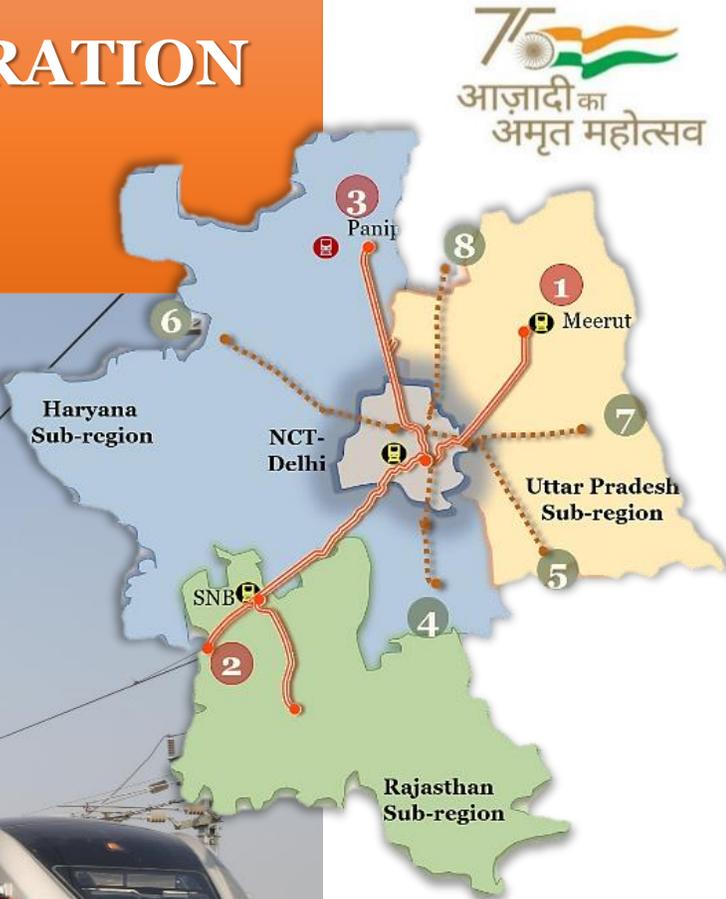


# NATIONAL CAPITAL REGION TRANSPORT CORPORATION

## ADB's Business Opportunity Seminar

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New Delhi  
12.09.2023

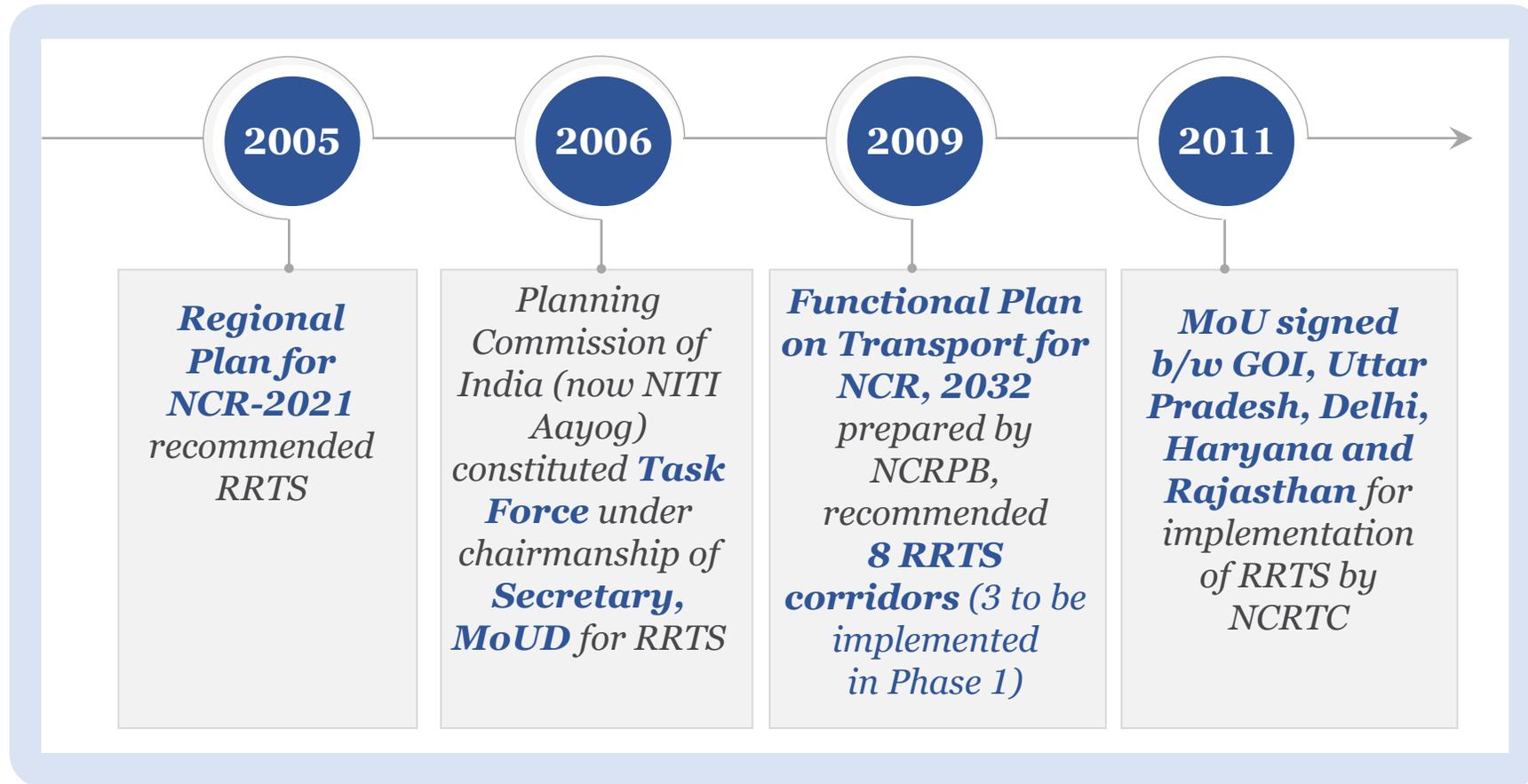


# *Presentation structure*

- Brief about the RRTS Corridor
- Delhi-Meerut RRTS Corridor Financing and Procurement status
- Delhi-SNB RRTS Corridor
  - Status of pre enabling works
  - Financing
  - Proposed Future Procurement Opportunities
- Delhi-Panipat (RRTS Corridor)

# Brief about the RRTS Corridor

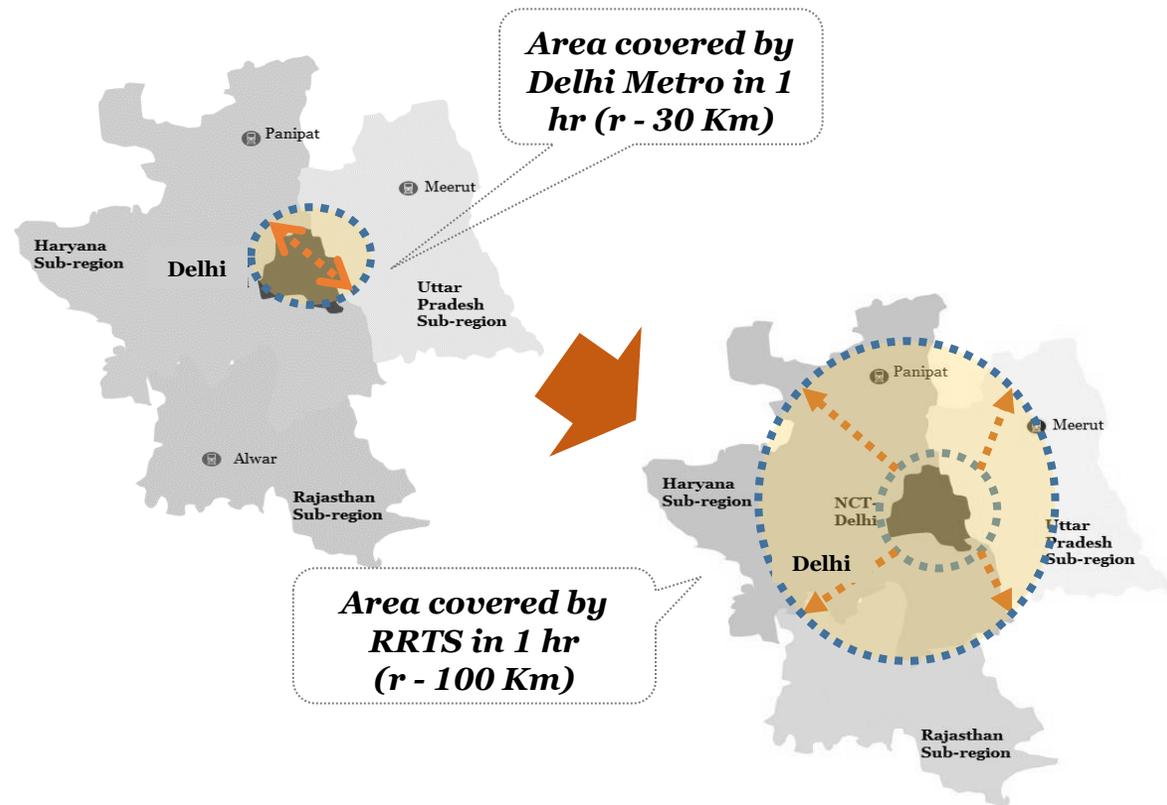
# Genesis of Regional Rapid Transit System (RRTS)



***Scheme evolved through a decade long multi-state multi-stakeholder consultative process***

# RRTS in NCR – enhancing Regional Mobility

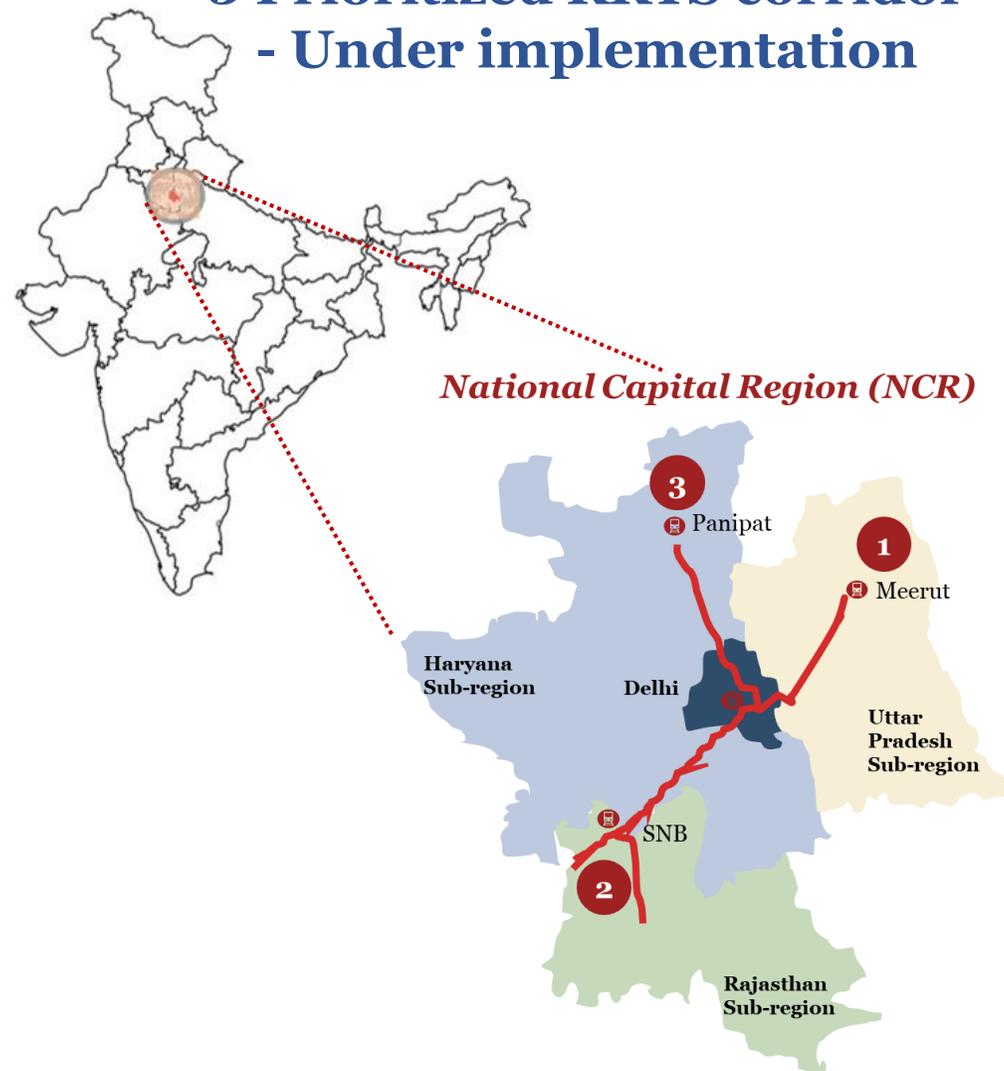
## 8 RRTS corridor proposed around NCR



- ✓ Delhi-Ghaziabad-Meerut
- ✓ Delhi-Gurgaon-Rewari-Alwar
- ✓ Delhi-Sonipat-Panipat
- ✓ Delhi-Faridabad-Ballabgarh-Palwal
- ✓ Ghaziabad-Khurja
- ✓ Delhi-Bahadurgarh-Rohtak
- ✓ Ghaziabad-Hapur
- ✓ Delhi-Shahdra-Baraut

✓ Under implementation    
 ✓ Proposed

## 3 Prioritized RRTS corridor - Under implementation

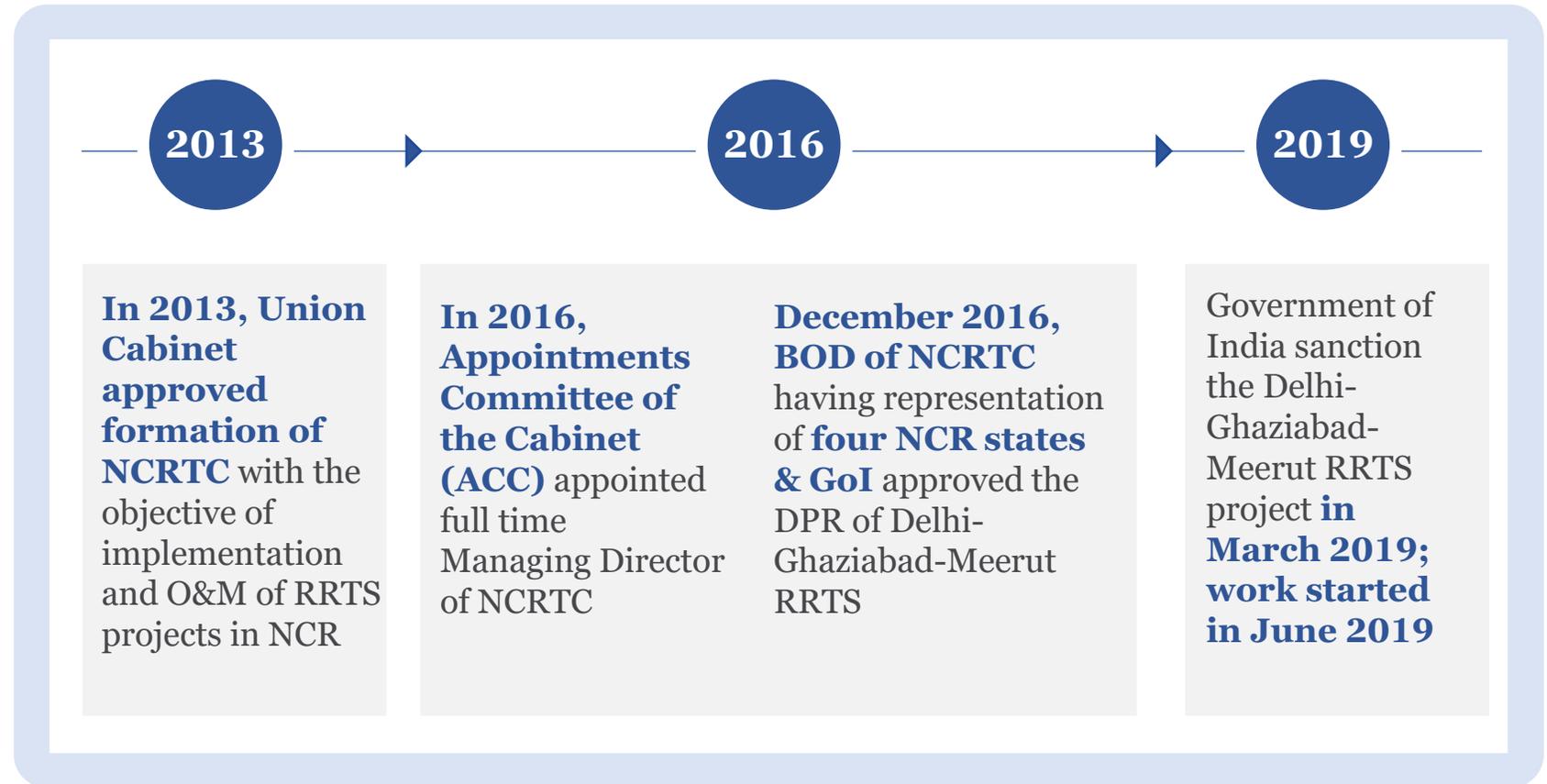


*National Capital Region (NCR)*

# Implementation Framework for RRTS

## Legal Framework

- The Metro Railway (Construction of Works) Act 1978
- The Metro Railways (Operation & Maintenance) Act 2002 as amended through Metro Railway (Amendment) Act, 2009
- The Railways Act, 1989



# RRTS – filling the gap of regional commute



## National-level

(>150 km)

- ✓ National Railways
- ✓ National Airlines
- ✓ High Speed Rail



## Regional-level

(20-150 km)

- ✓ Passenger Trains
- ✓ Inter-state Buses
- ✓ RRTS (Semi-high Speed rail)



## City-level

(10-25 km)

- ✓ Metro Rail Transit
- ✓ Bus Rapid Transit
- ✓ City Buses



## Last Mile

(<10 km)

- ✓ Autos / Shared Autos
- ✓ E-Rickshaws
- ✓ Feeder Buses

*High Speed Rail & Semi-High Speed Rail are in nascent stages of implementation*



Implemented already



Under implementation for first time

# RRTS is a complex project...

**First of its kind in India with design speed of 180 kmph**

*– design parameters different from Metro systems*

## Technological

### Civil structures

Different civil structures from Metro – due to higher speed; Higher tunnel diameter

### Track structure

Pre-cast slab track, low maintenance, suitable for high speed

### Flexible (Elv.) & Rigid (u/g) overhead Catenary system

Design speed 180 Kmph

### Signalling

ETCS II on LTE Backbone with ATO and PSD integration being tried for the first time globally

### Rolling Stock

Comprehensive Maintenance for 15 years with Design and Supply contract being tried for the first time in the country

### Integration of Metro & RRTS services

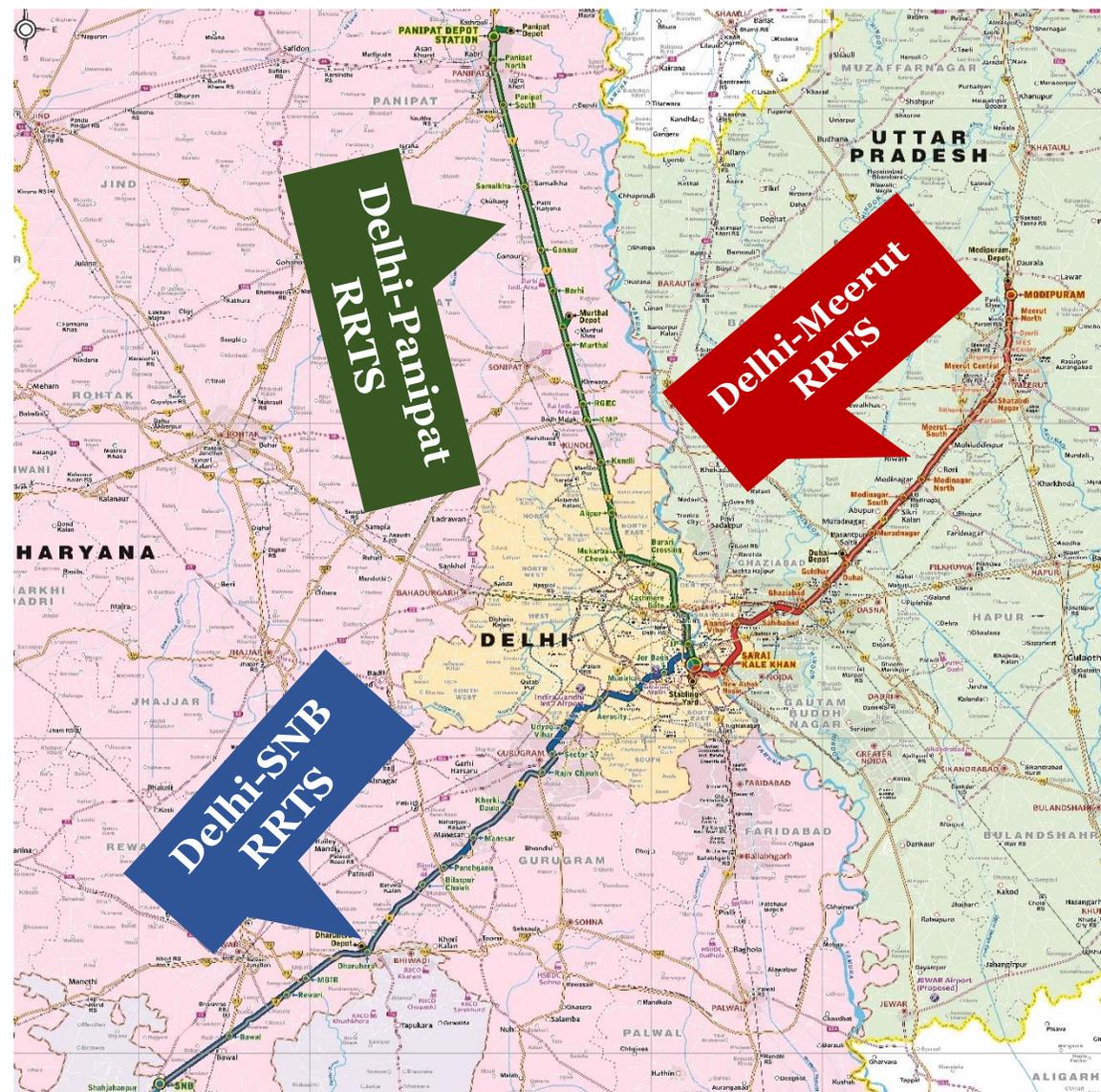
RRTS & MRTS operated on same infrastructure

## Operations

**Outsourcing of O&M in line with Metro Policy 2017**

# 3 prioritized corridors in Phase I

Parameters	Delhi – Meerut	Delhi – Panipat	*Delhi – SNB
Total Length (km)	82.15	103.02	107
Elevated (km)	69.79	91.54	70
Underground (km)	12.36	11.48	37
At-grade (km)	-	-	-
Estimated travel time (min)	60	72	75
No. of total stations	24	17	16



~ 292 kms

600 coaches

5 Depots

~ 2 mn daily ridership

**Delhi-Meerut RRTS Corridors of Phase 1 included in National Infrastructure Pipeline - 2020-25**

*\*Delhi-Alwar project is to be constructed in 3 stages in which one of the prioritized stage is DLI-SNB.*

# Broad system parameters

Parameter	RRTS
Design Speed	180 kmph intended to be upgraded to 220 kmph
Operating/Average Speed	160 kmph/ ~90-100 kmph
Frequency	5-10 min(RRTS)
Inter-Station Distance	5 – 10 km
Services on Network	Inter-operable
Train Length	6/9 coach trains : infrastructure for 9 coach trains
Gauge	Standard Gauge
Rolling Stock	<ul style="list-style-type: none"><li>• 3.2 meters wide cars</li><li>• Transverse seating</li><li>• One business class coach in every train</li></ul>
Tunnels	Twin tunnels of Dia 6.5 m
Signalling	ETCS Level II with LTE communication backbone
PSD/PSG	At all stations
Track	Ballastless Track suitable for 180 kmph/220 kmph
Traction	1x25 KV AC Rigid OCS in tunnels
Bearings	Spherical or other suitable for the speed

# RRTS projects are significantly different from Metro Rail

- RRTS is a high-speed **Rail based Regional Transit System** with a maximum design speed of 180 kmph and an average speed of 100 kmph. It is similar to Cercaneas of Spain, RER & Transilien of France, Cross Rail of UK and MTR of Hong Kong
- Inter station distances: 5 – 10 Km
- It will be **the FASTEST, the most COMFORTABLE** and **the SAFEST** mode of travel in NCR

RRTS	Design Speed 180 Km/hr	Max. Ops Speed 160 Km/hr	Average Speed 100 Km/hr 150 Km/hr for Non Stop	Time to Travel 100 Km – 1 Hour
Metro	Design Speed 90 Km/hr	Max. Ops Speed 80 Km/hr	Average Speed 32 Km/hr	Time to Travel 100 Km – 3 hours

**RRTS will travel at 3 times the average speed of Metro**



# Delhi-Ghaziabad-Meerut RRTS Corridor

# Financing Plan (Delhi-Meerut Corridor)

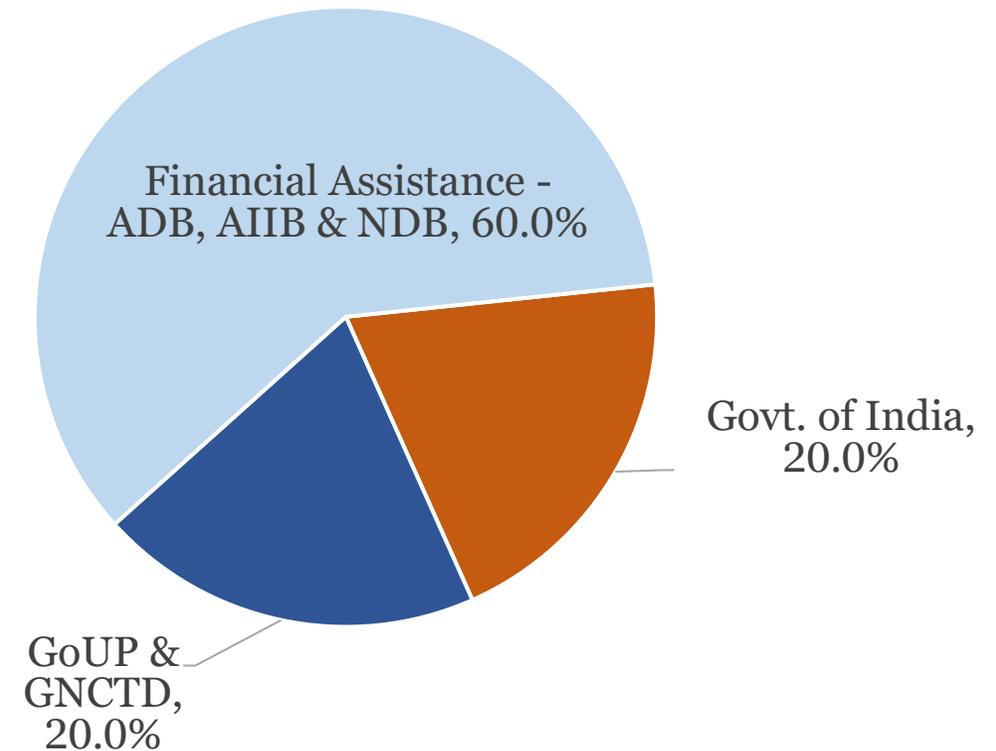
# Framework for implementation of Delhi-Meerut RRTS Corridor

In 2016, BOD of NCRTC having representation of **four NCR states & GoI** approved the DPR of Delhi-Ghaziabad-Meerut RRTS Corridor

- **Govt. of India** approved Delhi-Ghaziabad-Meerut RRTS Corridor in **March 2019**
- Construction commenced by **June 2019**



## Financing plan



# *Loan Name: Delhi-Meerut Regional Rapid Transit System Project (Project Number: 51073-003)*

- Loan Amount: **US\$ 2,049 million**  
(**ADB** Financing: US\$ 1,049 million; **AIIB** Joint Co-financing: US\$ 500 million; **NDB** financing: US\$ 500 million)
- Implementing Agency: National Capital Region Transport Corporation (NCRTC)
- Loan Repayment Period: 17 years for principal repayment (Feb' 2029 to Aug' 2045)
- Construction Period: from 2019 to 2025
- Categories of Procurement: (Civil Works/ Supply of Equipment/ Consultancy Services)
- Nature of Procurement: ICB/NCB/QCBS as per procurement policies of ADB
- Geographical Location: (Delhi-Ghaziabad-Meerut)
- Future Procurement Opportunities: All the major packages have been awarded and are under execution. However, last mile packages and other property development packages are in pipeline of Bidding.
- Project Director/Concerned Official's Contact Details:
  - Name & Designation: Mr. Anil Kumar Shrangarya, Director (Projects)
  - Postal Address: GatiShakti Bhawan, INA, New Delhi-110023
  - Phone Numbers: +91 011 24666700
  - Email Id: [anil.shrangarya@ncrtc.in](mailto:anil.shrangarya@ncrtc.in)

# Procurement: Delhi-Meerut RRTS Corridor

- M/s Ayesa-Italferr- Ayesa India Consortium is the General Consultant of Delhi-Meerut RRTS Corridor
- 30 Major and 10 Minor Contracts for Packages (Works Contract / Systems Contracts/Supply) were included in the Procurement Plan.
  - **Major Packages:** Approximately 96% packages have been awarded and are under execution. Balance Packages are to be invited.
  - **Minor Package:** Several minor packages are under execution and further Packages shall be invited as per requirement.

# Various Non-Fare Box Revenue streams for Delhi-Meerut Corridor

## Value Capture Financing (VCF)

- Tax / fee based instruments in the Influence zones of the project

## Land Value Capture / Property Development

- Development on RRTS owned lands / operational areas



## In Station Commercial / Property Business

- Conventional and innovative sources including advertisements, retail, co-branding, telecom, pouring rights, etc.



# Delhi-Gurugram-Rewari-SNB RRTS Corridor

# Delhi – SNB RRTS Corridor

## Alignment details

<b>Total Length (km)</b>	<b>107</b>
<b>Elevated (km)</b>	<b>70</b>
In Delhi	0.22
In Haryana	68
In Rajasthan	2
<b>Underground (km)</b>	<b>37</b>
In Delhi	22
In Haryana	15
In Rajasthan	0.0
<b>Estimated travel time</b>	<b>~ 75 min</b>
<b>No. of total stations</b>	<b>16</b>
In Delhi (U/G: 3)	4
In Haryana (U/G: 2)	11
In Rajasthan	1



# Stations on Delhi-SNB Corridor

S.No	Station Name	State	Interstation distance (in km)	Cumulative distance (in km)
1	Sarai Kale Khan Station	Delhi	0.48	0.00
2	<b>INA</b>	<b>Delhi</b>	7.29	6.81
3	<b>Munirka Station</b>	<b>Delhi</b>	5.07	11.88
4	<b>Aerocity Station</b>	<b>Delhi</b>	5.38	17.26
5	Udyog Vihar Station	Haryana	7.78	25.04
6	Sec 16 Station	Haryana	4.83	29.87
7	<b>Rajiv Chowk Station</b>	<b>Haryana</b>	3.49	33.36
8	<b>Kherki Daula Station</b>	<b>Haryana</b>	6.28	39.64
9	<b>Manesar Station</b>	<b>Haryana</b>	7.13	46.77
10	Panchgaon Station	Haryana	6.77	53.54
11	Bilaspur Chowk	Haryana	5.50	59.04
12	Dharuhera Station	Haryana	11.66	70.70
13	MBIR Station	Haryana	9.86	80.56
14	Rewari Station	Haryana	3.51	84.07
15	Bawal Station	Haryana	10.10	94.17
16	SNB Station	Rajasthan	11.84	106.01

10 Elevated Station

6 Underground Station

# Status of Pre-enabling works

# Progress: Pre-construction activities

- **CPM Field offices are functional** at Gurugram and Delhi since May 2019 and Jan 2020 respectively



- **Enabling works:** In order to save time in project implementation once the Project is sanctioned by GOI, enabling works are substantially completed with the support of Government of Haryana.



**Project fully ready for commencement of construction**

# Financing Plan (Delhi-SNB Corridor)

# Framework for implementation of DLI-SNB RRTS Corridor

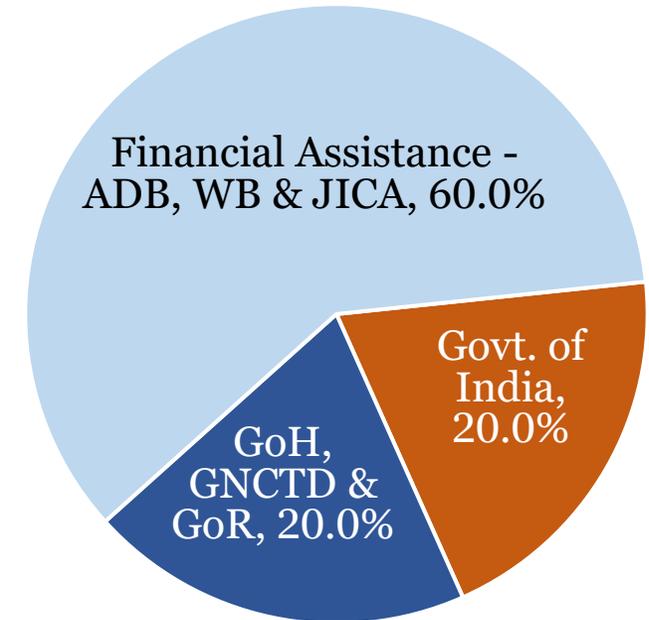
In 2018, BOD of NCRTC having representation of **four NCR states & GoI** approved the DPR of Delhi-SNB RRTS Corridor

Department of Economic Affairs, Ministry of Finance has posed the project for the external funding of **Delhi-SNB RRTS Corridor from ADB** (30th July 2021), **World Bank** (2nd July 2021) **and JICA** (24th May 2021) as funding agencies.

DPR of Delhi-SNB RRTS Corridor is under active consideration of Govt. of India for approval and sanction of the project is awaited

Pre-construction activities have commenced from **March 2018.**

## Financing plan



# *Loan Name: Delhi-SNB Regional Rapid Transit System Investment Project (Project Number: 56015-002)*

- Loan Amount: **US\$ 2358 million**  
(**ADB** Financing: US\$ 1382 million; **World Bank** Financing: US\$ 457 million; **JICA** financing: US\$ 519 million)
- Implementing Agency: National Capital Region Transport Corporation (NCRTC)
- Loan Period: Proposal is under active review.
- Construction Period: likely construction period is about 6 years from the date of sanction of the project.
- Categories of Procurement: (Civil Works/ Supply of Equipment/ Consultancy Services)
- Nature of Procurement: Expected to be ICB/NCB/QCBS as per procurement policies of ADB
- Geographical Location: (Delhi-Gurugram-Rewari-SNB)
- Future Procurement Opportunities: Please refer next slides.
- Project Director/Concerned Official's Contact Details:
  - Name & Designation: Mr. Anil Kumar Shrangarya, Director (Projects)
  - Postal Address: GatiShakti Bhawan, INA, New Delhi-110023
  - Phone Numbers: +91 011 24666700
  - Email Id: [anil.shrangarya@ncrtc.in](mailto:anil.shrangarya@ncrtc.in)

# Expected future Procurement Opportunities (Delhi-SNB Corridor)

# Expected Future Procurement Opportunities – Civil & Elect. Works (DLI-SNB Corridor)

SN	Type of Work	Location	Scope of Work	Likely Date for Invitation of Bid (IFB)
1	Construction of Depot cum Workshop	Dharuhera	All civil, PEB and E&M work	Q1/2024
2	Environment Control System (ECS), Tunnel Ventilation System (TVS) and Building Management System (BMS)	DLI-SNB	ECS, TVS & BMS for 37 km UG section and 6 Nos. of UG stations	Q2/2024
3	Escalators and Travelators	DLI-SNB	For 6 Nos. of UG and 9 Nos. of elevated stations	Q3/2024
4	Elevators (Lifts)	DLI-SNB		Q3/2024
5	HH Rails & Fastening System	DLI-SNB	Entire 107 Route km	Q3/2024
6	Construction of Elevated Viaduct	Kherki Daula Toll to Manesar Sector-1, Manesar Ravine Area ramp to Bilaspur Chowk, Bilaspur Chowk to Dharuhera	26.6 Route Km & 3 Nos. Elv. Stns.	Q1/2024
7	Construction of Elevated Viaduct	Dharuhera to SNB	35 Route km & 4 Nos. Elv. Stn.	Q3/2024
8	Design and Construction of twin Tunnels	Ramp at Millenium Park (including Ramp Structure) to Munirka	13 Route km & 2 Nos. UG Stn.	Q2/2024
9	Design and Construction of twin Tunnels	Ex. Munirka to Ramp at IDPL Complex (including Ramp Structure)	9 Route km & 1 No. UG Stn.	Q1/2024
10	Construction of Elevated Viaduct	IDPL Complex to Rajiv Chowk (Incl. Elevated ramp structure)	9.0 Route Km & 2 Nos. Elv. Stns.	Q2/2024
11	Design and Construction of twin Tunnels	Rajiv Chowk to Kherki Daula Toll and Manesar to Ravine Area	15 Route km & 3 Nos. UG Stn.	Q2/2024
	Other Packages	As and when required		

# Expected Future Procurement Opportunities – Other Infrastructural Works (DLI-SNB Corridor)

SN	Type of Work	Location	Scope of Work	Likely Date for Invitation of Bid (IFB)
1	Signalling, Train Control Systems, Telecommunication system, Platform Screen Doors	DLI-SNB	Entire 107 Route km	Q1/2025
2	Solar	DLI-SNB	RESCO Model	Q1/2025
3	Staff quarters and others	Dharuhera	For entire corridor	Q1/2025
4	Automatic Fare Collection	DLI-SNB	For all 15 Stns. (PPP mode)	Q1/2025
5	Financial Institution (FI) for issuance of Open Loop National Common Mobility Card (NCCM)	DLI-SNB	RESCO	Q1/2025
6	RRTS Trainsets (Rolling Stock Systems)	DLI-SNB	For entire corridor	Q1/2025
7	Catenary Maintenance Vehicle and Engineering Maintenance Vehicle	DLI-SNB		Q1/2025
8	Electrical Work on Viaduct & Tunnel (from Sarai Kale Khan to Kherki Daula)	DLI-SNB		Q1/2025
9	Electrical Work on Viaduct & Tunnel (from Kherki Daula to SNB [including Depot])	DLI-SNB		Q1/2025
	Other Packages	As and when required		



# Delhi-Sonipat-Panipat RRTS Corridor

# Delhi – Panipat RRTS Corridor

## Alignment details

**Total Length (km)** **103.02**

**Elevated (km)** **91.54**

**In Delhi** **29.7**

**In Haryana** **61.84**

**Underground (km)** **11.48**

**In Delhi** **6.5**

**In Haryana** **4.98**

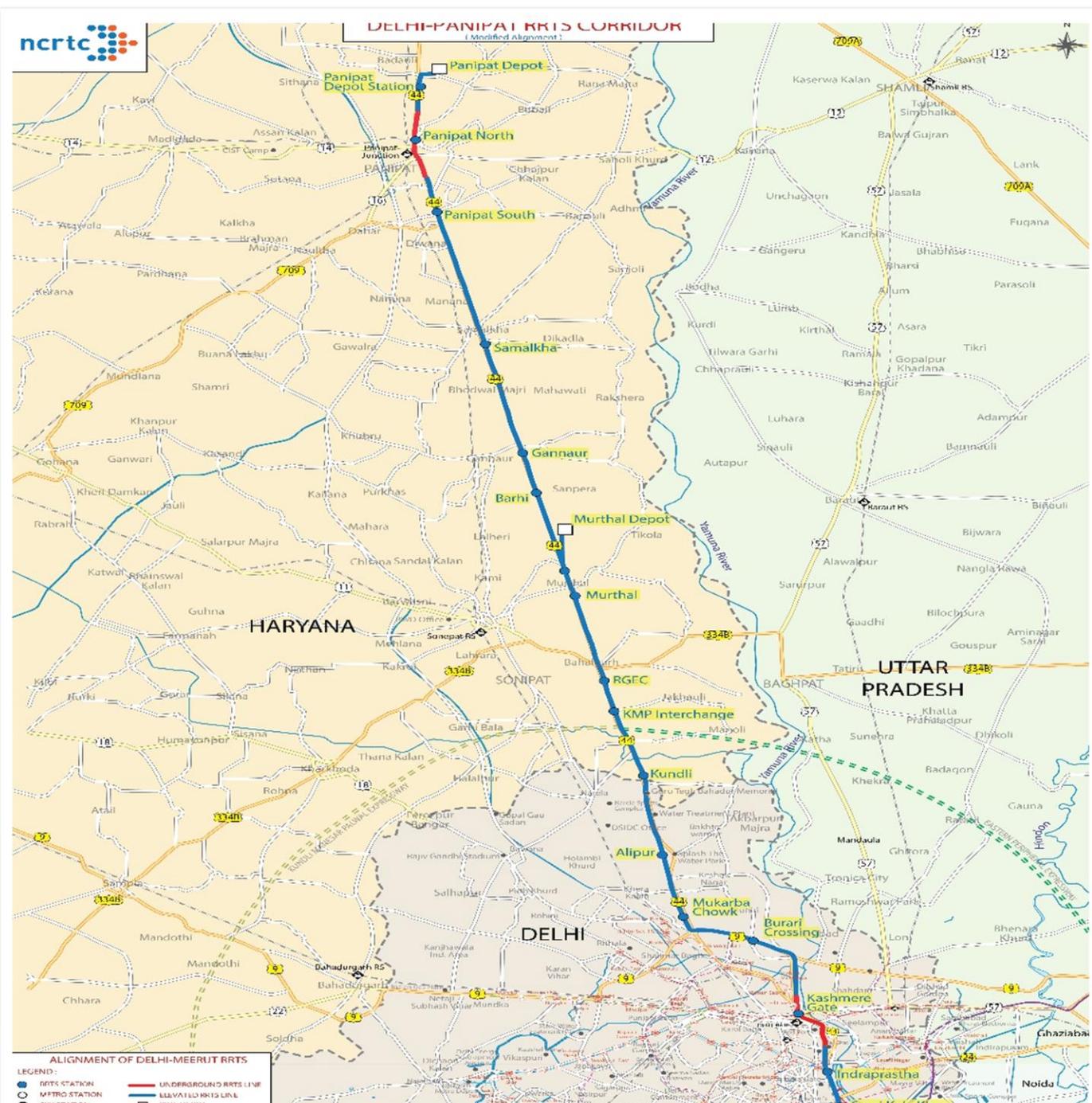
**Estimated travel time** **~ 72 min**

**No. of total stations** **17**

**In Delhi (U/G:1)** **29.7**

**In Haryana (U/G:1)** **61.84**

*\*Delhi = 36.20 km, Haryana = 66.82 km*



ALIGNMENT OF DELHI-MEERUT RRTS  
 LEGEND:  
 ● RRTS STATION  
 ○ MPTRO STATION  
 ○ EXIST. STATION  
 — UNDERGROUND RRTS LINE  
 — ELEVATED RRTS LINE  
 — EXIST. ROAD



# Stations on Delhi-Panipat Corridor

S. No.	Station Name	State	Inter Station Distance (Km)	Cumulative distance (in km)
1	Sarai kale khan	Delhi	0.48	0
2	Indraprastha	Delhi	3.82	4.3
3	Kashmiri Gate	Delhi	6.14	9.96
4	Burari Crossing	Delhi	8.51	14.65
5	Mukarba chowk	Delhi	5.36	13.87
6	Alipur	Delhi	6.64	12
7	Kundli	Haryana	7.13	13.77
8	KMP	Haryana	6.72	13.85
9	R G E C	Haryana	3.24	9.96
10	Murthal	Haryana	7.86	11.1
11	Murthal Depot	Haryana	3.23	11.09
12	Barhi	Haryana	5.87	9.1
13	Gannaur	Haryana	4.56	10.43
14	Samalkha	Haryana	10.66	15.22
15	Panipat-south	Haryana	12.37	23.03
16	Panipat-North	Haryana	6.83	19.2
17	Panipat Depot	Haryana	3.84	10.67

15 Elevated Station

2 Underground Station

# Delhi-Sonipat-Panipat

- In-principal approval of DPR from State Governments of NCT of Delhi and Government of Haryana have been given.

## DPR Capital Cost – INR 32,052 Cr

Description	Total Cost
Land	2,174
Civil works, Alignment and formation (excl. Stations & Depot)	9,858
Station Building	1,805
E&M Works	552
Depot-cum-Workshop	856
Permanent Way	2,082
Detailed Design and Proof check charges	-
Traction & Power Supply	2,175
Signalling and Telecom. (incl. Depot lines)	1,951
Automatic fare collection	10
Misc. Works	1,602
Rolling Stock	3,307
Miscellaneous Items	181
General Charge incl. General consultancy charges, administrative charges	1,221
Contingency Charges	833
Interest During Construction	3,443
<b>Total Project Cost (INR in Cr)</b>	<b>32,052</b>

गति से प्रगति

Thank You



*NCR Transport Corporation, Gatishakti Bhawan, New Delhi 110023*

*Website [ncrtc.in](http://ncrtc.in)*

# Progress: Pre-construction activities/enabling works



**Geotechnical Investigation**



**Sewer Line shifting**

**Shifting of EHT Transmission Electrical Lines 400 kv at Panchgaon**



**Road Widening**



**Laying of 11 kv U/G Cable at Manesar**

# Some RRTS nodes identified for LVC – Delhi-Meerut Corridor

Location	Product mix	Approx. area to be developed
<b>Jangpura</b>	• Commercial Towers above Stabling Yard	<i>~4 - 5 lakh sqm BUA</i>
	• Residential Development	
	• Mixed Use Development	
<b>Sarai Kale Khan</b>	• Offices / co-working, Food Court, Budget Hotel	<i>~50,000 sqm of BUA above elevated RRTS structures</i>
<b>Anand Vihar</b>	• Retail, Offices	<i>~50,000 sqm of BUA above UG RRTS Station</i>
<b>Ghaziabad</b>	• Retail, Offices, Entertainment, Food Court, Service Apartments	<i>total BUA development of ~50,000 sqm</i>
<b>Duhai Depot</b>	• Big Box Retail , Sports and Entertainment Zone (temporary), Integrated Townships (long term), warehouses, etc.	<i>~75 acres land available for integrated development</i>
<b>Bhaisali</b>	• Retail, Office / Healthcare	<i>~20,000 sqm above UG MRTS Station</i>



- Structure shall be provided either by NCRTC and leased to private developers on long term lease for furnishing, renting out ( revenue sharing) and operations or the land will be leased to developer and he shall develop it and in lieu provide upfront premium plus annual lease to NCRTC as the case may be. In both the cases Built-up area will be returned to NCRTC after the lease period.

# *Masterplanning for PD – Ghaziabad RRTS Station*



# *Masterplanning for PD – Duhai Depot*



# *Proposals for PD – Anand Vihar*



# *Proposals for PD – Bhaisali*



# Property Business / In-station commercial

*NCRTC, with support from ADB has conducted initial studies for implementation of PB Stream*

*PB streams in the scope of O&M Contractor*

- *In-Station Retail,*
- *Parking*

*NCRTC is currently initiating the process for appointment of transaction advisor for maximizing PB Revenues*

## Key Retail Opportunities

Retail Built-up Shops



F&B Built-up Shops



Kiosks and ATMs



## Other Opportunities

Pickup/Delivery Points



## Key Advertising Opportunities

Outdoor Advertising



Indoor Advertising



Semi-Naming Rights



Smart Card/Token Ads



In-train Ads and Wraps



Co-branded Cards



## Other Opportunities

Experiential Marketing



Tunnel Advertising



# Property Business / In-station commercial

## Key Telecom Opportunities

### Towers, IBS and Small Cells



### Optical Fibre Cables



## Key Last Mile Connectivity Opportunities

### Parking



### Cab Access



## Other Opportunities

### EV Charging Points



## Key Innovative Opportunities

### Virtual Stores



### Pouring Rights



## Other Opportunities

### Digital Products



### In-Train Wi-Fi

