ISBN: 978-93-47303-15-9
DOI: https://doi.org/10.70381/9789347303159.2026.7

CHAPTER 7

Urban Infrastructure: Problems and Solutions

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Abstract:

Urbanization is an index of transformation from traditional rural economies to modern industrial activities. It is a long-term process. This paper endeavors to illuminate problems and solutions of urban infrastructure. India over a century with emphasis on level tempo of urbanization and urban morphology using Indian Census data during 1901-2001. It will try to trace urban problems and related policy issues. Now, India is among the countries of low level of urbanization. Number of urban agglomeration /towns has grown from 1827 in 1901 to 5161 in 2001. Number of populations residing in urban areas has increased from 2.58 crores in 1901 to 28.53 crores in 2001. Only 28% of population was living in urban areas as per 2001 census. Over the years there has been continuous concentration of population in class I towns. On the contrary the concentration of. Population in medium and small towns either fluctuated or declined. The graduation of number of urban centers from lower population size categories to class I cities has resulted top heavy structure of urban population in India. India's urbanization is often termed as over urbanization, pseudo-urbanization. The big cities attained inordinately large population size leading to virtual collapse in the urban services and followed by basic

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problems in the field of housing, slum, water, infrastructure, quality of life etc. Urbanization is a product of demographic explosion and poverty induced rural-urban migration. Urbanization is occurring not due to urban pull but due to rural push. Globalization, liberalization, privatization are addressing negative process for urbanization and infrastructural issues.

Keywords: *Urbanization, trend of population, Solid Waste Management, Infrastructure.*

Introduction:

Urbanization is an index of transformation from traditional rural economies to modern industrial ones. It is progressive concentration (Davis, 1965) of population in urban units. Quantification of urbanization is very difficult. It is a long-term process. Kingsley Davis has explained urbanization as process (Davis, 1962) of switch from spread out pattern of human settlements to one of concentration in urban centers. It is a finite process, a cycle through which a nation passes as they evolve from agrarian to industrial society (Davis and Golden, 1954). He has mentioned three stages in the process of urbanization. Stage one is the initial stage characterized by rural traditional society with predominance in agriculture and dispersed pattern of settlements. Stage two refers to acceleration stage where basic restructuring of the economy and investments in social overhead capitals including transportation and communication take place. Proportion of urban population gradually increases from 25% to 40%, 50%, 60% and so on. Dependence on primary sector gradually dwindles. Third stage is known as terminal stage where urban population exceeds 70% or more. At this stage level of urbanization (Davis, 1965) remains same or constant. Rate of growth of urban population and total population becomes same at this terminal stage. The onset of modern and universal process of urbanization is relatively a recent phenomenon and is closely related with industrial revolution and associated economic development. As industrial revolution started in Western Europe, United Kingdom was the initiator of Industrial Revolution. Historical evidence suggests that urbanization process is inevitable and universal. Currently developed countries are characterized by high level of urbanization and some of them are in final stage of urbanization

process and experiencing slowing down of urbanization due to host of factors (Brockerhoff, 1999; Brockerhoff and Brennam 1998). A majority of the developing countries, on the other hand, started experiencing urbanization only since the middle of 20th century. Historically, cities have been the driving force in economic and social development. At present approximately 307 million Indians live in nearly 3700 towns and cities spread across the country. This is 30.5% of its population, in sharp contrast to only 60 million (15%) who lived in urban areas in 1947 when the country became Independent. During the last fifty years the population of India has grown two and half times, but Urban India has grown by nearly five times. In numerical terms, India's urban population is second largest in the world after China, and is higher than the total urban population of all countries put together barring China, USA and Russia.

However, with this development there are certain problems associated in regard to urban infrastructure.

Objective of the study:

- This paper focuses on the relative problems and solid solutions to the problems.
- To bring awareness about the trends in urbanization and its knowledge.

Urban infrastructure:

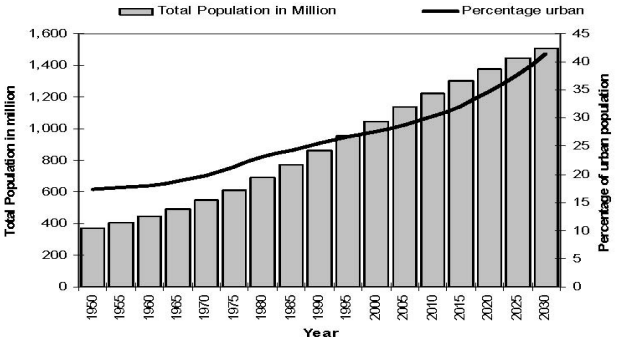
IN the 21st century, the first urban millennium in human history with over half of the population of the globe is living in cities and towns; India faces unprecedented challenges in throwing up sound institutions to cope with the rapid growth of cities. Roughly 30 percent of India's population is in cities it is expected that by 2025, half of the population will be urban.

The word urban means characteristic of city, something new and advance. Infrastructure means basic installations and facilities, such as roads, power plants, transportation and communication systems, which is vital to make human life easy and comfortable.

Urban infrastructure problems in India is an age-old problem. The infrastructure problems in India mostly took a backseat in the economic development policy drafts. The meager budgetary allocation to arrest infrastructure problems in India has so far proved to be too little to keep pace with other areas

of business development in India. Moreover, the tremendous growth of Indian IT, telecommunication, manufacturing, and pharmaceutical industries has consumed the limited world class urban infrastructure available in India. The main reason for urban infrastructural problems is increasing trend of urban population.

Figure 1: Growing Trend of Urban Population in India



Source: U.N. population statistics

- Infrastructure is the biggest bottleneck in 'India Growth Story'
- Transport systems have severe capacity constraints: highways, city roads, airports, seaports and railways
- Urban and Utility infrastructure: Huge demand-supply gap in drinking water, sewerage system, drainage and power supply
- India needs US$ 480 billion investment in the coming Five-Year Plan to meet current Infrastructure needs, at least 20% of this would be for the Urban Sector
- Government alone cannot bring the desired investment and efficiency: need for Public Private partnership (PPP)

The problems can be analyzed as follows regarding the urban infrastructure:

- **Power:** Urbanization has profound effect on the amount and type of energy consumed. Along with population growth, economic development and industrialization, urbanization is one of the principal forces driving the increase in energy demand (Figure-3). Although traditional rural societies rely heavily upon human and animal energy and on nearby wood or fuel, today urban societies are characterized by

their reliance on fossil fuels and electricity. These patterns of energy use lead to different environmental impacts.

- **Urban Transport**: Transportation systems are a major contributor to the decay of urban environment and reduced quality of life in the metropolitan areas due to their contribution to atmospheric emissions, noise and risk of accidents. Increasing vehicular pollution in major urban centers is becoming an area of growing concern. Poor maintenance of vehicles, degraded condition of roads and use of un-pure fuels primarily precipitate the problems of air and noise pollution arising from operation of motorized vehicles.
- **Water:** Immigration of people from rural to urban areas has led to problems of water, too. Because it creates shortage for water and somehow it pollutes the water. These cause serious diseases in cities. Ever increasing urbanization and their growing amounts of waste have overtaxed the natural recycling capabilities of local rivers and lakes. Of the many problems associated with urban effluents, nutrient loading or eutrophication of local waters is one of the most serious *problems*. Poor water resource management too contributes to water problems.
- **Sewerage:** Urbanization is also responsible for this problem. This is mostly due to overpopulation in cities. It also increases slum areas in cities.
- **Tourism infrastructure:** As the tourist spots are being overpopulated through visitors' rushes towards this has become acute problem for cities. Since it requires huge care of such places.
- **Solid waste management:** Human and animal generate many wastes that are discarded as useless or unwanted. This waste is normally solid and result in soil pollution. It is made through urban community, i.e., residential and commercial activities.

The component of city refuse is as follows:

Paper, wood, Cardboard	53%
Garbage and garden trimmings	22%
Glass, Crockery, Ceramics	10%
Metals	08%

Plastics, rubber, abandon vehicles 07%

- **Projects in SEZ:** Government has announced SEZ area; however, it has now resulted into many infrastructural facilities scarcities.
- **Health Care:** AS the density in cities increases it also has impact on health care. It means people are facing many new diseases which they were not familiar with earlier, another is that heath care facility is not have enough advanced equipment and space.
- **Entertainment:** The urbanization has changed the pattern of entertainment of the people in today's generation. Due to this need for different localities are many and it is tough to provide such facilities for all.
- **Communication:** No doubt, in the technological advanced era there is no more problem with the communication facility. However, it looks in some of the areas is still lacking such facility. The reason is that due to density of population in cities, it's very hard to manage for communication system. Our communication system is full of mistakes, because that is one of the most crucial problems. Due to easy availability of the instrument, everybody without proper intention starts using the facility. It creates hectic situations amongst people.
- **Housing and rental:** Due to this urbanization the important cause that can arise is density in cities. ON account of this there will be housing problems for all to avail this basic requirement. Other sanitary systems would be defective or inadequate to satisfy needs of people.
- **Other:** Other many infrastructural relate problems can affect the progress of urban people. It includes problems like Crime, prostitution, Slums, Beggery etc.

Sector / Area	Current Problems / Challenges in India	Latest Statistics / Facts (2024–2025)	Solutions / Strategic Approaches	Sources
Urban Population & Growth	Rapid urbanization puts pressure on services.	Urban population projected nearly double by 2050 (≈951 million). India will need over 144 million new homes by 2070. (World Bank)	Planned city expansion, affordable housing policies, resilient planning frameworks.	(World Bank)
Infrastructure Investment Gap	Historic under-investment compared to needs.	India needs over $2.4 trillion in urban infrastructure by 2050 for climate-resilient cities. (World Bank)	Boost public & private financing, PPP, municipal bonds, fiscal incentives for developers & affordable housing. (The Economic Times)	(World Bank)
Water Supply & Quality	Shortages, pollution, distribution losses.	Many cities lose 30–50% of piped water due to leaks, irregular supply; some sources (e.g., Hyderabad) highly polluted.	Strengthen treatment plants, modern pipelines, ring-main systems for uninterrupted supply. (The Times of India)	The time of India
Sewerage & Sanitation	Inadequate sewage treatment and connections.	Only about 30–50% households have sewer connections, wastewater treatment often inadequate. (The Economic Times)	Expand sewer networks & treatment plants; reuse treated water; integrate sanitation planning with housing. (The Times of India)	The Economic Times)
Solid Waste Management	Low scientific processing, large MSW generation.	Only ~26% of solid waste is treated scientifically in many parts. (VISION IAS)	Segregation at source, recycling facilities, waste-to-energy technologies, circular waste policies.	The time of india)

Sector / Area	Current Problems / Challenges in India	Latest Statistics / Facts (2024–2025)	Solutions / Strategic Approaches	Sources
Transport & Mobility	Congestion, low public transit capacity, pollution.	Indian cities among the most polluted with severe mobility challenges.	Expand metro & bus rapid transit, electrify public transport, non-motorized travel facilities.	(The Economic Times))
Housing & Urban Space	Severe affordable housing shortage.	Estimated affordable housing deficit increasing as urban population rises.	Fiscal incentives, NITI Aayog housing boosts, Smart Cities & PMAY programs. (The Economic Times)	(The Economic Times)
Governance & Local Bodies	Weak local governance slows infrastructure service delivery.	Urban local bodies face constraints in planning and execution.	Strengthen ULB capacities, urban policy reforms, better regulatory frameworks.	(The Economic Times))
Climate Adaptation & Resilience	Extreme heat, flooding risks increasing.	Urban warming and flood risks rising; climate adaptation urgently. (World Bank)	Green infrastructure, flood-resilient urban planning, heat action plans & early warnings. (World Bank)	
Financial Planning & Investment	Infrastructure funding below requirements.	`10 lakh crore is estimated to be invested in urban infra in next 4 years. (The Economic Times))	Expand public financing, promote capital markets for urban projects, strengthen PPP models. (The Economic Times))	

Source: financial Report

Solution for the problems: - Of course**,** where there is will there is way. 'There is solution for such problems of urban infrastructure. It can be elaborate as follows:

- **Power:** Power can be produced through alternate channels like atomic energy, wind power and making dams on the rivers (turbine energy). So, these are the new generation's formula for producing energy. Like France produced 80% of his energy from the atomic power plant. So, no need to depend on traditional energy-generating ideas which is now become very old-fashioned and at the same time generate lot of pollution. In India we have capacity to generate 50% of energy from atomic sector but we are lacking the proper management.
- **Urban Transport:** As the need of hi\our transportation is to be improved with all the latest facilities of state transport for the reduction of such problem. Furthermore, reducing the serious traffic problem in cities, specifically over flies, can only be the best solution and it should be totally automated in all respects.
- **Drinking Water:** IN cities now the first and foremost way to solve the water problem is to make available pure drinking water. Storage system should be improved up to the mark.
- **Sewerage rehabilitation:** Several cities have taken on major projects to try and repair damaged water and sewerage pipes. This improves the safety and quality of the water in the city and would reduce mortality rates. The rehabilitation also goes some way to reducing the unemployment problems. The planning should be proper and well managed. Slums areas can be removed by giving them adequate shelter like China has done in Shanghai. They made a 30-storey building and give one flat to all such people. Now they have 5-star hotels instead of slums.
- **Housing Developments:** Some countries, such as Singapore, have embarked upon massive re-housing programmes, resulting in high-rise estates. Large areas of shanty towns were cleared, tower blocks built and the shanty town residents re-housed. Early apartment blocks were very similar to those found in the UK and faced many similar problems. One such problem was people using the lifts as toilets - this was stopped when lifts were made sensitive to urine and locked on the offenders. They then had to wait

to be released, facing much embarrassment and a very heavy fine! Today, blocks are designed by architects and have management teams that keep them graffiti and litter free. This is helped by the strict rules enforced in Singapore, where dropping litter or selling chewing gum will result in a very heavy fine. Each housing development is designed to be self sufficient, with shops and services and employment in light industry, such as clothing.

Conclusion:

- **Solid Waste Management:** By melting and destroying the medical waste and throwing them out of the city where nobody resides. Dig them into the deep part of soil. It starts decomposition after some years.
- **Health Care:** Provide better food means pure vegetables. There should be some health care centre which should provide vital knowledge regarding health care to all the needy people in cities as well as in villages.
- **Communication:** Communication, as an essential device to be in contact with others more effectively, is must now. So, for this it should be made available to every onr.NO doubt, Government and private sectors are working in this regard very positively.
- **Education:** Education is the most significant aspect to solve any problem of urban infrastructure anywhere in the world.

Finally, to conclude, it can be mentioned that with the growing urbanization the need to improve infrastructural facilities is must. For this Government, Private Sectors and society as a whole is responsible for dealing with the problems and to shorten out relevant solutions to these. There should be immense change in the infrastructural facilities in villages so that migration of rural people to urban areas can be minimized.

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