Indian Railways



Freight Traffic Planning

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Structure of Presentation

PART I

- IR Freight performance and Target FY 2011-12
- STRATEGIES FOR GROWTH
- Critical Links vis-à-vis Traffic Projection

PART II

- THROUGHPUT ENHANCEMENT
- TRADITIONAL
- INNOVATIONS

PART I

FREIGHT LOADING TRENDS

YEAR	FREIGHT LOADING	%AGE GROWTH	GDP GROWTH	NTKM GROWTH
2001-02	492.50	4.01	5.60	3.48
2002-03	518.74	5.33	4.30	5.99
2003-04	557.39	7.45	8.50	7.94
2004-05	602.78	8.14	7.50	6.86
2005-06	667.20	10.69	9.00	7.90
2006-07	728.77	9.23	9.60	8.11
2007-08	794.21	8.98	9.00	7.70
2008-09	833.31	4.92	6.70	5.16
2009-10	887.99	6.56	7.40	8.65
2010-11*	921.51	3.77	8.5/7.8	3.63

Average Lead (in km)

Year	Lead (in km)
2002-03	681
2003-04	684
2004-05	677
2005-06	661
2006-07	652
2007-08	644
2008-09	646
2009-10	659
2010-11	658

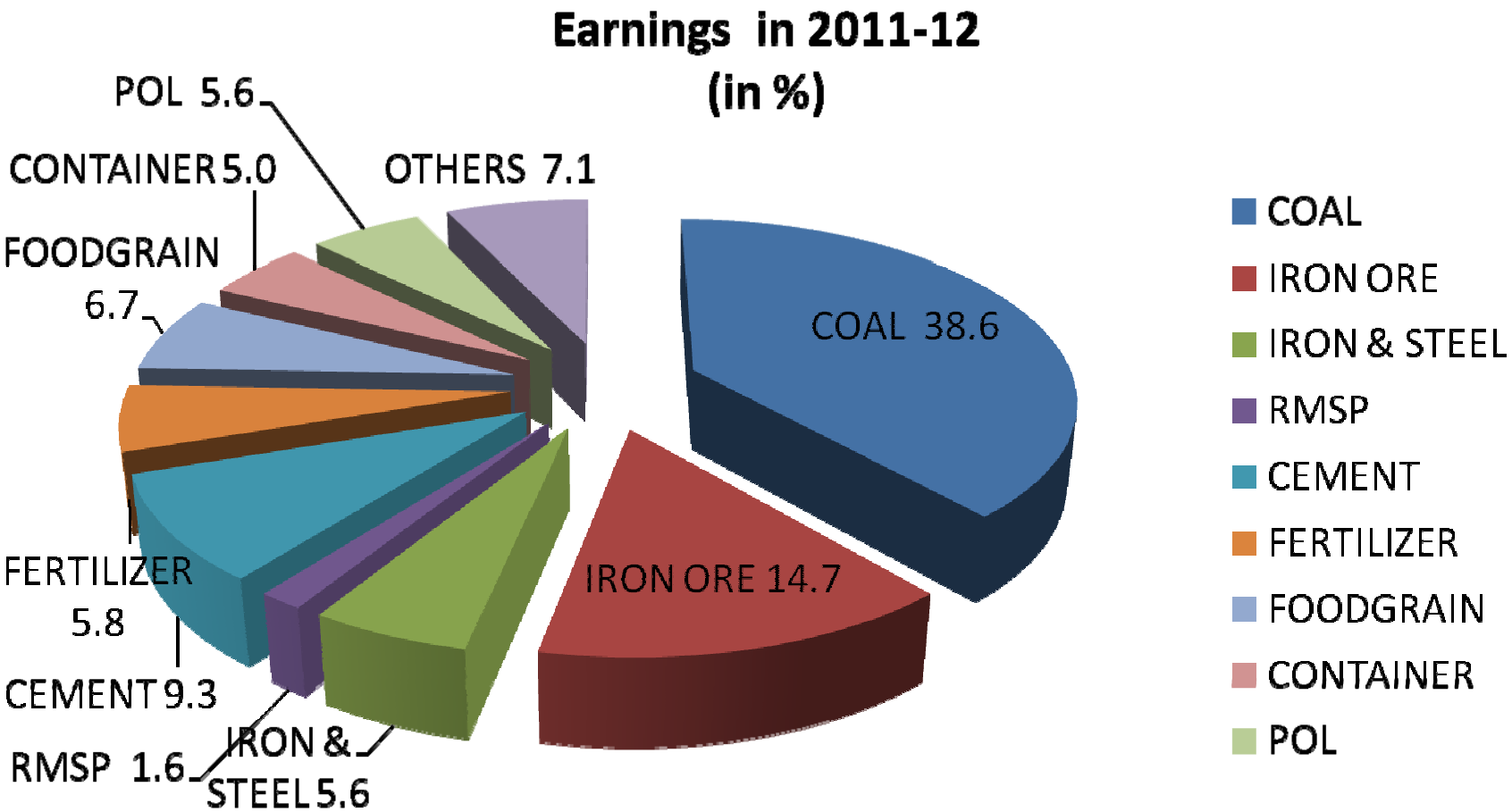
GDP and NTKM Growth



COMMODITY & EARNING SHARE 2010-11

COMMODITY	LDG 2010-11 IN MT	%AGE SHARE OF LOADING	%AGE SHARE OF EARNING	Target in 2011-12 MT	Projection in 2019-20 MT
COAL	420.21	45.6	38.6	458.00	700
IRON ORE	118.43	12.8	14.7	115.00	108
IRON & STEEL	32.30	3.5	5.6	34.50	225
RMSP	13.28	1.4	1.6	14.00	39
CEMENT	99.03	10.7	9.3	110.00	250
FERTILIZER	48.17	5.2	5.8	53.00	70
FOODGRAIN	42.02	4.6	6.7	47.25	50
CONTAINER	36.86	4.2	5.0	44.75	210
POL	40.25	4.4	5.6	40.50	48
OTHERS	70.96	7.6	7.1	76.00	150
TOTAL	921.51	100.0	100.0	993.00	1850

Business Segments



Current Strategy for freight business

- Key drivers of the current strategy
  - Increasing the axle load from 20.3t to 22.9t & now to 25 t on mineral routes –
  - Extend to all routes
  - Develop wagons for 25T
  - Targeted investments on low cost but high return traffic facility works
  - Efficiency Improvements - Better WTR
  - Tariff rationalisation and Dynamic Pricing policy
- Freight Unit cost brought down from 71 paisa per NTKM in 2000-01 to 63 paisa in 2007-08
- Wagon turn round improved from 6.7 days to 5.0 days

THE SR. DOMs ROLE AS THE DRIVING FORCE

- **UNDERSTANDING O-D FLOWS NOT ONLY AS PART OF OPERATIONS BUT ALSO TO CAPTURE MISSING LINKS ON HEAVIER AXLE LOAD STRATEGY.**

- **MONITORING KEY TRAFFIC FACILITY WORKS**

- **UNDERSTANDING FUTURE O-D FLOWS FOR ROUTE CAPACITY AND PLANNING EXERCISE**

- **LOOKING INTO ISSUES OF FUELLING POINTS, EXTENDED RUNS, ETC**

- **LOOKING INTO ISSUES OF ADEQUACY OF HANDLING INFRASTRUCTURE INSIDE POWERHOUSES,STEEL PLANTS AND PORTS**

ESSENTIALS OF FREIGHT PLANNING

5 ESSENTIALS
WAGONS
LOCOMOTIVES
CREW
TERMINALS
LINE CAPACITY

WAGONS

MANTRA- HEAVIER, LONGER, FASTER

STRATEGY	ACHIEVED	AIMING AT
HEAVIER	ALREADY CC+6 UNIVERSALISED	
	32000 ROUTE KMS COVERED UNDER CC+8	UNIVERSALISE CC+8

WAGONS contd…

STRATEGY	ACHIEVED	AIMING AT
HEAVIER	PARTIAL INTRODUCTION OF 25T ON IRON ORE ROUTES	PROLIFERATE TO ALL IRON ORE ROUTE
	TRACK UPGRADATION-	FURTHER UPGRADATION
	WAGON MODIFICATION (BOXNHL,BCNHL,BTFLN …)	INDUCT 25 T WAGON
LONGER	INCREASE IN TRAIN LENGTH BY 1-2 WAGONS (BOXN 58-59, BCN 40-42, BTPN 48-49)	PROLIFERATION

WAGONS contd…

STRATEGY	ACHIEVED	AIMING AT
FASTER	NEW BOXNHL CLEARED FOR 75L/100E	ALL STOCK FOR 75L/100E WHEN RUNNING IN CC+8 RDSO is to conduct trials for same
INDUCTION OF WAGONS	16638 WAGONS IN 2010-11	REQ OF 20,000 WAGONS

RATIONALISASTION OF WAGONS MAINTENANCE PRACTICES

- No. of rake examination/day has come down from 319 in Mar' 2006 to 228 in Mar' 2011.
- Approx. gains of 12-15 MT.
- Gains due to - Premium Examinations, increase in CC km etc.
- Road Ahead – * CC rakes to change from **base concept** to **Pool concept.**

  * Further category of 'Super Premium'.
- Inputs Reqd. – * Improve quality of POH/ ROH

  * Sick line quality to improve.

  * RAKE IN – RAKE OUT concepts

THE SR. DOMs ROLE AS THE DRIVING FORCE

- **EXAMINATIONS HAVE TO BE ONLY PREMIUM OR CC ESPESCIALLY WITH BOXN AND BCN RAKES**

- **BOXNHL AND BXNHL RAKES TO BE ONLY ON CC BASIS**

- **DISCIPLINE IN LOADING OF CC RAKES**

- **MONITOR RUNNING OF BOXNHL STOCK-CLEARED FOR 75L/100E-IS IT BEING DONE?**

- **LONGER TRAINS– ARE YOU A PART OF THE SOLUTION OR THE PROBLEM?**

LOCOMOTIVES

- As on 01.05.2011, there are **2452 Electric** and **1675 DSL** freight locomotives in IR system.
- LOCO induction in 2011-12

DIESEL		ELECTRIC	
TYPE	**No.s**	**TYPE**	**Nos**
WDG 4	150	WAG 9	55
WDP 4	50	WAG 7	140
WDM 3D	25	WAP 5/7	45
		WAP 4	30
TOTAL	**225**		**270**

LOCOMOTIVES contd…

- **Loco utilisation (EKM)**

Year	Diesel	Electric
2008-09	413	503
2009-10	402	506
2010-11	431	495

THE SR. DOMs ROLE AS THE DRIVING FORCE

Strategies to improve Loco utilisation:EACH STRAEGY IS UNIQUE

- **Right powering**
- **Review Power Plans, Pass. loco links : Save locos**
- **Monitor Dead/Failed locos on line**
- **ARE YOU MONITORING THE TIME SPENT BY LOCOMOTIVE ON LINE I.E BETWEEN SHED OUT TO SHED IN? CURRENT DATA SHOWS LOCOS ENTER SHEDS ON AN AVERAGE AFTER ONLY65-75% OF SCHEDULED TIME**

CREW - Strategies

- Most scarce resource – Monitor intensively
- Fill up the Vacancies:

CATEGORY	VACANCY % (As on 01.05.2011)	Absolute Nos IR
LP Goods (DSL)	24 %	2452
LP Coaching (DSL)	18 %	944
LP Goods (Electric)	27 %	3475
LP Coaching (Electric)	14 %	749
Guards	19 %	5194

CREW

- **MONITOR PDD – RAILWAYS HAVING CREW SHORTAGE HAVE HIGHEST PDDs**
- **CHANGE OPERATING ETHOS-**

  TRAIN SHOULD NOT WAIT FOR CREW

  TO

  CREW SHOULD NOT WAIT FOR TRAIN
- **MAKE MONITORING PDDs PART OF DAILY POSITION**

RUNNING- COACHING RAKE Vs LOCO

- **TOTAL 2357 PASSENGER RAKES ON IR REQUIRE LOCOMOTIVES**
- **RAKES SPENDS 12.5 HRS. ON LINE**
- **LOCO LINKS+GIP = 2956 LOCO USED IN COACHING SERVICES**
- **IN LIEU OF RATIO OF 0.55 ACTUAL RATIO IS 1.2**

RUNNING- COACHING RAKE Vs LOCO

- EVEN ASSUMING RATIO OF 1:1. SURPLUS IN COACHING SERVICES IS 473
- ALL NEW TRAINS OF 2011-12 WILL BE RUN FROM EXISTING COACHING LOCOS ONLY
- HIGHER RATIOS THAN 1:1 ON ECR, KR, NCR, NR, SECR, WCR
- UNDERTAKE REVIEW IMMEDIATELY

THE SR. DOMs ROLE AS THE DRIVING FORCE

- Reducing PDD by 1 hr , 10% crew can be generated.
- 9% of the crew are used less than 80 hrs in 15 days.
- Review crew on non-running duties, travelling as passenger to pick up link : ***Save crew***
- **Crew should not wait for train** and not the reverse.

TERMINALS

- Create more terminals: PFT Policy
- Reduce the detention at LDG/ULDG terminals
- Reduce detention on TXR Examination

- **Average 8.5% Growth in Freight Traffic every year.**

- **Wagon turn round improved from 7.5 days in 2000-01 to 5 to 6 days in 2008-09**

- **A reduction of 1 day in WTR means 20% additional originating loading.**

- **On an average 30% time is still spend in terminals.**

A Perspective

- POL loading accounts for approx 47 rakes/day.
- Approx 140 rakes excluding POL are loaded essentially from 12 Ports every day. This is 20% of total loading of IR.
- Approximately 85 rakes are unloaded at the ports necessitating positioning of empty rakes to ports.
- Entire Coal loading is done from sidings barring a few rakes. This is 45% of IR loading.
- Steel , Cement and fertilizer loading constituting about 25% of traffic is from sidings.
- About 15% of originating traffic is from Good Shed (Iron ore 30, FG 25, balance other 35 , container 5 rakes).

A Perspective

- 35% of unloading in Public Terminals (cement 75, Fertliser 45, FG 15, other goods 40, coal 20 Iron ore 15, container 5, Steel 20).

- Substantial role of Public terminals in unloading cycle

Private Terminals

- Detention of wagons at major port continue to be about 24hrs for single operation and more than 36 hrs for double operation.
- Concept of exchange yards leading to detention of rakes.
- Inadequate infrastructure including non availability of full rake length line, traction change..
- Reliability of handling equipments (tipplers, loading chutes, conveyors) -pipe line management?
- Lack of space for expansion
- Detentions to wagons in power houses at times exceeds more than 24 hrs

Public Terminals

- Initially built to handle wagon load traffic with warehousing facilities
- Introduction of rake load concept led to modification of terminal facilities to handle full rakes. Warehousing concept given up.
- 210 terminals in 2008 handled more than 15 rakes per day.
- In 2007 modernisation programme undertaken for upgrading 50 of the busiest terminals

Public Terminals- Modernisation

- Terminals handling >15 Rakes/month to have additional lines as a policy.
- To work round the clock.
- Circulating area to be commodity specific and made of concrete; approach roads to be heavy duty; covered sheds for bagged commodities
- Adequate Lighting; Amenities for labor and customers;
- FOIS and communication facilities
- Each upgradation could cost upto 5 crores

Way ahead- Terminals

- Consolidation of good sheds – nodal goods sheds
- Bulk Terminals
- Third Party Terminals.
- Multimodal logistic parks.
- Equipped with appropriate infrastructure automation and paperless transaction system

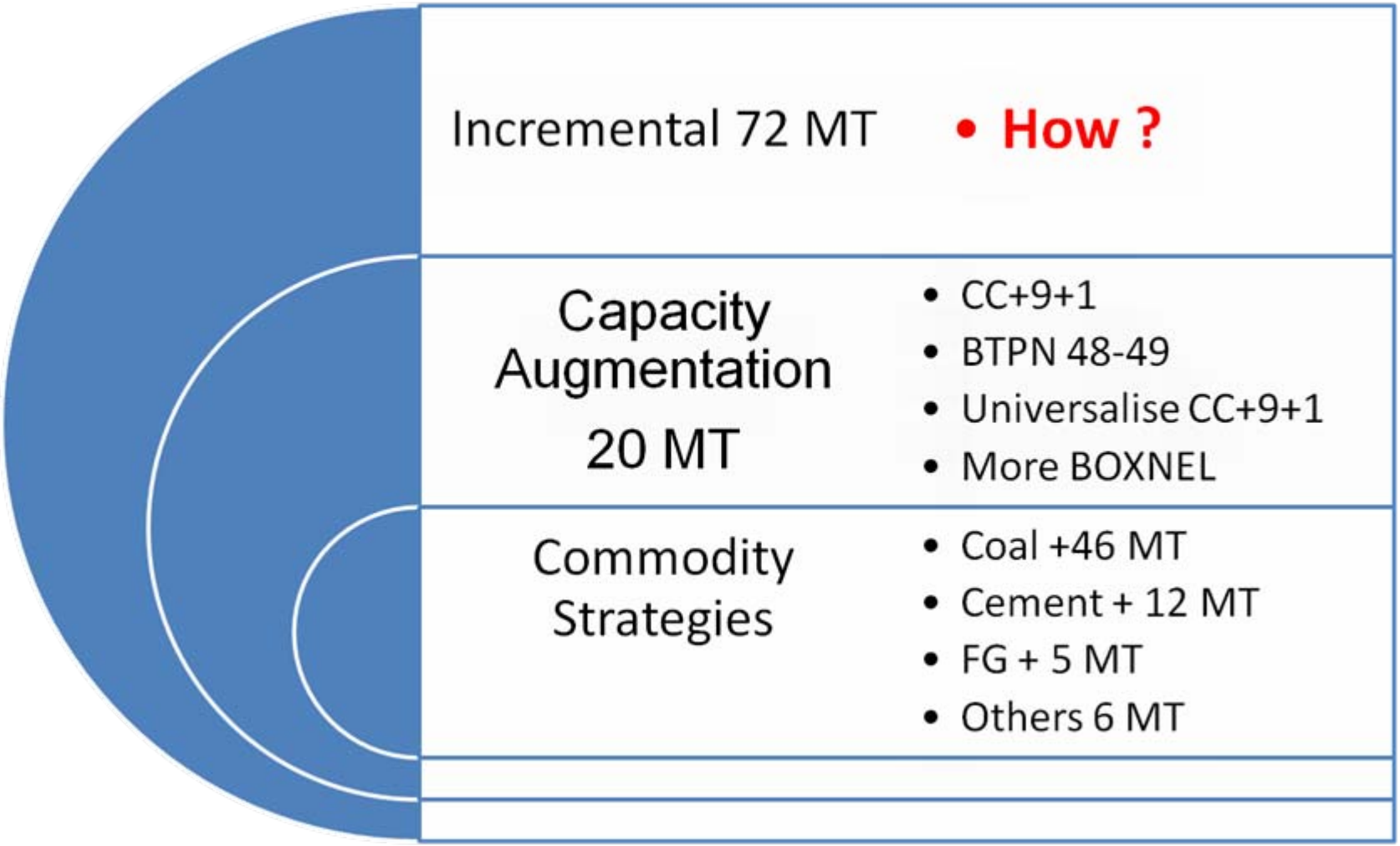
TERMINAL DETENTIONS FOR LOADING

Year	Rakes	Arr to PM	PM to Rel	Rel to Dep	Arr. To Dep.
2004-05	211521	3:43	11:36	7:39	23:17
2005-06	227302	2:53	10:14	5:57	19:14
2006-07	243721	2:09	9:48	5:44	17:41
2007-08	262543	1:46	8:56	6:07	16:49
2008-09	269355	2:25	8:48	5:08	16:21
2009-10	277102	2:31	8:02	4:18	14:51

TERMINAL DETENTIONS FOR UNLOADING

Year	Rakes	Arr. To PM	PM to Rel	Rel. to Dep.	Arr. To Dep
2004-05	211521	3:43	11:36	7:39	23:17
2005-06	227302	2:53	10:14	5:57	19:14
2006-07	243721	2:09	9:48	5:44	17:41
2007-08	262543	1:46	8:56	6:07	16:49
2008-09	269355	2:25	8:48	5:08	16:21
2009-10	276140	2:23	12:43	3:16	18:22

STRATEGY FOR FY 2011-12



+72 MT – WHERE FROM?

COAL	38	POSSIBLE
RMSP	0.72	POSSIBLE
IRON & STEEL	2.20	POSSIBLE
IRON ORE	-3.43	REDUCTION OVER LAST YEAR
CEMENT	11.00	POSSIBLE
FOODGRAINS	5.20	POSSIBLE
FERTILIZER	4.83	POSSIBLE
POL	0.25	POSSIBLE
CONTAINER	8.00	?
OTHER GOODS	5.00	POSSIBLE
TOTAL	71.50	

A Vision for the future

- Current strategy is conservative - Incremental approach
- Growth of the economy is likely to continue at 8% and accelerate – huge opportunity for railways
- For IR to play its role as a vehicle for inclusive growth and environmentally sustainable development- needs a high growth trajectory
- **VISION 2020:** From incremental approach to capacity ahead of demand ⇒ 10% growth in passenger and freight traffic
- **Freight traffic:** ***Originating Tonnage: 2009-10: 888 mt , 2019-20: 2165 mt***

  NTKM : 2009-10: 584 m , 2019-20: 1407m
- **Passenger traffic:** ***Originating passengers: 2009-10: 7.4b , 2019-20: 15.2b***

  PKM : 2009-10: 925b , 2019-20: 2360b

Targets for 2020

Year	2009-10	2019-20	Growth Rate (%)	Market-share Goal
Originating Freight (million tonnes)	**890**	**2165**	**10**	**70% bulk, 50% overall**
Originating Passengers (million tonnes)	**7397**	**15180**	**10**	**Full satisfaction**

SUMMING UP

- OPERATIONAL STRATEGIES

➢ Longer Trains

IMMEDIATE →

- - Already increased by 1-2 wagons
- Loco troll being inducted.
- Knock off BV's
- Add 1 more wagon
- Run long haul trains

FUTURE →

- Extra loops
- Plan for forward Loops
- Immediately review extra loops

SUMMING UP……

- Heavier Trains

  IMMEDIATE →
  - Proliferate 25 t Axle load
  - Get CRS sanctions

  FUTURE →
  - 25 t Axle load wagons being designed and should be inducted in 2 years time.

- Faster Trains

  IMMEDIATE →

  FUTURE →
  - RDSO conducting trials for 75 kmph.
  - All new BOXNHL cleared for 75 kmph load/ 100 kmph Empty.
  - Get CRS sanctions.
  - All speeds to be uniform at 75 kmph load / 100 kmph empty.

PART II

CRITICAL LINKS vis-à-vis TRAFFIC PROJECTION

- Long Range Analysis of Critical links based on future traffic projection in 2016-17 & 2021-22

  - with Dedicated Freight Corridor

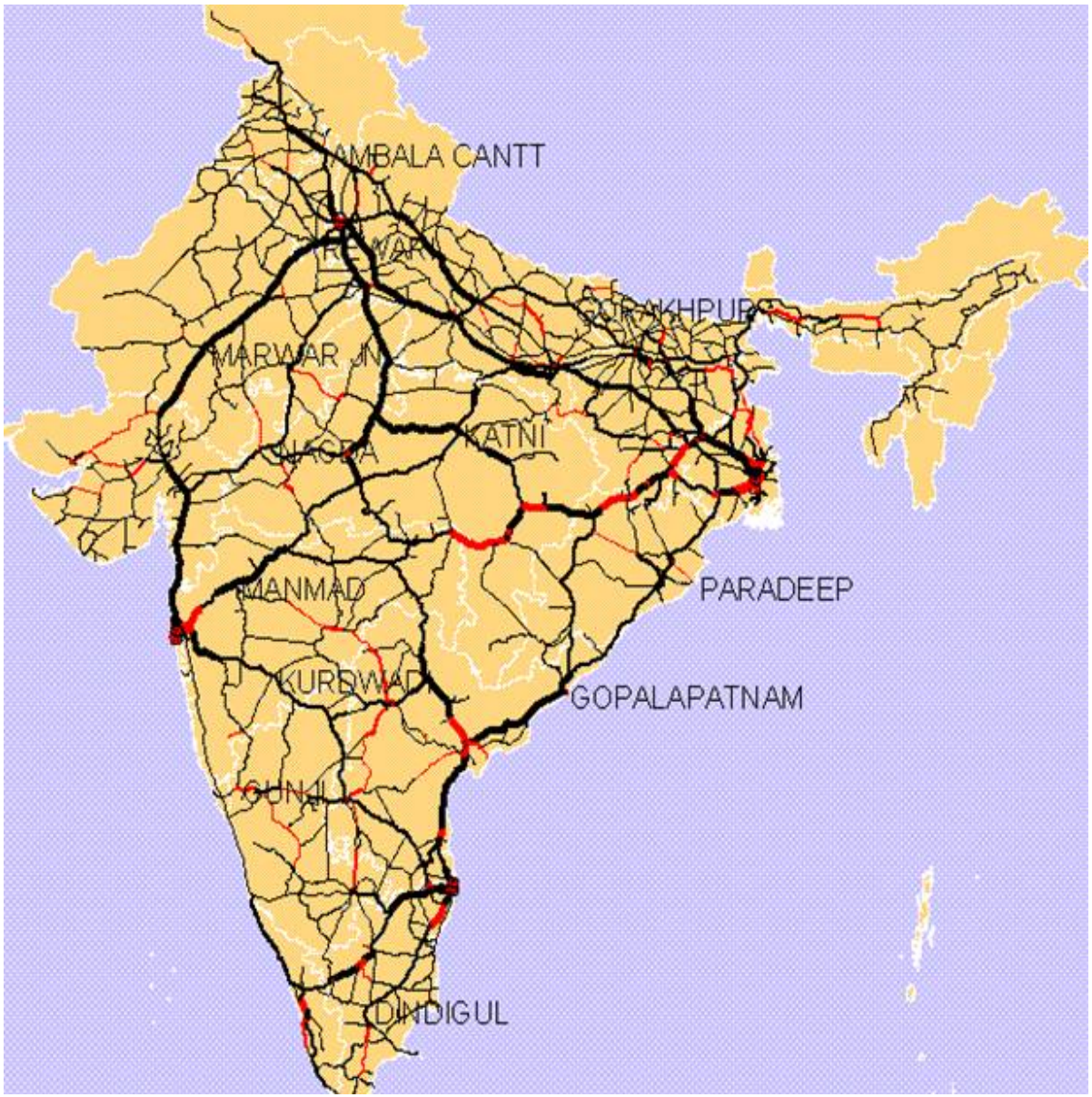
  - without Dedicated Freight Corridor

  - in combn. with s/stack & D/stack Containers

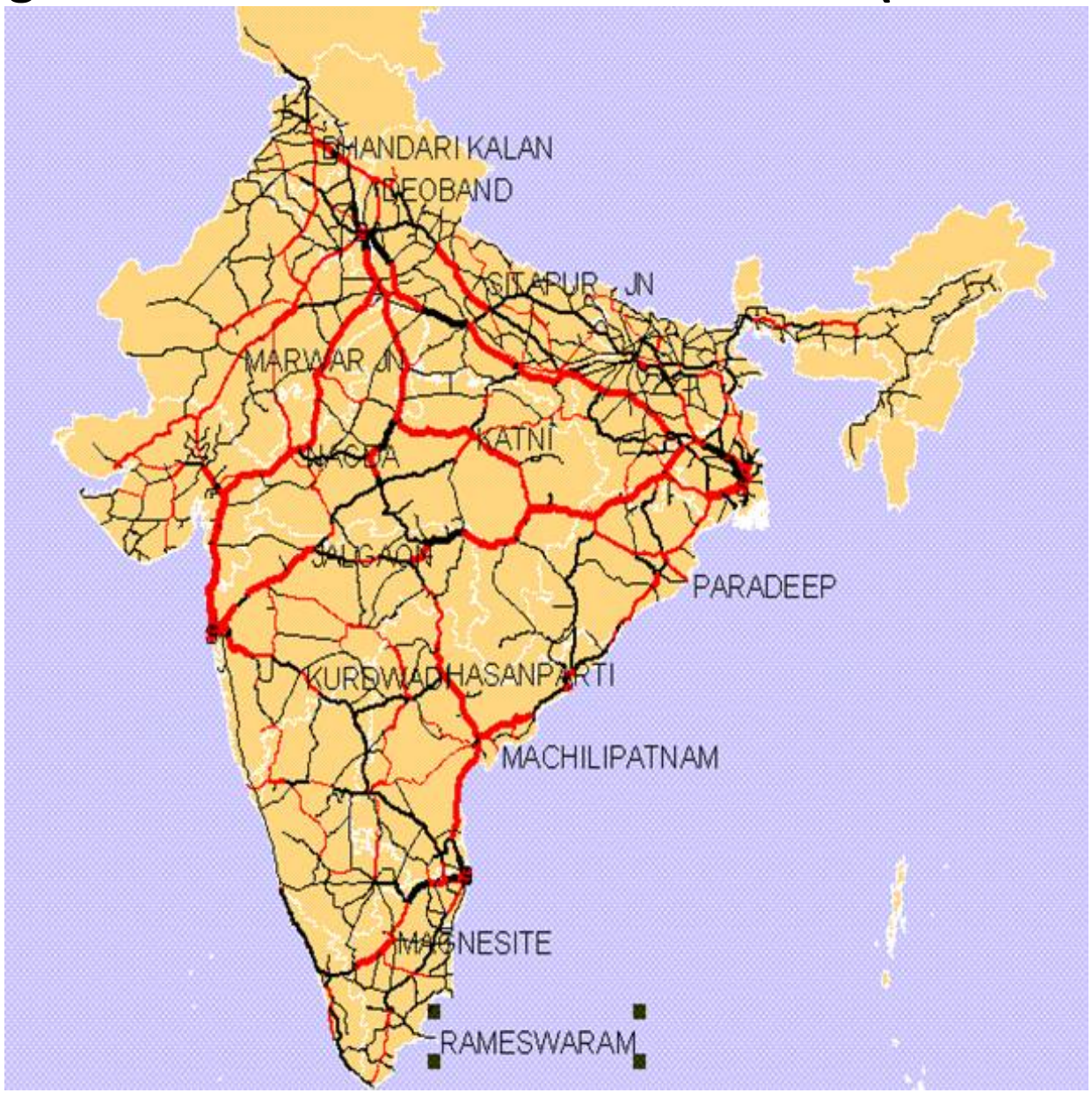
Envisaged Critical links in 2016-17 Network (Without DFC)



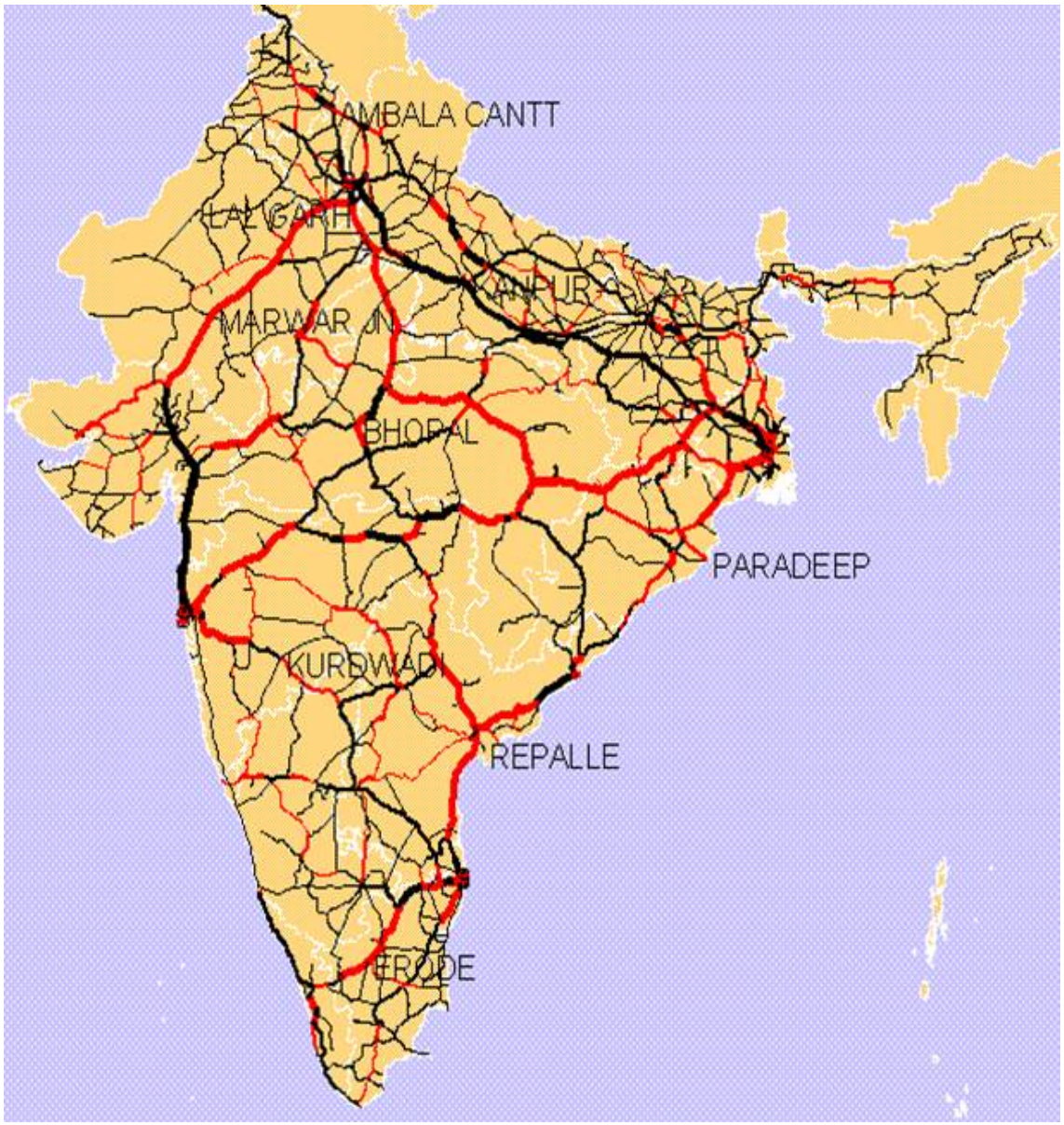
Critical links in 2016-17 with DFC & single stk Container trains



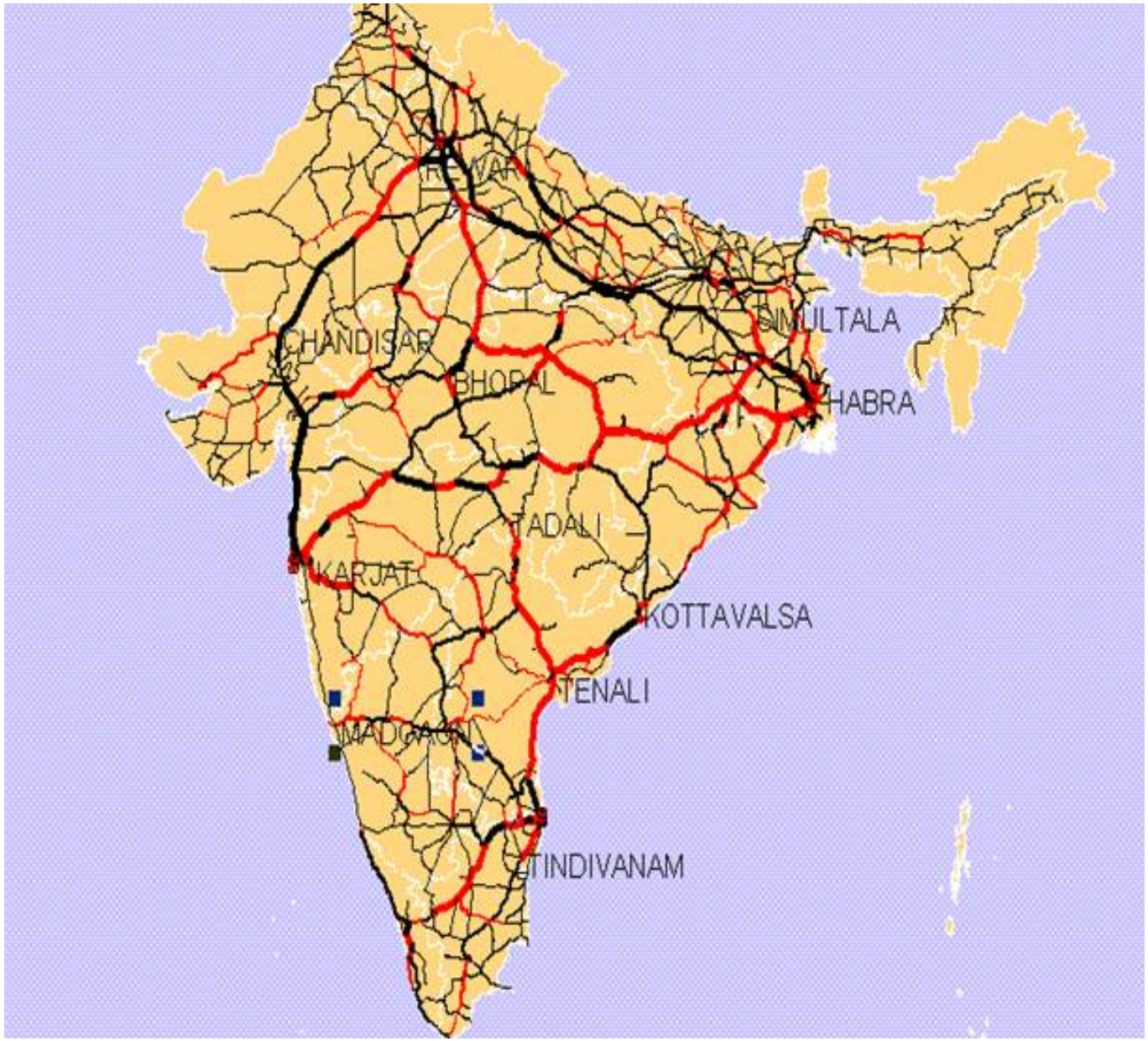
Envisaged Critical links in 2021-22 Network (Without DFC)



Critical Links in 2021-22 with DFC & single Stk operations



Critical links in 2021-22 with DFC and double stack containers



TRADITIONAL METHODS

- TRAFFIC FACILITY WORKS
- AUTOMATIC SIGNALLING
- ELIMINATING TRACTION CHANGES
- DOUBLING, ETC

IMPORTANT ITEMS

- AUTOMATIC SIGNALLING-
  - DO YOU HAVE HOLDING CAPACITY IN FORM OF MAJOR YARDS LOCATED CLOSELY?
  - ARE YOU HAVING MID SECTION SUB SECTIONING?
  - WHAT IS THE KIND OF TRAFFIC-SUBURBAN,ETC

DOING YOUR BIT
EMBEDDED EMPTY/SHORT LOADS

- **'C' CATEGORY UNLOADABLES INCREASED IN ER, SCR, ECR, SECR, SWR & WCR DESPITE BAN ON MECHANICAL UNLOADING BY JCB/POCLAIN**

- **ANALYSE FOR UNLOADING POINTS WHERE DAMAGES ARE TAKING PLACE**

- **SUBSTANTIAL SHORT LOAD RUNNING IN BOXN ON ECoR, SCR & SECR**

DOING YOUR BIT

- **SHORT LOAD RUNNING IN BCNS HAVE GONE UP IN NR & WCR**

- **WITH CONCORDE RAKES NOT HAVING BOXNS, NO MARKING OF STEEL FIT BOXNS. BOXN SHOULD BE EITHER FIT OR SICK**

DOING YOUR BIT

- **UNDER LOAD RUNNING OF BOXN HL RAKES ON SECR AND WCR CC RAKES**
- **UNDER LOAD RUNNING OF BCNHL RAKES**
- **UNDER LOAD RUNNING OF BOBRN RAKES ON ECoR CC AND ER RAKES**

DOING YOUR BIT

- **22% OF BCN RAKES RUNNING LESS THAN 42 WAGONS**
- **FULL TRAIN LEADING TO LESSER NUMBER OF TRAINS IS A MUST IN 2011-12**
- **DUE TO CURRENT SHORT LOAD RUNNING IN BCN RAKE, 9.6 RAKES/DAY ARE RUN EXTRA ON IR SYSTEM.**
- **DUE TO CURRENT SHORT LOAD RUNNING IN BOXN RAKE, 6.0 RAKES/DAY ARE RUN EXTRA ON IR SYSTEM.**

INNOVATIVE METHODS

- PROLIFERATE **LONG HAULS**: *(THE MORE THE MERRIER)*

  - Higher Speed More than 40 kmph

  - Higher throughput

  - Saves crew

LOCO TROLLS

- **New wireless technology under procurement:**

  - Distributed power , suited for Long Hauls

  - Shorter braking distance; more speed

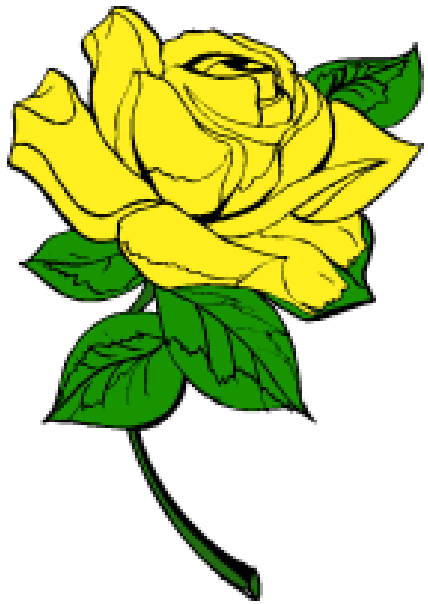
  - Saves crew

A PARADIGM SHIFT

- **ADVTGS OF LONG HAUL COMES WHEN MORE IS RUN**
- **BASIC NECESSITY IS TO HAVE LONGER LOOPS AT 4 STATION DISTANCES**
- **IF THIS IS THE FUTURE, SHOULD WE INVEST IN 3RD LINE OR 4TH LINE PROJECTS?**

INITIATIVES FOR CAPACITY AUGMENTATION

- Dedicated Freight Corridor
- Right Investments
- Improving Port Connectivity
- Improving Rolling Stock



Thank You