

19th December 2011

Conference with Japanese Government Agencies and JR East

- Presentation by MOR Staff : HSR - Indian Perspective and Policy
Initiatives

HSR – INDIAN PERSPECTIVE AND POLICY INITIATIVES

JICA Study, Tokyo

December 19, 2011

Ministry of Railways
Government of India

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I Indian Transport Scenario

II. Need of High Speed Railway in India

III. National High Speed Rail Authority (NHSRA)

IV. Key Issues and Challenges

IV. Implementation Structure

INDIAN TRANSPORT SYSTEM



INDIAN TRANSPORT SYSTEM

- India being the seventh largest country in the world has a large and diverse Transport infrastructure system.
- India's transport sector caters to the needs of 1.4 billion people. Urban population constitutes 31% of total population growing at rate of ~2.3% per annum.
- Railway, Road and Airport - the lifeline and the mainstay of the country's transport Infrastructure.



STATUS OF INDIAN TRANSPORT SYSTEM - RAILWAYS

- Indian Railways - the 3rd largest railway systems in the World, approx. 64,000 route kms.
- Approx. 7 Billion passengers, 922 million tones freight traffic (2010-11).
- Railways - account for approximately 10% of passenger traffic, 35 % of freight traffic.



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STATUS OF INDIAN TRANSPORT SYSTEM - ROADS & HIGHWAYS

- 2nd largest road network in the world - 3.3 million kms.
- National Highways form 2% of road network and account for 40% of total road traffic
- Roads -account for approximately 88% of passenger traffic and 65 % of freight traffic.



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STATUS OF INDIAN TRANSPORT SYSTEM - AIRPORTS

- 125 airports - 11 international airports.
- Planned investment in airport infrastructure is estimated to be \$9 billion by 2013.
- During the past year, passenger traffic has been 34 million and freight traffic has been 0.3 million.



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CHALLENGES IN TRANSPORT



- Congestion on the roads, longer journey times, higher vehicle operating costs, higher vehicle emissions, and more traffic accidents.

- Dependence on imported fossil fuels.
- Average passenger train speed is less than 60kmph and average freight train speed is less than 30kmph.



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INVESTMENT PLAN IN TRANSPORT: NEXT FIVE YEARS

- USD 1 Trillion Investment in Infrastructure
- Railway: USD 65.9 Billion
- Roads and Highways: USD 120 Billion
- Airports: USD 14.7 Billion



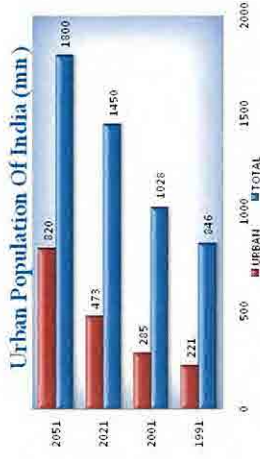
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INCREASING URBANIZATION

The major challenges faced are:

- Major Urban centers are severely congested:
- Dramatic growth in vehicle ownership in the past decade.
- Accessing jobs, education - becoming increasingly time-consuming.
- Billions of man-hours are lost with people stuck in traffic.



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INCREASING URBANIZATION



Explosion in Inter City Travel

India's urban population - 285 million reported in the 2001 census and 377 million in 2011 census.

McKinsey Global Institute (MGI) projects - 590 million by 2030 (40% of India's total projected population).



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NEED OF HSR IN INDIA ?

INCREASING URBANIZATION

Explosion in Inter City Travel

The rapid urbanization in the country has triggered a growing demand for inter city traffic between metropolitan cities and 2nd and 3rd tier cities.

In absence of HSR, passenger traffic of Airlines/ Car users growing at 15-20%



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NEED FOR HSR IN INDIA

HSR is energy efficient and is less polluting than Road/Air travel.



Indian imports about 80% of its oil requirement. HSR will use indigenous energy resources like thermal/hydel/nuclear based energy



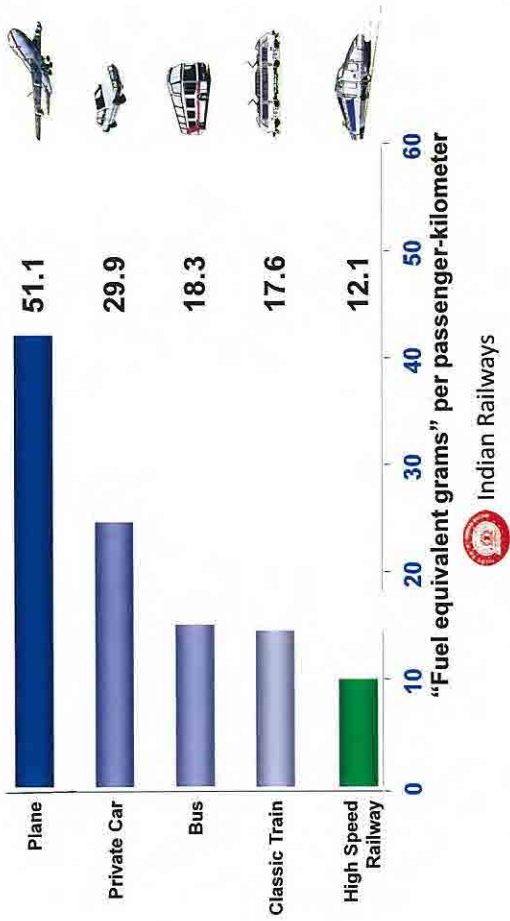
Economically as well environmentally, Rail based Transport system is ideally suited for India.



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ENERGY EFFICIENCY

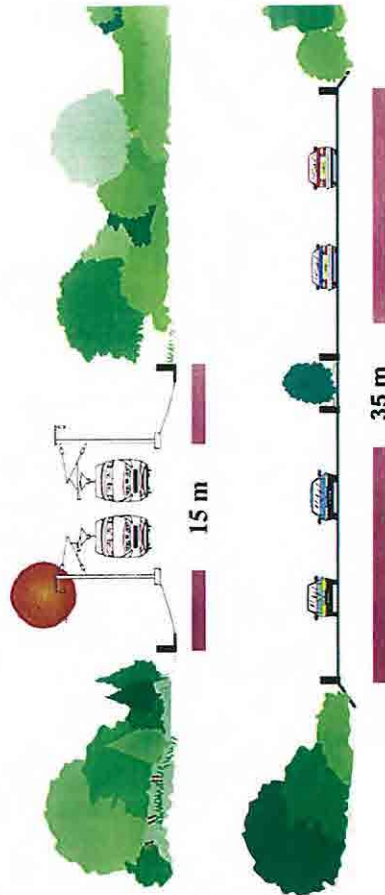
High Speed saves Energy Costs and reduces Greenhouse Gases



LAND REQUIREMENT

Land requirements are Smaller

A rail-line allows more passengers than an eight lane highway. Elevated rail corridors limits Land Acquisition.



DECONGESTION AND CAPACITY ADDITION

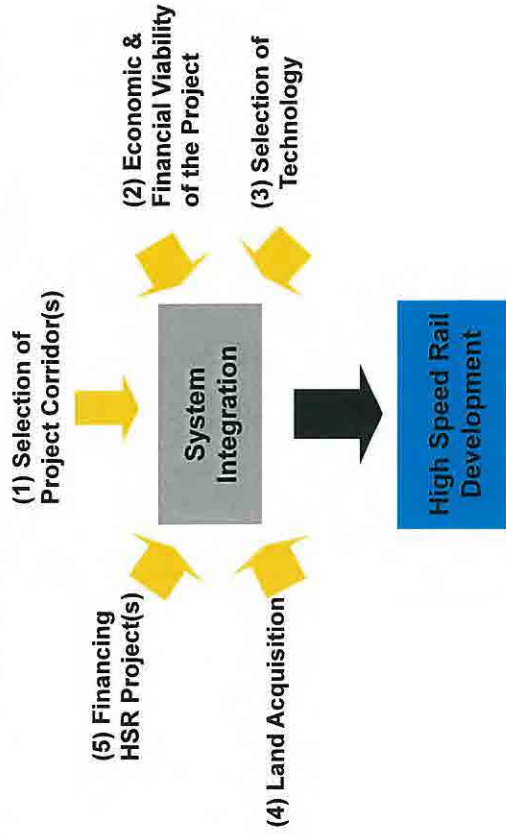
High Speed Rail	Motorway
Double Track	2x3 Lanes
12 Trains per hour per Direction	4500 Cars per hour per direction
1000 Pax/Train	1.7 (Average) Passengers per car
Capacity = 12000 per hour	Capacity = 7650 per hour

Reduction in commuting time between cities and added capacity gives an excellent opportunity for decongestion of the urban centers and growth of smaller towns and other cities.



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KEY ISSUES & CHALLENGES



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(1) SELECTION OF PROJECT CORRIDOR(S) FOR IMPLEMENTATION

- Many choice: Selection of pilot Project;
- Economically/financially viable projects to be given priority;
- Willingness of local governments to participate in the project by way of land and funding support.



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(2) ECONOMIC & FINANCIAL VIABILITY OF THE PROJECT

- HSR will be a dedicated line; Huge demand risk due to higher tariffs as compared to conventional rail.
- The high capital costs of HSR makes it a financing challenge.
- Emphasis on other alternative revenue sources like Real estate revenues, carbon credits, cross-subsidy from road/air travelers.



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(4) LAND ACQUISITION

- Critical due to stringent alignment requirements
- HSR corridors pass through conurbations or sensitive land;
- Strong public protests adversely affecting large number of projects.



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(3) SELECTION OF TECHNOLOGY

- Choice of Technology:
 - A) Fixed Infrastructure:
 - Mix of Embankment/Elevated/ Underground Structures and their dimensional control;
 - Construction Gauge;
 - Fencing of the complete track;
 - Electrical Installations.
 - B) Fast Upgrading Technology
 - Rolling Stock
 - Signaling and Communication
 - Train Control
 - Fare Collection



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(5) FINANCING OF THE PROJECT(S)

- GOI may not fully fund the corridors.
- Most state governments will have to raise finances by extra levies, real estate etc. even for part funding
- Private sector may not have adequate financing capability to fund the large HSR projects. Proper project structuring by unbundling the projects into smaller packages may be essential.



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SYSTEM INTEGRATION

- A typical HSR corridor might have large number of stakeholders (Centre, state governments, local municipalities, Indian Railways, technology vendors etc.), multiple concessions and complex interplay between roles and responsibilities of various authorities and concessionaires.
- The system integrator, the NHSRA or project specific SPV to derive the project to successful development and commercial operations.



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EXISTING SET UP OF INDIAN RAILWAYS

- Indian Railways is a department owned and controlled by the Government of India, via the Ministry of Railways.
- Constituted under the Indian Railways Act, 1890, Indian Railways is administered by the Railway Board.
- Railway is a Central subject; State govt. do not have jurisdiction on Railway systems



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REGULATORY STRUCTURE

- Operation of High Speed Systems are different as compared to the conventional Railways in terms of financial structuring, tariff, technology and safety parameters.
- The mix of social and commercial principles which guide the policies of conventional railways will not be the appropriate model for HSR
- HSR is highly capital intensive and proposes to provide a value-added service



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NEED FOR AN INDEPENDENT HSR AUTHORITY ...1



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NEED FOR AN INDEPENDENT HSR AUTHORITY ...2

- HSR Authority will:
 - With a dedicated focussed approach will be able to implement specific tasks more efficiently
 - Raise resources through multiple sources for financing the development
 - Can adopt different PPP structures on case to case basis.



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NEED FOR AN INDEPENDENT HSR AUTHORITY ...3

- HSR Authority backed by national legislation will be better suited to interact with multiple state governments and other strategic partners.
- To operate on sound commercial and economic principles.
- The Authority is also envisaged to perform a regulatory role for various HSR concessionaires.



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NATIONAL HIGH SPEED RAIL AUTHORITY

Government of India to set up a National High Speed Rail Authority (NHSRA)

- An autonomous body for implementation of High Speed Rail Corridor projects.
- This authority will be entrusted with the work of planning, standard setting, implementing and monitoring these projects.



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GOALS OF NATIONAL HIGH SPEED RAIL AUTHORITY

- Carry out DPR's for 2000 km of corridors by 2015
- Award of high Speed corridor/corridors of 500 km length for implementation on PPP basis by 2015
- Carry out Pre-Feasibility studies for 10,000 km of corridors by 2025
- Award/Develop high speed corridors of at-least 2000 Km, connecting various major cities having population of more than 2.5 million each with other important urban/industrial centers by 2025.



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ROLE OF THE NATIONAL HIGH SPEED RAILWAY AUTHORITY...2

- Overseeing implementation of projects and awarded contracts
- Periodic Monitoring of activities of Concessionaires/SPVs
- Interface with Indian Railway Units
- Coordination between various HSR SPVs
- Identifying sources of financing and assist in achieving financial closure for each project.

ROLE OF THE NATIONAL HIGH SPEED RAILWAY AUTHORITY...1

- Planning of core infrastructure and identification of regions for HSR Systems
- Creating platform for long term development of HSR in India
- Identifying and specifying processes and technologies to be used
- Invitation and award of contracts/concessions for implementation of the project
- Land acquisition for setting up new stations and tracks



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ROLE OF THE NATIONAL HIGH SPEED RAILWAY AUTHORITY...3

- Developing additional revenue streams – real estate.
- Optimisation of input costs
- Carry on research activities in relation to the development, maintenance and management of HSR systems or any such facilities
- Advise the State & Central Government on matters relating to HSR systems



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IMPLEMENTATION STRUCTURE



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PRESENT STATUS...1

Policy Initiatives:

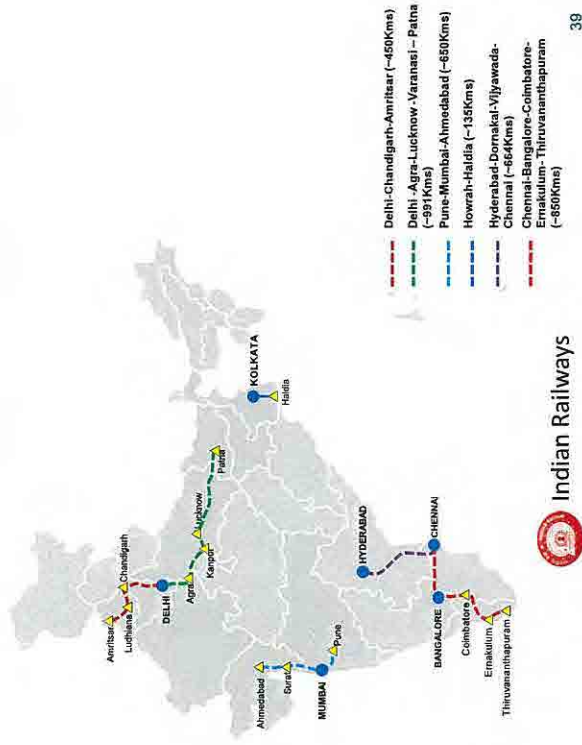
- Development of high speed rail corridors has been proposed through PPP in the Railway Budget Speech of the Hon'ble Minister for Railways for the Financial Year 2010-11
- Vision 2020 of Indian Railways: Completion of 4 High Speed Corridors of 2000 kms and subsequently development of 8 other corridors



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PRESENT STATUS...2



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PRESENT STATUS...3

Project Corridors	Status of Prefeasibility Studies
Pune - Mumbai - Ahmedabad	Final Report submitted
Delhi - Agra-Lucknow-Varanasi-Patna	Consultant selected.
Howrah -Haldia	Consultant selected.
Hyderabad-Dornakal-Vijaywada-Chennai	Consultant selected.
Chennai-Bangalore-Coimbatore-Thiruvananthapuram	Consultant to be engaged shortly.
Delhi - Chandigarh - Amritsar	Consultant to be engaged shortly.

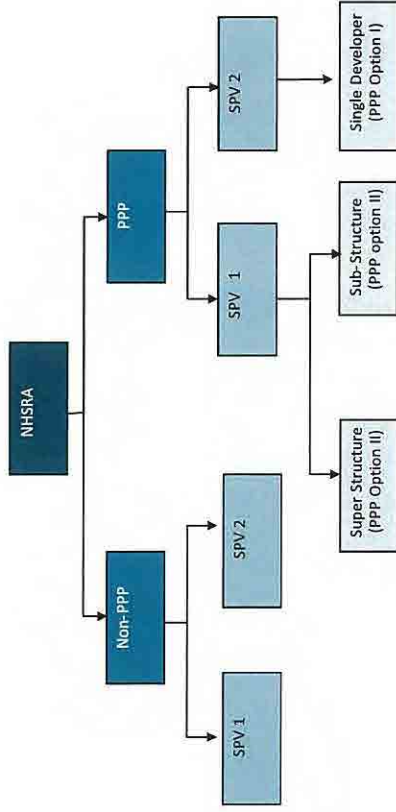


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IMPLEMENTATION STRATEGY

NHSRA shall act as the facilitator and regulator.



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NHSRA FUNDING...1

- Project Development Activities
- A separate fund will be created
- To be recovered from viable projects along with additional fee
- Rolling fund for further project development activities



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NHSRA FUNDING...2

- Funding Support by National High speed Railway Authority for PPP projects:
 - Viability Gap Funding
 - Multilateral/Bilateral loans by providing Centre government guarantees
 - Centre government guarantee for Long term Bonds of Project SPVs



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IMPLEMENTATION STRATEGY

➤ Project Structuring Options:

- Option 1: DBFOT
- Option 2: Unbundling the project into different components, so as to make the project components attractive to private players from the perspective of affordability in terms of size and risk allocation:
 - B&T (Fixed infrastructure)
 - DFOT (Train operations)

- Funding Support by NHSRA for Non-PPP Projects
 - Directly funded by Centre/State Governments
- Other Sources of Funds
 - Revenue share from Concessionaires (train operators)
 - Contribution from State Governments
 - Real Estate Development



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The Network & Organization

- “Shinkansen” – The Brand
 - Many entities, One Brand
- The Organisation – Public & Private – alignment of Objectives and Goal
 - (Manufacture, Operations, Maintenance & Research)
 - Customer Focus – Safety, Punctuality, Comfort, Speed and Capacity
 - Environment friendly – Emissions, Noise
- Central & Local Government Support



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Shinkansen - A Study Tour Perspective

- Dedicated Network
- Dedicated Organisation
- Infrastructure and Operations
- Integrated Supply Chain
- Creating value for customers
- Continuous Innovation



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Infrastructure and Operations

- Creating Infrastructure - JRTT
- Separation of Operations
 - Privatisation and division into six private companies of the Japanese National Railway thus fostering efficiency in operations
 - Focused and lean structure for Operations through region based Organisations (East, Central, West, Kyushu)
- Creating Mini Brands within “Shinkansen” to foster efficiency and dedication in operation (Tokaido, Sanyo, Tohoku, Joetsu)



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Integrated Supply Chain

- Backward
 - Specialised Manufacturers, Suppliers (Hitachi, Kawasaki, Toshiba, Nippon... et al.)
 - Robust Maintenance Organisations aligned towards efficient operations
- Forward
 - Creating value beyond travel – The Life style Business (retail, restaurants, vending machines, shopping centers, hotel chains, advertisement, sports and leisure...)

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OPPORTUNITIES FOR COOPERATION WITH JAPAN

- Japan being pioneer in HSR Technology, can be an important partner in developing Indian HSR.
- Both the countries have very long and close bilateral association.
- The possible areas for cooperation are:
 - Funding assistance
 - Technological assistance – Slab track, construction in congested areas, rolling stock, signalling and control system etc.

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Innovation – The Hallmark

- Sinkansen Series – creating new milestones
- New Technology – scaling new heights
 - Construction
 - Rolling stock Manufacture (eg. FSW, PMSM, Bolsterless Bogie, Wt Reduction)
 - Operations and Control (COSMOS)
 - Maintenance
 - Passenger services – Suika
- Innovative Operation
 - Coupling and de-coupling
 - Mini Shinkansen

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Arigato Gozaimasu

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