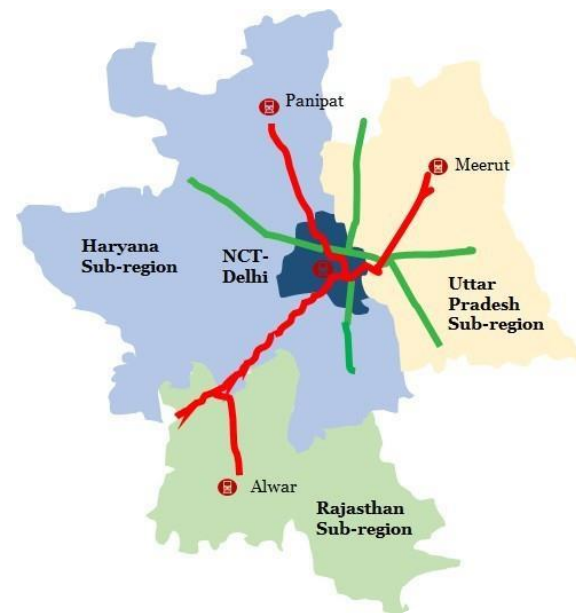




REGIONAL RAPID TRANSIT SYSTEM

TRANSFORMING REGIONAL MOBILITY



IMPACT OF INADEQUATE PLANNED MOBILITY – THE CHALLENGE



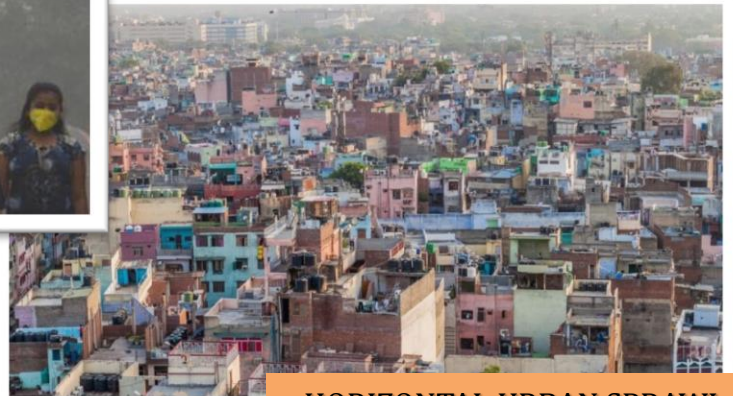
CROWDED INTERCITY
COMMUTE



AIR POLLUTION



ROAD CONGESTION



HORIZONTAL URBAN SPRAWL

UNDERLYING OBJECTIVES OF PLANNING INTERCITY TRANSIT – **THE SOLUTION**

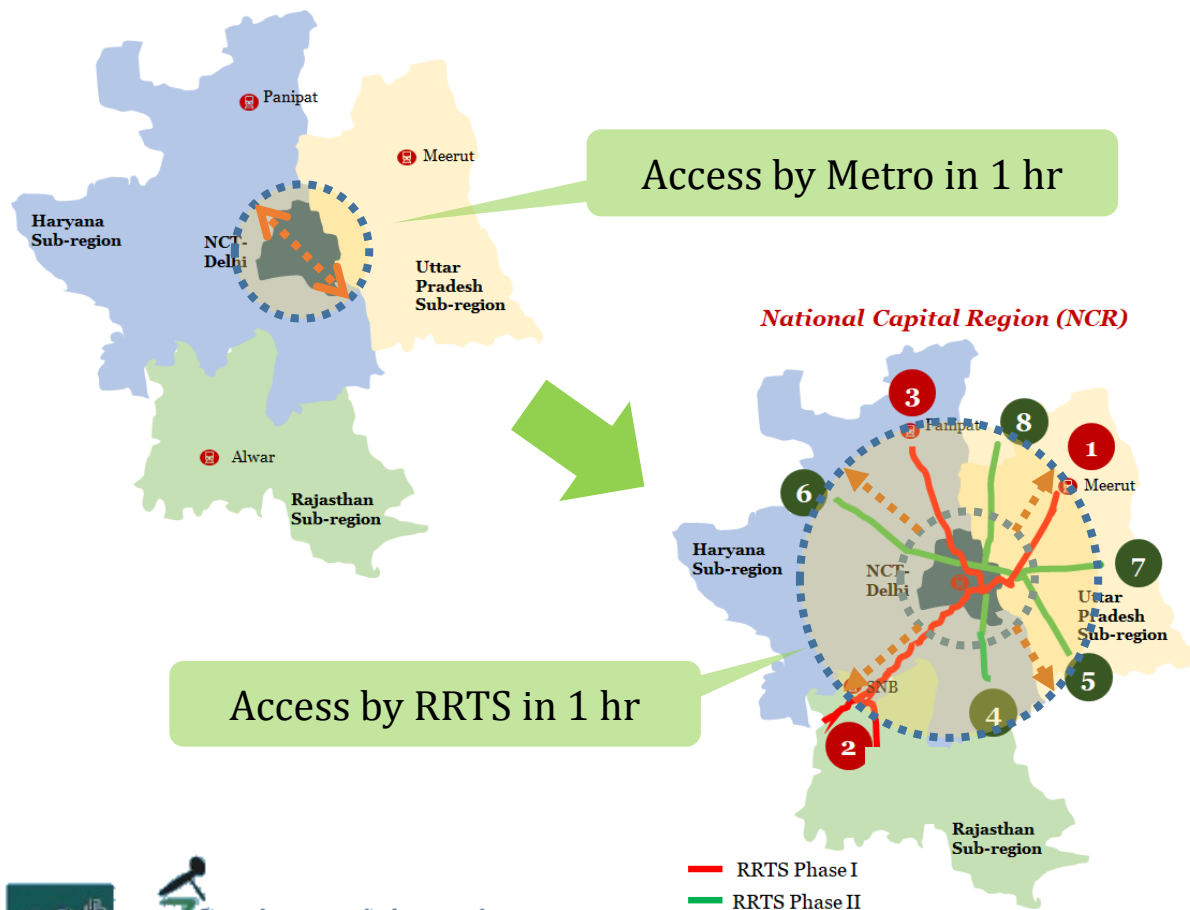
STRATEGIC INSTRUMENT FOR
LONG TERM PLANNING (NOT AS
AN INCREMENTAL SOLUTION)

DEFINE URBAN DEVELOPMENT
OF THE REGION IN LONG TERM
(50 YEAR HORIZON)

TRIGGER VERTICAL GROWTH
AND POLYCENTRIC ECONOMIC
DEVELOPMENT

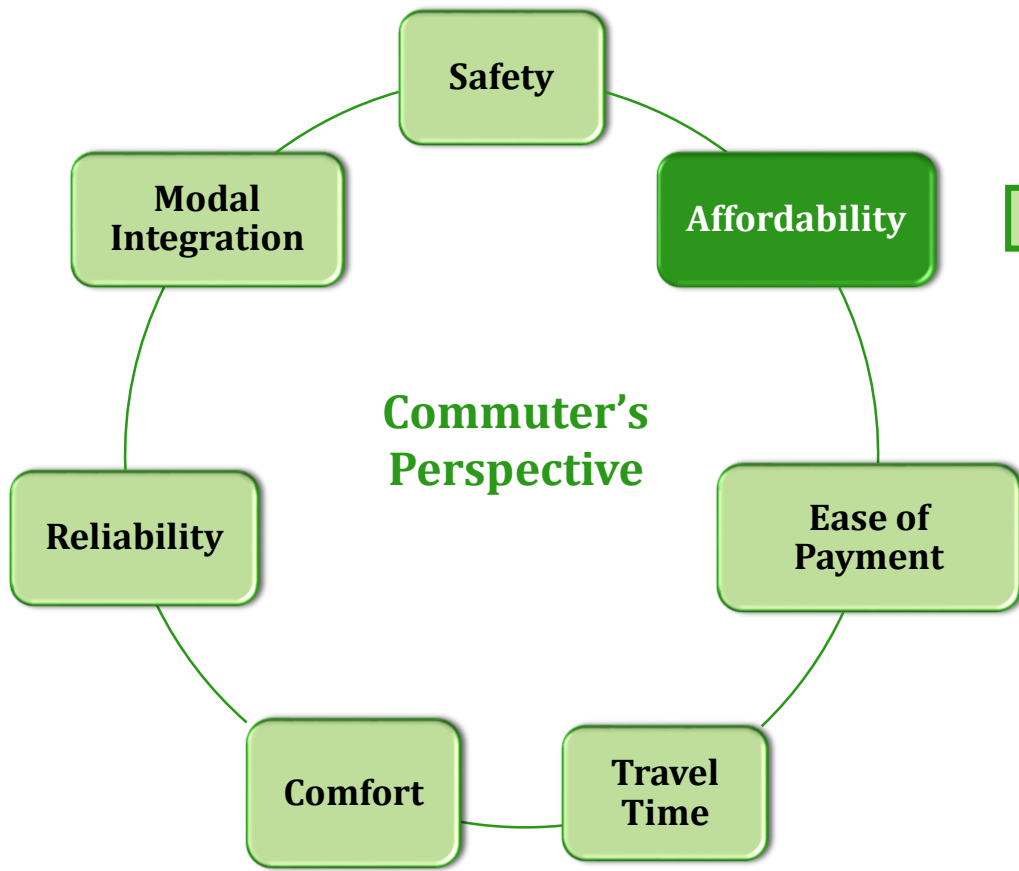
SAFE, FAST, COMFORTABLE &
ENVIRONMENT FRIENDLY

RRTS – A NEW CHAPTER IN THE JOURNEY OF INTERCITY MOBILITY



- **Backbone** of transit for daily commuters with other modes as feeder
- Redefining **urban densification** – more economic activity in the developed nodes with housing in sub-urban nodes
- Trigger for **socio-economic development** in the sub-urban nodes

BUT HOW CAN SUCH CAPITAL INTENSIVE SYSTEMS BE SUSTAINED...



With **AFFORDABILITY** as a defining factor for adoptability of public transit system, ensuring **SUSTAINED VIABILITY** has to be a key objective for the transport authorities

VALUE ENGINEERING FOR CAPEX REDUCTION

1

Minimizing private land

Project being implemented within RoW of Highways

4

Integration of Meerut Metro

Huge capital expenditure savings - Maximising utility of capex

2

Shared infra. with interoperability

Combination of major & minor depots, common stabling yard, etc.

5

Operational design optimisation

Reduction of depth (Anand Vihar), 4 lines to 3 lines (Meerut South), Platform width reduction

3

Underground to elevated stations

Conversion of underground to elevated station – Shatabdinagar, Brahmpuri

6

Rethinking Station Design

2 entry-exit points proposed at several station

OPTIMISATION FOR OPEX REDUCTION

1

Private Sector in O&M

- Private sector efficiencies in O&M of RRTS – Hybrid model to ensure

2

Rolling Stock Maintenance

- Procurement bundled with 15-year maintenance contract
- Maintenance - hybrid model

3

Low OPEX Infrastructure

- Categorisation of stations basis scale
- OPEX savings by Interoperability, Underground to Elevated
- Standardisation

MULTI MODAL INTEGRATION

Modes	MMI with RRTS
Metro Rail Systems	<p>Delhi Metro: With 7 metro lines, at Ghaziabad, Anand Vihar, New Ashok Nagar, SKK, INA, Aerocity, Indraprastha, Kashmere Gate, Munirka, Burari X-ing</p> <p>Meerut Metro: At Begumpul</p> <p>Gurgaon Rapid Metro: Udyog Vihar</p> <p>Bawal Metro: At Panchgaon, Kherki Daula</p>
Airport	At Indira Gandhi International Airport, Delhi – Aerocity Metro Station
Indian Railways	Hazrat Nizamuddin & Anand Vihar
ISBTs	Sarai Kale Khan, Kashmere Gate, Anand Vihar, Panchgaon, Panipat
Other Bus Terminal /Depot	Kaushambi Bus Depot, Sahibabad Bus Adda, Ghaziabad New Bus Adda, Muradnagar Bus Stand, Bhaisali Bus Adda, Bawal, Gannur, Panipat Bus Stand etc.
Roads	Ring Road, Eastern Peripheral Expressway, Delhi-Meerut Expressway

ADDITIONAL REVENUE STREAMS



PROMOTING 'MAKE-IN-INDIA' – IMPETUS TO 'AATMA NIRBHAR BHARAT'

- Promoting Make-in-India – an integral strategy right from planning stage - Excluded packages from multilateral funding where technology is imported to enable Make-in-India
- Rolling Stock - Package kept out of ADB funding – adhering Make-in-India - Awarded to M/s Bombardier Transportation India Ltd. - 100% trainsets shall be manufactured from its factory at Savli, Vadodara, Gujarat (80%+ local content)
- S&T - Package kept out of ADB funding – adhering Make-in-India - Specific requirement of minimum local content in various components as specified by MoHUA - LTE (not in India) – still made part of Telecom with min. 50% local content
- Track - Generally design & build in most cases - awarded to International firms - NCRTC split the design part - selected best ballastless track tech. through ICB & bought IPR - Enabled domestic contractors to participate in installation (90%+ local content)
- **Taken up challenge for indigenous development of PSDs – MoU signed with BEL**

LEVERAGING TECHNOLOGY

UAV (Drone) Videography

- Baseline documents
- Project monitoring



Building Information Modelling (BIM)

- Collaborative design: Synergies



Virtual Reality Studio

- 3D visualisation



CCTV/ PTZ Cameras Time Lapsed Video

- Project monitoring



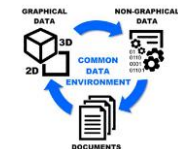
CORS

- Continuously Operating Reference Stations for Surveying



Common Data Environment

- 'Single Source of Truth'



Q&A



THANK YOU

गति से प्रगति