Addressing Urbanization Challenges for a Sustainable Future

This editorial is based on "Making transit-oriented urban development work" which was published in Hindustan Times on 03/09/2024. This article highlights that the Transit-oriented development (TOD) is frequently discussed in Union budgets but struggles with implementation. Despite its promise of improving accessibility and reducing carbon emissions by concentrating urban development around transit hubs, TOD faces several challenges.

For Prelims: Urbanization, United Nations, 2011 Census, United Nations, Global Liveability Index, Slums And Unauthorized Colonies, Flood Management, Urban Planning, World Air Quality Report 2023, Managing Solid Waste, Budget 2024-25, AMRUT, Housing For All, Regional Rapid Transit System (RRTS), Municipal Bonds.

For **Mains**: Significance of Planned Urbanisation for Sustainable Development.

Urbanization is a dynamic and complex process involving the **transition of populations from rural to urban areas**, profoundly transforming land use, economic activities, and social structures.

This phenomenon, recognized by the United Nations as one of the key demographic trends alongside population growth, aging, and migration, entails more than just a shift in numbers. It includes the expansion of city boundaries, economic diversification, cultural changes, and the evolution of governance systems.

The 2011 Census recorded India's urbanization rate at **31.2%**, an increase from **27.8%** in 2001. By 2030, it is projected that approximately 590 million people will reside in urban areas. With rapid urbanization underway, it is crucial to analyze the growth trends and their impact on the population.

Urbanization manifests in various forms, including planned settlements designed by government agencies to foster sustainable development and unplanned settlements that emerge spontaneously, often resulting in informal and sometimes precarious living conditions. In India, urbanization is accelerating, with significant impacts on **city infrastructure, economic output, and social dynamics.**

Despite the promise of urban growth projected to drive a substantial portion of GDP and job creation by 2030, challenges such as **inadequate infrastructure, transit issues, safety problems, environmental degradation, and socio-economic inequalities persist**. Understanding urbanization's multifaceted nature and addressing these challenges is crucial for fostering resilient and sustainable urban environments.

What is Urbanisation?

- **About: Urbanization** is the complex, multifaceted process of population shift from rural to urban areas, accompanied by changes in land use, economic activities, and social structures.
    - It encompasses **demographic transformation,** spatial expansion of cities, economic diversification, cultural shifts, and evolving governance systems, resulting in increased urban population density and the development of built environments.
    - The United Nations identifies urbanisation as one of four major demographic trends, alongside population growth, aging, and international migration.
- **Types of Urban Settlements:**
    - **Planned Settlements**: These are urban areas developed by **government agencies or housing societies** based on official plans.
        - With the aim to create **sustainable and livable environments,** such plans take into account various factors, including physical, social, and economic considerations, to ensure organized development.
    - **Unplanned Settlements:** These develop without official sanction, often on government or private land, in a disorganized manner.
        - These areas typically feature a **mix of permanent, semi-permanent, and temporary structures** and are commonly located near city drains, railway tracks, flood-prone areas, or on **agricultural land and green belts.**
- **Trends in Urbanisation:**
    - In global liveability index 2023 of the **Economist Intelligence Unit, New Delhi and Mumbai** are at **141st position** and **Chennai at 144$^{th.}$**
        - This ranking reflects that Indian cities have low scores in five key parameters: **stability, healthcare, culture and environment, education, and infrastructure.**
    - In India, urbanisation has steadily increased, with the urban population rising from 27.7% in 2001 to 31.1% in 2011.
        - The focus has shifted from large **Tier 1 cities** to medium-sized towns, driven by factors like employment, education, and security.
    - According to the **Confederation of Indian Industry (CII),** by 2030, urban areas are projected to contribute approximately 70% to the GDP, 85% of total tax revenue, and 70% of new jobs.
- **Reasons for Urbanisation:**
    - **Trade and Industry:** The growth of **trade and industry** attracts labor, fosters infrastructure development, and creates access to markets and innovation hubs.
    - **Economic Opportunities:** Cities offer a greater number of **job opportunities** compared to rural areas, hosting businesses, factories, and other institutions.
    - **Education:** Urban areas generally provide superior educational facilities, including schools and universities, which draw people seeking to enhance their education and career prospects.
    - **Better Lifestyle:** Cities offer improved services such as **hospitals and libraries** and provide a vibrant lifestyle with abundant social and cultural opportunities.
    - **Migration:** Migration significantly fuels urbanisation in India, leading to the expansion of informal settlements.
        - Migrants often move to unplanned areas due to the high cost of living in more established urban regions, resulting in numerous **informal settlements,** such as slums and unauthorized colonies, that lack essential amenities like clean water and sanitation.

What are the Challenges Related to Urban Development?

- **Urban Flooding**: It is a major challenge for urbanization, driven by **inadequate drainage systems and encroachment on natural water bodies.**
    - For instance, flooding events in Delhi (2024 & 2023), Nagpur (September 2023), Bengaluru and Ahmedabad (2022), Chennai (November 2021), and Hyderabad (2020 and 2021), revealed severe infrastructure shortcomings and highlighted the urgent need for better flood management **and** urban planning.
- **Gurugramisation of Cities:** Gurugramisation refers to the transformation of cities through rapid urbanization, characterized by **extensive commercial and residential developments, modern infrastructure, and urban sprawl.**

    - This trend, evident in Gurugram's expansion, often leads to **socioeconomic divides, environmental strain,** and challenges in maintaining balanced urban growth and sustainability.
- **Highway-Oriented Development:** Urbanization faces challenges from competitive disadvantages, such as cities favoring **highway development** for higher profits, leading to **Transit-oriented development's (TOD)** reduced appeal and increased **congestion in peripheral areas.**
    - Coordination issues between **transit and city planning agencies** result in inefficiencies, while rigid planning practices and cultural resistance hinder TOD.
    - For example, there is a **lack of coordination** between **transit agencies** (like the Delhi Metro Rail Corporation) and **city planning authorities** (like the Delhi Development Authority). This results in disputes over revenue-sharing and inefficient TOD implementation.
- **Traffic Congestion and Mobility Challenges**: Rapid urbanisation, lack of transit options and an increase in private vehicles have caused severe traffic congestion, extending commute times and reducing productivity.
- **Air Pollution and Environmental Degradation**: Urban areas in India are experiencing severe air pollution due to vehicle emissions, industrial activities, and construction.
    - For instance, the World Air Quality Report 2023 reveals that nine of the ten most polluted cities globally are in India and with Delhi emerging as the world's most polluted capital city for the fourth consecutive time.
- **Urban Heat Island Effect and Lack of Green Spaces:** The rapid **expansion of urban areas and the reduction of green spaces** have intensified the urban heat island effect, leading to higher temperatures and increased energy consumption.
    - For example, **Delhi** experienced an extreme heatwave in May 2024, pushing the city's power demand to over 8,000 megawatts.
- **Water Scarcity and Inadequate Water Management**: Many cities face severe water shortages due to rapid urban growth, rising populations, and declining groundwater levels.
    - For instance, Delhi water crisis in 2024 and Chennai's water crisis in 2019, forced residents to rely on water tankers and desalination plants, and Bengaluru's recent water issues, underscore the severity of the problem.
- **Inadequate Housing and Slum Proliferation:** The **Ministry of Housing and Urban Affairs** estimates a shortage of around 18.78 million housing units in India from 2012 to 2027, with over 65 million people living in slums or informal settlements.
    - This situation strains infrastructure, exacerbates poverty, and hampers planned development, affecting overall livability and social cohesion.
- I**nadequate Solid Waste Management:** Indian cities face difficulties in managing solid waste, resulting in garbage accumulation and health risks.
    - The Central Pollution Control Board reports that Indian cities generate approximately 62 million tons of municipal solid waste annually, with only about 20% being processed or treated adequately.

How TOD Promotes Sustainable Urban Development?

- **Reduction in Traffic Congestion:** TOD helps **alleviate traffic congestion** by integrating high-density, mixed-use neighborhoods with efficient public transit systems.
    - By prioritizing **public transit and walkable designs,** TOD **reduces the reliance on private vehicles,** thereby easing traffic flow and shortening commutes. This shift not only enhances mobility but also minimizes the environmental impact associated with vehicular emissions.
- **Mitigation of Suburban Sprawl:** TOD addresses the issues of suburban sprawl by focusing on compact, well-planned urban areas.
    - This approach **promotes the efficient use of land, reduces environmental degradation, and fosters vibrant, sustainable communities.**
    - By creating neighborhoods where residential, commercial, and recreational spaces are in close proximity, TOD counters the spread of low-density, car-dependent developments.
- **Enhanced Urban Lifestyle**: TOD enhances urban living by integrating diverse land uses within a short walking distance of transit stations.
    - This design supports a high quality of life, allowing residents to **easily access**

workplaces, amenities, and recreational areas. The focus on walkability and mixed-use development contributes to a more engaging and healthier urban environment.

- **Environmental and Economic Benefits:** TOD contributes to sustainability by **reducing pollution and fossil fuel dependency.** It supports environmental goals through lower emissions and decreased sprawl.
    - Economically, TOD **boosts local businesses, reduces transportation costs, and attracts investment, enhancing overall economic competitiveness. T**his integrated approach to urban planning supports long-term sustainable development goals.

Examples of Successful TOD Implementation

- **Metro Rail Projects:** India has been expanding metro rail networks in major cities to address urban congestion and provide efficient public transportation.
    - Around **15 cities** like Delhi, Mumbai, Kolkata, Bangalore, Hyderabad, Jaipur and Chennai etc have operational metro systems, with many more under construction or planned in other urban centers.
- **Urban Transport Policies:** With the aim to reduce congestion and pollution while improving mobility, several Regional Rapid Transit System (RRTS) projects are in the pipeline.
    - For example,in 2005, a government task force developed the**Integrated Transport Plan for NCR 2032,** identifying a need for a RRTS to connect major cities in the Delhi NCR. It prioritized three corridors**: Delhi-Meerut, Delhi-Panipat, and Delhi-Alwar.**
- **Mumbai: Lower Parel i**n Mumbai has evolved into a **TOD hub** with high-rise residential and commercial buildings around local train stations, reflecting increased integration of transit and urban spaces.
- **Noida's cycle zones:** It features dedicated tracks, **cycle-sharing programs,** and integrated urban design to promote sustainable transport. By separating bike lanes from traffic, offering rental options, and enhancing safety with signage, these initiatives aim to reduce pollution, improve public health, and support a greener, more pedestrian-friendly city.
- **No Emission Zones:** No Emission Zones are urban areas restricting access for **high-emission vehicles to reduce pollution.** They promote cleaner transport options and improve air quality.
    - **For example: London, UK – Ultra Low Emission Zone (ULEZ)** aims to reduce air pollution by restricting access to high-emission vehicles. The zone promotes the use of electric and hybrid vehicles and integrates well with public transit, supporting TOD by enhancing the environmental quality and encouraging sustainable transportation.
- **Hong Kong’s Property + Rail Model:** This model **integrates real estate development with transit funding.**
    - Authorities buy land development rights before rail construction, sell them post-construction at higher prices, and **use the revenue to finance transit operations.**
    - This model **generates substantial income from property,** reduces urban sprawl and pollution, and enhances ridership through increased density.

What are the Steps Taken for Urban Development?

- **Government Initiatives:**
    - **Budget 2024-25:** The budget 2024-25 has announced the creation of **Transit Oriented Development (TOD) plans** for **14 major cities** with a population above 30 lakh.
        - Also, central assistance of **Rs 2.2 lakh cror**e for **urban housing** over the next five years as well as an interest subsidy scheme to facilitate loans at affordable rates for urban housing works, was announced in the budget.
    - **Smart Cities Mission:** This program aims to develop **100 cities** across India by applying smart solutions to **improve infrastructure and services.**
        - It focuses on areas like water supply, sanitation, waste management, urban mobility, and e-governance.
    - **AMRUT (Atal Mission for Rejuvenation and Urban Transformation):** AMRUT targets 500 cities, focusing on ensuring basic infrastructure services like water supply, sewerage, urban transport, and development of green spaces.

        - It aims to improve the quality of life in these cities through better amenities and infrastructure.
    - **Pradhan Mantri Awas Yojana (Urban):** This scheme aims to provide "Housing for All". It offers financial assistance to urban poor for house construction or renovation.
        - The program includes **credit-linked subsidies** and partnerships with private developers to increase affordable housing stock.
    - **Swachh Bharat Mission (Urban):** This mission focuses on **eliminating open** defecation, improving solid waste management, and generating awareness about sanitation.
        - It includes **constructing individual and community toilets,** and implementing modern **waste management practices.**
    - **Digital India:** In urban areas, this initiative focuses on providing digital infrastructure and promoting e-governance.
        - It includes projects like **public Wi-Fi hotspots, digital delivery of government services**, and encouraging **cashless transactions** to create 'smart' urban ecosystems.
    - **Scheme for Special Assistance to States for Capital Investment 2022-23 (Rs. 6000 Cr):** It focuses on **urban planning** reforms including Modernization of Building Bylaws, Adoption of Transferable Development Rights (TDR), Implementation of Local Area Plans (LAP) and Town Planning Schemes (TPS), Implementation of Transit-oriented Development (TOD), Creation of Sponge Cities, Removing Taxation for running the Buses for Public Transport.
    - **Scheme for Special Assistance to States for Capital Investment 2023-24 (Rs. 15000 Cr):** It emphasizes enhancing urban planning through human resource augmentation, town planning schemes, modernization of building bylaws, in-situ slum rehabilitation, TOD, and strengthening urban ecosystems.
- **Constitutional and Legal Frameworks:**
    - **Articles 243Q and 243W:** Grant powers to local governments (municipalities) for urban planning and development within their regions.
    - **74th Constitutional Amendment Act, 1992:** Granted constitutional status to urban local bodies and introduced Part IX-A to the Constitution.
    - **12th Schedule**: Outlines the powers, authority, and responsibilities of municipalities.

What Other Measures can be Taken for Sustainable & Resilient Urban Development?

- **Leveraging Municipal Bonds for Urban Development:** Municipal bonds present a promising method for urban development by enabling cities to secure funding for critical infrastructure projects.
    - This approach not only provides immediate financial resources but also supports long-term urban modernization and resilience.
    - To maximize their impact, cities should enhance investor confidence through transparent processes and effective project management, ensuring that funds are used efficiently and lead to tangible benefits for residents.
- **Integration of Inclusive Urban Development:** Adopt a holistic approach by integrating various development sectors and prioritizing **inclusivity in urban planning.**
    - This means **engaging diverse stakeholders** and ensuring that development benefits all segments of society, fostering equitable growth and addressing disparities.
- **Harnessing Technology**: These **tech-driven solutions** not only improve operational effectiveness but also contribute to more **resilient and environmentally friendly** urban environments.
    - For instance, **Indore's innovative waste management system** utilizes smart bins and automated segregation to enhance efficiency.
    - Similarly, **integrating renewable energy technologies,** such as solar power and wind turbines, can reduce cities' carbon footprints and enhance sustainability.
- **Utilization of Scientific Data Methods:** Implement advanced **data analytics and evidence-based methods** to assess and monitor urban development schemes.
    - This approach ensures that decisions are informed by accurate data, leading to more effective and efficient urban planning outcomes.
- **Enhancement of Citizen Participation**: Boost citizen engagement through both physical and

digital platforms, ensuring their voices are heard in governance.
    - This involvement helps align urban policies with **community needs and priorities**, enhancing the quality and responsiveness of urban services.
- **Strategic Investment and Coordination:** Promote **strategic investments and coordinated actions** involving both public and private sectors.
    - Effective urban development requires a unified approach across agencies to address challenges and leverage resources efficiently.
- **Environmentally Focused Initiatives:** Implement sustainable urban practices such as the **Sponge City concept,** distributed waste-to-energy systems, and smart water management.
    - These initiatives aim to improve **environmental resilience and sustainability** within urban landscapes.
- **Adoption of Smart Technologies:** Deploy smart city infrastructure, including digital twins for predictive modeling and IoT-enabled services, to enhance urban efficiency and quality of life.
    - Invest in robust cybersecurity measures to protect critical digital infrastructure from emerging threats.
- **Improved Accessibility and Awareness**: Enhance accessibility to urban services and increase awareness through effective communication and participative governance.
    - This will ensure that urbanization efforts are inclusive and address the diverse needs of urban populations.

Conclusion

Urbanization represents a critical juncture in global and national development, offering both opportunities and challenges. As cities grow and evolve, embracing comprehensive planning and reform is essential to ensure that urbanization contributes positively to economic prosperity and quality of life.

In India, initiatives like the **Smart Cities Mission and AMRUT** aim to address **infrastructure deficits and enhance urban livability.** However, effective implementation of **transit-oriented development, better coordination among agencies, and modernization of planning practices** are necessary to overcome obstacles. By focusing on **sustainable growth,** enhancing infrastructure, and improving governance, cities can harness the benefits of urbanization while mitigating its challenges, paving the way for a more inclusive and resilient urban future.

Drishti Mains Question:

Discuss the key challenges in achieving sustainable urban development in India. How can transit-oriented development address these challenges?

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims:

Q. With reference to the role of UN-Habitat in the United Nations programme working towards a better urban future, which of the statements is/are correct? (2017)

1. UN-Habitat has been mandated by the United Nations General Assembly to promote socially and environmentally sustainable towns and cities to provide adequate shelter for all.

2. Its partners are either governments or local urban authorities only.

3. UN-Habitat contributes to the overall objective of the United Nations system to reduce poverty and to promote access to safe drinking water and basic sanitation.

Select the correct answer using the code given below:

(a) 1, 2 and 3

(b) 1 and 3 only

(c) 2 and 3 only

(d) 1 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)**