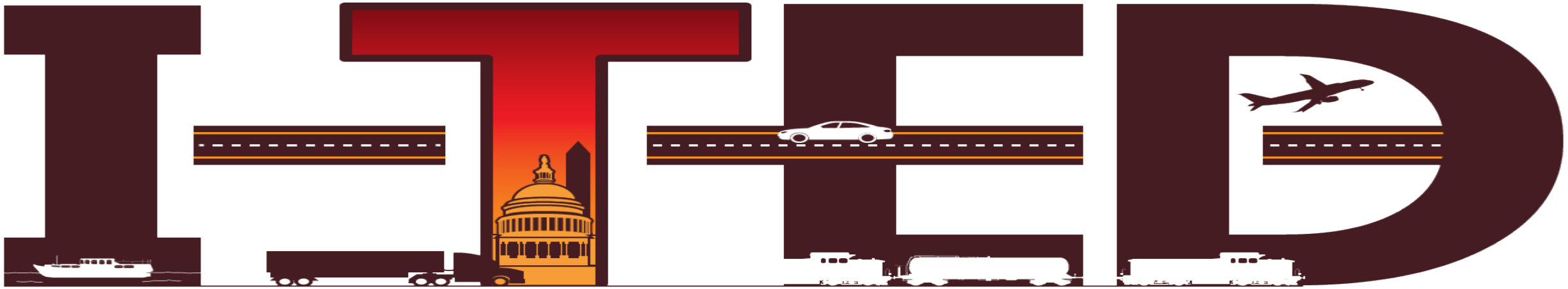

INTERNATIONAL TRANSPORTATION AND ECONOMIC DEVELOPMENT CONFERENCE
June 6~8 2018, Washington DC

INDIA RAILWAYS- DEDICATED FREIGHT CORRIDOR PROGRAM

Ben Eijbergen

Practice Manager Transport World Bank

Corridor/Spatial Impact

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Transport & Digital Development

Economic Growth & Freight Demand in India

- GDP growth rate - 7.2% (quarter ending December 2017)

- Projected freight growth – 9%

**Elasticity of transport demand to GDP is 1.2*

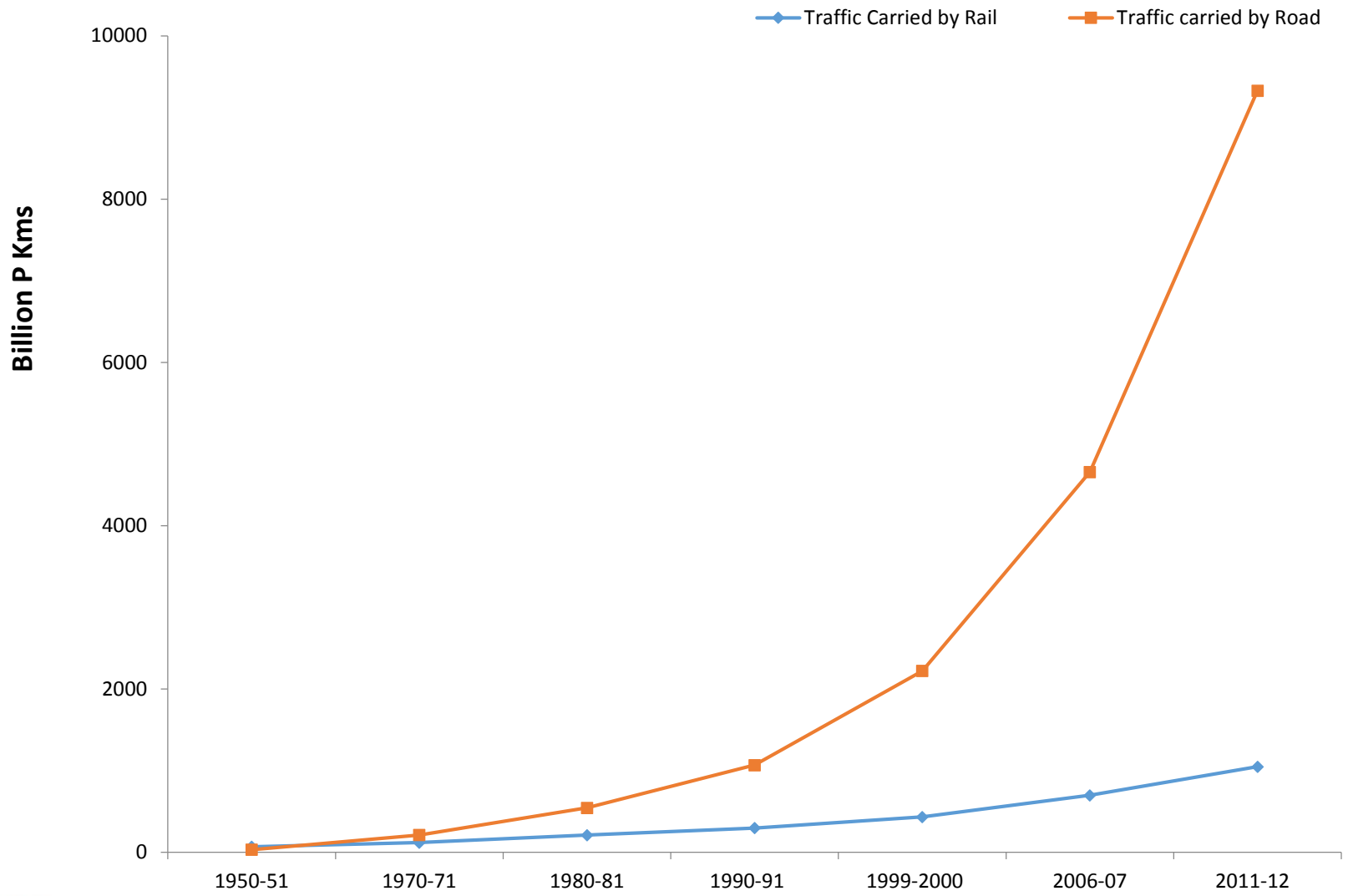
Indian Railways (IR): Key Facts

- IR operates a network of 65,400 route – kilometers carrying 8.4 billion passengers and 1.05 billion tons of freight
- Capacity utilization on IR's most heavily used routes exceeds 100 percent of nominal capacity by a significant margin
- Main railway corridors, part of the Golden Quadrilateral connecting Delhi, Mumbai, Chennai and Kolkata account for less than one-fifth of the network but carry more than 60% of its freight task

IR: Freight Share

- Passenger trains comprise 2/3rd of train km
- Insufficient physical capacity & service quality resulting in loss of market share (move to road haulage)
- Sufficient traffic demand to create additional capacity

Trends in Traffic Distribution



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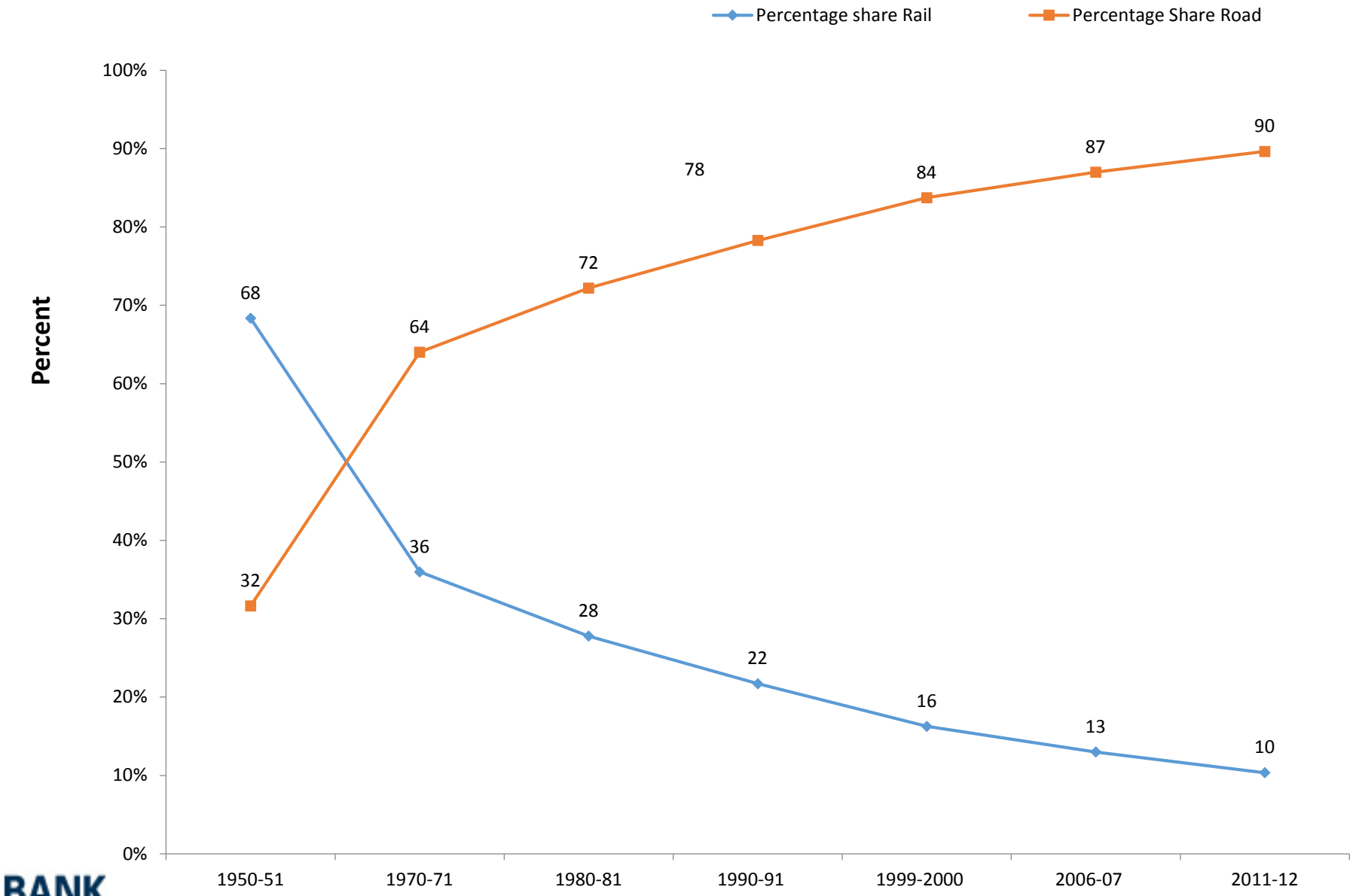
Trends in Traffic Distribution (%)



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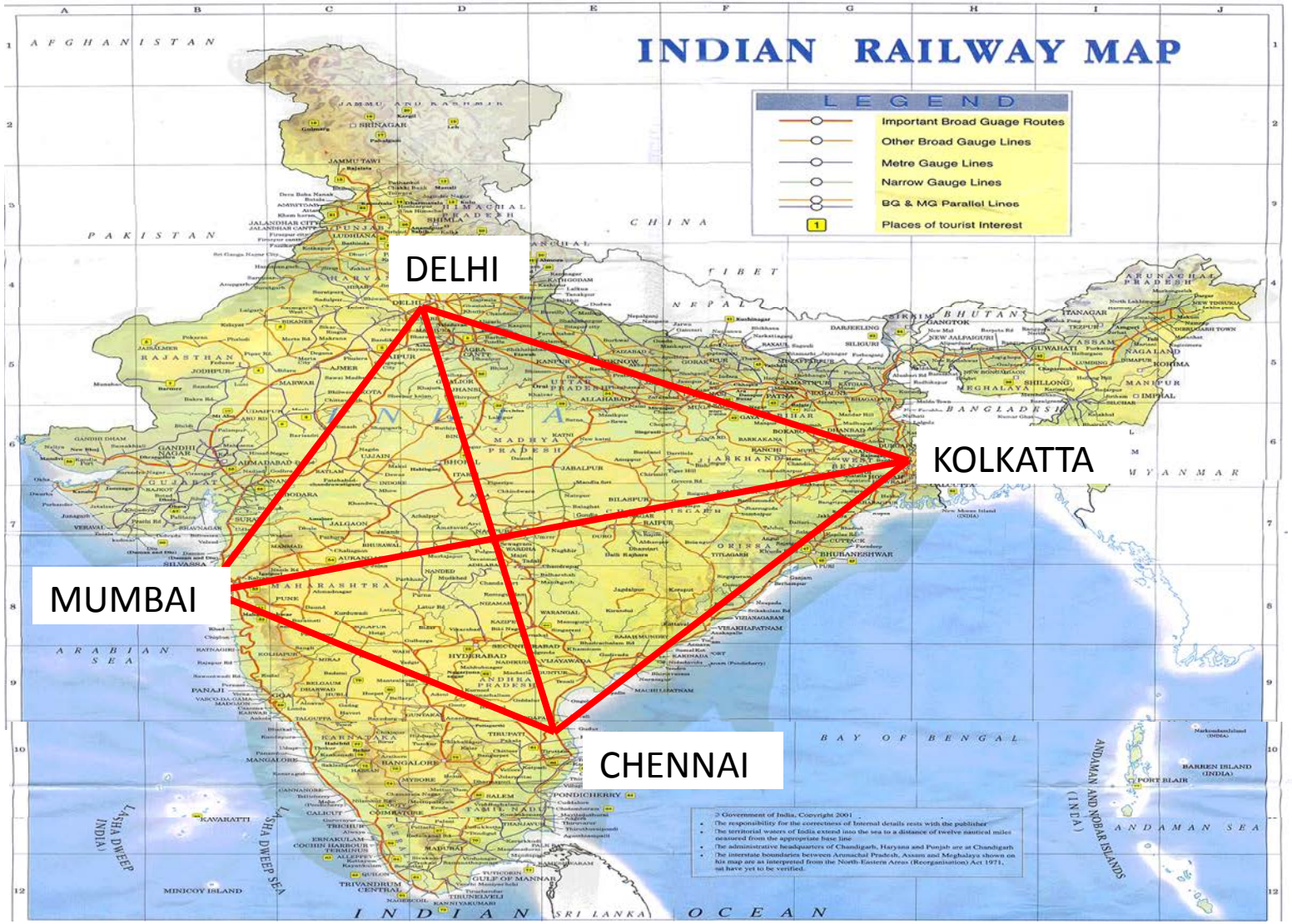
Golden Quadrilateral & its Diagonals



High Density Corridor (Golden Quadrilateral + Diagonals)

Rail: 16% of route Km carries 52% of passenger & 58 % of freight.

Road: National highways along these corridors less than 0.5% of network carry 40% of road freight.

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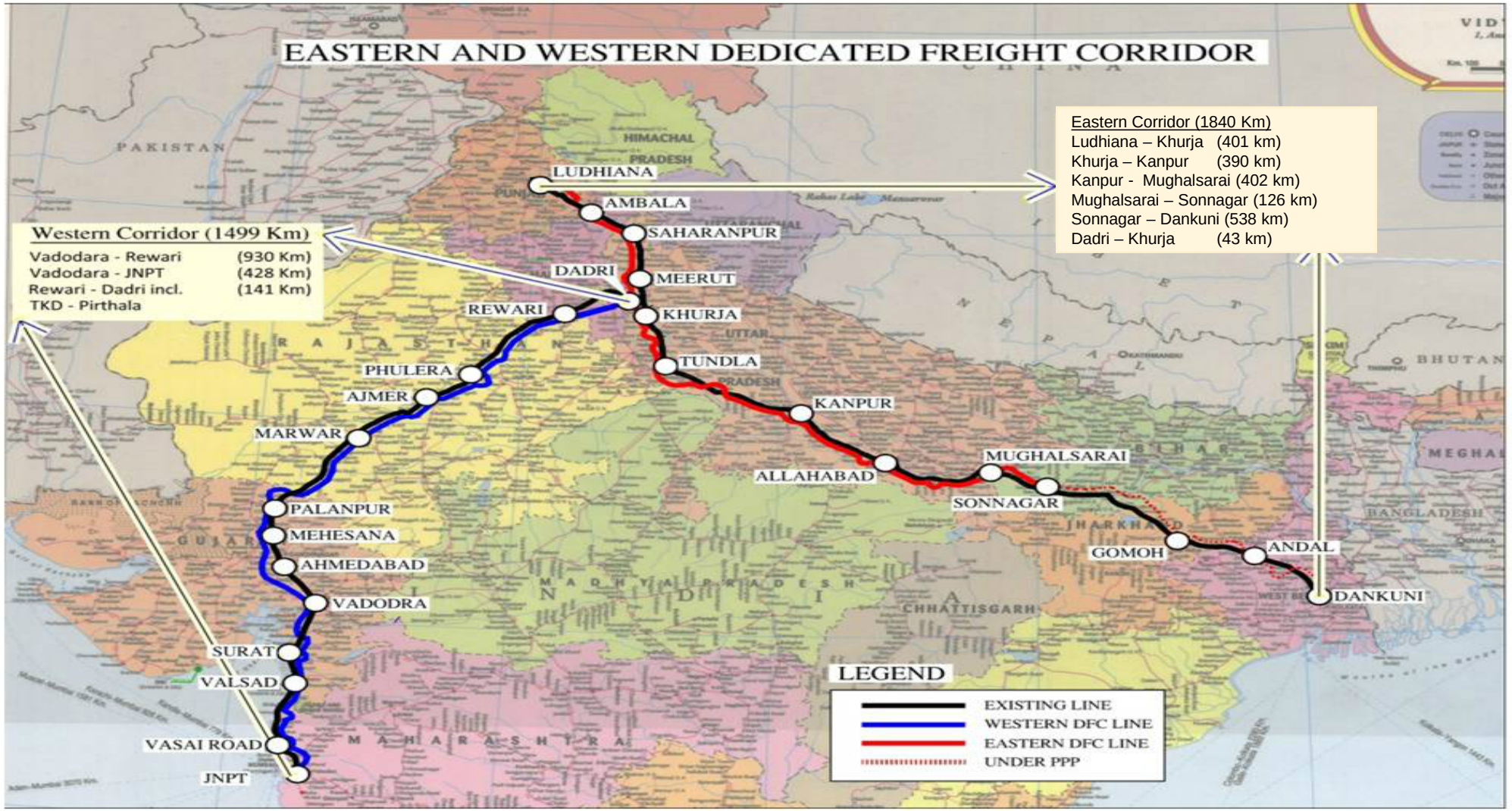
DFCs: Under Implementation



Line capacity utilization on existing trunk routes of Howrah-Delhi on the Eastern Corridor and Mumbai-Delhi on the Western Corridor vary between 115% to 150%

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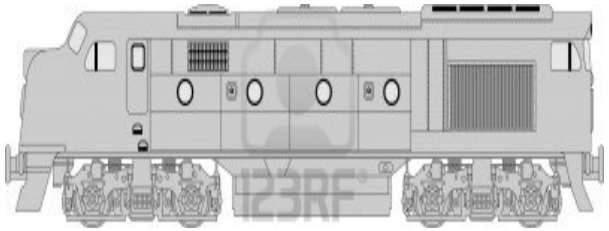
Transformational Impact of the Dedicated Freight Corridors

Policy Reform in Indian Railways

Economic –impact on trade and corridor development

Human Capital development and new institution (DFCCIL)

$4.7bn – new infrastructure, signaling system and Technical assistance



Private Sector Participation – Rail operations and freight market

55% reduction in GHG

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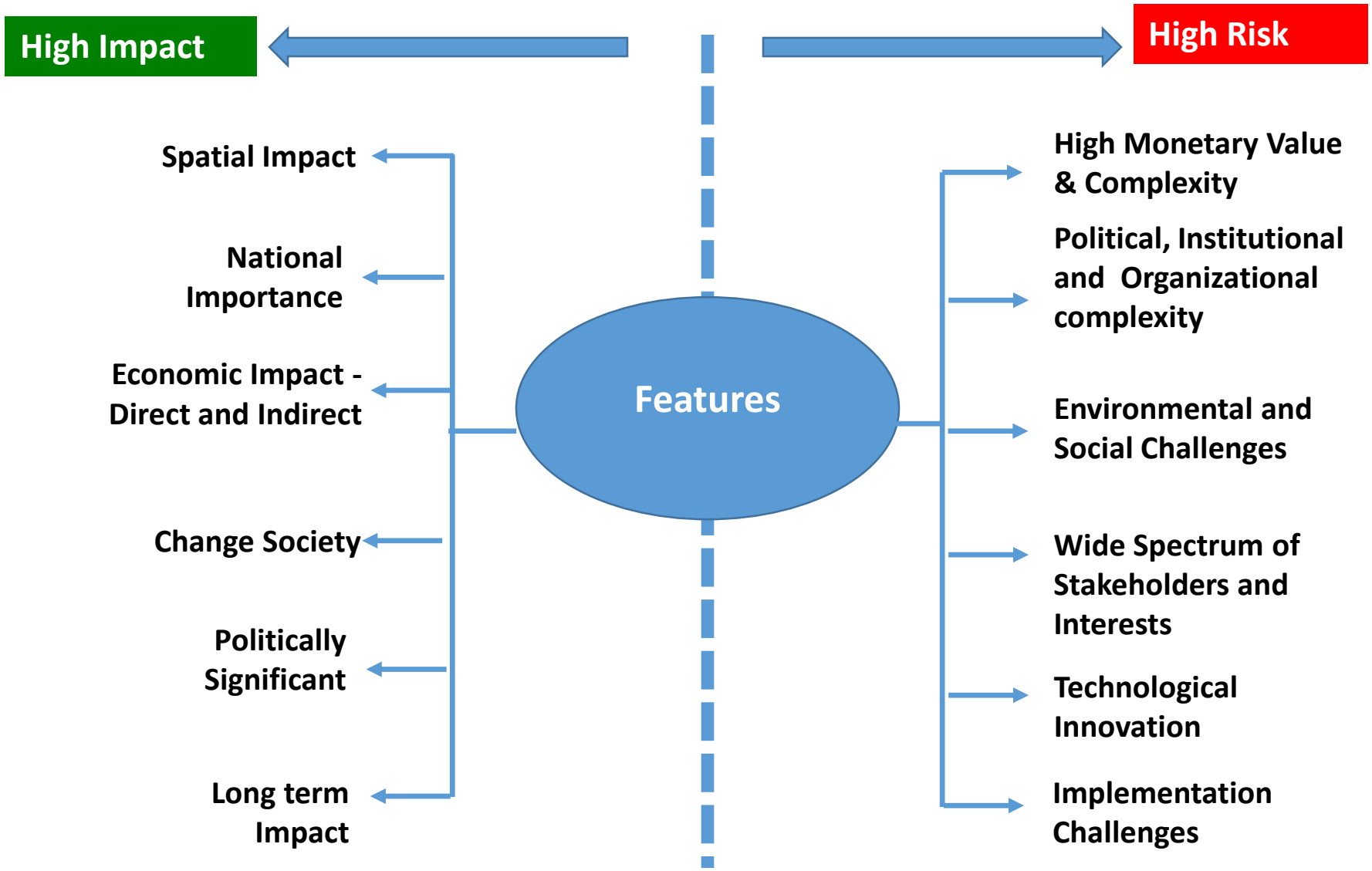

High Impact
High Risk
Spatial Impact
National Importance
Economic Impact - Direct and Indirect
Change Society
Politically Significant
Long term Impact
Features
High Monetary Value & Complexity
Political, Institutional and Organizational complexity
Environmental and Social Challenges
Wide Spectrum of Stakeholders and Interests
Technological Innovation
Implementation Challenges

Institutional Innovation

- New tracks will be built and managed by semi-independent company at arms' length from Indian Railways (otherwise integrated).
- Concession agreement between Ministry of Railways & DFC Co. provides for future accreditation of independent train operating companies, including private firms – like today's private container train operators.
- Train operators will pay DFC Co. for track access.

Key Benefits

- *Mode Shift*: About 85% of current freight traffic is expected to switch to the DFC tracks when they become available with an improved level of service quality and reliability
- *Reduction in O&M costs*: IR'S operating cost will be reduced significantly (total savings 10.5 Ps/ntkm)
- *Improvement in travel times and services*: Passengers on existing lines should experience a significant improvement in travel times with the reduction in congestion from freight train, from average speed of 20 km to 70 km ph
- *Reduction of GHG emissions*: The eastern corridor would generate about 10.48 million tons of GHG emissions during the forecast period up to 2041-42, under the "with project" scenario, as against 23.29 million tons of GHG emissions in the "without project" scenario - a reduction of about 55 percent.

Economic Benefits

- Economic benefits to ***transport large quantities of strategic bulk freight***

- ***Savings in IR operating costs*** due to improved efficiency of the DFC track (existing freight & passenger traffic)

- ***Savings in travel time of passengers*** due to faster movement of trains on the existing track

Financial Viability

- IRR is > 12 % (to IR and DFCCIL)

- DFCCILs main source of revenue is access charges for provision of infrastructure to IR trains (& other qualified private operators in the future)

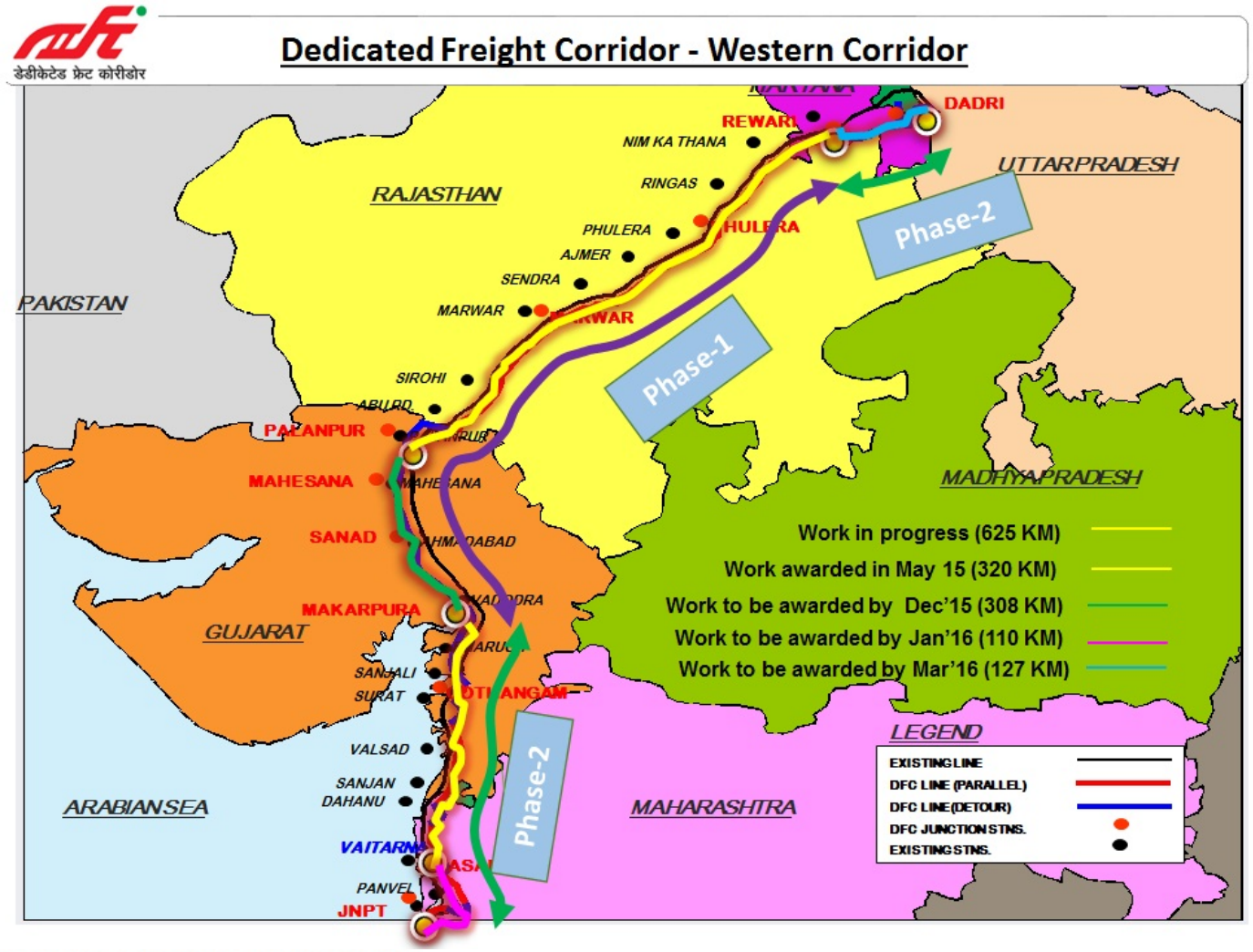
- IR's investment in INR 50 billion (per annum) from the total projected expenditure of INR 400-500 bn

Poverty and Development Impact

- EDFC projects will benefit industries of Northern and Eastern India, which rely on railway network for transportation of material inputs and exports that would accelerate creation of jobs in the northern and eastern regions of the country

- The eastern corridor majorly passes through Uttar Pradesh as well as Punjab and Haryana and the regions will benefit from the new rail infrastructure, bringing jobs and much-needed development to some of India’s poorest regions

Western Dedicated Freight Corridor



JNPT to Dadri via Vadodara-Ahmedabad-Palanpur-Phulera-Rewari

Route Length: 1483 kms

States: Harayana, Rajasthan, Gujarat & Maharashtra

Traffic:

- Growing container flows in medium term

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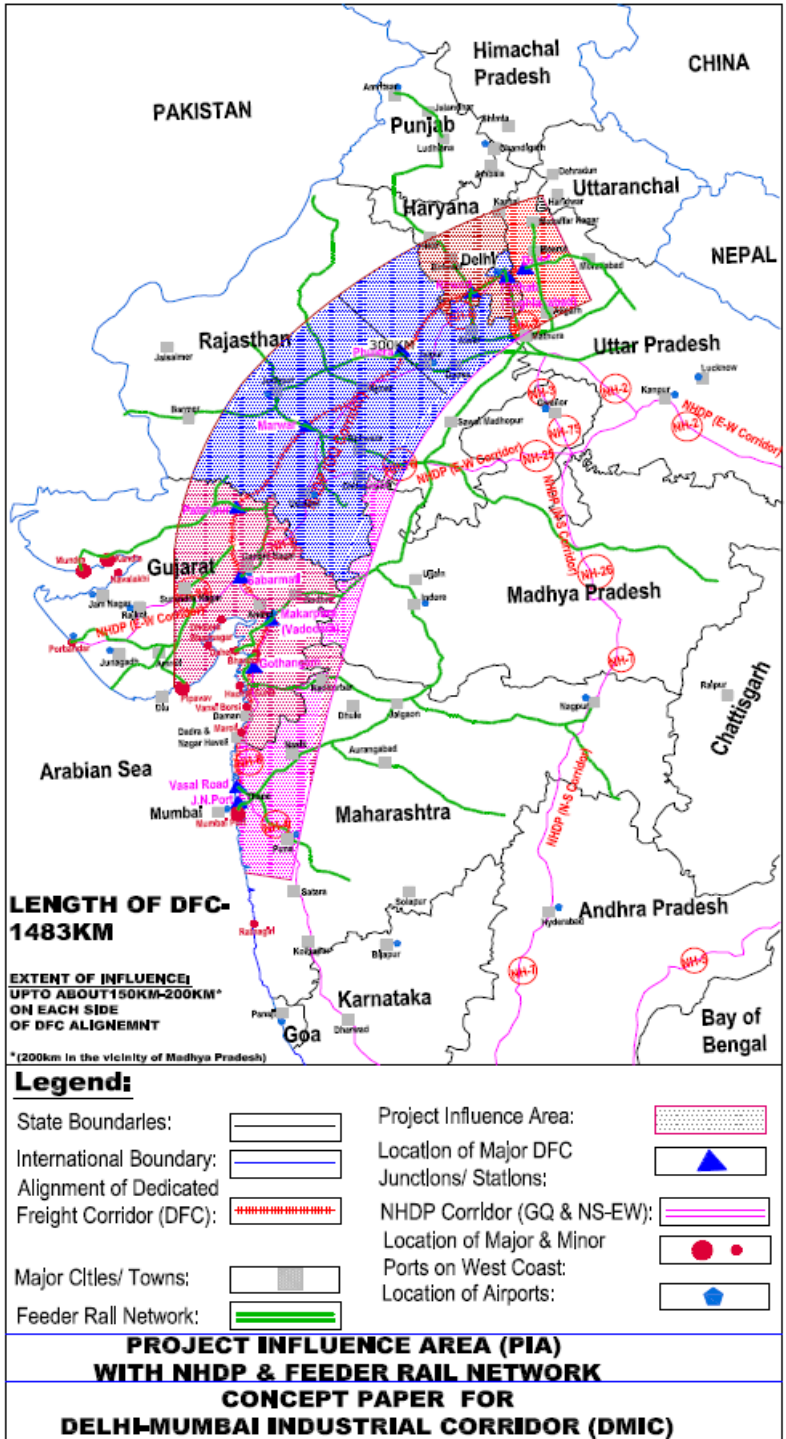
Linked Initiatives
Delhi – Mumbai Industrial Corridor

- DMIC aims to address the ‘missing link’ which is the infrastructure – logistics along the corridor
- High impact/ market-driven nodes have been identified to provide transparent and investment friendly policy/ facility regimes under which Investment Regions (IRs) and Industrial Areas (IAs) will be set up
- These regions are planned to be sustained industrial townships will world-class infrastructure, road and rail connectivity for freight movement to and from ports and logistics hubs.



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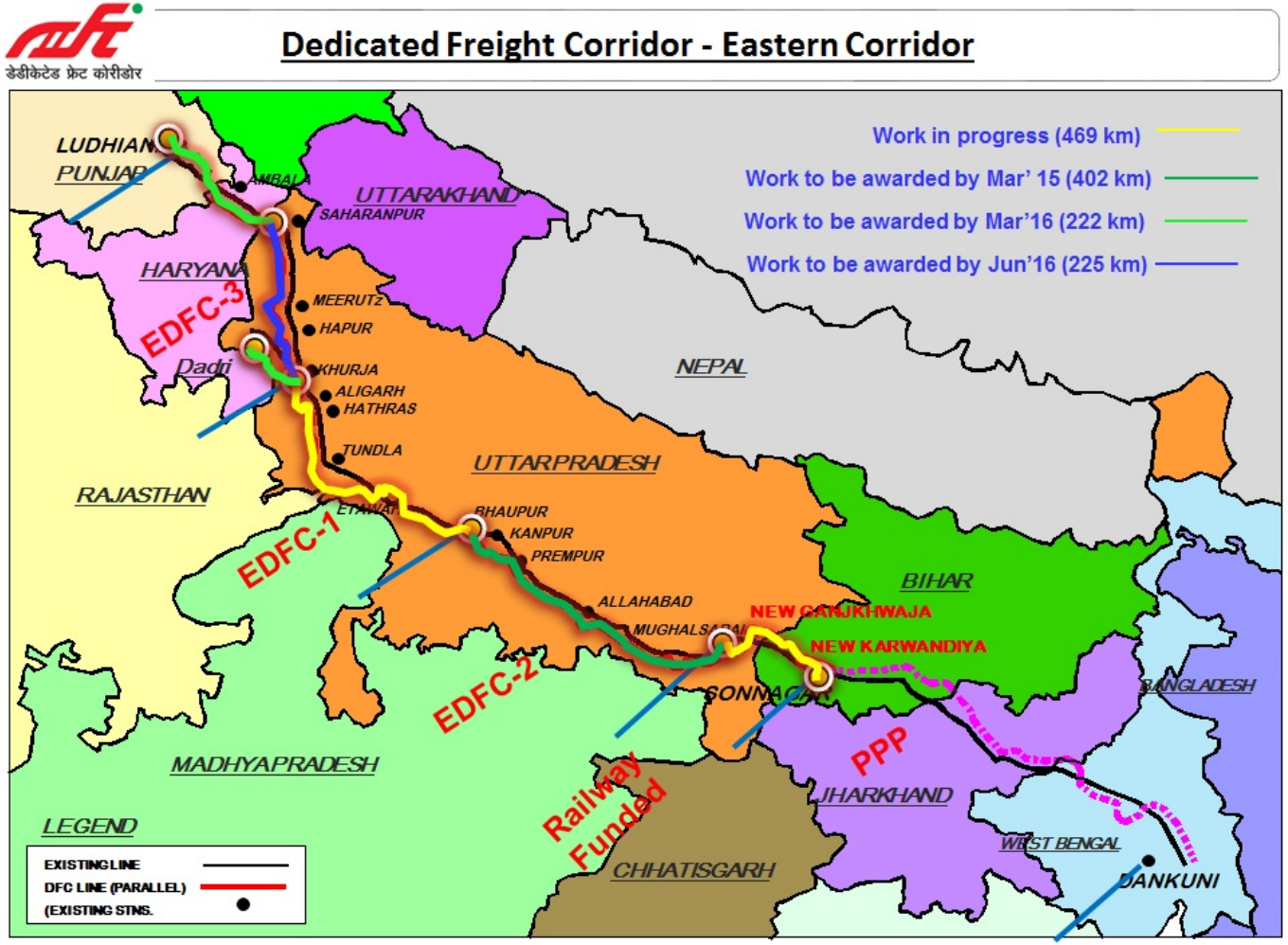
Eastern Dedicated Freight Corridor



Dankuni – Khurja and Ludhiana – Khurja – Dadri

Route Length: 1839 kms

States: Punjab, Haryana, Uttar Pradesh, Bihar, West Bengal & Jharkhand

Traffic:

- Bulks –coal for mega-power plants in capital area to ease power shortage; iron ore; cement; food grains.
- Growing container flows in medium term, especially once corridor extends via Kolkata to Bangladesh via Padma Bridge

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Leveraging World Bank Financing
i. Intermodal Connectivity & Logistics

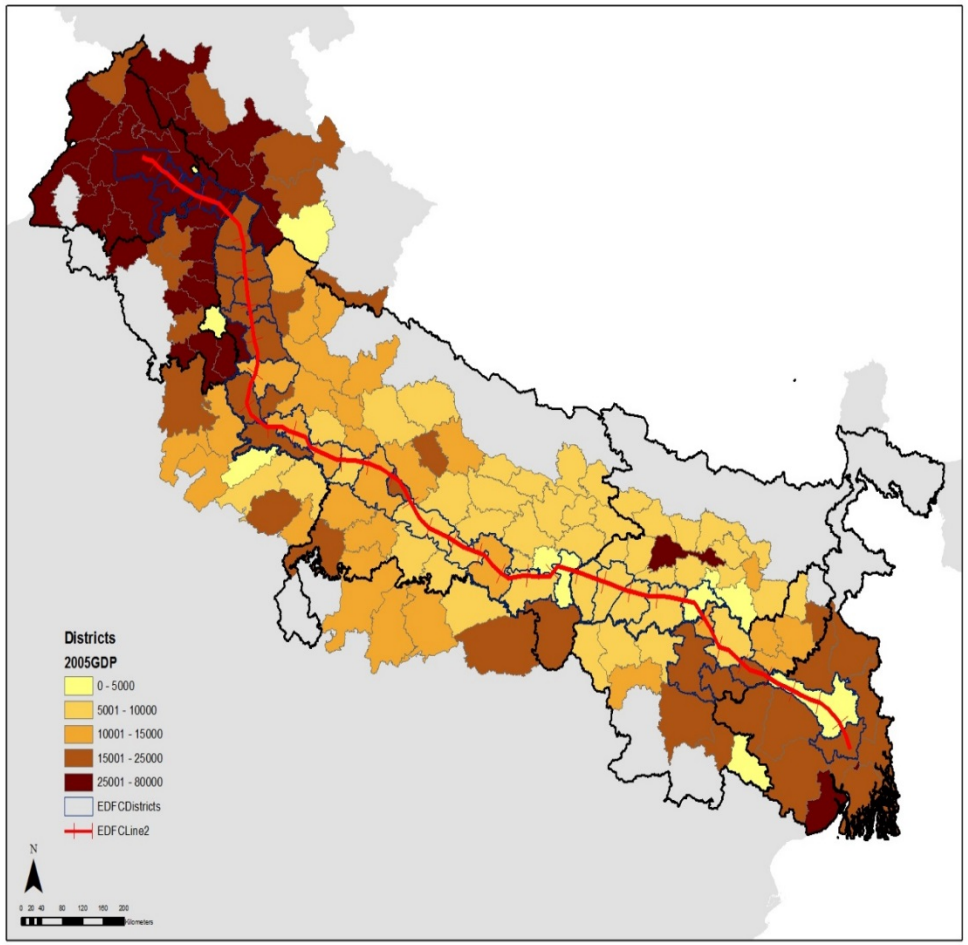
- Develop a transport model for freight traffic flows and origin-destination of bulk commodities – this will serve to ***assess the capacity and performance of rail, ports, inland waterways and road infrastructure with reference to intermodal traffic, the interoperability and scoping of infrastructure for intermodal terminals and the infrastructure gap***

- Prepare a comprehensive logistics cost model based on the concept of generalized logistics costs – this will help determine ***(i) costs to move freight; (ii) competitive advantage of each transport mode and of intermodal transport and (iii) importance of different component of logistics costs***

- Conduct a review of past experiences with private sector participation in freight & logistics operation and identify constraints; review of legal and institutional framework – through this ***recommend an overall private sector participation strategy for the development of a modern and efficient freight logistics system***

ii. Option Paper on Developments along the EDFC

- Western DFC and developments managed through the Ministry of Railways and a SPV
- Nature of EDFC states, densities and political economy very different from WDFC
- Ministry of Urban Development tasked to coordinate developments along the EDFC
    - Request for Bank assistance for: ***Options Paper on Developments along the EDFC***
- Leveraging investments in EDFC project for urban and regional development
    - Multi-sector: Urban, Transport, Agriculture, Private Sector and PREM
    - In line with India CPS and the connectivity pillar of the SAR Urbanization Flagship



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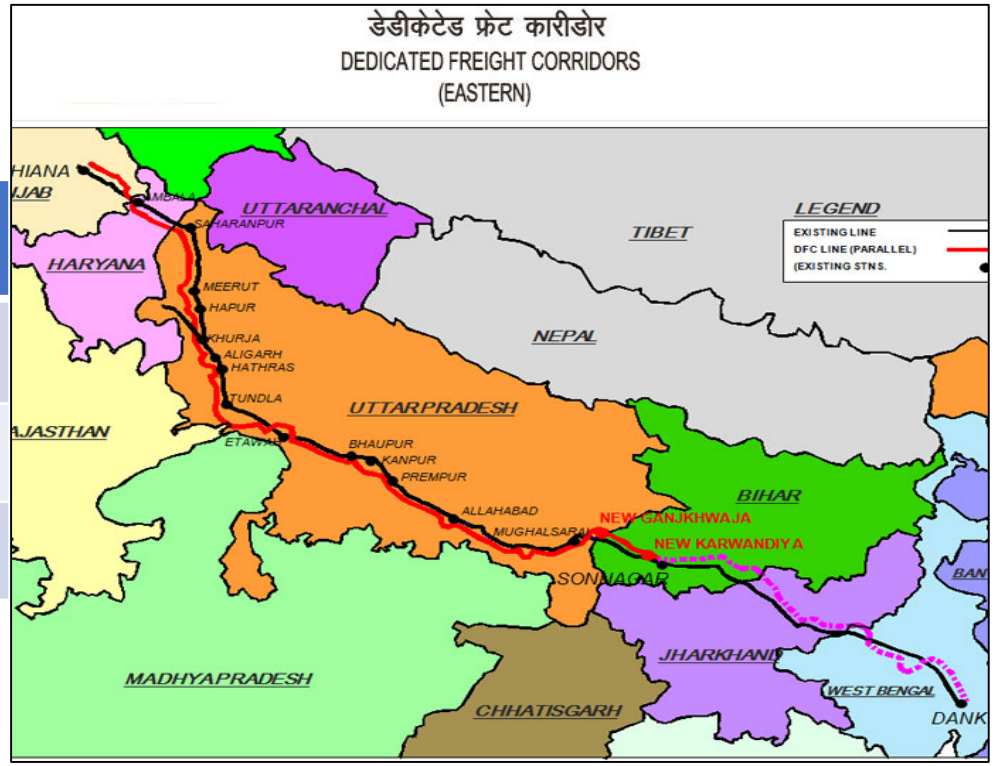
Logistics Facilities along the EDFC

- Proposed to set up Logistics Park at Kanpur in U.P. and Ludhiana in Punjab. These parks are proposed to be developed on Public Private Partnership mode by creating a sub-SPV for the same.
- DFCCIL proposes to provide rail connectivity to such parks and private players would be asked to develop and provide state of the art infrastructure as a common user facility at Kanpur in U.P. and Ludhiana in Punjab

EDFC Program

- The Eastern Freight Corridor Project series is a high priority project both for GOI and as well as The World Bank
- EDFC 1 was approved in May 201, EDFC 2 was approved in April 2014 and EDFC3 approved in June 2015.

Projects	Route Length (km)	Estimated Cost (US$ mn)
EDFC1	390	1604
EDFC2	402	1650
EDFC3	401	1107



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Current Status

Section (with Kms)	Civil/ Elect/ S&T	Land availability	Physical Progress	Financial Progress
EDFC 1 – Bhaupur – Khurja (343 km)	Civil	99%	79%	72%
	Elec & S&T		29%	21%
EDFC 2 – Bhaupur – Mughalsarai (402 km)	Civil	99%	32%	26%
	Elec & S&T		16%	11%
EDFC 3 – Pilkhani – Ludhiana* (179 km)	Civil	100%	13.8%	11.7%

** 2nd civil works package – Khurja – Pilkhani is under procurement*

Thank You

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