Regional Rapid Transit System (RRTS)

Source: TOI

Why in News?

- Currently, the **National Capital Region Transport Corporation (NCRTC)** is developing 900 **rainwater harvesting (RWH)** pits along the Delhi-Ghaziabad-Meerut **Regional Rapid Transit System (RRTS)** corridor in a move to ensure environmental sustainability.

What is Rainwater Harvesting?

- Rainwater Harvesting & Conservation is the activity of **direct collection of rainwater**. The rainwater collected can be **stored for direct use** or can be recharged into the Groundwater.
- There are two main techniques of rainwater harvesting:
    - Storage of rainwater on surface for future use.
    - Recharge to groundwater.

How do the RRTS Pits Capture and Store Rainwater?

- The pits are strategically placed for **maximum water collection** and **over 75%** of these systems are already **operational**.
- The pits are expected to **recharge millions of cubic meters** of groundwater, contributing significantly to water table levels.
- The design consists of **two small water chambers** constructed face-to-face underground, connected by a central **rainwater harvesting** pit.
- During rainfall, water flows from the viaduct (bridge-like structure) into these chambers The collected water is **filtered through three layers** of gravel and sand before being absorbed into the ground through the central pit.
- The **depth of the pits varies between 16 and 22 meters**, depending on the local groundwater level.
- Rainwater harvesting is also being incorporated at each RRTS station, with two pits being built near every entry and exit gate.

What are the Key Facts Regarding the RRTS?

- **Background:**
  - In 2005, a **government task force** was formed to create a **comprehensive transportation plan** for the Delhi **National Capital Region (NCR)**.
  - This plan called the **Integrated Transport Plan for NCR 2032**, identified a need for a special rapid transit system to connect major cities within the region.
  - The task force **identified 8 corridors** and **prioritized three corridors** for this "Regional Rapid Transit System" (RRTS): Delhi-Meerut, Delhi-Panipat, and Delhi-Alwar.
- **About RRTS:**
  - RRTS is a **brand-new mode of public transportation** designed specifically for the NCR.
  - Delhi-Meerut corridor RRTS is a **rail-based**,**semi-high-speed, high-frequency** commuter transit system.
  - The Delhi-Ghaziabad-Meerut corridor has a total length of **82-km long,** with **22 stations.**
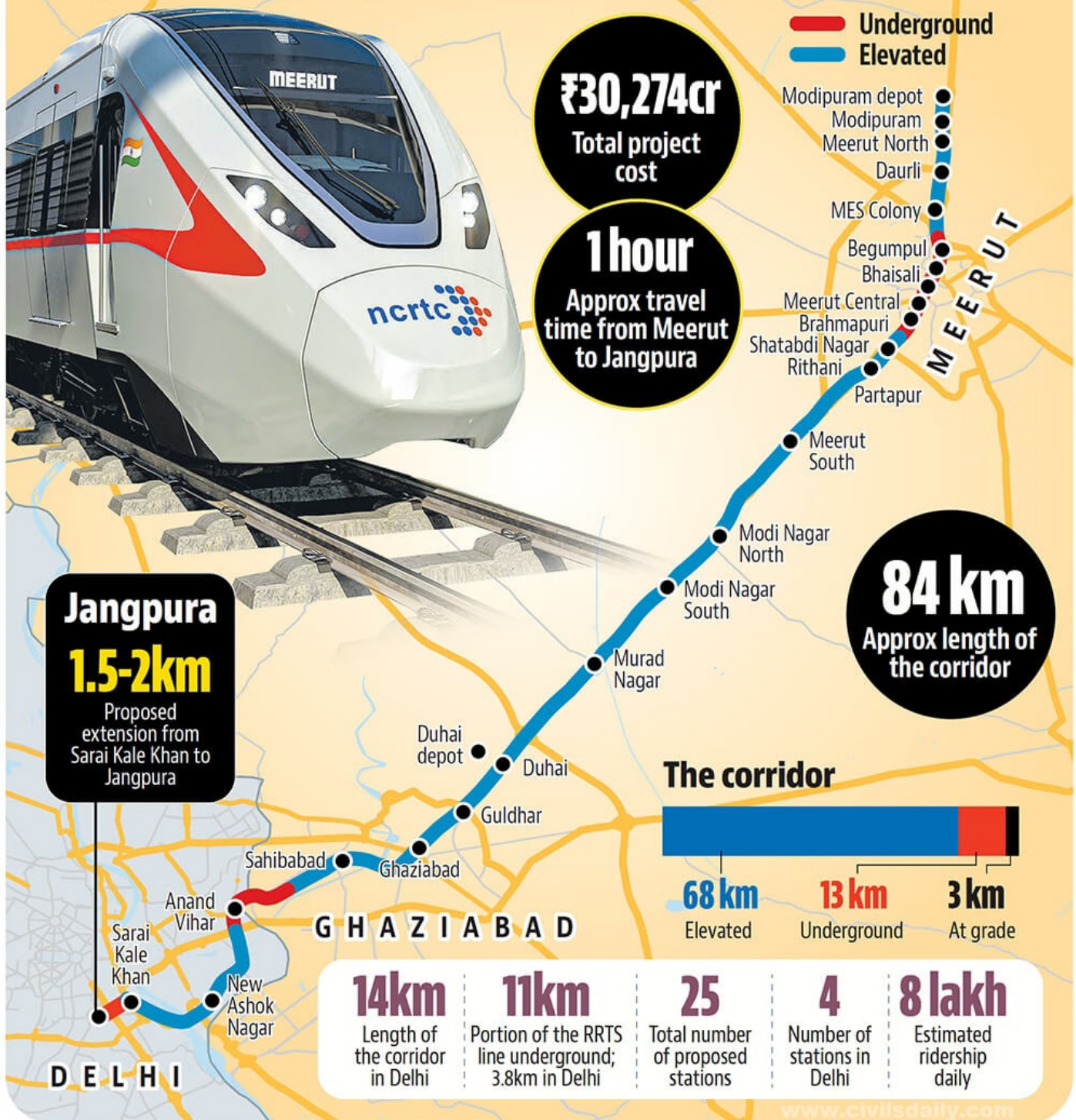- **Advantages of RRTS:**
  - **High Speed & Capacity:** Unlike traditional railways or metros, RRTS trains will travel at much **faster speeds (over 160 km/h)** and carry a large number of passengers, **reducing congestion, high-frequency** operations with trains every 15 minutes.
  - **Dedicated Corridor:** RRTS trains operate on a **separate, elevated track**, free from traffic congestion on roads, ensuring reliable travel times.
  - **Environmental Impact:** RRTS is estimated to **significantly reduce air pollution** in the region, by encouraging more people to use public transportation
  - **Economic Growth:** Improved connectivity will lead to more **balanced economic development** across the NCR, creating opportunities in various cities and reducing reliance on a single central hub.
  - **Sustainable Future:** RRTS serves as a model for developing **efficient public transport systems** in other Indian cities. It will also help reduce overall traffic congestion and emissions within the NCR.
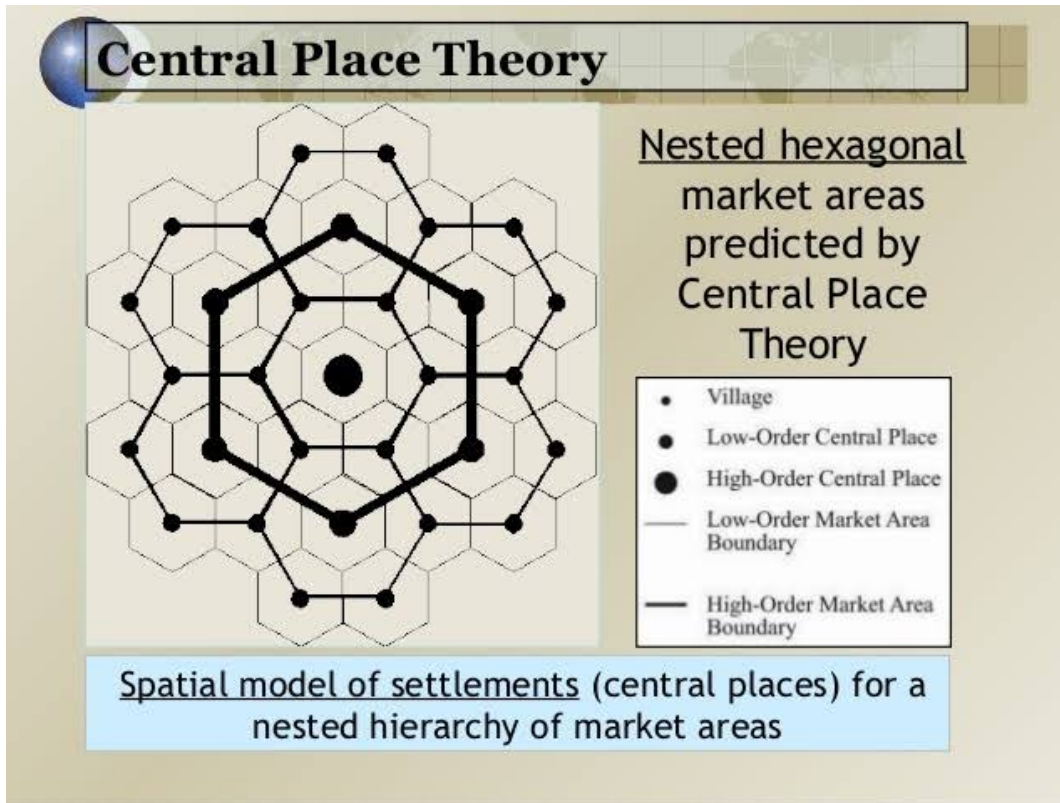
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A new start

The 84-km Regional Rapid Transit System (RRTS) corridor from Delhi to Meerut, being built at a cost of ₹30,274 crore, will start from south Delhi's Jangpura

Underground
Elevated

₹30,274cr
Total project cost

1 hour
Approx travel time from Meerut to Jangpura

84 km
Approx length of the corridor

Jangpura
1.5-2km
Proposed extension from Sarai Kale Khan to Jangpura

Stations: Modipuram depot, Modipuram, Meerut North, Daurli, MES Colony, Begumpul, Bhaisali, Meerut Central, Brahmapuri, Shatabdi Nagar, Rithani, Partapur, Meerut South, Modi Nagar North, Modi Nagar South, Murad Nagar, Duhai depot, Duhai, Guldhar, Ghaziabad, Sahibabad, Anand Vihar, Sarai Kale Khan, New Ashok Nagar

MEERUT

GHAZIABAD

DELHI

The corridor

68 km	13 km	3 km
Elevated	Underground	At grade

14km	11km	25	4	8 lakh
Length of the corridor in Delhi	Portion of the RRTS line underground; 3.8km in Delhi	Total number of proposed stations	Number of stations in Delhi	Estimated ridership daily

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What are the Geographical Theories associated with RRTS?

- Central Place Theory:

- This theory suggests settlements (cities) develop around **central locations** that **provide services** to surrounding areas.

- RRTS connects smaller towns and suburbs to major cities, allowing for easier access to jobs, education, and other services offered in the central city.

  - **For example**, The Delhi-Meerut RRTS connects Delhi, a major economic hub, with Meerut, a developing city. This improves access for Meerut residents to Delhi's opportunities like jobs, education, and other services offered in the central city of Delhi.

Central Place Theory

Nested hexagonal market areas predicted by Central Place Theory

- Village
- Low-Order Central Place
- High-Order Central Place
- — Low-Order Market Area Boundary
- — High-Order Market Area Boundary

Spatial model of settlements (central places) for a nested hierarchy of market areas

- **Gravity Model:**

  - This model suggests the interaction between two places is influenced **by their populations and the distance** between them.

    - RRTS strengthens this by facilitating faster and more frequent travel, thus increasing the potential for **economic and social interaction** between connected cities. This can **lead to increased trade, collaboration, and cultural exchange.**

APPLYING THE GRAVITY MODEL
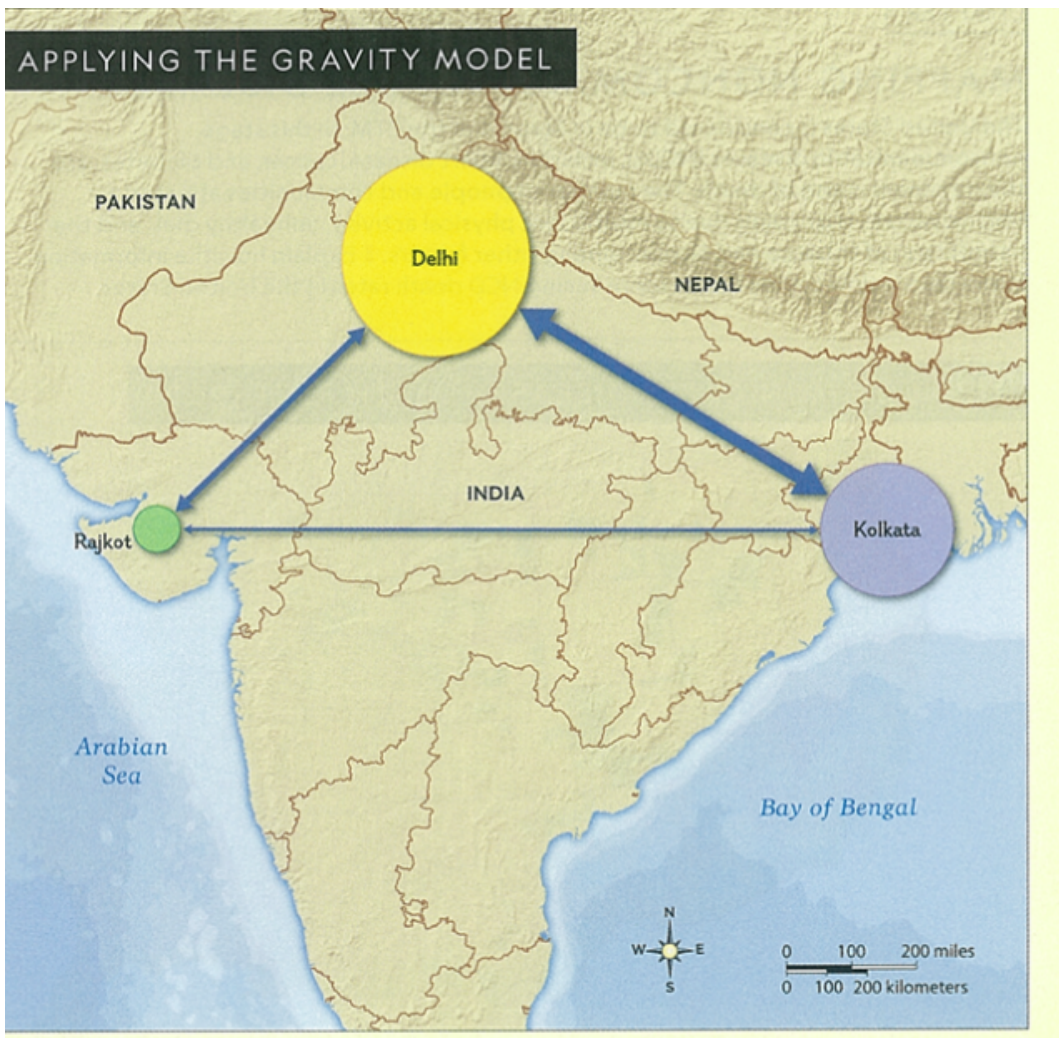
- **Diffusion Theory:**
  - This theory explains how **ideas, innovations, and practices spread** across space. RRTS can lead to the spread of urban development patterns (shopping malls, business districts) along the train corridor.
    - For Example, The Delhi-Ghaziabad RRTS could lead to the development of new commercial centres in Ghaziabad, previously a primarily residential area.

What are India's Initiatives for Urban Transportation?

- PM-eBus Sewa

- **The Gati Shakti Terminal (GCT) policy**

- **National Logistics Policy (NLP)**

- **Bharatmala Project**

- **Dedicated Freight Corridors**

- **Smart Cities**

Conclusion

The Delhi-Meerut RRTS project, as a whole, embodies a future-oriented approach to urban development. By prioritizing sustainable practices like rainwater harvesting, the NCRTC sets a positive example for infrastructure projects across India. This commitment to environmental responsibility goes hand-in-hand with the project's aim to provide a high-speed, reliable, and efficient public transportation system, ultimately contributing to a cleaner and more livable NCR.

> **_Drishti Mains Question:_**
>
> Q. Highlighting the key features of the Regional Rapid Transit System (RRTS) , discuss the advantages of RRTS with relevant geographical theories.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. With reference to the Indian economy after the 1991 economic liberalisation, consider the following statements: (2020)

1. Worker productivity (Rs. per worker at 2004-05 prices) increased in urban areas while it decreased in rural areas.
2. The percentage share of rural areas in the workforce steadily increased.
3. In rural areas, the growth in the non-farm economy increased.
4. The growth rate in rural employment decreased.

Which of the statements given above is/are correct?

(a) 1 and 2 only

(b) 3 and 4 only

(c) 3 only

(d) 1, 2 and 4 only

Ans: (b)

Mains

Q. The frequency of urban floods due to high-intensity rainfall is increasing over the years. Discussing the reasons for urban floods, highlight the mechanisms for preparedness to reduce the risk during such events. **(2016)**

PDF Refernece URL: https://www.drishtiias.com/printpdf/regional-rapid-transit-system-rrts-1