WEST BENGAL
CHHATTISGARH
ORISSA
MAHARASHTRA
ANDHRA PRADESH
KARNATAKA
CHANDIGARH
LUDHIANA
PATIALA
DEHRADUN
DELHI
JAIPUR
AGRA CANTT
MATHURA
LUCKNOW
KANPUR
ALLAHABAD
PATNA
GAYA
JODHPUR
BIKANER
JAISALMER
AJMER
UDAIPUR
KOTA
GWALIOR
JHANSI
BHOPAL
JABALPUR
AHMADABAD
GANDHI NAGAR
VADODARA
SURAT
RAJKOT
NAGPUR
RAIPUR
BILASPUR
RANCHI
ASANSOL
DURGAPUR
HOWRAH
CALCUTTA
DARJEELING
SILIGURI
GANGTOK
GUWAHATI
SHILLONG
ITANAGAR
KOHIMA
IMPHAL
AIZAWAL
AGARTALA
BHUBANESHWAR
CUTTACK
PURI
MUMBAI
PUNE
AURANGABAD
SOLAPUR
KOLHAPUR
PANAJI
GOA
HYDERABAD
SECUNDERABAD
VIJAYAWADA
VISAKHAPATNAM
BANGALORE
MYSORE
MANGALORE
CHENNAI
TIRUPATI
PONDICHERRY
SALEM
New Moore Island (INDIA)
Coco Island (MYANMAR)
NarkondamIsland (INDIA)
BARREN ISLAND (INDIA)
PORT BLAIR
ANDAMAN

Indian Railways – In Financial Crisis

"Indian Railways is today on the verge of a financial crisis. To put it bluntly, the Business As Usual Low Growth will rapidly drive IR to fatal bankruptcy, and in sixteen years Govt. of India will be saddled with an additional financial liability of over Rs. 61,000 crores (15 billion US $). On a pure operating level, IR is in a terminal debt trap."

- Expert Group on IR headed by Dr. Rakesh Mohan – July 2001.

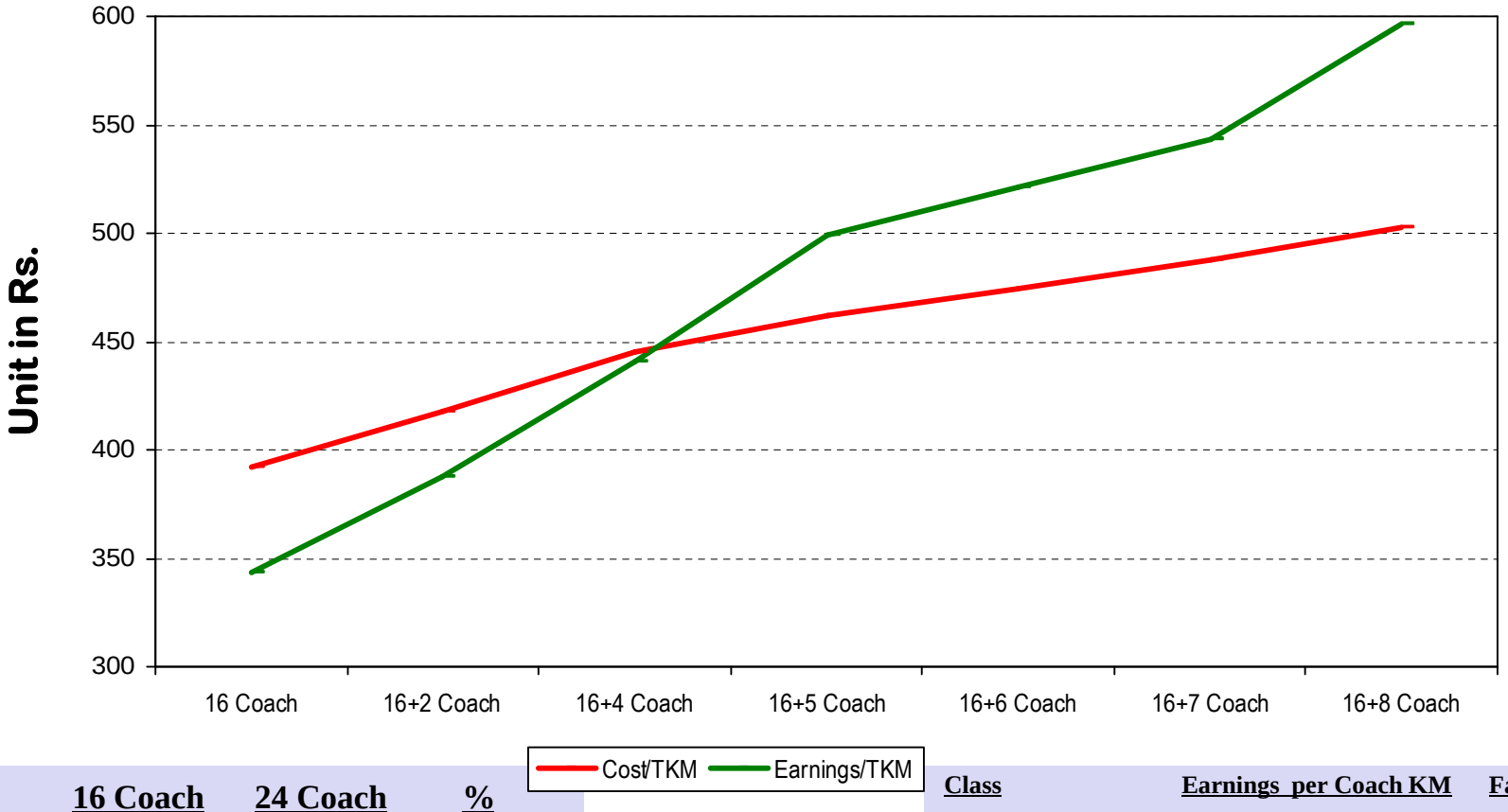
Problem

- A national carrier governed by Indian Parliament to cater to popular demands for cheap/free perquisites to masses.
- Commercial accounting regime for capital expenditure.
- Large 1.5 million under-trained employee base
- Stiff competition from roads cutting into lucrative finished goods business

Solution

- Intensive use of train paths by more coaches per train; better occupation.
- Intensive utilization of tracks by running more trains after creating more paths by overpowering.
- Heavier payload to take up slack available.
- Reduced terminal delays and midway examinations

Cost & Earnings per Train Kilometer at same distance (1385 km) for different rake composition



Increase	16 Coach	24 Coach	%
Cost/TKM -	$9.68	$12.42	28
Earn/TKM -	$8.49	$14.72	73

Class	Earnings per Coach KM	Fare Index
Sub-urban	$ 0.54	100
General(Ordinary)	$ 0.54	150*
General(Mail/Express)	$ 0.49	260
Sleeper	$ 0.40	430
3AC	$ 0.99	1180
2AC	$ 0.91	1680
1AC	$ 0.91	2930

* Since around 70% of suburban passengers are MST/QST holders, fare of general (ordinary) class has been assumed to be 50% more than suburban.

Freight Business Is A Play On Volumes

Higher Market Share and Margins

ITEM	2000-01	2006-07	VARIATION
Freight loading (Million Tonnes)	492	728	48%
NTKMs/Wagon per day	2,042	3,110	52%
Freight unit cost(US cents per NTKMs)	1.5	1.3	-14%

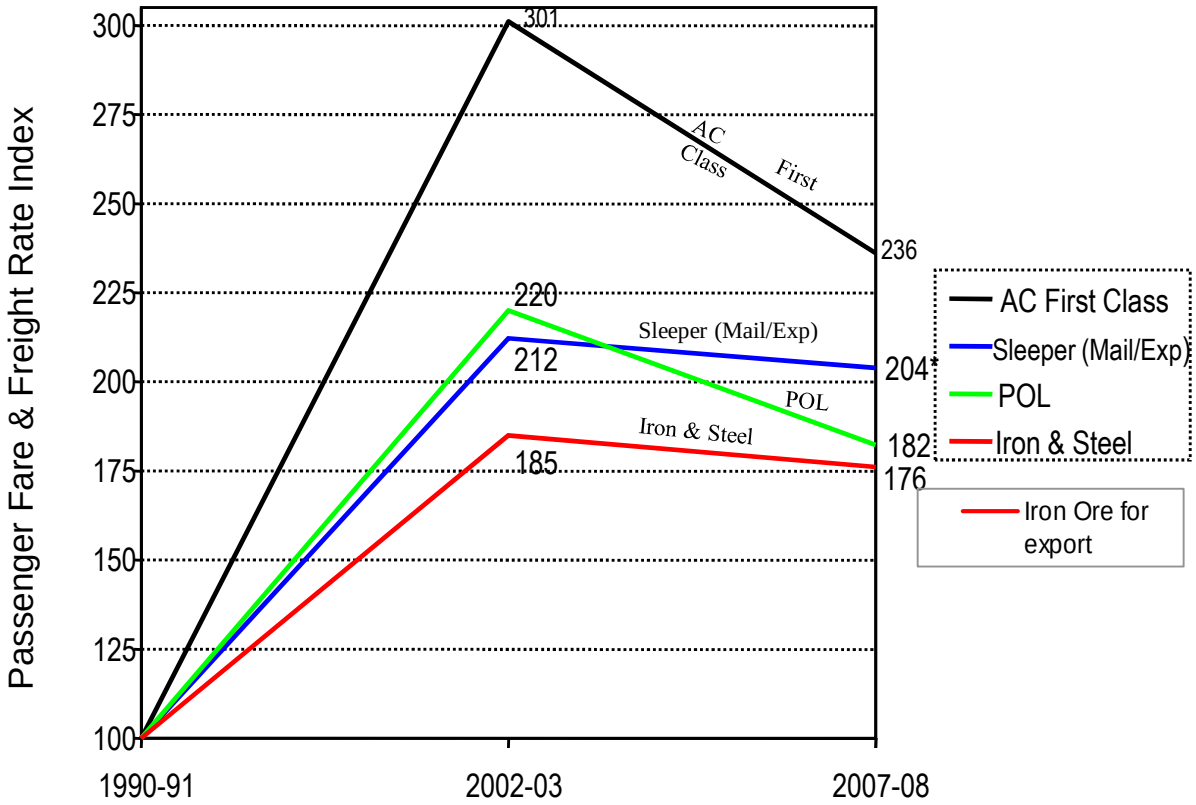
NTKMs – Net Tonne Kilometers

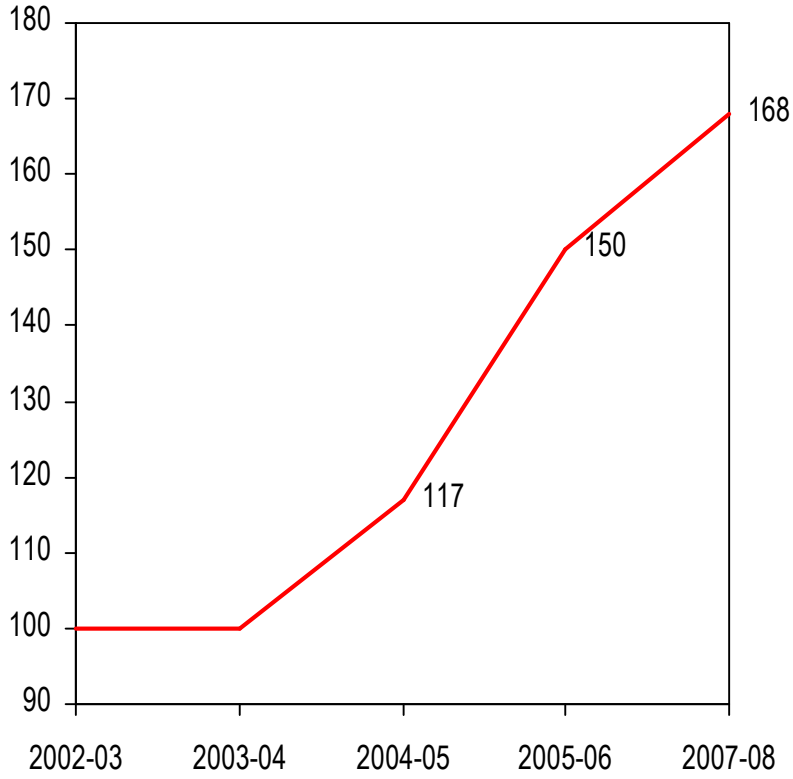
Overpowering

- Reduce running time in critical section (s) which limit the line haul capacity.
- Reduce waiting time and queue length of waiting trains, arriving at random
- Increased line capacity and reduce overall operation cost.
- Increased average train speed and productivity of rolling stock.

Tariff Rationalization

Passenger Fares and Freight Rates Index





- Second Class Passenger fares reduced by US 5 cents per ticket.
- AC I and AC II fares reduced by 22% and 14% respectively.
- 3 AC and AC Chair Car fares reduced upto 45% in fully AC Garib Rath.
- 4% fare reduction applicable only for new design coach.
- Present freight rates for POL, Iron & Steel are lower by 17 and 5% respectively.
- Freight discount of upto 45% for loading in empty flow and 15% in lean period.

o Pricing based on affordability Vs elasticity of demand.

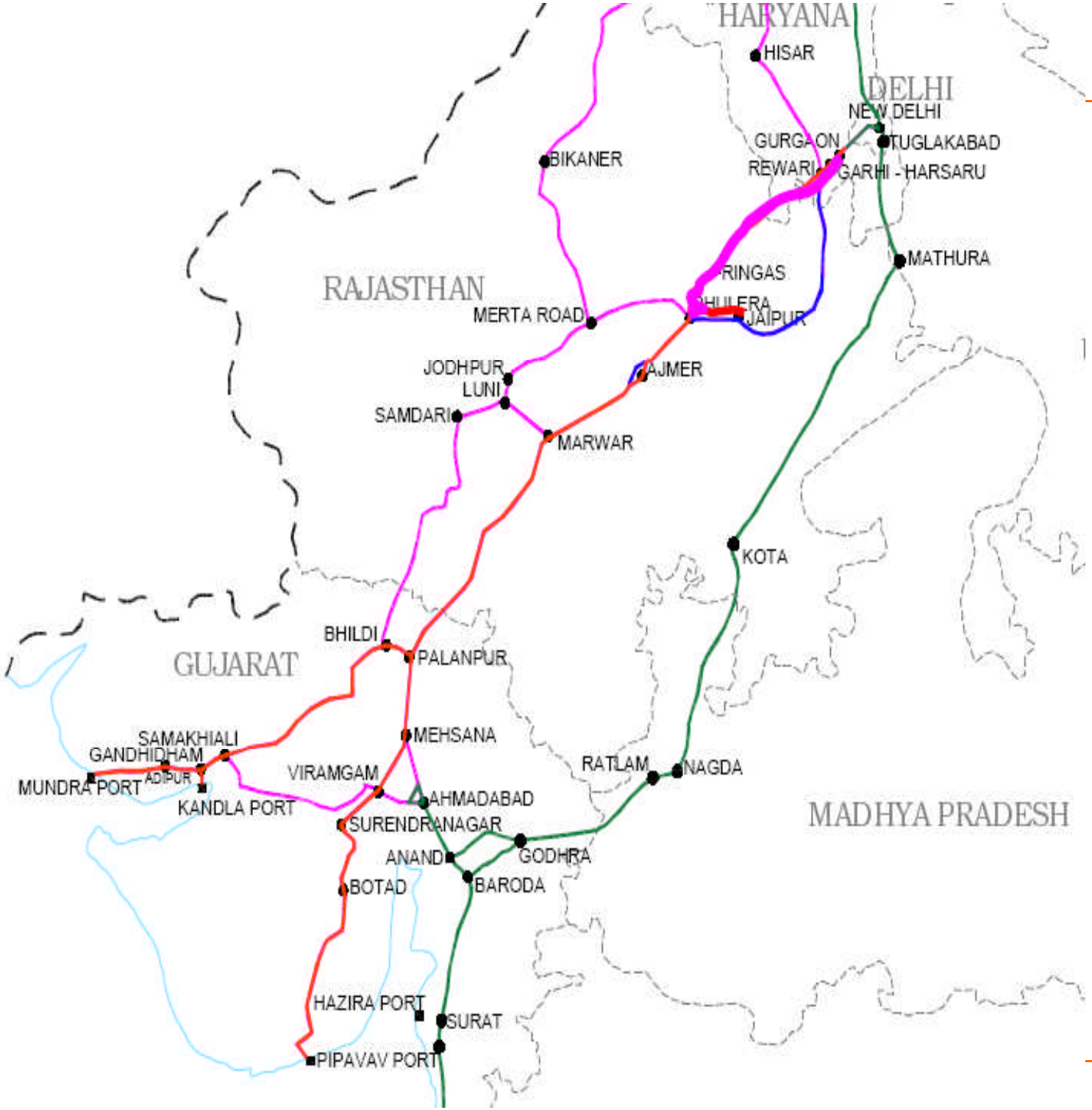
o Door to Door Vs Station to Station railway transportation.

Example

- Doubling of traction power could reduce critical section running time by 33%
- Line capacity could increase by 50%
- Mean Waiting Time could reduce by 80 %
- Total Service Time could reduce by 60%
- Productivity of rolling stock could increase
- Operating cost could come down particularly on graded sections.

5000 HP Modular Design Loco


GUJRAT
MAHARASHTRA
BULDHANA
WASHIM
HINGOLI
AURANGABAD
JALANA
PARBHANI
NANDED
NASIK
AHMADNAGAR
BEED
LATUR
THANE
PUNE
DHARASHIV
SOLAPUR
SATARA
SANGLI
RATNAGIRI
KOLHAPUR
RAIGARH
KARNA
DHULE 384
PACHORA JN. 373
PIMPALGAON 393
CHALISGAON JN. 328
KAJGAON 347
AJANTA
NAYDONGRI 306
NANDGAON 286
ELLORA
PANEWADI 266
VIA DAUND (504) MANMAD JN. 261
SUMMIT 250
LASALGAON 236
ANKAI 491
NIPHAD 219
KOPARGAON 462
PUNTAMBA 436
BELAPUR 418
NASIK RD. 188
DEVLALI 182
SHIRDI 17 (Ex. PS.)
PADHEGAON 406
TAKLIMIYA 397
IGATPURI 137
139/00 KM MB DIVN. LIMT
DAHANU RD.
KASARA 121
KHARDI 108
ASANGAON 86
TITVALA 65
VILAD 367
AHMADNAGAR 352
AKOLNER 339
DAUND JN. 288
KURDUWADI JN. 377
BHIMA RIVER
PUNE JN. 192
MUMBAI CST 0.00 (CSTM)
ARABIAN SEA
PANVEL
KALYAN JN. 54
DIVA JN. 43
THANE 34
DADAR 9
MUMBAI
JNPT 93
JASAI 84
URAN
PEN 104
KHOPOLI 115
THAL 130
ROHE RD. 144
RAJEVADI (RJW) 46
DAUNDAJ 66
NIRA 85
LONAND 93
PALSI 129
SATARA 146
KARAD 204
BHILAWADI 253
SANGLI 272
VISHRAMBAG 274
HATKANANGALE 27 From Miraj
KOLHAPUR (KOP)
(From Miraj 48)
(From CSTM 518)
GURUMARKET (CRMT)
44 From Miraj
TO MANGALORE (KRCL)
TO LONDA JN. (S.W.RLY.)
TO GADAG (S.W.RLY.)
MIRAJ JN. (MRJB)
BEDAG 556
BELANKI 538
KAVATHEMAHANKAL 520
DHALGAON 504
SANGOLA 459
PHALTAN
PANDHARPUR 429
TIKEKARWADI 462
MOHOL 422
PAKNI 439
BALE 449
AZHTI 407
PADSALI 389
SOLAPUR 458
HOTGI JN. 471
WADSINGE 385
VAKAV 400
ANGAR 406
KALAMB RD. 454
THAIR 464
TEDSHI 443
RAMLING 439
LATUR (LUR) 513H
HARANGUL (NGL) 504
NEOLI (NEL) 483
PARLI VAIJNATH 250 (Ex. ANG.)
BEED 178 (Ex. ANG.)
MANJIRA RIVER
LATUR RD.
TO VIKA
AKALKOTRD. 491
BORGTI 505
DUDHANI 519
GULBARG
C.RLY LIMIT 606 KM
TO RAI
PURNA
NANDED
JALANA
AURANGABAD
PARBHANI
Internet


HARYANA
HISAR
DELHI
NEW DELHI
TUGLAKABAD
GURGAON
REWARI
GARHI - HARSARU
BIKANER
MATHURA
RINGAS
RAJASTHAN
MERTA ROAD
JAIPUR
JODHPUR
AJMER
LUNI
SAMDARI
MARWAR
KOTA
BHILDI
PALANPUR
GUJARAT
MEHSANA
SAMAKHIALI
GANDHIDHAM
MUNDRA PORT
ADIPUR
KANDLA PORT
VIRAMGAM
AHMADABAD
RATLAM
NAGDA
MADHYA PRADESH
SURENDRANAGAR
ANAND
GODHRA
BOTAD
BARODA
HAZIRA PORT
SURAT
PIPAVAV PORT

Priorities for Container Business

- De-risking the business model of Railways
- Diversification of IR's freight portfolio by
- capturing piece-meal traffic of heavy commodities
- CAGR of 40% per annum for next 5 years in container traffic
- Container traffic to go up from 22 MT to 100 MT by 2010-11

  Domestic traffic : 40 MT

  EXIM traffic : 60 MT

Mission 2012

- **Double rail transport capacity**
  - Freight traffic from 728 to 1150 MT
  - Passenger traffic from 6000 to 9000 million passengers
- **Increase speed of trains**
  - Passenger trains from 55 to 100 KMPH
  - Goods train from 24 to 60 KMPH
- **Reduce unit cost**
  - 1.04 cent to 0.74 cent per PKM
  - 1.31 cent to 0.86 cent per NTKM
- **Deliver world class services and amenities**

Target 2012

(Figures in billion US $)

• Construction of dedicated freight corridors (11,500 Kms)	14.81
• Upgradation of feeder routes of DFC (30,000 Kms)	4.94
• Modernisation of assets	17.28
• Doubling and port connectivity works (6,000 Kms)	7.41
• Gauge conversion (12,000 Kms)	4.94
• Misc. works	12.35
Total	**61.73**

Business Opportunities

- 32.5 tonnes axle load freight car designs for dedicated freight corridor
- Aluminium wagon design with 4 tonne tare weight savings
- Coupling and Draft gear for dedicated freight corridor wagons
- High-speed turn-outs for dedicated dedicated freight corridor
- Double stack container wagons for North-West corridor

THANK YOU

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