



A Study on the magnitude of Urbanization and Environment degradation viz a viz the concept of Smart city

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ABSTRACT

Population is the greatest resource of any country and a major contributory factor for development, and yet it is a major cause of environmental degradation. As we find, the rapid speed of population growth has led to the exaggerative usage of natural deposits. A large population also leads to large production of waste. The results are loss of biodiversity, air pollution, pollution of water and soil and intensive pressure on waste land. All these cause great stress on the environment. So far it is concerned to India; Contributes 17 percent of the world population on just 2.4 percent of the world land area. The rapidly growing of the world's population, mainly in developing countries like India, has already had and will continue to have an adverse impact on establishment and arrangements and on the inclusion of some of the largest metropolitan cities. Even rapid advancement of technology we are still starving to reduced the rate of pollution. The concept of Smart city is one of the solutions towards the problem of pollution due to growth of urbanization. The aim of India's Smart City Mission program is to obtain better living conditions in a sustainable environment with smart solutions. This study identifies the key issues of urbanization and the environment. To meet these issues certainly depends on the monitoring, regulating and assessment of multiple factors such as demography, education, health, information communication and technology, transportations and the environment.

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INTRODUCTION

Urbanization in India

Urbanization is Process by which the maximum number of population leaves surroundings and starts live in cities and towns. Hence, India is part of the global trend to the direction of increasing urbanization, in which more than half of the world population living in cities and towns. So far India is concern, out of the total population of, that is 1210.2 million, 377.1 million populations settle in urban area. The net addition of population in urban areas over the last decade is 91.0 million. The percentage of urban area population is 31.6% to the total population of India. There have been increases of 3.35% in the amount of urban population in India during 2001 – 2011. Census of 2011 reveals that increases of 2774 town in which 242 are statutory town and 2532 are census town over a decade. Moreover, Growth rate of population in urban areas of India was 31.8%.

Urban areas have great potential for developing every nation, including India. It holds great opportunity for economic development, creating jobs, generating wealth through economies of scale. Nearly 31% of India's current population is urban area population, who contributed 63% of India's GDP. With increasing urbanization, expected population of urban areas will be 40% of India's population and contribute 75% of India's GDP by 2030.

Expanding urban populations is and will therefore continue to be strategic policy matter. Critical issues that need to be addressed, such as poor local governance, weak finances, inappropriate planning that leads to high costs of housing and office space, in some Indian cities, these costs are among the highest in the world, infrastructure shortages and major service deficiencies that include water and power supply. Many urban governments also lack a modern planning framework; also, large number of local bodies

obstructs efficient planning and land use, orthodox master plans and restrictive zoning regulating limit the land available for building, constricting city abilities to grow in accordance with changing requirements. This required great development in physical, institutional, social and economic infrastructure. So enhancing the productivity of urban area is the focus of the Ministry of Urban Development, India. Cities and town must be encouraged for expanding high urban productivity for countries. National economic growth, poverty reduction efforts will be help increase to the productivity of these cities and towns. Indian cities can become productive by achieving excellent urban system. Moreover, this depends on achieving transparent and fair delivery financing of urban infrastructure. All this is important in improving the quality of life and attracting people and motivating for investing in the city, and setting in motion a cycle of growth and development. The development of smart cities is a step in that direction [1].

A large number of human beings from the village shift to towns and mega towns to earn their livelihood. This has brought about unplanned and speedy enlargement of towns, growing significant strain at the infrastructural facilities. It creates pressures on housing, water and electric powered deliver and sewage, developing slums. Urban slums are the main reasserts of pollutants and be afflicted by the worst sort of unhygienic conditions. The speedy tempo of urbanization has additionally been accountable for depleting forests and irrational use of different resources.

Urbanization is a system that ends in the increase in towns because of industrialization and financial development, and that ends in city- precise adjustments in specialization, exertion department and human behaviors. The populace is developing on the price of approximately 17 million yearly because of this that marvelous 45,000 births, consistent with day and 31 births consistent with minutes. If the present-day fashion continues, through the 12 months 2050, India could have 1620 million populations. Due to out of control urbanization in India, environmental degradation has been happening very swiftly and inflicting many issues like shortages of housing, worsening water quality, immoderate air pollution, noise, dirt and heat, and the issues of disposal of strong and dangerous wastes. Pattern of urbanization until 2001 The sample and fashion of city populace and quantity of cities in India all through 1901 to 2001 indicates that overall city populace has increased by ten times from 26 million to 285 million [2] while overall populace has accelerated much less than 5 instances from 238 million to 1027 million from 1901 to 2001.

Growth with inside the Number of Million Plus (a million populace or more) Cities in India all through 1901–2001 There become first more than 1,000,000 populated city (Kolkata) in 1901 in India. It has become in 1911 (Mumbai added) and become consistent all through 1911 to 1941. Million plus towns will increase to 5 in 1951 and constantly improved after this decade and have become 23 in 1991 and presently its miles 35 in 2001 census. The total populace additionally improved with inside the million plus towns from 1.fifty-one million in 1901 to 107.88 million in 2001, nearly a fifty-fold boom. Slum Situation in India and its Metropolitan Cities Total slum populace in India in line with size/elegance of cities all through 1991 suggest that 41% of the whole slum populace become dwelling in million plus towns, in which 27% of overall populace of India resides [3].

Growth in motor automobiles in India and in Metropolitan Cities within 10 years from 1990 to 2000, there was nearly a three times boom withinside the quantity motor automobiles in India. On a median 10% boom has determined every year, that is a critical subject for air pollution. A metropolis may be described as 'smart while investments in human and social capital and traditional (transport) and modern (ICT) conversation infrastructure gasoline sustainable monetary improvement and the excessive first-class of life, with a smart control of herbal resources, via participatory motion and engagement [4].

WHAT IS A 'SMART CITY?'

There is no informality about definition of a Smart City. It varies person to person. Therefore, its concepts, and thoughts also vary from city to city and country, depending on the status of development, and try to change and reform, resources and aspirations of the city residents for development. Some boundaries are there to guide cities in the SMC (smart city mission). In the imagination of any city residents in India, understanding of smart city contains a wish list of infrastructure and services that describes his or her level of aspiration. In addition, to fulfill their wishes of citizens, urban planner's aims at developing the entire urban ecosystem, Which represented by the four main pillars of development that is institutional, physical, social and economic infrastructure. This can be a marathon process and cities can work toward developing such comprehensive infrastructure, including layer of 'smartness'.

Approaching the smart city mission, the main objective is to promote cites that provide core infrastructure and providing decent quality of life to its citizens, a clean and sustainable environment and application of 'smart' solution. The focus is on sustainable and development and idea are to look at

compact areas, to inspire nearby cities and towns, it acts like a lighthouse to other aspiring cities. This initiative by government has one of the targets to set examples that replicated both within and outside smart city, it help to promote the creation of similar smart cities in country [5].

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Smart City gives sustainability in phrases of monetary support and employment possibilities to its residents, no matter their stage of education, competencies or earnings levels.

Government of India [9, 12]

The core infrastructure elements in smart city would contain:

- Adequate water supply,
- Assured electricity supply,
- Sanitation and solid waste management,
- Better mobility & good public transportation,
- Housing for everyone, especially for the poor,
- Robust it connectivity and digitalization,
- Sustainable environment,
- E-governance and citizen participation,
- Safety and security,
- Health and education.

As far as smart solutions are concerned:

- E-Governance and citizens and Services,
- Waste management,
- Water management,
- Energy management,
- Urban mobility.

However, this not a comprehensive list and cities are free to add more solutions and applications.

Nowadays in 21st century houses have become a symbol of status and power, where multistory apartments are a norm. And so, purchasing a proper house in a civilized and respectable neighborhood has become somewhat of a struggle. Let us have a look on a project of Dwarka Phase-2 project [8].

Delhi Development Authority has begun out the venture MPD 2021 at Dwarka Phase-2 to ensure that human beings get the residence inside their budget. This audacious venture has begun below Smart City Awas Yojna answers for the citizens of Delhi due to the fact they may be compelled to shop for assets in close by regions consisting of Greater Noida, Gurgaon, and Ghaziabad. Finally, Delhi authorities have discovered the whole info of the sales of this venture. The construction of these homes will take 4 years (2022) to finish [9].

An emergent India represents a vivid beacon at the beaches of monetary growth. GIFT (Gujarat International Finance Tec-City), India's first International Financial Services Center, embodies this imaginative and prescient with conducive multi-carrier SEZ and the distinct home zone. A Fully included town with a stroll to painting culture, it has the next-in-magnificence infrastructure, connectivity, people, generation and felony framework – rising as a platform for organizations throughout the world. GIFT City is rising as brand new monetary capital of the world's monetary capital.

A smart city is one that has digital technology embedded across all city functions. It collects, communicates and crunch data.

A smart city is one that fundamentally unifies data from various sources, to inform decision-making by policy makers, citizen, businesses etc. -Dalberg Design Impact Group (DIG) [10].

Smart cities can be achieved through renewable energy, healthy water for domestic and industrial purposes, urban sanitation, social health conditions, and ease of life, healthy drinking water and proper treatment and disposal of human excreta and sewage and waste management systems.

To manage water supply, waste water and sanitation issues smart cities will seek to incorporate the latest technologies, products, solutions, and quality sewage systems.

Urban transportation is also an important element for smart cities.

Hence, there is a need to review city transportation systems in India (including metros, monorail, trams, waterways, walkways, bicycle tracks, roads, Bus corridor etc.), to provide new and enhanced infrastructure for public transportation.

Smart city features [10]:

Some of the features of smart cites which give them a unique identity like

- Promoting mixed land use (commercial and residential) with area-based developments and close to one another to make land use more efficient. The state will enable some flexibility in land use and building bye – laws to adapt to change.
- Housing and inclusiveness expand housing opportunities for all.

Smart cities have adopted transportation and urban mobility as two major aspects to build walkable neighbourhoods, reduce traffic congestion, enhance local economies, and promote social infrastructure for social acceptance and pedestrians. Theoretical Background: The environmental perspective is not often firmly present in the smart city concept, while "smart" can occasionally contain environmental sustainability, and I believe it must have a healthy environment.

The Constitution of India also favor Right to a healthy environment under the article 21 secures Right to Life. Now a day's world focuses on one of the major concerns and is Environment. The statistics have shown that major countries have degraded their natural resources of water.

For example, China has 90% river got toxic due to industrialization, urbanization and population. Same situation is in India as major rivers are got toxic and the ratio is 70% to 75%. Pollution is huge concern for developing countries at the same time they need to expansion too.

One example is the definition by the Center of Regional Science at Vienna University, where the smart city is characterized by (a) smart economy (b) smart people (c) smart governance (d) smart mobility (e) smart environment and (f) smart living.

Two of these definitions involve sustainability goals – the definition of smart mobility includes "sustainable, innovative and safe transport systems" and "smart environment encompass "sustainable resource management"

One of the goals of the smart city mission is to boost economic growth and improve people's quality of life by focusing on local development and leveraging technology, particularly smart technology. Area-based development will improve the livability of the entire city by transforming current regions, including slums, into better-planned ones. To accommodate the rapidly growing population in urban areas, new areas will be developed around existing cities.

The adoption of smart solutions in these cities will allow for the improvement of infrastructure and services through the use of technology, information, and data.

Development in such way will improve the quality of human life, generate employment and increase incomes for all, especially the lower economy groups and the disadvantaged, leading to inclusive cities.

Friendly road network

- Talking about environmental friendly and increasing in social interaction smart cities create recreational spaces, citizens, park, and playground.
- Public transportation plays one of the important roles in city development, it is very important to consider one of it features. Various options to promote this kind of activity like TOD (Transit Oriented Development), public transport.
- Making governance people-friendly and affordable, increasing online service for data and transparency, motivate for use of mobiles to reduce the cost of services and providing services without physical visit to municipal offices.
- Smart cities mission gives name to the cities by their different characteristics based on their financial activity, health, education, art, and craft, culture, sports, goods, furniture and etc.
- Applying smart solutions to infrastructure and services n area-based development to make them better.

Challenges

- First time a MoUD (Ministry of Urban Development) program is using the competition method for funding cities and using policy of area-based development. To develop as smart city. This captures the spirit of 'competitive and co-operative federalism'
- States and ULBs will play a key role for development of smart cities. A efficient leadership, long vision at this level and ability to act decisively will be an important factor to make this mission success.
- After knowing the concept of ABD (Area based development) and Greenfield development by policy makers, implementers and other stakeholders at different levels will require capacity assistance.
- Have to make investments in time and resources during the planning process to participate in the completion.
- Key requirement of mission is efficient people who actively participate in governance and reforms. Citizen involvement is much more important. These people involve themselves in the definition of smart cities, decisions on deploying smart solutions, implementing reforms, doing more with less.

Selection process:

Coverage and duration

The mission will select 100 cities and its duration will be five years (2015 – 2020). The mission can be continued after any evaluation can be done by the Ministry of Urban Development (MoUD) and include learning into the mission.

Smart cities selection process

Different steps in the selection of smart cities.

1. Letter is sent to all state governments to select their potential cities based on stage -1 eligibility criteria according to number of smart cities allocated to the states and UTs by the MoUD. This is the first stage of intra – State competition.
2. Response from states and UTs, and the list of potential 100 smart cities is declared. All India competition begins in second stage.
3. Each selected potential smart city prepares its proposal assisted by a consultant (from a panel created by MoUD) and a hand- holding external agency.
4. Proposals are submitted to the panel of experts on specified date of stage-2.
5. Selected cities declared – round 1 smart cities
 - Selected cities set up SPV and start the implementation of their SCP. Preparation of DP, tenders etc.
 - Other cities prepare to improve their proposal for the next round of the challenge

How many smart cities in each State and UTs [6-9]

The total 100 smart cities distributed among States UTs based on equitable criteria. The formula was equal weightage to urban population of the state/UT and the number statutory towns in State/UT. Based on this state and UT will therefore have a certain number of potential smart cities from each States and UT. The number of this smart cities from each state and UT will be capped at the indicated number.

This distribution of smart cities reviewed after two years of implementation of the mission, based on the performance of states/UIBs in the challenge.

The process of selection of smart cities

Smart city selection based on the ideas of cooperative and competitive sub-federalism.

Smart city selection process follows challenge methods; there are two stages for selection of smart cities.

Stage 1: SHORTLISTING OF CITIES BY STATES

Intra-State city selection by State government. All cities of a state compete within state itself. In the first stage cities selected by the States for intercity competition. The states and UT's select cities based on condition and scoring criteria and on the total number allocated to it. In addition, then the information sends by the ULB's for approval it goes to HPSC (State Level High Powered Steering Committee) and has to be evaluate by the State Mission Director.

Stage 2: THE CHALLENGE ROUND FOR SELECTION

All India Competition, which means the competition of selecting process of smart cities, competes all over country between all states within country. In the stage each 100 smart cities participate, make their own proposals for participating in "City Challenge". It is little bit confusing and tough level for the selection of expected model chosen. The proposals are mostly based on Greenfield development, redevelopment including pan city dimensions with smart solutions. The MoUD Committee involving a panel of national and international experts, organizations and institutions will work an evaluation criterion.

Timeline for completion (according to SCP)

In 2015, Smart City Mission was launched

Round-1 20 cities were selected: Jan 2016 to 2021

Fast Track 13 cities selected on 24th may, 2016

Round-2 27 cities: Sep 2016 to 2021

Round-3 39 cities: Jul 2017 to 2022

Round-4 cities: Jan 2018 to 2023

Parameters of scoring

Some of the questions asked by evaluators for smart city proposal

- In the last three years, what efforts have been made by the city for betterment of livability, sustainability and economic development?
- What have been the changes in Administrative Efficiency due to the use of Information and Communication Technology, during last three years?
- What are the strengths and developmental areas of the city?
- Based on the SWOT analysis, what should be the strategic focus of the city and policy blueprint for its development during the next 5-10 years for betterment livability and sustainability?
- What should be the vision of the city based on the strategic blueprint?

- Summarize your idea for an area-based development (ABD).
- List the key components of your area-based development proposal (e.g. buildings, landscaping, on-site infrastructure, water recycling, dual piping for water supply, etc.)?
- Describe the 'smart' characteristics of the proposed development that relates to urban form (e.g. public places, mixed-use, open spaces, and walk-ability) and how these will be incorporated.
- Description for the implementation of convergence.
- Describe the financial timeline for your smart city agenda.

Moreover, this list also extends as per criteria.

Generic gaps

1. Logical flow of process for plan development
2. Strategies and projects
3. Implementation plan
4. A financial plan
5. The credibility of the proposal and claims

Proposal preparation

Smart city contains the vision, plan for utilization of resources and intended outcome in terms of infrastructure up-gradation and smart applications.

Essential features of SCP are,

- At least 10% of the Smart City's energy requirement coming from solar
- At least 80% buildings should be energy efficient and green buildings
- At least 15% affordable housing
- SCPs using the principles of strategic planning process and the proposal will contain area-based development plans and Pan-city initiatives.

Implementation and criteria's:

While implementing smart city solutions, some factors are focused like ease of living, digitalization and connectivity, sustainability and smart social structure. Here there is some detail of current position of smart solutions of cities. (2018)

Smart roads, smart mobility, NMT (non-motorized transportation), public bike sharing, and transportation infrastructure are all examples of ease of life. Digital technologies, command and control centres, and mobile apps are all examples of digitization and connection. Smart water, smart wastewater, solar, and riverfront development are all examples of sustainability. Skill development, smart communities, education, heritage building and open spaces, street arts, and building illumination are all part of the integrated social system.

Handholding supports

There are two ways of obtaining technical assistance support — by hiring consulting firms and engaging with handholding agencies.

- Consulting firms: The state/UT has the right to use a panel of consulting firms that has been qualified by the minister of urban development. The state/UTs must solicit financial proposals from these companies and make their selection based on the appropriate procurement regulations and guidelines. States can appoint a consulting firm outside of the panel if they follow transparent and fair procedures that satisfy state financial norms.
- Handholding agencies: Many foreign governments have given assistance and support since the mission began and preparations began. Other external and domestic groups have also approached MoUD with the possibility of providing technical assistance. As hand-holding agencies, agencies with experience in the field of smart city development can provide assistance to states and UTs.

IMPLEMENTATION

Implementation status introduced that till now 90 cities were selected as Smart Cities.

Sixty five cities were constituted as Special Purpose Vehicles (SPV's).

52 cities have hired for the Project Management Consultants. Under Project Management Consultant as engineer contract will overlook at Engineering, Procurement and Construction (EPC) to ensure the scope of client work. Where EPC means a document use in industrial activities, which is handover to the owner or user.

Total 2,100 project are under DPR (Detail Project Report), which means the project reports, which are technical details with project and involve the plan layout.

Co-relation with other government schemes

Smart cities focused on growth as taking place in locations where the physical, institutional, social, and economic infrastructure are all integrated. Although the approach is diverse, many government strategies

converge in this aim. In order to achieve urban change, AMRUT and the Smart Cities Mission have a strong collaboration. While AMRUT uses a project-based approach, the Smart City Mission uses an area-based approach.

Convergence of various Central and state government programmes with the smart cities objective has yielded significant benefits. Cities must seek convergence in the SCP with AMRUT, Swachh Bharat Mission, HRIDAY, housing for all, and other social infrastructure programmes such as health, education, and culture at the planning stage.

CONCLUSION

The boom of clever town's within side the destiny will depend upon the achievement of the inclusion of massive statistics and the control of our sources for society's use. Efficient use of surroundings goes to want appropriate evaluation, tracking, feedback, and coverage formulation, that is simplest viable via significant statistics and statistics. Before setting up infrastructure for clever towns, the formation of statistics facilities is paramount, that allows to cause the identity of troubles and additionally assist in presenting solutions.

A nonstop-tracking machine of land use changes, water quality, inexperienced space, sewage machine and power intake must be made public via a web platform to make certain that the society is likewise capable of participating.

There are numerous technological and environmental challenges, which can be limitations to the achievement of the Indian clever metropolis assignment [19,20,22], in which rules are nevertheless missing; however, are vital for every clever metropolis. It is essential to undervalued environmental additives, including geography, climate, and inexperienced space, may be sincerely described and the way they may be protected within side the standards of the clever metropolis assignment for the identity of clever towns.

Second, in view of growing herbal dangers and climate-associated challenges, the way to discover an equitable manner of the use of sources and provisioning for destiny is every other mission that must be the middle of the formation of clever towns.

It is vital that we encompass diverse additives of the surroundings' environment, as those parameters offer a holistic view of Indian assignment of clever towns. Most towns are already reeling beneathneath the pressure of excessive pollution, and are among one of the maximum-polluted towns with inside the world. As the bulk of the Indian populace could be dwelling in towns with inside the destiny, the Indian authorities desires to make arrangements concerning the equitable use of sources to sell sustainable development. At equal time it's also vital to border such coverage to preserve the clever metropolis idea.

Smart metropolis governance is a critical element as soon as the coverage and clever metropolis assignment happen. Social safety is likewise a motive of subject for clever metropolis assignment. For those authorities must border coverage in one of these ways that right safety facility must offer to their citizen with the aid of using setting up police station alongside land use.

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