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Creation and Development of Smart City in India.

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ABSTRACT
Smart city is an emerging concept. This concept is being used all over the world with different nomenclatures context & meanings. A smart city is a city that is well planned, and it provides the cost efficient services, environmental efficiency, and technological sound services for the welfare of the citizens. Smart solutions can be helpful in controlling the ever increasing population in the cities. The Smart Cities can be abbreviated as Sustainable Management Action Resource Tools for Cities. Smart cities is the latest concept when it comes to building the cities of the future. Smart cities are expected to be the key to combining sustainable future with continued economic growth and job creation. This paper emphasizing a review on "Creation and Development of Smart City in India." based on some scholastically reviewed research articles and online databases.
Key Words: Population Growth, Smart cities, Urban Planning, Urbanization Trend

I.   INTRODUCTION

The Urbanization is most predominant and contemporary process prevalent throughout the globe especially in developing countries like India. To sustain the brisk growth rate of economy and urbanization and to alleviate the problems arising due to the growth, an integrated approach and sustainable strategy is required. The inclusive and smart planning is one such emerging strategy to tackle and mitigate these problems.

Smart City is a booming international phenomenon. Smart city word originated back in 1998, but the first funding for smart city came in the year 2000.The six dimensions of a smart city are Smart Economy, Smart Mobility, Smart Environment, Smart People, Smart Living and Smart Governance. Every city can become smarter by focusing on any of the above dimensions. A smart city is a community that is efficient, sustainable & liveable. The term smart city has become more and more popular in the field of urban planning. Smart cities can work as a tool for controlling the rapid urbanization and various problems caused by the ever increasing urban population. The implementations of the smart technologies can increase the value of the city. Smart city concept introduces new practices and services that highly impacts policy making & planning.
Various Definitions of Smart City are:
1. The UK Department of Business, Innovation and Skills considers smart cities a process rather than as a static outcome, in which increased citizen engagement, hard infrastructure, social capital and digital technologies make cities more liveable, resilient and better able to respond to challenges.
2. The British Standards Institute defines it as "the effective integration of physical, digital and human systems in the built environment to deliver sustainable, prosperous and inclusive future of its citizens".
3. IBM defines a smart city as "one that makes optimal use of all the interconnected information available today to better understand and control its operations and optimize the use of limited resources".
4. CISCO defines smart cities as those who adopt scalable solutions that take advantage of information and communications technology (ICT) it increases efficiencies, reduce costs and enhance the quality of life".
6. Accenture defines it as "A Smart City delivers public and civic services to citizen& businesses in an integrated and resource efficient may while enabling innovative collaborations to improve quality of life and grow the local and national economy."
7. Giffinger.et.al defines smart city as "A Smart City is a well performing city built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens."
Thus, there are many types of smart city definitions existing in the world. The definitions can vary from person to person & even country to country.
According to us, "Smart Cities are those which have smart (intelligent) physical, social, institutional and economic infrastructure. It is expected that such a Smart City will generate options for a common man

to pursue his/her livelihood and interests meaningfully". In this context:

Competitiveness refers to a city's ability to create employment opportunities, attract investments and people. The ease of being able to do business and the quality of life it offers determines its competitiveness.

Sustainability includes social sustainability, environmental sustainability and financial sustainability.

Quality of Life includes safety and security, inclusiveness, entertainment, ease of seeking and obtaining public services, cost efficient healthcare, quality education, and opportunities for participation in governance.

II. URBANIZATION IN INDIA

As the global population continues to grow at a steady pace, more and more people are moving to cities every single day. Experts predict the world's urban population will double by 2050, which means we are adding the equivalent of seven New Delhi Cities to the planet every single year.

Urbanization Trends: Urbanization accompanies economic development. As countries move from being primarily agrarian economies to industrial and service sectors, they also urbanize. This is because urban areas provide the agglomerations that the industrial and service sectors need. India is among the countries with low level of urbanization at present but the urban population is growing rapidly especially in developing countries like India leading to continuous demographic and spatial increase in the number and size of urban centers. The decadal growth of population in urban area is greater than rural population leading to the increase in urban population from around 27.8% (286 million) in 2001 to 31.2% (377million) in 2011[1] and is estimated to be 40% by 2030 and more than 50% by 2050.
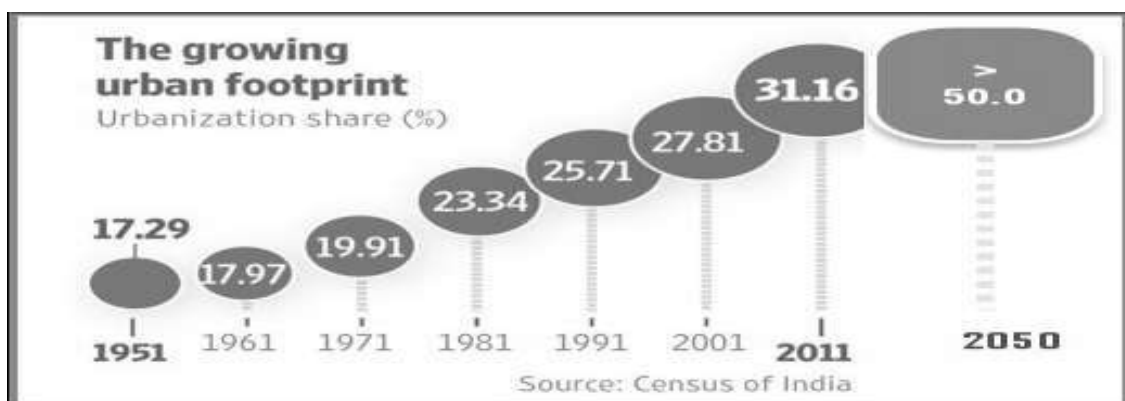

Figure 1: Share of Urban Population during census years

The growth of urban population in the country is not only explosive but also highly skewed. The number of census towns increased by 53.7% from 5161 in 2001 to 7935 in 2011 with number of Class I towns increased from 441 to 468 and the million plus cities increased from 35 to 53 over the past decade from 2001 to 2011[1].

Population Type	Percentage increase
Total Population	17.6%
Urban Population	31.8%
In Metro Cities (million plus)	33%
In Medium Cities (0.1to 1 million)	19.7%
In Smaller Cities (<0.1 Million)	46.9%

Table 1: Percentage Increase In Population

The Class I towns (population more than one lakh) dominate the urban scenario, which accounts for 70.20% of urban population in 2011 up from 68.7% in 2001, out of this 53 million (10 lakh) plus Metro cities alone accounts for more than 40% of urban population [1]. But if we compare the growth rate of population we find that smaller cities are growing at the fastest rate followed by the growth rate of metro cities which in slightly higher than the national urban growth rate. However, if we

analyze the rural scenario we find that there are19020 (almost 40%) towns with populations above 5000, which are legally Villages as per the definition of the Urban area in use in India since 1961 as set out in 2001 census as follows:

1. All places with a municipality, corporation, cantonment board or notified area committee, etc. so declared by state law.

2. All other places, which satisfy the following criteria:

a) A minimum population of 5000;

b) At least 75 percent of male working population engaged in non-agricultural pursuits; and

c) A population density of at least 400 persons per sq. km.

At the same time there is a large disparity in distribution of the urban population throughout the country. More than 60% of districts in the state of Assam, Orissa & U.P have less than 10% of urban population while the state of Tamil Nadu, Maharashtra, Gujarat, Karnataka & Punjab have more than 60% of districts exceeding national average urban population.

Percentage of Urban Population	Number of District	Percentage of Districts
0-10	128	20.00
10-50	432	67.50
50-60	27	4.22
60-70	21	3.28
70-80	8	1.25
80-90	5	0.78
90-100	19	2.97
Total	640	100.00

Table 2: District wise Level of Urbanization in India, 2011 Census [1]

III. PROBLEMS OF URBANIZATION IN INDIA

The urbanization in India is unplanned and haphazard in general, this in itself is a root cause of almost all the problems. The major problems associated with the urbanization in the country may be categorized into 3 broad categories which may be overlapping each other in one aspect or the other.

1. Infrastructure – It includes Physical, Social and Institutional infrastructure.

2. Governance and Management – This basically deals with the mechanism for the provision of urban infrastructures and services.

3. Sustainability – It includes the application of appropriate technology to attain the sustainability in terms of environment, economy and society.

All these functions together contribute towards strengthening of economic infrastructure and social overheads for the development of the urban areas along with the well being of the citizens.

3.1. Problems of Infrastructure

The provision of infrastructure and services have deteriorated over the time leading to the escalating demand for provision and maintenance of basic infrastructure and services such as water supply, sewerage, drainage, public health and sanitation, roads, streets, city transport, elementary education, etc. thus resulting in serious deterioration of quality service and thus the quality of life. On an average 38% of urban population is below poverty line [2] and 80 million people live in slums without basic services and amenities.

3.2. Problems of Governance and Management

Urban local bodies are the primary agencies for administrating the infrastructural needs of the people and fairly Large Capital Investment decisions being thrust upon them. But the limited revenue base and dependent fiscal Jurisdiction has made it difficult for them to meet revenue expenditures with their own resources, hence Direct Borrowing is an alternative which looks essential but improbable due to poor credits ratings of the urban local bodies in terms of pay back from revenue generation and recovery of the user charges for the provision of services due to malpractices in resource management, structural machinery, improper division of domain/ work and area, lack of hierarchy and proper planning, continuous rivalry and lack of coordination and understanding among different departments and section, lack of transparency and vigilance, etc. The predicament in delivery of urban service in the country is the result of the neglect of urban planning and infrastructure by state governments, the fragmented and overlapping institutional responsibilities of the state government, ULB's, Development Authorities, Parastatal agencies in different state[3]. This is further aggravated by inadequate investment in urban infrastructure, poor maintenance of public infrastructure assets, weak administration, poor system of delivery, inadequate autonomy of ULBs, and lack of accountability to community.

3.3. Problems of Sustainability

The sustainability basically includes the environmental, economic and technological sustainability but it is generally dominated by environmental impact because it drastically affects all other systems and aspects. The level of carbon dioxide has tremendously increased in the atmosphere since 1950 leading to the drastic change in climate round the globe. The city alone accounts for 50% of world's population (31.8% in India), 75% of energy consumption and 80% of carbon emission[4]. The cities face problems and challenges of pollution, congestions, deteriorating quality of life and infrastructure and rising cost while competing with each other for investments, jobs and talents, etc. The problem coupled with challenges of climate change, resource depletion, alteration in the ecological cycle and biodiversity intensifies the need for up-gradation in approach and to adapt, survive and thrive over the coming decades to prevent catastrophic climate change while maintaining or increasing quality of life in almost all the cities throughout the country in general and the Unplanned 'Quasi Towns' or 'villageTowns' in particular. These towns are often developed as peri-city or satellite towns and face haphazard growth, due to lack of coordination and collaboration between Planning Authorities and local government. They need to become more efficient, sustainable and liveable, in other words may be termed as 'Smart'[5].

IV. DEVELOPMENT OF SMART CITY IN INDIA

There are several instruments that facilitate the development of a Smart City. These are:

Use of Clean Technologies: As per the WHO report, Indian cities are amongst the most polluted in the world, creating severe health hazards. The trend needs to be reversed by promoting the use of clean technologies that harness renewable materials and energy sources and have a lower smaller environmental footprint. In smart cities buildings, transport and infrastructure should be energy efficient and environmentally benign.

Use of Information and Communication Technology (ICT): The extensive use of ICT is a must and only this can ensure information exchange and quick communication. Most services will need to be ICT enabled, and this often helps reduce the need for travel. The ability to shop on-line or book tickets online or converse online are very powerful ways of reducing the need for travel, thereby reducing congestion, pollutants and energy use.

Participation of the Private Sector: Public Private Partnership (PPP) allows Government to tap on to the private sector's capacity to innovate. Greater involvement of the private sector in the delivery of services is another instrument as it enables higher levels of efficiency (this should be the prime motive for using the private sector rather than just tapping financial resources).

Citizen participation: Citizen consultation and a transparent system by which citizens can rate different services is yet another instrument for improving performance. Making these ratings openly available for public scrutiny creates a powerful incentive for improved performance and a disincentive for poor performance.

Smart Governance: The existing Government setup in the Urban Local Bodies (ULBs) is rather fragmented with each department working in silos. The result of this is lack of coordination which is reflected in the form of poor services to the citizens. Therefore, for cities to become smart, it is essential that the governance structure is also smart. Therefore, ULBs would need to make effective use of ICTs in public administration to connect and coordinate between various departments. This combined with organizational change and new skills would improve public services and strengthen support to public. This will mean the ability to seek and obtain services in real time through online systems and with rigorous service level agreements with the service providers[6].

V. IDENTIFICATION OF THE SMART CITIES

In order to modernize our cities and make them internationally competitive, the Government has decided to support the development of 100 Smart Cities in the country. In this context, one has to recognize the federal structure of the country as well. Moreover, it has been the experience world over that developing Greenfield cities have seldom been successful as a city can grow on a sustainable basis only if there are opportunities for economic activity, entertainment, education, healthcare and a wide range of such services. However, some new cities need to be developed in the Hills and Coastal areas. In view of these cities with a 1 – 4 million populations would seem to be the most appropriate. Besides, satellites to larger cities would also make very good candidates. Accordingly, the current thinking is that 100 cities to be developed as Smart Cities may be chosen from amongst the following:

- One satellite city of each of the cities with a population of 4 million people or more(9 cities)
- All the cities in the population range of 1 – 4 million people (44 cities)
- All State/Union Territories Capitals, even if they have a population of less than one million (17 cities)
- Cities of tourist and religious importance (10 cities)

- Cities in the 0.5 to 1.0 million population range (20 cities)
- In Delhi, it is being proposed that Delhi Development Authority will develop a new smart city through the land pooling scheme as a demonstrative city and the New Delhi Municipal Corporation area may also be considered for demonstrating all the components of Smart Cities[7].

VI. CONDITIONS PRECEDENT

The selected cities will have to strive towards attaining specified benchmarks in a range of services. In addition, they will need to undertake the following through a tripartite Memorandum of Understanding between the Central Government, State Governments, and the Urban Local Bodies:

- Have an existing master plan that is valid for atleast the next 10 years or one that is likely to be approved shortly and have such a validity.
- Have digitized spatial maps Issue all clearances for projects in a collegiate manner using online processes and in a time bound manner.
- Electronic/Online delivery of all public services, so that visits to the local offices is rendered gradually redundant.
- Free right of way for laying optic fibre networks, water supply lines, sewerage systems, draining systems and other utilities.
- Create a platform for effectively communicate with the citizens and keep them abreast of various activities and plans of the city.
- Adopt tariff structures that are affordable for the poor and yet minimize waste. In doing so the State/Cities could use their own resources to bridge the gap between the revenue and expenses.
- Create open data platforms that are regularly updated.
- Make all information and decisions taken available in the public domain.
- Set up a regulatory body for all utility services such as water supply etc. so that a level playing field is made available to the private sector and tariffs are set in a manner that balances financial sustainability with quality.

VII. FINANCING OF SMART CITIES

The High Power Expert Committee (HPEC) on Investment Estimates in Urban Infrastructure has assessed a Per Capita Investment Cost (PCIC) of Rs. 43,386 for a 20 year period. Their estimates cover water supply, sewerage, sanitation and transportation related infrastructure. Using an average figure of 1.0 million people in each of the 100 smart cities, the total estimate of investment requirements for the services covered by HPEC comes to Rs.7.0 lakh crores over 20 years (with an annual escalation of 10percent from 2009-10 to 2014-15). This translates into an annual requirement of Rs.35,000 crores. However these estimates need to be analyzed for the purpose of funding by the Central Government. Moreover, it is expected that most of the infrastructure will be taken up either as complete private investment or through Public Private Partnerships. The contributions from the Government of India and the States/ULBs will be largely by way of Viability Gap Support (VGF). Therefore, a large part of the financing for Smart Cities will have to come from the Private sector with the States/Cities and the Central Government only supplementing that effort[7].

VIII. CONCLUSION

- In India, administration in the cities are often confronted with a multitude of key problems, like unplanned development, informal real estate markets, inevitable population growth, lack of infrastructure, inadequate transport facilities, traffic congestion, poor power supply, in competent health services, and lack of basic services both within the city and in the suburban areas, poor natural hazards management in overpopulated areas, crime, water, soil and air pollution leading to environmental degradation, climate change and poor governance arrangements are leading the urban citizen life in unhappy. So we plan and build the smart cities in view of resolving these problems.
- Various initiatives are being taken by the Government of India to convert 100 Cities into Smart Cities. The real challenge before the Government is to build inclusive smart cities for all its residents, irrespective of whether they are rich or poor. In a country like India, the process of making a city smart should be people centric. The idea should be to make cities work for the people. In order to fulfill the vision of Prime Minister for Smart Cities, the Ministry of Finance has allocated Rs.7060 crores in the Union Budget for the year 2014-15[8].
- The smart city concept is one such upcoming concept which is deemed to be the solution for the present day problems as well as the sustainable future. But in the absence of any definite guidelines and case specific solutions to develop the smart cities in India, there is need for further research to work out the parameters, definitions and guidelines for the development of smart cities.

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