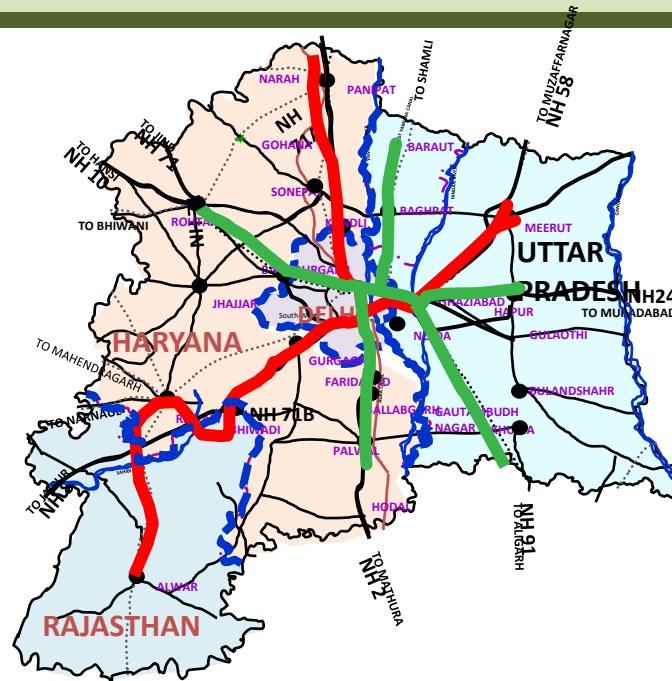


10th

Urban Mobility India
Conference & Expo 2017



CODATU 2017



Regional Rapid Transit System (RRTS) in NCR Sustainability of RRTS for Sustainable Urban Development

By Mr. Vinay Kumar Singh, MD,
National Capital Region Transport Corporation (NCRTC)

गति से प्रगति



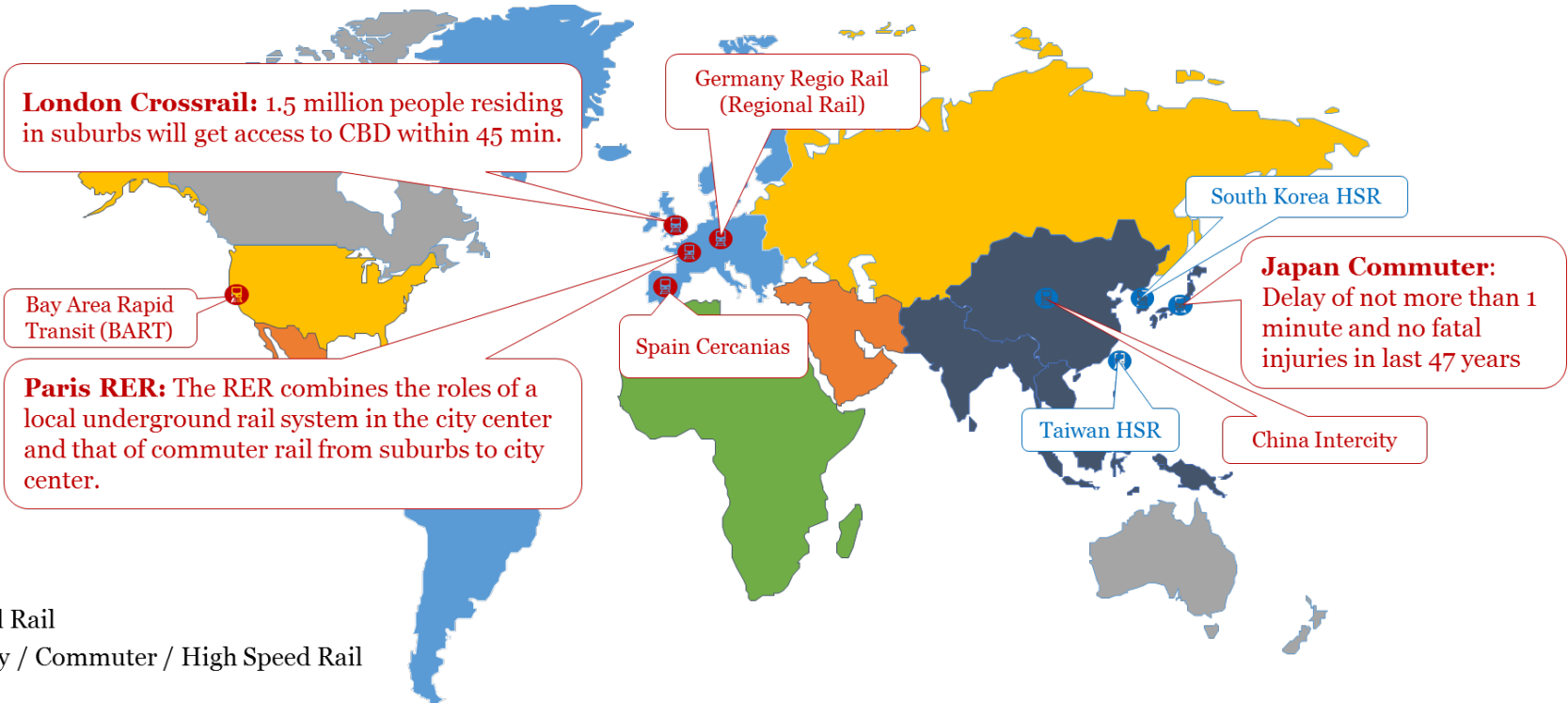
Agenda of Presentation

- **About RRTS**
 - RRTS around the world
 - Value Proposition of RRTS
 - Implementation mechanism and funding structure
- **Sustainability of urban rail projects**
 - Construction stage
 - International case studies
 - Impact of government support on demand-related risks
 - Operations stage
 - International case studies
 - Innovative value capture instruments
- **Conclusion**

What is *Regional Rapid Transit System (RRTS)*?

High-speed, high-capacity, integrated railway networks connecting outer suburbs to central districts

Regional rails around the world



What is Regional Rapid Transit System (RRTS)?

*It will be the **fastest, safest and most comfortable** mode of travel in NCR*

Significantly different from MRTS

RRTS	Design Speed 180 kmph	Ops Speed 160 kmph	Average Speed 100 - 150 kmph	Travel time for 100 kms: 1 hour
Metro	Design Speed 90 kmph	Ops Speed 80 kmph	Average Speed 32 kmph	Travel time for 100 kms: 3 hours

RRTS is similar to Cercaneas of Spain, RER of France, or Crossrail of London

RRTS will travel at 3 times the average speed of Metro

What is Regional Rapid Transit System (RRTS)?

Significant Value Propositions



1

High Speed connectivity



2

High Frequency
5 to 10 minutes frequency



3

High Capacity
2150 passengers per train



4

Comfortable journey
AC coaches, Airline type seating



5

Comparatively Affordable Fares



6

Reduced Congestion and Pollution



7

User Friendly Information System



8

Multimodal Integration



9

Safe Travel



10

Reliability in all weather conditions

RRTS will help in reducing road congestion, energy consumption and pollution

Need for RRTS in National Capital Region (NCR)

Functional Plan on Transport for NCR, 2032

Decennial growth rate of ~50% due to migration

Increasing congestion and shortages of civic amenities

Need for planning Delhi in the regional context was felt

Master Plan for Delhi emphasized planning in regional context

Enactment of **NCR Planning Board Act** by the Union Parliament

Functional Plan on Transport for NCR-2032

Regional Rapid Transit System (RRTS)

1956

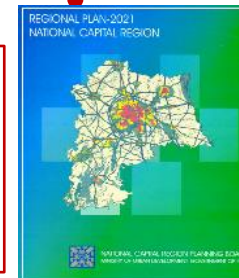
1962

1985

2005

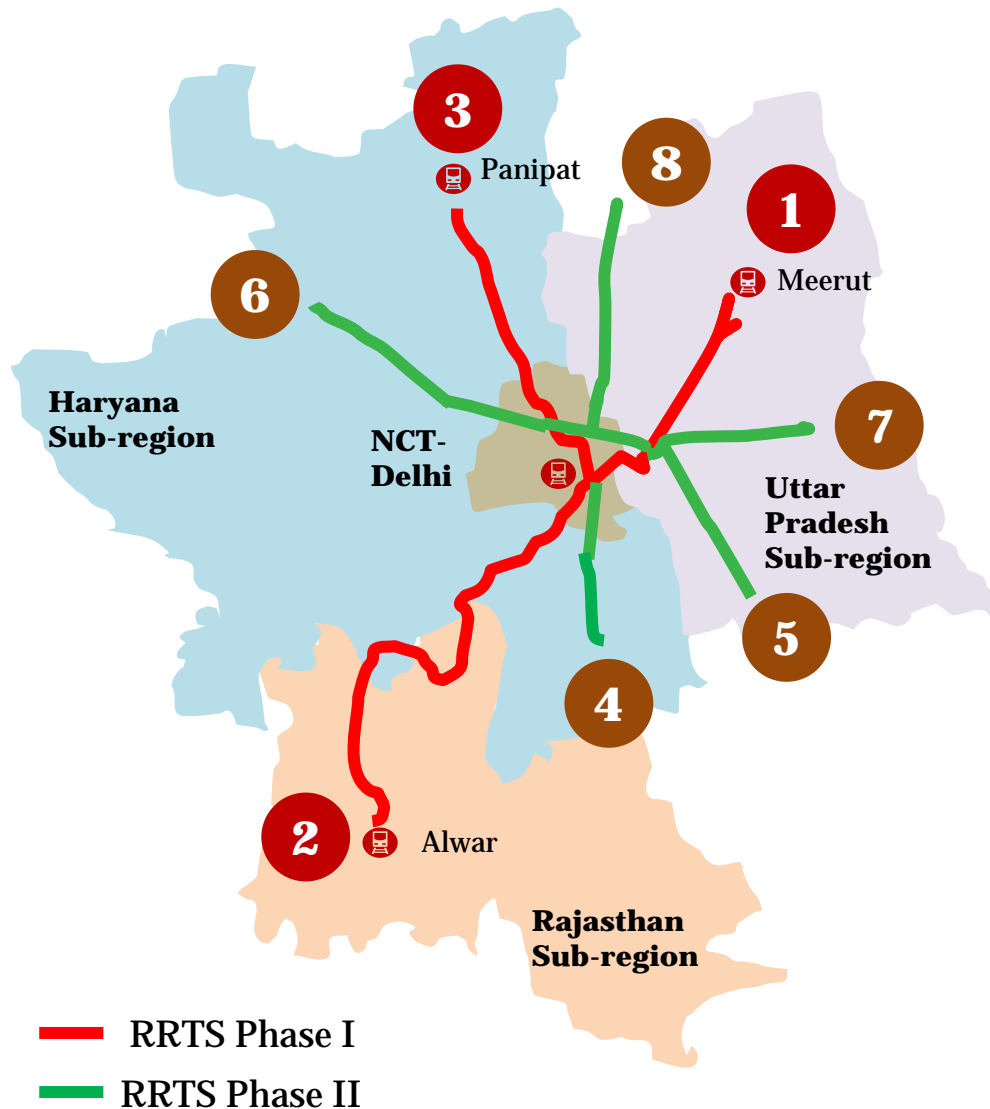
Interim General Plan suggested that '*serious consideration for a planned decentralization to outer areas & outside the Delhi region*'

Notification of **Regional Plan-2021**



RRTS connects 4 states in NCR

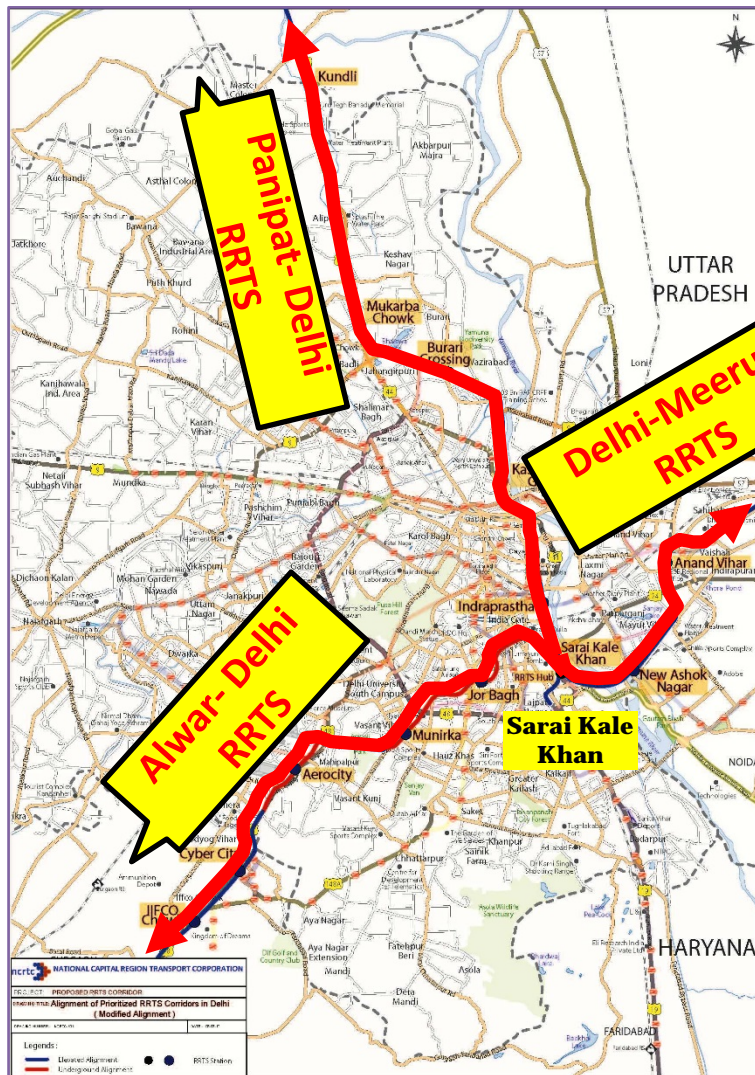
Delhi, Uttar Pradesh, Haryana and Rajasthan



- 1 Multi-state project, with NCR as center
- 2 Catering to an area of 58,000 square km
- 3 ... with a population base of 46 million

3 prioritized corridors are taken up in Phase - 1

Delhi – Meerut to be the first RRTS corridor in India



Salient Features of Delhi-Meerut RRTS Corridor

Parameters	Delhi – Meerut
Total Length (km)	90.2
Estimated travel time (min)	62
No. of total stations	17
Daily Ridership (2025)	~ 8 lakhs

RRTS Implementation Mechanism

Institutional Structure

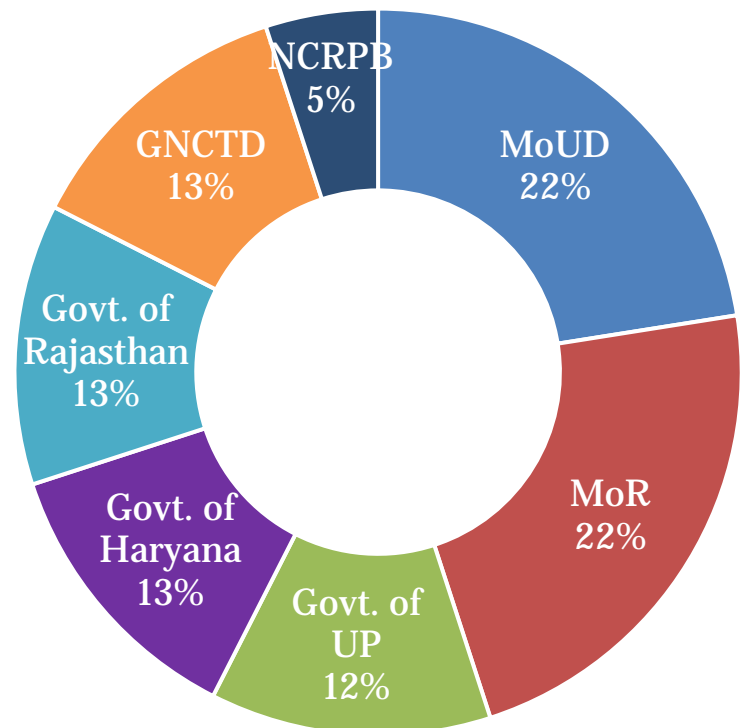
Institutional Structure

- **National Capital Region Transport Corporation (NCRTC)**
 - Incorporated in August, 2013 for the implementation of RRTS project in NCR
 - 4 State Governments joined hands with GoI to implement country's first RRTS in NCR

Legal and Regulatory Framework

- RRTS construction would be taken up under the Metro Railway (Construction of Works) Act 1978, and Metro Railways (Operation and Maintenance) Act 2002 as amended through Metro Railway (Amendment) Act, 2009
- Land acquisition and R&R required for the Project will be undertaken by respective State Governments

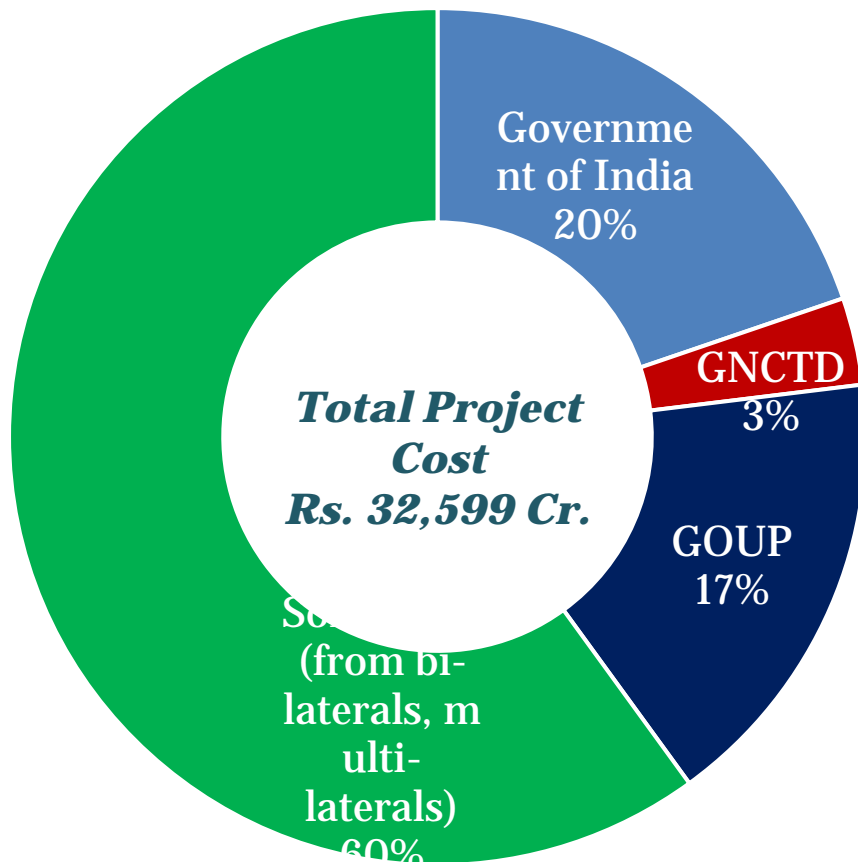
Shareholding pattern of NCRTC



Delhi-Meerut RRTS Corridor

Key Aspects

Delhi-Meerut RRTS Corridor



Economic IRR of more than 19%

01

About 8 lakhs per day ridership by 2025

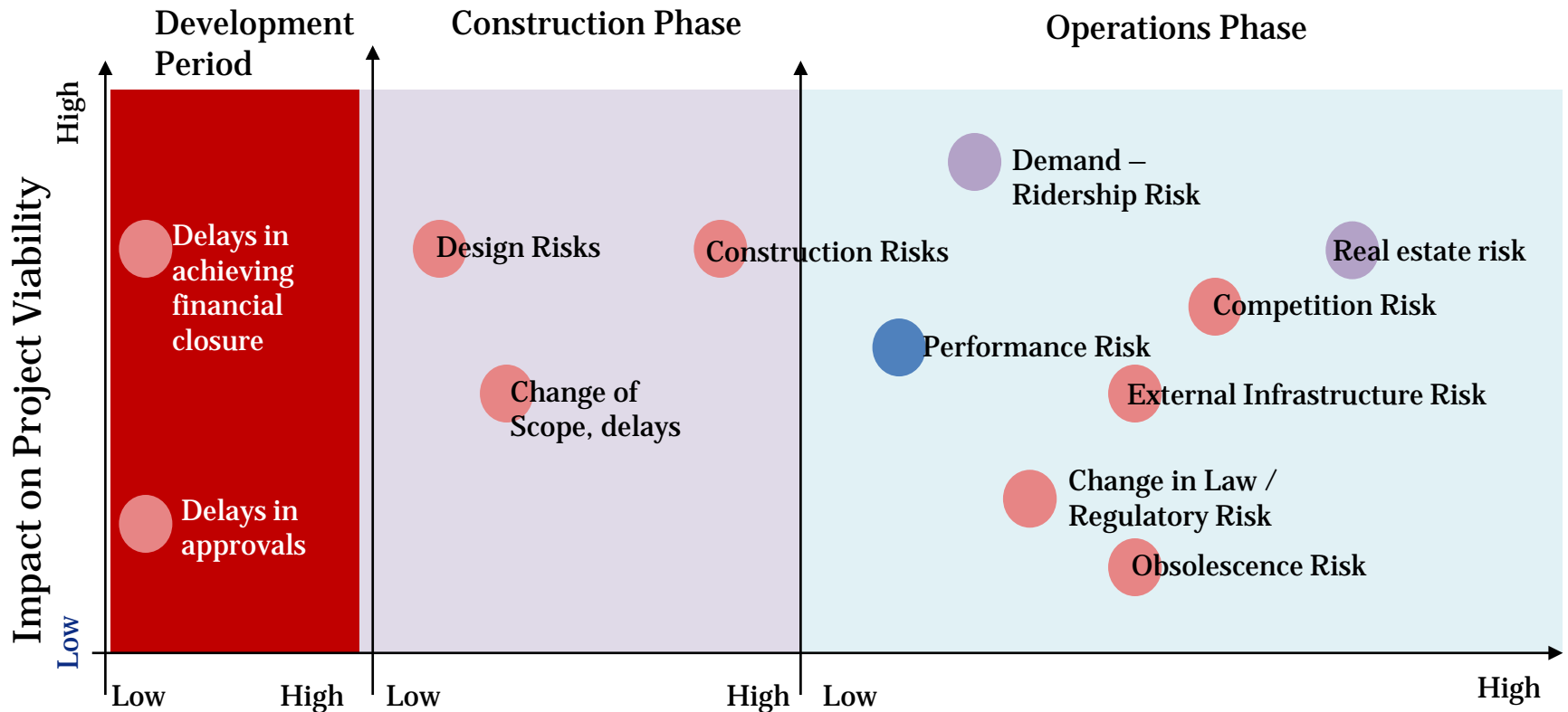
02

Equity IRR of more than 8%

03

Risk factors of the project

Multitude of risk factors across the life cycle of project



Development / Construction Phase

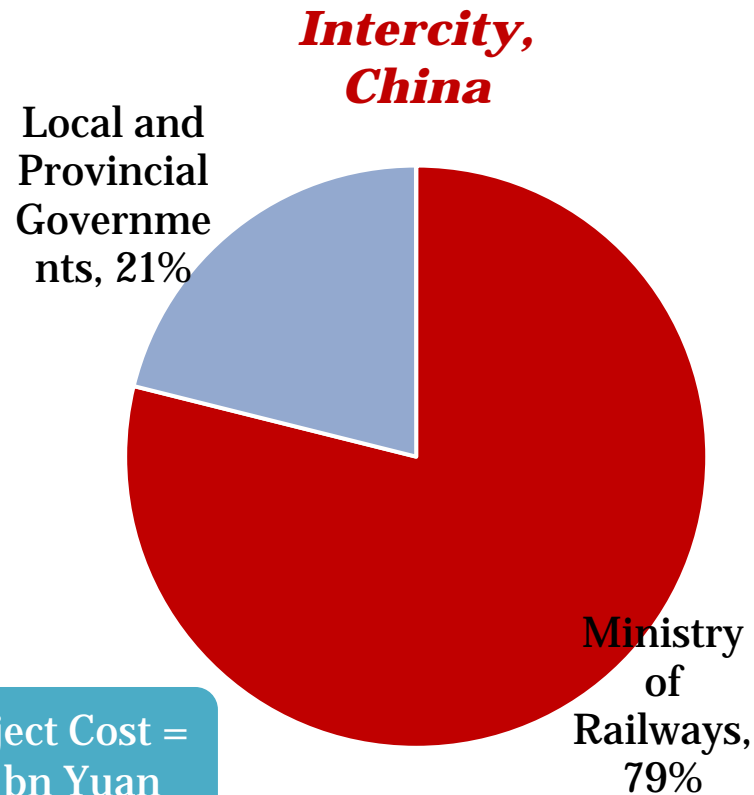
Capital intensive nature of projects –
more amenable to government

Operations Phase

High demand risk –
more amenable to government

Regional rail systems across the world (1/3)

Funded by government during construction



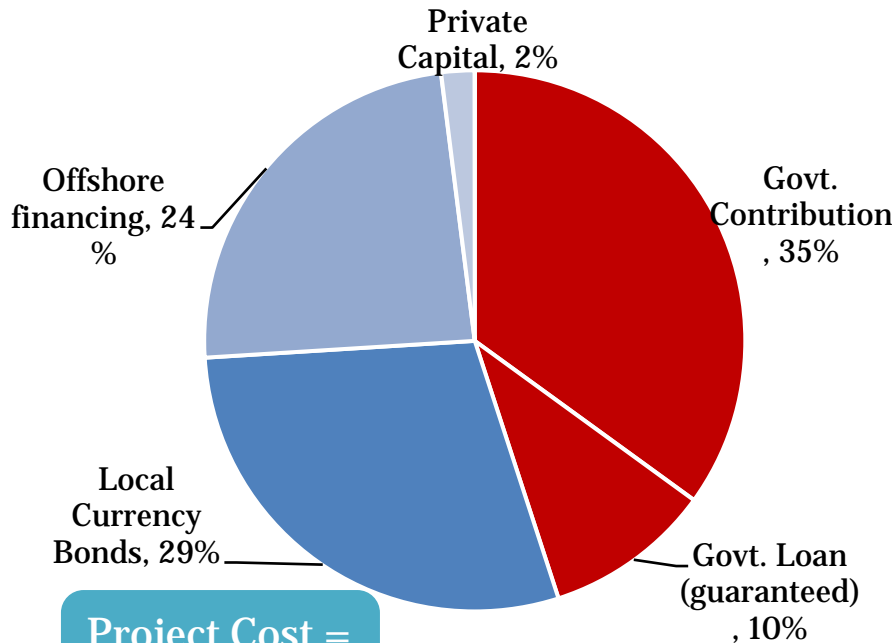
Project Cost =
160 bn Yuan

The Construction of Chinese inter-city rail projects are primarily funded by state owned banks and financial institutions, which lend money to the Ministry of Railways (MOR) and local governments.

Regional rail systems across the world (2/3)

Funded by government during construction

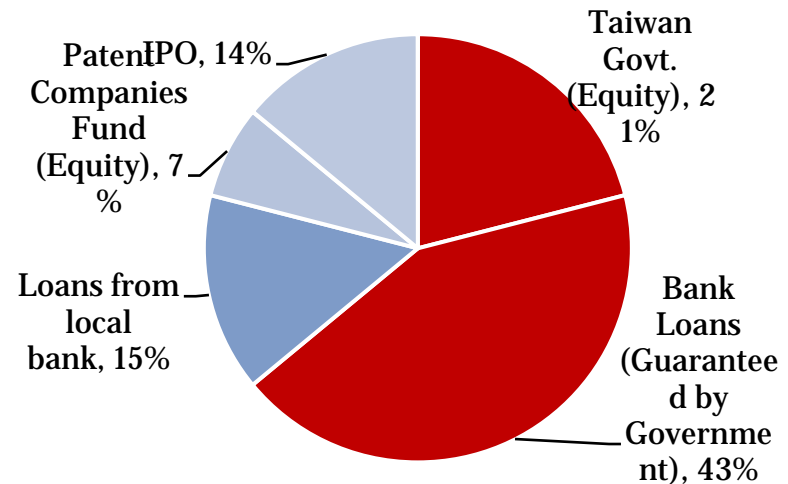
South Korea (HSR in Korea)



Project Cost =
12.73 tn KRW

The Government would provide 45% and the Korea High-Speed Rail Construction Authority would provide the rest 55% (24 % foreign loans, 29 % bonds, and 2 % private capital).

Taiwan (HSR in Taiwan)



Project Cost =
16.5 bn USD

Of the total project cost, 7.062 billion USD came from syndicated loans from 25 local banks guaranteed by postal bond from the Council for Economic Planning and Development

Regional rail systems across the world (3/3)

In Japan, after more than 30 years of sector evolution, government still funds the construction cost

Project cost covered by government and government backed loans with interest, 1959

Tokaido Shinkansen



World Bank Loan Government (FILP) JNR (Internal Resources & Railway Bonds)

Joetsu Shinkansen

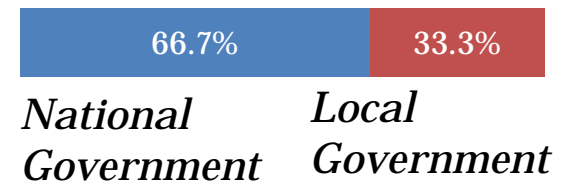


Government Government backed Loans

- Construction costs were expected to be paid back from operating revenues.
- However, **the model was not sustainable.**

JNR Reforms, 1987

- Government funds the construction**
- 2:1 funding from national and state government



Public Entity (JR TT)

Usage Fee (or Lease Fee)

Private Entity (JR Companies)

JNR Reforms, 1987

Till date

MRTS in India

After 20 years of MRTS evolution, the new Metro Policy recognizes continued government support

The new policy lay emphasis on economic viability instead of financial viability

1 Equity Sharing Model

Equal ownership of central and state government (in equity) or support by GoI to max. **20% of project cost**

2 Grant by Central Government

Central government will consider providing a **grant of 10%** of project cost to state government for metro rail project

3 Ownership/funding by Central Govt.

GoI may take up projects for **metropolitan regional development** by funding pattern other than equity sharing

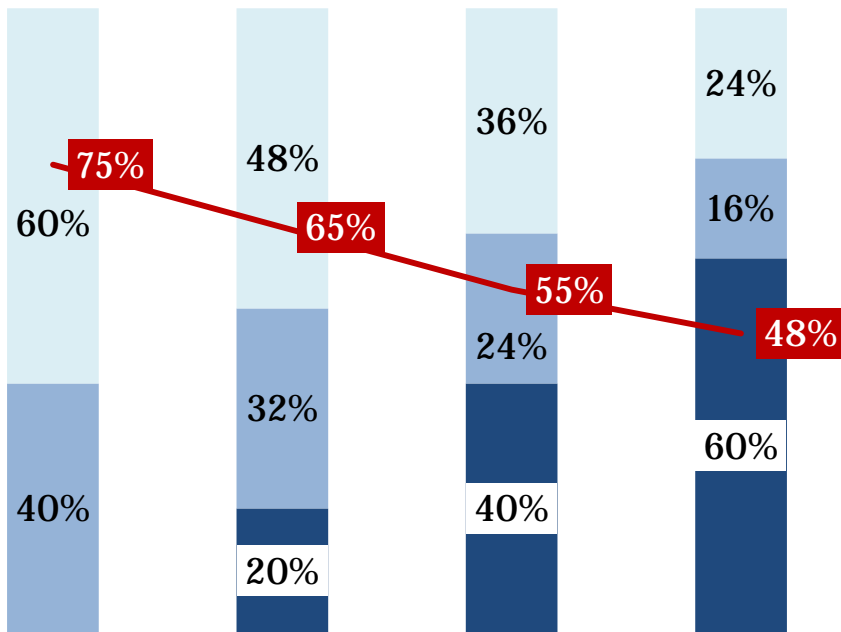
4 Public-Private Partnership (PPPs)

Central financing for this model will be governed by **VGF scheme of GoI**

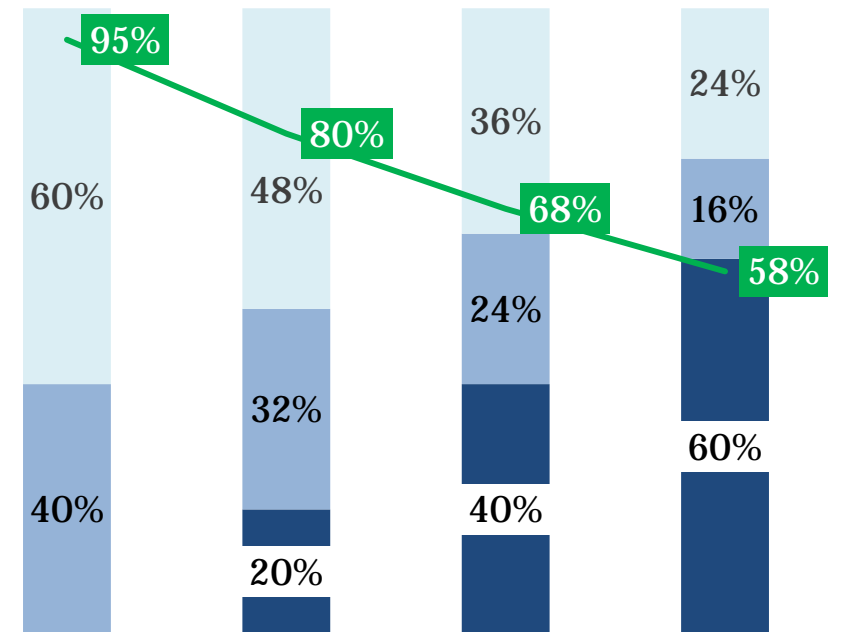
Government support for financing the project

...to mitigate demand risk of the project during operations

Ridership Reduction Threshold



Fare Reduction Threshold



■ Grant ■ Equity ■ Debt — Traffic (% of Total)

■ Grant

■ Equity

■ Debt

— Fare (% of Base Fare)

Subsidizing rail programs during operations...

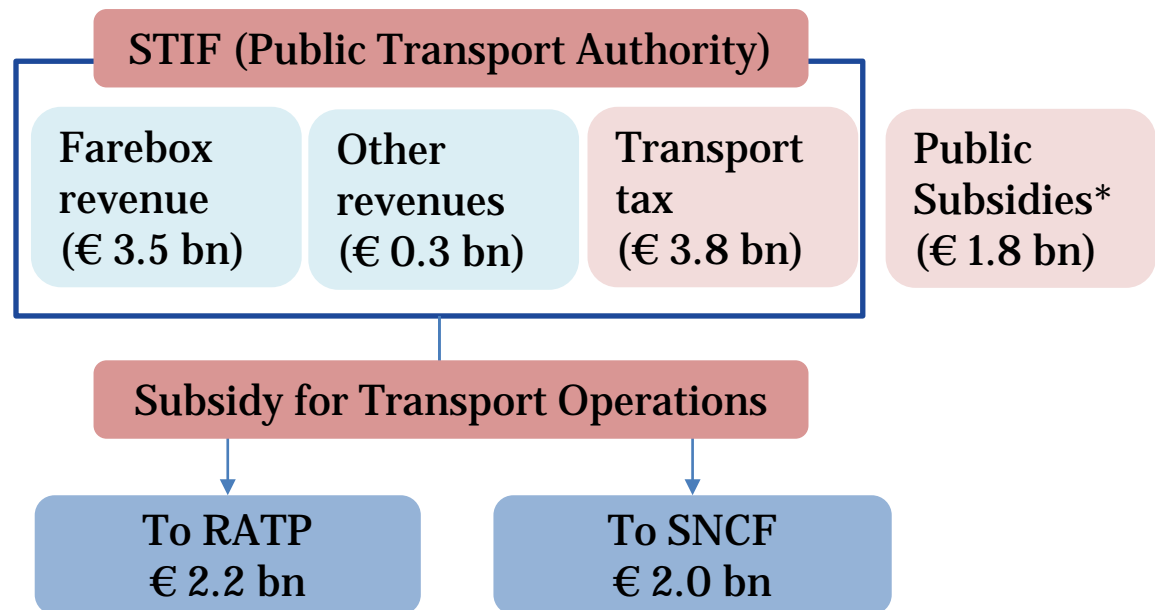
Case of Germany and France

Germany

In 2014, the German Federal Government paid **Euro 7.3 billion** as compensation to operational cost to **regional train operators**

The German Federal Government will increase annual compensation payment to local regions to **Euro 8 billion** from 2016 onwards (adjusted for inflation)

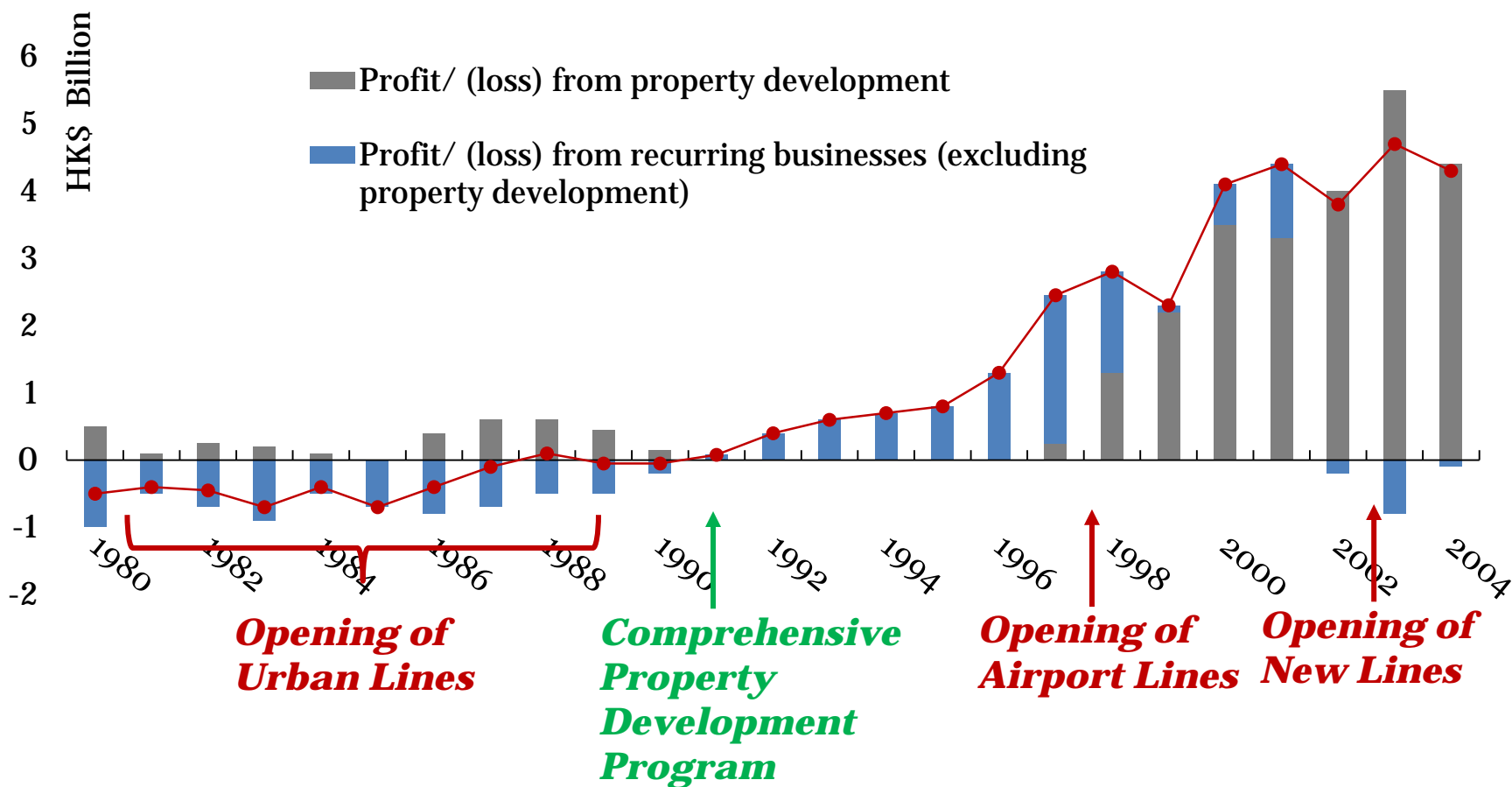
Paris Region, France



- **STIF** (Syndicat des Transports d'Ile-de-France) is a public transport authority competent for all modes of transport within the Ile-de-France Region as a whole. Responsible for financing public transport.
- **RATP** (Régie Autonome des Transports Parisiens) is a state-owned public transport operator
- **SNCF** (Société nationale des chemins de fer français) is a France's national state-owned railway company

As the sector matures, operational risk can be mitigated by innovative financing instruments

Profit (loss) for MTRC, Hong Kong



Delhi – Meerut RRTS also considers innovative financing instruments

LVC (Land Value Capture) Instruments Considered in DPR

1 Sale of Additional FAR

2 Additional Stamp Duty

3 Development Fee

4 TOD Cess

S.No.	LVC	Time Period	Revenue Potential (Rs. crore)
1	Additional FAR	2019-2035	1,744
2	Stamp Duty	2017-2054	4,149
3	Development Fee	2018-2041	1,132
4	TOD Cess	2018-2054	3,292
Total			10,317

Comprehensive study for assessing the revenues from LVC has been undertaken

In consultation with Ghaziabad & Meerut Development Authority, and Stamp and Registrations Department



The revenue potential may not be fully tapped during construction stage

No.	LVC Mechanism	Time Period	Revenue Potential Rs. crore
1	Additional Stamp Duty	2019-2035	5,948
2	Additional Development Fee	2024-2054	2,251
3	Additional FAR – Station Influence TOD Zones	2024-2054	1,949
4	Additional FAR in "Special Mixed Use Development" Areas	2024-2054	1,823
Total			11,971

Key Takeaways



As the sector of regional rails is not mature, government support is necessary during **construction** and **operations**



Increase in government support **during construction** will mitigate the demand risks **during operations**

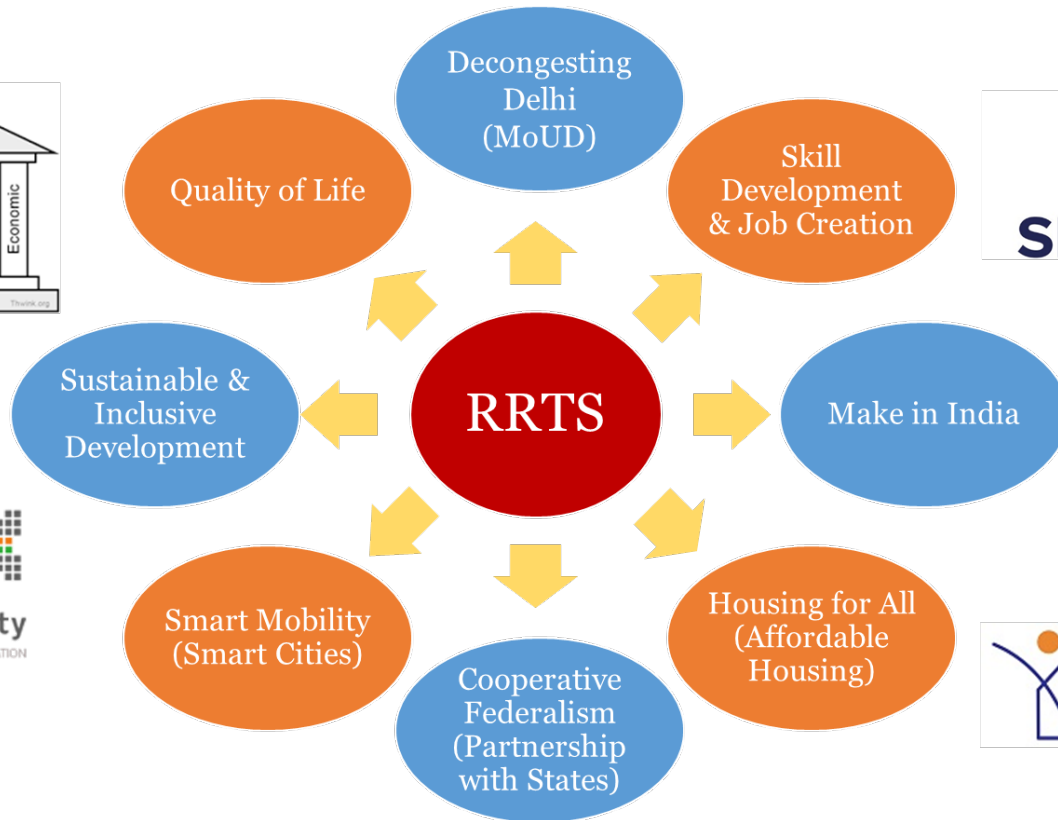
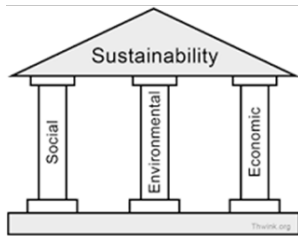


Land Value Capture may not be fully tapped during construction phase, but can very **effectively be utilized** during **operations**



Government not only has to play the role of a **regulator and facilitator**, but also of an **enabler**

RRTS is an ideal example of a project fitting into many priorities of Government of India



Thank You!



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