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INDIA'S URBAN TRANSFORMATION: A REVIEW OF URBAN POLICIES AND CHALLENGES

Mihir Bholey

Senior Faculty, Interdisciplinary Design Studies, National Institute of Design, PG Campus, Gandhinagar, Gujarat, India

ABSTRACT

This paper examines the global process of urbanization in general and India's own urban challenges in particular. It reviews India's policies of urban development over the years besides its various initiatives and preparedness to meet urban challenges and ensure urban transformation. In the process, the paper investigates whether the ubiquitous urban deficit in India is the outcome of the so-called 'reluctant urbanization' and can the current policy of creating hundred smart cities lead to urban transformation in India. This paper is based on the qualitative analysis of the available secondary data from various sources. By critically examining the available secondary data this paper explores whether India's urban deficit is a result of poor planning or lack of long term vision and strategy to meet the emerging urban challenges. This paper also critically looks into the emerging ICT-driven models and design of the 'smart cities' and analyzes the role of design, technology, and innovation in making the cities smart and future ready.

***KEYWORDS:*** *Design, ICT, Innovation, Smart City, Planning, Policy, Technology, Urbanization, Urban Transformation*

INTRODUCTION

Urbanization: The Ongoing Process

The definitions of urbanization address to a variety of concepts. Thompson (1935), who explained it in terms of occupational engagement, says, "Urbanization is characterized by movements of people from small communities concerned chiefly or solely with agricultural to other communities generally larger, whose activities are primarily centered in Government, trade, manufacture, or allied interests." Change in the pattern of population distribution is another aspect which Hauser and Duncan (1959) underscore in their definition of urbanization.McGranahan and Satterthwaite (2014) point out that "Urbanisation is often used more loosely, however, to refer to a broad-based rural-to-urban transition involving population, land use, economic activity, and culture, or indeed any one of these."The process of 'urban transition' has also been explained and emphasized by Montgomery et al., (2004) in a similar manner. The definitions describe urbanization as a transfer of a population from small rural settlements which relies on agriculture as the major economic activity to places which are not only different in terms of population density but also in terms of occupation which employs them either in the industrial or service sectors. They explain the phenomenon from the perspectives of rural-urban transition, population density, occupation, land use pattern, livelihood opportunities, etc.

As per World Urbanization Prospects: The 2014 Revision report, in the year 2012 close to 863 million people, comprising of nearly one-third of urban residents in developing regions, lived in slums or informal settlements deprived of access to improved water and sanitation or any security against eviction. Nevertheless, ever since 1950 it has picked up a faster pace and urban population has experienced exponential growth from 751 million to 4.2 billion in 2018. As compared to that, global rural population growth had been rather sluggish since 1950. As per the United Nations Department of Economic and Social Affairs (UN DESA 2018) report the present 55% of the world's population living in urban areas, is expected to increase to 68% by 2050. Figure 1 shows the ratio of world urban and rural population in a hundred year historical perspective between 1950-2050.
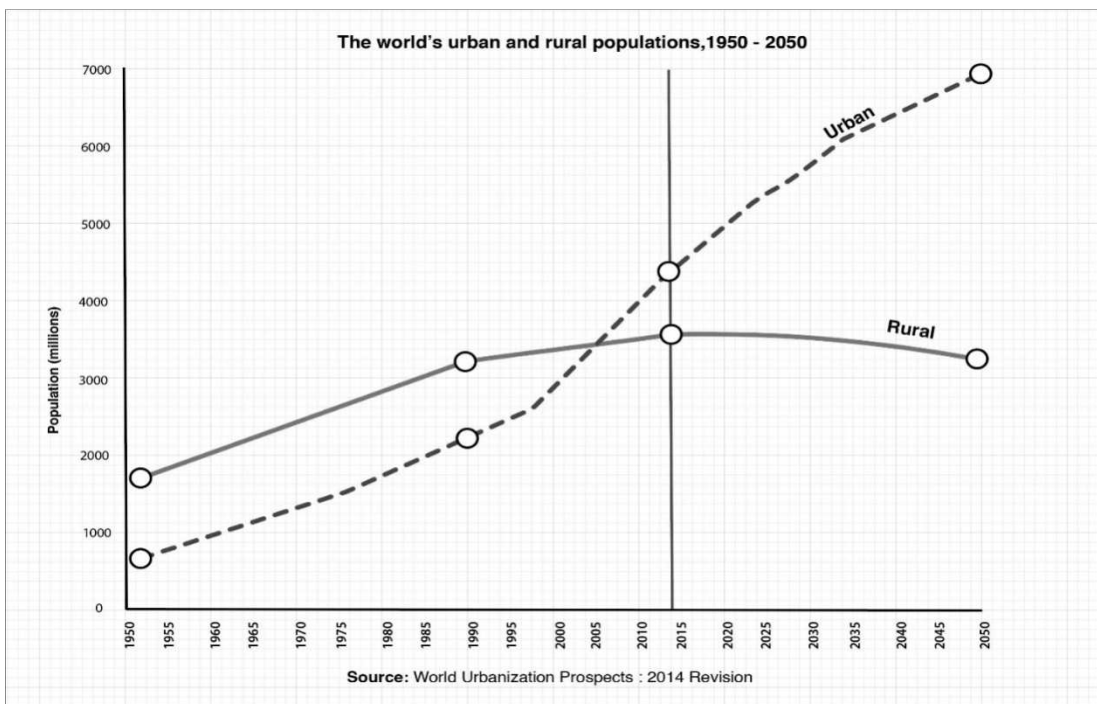
Figure 1

The report also estimates current (2018) global rural population to be close to 3.4 billion. After a slight rise, it is envisaged to further decline and settle around 3.1 billion in 2050. All these demographic changes are happening in a span of 100 years. 90 percent of world's rural population still lives in Asia and Africa (till 2018) and out of this India's share of the rural population is the highest (893 million) followed by China (578 million), the report states. It's the size of India's rural population which is going to remain the potential source of rapid urbanization in India for many more years to come. As per the projections of the World Urbanization Prospects: 2018 Revision report, India together with China and Nigeria alone is going to add 35% to the global urban population from 2018 to 2050. India's urban population is likely to become 416 million as per the projection. It's also among those ten countries of the world with a projected decline of the rural population between 2014-2050 which is an indication of continuous urban growth. While the growth in urban population is a global phenomenon, but the patterns of rural population decline and increase in urban population has a varied pattern which is also influenced by the gross demographic size. Figure 2 shows the projected decline in a rural population in some developed and developing nations.
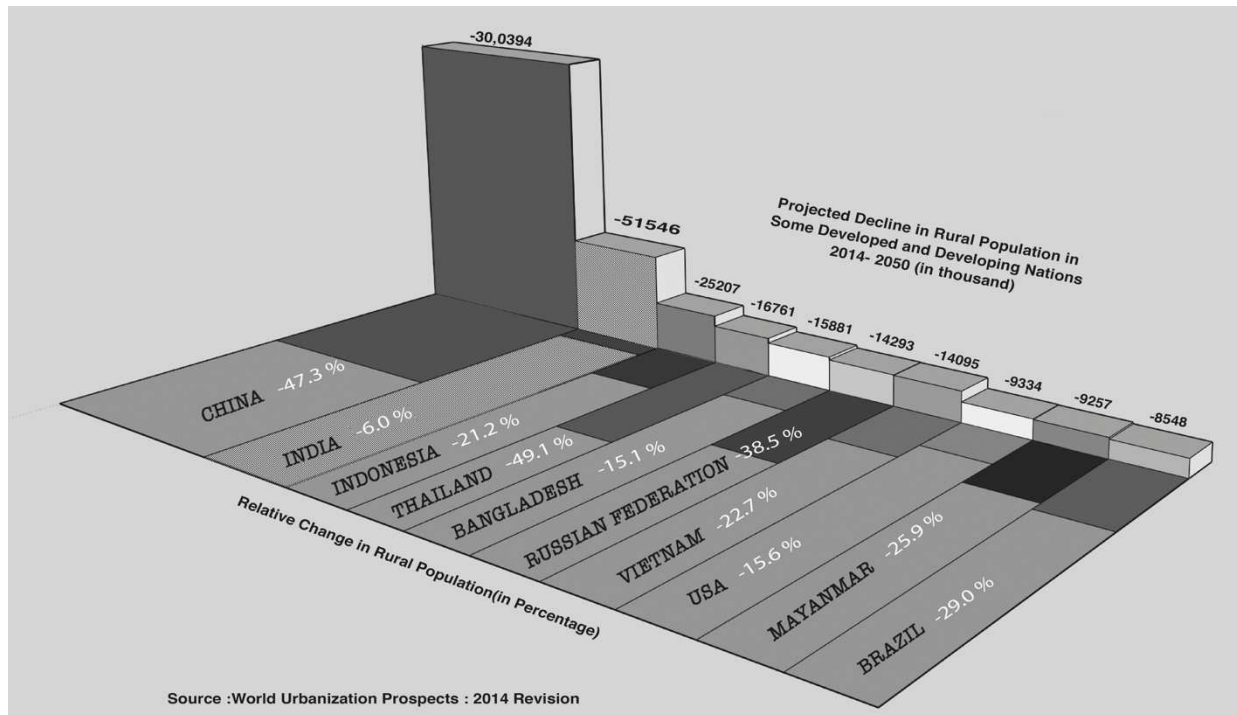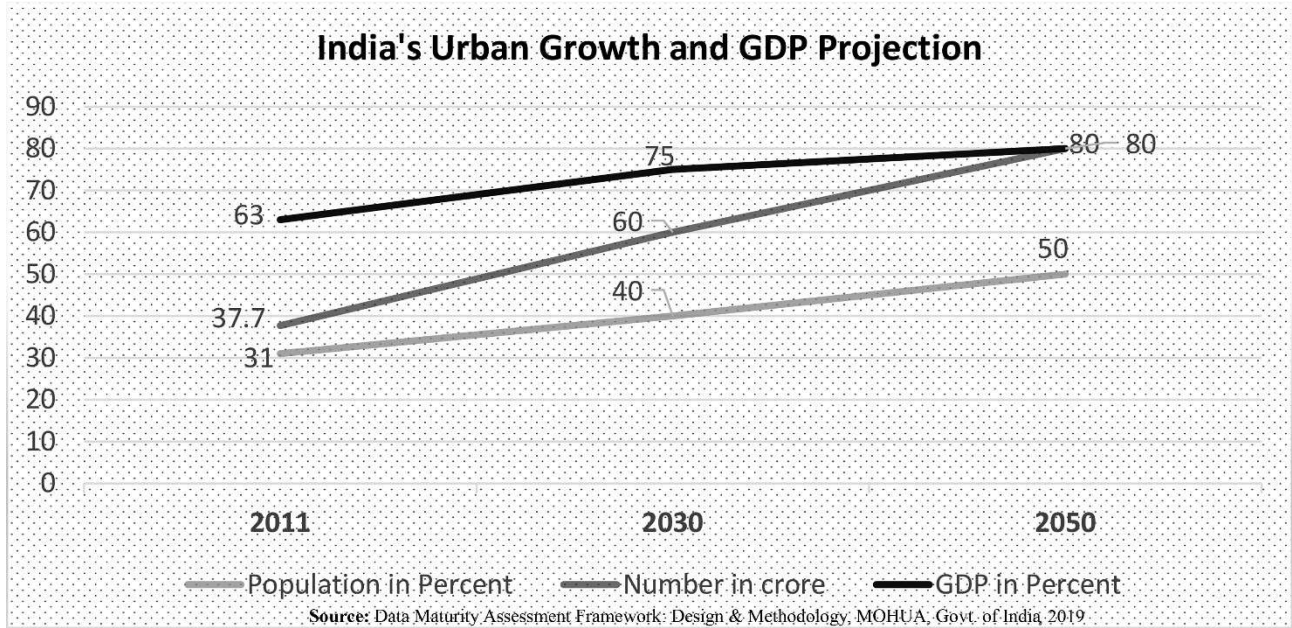
Figure 2

Sustainable urbanization will not be possible in the absence of sustainable models of rural development because rural-urban eco-system is synergetic in nature. Their coexistence is important for socio-economic growth and sustenance. A study by Lanjouw and Murgai (2010) shows the evidence of such synergy. It highlights the strong association between urban growth and rural non-farm sector particularly if the urban center is a small town and not a large city. Another study by Lanjouw and Murgai (2019) highlights that in rural Brazil incidence of poverty is found to be lower in those rural areas which are surrounded by such urban centers where the rate of poverty is low. Indian cities are also dependent on their surrounding rural areas for the seamless supply of food, goods, natural resources, man poweretc. while the villages depend on cities for employment, education, healthcare and so on. This urban-rural metabolism is essential for supporting sustainable human habitat.

India's Urbanization: an Overview

A city is not just a spatial or architectural design. It's a series of mutually interacting systems of which physical part is one (Vale and Vale, 1996). India's urbanization is no exception to this. It was always referred to as the 'country of villages' and one whose soul rested in villages. So much so, that bending over villages was considered 'politically correct'. Hence, for a long time, it conveniently ignored the consistent urban transformation and its rising demands. The observation of Ahluwalia (2017) is worth noting. She points out that the "political economy of development in India has remained dominantly concerned with the development of rural areas implicitly assuming that urban areas can take care of themselves." Not only that, even for making the strategy for the development of economy their role has been overlooked, Ahluwalia asserts. Figure 3 explains the projection in the rise of India's urban population and its estimated contribution to India's GDP.

India's Urban Growth and GDP Projection

Source: Data Maturity Assessment Framework: Design & Methodology, MOHUA, Govt. of India 2019

Figure 3

With the advent of the 20th century, India embarked into the era of rapid urbanization. In a hundred years between 1901-2001 its share of urban population increased from 11 to over 28 percent and total urban agglomeration increased from 1827 to 4386. As per the Government of India 2011 census, the total number of cities in India is 7,933 which include both the statutory and census towns. The year 1981 experienced the highest annual growth rate of urbanization which was 3.83 percent (Batra, 2009). Worldometers, which calculates realtime data, estimates India's urbanization in 2019 as33.6 percent while the total urban population is estimated to be 460,249,853. The percentage decadal change in India's urban population vis-à-vis the rural population has also been significant. Figure 4 below shows the decadal change in India's urban population vis a vis the change in rural population.
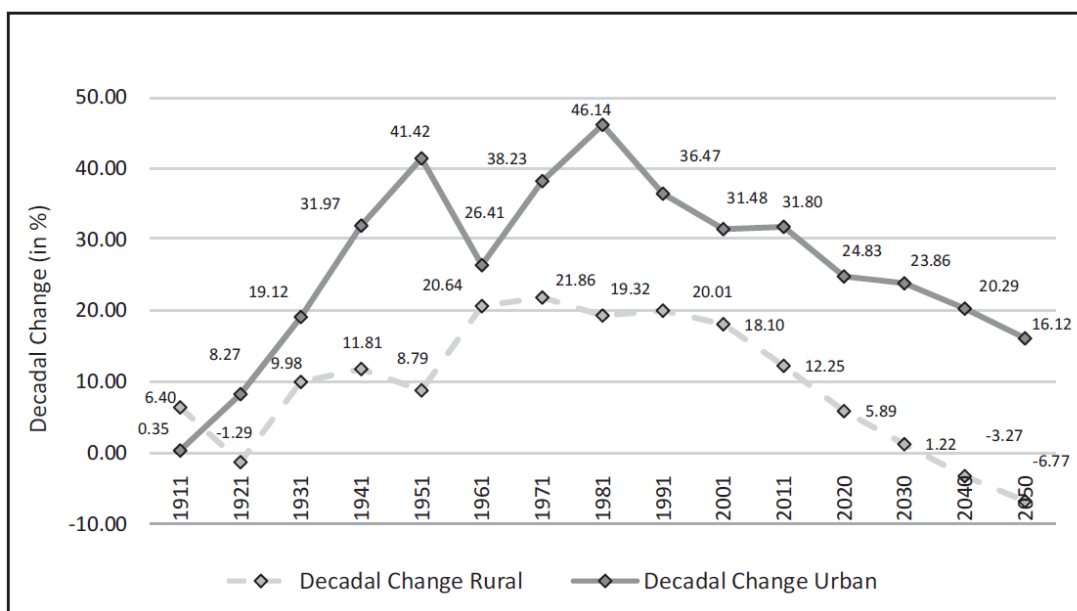
Figure 4

Percentage Decadal Change in Urban Population in India

Not only that, the urban population of India is way ahead of the combined population of East Africa, West Asia, Western Europe or the total population of Brazil and US separately. Economic unsustainability is a major concern arising out of lack of a wide spectrum of employment opportunities and high cost of living. Most of the jobs in the cities in recent years are white collar jobs. But despite the visible socio-economic disparity Indian cities are emerging as the highest contributors to GDP. As per McKinsey (2014) report 'Understanding India's economic geography' there were 54 metropolitan cities in India in the year 2012. They accounted for 40 percent of the GDP. The report estimates by 2025 India will have 69 metropolitan cities. Together with their hinterland, they will account for 54 percent of the country's incremental GDP from 2012-2025.

India's urban deficit can be identified at all levels. Just for meeting the shortage of 110 million units of housing by 2022, as per the KPMG report (2017) on India's Real Estate, the estimated expenditure would amount to USD 2 trillion (INR130 trillion). Not only this, any modern intervention (as in the case of smart cities) will require lots of supportive technologically advanced infrastructure. Hence, for the supportive urban infrastructure, including utility services, will require another USD1.0 -1.5 trillion (INR 65 – 97 trillion) by 2030.

The Challenges of Urbanization in India

Of late, India's urban demography has changed at an unprecedented speed. It ranks amongst the top ten countries of the world which will have the largest projected decline in the rural population during 2014-2050. It naturally indicates a sharp rise in urban population. It is not only creating huge demand for urban space and amenities but also sending warning signals of the perpetual infrastructure deficit. Lack of a dedicated pool of professional urban managers (planners, designers, engineers, and administrators included), financial crunch, comprehensive and futuristic vision are some of the obvious

challenges facing India's urban rejuvenation.

Paul (2010) identifies urban weaknesses at three fronts namely: (1) infrastructure, (2) finance and (3) governance responsible for the urban problems. Though they remain the basic necessities of a city. However, when it comes to smart city, the new aspiration for urban rejuvenation, these services are required to be augmented with smart interventions in the form of ICT infrastructure, technology, and design as well. Most of the cities are not fully geared up yet to move to the next trajectory. Like everywhere else, cities in India to have evolved from a simple to a more complex urban system. It's visible in its demography, system, design, infrastructure, management and so on. Marshall (2012) looks at urban evolution as a continuous process that applies as much today as in the past. That is, evolutionary urbanism is not some rudimentary historic process that was supplanted by modern town planning. The challenges these evolution poses are humongous. The gap between demand and supply persists despite the aspiration and articulation to ameliorate the situation. Bholey (2016) writes:"The question inevitably arises - where is the gap, whether at the policy or at implementation level? A democratic constitution that India has, nurtures the ideal of social inclusion in words and spirit. Good governance and satisfactory service delivery are some of the basic expectations of the people from the government. However, converting spirit into action is often better said than done."

Urbanization through the Plan Period

Though there were well-spelt policies of urban development throughout the plan period. But there was a kind of reluctance (Ahluwalia *et al.,* 2014 & Tiwari *et al.,* 2015) to accept the need for urban transformation. Lack of explicit constitutional status of cities and towns which people referred as anti-urban bias (Raheja, 1973) and absence of empathy regarding urban issues in the early years of the plan period in India was a kind of residual nationalist legacy of developing villages (Batra, 2012).

The 1stFive Year Plan (1951-56) looked at urbanization from the perspective of "proliferation of labor camps caused by rural to urban migration". Hence, the shortage of housing and the inflationary nature of land prices were taken into consideration. This led to some significant initiatives such as creating the Ministry of Working and Housing, National Building Organization, Town & Country Planning Organization and Housing Board (Sharma, 2014). Consequently, during 1951-1960 several schemes to meet the housing demand viz. Subsidized Housing Scheme for Industrial Workers and Economically Weaker Section (1952), Low Income Group Housing Scheme (1954), Subsidized Housing Scheme for Plantation Workers (1956), Slum Clearance and Improvement Scheme (1956), Village Housing Project Scheme (1957), Middle Income Group Housing Scheme (1959) came into existence.

The 2nd Plan (1956-61) noted and raised a concern about the rising price of urban land and the speculative buying besides high rentals particularly in big cities. The plan attributed it to the growing industrialization. To counter the problem the theme of regional plan and emphasis on preparing urban master plan was introduced for the first time under the 2nd plan period. To make up the deficit of urban housing scheme for construction of housing for the low-income group was proposed. The Slums Area (Improvement and Clearance) Act was passed in 1956. It recognized slums as any area where houses are unfit for living, where buildings are dilapidated, the area is overcrowded and their arrangement and design is faulty. In short, habitats which are "detrimental, to safety, health or morals." The concern for the marginalized and need for the development of the roadmap for future development was obvious in this plan.

The 3rdfive-year plan (1961- 66) also laid emphasis on housing and urban and rural planning. It allocated Rs. 142 crore or 14.2 million for housing and urban development. Its salient features were to recognize the importance of towns and cities in India's balanced development. It was during this plan period that adopting a regional approach for urban planning was advised. Besides, it highlighted the need for the preparation of a master plan for bigger cities, urban land regulation and controlling land prices for proper urbanization. Housing for lower income group, plantation workers, MIG housing, rental housing, removal of slums were some of the major recommendations for inclusive urban development. These recommendations still survive in their new avatars viz. Rajiv AwasYojna, PradhanmantriAwas Yojana, Indira Awas Yojana (for rural housing).

The emphasis of the 4th plan (1969-74) was on achieving balanced urban growth by easing the pressure on big cities through scattering urban populations in smaller urban centers. Hence, regional studies of the areas in the vicinity of metropolitan cities including Delhi, Mumbai, and Calcutta (now Kolkata) were undertaken. Besides, government-funded special grants to speed up the development of new state capitals namely Chandigarh, Bhubaneshwar, Bhopal, and Gandhinagar. While regional and urban development initiatives remained at the core, the fourth five-year plan included development of 72 urban centers. Not only that but the plan also stressed upon the need to mend urban legislation and identify the statutes coming in way of urban development. For providing loan to state housing boards and urban development authorities Housing and Urban Development Corporation (HUDCO) was set up in 1970 which played a major role in supporting urban housing needs of the poor and disadvantaged sections.

The 5th plan (1974-79) stressed upon controlling land prices in order to develop the medium and small town and augmenting their services. In 1975, Taskforce on Planning and Development of Small and Medium Towns was also set up. It was supposed to examine laws relating to local administration and urban development. Besides, the taskforce was also expected to suggest suitable modifications in the laws so as to assist in the planned growth of small and medium towns among others (Routray, 1993). Addressing the infrastructure deficit of cities having a population in access of 300,000 was also emphasized under this plan and to achieve that Integrated Urban Development Programme (IUDP) was launched. Housing being a priority checking urban land price was a great challenge. Hence, in 1976 the government launched the Urban Land (Ceiling and Regulation) Act (ULCRA), 1976. It was one of the major steps towards planned urbanization in India.

Besides the development of metropolitan cities, mid-size cities also figured in the planning process. Batra (2009) observes "the focus of the 6th Plan (1980–85) was largely on the development of small and medium towns and provision of basic services in urban slums."Improvement in the condition of basic urban amenities such as sewage, sanitation, etc. Was underscored in the plan which is a challenge for the proposed smart cities too. However, it was the introduction of Integrated Development of Small and Medium Towns (IDSMT) meant to provide basic infrastructure and services to the cities having less than 1000,000 population which was a major policy direction under the plan.

The 7th plan (1985-90) which concluded at the onset of India's economic liberalization, provided scope for the private sector in urban development and paved way for their entry into housing and real estate. Thus, as per the plan, the role of government was confined to the mere mobilization of resources for housing, making provision for low-cost housing for economically weaker sections and acquisition and development of land. The first ever National Housing Policy (NHP) was also introduced in 1988 to eradicate the problem of homelessness. To salvage city like Delhi which was reeling under the population pressure National Capital Region (NCR) Planning Board was set up. The purpose was to divert the pressure on

the cities of the adjoining states namely Haryana and UP. Today NCR is a huge urban agglomeration comprising of cities like Gurgaon, Faridabad, Noida, and Ghaziabad among others. As per the notification NCR includes the whole of NCT-Delhi and certain districts of Haryana, Uttar Pradesh, and Rajasthan. The total area covered is about 30,242 sq. kms.And the population is 37.03 million (as per 2001 census) (Report of the Study Group on NCR Policy Zones, Demographic Profile and Settlement Pattern, 2001). Managing this geographical spread and population remains a big challenge for urban planners and policy-makers.

The 8th plan (1992-97) saw the promulgation of the 74th constitutional amendment. The amendment paved the way for the creation of elected urban local bodies (ULBs) and thus the decision making with regard to urbanization was decentralized. Autonomy in terms of economic planning made it possible to find alternate resources of finance, use institutional finance and issue market instruments such as municipal bonds to meet capital investment requirements. It was a big milestone toward economic empowerment.

The 9th plan, (1997-2002) which coincided with 50 years of India's independence, was considered a bridge between fast economic growth and improvement in the quality of life of the people at large. Consequently, its outlook was described as "Growth with Social Justice and Equity".The need for greater fiscal autonomy to the ULBs was also highlighted in the India Infrastructure Report (2001). In the report, Mathur (2001) also suggested the need of developing innovative strategies by the ULBs to finance urban infrastructure and services so that 'the existing funds available from plan allocation could be supplemented by accessing the capital market.' The market-friendly initiative of allowing 100 percent FDI in infrastructure projects viz. road, the mass rapid transit system was also introduced during this plan itself. Repealing Urban Land Ceiling Act-1976 in the year 1999 was yet another major step towards integrating urban development with economic growth. Launch of Swarna Jayanti ShahariRozgar Yojana (SJSRY) in Dec. 1997 was a step towards ensuring inclusive urban development.

In order to carry out comprehensive urban reforms, the 10th plan (2002-2007) introduced some major policy push. Launching of the flagship scheme Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005 by the Ministry of Housing and Urban Affairs (MoUHPA) was one of them. The scheme was meant to provide "Basic Services for Urban poor (BSUP) and Integrated Housing and Slum Development Programme (IHSDP)" and "aimed at integrated development of slums through projects for providing shelter, basic services and other related civic amenities with a view to providing utilities to the urban Poor" (MoUHPA, 2019). It was run in a mission mode and identified 65 cities on the basis of their population and cultural significance to be covered under BSUP. While it remained a major scheme of urban rejuvenation in recent years, its larger benefits remained confined only to some major states like Maharashtra, Gujarat, Delhi, UP, West Bengal and Rajasthan which also received a more central allocation for IHSDP and BSUP (Kamath & Zachariah, 2015).

The urban development agenda under the 11th plan period (2007-12) began with the urban population base of 331 million. It was envisaged that during the plan period 36.8 million people would be added to the existing number. Thus, it was an additional absorption of 7-8 million people per annum in the cities for which planning was required. The strategy of urban development included the following measures:strengthening urban local bodies through capacity building and better financial management; increasing the efficiency and productivity of cities by deregulation and development of land; dismantling public sector monopoly over urban infrastructure and creating conducive atmosphere for the private sector to invest; establishing autonomous regulatory framework to oversee the functioning of the public and private sector; reducing incidence of poverty and using technology and innovation in a big way.(Planning Commission, 11th Five Year Plan, 2007-

12 Volume III)

India's planning era came to an end with the 12th five-year plan (2012-17). Planning Commission itself was replaced by National Institution for Transforming India popularly known as NITI Aayog in 2015. India now has a policy think tank at the place of the policy planning agency. Nevertheless, from the perspective of urbanization, it was significant as it envisioned smart cities and their role as being the engines of growth for the nation. As per the vision of the Planning Commission "cities must provide world class infrastructure and services at affordable costs to give a competitive edge to the economic activities they host."(Urban Development, Planning Commission).

India's Urban Transformation through Smart Cities

Urban experts and planners felt that to meet the imminent challenges of urbanization India needed extensive urban transformation and redesign its cities as smart cities. Though the concept of a smart city may be new to India's urban planning and management ethos, but it was envisioned decades back. Harrison and Donnelly (2011), believe that "The phrase Smart Cities is not new. It may have its origins in the Smart Growth [Bollier, 1998] movement of the late 1990s, which advocated new policies for urban planning."By 2005 the term and idea got infused into the thinking of a number of technology companies viz. Siemens (in 2004) Cisco (in 2005) and IBM (in 2009). They used the idea as an opportunity to integrate technology in managing complex urban systems and provide seamless services of urban transportation, buildings, electricity, water supply, sanitation among others. They developed different models of technology-led innovations for the planning, development, and operation of cities. Real-time data collection and sharing through ICT-driven infrastructure is the emerging frontier of urban management. Cities like Songdo (South Korea), Masdar (UAE), PlanITValley (Portugal), Barcelona (Spain), Copenhagen (Denmark) among a host of others have already infused them into their system.

Smart Cities: India's Vision for the Cities of Future

The intervention of emerging technology for urban transformation and to use them to create modern cities did not seem to be a priority under the centralized urban planning till the 11th plan period. However, it was clearly articulated during the 12th plan period when India acknowledged the need to revive its cities into smart cities and make them modern and contemporary. Smart cities are being envisioned as India's cities of the future. The nation which woke up to its urban challenges and the need to rejuvenate the ailing system recognized the need to adopt a completely transformative process. Thus the idea of a smart city was adopted as an opportunity to leverage IT integrated technology for urban upkeep, maintenance, governance and improving service delivery. Bholey (2016) writes, "in a simpler sense the prefix 'smart' is a euphemism for intelligent, apt and efficient application of technology and design for running the civic system."

Nonetheless, like any other transformative process, the idea of a smart city also has a fair share of its criticism. Cavada et al. (2014) refer to one of the smart city's prominent critics Greenfield (2013) who believes cities have always been smart and their intelligence resides in the people. He (Greenfield) also calls the concept a 'rhetoric' which need to be properly defined. Krivy (2018) on the other hand indicate three main arguments that scholars make against smart city. They're: "it is incompatible with an informal character of the city, that it subjects the city to corporate power and that it reproduces social and urban inequalities." However, Barlow et. al. (2019) explain smart city as 'an eco-system of people, process and solution.' The short term vision for the smart city may be about the integration of technology in improving urban services and their management, but its long term vision encompasses quality of life improvements of citizens by the smart application of technologies (Galati, 2018). Thus, within the smart city framework possibilities of enhancing aspects

like urban resilience, business, growth of citizens and services are also being explored.

Some of the most prominent apprehensions of India's foray into a smart city is on account of its being an idea better suited to developed nations. It is perceived, and rightly so, that the solution to manage complex urban problems is technology intensive which will require not only a huge financial investment but also new skills and training. Social inclusivity of this model and its perceived bias towards fulfilling the aspirations of the educated middle class have also been questioned. Because of the heavy dependence and application of IT in different sectors of urban management, security and safety of personal data are also being raised as a concern. Not only that,many urban experts feel that the whole process may finally help influential technology firms rather than individuals. Bhattacharya et al. (2015) point out that: "The Smart City Mission lacks clarity in its conceptualization. The focus seems to be on technology implementation, without an overall framework to understand the need and impact of the same. There is a lack of clarity in understanding the end (Smart City) and the means to reach the end (ICT)."Despite various apprehensions, the government of India launched the Smart city program in the year 2014 in a mission mode. The objective according to the Smart Cities Mission, Ministry of Housing and Urban Affairs (2017) is to:

"promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities.

Transformation of urban India is now being recognized as the need of the hour. Various steps are taken in the direction by putting in place several schemes and programmes such as JNNURM, AMRUT, Swachh Bharat Mission and Smart City Mission, etc. are meant to bring about the muchneeded transformation. Smart City Mission is the most ambitious policy of them all. While it carries on the welfare spirit of the plan period, it is also trying to find new ways to increase efficiency and improve service delivery through the integration of technology. The challenge of being compared with the global benchmarks like Songdo of South Korea, Masdar of UAE, PlanIT of Portugal and their like looms large. As per the Smart Cities Mission, the strategy for urban transformation includes:

- Pan-city initiative in which at least one Smart Solution is applied city-wide

- Develop areas step-by-step – three models of area-based developments

- Retrofitting

- Redevelopment and

- Greenfield

The above smart city strategy is expected to bring urban transformation by ensuring visible improvement in the delivery of water, sanitation and solid waste management, housing, transportation, IT infrastructure, etc. Figure 5 explains India's smart city priorities.
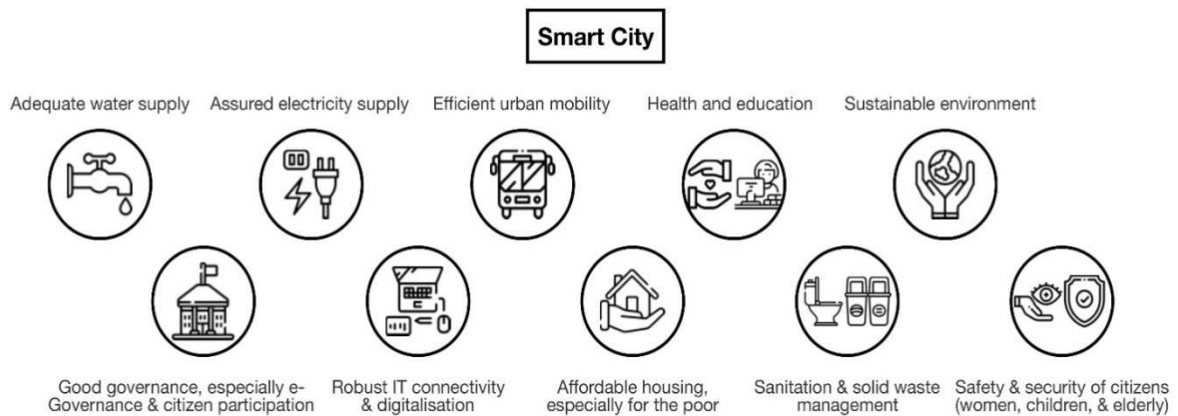
Figure 5

CONCLUSIONS

Successive urban plans in India largely look like an immediate response to the emerging urban needs of the day. They no doubt succeeded in solving the problems to an extent. However, they didn't envision the future of urbanization nor could they design long term strategic interventions to achieve urban transformation. While the nature of initial urban plans was more reactive as they addressed the immediate problems, the vision of the smart city looks more proactive and futuristic. India might have woken up to its urban challenges and imperatives a little late in the day, but it woke up at a time when its economic growth, technological competence, skills and experience in urban management are much improved as compared to the initial days of the plan period. So changes can be expected at a much faster pace. Transformation is a long arduous process, no matter whether it's socio-economic, political or urban. The complexity of the society is what often hinders and delays the process. Bertolini (2017) observes "Achieving transformative change in the face of complexity is a difficult and seemingly paradoxical task. Development in each component of the system both enable and constraint development in other components." Urban transformation in India is also experiencing teething problems. However, shifting from the centralized era of planned development to the decentralized, even localized era of participatory development itself is a major transformative process in India's urbanization. Now, it's also being backed by various design and technological interventions.

Nevertheless, it's interesting to see how Indian cities are identifying their own problems and developing solutions with the appropriate use of technology design and innovation. The Greater Hyderabad Municipal Corporation (GHMC) for example has provided app-based solution (My GHMC) to locate nearest public toilets. For monitoring cleanliness of the public toilets, it's timing, garbage collection at open spaces and sweeping, etc. GHMC has developed a Daily Monitoring Tool (DMT) app. Delhi Metro's DMRC app helps commuters find seamless connections between different routes of Metro. Online payment of electricity bills, house taxes, even generation of traffic offense fines through the monitoring cameras, in cities like Delhi, Ahmedabad, Hyderabad and many more is becoming part of urban governance. Connecting urban management with Digital India Programme meant to spearhead digital transformation is also playing a major role in improving urban public service delivery in recent years. The New Delhi Municipal Corporation app NDMC 311 besides connecting to other services also facilitates online registration for availing healthcare services at public hospitals. Identifying the nature of the problem and providing solutions thereof through simple user-interface is being made possible by creating a synergy between technology, design, and innovation. A city may be considered smart only when it carefully

invests into its human and social capital to improve the quality of life. Such smart interventions cannot only be technology driven. They will have to be more humane and solution-centric. Design as creativity led solution-centric approach needs to work as an interface between technology and innovation. The design may not invent technology but it can certainly innovate it in such a way so that the heterogeneous urban population can use technology seamlessly. It may help in the identification of the need, the problem and innovate new solutions keeping the users in mind. Whereas the technology-driven solutions of smart city propose to fit people into solutions, India's smart city approach should reverse the process and find befitting solutions for its people. While technology provides the wherewithal, innovation makes it happen, design defines how and in what form the solution should be provided. According to OECD (1992), the design is "the very core of innovation…the moment when a new object is imagined, devised, and shaped in prototype form." Urban transformation in India cannot ignore to leverage this nexus of technology, innovation, and design to make the cities future ready.

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