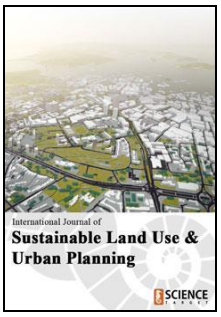
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Planning for a Smart City with a Human Face in Developing India[1]

Shashi Mehta[1*] and K. K. Yadav[2]

[1]Amity School of Architecture and Planning, Amity University, Haryana, India

[2]Retired Chief Town Planner, Haryana, India

Abstract. In today's world of increasing urban development and interconnectedness, the role of the city as "*an engine of growth"* and development is being recognized more and more. Though urban centers are associated with greater access to basic facilities and services— educational, medical, cultural, employment opportunities, and greater involvement of polity in the developing economies—cities often have poor infrastructure and services and sub-standard living conditions. Currently, smart cities are being hailed as the solution to all problems with the help of ICT and its enabled services around the globe, they lack clarity in totality. The smart city mission, which launched as a flagship program in India, is working in the same spirit. With the advancement of science and technology, the importance of ICT and digitization in the overall governance of towns and cities cannot be underestimated. The feasibility of this option in India, where a sizable proportion of the population lives in villages and below the poverty line, remains questionable. Research studies have proven that the root cause of compulsive migration to urban areas is the search for improved livelihoods, which further aggravates urban poverty. Amid this background, India needs to plan and develop cities and villages in synergy with regional and local contextual realities. On the foundation of this integration, Indian cities could be built to be more liveable, sustainable, prosperous, and inclusive smart cities "with a human face."

Keywords. *engine of growth, smart cities with a human face, sustainable, inclusive*

*Correspondence:
shashimehta.25@gmail.com

Introduction

Presently, the world's urban population is around 54%, which is expected to increase to 66% by 2050. India's urban population per the 2011 census is 31.2 %, which is expected to grow to 600 million (by 50%) in 2050. While analyzing the urban growth of India, the United Nations has estimated that India is on the "brink of urban revolution".

Since the ability to cope with the influx of people into existing cities has become an important concern for developing India, a new and robust strategy is needed to replace the heavy top-down approach of development. The urban transformation has become a major contributor to economic, demographic, social, and environmental change. A city built on the three pillars of functions, functionaries, and funds can balance its diverse character and resources efficiently if it works in an integrated manner.

The Human Development Report (HDR) released by the United Nations Development Program (UNDP) has placed India at the 135th position with a value of 0.547 in a list of 187 nations. This is at the bottom of the South Asia and Asia Pacific region. The only exception is Afghanistan. This report is constructed by looking at a combination of factors, such as long and healthy life, access to knowledge, and a decent standard of living. The Human Development Index (HDI) has profound implications on the

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overall human development of a nation. Similarly, the Gender Development Index (GDI) is the ratio of female to male HDI and is calculated for 148 countries with the same three basic dimensions of human development (i.e., health, knowledge, and living standards). India ranked the lowest with female HDI with a value at 0.519, while the male value of 0.627 put the nation among BRICS (Brazil, Russia, India, China, and South Africa) countries. The United Nations has also focused on gender equality, which is considered to be one of the most important ingredients of smart city initiatives. Women must be protected from any kind of violence, and their participation must be emphasized for their economic empowerment.

The first ever report released by India on urban poverty in 2009 points to a grim future. As migration towards urban centers increases, urban poverty also increases. Urban poverty poses different challenges, such as inadequate water and power facilities, differentiated education and health facilities, housing shortages, social security, a lack of livelihood, and provision of special needs for vulnerable sections of the society. Also, the slum population, whose dwellers lack the barest minimum needs, is increasing (*India: Urban Poverty Report, 2009).* Moreover, the rising urban population and income stipulated the demand for key services such as transportation, water, sewage treatment from five to sevenfold in city of every size and type. Among various urban services, urban transport is a very important service for balanced development and plays an important role in integrating overall development by providing mobility of people and goods and access to employment, education, shopping, health, and entertainment opportunities, which are typical quality of life indicators.

Challenges

Most Indian cities are unable to meet the increasing demands of the growing population due to a variety of reasons, including traffic jams, congestion, accidents, breakdown, construction, and other demonstrations or processions that randomly restrict the traffic flow. These factors have encouraged a shift towards more personalized modes of travel, which have resulted in an increase in vehicle ownership levels and their usage. Thus, traffic problems are increasing in the cities in general and are becoming more problematic, especially in the core area of the city.

Cities epitomize the concentration of economic, commercial, social, and cultural activities. These activities take place in a limited geographical context, which creates competition for land use and generates various traffic problems. In a developing country like India, it becomes very difficult to bear the cost, time, and energy spent during traffic jams and congestion. In such situations, it becomes important to think of unravelling these bottlenecks created through inappropriate urban planning, which cannot be resolved by merely applying smart technology. A number of research studies have shown that all the metropolitan cities of India, such as Delhi, Mumbai, Kolkatta, Chennai, Bangaluru, etc., are inordinately choked because of deficient public transportation and a high dependency on personalized vehicles.

The World Bank 2011 report indicated that 90% of urban growth is occurring in the developing nations with an addition of an estimated 70 million new residents to urban centres each year. At this rate, South Asia and Sub-Saharan Africa—the poorest regions—will double their population within the next two decades. In addition to this, the situation of urban slums presents a worse situation. In its report, State of World Cities 2013, UN- Habitat estimated that there are currently 863 million people living in the slum in the developing regions compared to 760 million in 2000 and 650 million in 1990. With half of the urban population of the world, Asia is accommodating one third of its slum while Africa's position is far worse with 61.7 % slum.

Keeping in view the complex urban scenario with its potential, challenges, and the involvement of various stakeholders at various levels of the process, it is of utmost importance to consider what a town and/or city should be and how to plan and develop it in the context of its varied setting and culture. Since towns and cities have been defined differently across the

globe in relation to their socioeconomic and spatio-temporal contexts, it needs analyzing in different perspective for better understanding.

Defining a Smart City

There are different views on the origin and definition of the concept of a smart city. Globally, there are diverse definitions of smart city, which has made the concept more complicated. Nevertheless, it has become a buzz word.

In the most basic terms, smart cities are primarily urban centres that apply ICT and its enabled services to enhance the quality and efficiency of urban services. This reduces cost and resource consumption and allows cities to more effectively and actively engage with their citizens. Its application is mostly utilized in the management of traffic and transportation, water and sanitation, energy system, safety and security, etc.

One author has defined the smart city along six dimensions: smart governance, smart economy, smart mobility, smart living, smart environment, and smart people. Another author describes a smart diamond that defines a smart city. These are smart government, smart energy, smart building, smart mobility, smart infrastructure, smart technology, smart health, and smart citizens.

Anthony Townsend, an urban planner, explains**,** "I believe there is a better way to build smart cities than to simply call in the engineers. We need to lift up the civic leaders who would show us a different way. We need to empower ourselves to build future cities organically, from [the] bottom up, and do it in time to save ourselves from climate change". Emphasizing sustainability with the participation of local leaders and citizens, Lucy Warin, a project manager, explains, "Smart people make smart cities, and any sustainability solution should start and finish with the citizens."

Table 1

Attributes and Indicators Describing a Smart City

Attributes	key Indicators	Supporting Indicators	Supplementary Indicators
Liveability	Better health statistics, reduced crime rates, natural and built environment,	Enhanced life expectancy, improved infrastructure and services, protection of public spaces	Expenditure on city services
Inclusiveness	Social inclusion, access to services and new opportunities, especially for the urban poor and marginalized groups	Greater equality	Engagement and mobilization that reflect diversity of cities and nations.
Prosperity	More production, more employment opportunities, infrastructure development	Increase trade and commerce activities, environmental sustainability	Rural-urban and urban-rural economic linkages, quality of life
Sustainability	Green economy, green building	Polluter pays, role of private sector in green investment	Pricing ecosystem services, poverty reduction

Source: Authors

Smart Cities in India

Indian urbanisation is a product of demographic explosion and compulsive rural-to-urban migration. It is reshaping towns with drastic consequences for globalization, liberalization, and privatization. With a total population of 1210.7 million, 31.2 percent or 377.1 million people are living in urban areas (as per 2001 census). Though this percentage of India's urban population remains one of the lowest in the world, there were 3768 towns and cities in the country in 1991, which increased to 5161 in 2001 and 7935 in 2011. Also, the total number of metropolitan cities in the year 1971 was 9, which increased to 12 in 1981, 23 in 1991, 35 in 2001, and 53 in 2011. This shows their even distribution across the country except for in the north-eastern states and major parts of Odisha, southern parts of Maharashtra, and northern and western part of Karnatka and Jammu and Kashmir as shown in Figure 1 (to be referred to in the annexure). Urban centers, especially the metropolitan cities, are attracting huge populations and becoming hubs of economic, social, and cultural activities.

The introduction of the smart city concept in India is a great idea; however, cities will face a lot of problems with implementation due to the presence of poverty, high cost of living, lack of infrastructure and amenities, etc. These problems have compounded to the extent that they are adversely impacting citizens to such a degree that human rights are violated.

Opinions regarding what constitutes a smart city are so diverse that meanings differ based on the person and their geographical area. For instance, the Delhi-Mumbai Industrial Corridor (DMIC) will have seven smart cities along the proposed corridor, while a small locality in Delhi is also being called a smart city. In addition to this, some builders/ colonizers have renamed their individual group housing buildings smart cities with the emphasis on ICT and digital technology across all sectors like power, water, safety, transport, etc. (which will help reduce energy consumption through smart metering and smart grids).

With an annual budget requirement of Rs. 35000 crores a year, the government of India has embarked on a smart city initiative and identified 100 cities with populations of one million each to be developed as smart cities in the first phase.

In the case of India, which enjoys varied levels of development with diverse physical landscapes, climate, and culture, the planning and development of cities becomes crucial, and one-size-fits-all approaches are untenable. The literature survey on smart city or for that matter any city has indicated emphasis, baring a few, on one or two aspects rather than a comprehensive whole in its entirety. Some have a liveability and quality of life focus, while others have an environment and employment orientation. Much interest has been generated over the last two decades, with increased application of ICT and digitization in the name of efficiency and activeness. Many have begun to view the smart city as a panacea for all urban problems.

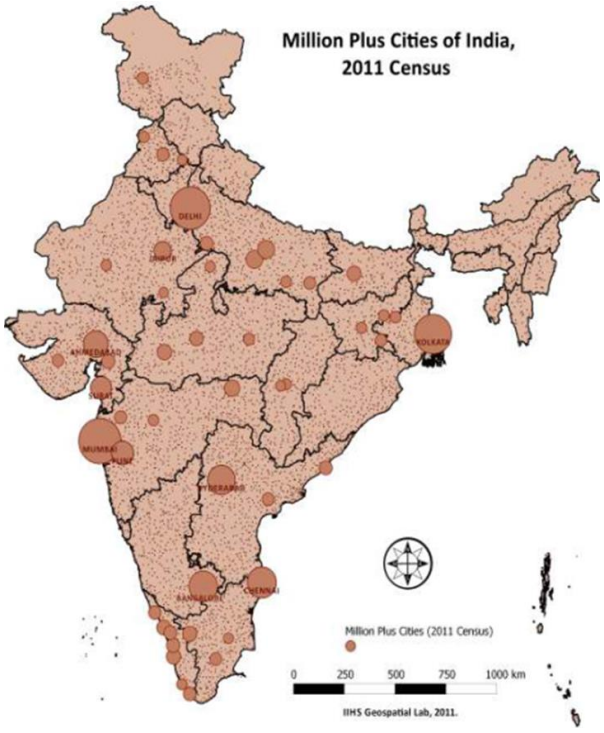


Figure 1: Million Plus Cities in India, 2011; Source: Indian Institute of Human Settlement, 2011

Smart City with a Human Face

With this background in view, a town or city must be viewed and seen as smart in its totality. A balanced approach would include and integrate aspects of inclusiveness, liveability, prosperity, and sustainability; and human beings would remain at the center of planning. Every activity, policy, and program should be directed and taken up with a focus on human welfare—regardless of caste, creed and gender—while providing special care and access to facilities and services to differently abled women and children, elderly, and marginalized peoples. In this context, a city cannot be considered smart unless it encompasses attributes of liveability, inclusiveness, prosperity, and sustainability.

Liveability

The interplay of social, economic, cultural, and environmental factors with the participation and governance forms a liveable city (CLC, Singapore, 2013). While rigorous and reinvention from environment policy to transport along with places that are benchmark for urban renaissance make a city liveable as per lifestyle magazine, Monocle's. From a much broader perspective, a liveable city should have attributes such as a low crime rate, better public health, better employment opportunities, higher expenditure on city services, low cost of living, artistic and cultural opportunities, and harmony improving physical and emotional health.

Inclusiveness

For a city to be inclusive, aspects such as involvement of people from all strata of society, equality of treatment of diverse peoples, access to services and new opportunities, and opportunities for engagement and mobilization that reflect the diversity of cities and nations are the cornerstone. To make a city smart and inclusive, it is essential to involve local communities and other stakeholders in its design, development, and implementation (Townsend, 2014). Jane Jacobs in her book The Death and Life of Great American Cities argued**,** "Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody."

Prosperity

Prosperity means increased production and employment generation with inter and intra - city trade and commerce. It empowers the economic base of the city. Lately, the UN has made it more comprehensive by including immaterial along with material attributes, as both contribute to contentment and overall quality of life.

Sustainability

Sustainability describes the degree to which a city is able to provide an improved quality of life for the whole community without compromising the wellbeing of other communities. Therefore, it is characterized by a healthy ecosystem with increased economic security and effective governance supported by meaningful public participation. The Institute for Sustainable Communities defines a sustainable city as, "One that is economically, environmentally, and socially healthy and resilient. It meets challenges through integrated solutions rather than through fragmented approaches that meet one of the goals at the expanse of the others…" Efforts towards conservation of the natural environment, alternative sources of renewable energy, better provision of water and sanitation, and control of consumption by the "haves" are what make a city sustainable.

A broader view of a smart city must include sustainability, liveability, inclusiveness, and prosperity in order to enhance the effectiveness and activeness of the urban infrastructure and services. This was demonstrated at the conference *Sustainable Smart Cities*, which was held in Bengaluru, India in September, 2015.

The concept of a smart city is considered to be related to urban centres, which apply the ICT and its enabled services to enhance the quality and efficiency of urban services in order to reduce cost and resource consumption and to engage more effectively and actively with citizens**.** As it helps working effectively and actively, its application is mostly utilised in the manage-

ment of traffic and transport, water and sanitation, energy system, education and health system, safety and security etc. A city can become smart when existing natural resources are used in a smarter way with the appropriate investment in human, social capital, traditional, ICT, and infrastructure in order to stimulate sustainable economy through participatory approach.

Large IT, telecommunication, and energy management companies such as CISCO, IBM, Schneider Electric, and Microsoft have developed new solutions and initiatives for intelligent cities that include the effective and efficient use of ICT and digitization. The application of these tools and techniques have often been utilized in the management of traffic and transport, water and sanitation, the energy system, education and health systems, safety and security, etc.

While it is true that ICT and digital connectivity have enabled us to make city life more active, efficient, and comfortable, in public discourse, there are reservations about the darker side of this technology (A.S Panneersalvan, 2015). Is it possible to solve the deep rooted problems of poverty, exclusion, environmental issues, and the cultural and behavioral disorders engulfing the city in developing nations by merely applying ICT and digital technologies?

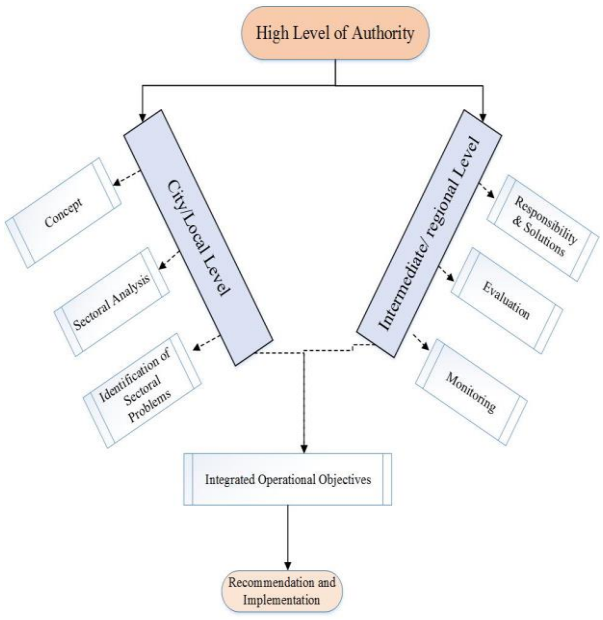


Figure 2: Process of Planning and Development and their Integration; Source: Authors

Conclusion

A city should be viewed in totality within the overall system of settlements within the framework of rural-urban relationships, as it is not an independent entity. The relationship of a city to its area of influence has a great role to play and cannot be viewed in isolation.

The smart city initiative undertaken by the government of India is not only narrow in its design and intent, but it is also divorced from the contextual local and regional realities. The concept has been designed considering the city itself as an entity rather than viewing its place through the lens of urbanization as a whole. Moreover, its limited collaborative efforts with urban local bodies inviting investors through Public Private Partnership (PPP) model highlights the weakness of not involving the local communities and civil society. Recent flooding in Chennai of Tamil Nadu is an example of the failure of urban planners and district administration to realize the local and regional contextual realities where the deluge caused immense loss of property, standing crops, human, and animal life and damaged infrastructure such as highways, roads and bridges, houses, and other public buildings as well as the water, sewerage, drainage, and electricity network. Overemphasizing the role ICT and digitization in the amelioration of urban and rural poverty and hunger, improvement in the human development index (HDI), and environmental concerns is a lop-sided approach. Thus, application of ICT in some spheres may be necessary and urgent but not a sufficient condition for human development.

The interplay of demographic, economic, social, and environmental activities is responsible for evolving and transforming urban settlements in their regional settings. Therefore, in the face of a rapidly growing urban population, it is important that the related issues be immediately addressed from the right perspective with the involvement of politicians, planners, administrators, and civil society.

Though the historic 74th Constitution Amendment Act (CAA) of 1992 has paved the way for making a smart city purposeful by decentralizing political, administrative, and fiscal powers, the absence of adequate funds, functions and

functionaries among the urban local bodies means the success of the smart city initiative is still far away from becoming reality. Based on this mandate, the Planning Commission formulated a manual on Integrated District Development Plan with the goal of promoting a symbiotic relationship between the different spheres of activities and local communities as well as between rural and urban settlements. Surprising is the fact that the smart city mission initiative of India does not mention what to talk of planning and developing it.

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