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## The Smart City Mission in India Opportunities, Improvements, Challenges in the Urban Environment

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### Abstract

Cities in India are growing very fast and creating a lot of problems. This is because they are not being planned well and there are not enough regulations to control the way they grow. Some of the problems include too much traffic, not enough vegetation, and homes being built in areas where they should not be. These problems are damaging the environment and will become worse in the future if we do not do something about it. In response to these problems, India launched the National Smart Cities Mission (SCM) with the aim of transforming urban areas into more inclusive and sustainable environments. The program was a response to the needs of a rapidly urbanizing population that required radical change in the built environment to create a more prosperous and egalitarian society. The project has approved a total tender amount of ₹1.84 lakh crore, which will finance new projects across the country. However, in many cases SCM does not deliver on its promises. It has distributed its resources through a grant structure that is contrary to the national strategic vision of smart urbanization. Furthermore, by expanding the definition of smart cities almost beyond recognition, it has become an umbrella for new government funding for urban projects rather than for making India's cities more digital and resilient. This raises the question of whether it is appropriate for India to invest in smart cities now, or whether these funds should first go toward expanding the systems that provide essential basic services to the population. Fortunately, the SCM approach can be modified so that new investments made under the program meet the current needs of the population and lay the foundation for smart infrastructure for the 21st century. Indeed, this is important to ensure that SCM and future urban development projects deliver solid benefits relative to their costs. This program will help make cities more eco-friendly and better able to deal with disasters like floods. It is important to have smart cities so that we can protect the environment and have better places to live.

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**Keywords :-** Smart City Mission, Sustainable Development, Urban Environment, Urban Planning.

### Introduction

Since the mid-20th century, the world has experienced a wave of urbanization unprecedented in human history. As economic opportunities become concentrated in urban areas and migration between cities and rural areas increases, billions of people now live in vast metropolitan areas on a scale unimaginable a century ago. Since 1950 alone, the world's urban population has increased from 751 million to 4.5 billion and is expected to reach 5.2 billion by 2030. Percentage by 2030: The number of people living in cities today will exceed the world population in 1980, and by 2030 the urban population will exceed the world population in 1990.

Extensive urbanization in developing countries like India provides opportunities for economic growth and development. On the other hand, it also brings many problems. Therefore, the urbanization process itself is

sometimes blamed for contributing to climate change and other global environmental pressures<sup>[1]</sup>. Large-scale and rapid urbanization due to lack of proper urban planning and management has led to increased anarchy<sup>[2]</sup>. Additionally, large population explosions in major cities place pressure on water and wastewater infrastructure, existing transportation systems, and overcrowded housing<sup>[1]</sup>. This leads to problems of unplanned development, illegal encroachment and settlements, which pose serious challenges to the quality of the urban environment<sup>[2]</sup>. The continuous deterioration of environmental conditions is a reality in various major cities across the country and the situation could be dire for millions of urban residents<sup>[3]</sup>. Emissions of carbon dioxide and other greenhouse gases are worrying in many cities of the Indian subcontinent. This growth is expected to increase even more rapidly in the coming decades. As a result, ecological conditions deteriorate significantly and all natural resources in and around the city are depleted.

The extensive urban structure in industrialized nations like India provides opportunities for economic growth and development. On the other hand, it also brings a variety of tastes. Therefore, the urbanization process itself is sometimes blamed for contributing to climate change and other global pressures<sup>[1]</sup>. Large-scale and rapid urbanization has led to anarchy due to lack of urban management<sup>[2]</sup>. Additionally, massive population explosion in major cities is putting pressure on water and wastewater reserves, stagnant transportation bottlenecks and overcrowded housing<sup>[1]</sup>. This leads to unsystematic development, illegal systems and diverse problems, which pose serious challenges to the quality of the environment<sup>[2]</sup>. The continuous deterioration of environmental conditions is a reality in various major cities across the country and may lead to ocean conditions for millions of urban areas<sup>[3]</sup>. Carbon dioxide and other gases are used in many cities of the Indian subcontinent. This growth is expected to increase even more rapidly in the coming decades. As a result, global warming occurs to a great extent and all natural resources in and around the city are depleted.

Globally, more than two billion people are expected to move to urban areas by 2050; This explains a lot about the problem of factory goods. India's urban population is currently about 410 million, accounting for 32% of the total population, and is expected to reach 814 million (50%) by 2050. Three Indian cities are among the most populous cities in the world: Delhi with an area of 25 million, Mumbai with an area of 21 million and Kolkata with an area of 15 million are ranked second, sixth and 14th in the world scenario. The country is experiencing growth in the population and proportion of its urban population, the majority of which is in cities with a population of more than one million and is expected to continue increasing<sup>[6]</sup>. The industry is responsible for generating demand for residential and non-residential building stock<sup>[2]</sup> and putting pressure on the already deteriorating Catholic, physical, economic and socio-cultural establishment. Limited vital components and infrastructure have created challenges for the urban area population due to the problem of healthy food, fresh water, energy supply<sup>[7]</sup>, adequate housing and transportation, which affects the environment of the entire city.

High growth rates of human diversity and urban structure are causing changes in physical terrain, urban composition and urban structure in many northeastern countries<sup>[8]</sup>. Due to land use issues, Indian cities largely follow local development non-urban models such as the targeted area model, multi-core model or regional planning model. Due to the competing demand for land in Michigan and industrial development, the Green Belt is undergoing many changes. For example, the city of Pune is experiencing large-scale land use and has land available for industrial development, even without embankment infrastructure<sup>[9]</sup>.

However, smart cities are not a magic formula for development. While the technology behind them contributes to sustainability to some extent by increasing resource efficiency, it does so in a way that increases the productivity of the facility to which it is applied. As a result, smart city technology reinforces existing systems

that may or may not be sustainable at the scale required for today's rapidly growing urban areas. For example, cities that invest in improving the accessibility of their roads for autonomous vehicles may see small temporary improvements in traffic and emissions reductions, but this may lead to greater reliance on private vehicles in the future. Demand will increase and a fundamentally incompatible mode of transportation will emerge. Population density is essential for a sustainable urban area. Furthermore, the full potential of smart technologies will only be realized when they are embedded in a complementary system of data collection and flexible adaptation, and invisible investments are made before benefits are realized. In addition, several security measures are required. General Public Thus, policymakers wishing to implement smart city innovations must first ask whether the form of infrastructure they want to strengthen is inherently sustainable, especially given the burden of large urban populations that will continue to increase in future also.

The growth of Indian megacities such as the region has resulted in huge demand for energy, transportation and housing, leading to large-scale use of industrial gas. Most of the Indians are consultants from urban health services. The development is a prime location in major cities like Delhi, Modinagar, Mumbai, Bengaluru, Gurgaon and many other cities. The city is under pressure due to the Northeast, economic restructuring, climate change and unemployment. Due to many problems have emerged such as:- B. Promoting urbanization and the lack of local enterprises for transformation through early warning systems, increased use of public transport, industrial management and energy production sustainable development missions. grads in the planning and implementation phase of these boards. In addition, several other instruments have arisen, including land acquisition and land use management, engineering wealth transfers for coal, etc.

Since the mid-20th century, the world has experienced a wave of urbanization unprecedented in human history. As economic opportunity becomes concentrated in urban areas and mobility between cities and rural areas increases, billions of people now live in clusters that were unimaginable a century ago. Can do. Since 1950 alone, the world's urban population has increased from 751 million to 4.5 billion and is expected to reach 5.2 billion by 2030. This is almost double the global urbanization rate since 1950, which ranges from 30% to 57% today and is estimated at 60%. % by 2030. The number of people living in cities today will already exceed the world population in 1980, and the urban population in 2030 will exceed the world population in 1990.

### Smart city mission

Future of Sustainable Urban Development Faced with various challenges in the field of sustainable development and increasing pressure on established cities to provide quality of life and opportunities to their residents, the Government of India (GoI) under the leadership of Prime Minister Narendra Modi has A national scheme has been launched. Smart city. Mission 25 June 2015 (NSCM). A total of 100 cities have been selected to participate in NSCM with an initial funding level of Rs 48,000 crore (US\$6.4 billion) over five years. Cities that complete the projects will serve as showcases for other cities to harness the power of combining smart city innovations. Ultimately, the success of these pilot projects is intended to encourage a wave of public and private investment in the further development of smart cities, without the need for direct intervention from the central government. To date, NSCM has invested a total of Rs 1.84 billion (US\$24.6 billion) from the public and private sectors in projects across the country.

In 2019, IESE Business School created a global ranking of 174 cities based on "smartness", which included indicators of human capital, social cohesion, economic prosperity, governance, environment, mobility, urban planning, international access and technology. As envisioned by SCM, Indian cities are at the forefront not only in becoming technology powerhouses but also in providing essential services to all their residents.

Cities were invited to submit proposals for at least two projects through NSCM. The first will be a community development project in which an existing space will be upgraded or redesigned to serve as a "beacon" or model of best practice for other parts of the city. The second would be a city development project aimed at affecting the entire population. Projects presented under this policy are typically citywide ICT networks with the specific goal of improving the monitoring of city functions such as public safety, energy consumption, transit and traffic, or environmental conditions. To support members in developing their vision for smart cities, the Ministry of Housing and Urban Affairs (MoHUA) has issued guidelines recommending that cities promote transparency and accountability through mixed land use, Implement inclusive housing, walkable communities, open spaces, and multimodal transportation. , Strengthening governance and local identity while maximizing smart solutions to these problems.

The participating cities were selected as part of the Smart Cities Challenge, which was developed and implemented by the Government of India in collaboration with Bloomberg Philanthropies. The city ranking, with a weightage of 30%, is based on the performance of each urban local body (ULB) based on indicators such as administrative and operational efficiency as well as the overall urban strategic vision of each city, the sustainability and inclusivity of that vision. Assesses. And it plans to integrate ICT into the urban landscape. On the other hand, 70% of the proposal-level evaluation examined the merits of each city's proposals based on parameters such as cost-effectiveness, feasibility, innovation, scalability and citizen participation. Initially, cities competed with their counterparts at the state level, with state governments then nominating candidates for the national government. The 33 best performing cities were selected to participate in the first round. Other applicants were asked to review and resubmit their invitations annually until the total number of cities participating in the final round reached 100. As a result of this process, cities from all the states and union territories of the country were selected to participate. NSSM. Except the newly formed Union Territory of Ladakh. About 35% of India's urban population, i.e. About 130 million people live in the selected cities.

Once a city was selected for inclusion in the NSCM through this competitive process, a special purpose vehicle (SPV) had to be created to coordinate the financing and implementation of the proposed projects. The SPV had to transfer most of its shares to government agencies, with private investors' stake limited to 40%. As a condition of receiving the initial funds from the Government of India and matching funds from the State Governments, the SPV will have to obtain the remaining funds for its projects through other means. This funding structure provided an average of ₹200 crore (US\$26.7 million) per year per city from government sources, less than half of the funding required for all projects. However, the funding requirement varied widely across cities, ranging from Rs 500 crore in Lakshadweep to Rs 600 crore in Chandigarh. The same budget is set aside for all cities, regardless of their status in the mission, and the rest of the cost comes from municipal bonds issued in the financial markets, land use conversion fees, user fees and other government sources. Funding comes from program coordination and the sale of public facilities. Recovery takes place through state assets. Corporate CSR Initiative.

SCM projects are officially divided into two categories: regional development and citywide development. Citywide development benefited the entire urban area and often incorporated the most innovative ICT applications into the SCMs with the greatest potential for integrated benefits for the population. Regional development, on the other hand, involves intensive investment in a relatively small geographical area, designed as a proof of concept of smart urban renewal for surrounding communities and can be implemented in three different models . These can be divided into: modernisation, rehabilitation and development of new facilities. Modernization projects create new infrastructure on existing built-up areas of at least 500 hectares

to improve efficiency and quality of life. Redevelopment or "brownfield" projects have replaced approximately 50 acres of the existing built environment with a new environment designed according to the principles of mixed-use development, increased density, and technology integration. The new 250-acre stadium took advantage of undeveloped rural or agricultural land outside existing urban areas and created an entirely new environment that integrated smart infrastructure into its design. The Indian government's initial vision of "100 new smart cities in India" was in line with the greenfield development model, but over time, cities have opted to pursue revitalization and modernization plans.

Other topics related to this article,

## **ENVIRONMENTAL CHALLENGES IN INDIA -**

In the water sector, the situation is similar in urban India: about 8% of urban households still have to travel more than 100 meters to access drinking water. In the power and energy sector, electricity penetration in urban India is less than 100%. Currently, 93.9% of urban areas have 24-hour electricity access. Agricultural collection in the urban area is 70-90% less and residue separation is less than 30%. Due to illegal waste water treatment, even in cities, only 20% of waste water is treated. Looking at India's urban sector, only 22% of India's transportation is public transportation and only 20% of cities have urban bus services <sup>[5]</sup>. Past fishermen and future plans to resolve into self-reliant and eco-owned cities and the role of entrepreneurs, coordinated and planned development have been demonstrated. The concept of Smart Society in India is a step towards the current development trends, resource sources and setting up of important libraries and is being studied for more than a decade. However, this is significant after the formation of the new central government in 2014. The overall concept of the Smart City Mission is to create a self-sustaining and well-managed area within the urban complex, which can serve as an ideal place to inspire and improve the efficiency of other parts of the city. The implementation period of smart city programs is estimated to be five years. The state will receive financial grants from the government to implement smart city development from 2017 to 2022, and we can see the progress of work by 2022. However, to provide the basis for urban development, the Smart Cities Mission in India should be the priority. Major cities and other individual cities will be developed more and more and transformed into smart cities <sup>[12]</sup>.

The planning, design, development and redevelopment of cities, towns, suburbs and rural areas to create and promote social equality, a sense of place and community, and the conservation of natural and cultural resources. This strengthens environmental identity in both the short and long term. It improves the quality of life for everyone by expanding transportation, employment, and housing opportunities in the region in a fiscally responsible manner. Smart cities also help in maintaining ecological balance in the environment. Due to increasing urbanization, industrialization, lack of infrastructure, and overuse of natural resources, physical development decisions affect land quality in urban systems. Spatial parameters include urban sprawl, population density, urban green space and infrastructure development. This is important for optimal environmental development in urban systems. There is a limit to the urban environment and area, and if it is exceeded, it is not conducive to the healthy development and growth of the urban ecosystem and the damage may be irreparable and serious<sup>[14]</sup>.

### **Smart cities and infrastructure.**

Smart cities are "a set of intelligent computing technologies applied to critical infrastructure components and services as described in <sup>[15]</sup>. The development of smart cities makes it possible to create a smart, connected and sustainable urban system that integrates ICT, Integrates data analysis and mobile devices. Uses actuators, sensors, and simulation to improve operations, service, and decision making. Many achievements are expected



from the development of smart cities, such as improving management processes, managing natural resources, public Optimization of facilities and quality of life. Smart cities have been classified on the basis of total population. A smart city should include a mix of industrial centers and businesses, state capitals, cultural and tourism centers and port cities. However, India's Smart City Mission is a strategic response to address the challenges of urbanization that can ultimately help improve the overall quality of the urban environment <sup>[16]</sup>. Adequate connectivity and interconnection of the road system are important elements for the development of smart cities. Smart city policies involve the use of cutting-edge technologies such as ICT, cyber security, rapid transit system (RTS), etc. To improve security, time utilization, energy conservation etc. Smart cities should focus on improving city infrastructure including housing, water supply, transportation etc. Smart technological advancements should be used to improve infrastructure for greater efficiency with less investment. There are many technologies useful in creating smart cities:-

**1 Traffic Management System.** Traffic management systems provide accurate information about passenger status and related safety precautions. Traffic management systems increase daily public transportation usage and improve operational efficiency, service reliability, and response to service disruptions. Users or travelers have optimal access to home information, schedule information, tasks and operational information. There is a shipping desk where customers can get information about arrival and departure times. An example of a traffic management system is Instant Vehicle Location (AVL). Advanced technology enables vehicle tracking. Automotive vehicle location information provides data about a vehicle's location in real time. It is used to confirm commitments appointments and provide information about the vehicle to the supervisor <sup>[17]</sup>.

**2 Emergency Management System.** Emergency management systems are considered a discipline that deals with risk, risk management and risk mitigation. The system aims to address natural disasters that occur in the natural environment, often caused by hydrological, volcanic, geological, seismic, meteorological, mass movements or other natural processes, and pose a threat to human systems and populations. Do it. Emergency Management and Information Systems (EMIS) provide an environment for monitoring and computing information and decision support systems, making decisions easier to make during crises in the transportation system. In case of emergency, it is important to control the transportation system and transportation services. Getting supplies, or perhaps people, to safety is a priority. Studies show that various models and methods of analysis in emergency management <sup>[18]</sup> systems have changed over time <sup>[18]</sup>.

## CONCLUSION-

As mentioned earlier in this article, the old principles of smart city development have now turned into distorted concepts of smart growth and smart cities. Smart city concept is a combination of good action plans and advanced innovations to improve the quality of life in urban areas by providing infrastructure and urban services in urban settlements. This idea is considered the ultimate goal of sustainable development in the field of urban development. There is no universal standard for this concept and it is modified depending on local needs. India, a developing country, is experiencing rapid urbanization in its major cities, which is having a negative impact on the quality of life of these urban communities <sup>[19]</sup>. The Government of India has initiated various activities to address the problems of urban development. In India, "Mission 100 Smart Cities aims to solve the problems caused by rapid urbanization in the metros and cities of the country. Generally, many smart city development projects are planned to be constructed in the future.

The objective of this study is to enable decision makers and urban planners to assess the potential of cities from various dimensions and establish evaluation criteria for the city selection process to achieve the mission of smart cities <sup>[13]</sup>. Since India is a culturally diverse country with 29 states and 7 union territories, one city was selected from each state to cover the entire country. Residents of Indian cities have their own concepts

about smart cities based on their needs and configure infrastructure and services based on their hopes and ambitions.

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