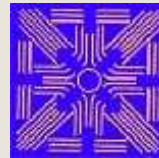


# **METROPOLITAN REGIONAL RAIL TRANSPORT**

**B K Tripathi**  
Member Secretary



**NATIONAL CAPITAL REGION PLANNING BOARD**

## NCRPB's Mandate

NCRPB was formed under the provisions of Article 252 (1) of the Constitution, after resolutions were passed by the Legislatures of the States of Haryana, Rajasthan and Uttar Pradesh

As per 'Preamble' of NCRPB Act, 1985, the rationale for the 'National Capital Region Planning Board' is

'..... preparation of a *plan for the development of the National Capital Region* ..... for evolving harmonized policies for the *control of land-uses and development of infrastructure in the National Capital Region* so as to avoid any haphazard development of that region.....'

# NCR: Constituent Areas

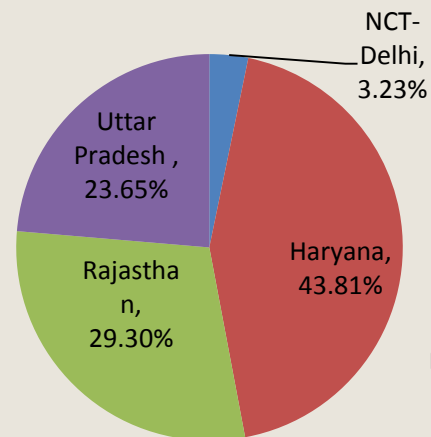


## Legend

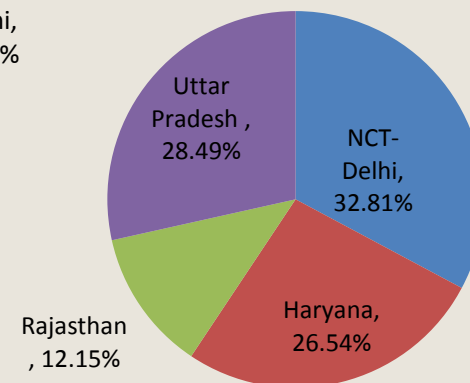
- NCR Boundary
- State Boundary
- District Boundary

Regions	Area (in Sq.km)	Population in Lakh (2011)
<b>National Capital Region</b>	<b>45,888</b>	<b>511.70</b>
<b>Constituent sub-regions</b>		
NCT- Delhi	1,483	167.90
Haryana (11 districts)	20,105	135.81
Rajasthan (2 districts)	13,447	62.19
Uttar Pradesh (6 districts)	10,853	145.80

**NCR sub-regions**  
(% share of Area)



**NCR sub-regions**  
(% share of Population)



# Introduction

- **Great Cities have a Great Public Transport System...**

*which is a combination of pedestrian friendly sidewalks,  
high cycling opportunities, commuter friendly buses,  
safe and efficient **metro system** and...*

***Integrated Regional Transport Network***

## Integrated Metro and Regional Rail Around World

- World over : Integrated Metro and Regional Rail Systems. Best practices are S-Bahn, BART, RER, Overground.
  - These systems have evolved by *integrating the Regional railways into the urban system.*
- *“Suburban railways can never be well integrated into the urban network if the suburban trains terminate at a hidden sidetrack at railway termini located at the very edge of the City area. Suburban services have to operate right into the beating heart of the cities.”*

## HSR in Berlin – Key features

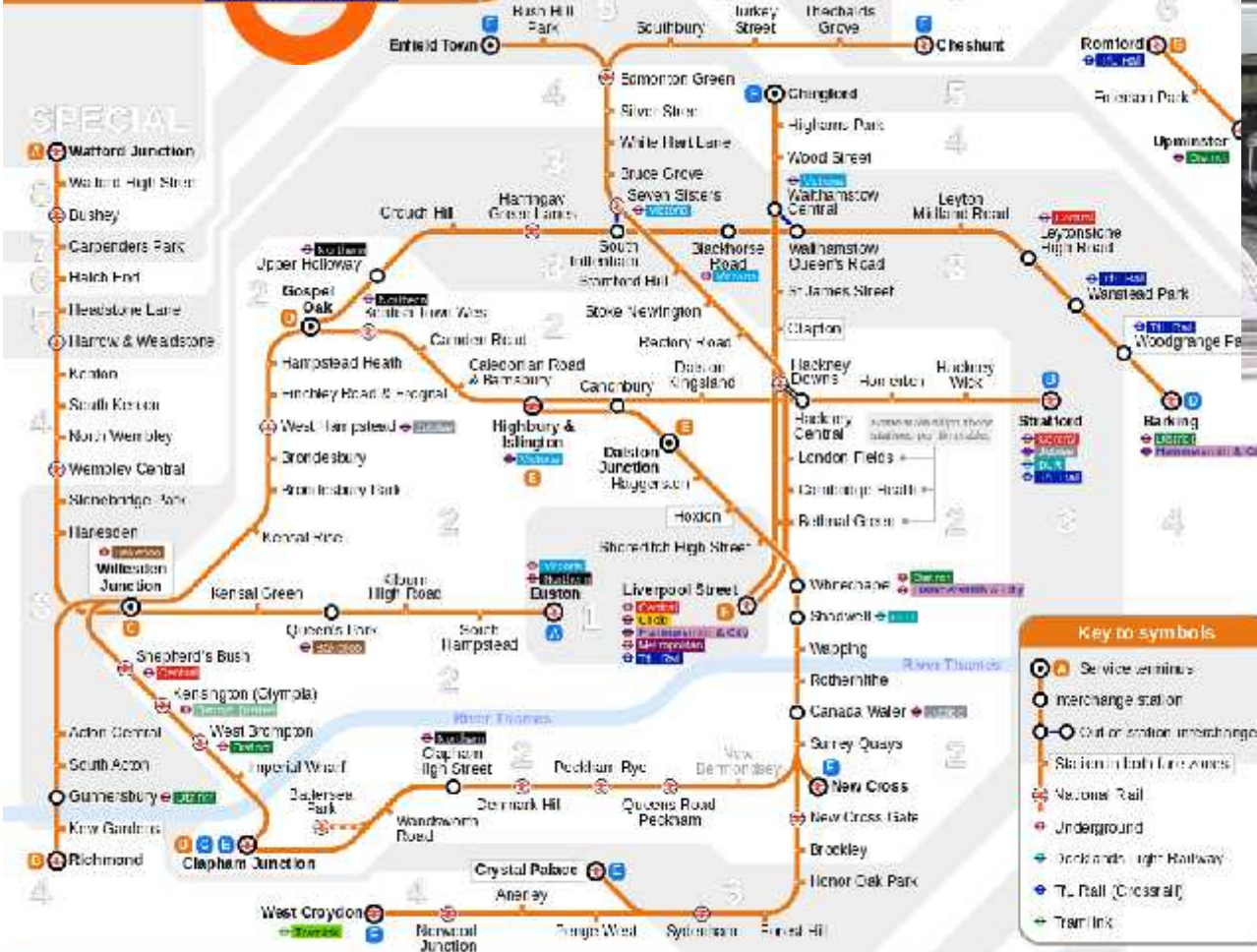
Both the Intercity and Regional routes:

1. Enter and cross through the inner city
2. Have Multiple Stations along the route within the city
3. Share stations with the existing city system making key interchange points
4. Have seamless interchange facilities at Major Stations



# London Overground

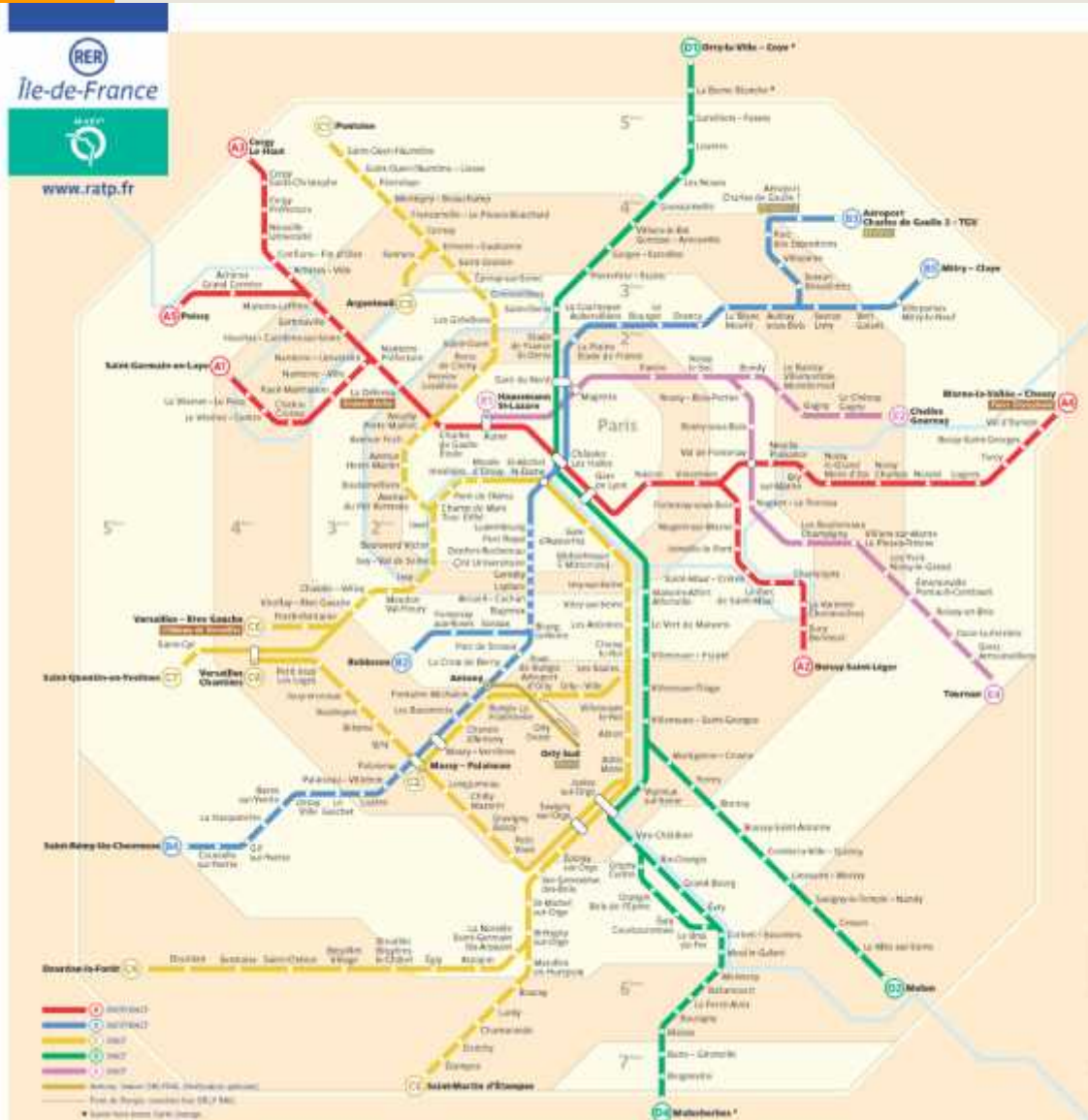
## London Overground map



<b>Length</b>	<b>123 km</b>
<b>Lines</b>	<b>9</b>
<b>Stations</b>	<b>112</b>
<b>Daily Ridership</b>	<b>3,69,000</b>
<b>Operational Speed</b>	<b>120 kmph</b>
<b>Gauge</b>	<b>Standard</b>

- 1 Watford Junction–Easton
- 2 Gospel Oak–Barking
- 3 Romford–Upminster
- 4 Richmond/Clapham Junction–Stratford
- 5 Dalston/Highbury & Islington–Clapham Junction/West Croydon/Crystal Palace/New Cross
- 6 Willesden Junction–Clapham Junction
- 7 Liverpool Street–Enfield Town/Cheshunt/Chingford

# Paris Réseau Express Régional (RER)



<b>Length</b>	<b>587 km</b>
<b>Lines</b>	<b>5</b>
<b>Stations</b>	<b>257</b>
<b>Daily Ridership</b>	<b>6,00,000</b>
<b>Operational Speed</b>	<b>90 kmph</b>
<b>Gauge</b>	<b>Standard</b>

# Bay Area Rapid Transit (BART), San Francisco



Length	167 km
Lines	6
Stations	45
Daily Ridership	4,22,490
Operational Speed	130 kmph
Gauge	Broad

# INTEGRATED TRANSPORT PLAN FOR NCR - 2032

## Integrated Transport Plan for NCR 2032

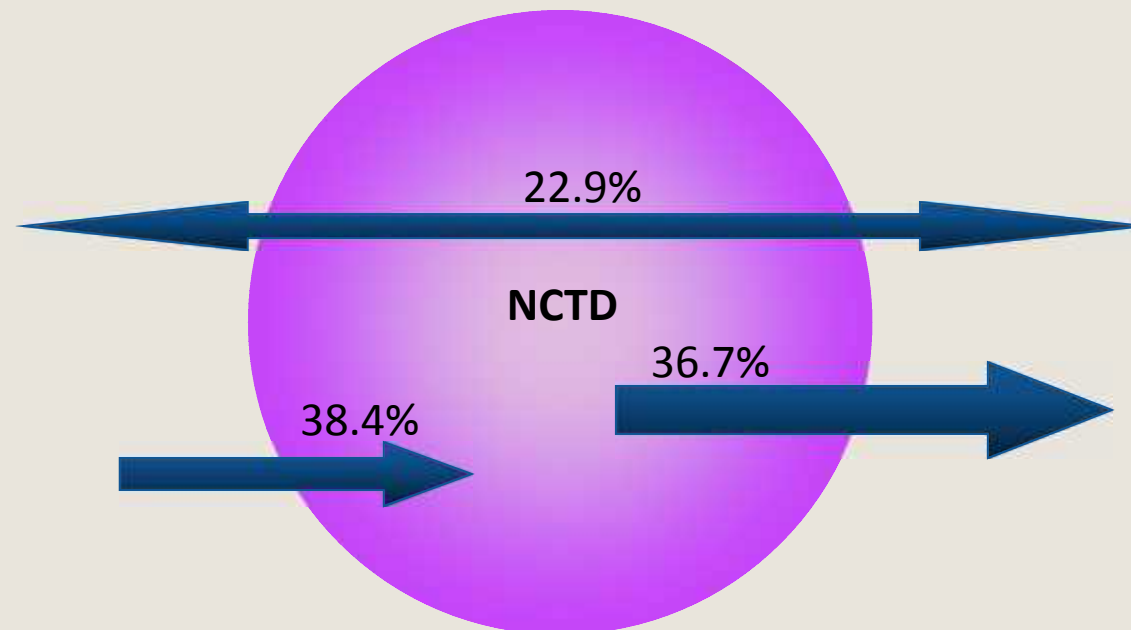
- National Capital Region Planning Board prepared Integrated Transport Plan for NCR 2032 (approved in 31<sup>st</sup> Board meeting in 2009).
- Board decided that the following matters relating to RRTS would be deliberated by the Task Force Constituted by Planning Commission, headed by Secretary (UD):
  - Prioritization of RRTS corridors
  - Decision on Feasibility Study
  - Detailing of Institutional Arrangement for SPV between MoUD, Railways, NCRPB, GNCT-Delhi, U.P., Haryana and Rajasthan
  - Funding pattern for implementation

# Integrated Transport Plan for NCR 2032

## Travel Pattern of Passenger Modes: Delhi Borders

11,07,043 passenger modes crosses Delhi Borders in a day (year 2007)

Internal-External (IE) :	36.7% (Origin within NCTD)
External-Internal (EI) :	38.4% (Destination within NCTD)
External-External (EE) :	22.9% (both O & D outside NCTD)



# Transport- Components

<b>Railway</b>	Rail Network	
	RRTS	
	MRTS	
<b>Roads</b>	Up-gradation of Roads (NH, SH, MDR, ODR)	 
	Expressways	
	By Pass	
<b>Buses</b>	Bus Transport System	 
	Bus Terminals	
<b>Freight / Cargo</b>	Logistics Hubs	 
	Integrated Freight Complex	
	Highway Facility Centres	
<b>Airports</b>		

# Major Transport Proposals of Functional Plan on Transportation-2032



- Existing Highways —————
- Peripheral Expressway —————
- Prioritised RRTS Corridors** —————
- RRTS Corridors- Proposed —————
- Regional Orbital Rail Corridor (RORC) - - - - -
- Inner Regional Orbital Rail Corridor (IRORC) - - - - -

Sl. No.	RRTS Corridors
	<b>Prioritised Corridors Identified</b>
1	Delhi – Sonipat – Panipat : 111 km
2	Delhi - Ghaziabad -Meerut : 90 km
3	Delhi - Gurgaon – Rewari - Alwar : 180 km
	<b>For Second Phase</b>
4	Delhi – Faridabad – Ballabgarh - Palwal
5	Ghaziabad – Khurja
6	Delhi - Bahadurgarh - Rohtak
7	Ghaziabad-Hapur
8	Delhi-Shahadra-Baraut

11 lakh Passenger vehicles cross Delhi Borders in a day (2007 data)

# Regional Rapid Transit System (RRTS)

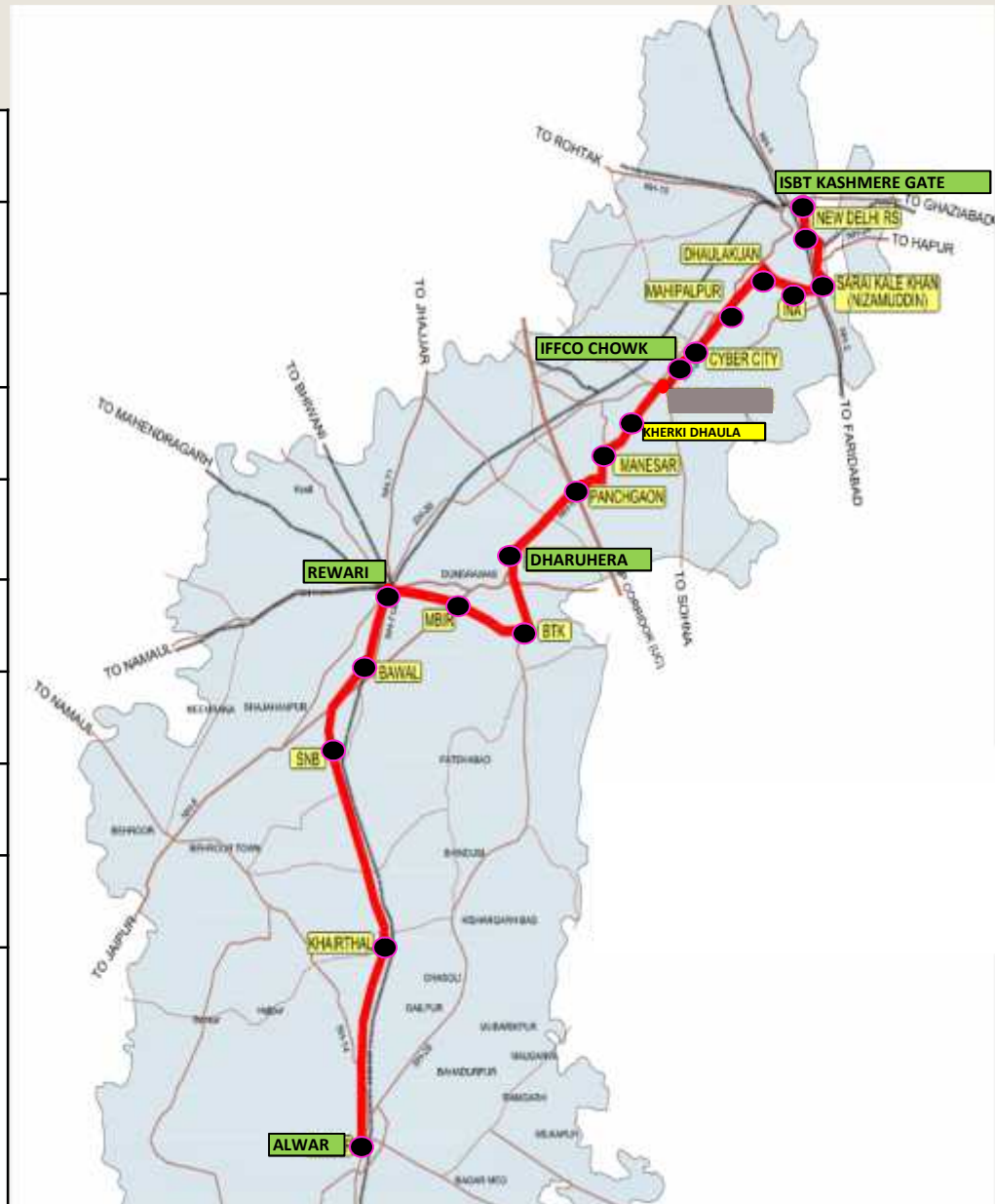
- Hi-speed Rail based Commuter Transit System with seated accommodation for regional passenger Traffic
- 60-70 min to cover 100 km



- Broad gauge track
- Well Integrated with Delhi Metro, Indian Railways, ISBTs and Airport

# Proposed Alignment: Delhi-Alwar Corridor

Parameters	
Length (km)	180
Speed ( km/h)	160
Travel Time (min)	117
No. of Stations	19
Frequency ( min)	5-6
Length in Delhi (km)	32 (UG)
Underground (km)	48
Elevated (km)	132
Stations in Delhi	<ul style="list-style-type: none"> <li>▪ Kashmere Gate</li> <li>▪ New Delhi</li> <li>▪ Sarai Kale Khan</li> <li>▪ INA</li> <li>▪ Dhaula Kuan</li> <li>▪ Mahipalpur</li> </ul>



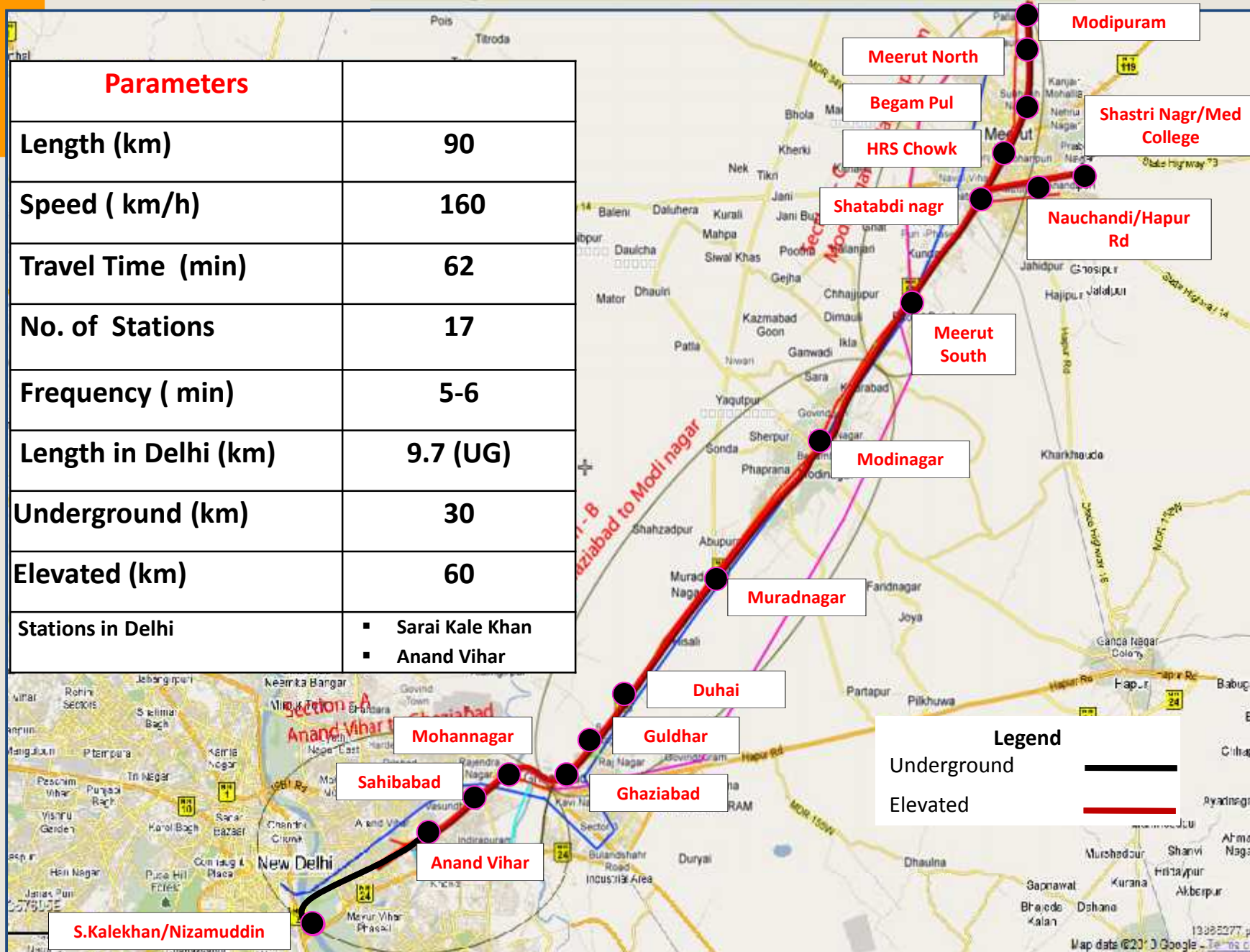
# Proposed Alignment: Delhi-Panipat Corridor

Parameters	
Length (km)	111
Speed ( km/h)	160
Travel Time (min)	74
No. of Stations	12
Frequency ( min)	5-6
Length in Delhi (km)	29 (2.7 UG + 26.3 Elevated)
Underground (km)	2.7
Elevated (km)	108.3
Stations in Delhi	<ul style="list-style-type: none"> <li>▪ Kashmere Gate</li> <li>▪ Mukarba Chowk</li> <li>▪ Narela</li> </ul>



# Proposed Alignment: Delhi-Meerut Corridor

Parameters	
Length (km)	90
Speed ( km/h)	160
Travel Time (min)	62
No. of Stations	17
Frequency ( min)	5-6
Length in Delhi (km)	9.7 (UG)
Underground (km)	30
Elevated (km)	60
Stations in Delhi	<ul style="list-style-type: none"> <li>▪ Sarai Kale Khan</li> <li>▪ Anand Vihar</li> </ul>



## Daily Ridership on RRTS corridor

Year	Total daily ridership (in lakhs)		
	Delhi - Panipat	Delhi - Meerut	Delhi - Alwar
2016	3.77	5.7	6.9
2021	5.47	7.4	9.1
2031	7.79	9.2	12.5
2041	9.83	11.4	15.1

### OTHER CORRIDORS

S.No.	Line	Length (km)	Ridership ( year 2032) (lakhs)
1	Delhi– Faridabad– Palwal	60.0	2.14
2	Delhi-Ghaziabad– Khurja	103.0	2.29
3	Delhi– Bahadurgarh– Rohtak	70.0	0.81
4	Delhi– Ghaziabad– Hapur	77.0	1.14
5	Delhi-Shahadra – Baraut	76.0	0.48

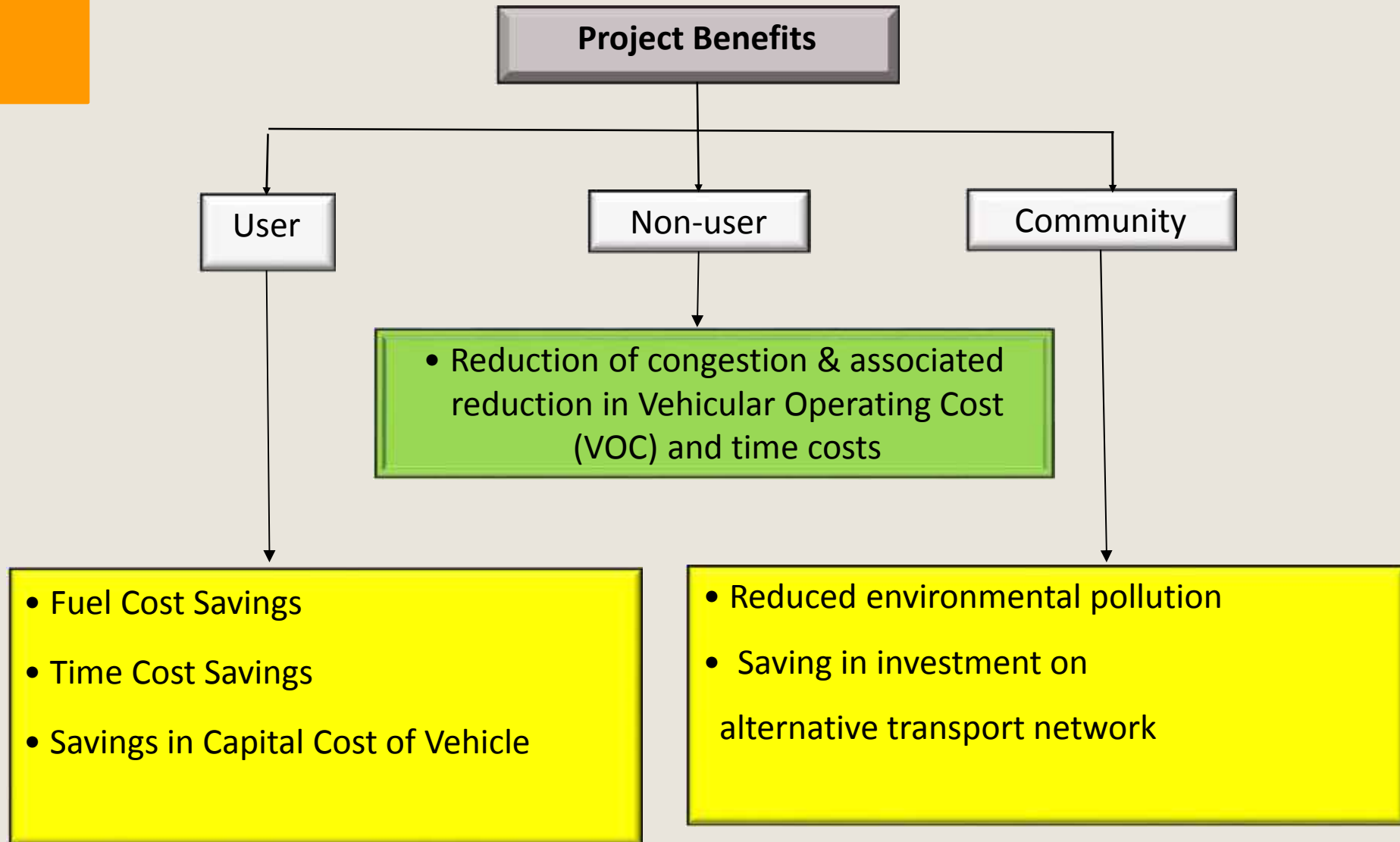
## Financial Feasibility: Capital Cost Summary

Rs Crores

Components	Delhi - Panipat	Delhi - Meerut	Delhi - Alwar	Total
Total Base Project Cost including land (without Taxes)	<b>14,489</b>	<b>16,592</b>	<b>24,595</b>	<b>55,677</b>
Total Base Project Cost including land (with central and State Taxes)	<b>16,558</b>	<b>19,084</b>	<b>27,206</b>	<b>62,849</b>
Total Project cost including escalation and IDC (with central and State Taxes)	<b>19,038</b>	<b>21,274</b>	<b>32,141</b>	<b>72,453</b>

*Cost at 2010 prices*

# Economic Benefits



## Financial Feasibility: Project IRR & Economic IRR

Description	Delhi - Alwar	Delhi – Panipat	Delhi – Meerut
Project IRR (post Tax)	10.66%	5.78%	4.25%
Economic IRR	18.5%	22.31%	24.10%

# Physical Timelines

S.N.	Particular	Time Line
1	Base Year	D
2	Award of Contract	D+1 year
3	Years of Construction	Six years
4	Commercial Operations Date (COD)	D+Six year
5	Concession period/model period, if taken up on PPP	30 years

**National Capital Region Transport Corporation (NCRTC) has been incorporated on 21.08.2013, with initial seed capital of Rs.100 crore, for designing, developing, implementing, financing, operating and maintaining Regional Rapid Transit System (RRTS) in NCR.**

**Thank you**

[www.ncrpb.nic.in](http://www.ncrpb.nic.in)