Reforms in Urban Governance;
Role of Small and Medium Towns: New Drivers of Development; and
Planning and Development of Smart Cities

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Editorial

This issue of the ITPI Journal presents selected papers received for the 71st National Town and Country Planners Conference held at Bhubaneswar, Odisha in February 2023.

The first paper on the theme 'Reforms in Urban Governance' written by Ramanath Jha, proposes radical city governance reforms to successfully meet the complex urban challenges in the cities of India. Cities in India are sitting on a developing situation facing unprecedented questions in the coming decades. Cities will be able to face these challenges successfully if their organizational structure is radically changed. While the second paper on the same theme is authored by B. Misra, contends that the main objectives of urban governance are to provide better quality of living for all residents, to be proactive, and get prepared to meet emerging challenges in fast changing urban scenario and create investment environment conducive to maintain sustainable development. Accordingly, the paper highlights the lacunas in the urban governance, beside narrates the fault lines, and also suggests actions to ameliorate this situation.

The third paper written by K. K. Pandey, on the theme 'Municipal Reforms for Pollution Control in India' describes the extent of urban pollution and links reforms initiated in India to strengthen the role of municipal bodies to curb pollution in urban areas at grassroot level. In the last few years, India witnessed increasing focus on municipal role in containing urban pollution in line with global emphasis on urban pollution, and finally presents a ten-point road map for reforms at municipal level to minimize urban pollution.

The fourth paper on the 'Role of Small and Medium Towns: New Drivers of Development' is written by R. Srinivas argues that small and medium towns play an important role in country's economic development as they constitute 40 per cent of the total urban population as per Census 2011, and broadly highlights the role of small and medium towns as new drivers of development and how with planned development they can redistribute the urban population in a metropolitan regional planning perspective. Similarly, the paper on the theme 'Small and Medium Towns in Haryana: Economic Perspectives and Private Sector Contribution' authored by Prem P. Singh, provides an overview of small and medium towns in Haryana, and underlines that these towns could act as major drivers of redirection of population and investment, potentially contributing to enhance economic opportunities. While concluding the author recommends to remove bottlenecks in infrastructure, housing, and transportation so as to enable employment intensive growth in these towns.

Kajri Misra in the sixth paper on the theme 'Smart Cities in the Global Imaginary: How does Bhubaneswar Smart City Measure Up?' examines the progress made in the capital city of Odisha through the Smart Cities Mission 2015. Setting the discussion

in the global context, major achievements of Bhubaneswar Smart City are discussed. Beside, the author notes a few concerns towards the end of the paper. So, also the paper authored by Tathagata Chatterji, on the theme 'Planning and Development of Smart Cities: A case study of Bhubaneswar' discusses the Smart City Plan proposal of Bhubaneswar which ranked first in the national challenge round competition under the Smart Cities Mission and exemplifies a technology-enabled road map for a medium-sized city, towards people-centric planning with a focus on citizen engagement and social inclusion. He further emphasized that planning for smart cities is a continuous process and therefore Smart City Plans need to be integrated with the city's overall master planning framework. The eighth paper written by Jayant K. Routray on the theme 'Smart City Issues and Challenges with Focus on Bhubaneswar' begins with a discussion on the concept of smart cities, and criteria adopted for a smart city by examining Bhubaneswar Smart city and its attributes. However, the main focus of the paper is to identify attributes of Bhubaneswar city and 14 of these attributes have been identified. The author cautions the governors and managers to pay attention to these 14 attributes and work out project activities following the sustainable path to make the city really a smart one.

The ninth paper titled 'Key Issues and Challenges for Urban Planning to Achieve Sustainable Development Goal 11, in India' is written by H. S. Kumara who argues that sustainable urbanization remains integral part for achieving sustainable development goals, and analyzes the challenges faced by the Indian cities to achieve SDG 11. Before concluding the author also lists important initiatives towards achieving SDG 11 targets, and suggests to continue to work in this direction.

Looking at the themes of the nine papers, two aspects become very clear. First, we see a sustained focus on issues related to climate change, more specifically SDGs. Second, clearly authors are focused on urban settlements either through smart cities or small and medium towns. Thus, the city appears to be at the centre of academic discourses.

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Content

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Reforms in Urban Governance

Ramanath Jha, Ph.D.

Abstract

Radical city governance reforms are proposed in this paper to successfully meet the complex urban challenges in the cities of India. Cities in India are sitting on a developing situation facing unprecedented challenges in the coming decades. Cities will be able to face these challenges successfully if their organizational architecture is radically changed. Such a framework requires local autonomy, fixed functional and financial domains for ULBs, proactive decision-making, effective leadership and the tools of quick service delivery. Given the nature of power, a strong all-powerful executive, counter-weighted by transparency and accountability needs to be adopted.

1. INTRODUCTION

Governance comprises of the principles and processes underpinning decision-making in an organization. It has immense significance in any organization's architecture. Whenever an institutional analysis is essayed, the quality of governance emerges as one of the most critical issues in that entity. The concept of governance is based on certain principles. These comprise the rule of law, the principle of subsidiarity, equity in decision, distribution of resources and efficiency in service delivery. All decisions must be made in a transparent manner, information ought to be shared with citizens and the decision-makers must be accountable to the citizens for the decisions that they have made on their behalf. As far as possible, decisions must strive to be consensual and the state must guarantee security of life and property.

In the context of urban governance, Government of India started a Good Urban Governance Campaign in 2001. At the end of the campaign, there was a wide agreement on the six key issues of good urban governance that are central in the Indian context. These are Urban Decentralization, Municipal Finance, Urban Environment; Integration of the Poor and Marginalized, Transparency and Civic Engagement; and Municipal Management and Capacity Building.

Twenty years down the line, the key issues do not appear to have moved ahead. In many areas, the situation has become worse. This paper analyses these issues and challenges.

2. CHALLENGES BEFORE THE ULBS

The ULBs today are beset with a multitude of challenges. In local governance, their autonomy is truncated by the state and the decentralization expected post 74th

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Constitution Amendment Act (CAA) is nowhere to be seen. Citizens themselves are disenchanted with their local governments. In municipal corporations, municipal commissioners are the chief executives, but are weighed down by time-consuming decision-making processes. In the councils, the presidents are the chief executives, but accountability lies with the chief officers. Levels of transparency in ULBs is nothing to write home about. Urban planning in cities appears outdated. The planning process is long; affordable housing, solid waste, roads, and work spaces do not receive adequate attention. Urban land faces challenges of clear land titles, primeval record keeping and survey backlogs.

The ULBs have neither a mandated functional domain nor matching finances. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (RFCTLARR) 2013 has raised the cost of urban land inordinately, taking land acquisition beyond the reach of ULBs. The GST has subsumed local taxes leaving property tax as the only substantial local tax to foot all local bills. The 13th Finance Commission advocated allocation of a sixth of the GST resources for the third tier i.e., ULBs. This was not acted upon. Transfers recommended by successive State Finance Commissions (SFC) have not fully materialized. Cities, therefore, are saddled with "unfunded mandates". Cities, in turn, are loath to levy reasonable taxes and have shown ineptitude in collection.

Cities face great pressure for more infrastructure. At the same time, old infrastructure suffers from atrophy and begs for replacement. The quality of maintenance of built infrastructure, however, is sliding downwards, evidenced by repeated maintenance related mishaps. Storm water drains and solid waste management, the management of rivers, *nullahs,* and other water bodies, roads and footpaths, and urban transportation provide little satisfaction. Municipal primary schools do not find favor with citizens.

The environment of cities shows little signs of improvement and threatens quality of life. To add to city woes, climate change has emerged as a serious threat and is imposing itself as a crucial component of a city's management program. Extreme heat events and flooding will repeatedly stare many cities in the face. So would future pandemics that are most likely to be city-centric, just as Covid-19 was.

The social and demographic profiles of cities are throwing up new and complex challenges. While city demography continues to be predominantly young, around 20 per cent of India's urban population is likely to be above 60 years by 2050. Cities will have to customize services to make them useful for children, women, the old as well as the young.

Quite evidently, cites are in terrible shape and cannot be nursed back to health through the old institutional constructs. Nothing short of a complete overhaul in the light of the current urban dynamics can deal with the gravity of the

situation. Tinkering with the existing architecture will not yield solutions. Urban governance is crying aloud for a radical transformation.

As an urbanizing nation, India should come up with a clear policy on urbanization. The policy would be the basic framework for cities and a template for all states and state organizations. Some of the points that it could deal with are suggested below:

- In the country, the very large cities have been thrown into turmoil. Over time, a demographic overload puts them under great governance stress and seriously compromises their liveability. Hence, managing city density is a key future sustainability challenge. India needs to work on a large number of other viable urban destinations across the country and strengthen their economy, infrastructure, environment and affordability.

- Another key issue for urban policy is the subject of urban poverty. The key constraint that urban poor face is spatial, both in terms of shelter and livelihoods. The country must fix this issue to radically improve the lives of the urban poor. A vital component of this would be support for informal employment. Equally significant is housing, including rental housing, where a model has been recommended by the Government of India.

- Good urban governance is vital for creating liveable cities. Municipal transparency, efficiency and accountability are vital tools for achieving it and so is decentralization. This involves decentralization from the state to the city, from the city centre to its 'wards committees' and from 'wards committees' to civil society.

- Urban planning also faces a multitude of challenges. The lengthy plan preparation process, the absence of multi-dimensional planning teams, low ULB planning capacity, zoning practices and a host of other issues bedevil urban planning. It is clear that urban planning needs serious re-engineering. It needs the injection of speed, larger public participation, decentralization and more imaginative use of land instruments. Above all, planning needs large doses of inclusionary concepts. A redressal of these vital issues is critical since they cast their shadow on urban governance.

- The 74th Constitution Amendment Act failed in delivering good local governance. It is high time that this Act is replaced by another that delivers for municipalities a functional and financial domain, furthers ULB self-governance by curtailing the operational role of the states in ULBs and injects good governance in the working of ULBs. In a similar vein, state statutes need to be rewritten. A hugely demanding facet of urban governance is metropolitan governance. For ULBs that fall in metropolitan regions, the quality of local governance in ULBs would be largely dependent on the quality of metropolitan coordination and

flexible management frameworks that allow empowered self-governance of the ULBs.

3.   CHANGES FOR TRANSFORMED URBAN GOVERNANCE

In the following paragraphs, this paper suggests some of the changes that are required to transform urban governance. Many of these suggestions are borrowed from the Report of the Committee on Transparency, Efficiency, and Accountability in Urban Local Bodies in 2018. The recommendations of the Committee were some of the most radical and comprehensive attempted till date in the area of urban governance.

3.1   The Mayor and Municipal Leadership

One of the key governance issues in cities is the question of municipal leadership. The developed world predominantly favours a strong mayor. India, by and large continues to favour the municipal commissioner as the chief executive.

The ULBs are largely service delivery organizations. They have the responsibility of providing such critical services that enable citizens to perform their economic functions. The speed and quality of such delivery is key to city efficiency. This calls for quick and efficient decision-making. This in turn requires a very powerful chief executive to head the city. It would, therefore, be wise to fully empower the mayor as the chief executive with comprehensive administrative, functional and financial powers. A warning must be sounded here. An all-powerful chief executive will not serve much purpose if the ULBs themselves continue to be denied the status of self-governing institutions with allocation of adequate financial resources.

3.2   A New Municipal Statute

Municipal statutes need to be replaced by a single, composite law. The new legislation should be in consonance with the state urbanization policy and should bring about local self-governance. The statute would provide for mandated functions and finances and would be imbued with principles of good governance. The statute would deal comprehensively with matters such as informality and issues of urban planning that are seriously out of joint. It would be required to cover fresh urban challenges such as climate change, demographic diversity, digitization, metropolitan complexities, and promote civic participation.

The new statute should be designed to allow an empowered chief executive to make quick decisions. In the new governance system, the mayor should be directly elected. The mayor would have a term of five years and will be eligible for re-election of one more term and no more. The same should apply to councillors. All municipal statutory committees should be converted into advisory committees. For the purposes of continuity, the mayor may not face a no-confidence motion

in the first two years of his tenure. Thereafter he could be removed with the approval of the state government, if three-fourth of the elected members vote against him. The Council shall also stand dissolved.

The Wards Committee would comprise a number of electoral wards and shall coincide with administrative zones. All councillors elected within the boundary of the Wards Committee shall be its members. They would elect a chairman from amongst themselves. The Wards Committees will perform functions statutorily provided which pertain to their area.

The functional and financial domains of the ULBs will have to be specified. Functional assignment to Councils will have to be linked with finances. The states must undertake the constitution of cadres of municipal services. For the recruitment of officers to these cadres, the State should set up a Municipal Services Commission.

Among external checks, states should set up a Municipal Vigilance Authority and allow the audit of the ULB accounts by external auditors. The Municipal Accounts Committee should be headed by the leader of the opposition in the ULB. A Municipal Regulatory Authority would also be required, with powers to fix rates of property tax, premiums, and user charges. It would also handle situations of financial gridlock and disputes arising out of privatization.

Looking at the frailties of the planning statutes, they may be repealed and city planning should be amalgamated with the Municipal Act, thereby creating one combined Act for the ULBs. The regional planning part of the law may be taken out of the new Act. A separate Act for regional plans be framed. The constitution of the Special Planning Authorities may be restricted to areas where no planning authority exists. The new planning chapter should plug deficits in regard to solid waste, affordable housing, homeless shelters, Street Vendors' Act, roads, town planning schemes, and building regulations. Provisions for privatizing building approvals should be included and purchase notices may be disallowed for lands that are encumbered.

The local body itself should approve its development plan and no approvals by the state should be required. The state, however, should retain the right to direct the ULB if set objectives have been side-lined.

The need for amenity land should be reduced through multiple uses of one property. Further, the use of public lands should be maximized. Private land owners should be allowed to develop the amenity, wherever feasible. The policy of accommodation reservation and transfer of development rights should be made very attractive. Moreover, the option of swapping public land with private land based on the Ready Reckoner Rate should be included. Uniform planning

standards and Development Control Rules (DCRs) be prepared for similar class of cities. This would promote standardization of quality among cities.

3.3   States and Responsibilities

The new legislation should have a redefined role for the states. The state would prepare a state urbanization policy, fix criteria for municipalization and classification, fix the functional and financial domain of the ULBs with variations for different classes of the ULBs and will create state municipal cadres. It would also create the Municipal Regulatory Authority, Municipal Vigilance Authority, Municipal Audit Commission, and prepare a Municipal Accounting Manual and contractual documents for procurement.

The state would standardize IT applications across cities, prepare a standard web site for the ULBs, do private sector and NGO accreditation and set benchmarks for assessing the performance of the ULB. On the planning side, the state would standardize planning standards, DCRs and develop a plan for peri-urban areas. It would make government land available for affordable housing, co-ordinate transportation agencies and strengthen the office of town planning. Looking at greater future urbanization, the Urban Development Department itself would have to be expanded and reorganized.

The ULBs will be responsible for intra city strategies and their operations and planning. This would include city-wide plans, infrastructure priorities and strategies for equitable development of the city. The town hall would implement programs that have a city-wide impact while the wards committees would implement zonal plans.

3.4   Citizen Empowerment

The question of citizen empowerment, however, remains. Considerable progress in this area has been achieved in the western world. Unfortunately, the struggle in India for institutionalizing citizen's participation in the ULBs has till date been an unsuccessful one. Government of India itself initiated the Model Nagar Raj Bill to institutionalize people's participation through the Area *Sabhas*. The response of the states, however, was extremely tepid. The Transparency Committee of Government of Maharashtra, on the other hand, proposed a '*Jan Sabha*' at the ward level with mandated powers. *Jan Sabha* would decide on the priorities of the works to be undertaken, would bifurcate the capital budget into works and play a role in social audit of all expenditures within that electoral ward.

3.5   Municipal Transparency

Transparency connotes the manner in which an organization discloses information about its decisions and processes. Growth of new technologies has greatly aided

transparency. There is a large variety of transparency mechanisms that the ULBs could employ. Firstly, ULBs can live stream the proceedings of the general body and other committees of the ULBs. Secondly, information related to the mayor, councillors and top municipal officers should be made available on the website of the ULBs. Thirdly, information such as building permissions granted, rules framed, policies prepared, and circulars that impact people should also be periodically placed in the public domain. Furthermore, citizens need to know how much money a ULB collected, what were the sources, what were the heads on which money was spent and how surplus money is being invested. Transparency about municipal procurements is vital and details with regard to the award of all contracts beyond a certain stipulated value must be put in the public domain.

The use of information and communication technologies (ICTs) by public bodies to speed up decision-making processes and deliver quality information to citizens through more efficient and transparent structures is equally critical. IT tools for ULBs comprise, inter alia, web-based citizen services such as property tax payments and birth and death registrations.

E-governance also includes mobile-governance that moves the delivery of services to the hands of citizens. The ULBs deliver a host of vital services related to public health, education, water, sanitation, street lighting, waste management, livelihood, transportation, gardens, and other essential services. Their delivery on a digital platform would radically alter both the efficiency of the ULBs and the satisfaction levels of citizens. It is, therefore, recommended that cities be encouraged to leverage digital platforms for information-sharing and feedback.

3.6   Municipal Accountability

Local accountability refers to holding the ULBs and its functionaries accountable in regard to their functions. Whole array of steps could be introduced for complete accountability of the ULBs. Apart from independent authorities, for auditing municipal accounts, an Ombudsman would be useful, which is empowered to investigate the mayor, if needed.

Furthermore, a code of discipline on councillors ought to be imposed. Councillors should attend municipal meetings; meet their ward citizens; disclose all business interests, must not acquire, lease and take for operation any property and operation of the ULBs that would result in pecuniary benefits. A newly elected councillor must attend a capacity building course. Failure on any of these counts would be subject to reprimand or suspension or disqualification. In regard to state appointees, the mayor would be empowered to recommend an officer's withdrawal if the mayor finds his services unsatisfactory. Since the job of the mayor would be a full-time job,

the incumbent will have to be remunerated commensurate to his position as the first citizen. The councillors should be also recognized for their work and paid a decent honorarium by the ULBs.

3.7   Municipal Partnerships

In the larger municipal corporations, jobs are becoming technically complex. The in-house ability to handle them is getting more and more suspect. The ULBs are, therefore, required to outsource some such high-end technical jobs. A more substantive partnership through the private sector participation (PPP) in municipal infrastructure. This partnership has the potential to improve performance and liveability of cities. Unfortunately, despite several attempts, PPP in core municipal infrastructure is still struggling to establish itself. The major stumbling block appears to be the fact that while privatization may bring in efficiency and quality, it appears weak in handling the issue of equity. This inability of privatization has given impetus to a global trend of 're-municipalization', reversing the privatization trend of the 1980s. In 2010, for instance, Paris annulled privatization of water services and reverted back to public ownership. Hence all PPP initiatives have to be seen on how they impact the poor. There are a whole range of PPPs possible. However, most ULBs lack capacity in this area. It may be a good idea to prepare standard contractual documents for specific municipal services and a state level organization created to manage these for smaller ULBs.

3.8   Municipal Capacity

Capacity Building of municipal bodies remains an area of darkness. Despite very wide recognition that large gaps exist in municipal capacity, the ULBs are reluctant to allow municipal staff to go for training sessions, more so, when they are required to foot the bill. The problem is compounded on account of the nature of cities. Urbanization is a dynamic and cities are growing more complex. Hence capacity building inputs are prone to quick depletion. Capacity building, therefore, must be an on-going process. Furthermore, capacity inputs need to cover the entire gamut of things that make the ULB efficient and the entire range of people involved in municipal affairs - elected representatives including women representatives, officials, and civil society stakeholders.

Unfortunately, municipal capacity gaps are matched by capacity deficits in capacity building institutions. Training curricula are program-centric or event-based limiting their utility. Surely, a proper training needs analysis. Following from the needs analysis, quality training material offering a mix of classroom-based training, on-field training and web-based training have to be designed and imparted.

It is also necessary that there is sufficient decentralization of delivery mechanisms to cut time, travel, boarding and lodging costs. The IAS officers, especially in urbanized states, are likely to be involved in larger numbers in municipal affairs. They, therefore, require specially strengthened urban content in their syllabi.

An added problem is that there are very few institutions capable of meeting the capacity building needs of the ULBs. While urbanized states should quickly establish an official institute exclusively devoted to urban affairs, such training institutions need not come from the narrow basket of governmental institutions. Private, academic and non-governmental training and research organizations will help bridge the shortage of capacity building institutions.

3.9   Municipal Finance

Indian ULBs have suffered from a perennial resource crunch. Today, Indian cities are financially among the least funded. A large number of ULBs all over the country find it difficult even to pay salaries to their staff. Hence, while there are huge improvements possible in greater financial efficiency at the ULB level, the fact remains that municipalities today with all the efficiency are still not in a position to make both ends meet.

A start ought to be made with the widening of the local tax base by including more taxes in the basket such as profession tax, entertainment tax, stamp duty on registration of land and property and motor vehicles tax. Additionally, the centre and the states should set aside larger transfers and grants-in-aid that bridge the financial gap of the ULBs. Collections from the GST to be shared with the ULBs would be the most appropriate and substantial.

Property tax could be more buoyant if the ULBs shift to the capital value system and use GIS for property mapping. Article 285 of the Constitution should not stand in the way of Government of India and state governments from paying an amount equal to property tax in the form of service charges, if they are willing. Lands within cities that are kept vacant for speculation should be subjected to vacant land tax. As a principle, where a service is measurable, user charges should be applied.

Land instruments are equally versatile for revenue mobilisation. These include FSI, TDR, accommodation reservation, contributory amenity space, development charge, premiums and compounding fee. Their use, however, has to be weighed in the context of each city. They have a huge, negative fallout, if unwisely used, through infrastructure overload and demographic density.

Local bodies have to also look for institutional finance for financing large capital investment. Competent ULBs should be given the freedom to borrow without

state approval with cap. Municipal bonds are another attractive source for financing capital expenditure and projects. In this regard Government of India could play a major role by promoting tax free municipal bonds for smaller ULBs and low interest rates for the larger ones. A State Financial Intermediary to assist the ULBs to make use of capital markets for meeting their infrastructure investment requirements would be welcome step.

The ULBs may exploit the commercial potential of its own lands, especially since it is the planning authority. Since land is a finite commodity and since the ULBs would have a limited pool of land, the strategy has to be, to use land in a manner so that a long-lasting income source is created. Hence, permanent land disposal for one-time income is not advisable.

Large cities are known to attract migration both on account of opportunity as well as poverty. As a consequence, cities are burdened with a fair percentage of population that do not contribute to municipal revenues but need to be serviced by the ULBs. In fairness, since this population has come in primarily from rural areas, Government of India and state governments must bear the responsibility of supporting their welfare through poverty programs in ULBs.

4.   CONCLUSIONS

Cities in India are sitting on a developing situation that will ask unprecedented questions in the coming decades. Cities will be able to face these challenges if their organizational architecture is radically changed. Such a framework requires local autonomy, fixed functional and financial domains for ULBs, pro-active decision-making leadership and the tools of quick service delivery. Given the nature of power, a strong, all-powerful executive, counter-weighted by transparency and accountability appears to be the best bet.

States must continue to strategically think for cities. Their strategic role would be significant but a very sizeable responsibility would have to be shouldered by cities. Lastly, it will have to be borne in mind that part implementation and disjointed reforms will not deliver the intended results and certainly not good governance.

Reforms in Urban Governance

B. Misra

Abstract

Rapid urbanization and growth of cities have played increasingly pivotal role in country's development and transformation from rural to urban. For sustaining this progress, the country needs to be sensitive to urban governance. Main objectives of urban governance are to provide better quality of living for all residents, to be proactive and get prepared to meet emerging challenges in fast changing urban scenario and create investment environment conducive to maintain sustainable development. The paper focuses on highlighting the lack in the main pillars of urban governance and the fault lines in governance. Major fault lines in urban governance are lack of a holistic approach to govern both urban and rural areas; inadequate empowerment of the ULBs; lack of strict monitoring and action to stop unplanned urban growth; extreme poor delivery of urban services; inadequate mechanisms for generating institutional capital and innovative financing; implementation of PPP mechanisms in development projects and more importantly poor peoples' participation in decision making. The paper attempts to focus on selected four fault lines in urban governance and ends with suggested actions to ameliorate this situation.

1.   INTRODUCTION: INDIA'S URBAN GOVERNANCE SCENARIO

Urban governance objective is to provide better quality of life for all residents and generate an investment climate that is capable of sustaining rapid growth (Ahluwalia, 2019).

Reforms in urban governance in India started since 1992 with the liberalization of the economy, and the 73rd and 74th Constitution Amendment Acts (CAA). The CAA was a great landmark in urban sector through providing statutory powers to local governments as the third tier of governance after the nation and the state. Very significant urban transformation has taken place since then. Huge investments in infrastructure projects that provide strength to urban growth have been made. Road, railway and air transport at the national, regional and local levels have undergone tremendous up-gradation. Better mobility, liberalized economy and impact of globalization have directly boosted urban growth. National economic and industrial corridors also have generated many spatial corridors of urban development with urban centres of various sizes. The urban sector is fast growing as the major engine power to drive the economy. Services sector has the highest spike in growth. From a level of 63 per cent in 2011 the urban sector in India is projected to contribute 75 per cent to the GDP of India by 2030. (Smith, et al., 2019). However, India's fast urban growth and

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fast urban transformation put many challenges before urban governance. The most demanding one is to improve quality of life for all, make cities and towns safer and promote sustainability.

2.   MOST DEMANDING CHALLENGES OF URBAN GOVERNANCE

2.1   Urban Growth, Transformation, and Governance Systems

India's urban situation is complex and more demanding because of the rapid urban growth since the last two decades. For example according to the Registrar General of India urban India would increase by over 100 million each year over 432 million level in 2021 by 2026, just in five years. The rise is likely to go further up considering the good health of the Indian economy as the country is among the fastest growing economies of the world during the last decade. While the trend of concentration of urban population in large cities and agglomerations in India is consistently getting stronger those show a persistently high concentration of low income and poor population groups. However, significant rise of the middle income class in cities provide economic opportunities and their high expectations in urban living demand better governance.

The opportunities created by high urban growth are many. In recent years huge investments in infrastructure development has been made. As mentioned above increased mobility at all levels including within the large cities has boosted the pace of urban growth and transformation. Commendable developments in digital communication, digital finance and digital governance systems in India also have well supplemented fast urban transformation. Another opportunity is Indian cities especially the larger ones are increasing being the store houses of large number of highly skilled and trained personnel most of them are young between 20 to 35 age and ready to be the agents of change in urban development. Urban middle class has expanded significantly boosting urban economy. Also growth of the middle class has generated high expectations in quality of life and demand better urban governance.

2.2   Stretch of Urban Growth much beyond the Urban Official Jurisdictions

Another important aspect of India's urbanization is the fast spread of urban activities beyond the officially recognized urban areas to the periphery which some call 'Rurban'. Several thousands of nodal villages beyond the official urban centre jurisdiction have distinct urban activities and urban character. Transformation from rural to urban in them is fast. However, these upcoming urban settlements are not officially recognized as statutory towns with local urban governance systems and are designated as Census Towns by the Registrar General of India. These Census Towns have less than 100,000 people, density of 400 per sq km and 75 per cent of male working in occupations other than agriculture. In 2021 there were 4000 Census Towns and the number is likely to increase by 2231 by 2031 according to a study of the Centre of Policy Research.

The large number of Census Towns are governed by rural '*Panchayats*' the oldest form of local self-government in India. Because of their non-statutory status they do not enjoy the governance benefits, the statutory ULBs have. There is obviously vast difference in the capability and resources of these two types of governing bodies. However, both the statutory cities and towns and the Census Towns do constitute the total urban environment in India. Therefore, the ambit of urban governance should include both the types of centres like lack of urban governance in the Census Towns create serious problems - Lack of a wholesome approach to urban governance and the current urban rural divide which has shown its pitfalls in governance.

2.3   Fault-Lines in Urban Governance

Present urban landscape of India shows many pitfalls or fault lines in governance. Often questions are asked why the urban governance is so unsatisfactory. Why cities present highly contrasting living conditions. Why many parts of Indian cities present chaos, rampant illegal encroachments while some others glitter as excellent window of urban landscape. Why delivery of basic urban services are so much wanting. Often cities in many parts look shabby, uncared for with flowing drains, heaps of unattended garbage waste, stray street animals blocking traffic, poor performing street lighting and so on portraying poor municipal governance.

The appalling situation clearly points to failure of the governance by the urban local bodies (ULBs). ULBs power and capability as governing institutions are restricted and curtailed by lack of proper institutional governance. Rapid increase in urban population is stated by some as the reason. To some extent true particularly when the pace of growth overwhelms the local governing capacity and its pace of enhancement. But, in reality the top reason is the lack of innovative and insightful urban governance.

The need for revamping urban governance is urgent. Quick, proactive and forward looking governance is the need. Improving the quality of life for all especially for the low-income and the poor sectors of cities is the pressing need on one hand and on the other governance should pre-empt the likely challenges and disruptions due to rapid urban growth in the future. A number of reforms in governance required. Integrated development of both urban and regional planning therefore becomes the core of urban planning and development. Urban planning which constitutes an important part of governance need to be based more on the use of advance technology, draw skill from allied disciplines and what is more, must be people-centric in approach. All this make urban governance a multi-faceted and integrated task.

3.   ESSENTIAL AREAS OF REFORM IN URBAN GOVERNANCE

Urban analysts and experts have highlighted major road blocks to urban governance in India. Major road blocks underlined are: the federal governance system despite

a very positive constitution amendment in 1992 however, yet ULBs has not been empowered as the 3rd tier of statutory institutions of governance as provided in the Constitution; the current rural and urban divide in governance policy despite fast urban transformation of large number of rural settlements designated as Census Towns; missing link between the large cities and small towns breaks the rural urban functional continuum; severe inadequacy of trained personnel; and political overtones and corruption in urban management and dominance of state functionaries in ULB to manage planning functions.

3.1   A Holistic and Comprehensive Approach to make Urban Governance Inclusive

Urban governance and urban reforms are evolutionary processes that consistently change for improvement commensurate with the pace of urban growth and transformation. Urban governance in India suffers from a two faceted important gap. On one hand the ULBs are not fully empowered to govern on the other there is the lack of wholesome policy and approach to include all those settlements that show urban transformation; nearly half of such settlements are kept out of urban governance, and a third of the fast growing towns have less than 1 lakh population and accounted for 40 per cent of total urban population in 2011.

3.2   The Para-Urban Census Towns

Total number of urban centres with statutory status provided by the constitution of India is 7933 (Niti Aayog 2022). The statutory urban centres have local governing bodies namely Municipal corporations, Municipal Councils, Municipalities, Cantonment Board, and Notified Town –area Committees. Cantonment Board governing body is exclusively managed by the Army. However, added, there are a large number of fast growing village settlements in India which have distinct and predominant urban functions and urban spaces. These settlements function as nodal service centre villages usually located in the urban periphery areas and along the growth and transport corridors. The national Census of India designates these settlements as Census Towns. The number of Census Towns increased fast from 1362 in 2001 to 3894 in 2011. The number further has increased significantly to 6125 adding 2231 new Census Towns in 2021. Census Towns have no statutory status hence have no urban local bodies and are governed by *the Panchayat* system of governance of rural areas. Sustainable urban development in India cannot ignore the fast expanding spatial trail of urban activities and functions and for ensuring sustainable urban development radical reform in the designation, classification of all urban centres and their empowerment to govern meaningfully are urgent.

3.3   Provisions in the 73rd and 74th Amendments of the Indian Constitution (1992)

Article 24BP and Q of the CAA 74th makes provision for urban centres of varying scale namely Municipal Corporations, Municipalities, Municipal Councils, Can-

tonment Boards, *Nagar Panchayats* (NAC). It is prerogative of the state govern-ments, however, to designate these urban centres and extend and control their functional sphere through executive decisions without an amendment to the leg-islative provisions. Cantonment Boards also are statutory urban centres but their governance is only by the Army. 11th schedule 73rd CAA provides rural functions for the *Panchayati* system of local governance while the 12th schedule provides urban functions for the urban centres. The Constitution, however, does not pro-vide distinction between different categories of urban centres in the provision of urban functions. Some argue, that does not restrict the state governments to devolve urban management related functions out of the 29 specified functions from 11th schedule to selected small ULBs or from 18 urban functions of the 12th schedule to *Nagar Panchayats* (NACs) and Census Towns depending on the capability of the concerned urban centre (Mukta Naik, 2019). Some urban func-tions namely issue of building licensees, power to regulate subdivision of land for urban use, layout permits for local transport modes can be devolved by the state governments to Census Towns. The article 243 X of the Constitution provides the ULBs to collect taxes and duties authorised by the state government. All or some selected of these powers could possibly be devolved to all types of urban centres to improve their own revenue.

The above suggestion makes sense particularly in the context of supporting reform to urban governance. The suggestion appears necessary within the framework of a holistic approach to inclusive urban governance for all centres that decisively predominantly show urban functions. The reform sounds meaningful both from the points of administrative and financial management. Implementation of the idea, however, requires proper understanding of pros and cons of the necessary changes required both in the administrative and legal frames of governance. More than the central government the state governments are required to evaluate the possibilities of implementation and also be confident over the benefits that it would accrue. In the context a wider national level discussion involving the central and state governments, the ULBs and academic experts seems essential. The government may set up a high powered committee for the purpose.

3.4   State Governance and the spirit of Constitution Amendment

Designation and devolution of urban governance functions to *Nagar Panchayat or* Town *Panchayat or* NAC (Notified Area Council) levels is a prerogative function of the state government. *Nagar Panchayats* and NACs are small in size, more than 12 thousand and less than 40 thousand population. Governance is done by a committee with an elected chairman and elected ward members plus three nominated members by the state. NACs and Town Area Committee (TAC) are parts of *Nagar Panchayat* and are in transition from rural to urban and therefore stands as a form urban political unit comparable to a smaller municipality. Many states have their own management directorate for NACs, example - Karnataka, Kerala, Maharashtra, and Tamil Nadu.

The suggestion made in item 3 (c). looks desirable and surely calls for deeper debate at the national level. The suggestion would fulfil the need for a wholesome governance of urban growth in India. However, it should be noted that a number of administrative and perhaps legal changes are essential to make it a reality. We know that even after 3 decades the real spirit of the 73rd CAA to devolve urban functions to the local ULB level and fully empower them to govern has not come into full reality. Barring few states most states have not yet devolved the urban governance functions as provided by the CAAs. While this is a very undesirable status of urban governance in India, over and above, there is now emerging a pressing demand to approach urban planning and development in its totality that is inclusive of all such settlements which are already in the path of fast transformation from rural to urban. In short, integrated urban and regional planning governance merit consideration.

3.5   Need of Change of Governance Paradigm and Mind Sets

The State legislatures have to change their mind set and rise over the political wrangles to take bold policy decisions to make urban governance meaningful. Designate the fast growing small Census Towns as ULBs and devolve essential urban governance functions of the 12th schedule to the NACs. Capability of the selected and deserving Census Towns must be upgraded with skilled and technical manpower to govern some urban functions namely issue of building permits, regulate land subdivision of land for urban use, layout permits for urban use areas, etc. The District Town Planner and one specially trained planner (out of the 5000 special trained planner in pipeline over next five years by SPA Delhi approved by MoHUA) can be given the responsibility to look after urban functions of small ULBs (Census Town).

3.6   Empowering the ULBs as Full Governing Bodies

The landmark in Indian national framework for urban governance was the CAA 73rd and 74th of 1992. Even after thirty years the CAAs have not been implemented in full. The federal government of India, the basic functions of governance are distinctly divided between the central and state governments. Land and urban development and the governance functions are exclusive of the state functions. CAA makes mandatory for states and UTIs to create institutions to guide and govern the fast urban growth and transformation. CAA 73rd created urban local bodies (ULBs) with urban governance power. Article 243ZD of 74th CAA created District Planning Committees (DPCs) for planning at the district level and below. Article 243 ZE of part IX-A of the constitution created Metropolitan Planning Committees (MPCs) and the Article 243 S the Ward Committees. The articles of the CAAs are very well intended in the urban governance context.

However, functions specified in the 11th and 12th schedules for devolution of power to these institutions have not yet done by most state governments. In

the urban governance spectrum major problem lie in the devolution of urban functions to the ULBs. The most important function - urban planning including town planning as specified in the 12th schedule have not been assigned to the ULBs by many states. This important function of urban governance continue to be held by the state governments (Panagariya, 2014 as quoted in Ahluwalia, 2019). The ULBs are denied the function of town planning and are powerless in mobilizing finances for improving infrastructure and growing need for delivery of urban goods and services and also maintain the human resources. Their dependence on the state government for funding is solid and so is the state governments control over them. State control is further consolidated as municipal functionaries in most cases are employees of the state governments and are posted by the state governments to individual cities (I. J. Ahluwalia). Further no concrete actions seen to transfer the deputed functionaries to the ULBs. Only a few progressive states have followed the centre guidelines

It is construed from the above that the most ULBs have become powerless to guide and govern urban development defeating the very spirit of the 73rd and 74th CAAs. In the context of what is mentioned in the Sections 3 (a) and (b) the following suggestions are made:

- The State governments must seriously think about how to break the urban and rural divide and fine tune the distinction to develop a wholesome urban governance system. The objective is to widen governance of the emerging urban space in an inclusive way including in the ambit Metros, large cities, large towns, NACs, fast growing Census Towns and the intervening urban impacted villages. In short, integrated urban and regional planning context. It is time for quick decisions and rapid actions with focus on urban governance. A wholesome human settlements approach in planning and development has been suggested in many forums specifically in the national URDPFI Guidelines.

- The state legislatures should discuss the matter seriously and set up high powered Committee to analyze the situation evolve legal and administrative measures to adopt a common categorization of all urban bodies. The working paper no 4, 2009, p32 of DEA GOI reiterates this urgent need for new categorization of urban centres. The paper also suggests systematic planning process and guideline for devolution of state funds to strengthen the ULBs.

4.   AUGMENTING THE SOURCE OF FINANCE FOR THE ULBS

4.1   Poor Status of ULBs' Finance

It is a common public realization that the condition of the basic urban services in most cities is poor there is the urgent need to improve delivery of basic urban services which directly affects the quality of public life. The

most important reason for this state is low level of ULBs financial capability. Of course miss-management even corruption are the reasons. However, the primordial requirement is to augment ULBs financial status. The situation is very demanding in many ULBs particularly in the Census Towns where state grants are totally inadequate. While the tax revenue systems are ineffective in many ULBs the Census Towns are not empowered to levy taxes because of the non-urban status. These factors as discussed in previous section, demand urgent reforms in governance. Added to the problem is that most State legislations decide the level of taxes the ULBs can levy. Though several official committees have recommended the basis for fixing the property municipal taxes and fees for the ULBs the financial condition of them continue to be poor. Many expert studies including that of Ahluwalia (2019) and Mohanty have reiterated that there is deterioration of all major financial indicators of financial empowerment of ULBs which are already at low levels.

4.2   Reasons for the Poor Status

Many reasons for this problem are noted in the previous section. The root cause is lack of reforms in governance that address the reality particularly the ever increasing public demand for better quality of services. Empowering the ULBs and the Census Towns for reform in governance boost capability to manage and deliver better the basic urban services. Excessive and continued dependence on state for funds is regressive for local urban governance and there is always a sense of unpredictability over reasonable sharing of state grants to ULBs.

4.3   Role of the State Finance Commission and the ULBs

At the state level 74th CAA provides for setting up State Finance Commission (SFC) by the States and for the same the centre provided guidelines. The task of the SFC is to set principles for sharing a part of the state revenue with the ULBs. However, reputed finance experts (Rangarajan, 2005) say that the SFCs did not meet the standards set by the Central Finance Commission (CFC). Further, Ahluwalia writes "CFC has not challenged the state level political resistance to devolve urban functions to the ULBs, in turn ULBs continue to suffer from lack of funds and have to function as with unfunded mandated functions". It is also noted that State municipal laws are very old, ineffective in the context of fast changing urban scenario and do not enable the ULBs to go for reform.

Realizing the central government formulated in 2003 the Model Municipal Law (MML) to guide the necessary changes in the state municipal laws. For reform in the financial sector of the ULBs the central government brought in several guidelines such as National Municipal Accounts Manual (NMAM), Fire (D), DEAAS, etc. Some progressive states seriously implemented the guidelines and the results are exemplary in making the ULBs better funded with proper resource management and became accountable to the public. The central reform guidelines, however,

though well intended have not been implemented with their letter and spirit by many states.

Following this many states have initiated reforms like changes in their municipal laws. The Centre Ministry of Economic Affairs in its working paper No. 4 in 2009 Sikkim and Odisha among some others have initiated reforms empowering to some extent the ULBs for governance. Rajasthan government in September 2008 through Ordinance guided by the MML made new provisions such as assigning town planning as municipal function, improved accounting procedure, setting up State Finance Commission and boosting finance through municipal bonds, encouraging PPP, transparency through public discloser, etc. It is to be noted that the central Government has from time to time has consistently tried many ways of urban governance reforms right from the enactment the CAAs in 1992. The democratic federal political system in India puts the major responsibility of related actions on the states.

The states with their widely varying capacity, political and administrative systems have implemented the central guidelines with varying results. Forward looking states have progressed significantly in the path of reforms while others lag behind with slow process of implementation. Some crucial functions of the ULBs assigned by the constitution namely assigning urban planning including town planning functions and to receive the legitimate share of central funding and also freedom in raising local funds to the ULBs have been largely curtailed in many states. The dominance of the state government in the functioning of the ULBs has increased rather reduced. As highlighted in the sections 3(a) and (b) a quick change in the mechanisms of urban governance is not only essential but delay surely is going to further upset the urban landscape heightening public unrest and human suffering.

4.4   ULBs Precarious Financial Situation

The central government guidance is that 3 per cent of the Union divisible tax pool should be devolved to ULBs over and above the state's share. The objective is to boost the local bodies' finance. The 14th Union Finance Commission recommended performance grants to ULBs and *Panchayats*. The major revenue sources of ULBs are taxes, fees, fines, and transfers from the state government. For good performing ULBs property tax is the largest source of revenue. Unfortunately, while the proportion of transfer from the state governments has reduced over years, most ULBs do not also have the capacity to realize the property tax as required. Many reasons are - the property records in most cases are old while changes in property occurs fast. The records are updated in long intervals and the property valuation and tax fixation is left to low level functionaries who are very prone to corruption. The mode of property valuation namely annual rental value, capital value (ARV) unit area systems, etc., have been analyzed and discussed

widely. But the crucial lag is in regular monitoring of the fast changes the people make in additions, extensions and also in the use of property. UPS and GIS based property mapping is the only answer. Some progressive states are adopting the technology but process would take long time to cover the all urban centres of the country. The major source of income from property would remain very low forcing the ULBs' with continued heavy dependence on the states for funds. This very weak financial health of the ULBs is well reflected in their very poor delivery of goods and services. Some states have rightly started Public-Private- Partnership (PPP) system to upgrade delivery of urban services with some convincing result. In view of the fact uncertainty continues in quick augmentation of ULBs' finance it is good practice to adopt PPP system in the governance of delivery of basic urban services for all, however, a long way to go in the context.

Total ULBs revenue in India has shown decline since 2016. When compared to the country GDP in 2007-8 ULBs' revenue constituted only 1.08 per cent which declined further to 1.03 per cent in 2018-19. Fourteenth Finance Commission recommended that central grant should be released to the states within 15 days of the central credit given. But in reality this has regularly not happened. State Finance Commission recommended shifts of funds from state to the ULBs also has not fully implemented in many states. Experts say that the state allocation of funds to ULBs fell short by 53.17 per cent during 2016-2020. One reason stated for this is state grants are given in installments subject to acceptable utilisation certificate from the ULBs. This subject has been widely and deeply analyzed by experts over years.

The overall conclusion is the ULBs do not get their dues from the state and at the same time do not have much leverage to improve their own revenue. All this adds to a precarious financial situation of the most of the ULBs well reflected in their poor delivery of goods and services and more serious a sense of defeatism in self-reliance and avoidance of accountability among functionaries.

5.   SEVERE INADEQUACY OF TRAINED PLANNERS TO GUIDE URBAN DEVELOPMENT

5.1   Trained Manpower Resource, the Need and Placement

Urban planners play a key role to advice on and guide government policies and reforms. Planners play a key role in urban governance. Urban planners, therefore, need to be equipped with governance and management skills. They also must have the capability to guide the team work of planning offices at the state, district and ULB levels. Urban planning profession, therefore, requires special well trained urban planners with high urban planning skill and knowledge. India has appallingly low number of trained urban planners compared to that of most of the western countries. Niti Aayog (2021) writes Indian cities continue to face many efficacy and sustainability related challenges. No Indian city ranks within top 50 of global ranking. Lack of human resources is a major bottleneck in the states responsible for urban planning and design, observes NITI Aayog.

Therefore, development planning tasks in cities are seriously affected and in contrast to the fact that though cities occupy only 03 per cent of the land area of India contribute over 80 per cent to the GDP.

Lack of trained urban planners is a major bottleneck in urban planning and governance in India. There are only about 5000 registered planners in India with 1.5 billion people while the minimum requirement is one planner for 75,000. As per national organizations like TCPO, NIUA, Niti Aayog the required number of urban planners in India is 12,000 as against only 4000 sanctioned positions in the states of which nearly half lying vacant. The demand and supply of urban planners in India is severely disconnected. Result is 65 per cent of the 7933 urban settlements do not have master or development plans to guide growth and the result is piecemeal planning and intervention.

Further there is a common observation that the many of the urban planners are trained inadequately and are not capable of undertaking quality planning and management of development in fast urban growth and transformation scenario. A high level Advisory Committee was constituted by Niti Aayog in 2020 to suggest reforms in planning education. Some of the reforms intended are related to planning healthy cities, advancement of development control regulations, re-engineering urban governance and revision of Town Planning Acts.

5.2   Professional Decision making and Urban Planners

It is observed by many urban planners that their freedom in taking professional decision to guide urban planning and development projects is at times curtailed by subordination to bureaucrats and political overtones. The melee is also added with another bottleneck is the low awareness level among Indian public about the benefits urban planning can bring to the quality of life for all. Inadequate or ineffective urban governance is a direct reflection on the government and planners capability and often it becomes a silent crisis for human suffering and also seed for social unrest.

However, it is important to note that MoHUA in May 2022 started a special initiative to provide special training to 5,000 urban planners working with the State Town and Country Planning Departments, ULBs and development authorities in next five years as part of urban reforms. The expert committee set up for this purpose will formulate strategy to train on the job planners to gain capability to develop innovative urban development concepts in close consultation with the private sector practitioners.

5.3   Encroachment on Public Land in Cities is a Bottleneck in Urban Governance

Opportunistic encroachment on public land is a common problem in many developing countries. In India it is glaring public issue. Rapid growth of

urbanization, lack of trained man power to control and lack of strong political will to govern cities are the major reasons for growing encroachment on public land in the cities and in the peripheries. City's planned growth is largely retarded even halted at times due to encroachments on public land. Implementation of planned projects of the sanctioned development plans are delayed and halted due to protest by the encroachers who fight with reasonable humanitarian issues that they have been living on the encroached land for decades. This situation is the direct reflection on the failure of urban planning process. In most cases the city government is forced to provide compensation to the concerned families for clearing the encroachment and or shifting the families to another site at high public cost. The situation is often also charged with social unrest and fight against the government.

It is also queer to see in India, unscrupulous politicians in view of vote bank politics patronage encroachments on public land even very valuable land. At times the politicians prevail while the city suffers. Many large Indian cities show glaring examples.

5.4　Failure of Urban Governance

The bottom line of the problem in India is the failure of urban governance to provide land and housing for all in rapid growth scenario. It is not only the poor and low-income families encroach on public land. Higher income families, organized businesses and industries also often illegally encroach on more land than they are permitted to. It is common to see that large number of small retail shops encroach public land along city streets. Added to the problem is encroachment on public land by illegal construction without government sanction is also rampant in Indian cities. Ironically lack of alert urban governance, political overtones and interference are taken as normal environment by the Indian public these days and encroachment on the un-protected public land seems to be free for all. Even some incidental open spaces within a planned developed area also is not free from encroachment where the local residents' voice is weak.

Government's urban governance intervention, on the other hand, come ups in spurts more to show power, often too late. Demolishing the encroachments is done as part of governance at high public cost. Example, the 'bulldozer demolition' as a step in urban governance is seen India states these days. The bottom line of all the above denotes the urgency of revamping urban governance in India with reforms and increase the trained manpower and empowering the ULBs as full governing local bodies.

6.　CONCLUSIONS

Governance reforms for integrated development of municipal areas and urban periphery "rurban' areas, empowering ULBs, revamping ULB financing, PPP in

delivery of urban services and ensuring adequate number of trained planners and supporting man power are the top agenda in urban governance reform. Participation of the civil society through Ward Committees in cities put to practice to some extent in the Local Area Plans of Delhi is an important part of urban governance.

Urban governance primarily is to deliver better quality of life for urban residents, manage and sustain equitable delivery of services also generate and nurture an investment climate to generate funds. In India urban governance is faced with many challenges and the performance is far from desirable, despite the start of reforms almost three decades back in 1992 followed in subsequent years by several government ordinances to reframe urban governance. Overarching national promises namely slum free cities, housing for all, equitable delivery of urban services, 100 smart cities, JnNURM, AMRUT, etc.; are all well intended. However, their fulfilment depends on institutional reforms in administration and urban governance mechanisms as the basic foundation. This requires change in the mind set of states, rise above local politics, and discharge their responsibility as provided by the Constitution in the national interest by revamping urban governance.

REFERENCES

Ahluwalia, I.J. (2019) Urban governance in India, *Journal of Urban Affairs*, Vol. 41, Issue 1, pp. 83-102.

Mathur, O.P. and Peterson, G. (2006) *State Finance Commissions and Urban Finance Decentralization in India*, Urban Institute, USAID.

Mohanty, P.K. (2016) *Financing Cities in India: Municipal reforms, fiscal accountability and urban infrastructure*, Sage India, New Delhi.

Moren, T. and others (2014) 'Underpowered Cities' in Ricky Burdett, Philipp Rode, and Priya Shankar (eds.) *Governing Urban Futures*, LSE Cities, London.

Naik, M. and others (2019) *Bridging the Local beyond the 73rd and 74th CAA*, Centre for Policy Research, New Delhi.

Panagariya, A. (2014) 'Space Services and the State', in Ricky Burdett, Philipp Rode, and Priya Shankar (eds.) *Governing Urban Futures*, LSE Cities London.

Rangarajan, A. (2005) *Reports of Finance Commissions of India*, Government of India, New Delhi.

Sivaramakrishnan, K.C. (2011) *Revisioning Indian Cities: The Urban Renewal Mission*, Sage India, New Delhi.

Fatima, S. (2016) *Governance of Megacities: Fractured thinking and fragmented setup*, Oxford University Press, New Delhi.

Rao, G. and Bird (2014) Governance and Fiscal Federalism, in I.J. Ahluwalia and others (eds.) *Urbanisation in India: Challenges, opportunities and way forward*, Sage, New Delhi.

Robinson, E. (2004) *Land encroachment: India's disappearing common lands*, CSAE working paper series, University of Oxford, Oxford.

Municipal Reforms for Pollution Control in India

K. K. Pandey, Ph.D.

Abstract

This paper covers the extent of urban pollution and the reforms initiated in India to strengthen the role of municipal bodies to curb urban pollution at grassroot level. In the last few years, we have witnessed increasing focus on municipal role in containing urban pollution in line with global emphasis on urban pollution. COP 26 and 27 have given due attention on urban pollution as part of race 2 zero and interim urban agenda for 2030. Indian urban missions, programs and schemes have shown top down and bottom-up coordination with specific, decisive and nodal role of urban local bodies (ULBs). These initiatives need to be replicated with scaling up in respective cities. Further, the focus on regional approach as suggested by Fifteenth National Finance Commission should be consolidated along with mainstreaming the census towns which are deprived from city governments despite of urban character and inclusion in urban heat Islands. Finally, the paper presents a ten-point road map of reforms at municipal level to minimize urban pollution.

1.   INTRODUCTION

This paper covers the extent of urban pollution and the reforms initiated in India to strengthen role of municipal bodies to curb urban pollution at grassroot level. It is noted that last few years have witnessed increasing focus on municipal role in containing urban pollution in line with global emphasis on urban pollution. COP 26 and 27 have given due attention on urban pollution as part of race 2 zero and interim urban agenda for 2030.

Indian urban missions, programs and schemes have shown top down and bottom up coordination with specific, decisive and nodal role of urban local bodies (ULBs). It is noted that these initiatives need to be replicated with scaling up in respective cities. Further, the focus on regional approach as suggested by XV National Finance Commission should be consolidated along with mainstreaming the census towns which are deprived from city governments despite of urban character and inclusion in Urban Heat Islands. Finally the paper presents a ten point road map of reforms at municipal level to minimize urban pollution.

2.   THE URBAN POLLUTION AND MUNICIPAL SERVICES

Urban areas in India generate 70 per cent of carbon emission leading to pollution covering displacement of oxygen in the air leading to impact on breathing, increase in the air pollutants, preventing earth from night time

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cooling (greenhouse effects - warming of ocean waters and drop in its ability to absorb carbon emission)[1]. Urban pollution, thus created, has a multiplier effect on quality of life, productivity and human health with overwhelming share of seven million lives lost globally per annum. In the rapidly urbanizing world (4.5 billion currently to 6.25 billion in 2050), the carbon emission, accompanied by pollution from transport, construction, energy and waste management sectors is likely to increase further globally unless drastic actions are taken by multiple stakeholders in a well-designed manner. In this regard municipal services play crucial role[2] (Box 1).

Box 1

> **Role of Municipal Services in Pollution Related Preventive Measures**
>
> *Role of municipal services in pollution related preventive measures particularly WS and SWM in terms of* untreated water, solid waste (household /municipal / electronic/ end of use vehicles / hazardous / green leafs / construction and demolition waste, etc.), road sweeping, condition of footpath, dividers roundabout, burning of waste, lack of greenery / plantation, maintenance of parks / lakes, *etc., determines the levels of AAQ.* It is also estimated that 6.4 per cent of GDP (largely in urban centres) is lost due to inadequacies in WS and SWM. The two are also important from the angle of resource efficiency and circular economy using one output as input for anther product. It is argued that 90 to 95 per cent solid waste can be processed for anther input.

Source: IIPA research on waste management in Bengaluru, 2022.

WHO also has revised norms on 22 September 20210 for Ambient air quality guidelines of PM 2.5 (5 mg per cubic meter from 10 pcm) and annual mean of PM 10 (15 mg pcm from 20) just before 26th session of UN Conference of Parties(COP 26 held in November 2021 which deliberated on new standards and global agenda towards Race to Zero (RTZ) Carbon 2050 along with identification of interim agenda for 2030[3].

3.   INDIAN SCENARIO

India during *Amrit Kal* of independence (75 to 100 years) is completing a transition from semi urban to urban majority society @ India 2047. It will be accompanied by structural alteration with surplus labour from agriculture sector moving towards urban centres. With around 15-19 per cent GDP for nearly half of workforce and 65 per cent population the rural areas will generate sizable chunk of surplus labour. Urban areas already contribute 60-70 per cent carbon emission and high levels of PM 2.5 and PM 10. It is also noted that 14 out of 20

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1   *K.K. Pandey, An Eight Point Agenda for Pollution control in India Business Standard, October 9, 2021.*

2   *U.N., World Urbanisation Prospects:2018.*

3   *Ibid 2*

most polluted cities in the world are in India. (Delhi's PM 2.5 is 17 times the safe limit along with Kolkata 9.4, Hyderabad 7 and Chennai 5.4, etc.)[4].

A large part of loss of lives in India is due to pollution in urban areas being 1.7 (ICMR, etc., 2019) to 2.5 million per annum. Delhi, Mumbai, Chennai, Bengaluru, Hyderabad, and Lucknow lost nearly 120000 lives due to air pollution in 2020. Further, Delhi recorded highest per capita economic loss (2019) being 13 per cent of city GDP accompanied by 14 per cent for Lucknow, 9 per cent for Mumbai, 8 per cent for Hyderabad, and 6.8 per cent each for Bengaluru and Chennai[5].

At the same time, urban India needs to be planned in a city region context The institutional arrangements and governance among UAs to protect air quality are fairly complex and go beyond the administrative jurisdiction of cities. National capital Region (NCR) for instance is a classic case which involves administrative city (MCDs, NDMC, and Cantonment Board), physical City (Gurugram, Ghaziabad, Faridabad, NOIDA etc.) and city region along with several public agencies. This needs due coordination for pollution control as services (transport, waste, sewage) have regional implication[6].

Further, requirements of funds are fairly high than the grant funds and other funds available with ULBs. HPEC report estimated investment requirements for WS and SWM as Rs. eight lakh Cores at 2010 prices in a 20 years' perspective which was 26 per cent of total requirements. In addition municipal roads account for 56 per cent requirements[7]. Hence the budgetary allocations to ULBs are not enough to meet the requisite actions towards AAQ.

4.   URBAN REFORMS ON POLLUTION CONTROL

Last couple of years in urban India, we have witnessed a particular attention towards AAQ with a multi-pronged strategy taken up at intergovernmental level with a particular focus on role of municipal services and urban local bodies. This strategy gives due cognizance to identify and speedup municipal reforms to combat the intensity of pollution. It covers first ever dedicated allocation on AAQ with municipal role in a regional context by National Finance Commission (NFC) and specialized schemes and programs[8]. There are four specific areas of allocation to ULBs by fifteenth NFC which will substantially improve the AAQ in urban areas.

4   Hindustan Times, December 29,2022.9 /india-news/14-out-of-world-s-20-most-polluted-cities-in-india-delhi-and-varanasi-the-worst-who/story-cjdPLlaCZoaxflqoKGxgEI.html
5   Ibid 2
6   K.K., Pandey, Learn from Morbi: Fix Local Government, Times of India, November, 2022.
7   High Power Expert Committee Report on Urban Infrastructure, MoUD/MoHUA, 2011
8   XV NFC Report and urban Sector Missions, MoHUA, GoI and https://mohua.gov.in/

- Rs. 38,196 crore for 2021-26 under XV Finance Commission (FC) given to 44 Urban Agglomerations (covering 1115 towns) for AAQ and water and solid waste management (SWM) in a ratio of 32 and 68 per cent respectively[9]. These are linked to each other as provision of water promotes greenery and processing of construction and demolition waste has specific impact on air quality related to Particulate Matter (PM) 2.5 and 10.

- Nearly Rs. 50000 crore (for remaining 3,000 plus towns) are also allocated to water and SWM in a ratio of 50 per cent each. This will also promote AAQ in a similar manner.

- In addition a sum of 24000 crore is also allocated for urban health and wellness centres which will duly include medical support system for pollution related respiratory diseases.

- Further Rs. 8000 crore are allocated for Incubation of eight towns in a competitive manner among states. It will give specific planning and regulation for safe air and AAQ.

- UA and ULBs are also expected to prepare five year plan on pollution control. The plan should also be based on environmental and energy audit as already included under Model Municipal Law of 2003 but not put in practice at municipal level so far.

- In order to promote C2C (City to City) competition and keeping the money for overall AAQ only, the unspent money is allocated to top towns performing better in fund utilization.

The specific programs and schemes include (i) Pioneering Program of Swachh Bharat Mission 2.0 and AMRUT (Atal Mission for Rejuvenation and Urban Transformation), (ii) National Clean Air Program (2019) covering 132 cities, (iii) Climate Smart City Assessment Framework (CSCAF), and (iv) State and city specific initiatives.

4.1   SBM and AMRUT

The pioneering program of Swachh Bharat Mission (SBM) 2.0 and AMRUT (Atal Mission for Rejuvenation and Urban Transformation) with allocation of 4.3 lakh crore (two-point five time more than phase - I) were launched on 1st October, 2021 to give focus on water availability to all and treatment of sewage to create water plus cities[10]. The two programs also cover (a) drainage plan (including network of Storm Water Drains),(b) water conservation,(c)revival of lakes and tanks and(c) rain water harvesting. It will significantly improve water table and green cover among respective cities.

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9   *KK Pandey, Financial Express,April,12,2021: Urban Allocation and Follow-up of FFC*
10   *https://mohua.gov.in/*

4.2   National Clean Air Program

National Clean Air Program (launched by Government of India in 2019) covers 132 cities. Under NCAP, city-specific action plans are prepared to include measures for strengthening the air quality monitoring network, reducing vehicular and industrial emissions, increasing public awareness, etc. The cities are updating their action plans to meet the updated targets. Many of the actions envisaged in NCAP fall within the functional domain of ULBs, although the program is implemented by CPCB (Central Pollution Control Board) with the help of state PCBs. However, it is felt that the program needs to concentrate on all the urban centres as envisaged and should be duly linked with municipal system. A better involvement and coordination of ULBs and coverage of census towns is also a must who are also deprived from the creation of city government in these settlements. Only 10 per cent census towns are covered under NCAP[11].

4.3   Climate Smart City Assessment Framework (CSCAF)

Climate Smart City Assessment Framework (CSCAF) was launched in 2019 for the 100 Smart cities in order to incentivize a holistic, climate responsive development. This is a first-of-its-kind Assessment Framework for cities, aimed at creating a green mind-set in cities while they plan and undertake various developmental projects. The Framework includes various air and climate relevant parameters that shall guide the cities and help them to assess their own preparedness to tackle the menace of climate change and degrading air quality[12]. The purpose is to encourage cities to initiate actions in a competitive manner. Implemented as part of Smart Cities Mission the CSCAF also tends to award cities on exemplary performance and also develop training material on such best practices to expedite the urban reforms towards clean air. The framework has developed 28 indicators under five areas are: (i) urban planning; (ii) green cover / biodiversity; (iii) energy efficient green buildings; (iv) mobility and air quality; and (v) water and waste management[13]. The CSCAF covers 126 cities and tends to scale up the framework to 500 cities in due course. Ahmedabad, Pune, Indore, etc., were adjudged top performers.

4.4   State and City Level Initiatives

State and city level initiatives cover:

- Application of UN led RTZ campaign (2050) in 43 major towns in Maharashtra[14];
- Gujarat and Bihar are also planning RTZ;

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11 *https://www.cseindia.org/is-india-s-national-clean-air-Program-ncap-working--11407*
12 *https://smartcities.gov.in/climatesmart_cities*
13 *https://pib.gov.in/PressReleasePage.aspx?PRID=1653293*
14 *KK Pandey, November 18,2021,Financial Express, Citieas and Climate Agenda*

- Drive to eliminate End of Use Life Vehicles (ELVs) in Delhi (which has four million ELVs) for scrapping (25 September 2021) with identification of seven partners[15];
- Scientific processing of construction and demolition waste (Ahmedabad, Delhi, Bengaluru, etc.)[16];
- Commission for AQM in NCR (National Capital Region) has issued specific guidelines to strictly follow construction and demolition waste management rules and upload the compliance on a portal being created in NCR (October 2021gement)[17];
- Specific sites for parking commercial vehicles to make space on roads in Municipal Corporation of Delhi (MCD);
- Innovation officer to adapt lake revival, water harvesting (Chennai);
- Generation of solar energy in the banks of tanks in Bhopal[18]; and
- Blue green policy for mobility and waste management (Delhi master plan 2041)[19].

These are just few important initiatives to flag the intensity of reforms. Many other cities are also implementing similar initiatives which also deserve due cognizance.

5.   CONCLUSIONS

Specific points of attention emerging from above for municipal reforms for pollution control are:

- Due cognizance is required to view urban pollution in a city region in line with the 50 UAs (264 ULBs and census towns, villages and special townships -railways, industries, etc.)
- Other city regions in addition to urban agglomerations also need to be identified.
- Census towns need to be upgraded with city governments as applicable. Empirical evidence suggests that pollution control related reforms do not cover census towns. Only 10 per cent census towns are covered under NCAP.
- Additional funds should be made available for ULBs for pollution related measures such as water, roads and drainage sector.
- The five year plan to be prepared for UA should also be based on environmental and energy audit as per Model Municipal Law of 2003.

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15 Ibid2
16 Ibid15
17 Ibid2
18 Ibid15
19 https://dda.org.in/pdf/july13/Final per cent20MPD per cent202041 per cent20- per cent20e per cent20Gazette_ per cent20English.pdf

- NFC funds should be used as seed capital to mobilise extra budgetary resources from community, Corporate Social Responsibility funds and Public Private Partnerships for activities under five year action plan.

  - These may include plantation, maintenance of parks, water bodies, foot path, etc. (already done by Delhi, Bengaluru, Indore, etc.), and

  - At the same time, allocation of NFC grant funds should be enhanced in proportion to the size of census towns, etc., that fall in the jurisdiction of 50 UAs. They are currently covered under rural sector allocation of NFC grants.

- These initiative pave way for a national urban agenda on pollution control which should be fairly diversified to cover different sectors including urban roads, and transport and others including water and sanitation. Specific actions in the sectoral plan should include nine actions as given in Box 2.

Box 2

Components of Municipal Sectoral Plan for Pollution Control

Specific components for municipal reforms in select services are as follow:

- Preparation of state urban transport policy to eliminate ELVs, promotion of fuel free transport, walking and cycling space, rationalize and restrict parking, promotion of Bharat stage 6 vehicles / better energy (as NCTD and Maharashtra);

- Develop and rejuvenate water bodies;

- Make environment friendly process for building construction and C and D waste;

- Minimize garbage going to dumping sites through reduce, recycling and reuse with a circular economy;

- Enforce plantation drive and census of trees;

- Wider application of water harvesting;

- Prepare or revise master Plans for blue-green development;

- Initiate awards on best practices on RTZ 2050; and

- Take up capacity building of ULBs on above actions through training (virtual, Hybrid, face to face), technical assistance and field visits.

Source: Ibid 2.

- Finally, the capacity building of concerned institutions for such a complex issue is equally important. In the current context, the digital training would serve useful purpose to educate stakeholders to act on national agenda of AAQ through specific modules and experience sharing. The class room training and field visits may also be included in due course.

Role of Small and Medium Towns: New Drivers of Development

R. Srinivas

Abstract

Small and medium towns play an important role in country's economic development as they constitute 40 per cent of the total urban population as per Census 2011. Small and medium urban centres have long been seen as potentially offering opportunities for regional development encompassing urban and rural areas, people, and enterprises. Census 2021 figures are not yet published; however, it is expected that more than half of the urban population shall reside in small and medium towns. These towns especially in post pandemic times have assumed much significance. With work from anywhere concept gathering momentum, these towns are bound to grow and prosper. The paper broadly highlights the role of small and medium towns as new drivers of development and how with planned development they can redistribute the urban population in a metropolitan regional planning perspective.

1.   INTRODUCTION

While addressing mayors and elected representatives of urban local bodies on 21 September 2022, the Prime Minister of Indian pushed for holistic development of cities through localized plans for urbanization as they are the key to national progress. He asked the mayors and elected representatives of urban local bodies that states should create satellite towns and develop smaller cities into economic centres to ease the population pressure on metropolises. He also focused on decentralised urbanization as a critical driver of India's future.

There is no doubt that there is a huge potential of smaller towns and cities developing as economic centres. Apart from satellite towns in the metropolitan region, there is a need to focus on tier two and tier three cities as these can also be centres of economic activities. Most of the start-ups now are being set up in tier two and tier three cities. This will certainly ease the pressure on the metropolitan cities and new economic opportunities in small and medium towns can be provided. The Prime Minister also stressed that there is also a need to develop industrial clusters in such places to unearth their potential.

2.   ROLE OF SMALL AND MEDIUM TOWNS IN URBANIZATION

As per Census of India 2011, there are 7,933 towns in India with population 37.71 crore. These towns are classified in six classes on the basis of population. 505 towns are classified as Class I towns while remaining 7428 towns come under other class namely Class II to Class VI. These 7,428 non-Class I towns having 14.92

Table 1:   Distribution of Class Wise Towns, Census 2011

Class	Class I (more than 1 lakh)	Class II (50,000-1,00,000	Class III (20000 - 50000)	Class IV (10,000-20,000)	Class V (5,000 - 10,000)	Class VI Less than 5,000
Number of Towns	505	605	1905	2233	2187	498
Total Population	227898191 (22.7 crore)	41328224 (4.13 crore)	58174490 (5.81 crore)	31866174 (3.1 crore)	15882772 (1.5 crore)	1955909 (19.5 lakh)
Percentage of Total Urban Population	60.4	11.0	15.4	8.5	4.2	0.5

Source: Census 2011

crore urban population, constitutes 39.57 per cent of total urban population although 93.37 per cent of all towns comes under these categories of towns.

The Census 2021 figures have not yet been published. It would be interesting to ascertain that how many census towns would be added in the 2011-21 decade, that has witnessed corridor induced development wherein large number of gated townships could be observed being developed along the expressways and highways which may not come under the administrative controls of an urban local body. Further, as per United Nations-Habitat's World Cities Report 2022, India's urban population would be 49.11 crore in 2021 and may attain 67.50 crore by 2035. The share of small and medium town's population is likely to be more than 50 per cent of the total country's urban population by 2021 census.

3.   SMALL AND MEDIUM TOWNS - CENTRALLY SPONSORED SCHEMES

The Centrally sponsored scheme of Integrated Development of Small and Medium Towns (IDSMT) was initiated in the year 1979-80 and continued with timely amendments and modifications up to 2004-2005 and in December 2005, it was subsumed in Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT). It was envisaged that investments in the development of small urban centres would help in reducing migration to large cities and support the growth of surrounding rural areas as well.

The total release of central assistance amounted to Rs. 1069.90 crore for 1854 towns under IDSMT till 31 March, 2008. The states had released Rs. 707.82 crore towards matching state share. Against these releases an expenditure of Rs. 1614.44 crore was reported by the States. In 1990, National Institute of Urban Affairs conducted an evaluation study on IDSMT Scheme which gave the following important observations:

• Development of Small and Medium Towns is a process which requires attention over a relatively long period of time;

- The more successful process will be one which focusses on the positive economic advantages of small and medium towns rather than the fears of migration flows and concern of over concentration in large cities;

- Small and medium towns development strategy, if to be successful must include the systematic building up of local management and financial capacity; and

- Such a strategy will also need to introduce flexibility in project identification and preparation of development schemes more suitable to the background and resource potential of small and medium towns.

In 2005, Urban infrastructure development scheme for small and medium towns (UIDDSMT) scheme was formulated in 2005-06 to bridge the resources gap that were faced by the Urban Local Bodies under the JnNURM mission, which integrated both needs of urban infrastructure and required investment for infrastructure and urban reforms to improve the urban governance. This scheme was for the remaining cities and towns which were not funded under JnNURM. The scheme focused on efficiency in development of urban infrastructure, services delivery mechanisms, community participation and accountability of ULBs or parastatal agencies.

The objectives of this scheme were to improve the infrastructure facilities and create durable public assets in towns and cities, enhance public private partnership in infrastructure development projects, to promote planned integrated development of towns and cities.

UIDSSMT scheme was implemented in 31 states and union territories except Andaman and Nicobar Islands, Lakshadweep, Daman and Diu, and Pondicherry. 1148 projects were sanctioned under UIDSSMT and only 50% of the projects were completed as on March 2014. Most of the projects implemented under UIDSSMT were water supply projects followed by road and sanitation sectors.

Delays in obtaining permissions from the various departments for land acquisition, delays in releasing Additional central assistance and litigations were the major issues in water supply projects for not being completed (Performance Audit of Jawaharlal Nehru National Urban Renewal Mission (JnNURM, 2011-12). AMRUT (Atal Mission for Rejuvenation and Urban Transformation Mission) 1.0 focused on establishing an infrastructure for ensuring adequate sewage networks and water supply in the urban areas through the implementation of the urban revival projects. The main objectives of AMRUT 1.0 are mentioned below:

- To ensure a proper supply of water and a sewage connection in every household;

- To develop green and well maintained open spaces and parks to increase the amenity value of the cities;

- To reduce pollution by switching to public transport or through the construction of non-motorized transport facilities such as walking and cycling; and

- Atal Mission for Rejuvenation and Urban Transformation (AMRUT) aims in covering around 500 cities that are having a population of over one lakh with notified municipalities.

The Mission was launched on June 25, 2015, with an overall budget of Rs. 1 lakh crore allocated for the development under this scheme. Of which, State action plans amounting to Rs. 77,640 crore for basic infrastructure projects were approved, against which projects worth Rs. 79,772 crore have been grounded. So far, i.e., as of June 2021, work worth Rs. 52,477 crore (66 per cent) has been carried out.

The Atal Mission for Rejuvenation and Urban Transformation 2.0 (AMRUT 2.0) upto 2025-26 was approved by the Cabinet during October 2021 as a step towards Aatma Nirbhar Bharat and with aim of making the cities 'water secure' and 'self-sustainable' through circular economy of water. Taking forward the remarkable strides made under AMRUT, AMRUT 2.0, targets universal coverage of water supply by providing household tap connections in all 4,802 statutory towns, and 100% coverage of household sewerage / septage management in 500 AMRUT cities. Mission targets to provide 2.68 crore tap connections and 2.64 crore sewer / septage connections to achieve the intended outcomes. Total indicative outlay for AMRUT 2.0 is Rs. 2,77,000 crore including central share of Rs. 76,760 crore for five years from FY 2021-22 to FY 2025-26.

The Mission will be monitored on a robust technology based portal. The projects will be geo-tagged. There will be an endeavour to make it a paper-less Mission. Cities will assess their water sources, consumption, future requirement, and water losses through a city water balance plan. Based on this, city water action plans will be prepared which will be summed up as State Water Action Plan and will be approved by the Ministry of Housing and Urban affairs. The funds for the projects will be shared by Centre, State and ULBs. Central funds will be released to the States in three tranches based on allocation to the State as per State Water Action Plan.

It is expected that all the statutory towns 4802 (December, 2022) are going to be covered under AMRUT 2.0 giving much fillip to infrastructure development in small and medium towns. With funds available under the AMRUT Mission-2.0 as well as Fifteenth Finance Commission Recommendations, there may not be much paucity of funds flow, however, it has to be ensured that all infrastructure development should be part of the planned development rather than having

piece meal approach wherein the intra-town disparities do not get reduced. The experiences of implementing these schemes signifies that:

- If the small and medium towns have the potential for growth, can very much act as counter magnets and absorb the potential migrants to million plus cities; and

- If large scale investments are made, then large number of employment opportunities can be created.

4.   REGIONAL DEVELOPMENT PLANNING: IMPLICATIONS ON SMALL AND MEDIUM TOWNS

Regional development that includes urban and rural areas, people and enterprises is crucial for sustainable development. This is especially the case for low and middle income countries undergoing the urban transition, and for countries where employment opportunities need to be created in both urban and rural areas for a growing and youthful population.

Small and medium towns are a crucial but often overlooked link between rural and urban areas. In most policy discussions, 'urban' is implicitly assumed to mean large metropolitan cities or medium-sized urban centres. This is despite the demographic significance of small towns with more than one-fifth of the world's urban population lives in centres with up to 50,000 population. It is also despite the economic importance of small and medium towns, they are the key component of national and regional urban systems, and can play a crucial role in the development of their surrounding region.

While India is on the growth trajectory with the country aspiring to be $ 5 trillion economy, it is invariable that profound transformations are taking place in rural areas. The villages along the highways are also experiencing the transformation and more and more agricultural land being converted into urban uses and villages are likely to transform into small towns as there is gradual shift towards non-farming activities. These places will be seen to form an important linkage between larger cities and the rural hinterland in terms of the flow of goods, produce, circuits of capital and migration of people. They are likely as well to be independent economic centres. Small and medium towns in India are thus key locations for opening up an urban enquiry into the diversity of urban settlements and the role they play in the larger scheme of urbanization.

The National Sample Survey Office (NSSO) data on employment and unemployment have also highlighted the fact that the period after 2004-05 is the first since independence when the absolute number of workers in agriculture declined. The decline between 2004-05 and 2011-12 was around 35 million workers who moved out of agriculture into non-agricultural occupations. While rural areas accounted for the bulk of the increase in non-farm employment, a significant majority of

them have also found jobs in these urban peripheries. Perhaps the data during the period 2011-2021 would be more revealing with regard to increase in the proportion of non-farm workers.

A recent study by Urmila Chatterjee, Rinku Murgai and Martin Rama from the World Bank suggests that small towns have contributed significantly more in generating non-farm employment as compared to large cities. Another study by John Gibson, Gaurav Datt, Rinku Murgai and Martin Ravallion also highlights the importance of small towns in rural poverty alleviation compared to large cities. Further, Census 2011, also shows that 48 per cent of all workers engaged in activities other than agriculture and household industry are commuting to a distance of 2 km and more for work. Almost 30 per cent of these rural workers are commuting to a distance of more than 5 km for work. This confirms the growing importance of these small towns as providers of employment but also as drivers of growth for new non-farm activities. Most of these new activities are at present casual and largely in construction, transportation, and other service activities.

Improvement in communication and transportation have also made accessing jobs in these small and medium towns located in urban peripheries easy. The advantage of small and medium towns is the availability of cheap labour which is looking for employment outside agriculture. It is interesting to note that most of these urban peripheries are not only towns in the vicinity of large metropolitan cities but also rural villages which have grown to acquire characteristics of urban areas. The emergence of market towns is also an important feature of these census towns and small towns. But proximity to rural areas has also allowed these small and medium towns to become centres for growth, for demand for new services and goods consumed by the rural population. The close links to the rural and agrarian economy has allowed them to insulate themselves from the uncertainties of large urban cities.

It can also be stated that there is a late resurgence in the interest towards small and medium towns, which may be considered as a part of the move away from the "metro-centricity" bias. Recent studies in India have suggested that large cities do not convincingly show that they are the drivers of economic growth. With limited jobs in the urban formal economy, except for the highly skilled jobs, leading to "exclusionary urbanization", the process of urbanization in India is becoming dispersed, small towns have grown relatively faster in all the states during 2001 and 2011. It is now believed that small and medium towns can play a major role in the process of development by maximizing their competitive advantages in manufacturing activities due to lower costs of production and living. They are also known to play a strong role in the diversification of rural economy and growth of towns

matters more than that of cities in the reduction of rural poverty. They play an important role in the process of rural development by providing market facilities and services to the rural populations and by acting as linkages between villages and cities.

5.   ROLE OF SMALL AND MEDIUM TOWNS IN THE INTEGRATED METROPOLITAN / STATE CAPITAL REGION PLANS

The development of small and medium towns should be seen as a strategy to encourage a more balanced urban hierarchy, and in turn to help reduce pressure on primate cities, moderate spatial inequities, enhance rural-regional development and foster embryonic or latent forces of polarization reversal. India, one of the rapidly-developing countries, has accepted the rationale of this strategy and is making efforts in this direction for more than a decade now. It may be appropriate to make an assessment of the Indian initiatives in this context in order to define orientations and directions for the future. Small and medium towns are in positions of disadvantage with not only limited support from both the national and state governments, but also little private investment which may be considered as constraint and is required to be overcome by proactive initiatives.

They are seen as "in between" or "transitional" places and are merely regarded as "conduits through which rural resources, both material and human, flowed up the urban hierarchy to the core." However, there is a late resurgence in the interest towards small and medium towns, which may be considered as a part of the move away from the predominance of metropolitan cities.

It is now believed that small and medium towns can play a major role in the process of development by maximizing their competitive advantages in manufacturing activities due to lower costs of production and living. They are also known to play a strong role in the diversification of rural economy and growth of towns matters more than that of cities in the reduction of rural poverty. They play an important role in the process of rural development by providing market facilities and services to the rural populations and by acting as linkages between villages and cities. Benefits in development of small and medium towns are:

- Improving infrastructural facilities and helping in the creation of durable public assets in small and medium towns;
- Decentralizing economic growth and employment opportunities and promoting dispersed urbanization;
- Increasing the availability of serviced sites for housing, commercial and industrial uses;
- Integrating spatial and socio-economic planning as envisaged in the 74th Constitution Amendment Act, 1992; and

• Promoting resource-generating schemes for the urban local bodies to improve their overall financial position.

Small and medium sized towns play an important role in metropolitan cities and state capital regional plans. In that respect a number of important issues arise:

• Strengthening small and medium sized towns in rural areas as focal points for regional development and promotion of their networking;

• Maintenance of basic supply of services and public transport in small and medium sized towns;

• Promotion and support of partnership-based cooperation between small and medium sized towns at a national and transnational level through joint projects and mutual exchange of experience; and

• Many aspects have to various degrees determining impact on quality of life and future prosperity in small and medium

6.   ROLE OF SMALL AND MEDIUM TOWNS IN POST PANDEMIC TIMES

The corona pandemic brought the urban life to standstill due to lock down. The role of digital communication virtually became the new order. Home office and remote work became the "new normal" especially for office goers and academic community. The boundaries between work and living got increasingly blurred. Digital work technologies have been pushed in an unprecedented way. After the crisis, it can be expected that firms /companies stick at least to some of the new routines of remote work: hybrid work models and multi-local work including the use of home offices, co-working spaces and firm offices may play an increasing role.

The Collaborative work spaces offer not only new opportunities for remote work to office goers but also to the development of small and medium towns which might benefit from new entrepreneurs and business models. Collaborative work spaces can also be seen as new components of a town's social infrastructure which may contribute to more holistic and sustainable regional development. This might hold all the more true when new forms of working together are entangled with co-living models and community engagement leading to the establishment of multifunctional areas instead of segregated spaces for work, living as well as recreation and leisure activities.

7.   CONCLUSIONS

Small and medium towns are significant to enhance urban-rural linkages because they are often more accessible to rural populations and also act as a bridge between rural populations and large cities. They present strategic locations for

linkages to rural regions, and can promote more equitable economic growth in rural regions and spur balanced development, manage urbanization, attract investment and meet the demand for housing, land, infrastructure and basic services.

The States need to encourage delineation of metropolitan regions, and state capital regions and make efforts towards preparation of metropolitan region plan and focus on decentralization of economic activities and give impetus to development in small and medium towns based on their potential. With the availability of grants from central government, these towns need to strengthen the infrastructure and become the hub of creating new economic opportunities. With more focus on corridor induced development there is much scope for development of these towns and diversification of economy on which both primary and non-primary sector's thrive, thereby benefitting the regional economy. The access to digital communication with all towns getting connected to fibre optics also offer immense potential to work from small and medium towns thereby cutting the operating and maintenance costs normally incurred on a very higher side in metropolitan cities. Hence, the role of small and medium towns would be crucial in future and shall pave the way for balanced urbanization with shift from over dependence on metropolitan cities in terms of investments as well as planned development.

REFERENCES

Ministry of Housing and Urban Affairs (1980) *Guidelines on Integrated Development of Small and Medium Towns.*

Ministry of Housing and Urban Affairs (2004) *Guidelines on Urban Infrastructure Development in Small and Medium Towns.*

Ministry of Housing and Urban Affairs (2015) *AMRUT 1.0 Guidelines.*

Ministry of Housing and Urban Affairs (2021) *AMRUT 2.0 Guidelines.*

John Gibson, Gaurav Datt, Rinku Murgai and Martin Ravallion (2017) *For India's Rural Poor, Growing Towns Matter More Than Growing Cities,* Economic Papers, Orebro University School of Business, Sweden.

Urmila Chatterjee Rinku Murgai Martin Rama (2015) *Job Opportunities along the Rural-Urban Gradation and Female Labor Force Participation in India, World* Bank.

National Sample Survey Organization (2004) India - *Employment and Unemployment, July 2004 - June 2005, NSS 61st Round.*

Small and Medium Towns in Haryana: Economic Perspectives and Private Sector Contribution

Prem P. Singh

Abstract

This paper provides an overview of small and medium towns in Haryana. Increasing level of urbanization due to close proximity to the NCR is made obvious after setting out the context. Thereafter the architecture of urbanization is sketched. Increasing importance of small and medium towns is then analyzed. It is suggested that these towns could act as major drivers of redirection of population and investment, potentially contributing to enhanced economic opportunities. The state is still heavily dependent on the agriculture sector for employment generation, which contributes 28 per cent of employment vis-à-vis 16.9 per cent state GDP. These towns can make a major contribution, removing this imbalance through promotion of agro- based industries and services. Diversifying growth in these towns could also make growth of the state sustainable by making it multi-pronged. Small and medium towns account for more than two-third of the urban population in the state and accordingly addressing infrastructure bottlenecks, housing, and transportation is likely to enable employment intensive growth in these places. Focus on education and training needs of women workforce specially in small and medium has also the potentials in achieving gender inclusion.

1.   INTRODUCTION

Haryana has a population of 25 million with a geographical area of approximate 44,000 square kilometers. This population is spread over 23 districts. Out of 23 districts, 14 districts fall under the National Capital Region (NCR), which is one of the fastest growing economic sub-regions of India. Haryana has traditionally been agriculture dominated small state but one with its locational advantage. In the recent decades, the state has emerged as a favorite destination for investment in urban infrastructure and housing by private sector developers and industry.

The State has witnessed an economic growth, which is above the national average. The state came into being on 1 November, 1966 with its share of only 2 per cent of the country's population. However, over the years its contribution to the national GDP has kept growing. The share of GSDP of Haryana State in National GDP has been consistently rising and currently stands at 3.99 per cent as per 2021-22 budget.

2.   STRUCTURAL TRANSFORMATION OF THE STATE'S ECONOMY

At the time of formation of the state of Haryana, the state's economy was predominantly an agrarian economy. During 1969-70, the contribution of

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agriculture and allied sectors to the GSDP at constant prices was the largest (60.7 per cent) followed by services (21.7 per cent) and industry (17.6 per cent) sectors.

During the period of 37 years (1969-70 to 2006-07), industry and services sectors have registered higher average annual growth, higher than the agriculture and allied sectors. The share of agriculture and allied sectors in GDP declined from 60.7 per cent in 1969-70 to 21.3 per cent in 2006-07 while the share of industry sector increased from 17.6 per cent in 1969-70 to 32.1 per cent in 2006-07. The share of services sector increased from 21.7 per cent to 46.6 per cent during this period.

Fig. 1: Sector-wise Composition of State's Economy at Constant (2011-12) Prices in 2021-22
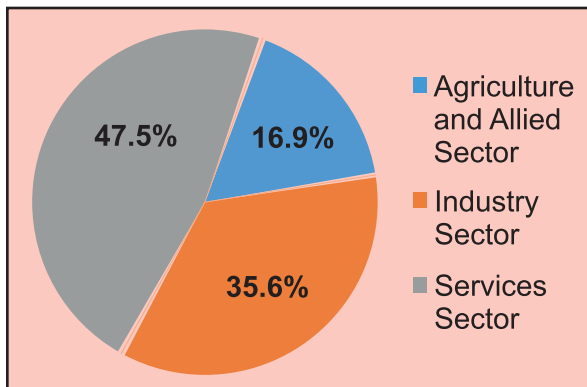
Source: Economic Survey of Haryana 2021-22

The pace of structural transformation of the state's economy has continued. In 2019-20, the share of agriculture and allied sectors in GSVA was recorded as 17.6 per cent whereas, the share of industry and services sectors was estimated at 34.0 per cent and 48.4 per cent, respectively.

The services sector has been the hardest hit by the pandemic especially segments that involve human contact. As a consequence, the share of this sector in gross state value added (GSVA) has decreased to 47.1 per cent resulting in the increase of share in agriculture and allied (18.0 per cent) and Industry (34.9 per cent) sectors. With the excellent growth recorded in industry (11.5 per cent) and services (10.1 per cent) sectors in 2021-22, the share of these two sectors improved to 35.6 per cent and 47.5 per cent, respectively resulting in the decreased share of agriculture and allied sectors (16.9 per cent).

Despite being considered as a relatively developed state in the country on GDP parameters, the employment structure has remained conventional, with a disproportionate dependence on agriculture for employment purpose. The agricultural sector accounted for 28 per cent of employment (CMIE Sept 2022) despite just 16.9 per cent contribution to state GDP.

Such an over dependence for employment on agricultural sector, if continued, is not a healthy sign for the agriculture sector in particular and the state's economy in general. This also points towards lower gains from the agricultural sector per capita which is neither desirable nor sustainable. More employment needs to be created in manufacturing and services sector specially in small and medium towns to enable a more balanced development.

The per capita income in Haryana is Rs 1.80 lakh per annum as per the Statistical Abstract of Haryana 2020-21, which is among the highest in the country. However, at the district level there are huge disparities among districts. (Table 1)

Table 1:   District-wise Per Capita Income (PCI) of Haryana (at Current Price in Rs.)

District	PCI			Index		
	2004-05	2008-09	2011-12	2004-05	2008-09	2011-12
Gurgaon	81,478	2,65,351	4,46,305	215	394	420
Panipat	57,436	1,09,113	1,64,541	151	162	155
Faridabad	41,590	80,120	1,63,247	110	119	153
Panchkula	43,406	78,393	1,15,962	114	116	109
Rewari	46,259	76,276	1,18,250	122	113	111
Ambala	43,455	72,695	1,16,329	114	108	109
Haryana	37,972	67,405	1,06,358	100	100	100
Son i pat	31,723	56,669	95,053	84	84	89
Karnal	35,172	62,602	93,231	93	93	88
Yamuna Nagar	32,038	56,000	82,232	84	83	77
Hisar	33,999	56,332	88,759	90	84	83
Fatehabad	31,712	54,856	80,425	84	81	76
Sirsa	32,569	55,107	86,792	86	82	82
Kurukshetra	31,537	56,743	82,590	83	84	78
Jhajjar	26,820	46,979	76,292	71	70	72
Rohtak	28,959	47,373	79,002	76	70	74
Bhiwani	25,085	43,141	67,050	66	64	63
Kaithal	27,475	49,539	69,360	72	73	65
Jind	25,642	47,017	68,763	68	70	65
Mahendergarh	21,888	36,353	54,835	58	54	52
Palwal	*	*	65,009	*	*	61
Mewat	*	28,594	45,934	*	42	43

*Source: Department of Economic and Statistical Analysis, Haryana *Districts not in existence in this*

3.   URBANIZATION LEVELS AND GROWTH TRENDS

India, as a whole, and Haryana, in particular, has also been experiencing unprecedented urbanization during the last few decades. During the last decade, i.e., 2001-2011, the pace of urbanization has exceeded the previous trend, (Table 1). It is also interesting to observe that whereas the urbanization level of Haryana was lagging behind that of India till 1991; there has been a reversal of this trend after 1991, wherein the urbanization level in Haryana has exceeded that of the country.

Table 2: Urbanization Levels in India and Haryana during 1981-2011

	Urbanization Levels (%)	
Year	India	Haryana
1981	23.31	21.88
1991	25.7	24.63
2001	27.8	28.92
2011	31.2	34.88

3.1   Level of Urbanization in Haryana

Table 2 provides an indication of the growing rate of urbanization in Haryana and a glimpse of what can be expected in future. With the growth potential in NCR towns of Haryana expected to further pick up in the coming years and decades, the urbanization figures are expected to continue showing a pronounced effect on further increase in the 'gap' vis-à-vis rest of the country.

3.2   Effect of Delhi on the Urbanization Levels in Haryana

It is quite obvious that the single most important factor aiding this 'higher-than-normal' growth being experienced in Haryana is on account of its geographical proximity to the 'National Capital Territory of Delhi' which is surrounded on three sides by various districts of Haryana, viz., Faridabad and Gurgaon towards South and South-East; Jhajjar, Sampla and Bahadurgarh towards the West and Sonipat, Kharhauda towards North. With the natural growth of Delhi towards South and South-East, Gurgaon and Faridabad had obvious advantages and have thus experienced above-normal urbanization rate during 2001-2011. The proximity to Indira Gandhi International Airport has also worked as an added advantage in favour of Gurgaon. With the slowing down of pace of urbanization in Delhi and a retarded supply of modern-day commercial infrastructure availability in Delhi, the high quality urban infrastructure being added at a regular pace in Gurgaon and Faridabad, albeit not keeping pace with the prevailing demand, has further fuelled the growth of urbanization in these satellite towns of Delhi. With increased developments, the boundaries of Delhi with Gurgaon and Faridabad have blurred, and the easier accessibility has further resulted as a virtual merger of Gurgaon and Faridabad with Delhi.

3.3   Key highlights of increased Urbanization in Haryana

The key highlights of increased urbanization being experienced in Haryana are as follows:

- 2 persons being added in Urban Areas against each person added in Rural Areas: During 2001-2011, whereas, the rural population in the State has increased by 1.5 million, the urban population during the same period has increased by 2.7 million, which effectively amounts to addition of 2 persons in the urban areas for every 1 person being added into rural areas. This phenomena is unique to the State of Haryana (excluding city States like, Delhi and Goa) which is likely to change the entire dynamics of the requirements for land for keeping pace with the urbanization trends.

- 294 per cent Decadal Growth Rate experienced by Gurgaon: The district of Gurgaon has experienced unprecedented growth during the last decade i.e.,

Fig. 2:   Controlled Areas of Haryana

Source: IT Cell, Department of Town and Country Planning, Government of Haryana

2001-2011. The decadal growth rate of 294 per cent, as per the census data, is perhaps one of the highest ever growth rate experienced by any city having population exceeding 0.1 million in the country.

- Three districts of Haryana are predominantly Urban: The districts of Faridabad, Gurgaon and Panchkula having an urban population of 80 per cent, 69 per cent and 56 per cent respectively (as per 2011 census) are

already predominantly urban districts. This represents a major challenge in terms of the governance policies as well as policies affecting supply of land to support such levels of urbanization.

4.   ARCHITECTURE OF URBANIZATION IN HARYANA

The existing statutory framework for urbanization exists in the form of multiple layers, and has fairly good coordination among themselves.

Urbanization framework as governed by Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act, 1963 and Rules 1965: The development of the controlled areas declared around the Municipal towns is undertaken under the provisions of the Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act, 1963 (hereinafter referred as Act of 1963). This enactment has been made with the objective of preventing haphazard and substandard development along the scheduled roads and controlled areas of the State of Haryana. The development plan of the controlled area is prepared under Section - 5 of the Act of 1963. These development plans guide the process of development for a period of 20 to 25 years. The Development Plans notified under the Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act, 1963 form the corner-stone for town planning and for undertaking planned development in the urban areas.

Urbanization framework as governed by Haryana Development and Regulations of Urban Areas Act, 1975 and Rules 1976; Haryana Shehri Vikas Pradhikaran (HSVP) Act, 1977, Incorporation of Haryana state Industrial and Infrastructure Development Corporation Ltd (HSIIDC); Gurugram Metropolitan Development Authority (GMDA), Faridabad Metropolitan Development Authority (FMDA), Haryana Municipal Corporation Act 1994; the Haryana Municipal Act 1973, and the various actors involved in the implementation of development plans are:

- Private sector Real Estate Developers who obtain license for real estate development in the conforming land use zone of respective development plans under the provisions of Haryana Development and Regulations of Urban Areas Act, 1975 (hereinafter referred as Act of 1975);

- HSVP undertakes acquisition of land to be developed mainly for residential, commercial and institutional purposes under the *Haryana Shehri Vikas Pradhikaran (HSVP) Act, 1977;*

- HSIIDC, another state agency entrusted with the objective of industrial development, also acquires land for industrial development and undertakes its activities under the provisions of the 1963 Act and the 1975 Act.

- In order to undertake focused urban infrastructure development of the Metropolitan towns of Gurugram and Faridabad, the State has established GMDA and FMDA through a State Act. The activities of these agencies have

picked up pace in the recent years after their establishment and it is expected that very soon the urban infrastructure related woes of such metropolitan towns shall be taken due care of through these agencies.

• The municipal administration activities are undertaken by the Urban Local Bodies Department, Haryana through its various urban local bodies under the Haryana Municipal Corporation Act 1994 and the Haryana Municipal Act 1973.

Fig. 3: Development Plans-Haryana
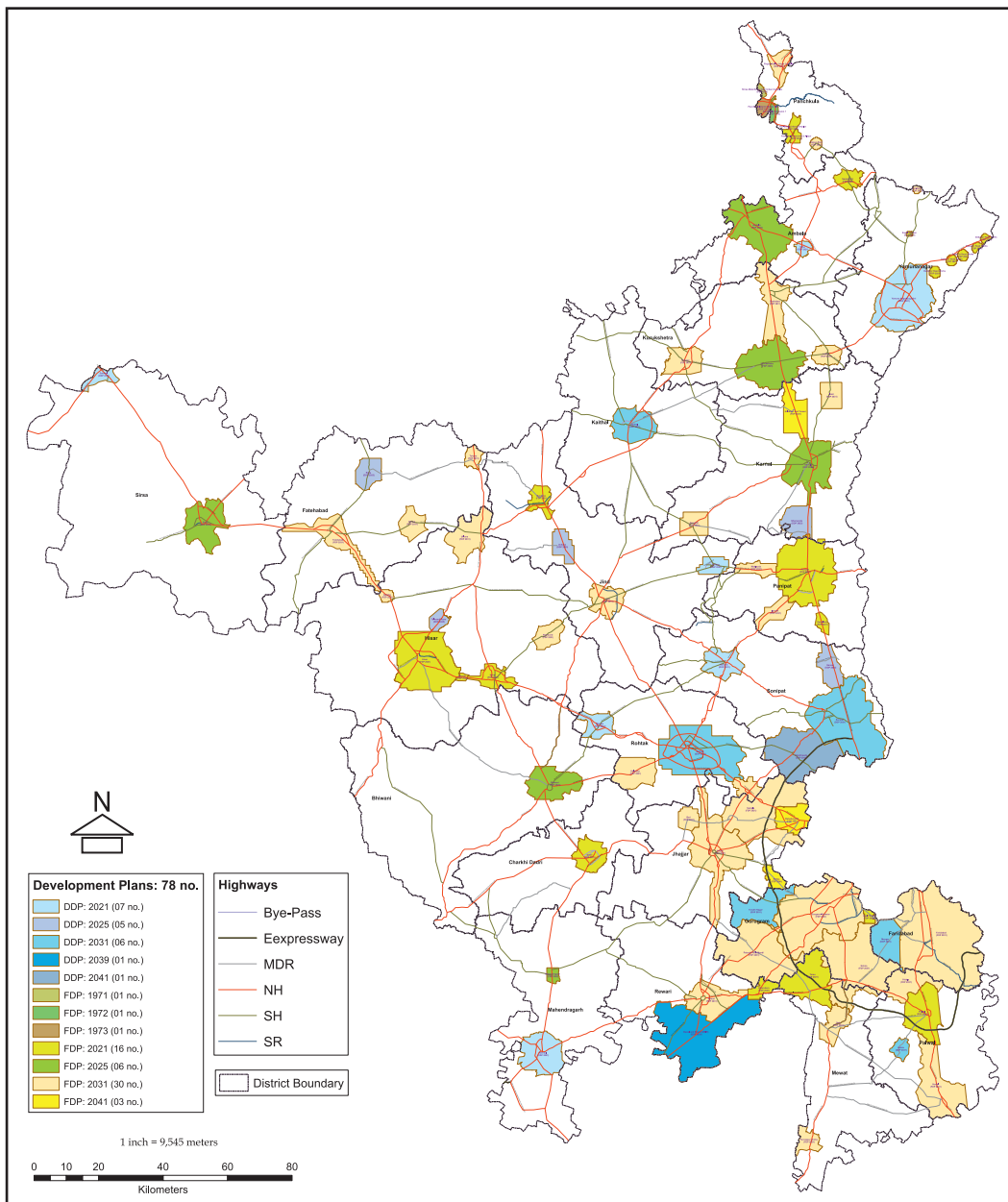
Source: IT Cell, Department of Town and Country Planning, Government of Haryana

- Despite the involvement of multiplicity of agencies, in the urban development sector, all developments undertaken either by the state agencies or the private sector developers have to conform to the Development Plans notified under the relevant statutes. Thus, the Act of 1975 (enabling involvement of private sector real estate developers) HSVP Act 1977, GMDA Act 2017, FMDA Act 2018,Haryana Municipal Corporation Act 1994 and the Haryana Municipal Act 1973 along with the incorporation of HSIIDC together provide an institutional framework for urban development in Haryana in a healthy competitive environment between the public and private sector.

Extent of Land Acquisition by Public and Private Sector agencies in Haryana: Whereas the private sector agencies purchase land from farmers / land-owners through negotiated deals, the State agencies, viz., HUDA and HSIIDC have completely depended on Land Acquisition Act 1894 for its land requirements. The extent of supply of developed land in the urban areas of the State by the public and private sector agencies in Haryana has progressed at an almost even keel. The supply of land by the public and private sector agencies has been approximately 28,000 hectares and 18000 hectares respectively over a period of last 42 years, i.e., during 1980 to 2022. It is accordingly clear that as far as the supply of land to the overall urban housing, commercial, industrial and infrastructure market is concerned, there has not been total dependence on Land Acquisition Act 1894, since the contribution of private sector developers, who have made all land purchases through negotiated purchase with the land-owners / farmers has been quite substantial. However, it is also a fact that the public sector agencies have been fully dependent on the erst while Land Acquisition Act 1894 (LAA 1894) for their land requirements.

5.   ROLE OF SMALL AND MEDIUM TOWNS IN HARYANA

The story of urbanization of Haryana primarily belongs to its small and medium towns. For the purposes of this paper, the towns of less than 1 lakh population have been considered as small town and those between 1 to 5 lakh population have been considered to be medium size towns, in line with the Government of India guidelines for the IDSMT scheme.

5.1   Urbanization Trends

Till 1981, none of the 81 census towns of Haryana had a population exceeding 5.0 lakh. It was for the first time in 1991 that the largest town of Haryana, i.e., Faridabad exceeded the 5.0 lakh population limit and recorded population of 7.74 lakh. All other 93 census towns, as per 1991 census, remained below 5 lakh population. Same trend was observed in the census 2001. Only Faridabad, exceeded the 5 lakh population limit, rather crossed the 10 lakh population mark and recorded population of 12.21 lakh. All other 105 census towns, as per 2001 census, remained below 5 lakh population.

As per 2011 census, Gurgaon joined Faridabad in the 5 lakh plus population category. The towns of Faridabad and Gurugram recorded a population of 14.05 lakh and 9.01 lakh respectively. The remaining 152 census towns, as per 2011 census, recorded a population of less than 5 lakh. The extent and growth of small and medium potential towns in Haryana and its cumulative population is quite phenomenal. (Table 3)

Table 3:   Extent and Growth of Small and Medium, Towns decadewise

Sl. No.	Census Year	1981	1991	2001	2011
1	No of Census towns	81	94	106	154
2	No of Large Towns (more than 5 lakh population)	0	1	1	2
3	No. of Small & Medium size Towns (SMTs)	81	93	105	152
4	Cumulative population of Large Towns (lakh)	0	7.18	12.21	23.07
5	Cumulative population of SMTs (lakh)	28.27	33.37	48.94	65.35
6	Percentage of total urban population in SMTs	100%	82%	80%	74%
7	Decadal Growth rate of population in SMTs		18%	47%	34%

5.2   Focus on Planned Development of Small and Medium Towns

The State Government has been focused on planned development of these small and medium towns and accordingly Development Plans stand prepared and notified for a majority of such towns. (Table 4)

Table 4:   Status of Development Plans of Small and Medium Towns in Haryana

Sl. No.	Number of Towns		Population	Coverage under Development Plans
1	No of Census Towns which are also Statutory Towns (2011)	80	78.46 lakh (89 %)	• 58 Notified Development Plans • 13 Plans Under Preparation • 89 % of such Statutory Towns covered
2	No of Census Towns which are Not Statutory Towns (2011)	74	9.13 lakh (10.33 %)	• 49 Notified Development Plans • 6 Plans Under Preparation • 74 % of such Census Towns covered
3	TOTAL: Census towns as per 2011 Census	154	88.42 lakh*	• Approximately 82% of towns covered under some Development Plan

*Source: *Includes 15 outgrowths having population of 0.66 lakh (0.75 % of Urban Population)*

5.3   Private Sector Contribution to Housing and Urban Infrastructure in the State

The entire urban policy environment in Haryana is modeled keeping in view the potentiality for development. The present potential zones as defined in the statute are:
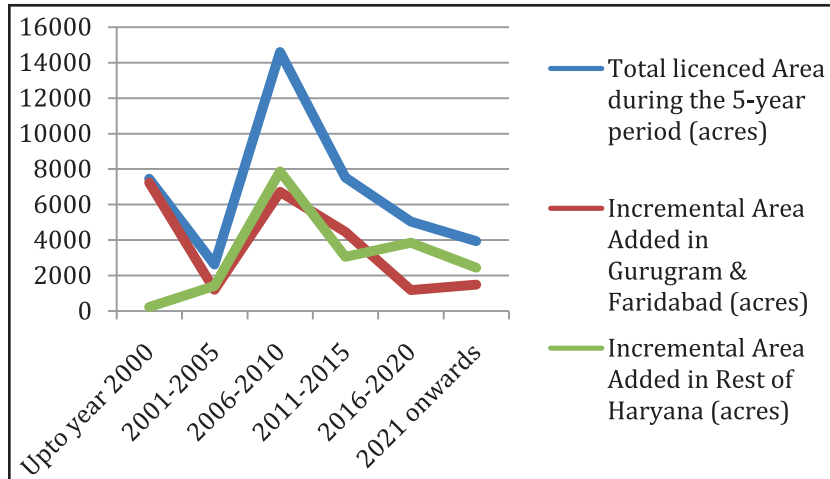
- Hyper potential: Gurugram;

- High potential: Faridabad, Sohna, Gwal Pahari, Sonipat, Panipat;

- Medium potential: Karnal, Kurukshetra, Ambala, Yamunanagar, Bahadurgarh, Hisar, Rohtak, Rewari, Bawal, Dharuhera, Gannaur, Palwal, Hodel, Baholi; and

- Low potential: Rest of the State.

On account of this recognition of potentiality in the statutory framework, it has been possible to formulate policies giving preferential treatment to towns with comparatively lower potential for urbanization as on date. For example, fees and charges to be recovered for various services get graded with the highest rate prescribed for hyper potential and lowest rate being prescribed for low potential towns. Similarly, the area parameter for setting up of colonies / facilities are also similarly graded with higher areas required for hyper potential and lower areas required for low potential towns. Stricter restrictions vis-à-vis environment related parameters or applicable to hyper and high potential towns, whereas, less stringent norms are prescribed for low and medium potential towns. This has definitely resulted in progress made by small and medium potential towns, with the gap vis-à-vis large towns getting reduced progressively. (Figure 4).

Fig. 4: Incremental Increase in Licenced Area: Gurugram and Faridabad Versus Rest of the Small and Medium Towns of the State

The rate of growth of licensed areas in small and medium towns has been much higher than that experienced in large towns. Part of it can definitely be attributed to the lower base effect. Nevertheless, the growth itself has been quite phenomenal.

6.   ACTIONS TAKEN BY THE GOVERNMENT FOR ENCOURAGING GROWTH OF SMALL AND MEDIUM POTENTIAL TOWNS

In the last decade, the Government of Haryana has come up with several policies to encourage the planned development with special focus on the development of the low and medium potential towns. The policy frameworks have been simplified and the area norms for grant of licenses for real estate projects have been brought down substantially to encourage such initiatives.

6.1   Affordable Housing Policy, 2013

- Affordable Housing Policy notified on 19 August, 2013 encourages planning and completion of "Group Housing Projects" wherein apartments of "pre-

Fig. 5: Cumulative Licenced Area: Reducing Gap between Large and Small / Medium Towns
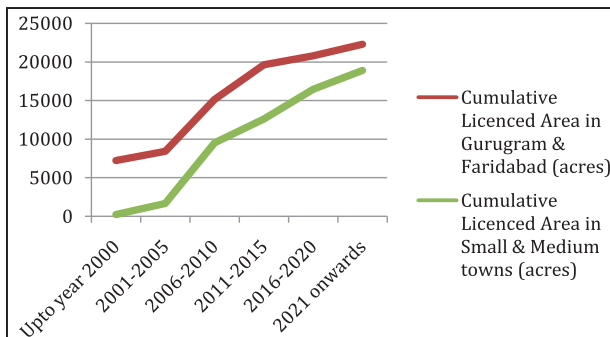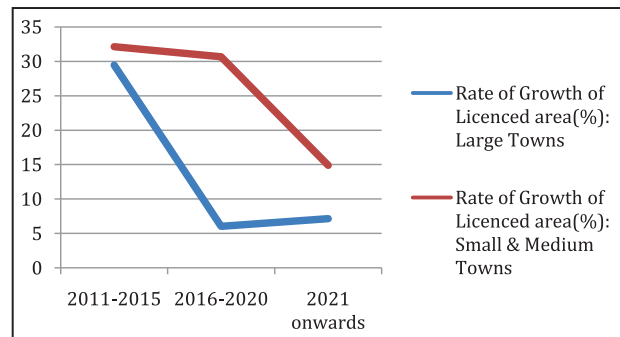
Fig. 6: Higher Rate of Growth Experienced by Small / Medium Towns Vis-à-Vis Large Towns.

defined size" are made available at "pre-defined rates" within a "Targeted time-frame" to ensure increased supply of "Affordable Housing" to the deserving beneficiaries. The policy is one of its kind and has been extremely successful in creation of affordable housing stock for the lower strata of society;

- Projects are required to be completed within 4 years from the approval of building plans or grant of environmental clearance, whichever is later;

- Carpet area of the apartments ranges from 28 sq m to 60 sq m in size. Permissible density is 750 ppa (minimum) and 900 ppa (maximum). Maximum FAR allowed is 225;

- Department has also fixed maximum allotment rates on per sq ft carpet area basis for projects to be developed under this policy. Also, to encourage development of projects under this policy, the License Fee and SIDC have been waived off. Accordingly, the cost of one affordable unit ranges from Rs. 9.5 lakh – Rs. 20 lakh in low potential zone to Rs. 12.50 lakh to Rs. 27 lakh in hyper potential zone; and

- As on 03.06.2022, the department has granted 179 licenses over an area measuring 1032.56 acres approximate 1,33,233 number of flats have been approved in such colonies out of which 95,643 flats stand allotted and remaining are in the pipeline for allotment.

6.2   Deen Dayal Jan Awas Yojna - Affordable Plotted Housing Policy, 2016

- Policy has been notified on 8 February, 2016 to encourage development of high density plotted colonies in the State wherein small plots are made available through a liberal policy framework. The policy has been successful in creation of affordable plotted housing stock in the low and medium potential towns of the state;

- Projects are required to be necessarily completed within 7 years (5+2 years) from the date of grant of license;

- The maximum area of plots is 150 sq m. The permissible density is 240 to 400 persons per acre (PPA);

- To encourage development in Low and medium potential towns, conversion charges and SIDC stand waived off under this policy;

- In high potential towns, the fee and charges applicable are 75 per cent of the rates of Residential plotted colonies. In hyper potential town, the fee and charges applicable are equivalent to the rates of residential plotted colonies; and

- As on date, the department has granted 303 licenses over an area measuring 3084.18 acres. In these colonies / licenses, more than 57699 plots have been approved. Out of these, 9409 plots fall in completion certificate granted colonies.

6.3   Policy for Grant of Transferrable Development Rights Certificate

- Considering the problems being faced in acquisition of land for infrastructure development in view of Land Acquisition, Rehabilitation, and Resettlement (LARR) Act, 2013, an alternative land assembly tool of grant of Transferrable Development Rights Certificate has been introduced;

- Policy instructions stand issued on 16.11.2021 for the purpose of aggregation of land required for critical infrastructure needs;

- Policy intends to make it simple for such land-owners, whose land is required for critical infrastructure needs of the development plan, to surrender his land in favour of the Government in return of a TDR Certificate, which can be monetized by the land-owner by selling it to various developers / users in the same Development Plan; and

- Department has already prepared an online portal for receiving and examining the TDR applications and the online portal is functional.

6.4   New Integrated Licensing Policy (NILP)

- The New Integrated Licensing Policy (NILP) is a landmark step in further advancing the Public-Private-Partnership (PPP) in land aggregation;

- Allows flexibility in the development process by prescribing the upper limit of built-up space in the form of gross FAR on the total licensed area;

- The developer is allowed flexibility to conceive and plan the colony as low-rise or high-rise or a mix of both depending upon the requirements and demand at site;

- Beyond 20 per cent group housing component in a residential sector;

- Minimum area: 15, 10 and 10 acres respectively for hyper or high, medium and low potential towns.

- Density of 400 persons per acre is permissible with FAR of 1.25;

- FAR of 1.5 is allowed if land is more than 50, 30 and 20 acres respectively for hyper or high, medium and low potential towns;

- Commercial component: 4 per cent with 1.75 FAR and ground coverage of 50 per cent of which minimum 2 per cent will be utilized for local shopping; and

- Completion period: 7 years.

6.5   Migration of License

To boost the development activities in such projects which have proved to be a non-starter and to resolve the problems being faced by the allottee of these licensed colonies, the policy enables a colonizer to get his licensed land partly or fully converted to any other category of license under the prevailing policy provisions.

- Migration allowed within the existing land schedule;

- For migration of the complete license, no third-party rights should have been created, otherwise the migration is permitted in proportion to the extent of the third-party rights created in the colony;

- In case the consent of the individual allottee is also available then the area of the colony shall be allowed to that extent also;

- The licensee shall have to make payment of outstanding renewal fee with interest upto date before considering the project under the policy;

- EDC paid for the area under migration shall be adjusted in the license to which the migration is being done;

- The colonizer shall be absolved of the liability to deposit the unpaid interest amount on EDC and IDC of the existing project;

- The conversion charges, license fee, IDC paid in the existing license shall be adjusted; and

- The migration shall subject to the applicable area norms, parameters, and sector area limits for group housing and commercial components, etc.

7.   CONCLUSIONS

There is no doubt that there is still a long way to traverse on this route to ensure balanced development of small and medium towns. It is clear that the benefits of promoting the development of small and medium towns are too huge to be ignored. The state is still heavily dependent on the agriculture sector for employment generation, which contributes 28 per cent of employment vis-à-vis 16.9 per cent to state GDP. The small and medium towns can make a major contribution, removing this imbalance through promotion of agro-based industries and service sector for which they remain better suited. Diversifying growth in small and medium towns shall also make the growth of the state sustainable by making it multi-pronged. Small and medium towns account for more than two-third of the urban population in the state and accordingly addressing infrastructure bottlenecks, housing, transportation is likely to enable employment intensive growth in these places. Focus on education and training needs of women workforce specially in small and medium has the potential in achieving gender inclusion.

Smart Cities in the Global Imaginary:
How does Bhubaneswar Smart City Measure Up?

Kajri Misra, Ph.D.

Abstract

This paper examines the progress made in the capital city Odisha through the Smart Cities Mission 2015. Setting the discussion in the global context, major achievements of Bhubaneshwar Smart City are discussed. The author appears to note a few concerns towards the end of the paper. The first concern is about misgivings of the Smart City approach i.e., the entrenchment of elitist "enclave urbanism" because of the Area-Based Development which is a central requirement of the Mission. The second concern is the potential exclusion of groups without adequate access to technology. It is held that the most vulnerable groups in the city must be reached out by other means. The diversion of funds and attention away from elected municipal bodies and possible dilution of the support they require for effective use of ICT is the third concern.

1.   INTRODUCTION

The notion of the "Smart City" has figured prominently in international imaginaries for urban development, finding substantial ground also in the global south (Hollands, 2008, Prasad, 2020). While there is no consensus on the definition of a smart city, common themes are the application of information and communication technologies (ICT) and involvement of private corporate enterprises for good urban governance and sustainability. The expectations of such an approach are however, quite contested – while many hail the "smart city" ideas to be an effective contemporary approach to improving governance, service delivery and sustainability, there are many authors who point to its propensity for increasing inequities, eroding democratic governance and facilitating corporate profits from essential public services, particularly in developing country contexts.

India's Smart City Mission occupies a notable place in this discourse, with 100 cities being selected todate under the Mission. Among these, Bhubaneswar occupies a distinctive place, having won the first position in the 2016 competitive listing of proposals for the Smart Cities Mission, and going on thereafter to win a number of awards and consistently ranking well among the Smart Cities in India, including in social aspects and citizen-centric governance. Since its inception, progress of some "Smart City" projects in Bhubaneswar have been appreciated in the national level competitions (as evident in the awards won) within the Mission parameters. There has been little emergence of any substantial issues, either in general reporting or in any studies. Apparently the Bhubaneswar Smart City story

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has had positive outcomes; or if there are any problematic outcomes, these are yet to be discussed.

Thus, a number of questions arise in regard to the Bhubaneswar Smart city experience. First, does the general appreciation of the Smart City initiative in Bhubaneswar correspond to the positive expectations of smart cities? Conversely, are any of the issues posited in the more critical smart city literature, or observed in other locations, evident? And if not, how have they been avoided or addressed? In this paper we explore these questions, looking critically at the achievements and experiences of the Bhubaneswar Smart City, in the context of the National Smart City Mission and in the larger urban context of Bhubaneswar city. To do this, we first summarize the idea of the smart city and the positive outcomes expected in the literature, and the apprehensions in the more critical literature. In the next section we set out the developments in Bhubaneswar Smart city, and go on to examine these in light of the potential issues set out in the more critical smart city literature in the subsequent section.

2.   SMART CITIES, OUTCOME EXPECTATIONS AND POTENTIAL ISSUES

There is no agreement in the literature on the definition of a Smart City, but common characteristics sketched by many authors focus on the application of technology, especially information and communication technologies (ICT and IoT), involvement of private commercial firms in urban development and a market-based approach to service delivery and citizen engagement. Most authors posit technology, especially Information and Communication Technology (ICT) to be an important enabler in attaining sustainability and good governance (C-Step 2016) and advocate technological solutions for a variety of urban components, including governance, economic development and entrepreneurship, infrastructure, citizen engagement, and environmental sustainability (Hollands 2008, Chourabi et al., 2012; Nam & Pardo, 2011). Indeed, the supportive discourse on smart cities suggests that such initiatives in policy and practice would yield more effective service delivery, better responsiveness to citizens, democratic governance, environmental sustainability and efficient functioning, among other desirable outcomes (see Kawyitri and Shekhar, 2021).

A more critical discourse questions - the applicability and appropriateness of the Smart City concept for the Global South, in view of its 'futuristic thinking' and involvement of market-based private corporations, and inadequate local capacities existing in these contexts (e.g., Robinson et al.,2016). Others have questioned the relevance of transfer of the idea of smart cities from the developed countries, noting the need for a contextually informed definition (Prasad and Alizadeh, 2020). Referring specifically to the idea and its implementation in India, Chakrabarty (2019) sees the Smart City discourse as an "ideological

cover for the ongoing processes of neoliberal urbanization" instead of a useful guide for sustainable urban development in the country. Some authors term it a "branding exercise" by the ICT industry, which focuses exclusively on technology and neglects local values and cultural and historical profiles (Allam and Newman 2018). More empirical studies highlight the elitist nature of citizen engagement (Hoelscher, 2016); the spatial inequalities resulting from the uneven technology implementation (Odendaal, 2011; Watson, 2014); and the diversion of resources into iconic "smart" projects instead of funding the under-resourced local governments to provide much-needed urban basic services (Soderstrom et al., 2016).

It is also argued that the interpretation of "smart" in the context of the informal settlements in the Global South is not really "smart" in the sense of using ICT to facilitate urban functioning, but rather focuses on generating digital data (McFarlane and Soderstrom, 2017). From empirical study of governance issues with new SPVs for Smart Cities instituted alongside existing local governments and state departments, Prasad et al (2021) note that the overlap of smart city governance led to duplication of functions; at the same time, proclivity of state departments to work in silos also led to data collection by multiple agencies, resulting in inconsistent data for projects. These authors also note the dis-empowering of local governments both in authority and confidence to undertake the large Smart City projects.

The critical discourse on smart cities sets up a list of potential issues associated with its application in India. But does the experience of Bhubaneswar Smart City bear out any of these apprehensions? We explore the question by reviewing the work of the Bhubaneswar Smart City to assess how it stands up against these issues and apprehensions.

3.   THE SMART CITY MISSION AND THE BHUBANESWAR SMART CITY PROJECTS

The Smart City Mission, a centrally sponsored scheme initiated in 2015 by the Ministry of Urban Development, Government of India, is well documented and need not be elaborated in detail here. The Mission document defines smart cities as "cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions''(Government of India, 2015: 5). Cities in India were invited to develop competitive proposals for "Area-based" and "Pan-city development", incorporating projects for ICT application in e-governance, urban mobility, waste management, water management, citizen services, and some others. The Ministry provided a fund of Rs. 480 crore, with a matching contribution from the respective state government; additional resources if required were to be raised from private corporate partners.

The Bhubaneswar Smart City proposal was developed by the Bhubaneswar Development Authority, for submission to the Smart City Mission of the Government of India. In 2016, the Government of Odisha constituted a Special Purpose Vehicle (SPV) company named "Bhubaneswar Smart City Limited" for implementation of the Smart City Proposal[1]. Bhubaneswar Smart City Limited (BSCL) is the nodal agency to plan, implement, manage and operate the Smart City Development Projects in the city. BSCL id led by a Board of Directors from Government of Odisha and 5 Independent Directors, advised by a City Level Advisory Forum headed by the Mayor of Bhubaneswar and including members of Parliament, Members of Legislative Assembly, and other stakeholder representatives such as from Resident Welfare Associations, etc. The Chairman of the Board is ex-officio the Development Commissioner-cum-Additional Chief Secretary, Planning and Convergence Department, Government of Odisha. BSCL is headed by the Managing Director, who most often has been the Commissioner of Bhubaneswar Municipal Corporation; the day to day operations are handled by a full time Chief Executive Officer.

Among the 20 city proposals in the Smart City Challenge Round 1 by the Ministry in 2016, the one submitted by Bhubaneswar was adjudged to be the best. Indeed, it went on to win several international awards for excellent planning, citizen engagement, and other aspects. For example, the Canadian Institute of Planners recognized it with the Award of Merit in 2016 and the American Planning Association bestowed the Pierre L'Enfant International Planning Excellence Award in 2017.[2] Key to its national and international appreciation was the extensive citizen engagement in the development of the proposal itself, through a three month long, intensive "Citizen Connect Initiative" The multiple ways in which this was elicited, and the results, is shown graphically in Figure 1.

The proposal itself included a list of projects to be undertaken through participatory decision-making, responsible governance and open access to information and technology. At the core of the proposal were the Area Development of 985 acres in the central spine of the city, with a "vibrant 24x7 Bhubaneswar Town Center District (BTCD)" and development of a "state-of-the-art Intelligent City Operations and Management Centre (ICOMC)" for smart pan-city systems for intelligent traffic control and other smart systems. The full list of Area Development Projects is provided in Table 1, followed by the list of Pan City Projects in Table 2.

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1   *vide Notification No. 4741 dated 23/02/2016*

2   *See announcements in the NIUA website https://smartnet.niua.org/content/cbfee97b-87cb-4c87-9a39-d4bfe41cd442 and the website of the American Planning Association at https://www.planning.org/awards/2017/bhubaneswar/*

Fig. 1:   The Citizens Connect Initiative Undertaken during the Preparation of the Bhubaneswar Smart City Proposal
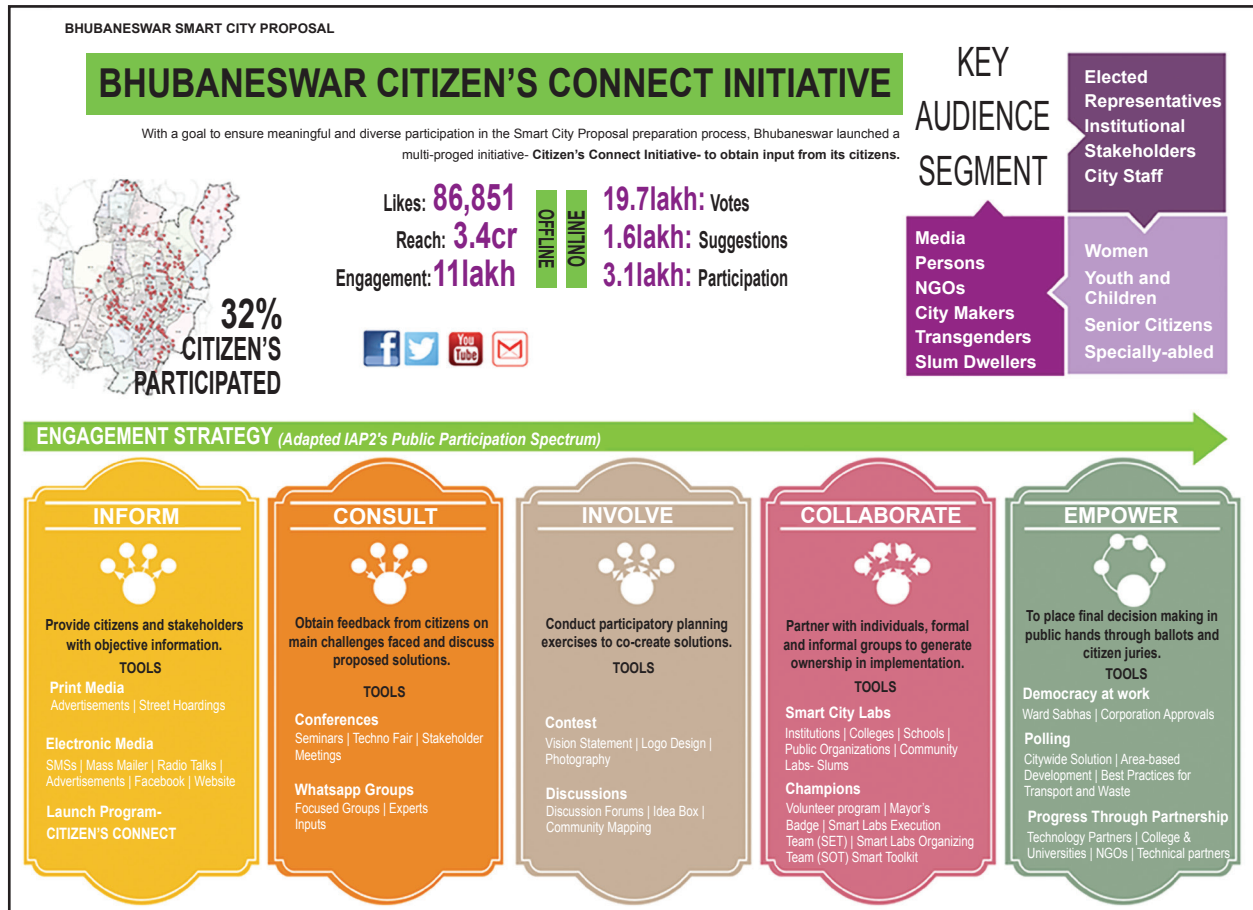
Source: Bhubaneswar Smart City Proposal Graphic by IBI Group

Table 1:   Projects in the Area Development Component of the Bhubaneswar Smart City Proposal

Sl . No.	Project	Description
1	Project Kutumb	• Construction of Social Equity Centre; • Rental housing for construction workers of 200 beds; • Aahar Centre (subsidized cooked Meal); • Water ATM and other required amenities; • 50 beds for the Urban Homeless; and • Dormitories along with provision of security guard.
2	Integrated Public Service Centre (IPSC)	Incorporating: • Bill payment Centre; • Dispensary Crèche and Community Group Space; • Ward House; • Multipurpose Hall; • Library and Reading Room; and • Skilling Centre

Sl . No.	Project	Description
3	Integrated Infrastructure Improvement	Provide efficient utility services in the designated 985 acres are - water supply, sewerage, energy, solid waste management, roads and street lighting through an Agency responsible for effective Operations and Maintenance through Management Contract for ensuring and complying various Service Level Standards (SLBs).
4	BMC Headquarter	BMC - ICOMC Building - an Iconic Building and as City's Service Head Quarter integrating various city level agencies under BMC; housing state-of-the-art Intelligent City Operations and Management Centre (ICOMC), a digital platform for integrating multiple city sub-systems.
5	Street Vendors Improvement Project	A city wide project across all 67 wards, organizing vending activities, regularization of activity on public land, and providing social security to street vendors, for hygienic vending zones, public places and streets, increased accountability of vending activities and revenue generation.
6	Smart Janpath	Street scape design, beautification, landscaping, intersection redesign, and infrastructure upgrades with construction of new pavement, rehabilitation of existing pavement, construction and/or rehabilitation of major and minor bridges, culverts, road intersections, interchanges, drains, etc.
7	Smart Parks	Redesign and redevelopment of • Triangular Park • OMC park and • Saheed Nagar Park
8	Affordable Housing Project	In-situ redevelopment of Shanti Nagar Awas Yojna – in-situ redevelopment of Shantipalli slum of Satya Nagar in PPP mode
9	Multilevel Car Parking in Unit -2, Rajmahal Square.	Parking for minimum 450 cars on four levels and minimum 57000 sq ft of commercial saleable space above, in 7 storey building with two basements.
10	Multilevel Car Parking in Saheed Nagar	Parking for minimum 250 cars on two levels and minimum 38000 sq ft of commercial saleable space above, in 5 storey building with two basements.

Source: Bhubaneswar Smart City Proposal and Work Status brief

3.1   Area Based Development

In the Area-based Development component, the proposal was to retrofit and redevelop 985 acres along a central spine of the city, the *Janpath* (which was also one of the earliest developed segment of the planned city) to the Railway Station and beyond to create a multi-activity Bhubaneswar Town Centre District (BTCD). It incorporated ten developments, as shown in the Table 1 and the plan for the 985 acres area development is given in Figure 2.

3.2   Pan City Smart Solutions

The pan-city component of the proposal comprised two parts – one, ICT applications for intelligent systems ad smart solutions, and two, Social Smartness Infrastructure. The components of the first are given in Table 2 and Figure 3.

**Fig. 2: Proposed Area Based Development Plan of Bhubaneswar Smart City**
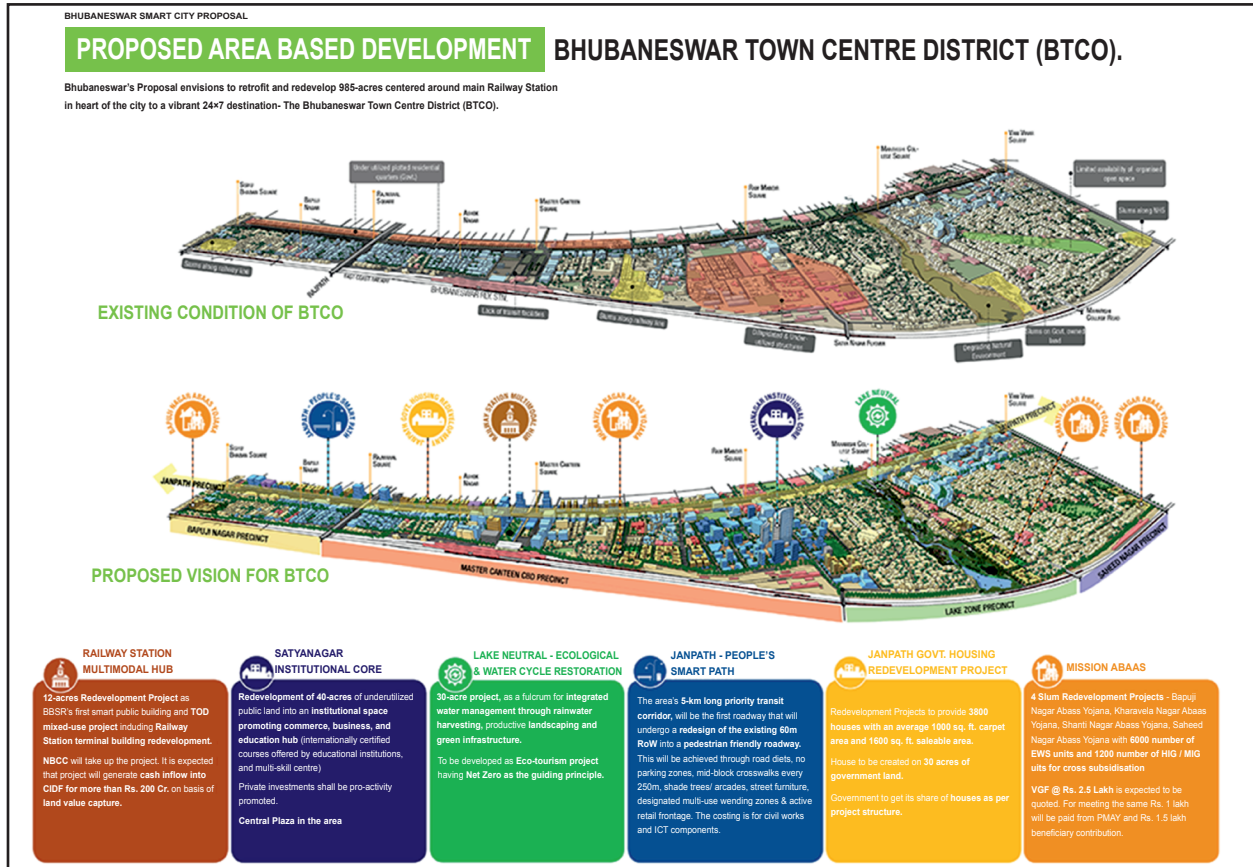
Source: Bhubaneswar Smart City Proposal; graphic by IBI Group

Table 2:   Pan City Intelligent Systems

Sl. No.	Project	Description
1	Common Payment Card System for Bhubaneswar	Open loop smart card and mobile application based payment system, to facilitate payment for citizen services in the city - buses and other transit modes, parking, municipal services (property taxes and other charges), utilities (electricity and water), recreational and retail payments; also, other payment systems like Aadhar Enabled Payment System (AEPS), Unified Payment Interface (UPI), and Physical Point of Sale (POS), etc., will also be included.
2	Intelligent Traffic Control System	Signalization of traffic intersections in the city based on Adaptive Traffic Signal Control System, with provision of pelican signals and blinkers, using Composite Signal Control Strategy (CoSiCoSt) developed by C-DAC (Centre for Development of Advanced Computing)
3	Bhubaneswar One	Website integrating geo-spatial data from all Government and Private organizations to provide easy and hassle-free information for residents and tourists.
4	Smart Solutions	Acquisition of goods and services for installation, commissioning, operation and maintenance for Intelligent City Operations and Management Centre.

Source: Bhubaneswar Smart City Proposal and Work Status brief

Fig. 3: **The Intelligent City Operations and Management Center (ICOMC) Components and Pan-City Intelligent Traffic Control Plan**
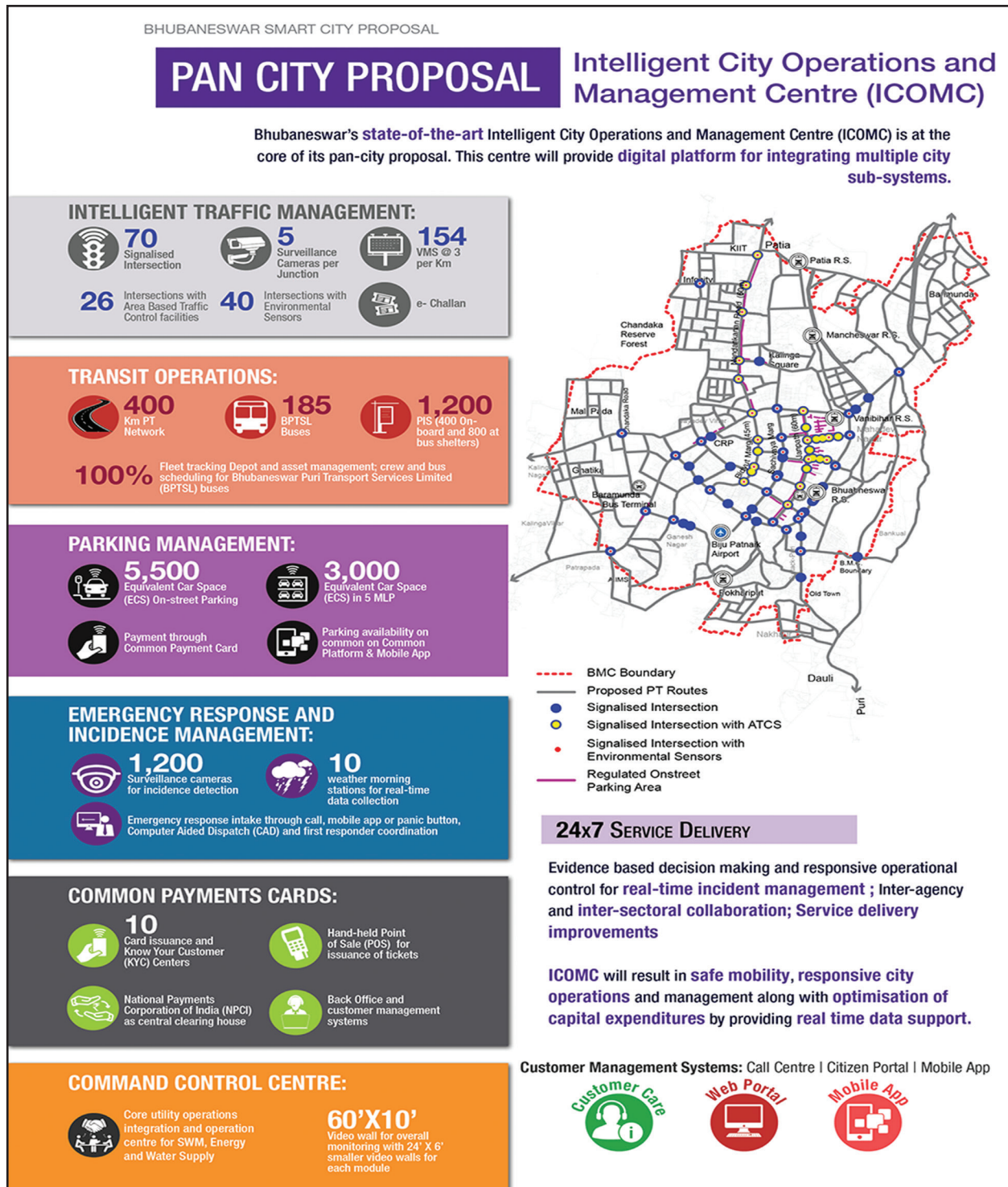
Source: *Bhubaneswar Smart City Proposal; graphic by IBI Group*

3.3   Pan City Social Smartness Infrastructure[3]

To make Bhubaneswar "socially smart", two initiatives were proposed:

People Centric Programs

A variety of people centric interventions were proposed through engagement of youth, especially women and girls with focus on the most marginalized, such as promoting safety and security of girls and women, increasing availability and accessibility of social, health and other development programs for the vulnerable and marginalized population, etc. This was to be implemented in partnership with NGOs, piloted in the slums in the BTCD area and extended to other slums in the city. Youth-centric activities would also be organized in the educational institutes in Bhubaneswar.

- *Humara Bachpan* Trust, Feedback Foundation and others are implementing partners and activities have included, *inter alia*:
- Community mobilisation piloted in the 24 slums of BTCD area and expanded to 100 slums;
- Community led total sanitation process to make 24 slums of BTCD area, open defecation free;
- Community mapping to understand various issues and challenges of slum communities;
- Life skills education, for young boys and girls, including self-defense training for young girls and women;
- Strengthening service delivery at community level by linkages with various departments;
- Raising awareness of students across educational institutions in Bhubaneswar on gender-based violence and other issues; and
- City Changer labs created as a forum for youth to share their ideas and innovations to improve urban living.

I Am Bhubaneswar

This was proposed as a comprehensive City Branding project to create a unique identity for the city, with a series of public events, strategic place making and activating idle public spaces. This included, among other initiatives:

- STAMP (Street Art and Mural Project), comprising public art installations, murals and experiments in street paintings;
- City Signage project to standardize and improve way-finding for public spaces, and integration of universal accessibility features at public places;

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3   *Bhubaneswar Smart city limited received 'Smart City Award' for its social intervention and community mobilisation initiative at Smart City XEPO- JAIPUR, organised from 26-28th September 2018.*

- Organizing signature City Events such as *Patha Utsav* (weekly street festival), *Ekamra* Walks (weekly heritage walks), Music In Park (Music concert in city Parks) and Annual City Festival; and

- Development of a City website, Bhubaneswar.me as a one-stop information portal for tourists and visitors in the city.

4.   BHUBANESWAR SMART CITY INITIATIVES: BLOOM OR GLOOM?

The Smart City approach to urban development has been somewhat contentious in the literature, with a distinct difference in the arguments of supporters and sceptics. The expectations of positive outcomes in urban development as well as the questions and critiques advanced have been sketched in Section 1 above. How does the experience of Bhubaneswar Smart City stand in relation to the expectations and apprehensions? While more intensive exploration of the impacts and effects of the projects would be needed to make definitive statements in this regard, a preliminary examination does provide interesting insights, especially when considered in the context of other urban development initiatives in the city, outside the Smart City ambit. Some of these aspects are discussed below.

It is not intended here to compare the performance of Bhubaneswar Smart City with others in the country, such as through the Smart City Rankings – though BSC has ranked reasonably over the years. Nor is it intended to assess the impacts of the projects against the stated objectives or targets. The attempt here is to see how the overall "Smart City" approach – as defined in the Mission – has panned out. What appear to be the overall positive effects? Are any of the apprehensions such as elitist engagement, increased spatial inequity, etc, borne out?

4.1   Appreciation and Accolades

Clearly, many of the specific initiatives and projects in the Bhubaneswar Smart City ambit have attracted positive attention and numerous accolades. A list of awards and citations of various projects is provided in Table 3.

Table 3:   Awards and Recognition of the Bhubaneswar Smart City Initiatives

Sl . No.	Awards and Year	Category / Theme	Host	Rank	Awardee	Reference
1	Global Smart City Performance Index, 2017	Mobility - Urban transport systems category	UK-based Juniper Research	20th	BBSR CITY	https://newsroom.intel.com/wp-content/uploads/sites/11/2018/03/smart-cities-whats-in-it-for-citizens.pdf https://citizenmatters.in/bhubhaneswar-among-the-worlds-top-smart-cities-8096
2	Global Smart City Performance Index, 2017	Health - Healthcare service delivery	UK-based Juniper Research	20th	BBSR CITY	https://newsroom.intel.com/wp-content/uploads/sites/11/2018/03/smart-cities-whats-in-it-for-citizens.pdf

Sl. No.	Awards and Year	Category / Theme	Host	Rank	Awardee	Reference
3	Global Smart City Performance Index, 2017	Public Safety - Mortality and law enforcement services	UK-based Juniper Research	13th	BBSR CITY	https://newsroom.intel.com/wp-content/uploads/sites/11/2018/03/smart-cities-whats-in-it-for-citizens.pdf
4	Global Smart City Performance Index, 2017	Productivity - City policies and technologies	Juniper Research (UK)	20th	BBSR CITY	https://newsroom.intel.com/wp-content/uploads/sites/11/2018/03/smart-cities-whats-in-it-for-citizens.pdf
5	Top 50 Smart City Governments in the world, 2018	Smart city strategy	Eden Strategy Institute (Singapore)	32nd	BMC & BSCL	https://www.dailypioneer.com/2018/state-editions/bbsr-32nd-among-worlds-top-50-smart-city-govts.html
6	Smart City Award, 2018	Social intervention and community mobilisation initiative	Smart City XEPO-JAIPUR	-	BSCL	https://www.smartcitybhubaneswar.gov.in/social-smart
7	IASC (India Smart City Awards Contest), 2020	Social Aspects Project category	MoHUA	2nd	BSCL	https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1817774
8	IASC (India Smart City Awards Contest), 2020	Governance category	MoHUA	3rd	BSCL	https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1817774
9	SKOCH - Urban Governance Award, 2022	E-governance management	SKOCH	-	BSCL	https://www.thestatesman.com/cities/bhubaneshwar/bhubaneswar-smart-city-wins-two-skoch-awards-e-governance-1503036839.html
10	SKOCH - Ease of Doing Business award, 2022	Building Plan Approval System	SKOCH	-	BSCL	https://www.thestatesman.com/cities/bhubaneshwar/bhubaneswar-smart-city-wins-two-skoch-awards-e-governance-1503036839.html
11	Smart City Empowering India Awards, 2020	ICT based solutions (Mu Bhubaneswar app)	Common-wealth Innovation	-	BSCL	https://www.thecommonwealth.io/digest/bhubaneswar-wins-smart-city-empowering-india-awards-2020/
12	Best Admired Smart City, 2022	-	Infra-Focus Summit and Award, Economic Times	-	BSCL	https://newsroomodisha.com/bhubaneswar-smart-city-awarded-as-best-admired-smart-city/

Source: Compiled by author

Table 4:   Awards and Accolades Received by other ULBs in Bhubaneswar City

Sl. No.	Awards and Year	Category / Theme	Host	Rank	Winner	Reference
1	Best Smart City Proposal	Proposal	Smart City Challenge – 1, MoUD	1	BSC Proposal (prepared by BDA)	
2	Award for Planning Excellence Merit, 2016	Legal systems, urban planning, and local fiscal systems	Canadian Institute of Planners	-	BSC Proposal (prepared by BDA)	https://smartnet.niua.org/content/5187aa75-25f6-431a-804b-77ee9ad4d76b
3	National Planning Excellence - Pierre L'enfant International Planning Award, 2017	Public outreach and citizen-driven vision	American Planning Association	-	BSC Proposal (prepared by BDA)	https://www.planning.org/awards/2017/bhubaneswar/ https://smartnet.niua.org/content/c604e074-49c7-4dbc-9715-cad9b7594c1a
4	Best Business World Smart City award, 2022	Unique Smart City Proposal of Leadership and Innovation	Business World magazine group	-	BMC	https://indiasmartgrid.org/viewnews.php?id=2390
5	Smart Cities India Awards, 2021	Smart SPV/ Municipal Corporation	8th Smart Cities India Expo	-	CRUT	https://www.smartcitiesindia.com/smart-cities-india-awards-2021.aspx
6	2nd Urban Infra Business Summit & Awards, 2022	Most Innovative Bus Transit System Award - Transit and Mobility Category	Urban Infra Group	-	CRUT	https://urbantransportnews.com/news/odishas-mobus-bags-most-innovative-bus-transit-system-award-at-urban-infra-2022
7	Annual India Sanitation Coalition (ISC)-FICCI Sanitation Awards, 2022	Faecal Sludge and Septage Management (FSSM) Model - Urban	FICCI	1st	BMC	https://timesofindia.indiatimes.com/city/bhubaneswar/odisha-wins-3-national-awards/articleshow/96063549.cms
8	Swachh Survekshan 2022	Sanitation	MoUD	-	BMC	https://argusnews.in/article/odisha/national-award-for-bhubaneswar-civic-body-in-swachh-survekshan-2022
9	Ease of Living Index, 2018	Governance and social, economic and physical infrastructure.	MoUD	18th	BBSR CITY	https://www.telegraphindia.com/odisha/u-20-but-long-way-to-go/cid/1310305

Indeed, such recognition definitely indicates some positive effects of the smart city efforts. It is worth noting that socially-directed initiatives have been as much appreciated as the technology-application ones. In fact, BSCL has also bagged the award for Best Loved Smart City, at the Infra-Focus Summit in 2022.

In line with the above, other ULBs in the city have also been active and attracted accolades for their work, including in application of ICT for improved service delivery and other developmental initiatives. Thus, to assert that the Smart City initiative has spearheaded technology applications for urban development, governance and service delivery would be erroneous. Table 4 lists the awards and recognition received by the Bhubaneswar Municipal Corporation and the Capital Region Urban Transport (CRUT). BDA developed the Smart City proposal, using ICT for citizen engagement and working with private sector partners – both relatively new initiatives for the organization. Both BDA and BMC had already started on ICT applications for e-governance – registration of births and deaths, grievance recording, building plan approvals and other services. While these were mostly not "smart / intelligent" systems, strengthening their efforts would have obviated the need for a specialized SPV and strengthened local governance.

4.2   ICT and the Extensive Citizen Engagement

At the outset, the use of ICT for the extensive citizen engagement elicited in the development of the Bhubaneswar Smart City Proposal itself is notable, and has attracted much appreciation. However, there are two caveats to this - one, the proposal was developed not by BSCL, but by the Bhubaneswar Development Authority (BDA) which undertook the smart Citizen Centric Initiative for citizen participation in the proposal development. This makes clear that use of smart technologies by existing ULBs is eminently possible (if they are provided a mandate), and there is no need for a specialized SPV for technology application; it just adds to the forest of ULBs engaged in urban development. Second, this success does not erase the concern raised by some authors regarding exclusion of groups without or with low connectivity. Clearly, only segments of the citizenry with some education, time and ability to engage with city-level discussion and good internet access would be the participating groups; those in technology-shadow locations or groups would have much less scope for engagement through ICT-enabled modes.

4.3   Funds, Attention and Visibility

Following from this is the aspect of diversion of funds, attention and visibility away from existing local governance bodies, and thus perhaps undermining their capabilities. This apprehension of some authors is clearly borne out in the

introduction of BSCL and the resource support, media attention and heightened visibility accorded to the "Smart City", over the existing ULBs.

4.4   Pan-City Projects

The BSC pan-city projects attended to important infrastructure and essential services needs of almost all residents of the city (except some of the fringe areas). Intelligent traffic control was extended across the city as shown in the map below; vending zone redevelopment and community mobilization, service improvement and other developmental initiatives were also extended across the city to all 67 wards. Smart initiatives like the Common Payment Card and the Bhubaneswar One website also serve the whole city – though the issue of technology-shadow groups and locations remains.

4.5   Area Based Developments

In contrast, however, the Area Based Developed expanse of 935 acres stands out clearly in attracting more funds, iconic developments and heightened beautification efforts – a special enclave of privilege for local residents and businesses, and heightened property values. This is clearly in line with the trend of "enclave" urban development, and carries the idea forward. The positioning of the ABD as a "light-house" for development of the rest of Bhubaneswar city (and other cities) is clearly belied. Further, the SPV model for urban development is actively reinforced, undermining the ideal of democratic local governance embodied in the elected Municipal bodies.

4.6   Market-based Urban Development

The strong shift to a "market-based urban development" that is apprehended by critics of the smart city approach can be observed in Bhubaneswar, but in a mixed way. On one hand, all BSCL work is done through private partners, both large, multinational entities and consultants such as Honeywell and the IBI Group, as well as non-profit organizations (such as Hamara Bachpan) and philanthropic foundations. The fear of an large scale shift of urban development to private firms is not as strongly evident in this mix of partnerships. More, BSCL works closely in partnership with the BMC and other local bodies – this is perhaps an artefact of the state government's appointing the Municipal Commissioner to head BSCL, over most of the period of BSCL's existence. How this would pan out if executive heads of all ULBs are different, is to be seen.

5.   CONCLUSIONS

In this paper, the initiatives of the Bhubaneswar Smart city have been examined in light of the expected positive outcomes and apprehensions in the literature. While more intensive research would be necessary to explore this question in

detail, the preliminary observations here make clear that the Smart City approach has mixed results. On the one hand, meaningful development initiatives have been rolled out that improve the lives of all residents in the city, for example, the intelligent traffic management system. Bhubaneswar Smart City has clearly undertaken projects that have improved the lives of Bhubaneswar residents, both through use of ICT for "smart" functioning as well as for social and community development initiatives. The latter however, are as much or more about hands-on, "off-line" engagement as about use of ICT.

Another positive outcome may also perhaps be discerned, though this requires further research into the dynamics of the development processes and relationships between BSCL and other ULBs. The improvements in governance and service delivery by other ULBs – as evinced by the public recognition of achievements - may be due to the "lighthouse" effect and / or the partnerships with the BSCL. This observation may however, be belied by the fact that if the ULBs were supported in the same way as the BSCL, such achievements and perhaps more would have been possible. And through more democratic processes.

But there are a few concerns, one is about misgivings about the Smart City approach i.e., the entrenchment of elitist "enclave urbanism" because of the Area-Based Development which was a central requirement of the National Mission. The other is the potential for exclusion of groups without adequate access to technology. It is held that the most vulnerable groups in the city must be reached by other methods. The diversion of funds and attention away from elected municipal bodies and possible dilution of the support they require for effective use of ICT is surely another concern. A comparison of the resources made available to municipal bodies vis-à-vis the BSCL would shed more light on this aspect.

REFERENCES

ANI News 2021: Bhubaneswar wins two awards in smart city contest; https://www.aninews.in/news/national/general-news/bhubaneswar-wins-two-awards-in-smart-city-contest20210626014410/

Bhattacharya Srimoyee, et al. (2015) Reconceptualising Smart Cities: A Reference Framework for India, Center for Study of Science, *Technology and Policy* (C-Step)

Chourabi, H., Nam, T., Walker, S., Gil-Garcia, J. R., Mellouli, S., Nahon, K., Scholl, H.J. (2012) Understanding smart cities: an integrative framework.

De Jong, M.; Joss, S.; Schraven, D.; Zhan, C.; Weijnen, M. Sustainable-smart-resilient-low carbon-eco-knowledge citiesm 2015: Making sense of a multitude of concepts promoting sustainable urbanization, *Journal of Clean Productivity*, 109.

Deepti Prasad∗, Tooran Alizadeh (2020) What Makes Indian Cities Smart? A Policy Analysis of Smart Cities Mission, *Telematics and Informatics*, 55, 101466.

Deepti Prasad *, Tooran Alizadeh, Robyn Dowling. (2021) Multiscalar Smart City Governance in India, *Geoforum*, 121, 173–180

Herschel, T. Competitiveness and sustainability, 2013: Can 'smart city regionalism' square the circle? *Urban Studies*, 50, 2332–2348.

Hoelscher, K., 2016. The evolution of the smart cities agenda in India. *Int. Area Stud. Rev*. 19 (1), 28–44. https://doi.org/10.1177/2233865916632089.

Hollands, R.G. (2008) Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? *City*, 12 (3), 303–320.

India Today 2020: Odisha's capital city Bhubaneswar wins two awards in India Smart City Awards Contest 2020. https://www.indiatoday.in/india/story/odisha-capital-city-bhubaneswar-wins-two-awards-india-smart-city-awards-contest-2020-1819543-2021-06-25

McFarlane, C., Soderstrom, O. (2017) On alternative smart cities: from a technology intensive to a knowledge-intensive smart urbanism, *City*, 21 (3-4), 312–328.

Neha Kawyitri, Ankit Shekhar (2021) Assessing vulnerability and capacity of Bhubaneswar as a progressive smart-city: An empirical case study of Fani cyclone impact on the city, *International Journal of Disaster Risk Reduction,* 56, 101986

Newsroom Odisha, (2022) Swachh Survekshan 2022: Bhubaneswar Gets Award in "Citizens Feedback" Category, https://newsroomodisha.com/swachh-survekshan-2022-bhubaneswar-gets-award-in-citizens-feedback-category/

Odendaal, N. (2011) Splintering urbanism or split agendas? Examining the spatial distribution of technology access in relation to ICT policy in Durban, South Africa. *Urban Studies*, 48 (11), 2375–2397.

Robinson, J., Scott, A.J., Taylor, P.J. (2016) *Urbanizing: the future. In: Working, Housing, Urbanizing*. Springer, pp. 55–60.

The Statesman (2022) Bhubaneswar Smart City wins two SKOCH Awards for e-governance; https://www.thestatesman.com/cities/bhubaneshwar/bhubaneswar-smart-city-wins-two-skoch-awards-e-governance-1503036839.html

Times of India (2022) Odisha wins 3 national awards, https://timesofindia.indiatimes.com/city/bhubaneswar/odisha-wins-3-national-awards/articleshow/96063549.cms

Watson, V. (2014) African urban fantasies: dreams or nightmares? *Environment and Urbanisation*, 26 (1), 215–231.

Zaheer Allam and Peter Newman (2018) *Redefining the Smart City: Culture, Metabolism and Governance, Smart Cities*, 1, 4–25; doi:10.3390/smartcities1010002

Planning and Development of Smart Cities:
A case study of Bhubaneswar

Tathagata Chatterji, Ph.D.

Abstract

This paper discusses the Smart City plan proposal of Bhubaneswar which ranked first in the national challenge round competition under the Smart Cities Mission in 2015. Bhubaneswar's Smart City plan exemplifies a technology-enabled road map for a medium-sized city, towards people-centric planning with a focus on citizen engagement and social inclusion. However, planning for smart cities is a continuous process. While the projects initiated under the Smart Cities Mission acted as a lighthouse, ultimately, it would be important for the local governments to take ownership and move forward. Moreover, the deployment of digital technology needs to be linked to achieving specific developmental objectives in a measurable way to optimize resource utilization. For this to happen, Smart City Plans need to be integrated with the city's overall master planning framework.

1.   INTRODUCTION

Over the past two decades, the smart city phenomenon had gained worldwide popularity. More and more cities are applying advanced digital technologies including big data, block chain, the internet of things (IoT), and artificial intelligence to address urban planning, management, and governance challenges. Indeed, the application of digital technology and data in city systems can help to optimize resource allocation, improve functional efficiency, reduce wastage of time and material; improve performance monitoring and widen scope the for-citizen engagement (Alizadeh, 2021; Schiavone, Paolone, and Mancini, 2019).

However, the smart city phenomenon has drawn criticism. Global technology corporations have been promoting the concept of "smart cities" for the past 20 years, and their roles in urban affairs are steadily expanding. Yet, there is no commonly accepted definition or set of characteristics that define what makes a city "smart." Without a clear definition, there are concerns that the idea will be used for corporate branding activities (Hollands, 2008). It is also being argued that digital technology is not an end in itself, and there are concerns about what smart cities have provided in terms of actual results. International organizations like the OECD advocate for smart cities to include a balanced combination of human, social, cultural, economic, environmental, institutional, and technological factors (OECD, 2020). UN-Habitat advocates smart cities be linked to sustainable development goals. Thus, technology is seen as an enabler

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to achieve larger planning goals. There is also a need for smart city impact assessment – to evaluate to what extent smart cities are able to improve the quality of life for people. Over the past years, many smart city ranking, and assessment frameworks have come up (Giffinger, Haindlmaier, and Kramar, 2010; Sharifi, 2020). However, these assessment frameworks tend to be context specific, as there is no universally accepted definition of a smart city. When the Smart Cities Mission was launched in India, participating cities were encouraged to define their own goals, according to their specific local requirements. This was deemed necessary as the scope of the Smart Cities Mission included 100 cities of very diverse characteristics (Sharma, 2018).

This paper discusses the Smart City plan proposal of Bhubaneswar which ranked first in the national challenge round competition under the Smart Cities Mission in 2015. The plan later won the American Planning Association's Pierre L'enfant International Planning Excellence Award 2017 for its use of contemporary technology to articulate a citizen-driven future vision (APA, 2017). The standout feature of the plan is the customized approach, toward citizen engagement. Targeted use of in-person interactions and social media platforms allowed the strategy to reach 32 per cent of the city's 0.97 million residents and win support from a broad swath of the populace (BSCL, 2015).

The next section of this paper provides a brief snapshot about the city. The third section discuss Bhubaneswar's economic transformation as a business services hub and various planning interventions. The fifth section then highlights the Smart City Plan and its key features. The sixth section wraps up the discussion by highlighting the lessons learnt. The last section provides a way forward.
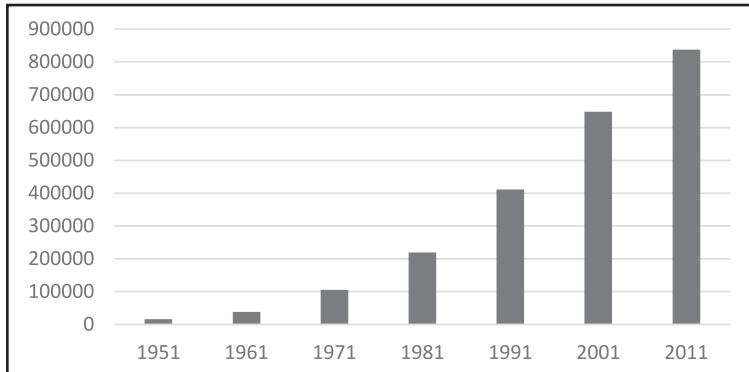
2.   CITY PROFILE

The modern city of Bhubaneswar was developed in 1948-49, to shift administrative functions away from congested and flood prone Cuttack. The new city was located beside a historic settlement with several architecturally significant temples dating back to the 11th the century. It was designed by German architect Otto Koenigsberger based on the neighborhood concept (Kalia, 1995).

With the establishment of the new state capital, Bhubaneswar had witnessed astronomical population growth. As various government departments began to consolidate their operations in the newly built state capital; significant expansion in state apparatus also took place in the era of public sector-led development. Starting from a low population base of only,16,500 in 1951, the city witnessed a decadal growth rate over 100 per cent during 1951-61, 1961-71 and 1971-81 census decades (Figure 1). As per Census (2011), Bhubaneswar had a population of 8,40,834 with a slum population of 3,01,611.

**Fig. 1:   Bhubaneswar Population Growth**

Source: Census (2011)

The core part of the city is administered by the Bhubaneswar Municipal Corporation (BMC) area, which covers 186 sq km, in area divided into 67 wards (BMC, 2022). Planning responsibilities for the capital city and its surrounding regions are handled by the Bhubaneswar Development Authority (BDA), which was constituted in 1983. Currently, the planning jurisdictions of BDA covers an area of 1100 sq km, with a population of about 1.3 million, which includes Bhubaneswar Municipal Corporation, Jatni Municipality, Khurda Municipality, Pipli Notified Area Committee, and several panchayat areas(BDA, 2022). Figure - 2 shows the municipal core and the city-region.

Fig. 2:   Bhubaneswar Development Authority Area
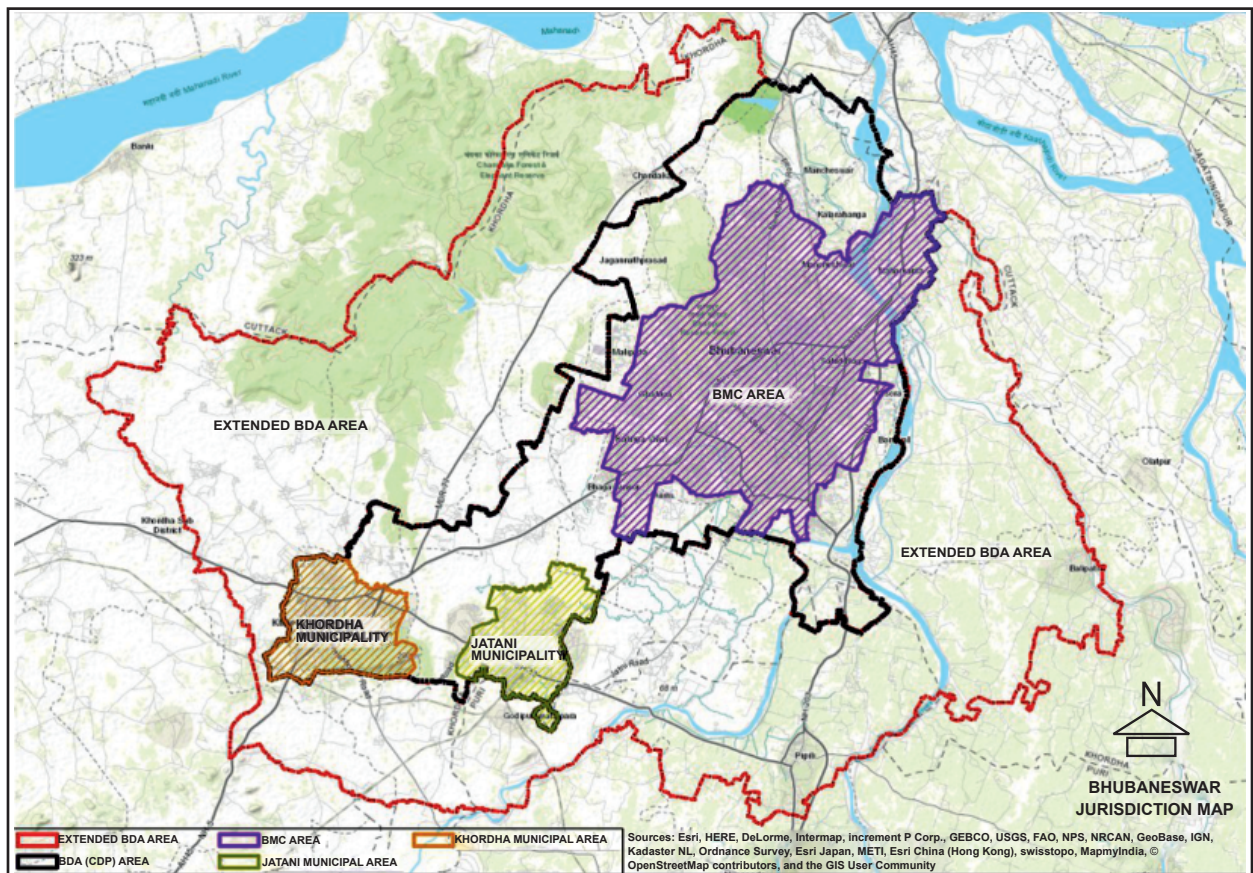
Source: Bhubaneswar Development Authority (2022)

Tathagata Chatterji, Ph.D.

3.   ECONOMIC TRANSFORMATION

Until the late 1990s, economy of Bhubaneswar was mainly centered around government - related administrative functions. It was also partly related to tourism sector, as gateway to Puri - Konark - Bhubaneswar cultural heritage tourism circuit. However, from the early 2000s, the economy of Bhubaneswar started to diversify as the Odisha State Government stepped up efforts to attract private investments and over the next two decades the city has grown into a leading business destination among the Tier-II cities in India (Chatterji and Maitra, 2019). Bhubaneswar had been particularly successful in attracting investments in the IT (Information Technology) enabled back offices and tertiary educational institutions. Bhubaneswar quickly climbing up to 9th position nationally in terms of IT services exports (NASSCOM, 2016). In addition to IT-enabled services, companies engaged in mining, mineral processing and various other industrial activities elsewhere in the state, opened their regional offices in the state capital. The education segment has also expanded substantially. Multiplier effects of the knowledge services production economy have contributed to further downstream investments in consumption sectors related to retail, housing, specialty medical and hospitality segments.

3.   DEVELOPMENTAL CHALLENGES AND PLANNING INTERVENTIONS

Koenigsberger's Plan (1954) envisaged Bhubaneswar to be primarily an administrative centre and had a target population of 40,000. This population threshold was crossed by the early 1960s. During the next three decades (see Figure 1), when the city went through extremely rapid urbanization, planning did not receive adequate policy attention. Following the establishment of BDA, an Interim Development Plan was prepared in 1993. With faster economic growth from the 1990s onwards, the city started to expand outwards. A need was felt for a metropolitan regional plan. Subsequently, Perspective Plan-2030 for the Bhubaneswar Cuttack Urban Complex (BCUC) was prepared in 2006 covering 722 sq km area (Anand and Deb, 2017). Then, within the framework of the Perspective Plan, a Comprehensive Development Plan for the Bhubaneswar Development Planning Area of 419 sq km was prepared in 2010.

In addition to the statutory plans, plans of more strategic nature were taken up to meet requirements for funding schemes, including the City Development Plan prepared under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM); Service Level Improvement Plans (SLIPs) under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Smart Cities Plan under the Smart Cities Mission. However, the statutory plan had faced implementation difficulties and areas demarcated as Environmentally Sensitive Zone got encroached upon (Anand and Deb, 2017). Unplanned urbanization of the peri-urban areas without provision of trunk infrastructure and indiscriminate construction activities through filling up of paddy fields

and rural water bodies are leading to flood hazards, depletion of ground water and loss of green cover.

With population pressure outpacing urban infrastructure investments, Bhubaneswar is facing deficiencies with regards to provision of water supply, sewage disposal, solid waste collection and storm water drainage. According to the Service Level Benchmark data 2018-19 sewage system is highly inadequate, the network coverage is only 27 per cent, and treatment plants are yet to be operationalized. Although water supply at 218 lpcd is well above the stipulated standard of 135 lpcd, but the distribution network covers only 71.61 per cent households, indicating localized problems of access. Municipal solid waste collection is 70 per cent, but segregation and recycling capacities are lacking (Housing and Urban Development Department, 2022).

Although, being a planned city, Bhubaneswar has better roads compared to most Indian cities, nevertheless, the city is facing challenges regarding traffic congestion and air quality is worsening. Share of public transportation in the city's mobility system is low and over 80 per cent of the commuters in the city are dependent on private vehicles, with two-wheelers being the dominant mode. In 2019, the city had 14 lakh registered private vehicles, which are about 1.4 times higher than the estimated city population of 10 lakh (GIZ, 2019). Bhubaneswar has initiated a Low Carbon Mobility Plan for the city.

4.   THE SMART CITY PLAN

The Smart Cities Mission in 2015 offered a fresh opportunity for Bhubaneswar to develop a futuristic vision. Bhubaneswar's proposal was developed by the BDA and BMC with the support of international consulting firms Jones Lang LaSalle (JLL) and the IBI Group. Bhubaneswar Smart City Ltd. (BSCL) a Special Purpose Vehicle formed under the Companies Act (2013) is the single point nodal agency entrusted with planning, execution, management and operational responsibilities with all smart city related projects. The Board of BSCL is helmed by the Chairman who is ex-officio Development Commissioner-cum-Additional Chief Secretary, Planning and Convergence Department, Government of Odisha. The Commissioner of Bhubaneswar Municipal Corporation is the ex-officio Managing Director. The Chief Executive Officer is in charge of the day-to-day operations (BSCL, 2022a).

The Ministry of Housing and Urban Affairs, Government of India guideline suggested that projects under the Smart Cities Mission to be divided into Pan City and Area Based Development components. Pan-city envisages application of selected Smart Solutions to the existing city-wide infrastructure, (i.e. transportation, water, waste, security). Area-based development aims at comprehensive urban renewal and retrofitting a designated city district on a pilot basis, which can act

as a lighthouse for future developments. However, in addition to the pan-city and area-based developments, Bhubaneswar's Smart City proposal comprises of an additional 'Social' component, to induce social equity, equal accessibility and enhanced economic opportunities to citizens. Bhubaneswar's Smart City Plan is anchored around the following key vision elements (BDA-BMC, 2015):

- **Livable City** - by providing a diverse range of housing, educational and recreational opportunities and enhancing heritage conservation;

- **Child Friendly City** – by providing safe and accessible public spaces;

- **Eco City** – by co-existing in harmony with nature for nurturing a resilient, clean, green, and healthy environment;

- **Transit Oriented City** – by promoting a compact urban form that encourages active, connected and sustainable mobility choices;

- **Responsive Governance** – participatory decision making and citizen engagement; and

- **Regional Economic Centre** – by encouraging knowledge-based enterprises, start-ups and sustainable tourism

The vision elements are being realized through five integrated strategic pillars: Responsive governance, TOD based planning and design, Fiscal sustainability, Infrastructure and Socio-economic development. These five pillars are then sub-divided into 10 Strategic Directions and 30 City Goals – which in-turn lead to catalyst projects grouped around pan-city, area-based development and social development components. The key project level interventions under Bhubaneswar Smart City are as follows (BSCL, 2022b):

- **Pan City Component** projects are a range of urban management interventions designed to address traffic system, transit system, parking system, emergency response and incidence management system; Common Payment Card System for encouraging digital payment eco system; Enterprise Resource Planning and e-Governance for the four city level organizations i.e. BDA, BMC, CRUT (Capital Region Urban Transport) and BSCL. It also includes setting up an Intelligent City Operations and Management Centre (ICOMC) for managing different urban services on a common platform in an integrated manner.

- **Area Based Development** is focused upon an area of 985 acres of at the heart of the city or Bhubaneswar Town Centre District (BTCD) (Figure 3). The land use plan of the Town Centre District has earmarked 31 per cent of the land for residential usage, 15 per cent for mixed-use and 12 per cent for commercial activities, to encourage round the clock activities. The central commercial street Janpath, with a right of way of 60 m and 5 km in length, has been re-developed, with designated pedestrian walkways, cycle tracks, automobile lanes and bus lanes. Densification of the stretch has been planned

Fig. 3: Town Centre District Area of Bhubaneswar
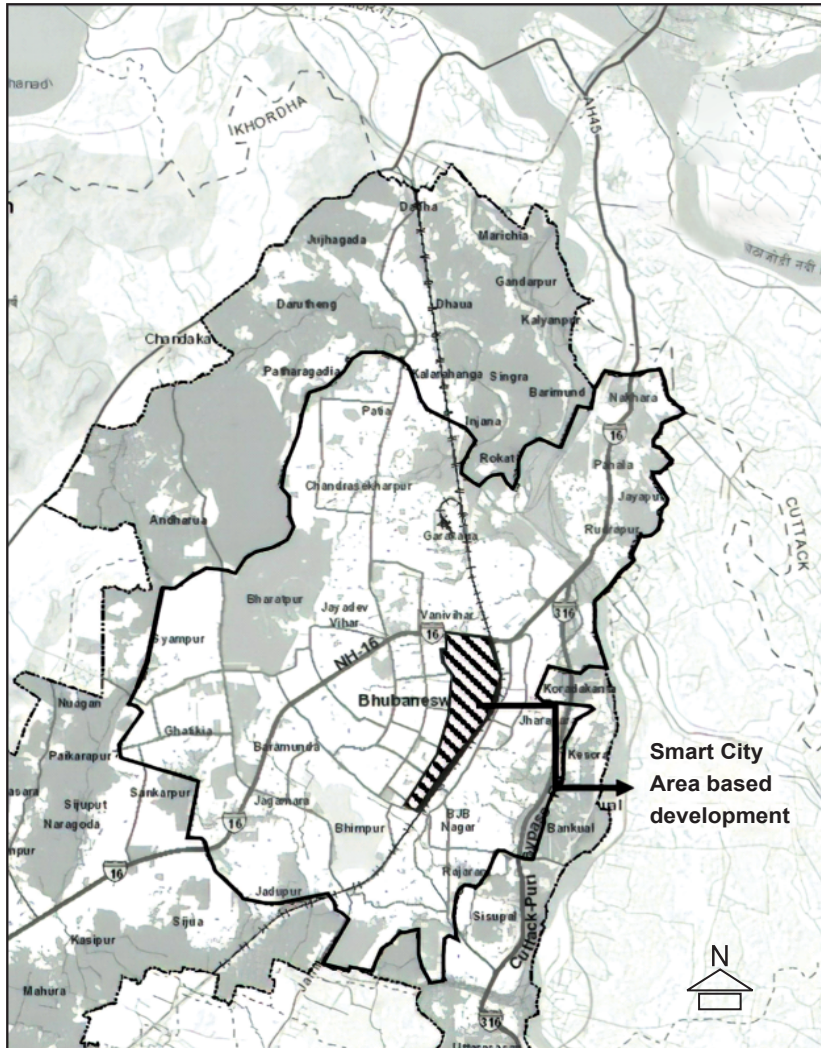
Source: Bhubaneswar Smart City Proposal (2015)

to encourage transit-oriented development. Apart from these, several other projects and programs for social awareness, capacity building and overall urban planning and design involving holistic improvement of living conditions in the city are being taken up under area-based development.

- **Social Development** projects are being implemented through capability building and awareness creation modules which are contextualized to suit the local requirement of the city and its residents through Project Kusum, Project Kutumb and Project Swabhiman. Project Kusum comprises of early childhood education and digital education for children of all segments; Project Kutumb relates to development of social equity centers

to cater the needs of homeless and other residents, migrants and tourists through one stop provision of food, water and shelter; Project Swabhiman aims towards economic opportunity improvements for slum dwellers, street hawkers through micro business incubation, skill development and quality improvement programs.

Seven years since its inception, projects funded under the Smart Cities Mission are in various stages of completion. In terms of overall progress in achieving project completion, Bhubaneswar is ranked among the seven best performing cities nationwide (Economic Times, 2022). Bhubaneswar's Smart Cities proposal had a total budget of Rs. 4,537 crore. Out of this, Rs. 950 crore is Smart Cities Mission fund, Rs. 2,563 crore was projected to be raised through Public Private

Partnerships, while the balance amount was projected to be raised from various other sources. (BDA-BMC, 2015). According to data available on Smart Cities Mission dashboard, Bhubaneswar has provided fund utilization certificate for 80 per cent of the Central Government grants (Rs. 392 crore out of Rs. 490 crore) and 75 per cent of State grants (Rs. 295 crore out of 392 crore) (Ministry of Housing and Urban Affairs, 2022).

5.   ACHIEVEMENTS AND LESSONS

Bhubaneswar's Smart City Plan demonstrates innovative approaches towards citizen engagement and social inclusion. However, there are also difficulties and roadblocks in the implementation process.

The most standout feature of Bhubaneswar's plan was extensive public consultation. It included all five steps - information, consultation, engagement, cooperation, and empowerment and was based on the "spectrum of public participation" paradigm developed by the International Association of Public Participation (IPA2). At the outset, the city launched a three-month long 'Citizen Connect Initiative' to get inputs from city's residents through discussion channels and face-to-face meetings with slum dwellers and street vendors, online polls, social media platforms, idea papers and design competitions. Stakeholder interfaces involved engagement with politicians, government officials, media, NGOs, slum dwellers, women, youth and children, senior citizens and the physically challenged. Street plays, flash mobs and informational kiosks were organized for youth engagement. The outreach was able to engage with 32 per cent of the city's population and created a 'buzz' about the Smart City Plan. Public personalities also actively took part in the campaign. The Smart Cities proposal were finalized based on this elaborate citizen engagement. Subsequently, after Bhubaneswar ranked first in the National Challenge Round, it generated tremendous amount of civic pride and popular support behind the plan.

Bhubaneswar's innovative application of online and offline channels, demonstrate how modern communication technology can be effectively used in planning communication, and reach out to diverse sections of the society. Encouraged by the positive public response during the proposal phase of the Smart Cities project, the Bhubaneswar Smart City Ltd has now launched a 'My City My Pride' (MCMP) program to empower citizens to bring about transformation, mobilize the public, and connect with the government on a regular basis. MCMP with its mobile app and website allows citizens to view the status of their complaints, learn about other issues in their locality and get attention from the authorities (BSCL, 2017).

Moreover, Bhubaneswar shows a socially inclusive, people-centric approach towards development of smart cities. Going beyond the mandate of area-based

and pan-city components suggested under the Smart Cities Mission, Bhubaneswar incorporated a specific 'social' component by focusing on livelihood needs of the urban poor through skill building programs. The city has also initiated several steps towards digital inclusivity by launching programs for digital education of children from underprivileged background.

The inclusive approach was also visible while dealing with informal sector street vendors impacted by the area-based development component of the Smart Cities Mission. Comprehensive urban renewal of the railway station area and the Janpath corridor. BMC engaged with the vendors and organized the area into vending and non-vending zones. Vendors were also provided with special uniforms. It is pertinent to note that even before the Smart Cities project was launched, Bhubaneswar was one of the very few cities in India which took proactive steps to setup vending zones in consultation with the street vendors.

Furthermore, ICOMC, the Intelligent City Operations and Management Centre, the nerve centre of the smart city Bhubaneswar has taken steps to streamline inter-agency coordination. It has set up platforms for data-sharing, transactions, and integrated Management Information Systems. These steps are likely to bring in greater operational efficiency in delivery of civic services; reduce pilferage, transmission and distribution losses, through service level benchmarking and real-time monitoring.

However, Bhubaneswar Smart City has also come under some amount of criticism. According to the Smart Cities Mission data, the area-based development component, has received about 80 per cent of the Smart Cities Mission fund (Rs 164,204 crore) nationally, while the pan city component has received only 20 per cent fund (Rs. 38,914 crore) (Ministry of Housing and Urban Affairs, 2022). In Bhubaneswar, the area-based development of the town centre has received 90 per cent of the smart city budget (Rs. 4095 crore), even though at 985 acres, it accounts for less than 3 per cent of BMC area (186 sq km). The pan-city component has received just about 10 per cent (Rs. 442 crore. It was envisaged that urban renewal of the central part of the city through high value projects like the multi-modal transit hub at the railway station would help the city financially. However, some of the projects having PPP arrangements are facing delays due to contractual issues.

Secondly, some of the Smart City projects were rushed through to meet tight deadlines without adequate planning and had not delivered expected results upon implementation. One such example is Mo Cycle the app-based bike sharing scheme, lunched by BSCL in November 2018, to reduce traffic congestion, enhance road-space efficiency, and improve air quality in the city. Dedicated cycle lanes were demarcated and cycle docking stations were developed which was designed

around bus stops and other important public spaces. However, ridership of the scheme started declined from 37,008 in December 2018 to 6216 in March 2019, as initial enthusiasm waned (Mishra, 2021). Again, it needs to be pointed here, that Bhubaneswar is not the only city to face problems with popularizing public bike sharing scheme and similar problems were also witnessed by Mysore, Bhopal, and Ahmedabad as well. A report by the GIZ (2021) had suggested need for detailed planning before introduction of schemes, including - better integration between the public bike sharing scheme with other modes of transit; clearer policy objectives behind the scheme introduction; and greater attention towards operations and maintenance issues.

6.   CONCLUSIONS

The Smart Cities Mission had triggered a qualitative change nationwide about how Indian cities are planned, managed and governed. It has also been the catalyst behind several innovative approaches. Bhubaneswar's Smart City plan exemplifies a technology-enabled road map for a medium sized city, towards people-centric planning with a strong focus towards social sustainability. However, smart cities are not built in a day, it is a continuous process. Indeed, it is neither a single time activity, nor can have a definitive time line. While the projects initiated under the Smart Cities Mission had acted as a lighthouse, ultimately, it would be important for the local governments to take ownership and move forward. Centrally funded programs have specific time schedule, but the plans initiated needs to be continued.

Until now, area-based development has received maximum attention and budgetary allocation. However, in future, the focus has to shift more towards technology, as Bhubaneswar is an emerging education and business services hub with a large youth population. However, the city is facing several environmental challenges like rising air pollution and road congestions which could be directly attributed to the changing economic orientation of the city. Under the circumstances, Smart City plans should not be treated in isolation, but instead integrated with the city's overall planning framework, and it should be linked to achieving specific developmental objectives in a measurable way, to optimize resource utilization.

REFERENCES

Alizadeh, T. (2021) *Global Trends of Smart Cities*. Amsterdam: Elsevier.

Anand, G., & Deb, A. (2017) *Planning, 'Violations', and Urban Inclusion: A Study of Bhubaneswar*. New Delhi: YUVA and IIHS.

APA. (2017) Pierre L'enfant International Planning Award. Retrieved from https://www.planning.org/awards/2017/bhubaneswar/

BDA-BMC. (2015). *Bhubaneswar Smart City Proposal*. Retrieved from Bhubaneswar:

BDA. (2022) *Planning*. Retrieved from https://bda.gov.in/projects/planning/1

BMC. (2022) Profile. Retrieved from https://www.bmc.gov.in/about/profile

BSCL. (2015) Smart City Plan Retrieved from http://www.smartcitybhubaneswar.gov.in/smartcityFeatures

BSCL. (2022a) Board of Directors. Retrieved from https://smartcitybhubaneswar.gov.in/about-us/board-of-director

BSCL. (2022b) Smart Transformation -Interventions. Retrieved from https://smartcitybhubaneswar.gov.in/smart-transformation/interventions

Chatterji, T., and Maitra, S. (2019) Bhubaneswar, India: Smart City Plan and economic sustainability. In S. Darchen & G. Searle (Eds.), *Global Planning Innovations for Urban Sustainability*. London: Routledge.

Economic Times. (2022) Bhopal, Surat, Udaipur to be India's first smart cities Retrieved from https://economictimes.indiatimes.com/news/india/bhopal-surat-udaipur-to-be-in-list-of-7-smart-cities/articleshow/91295388.cms?from=mdr

Giffinger, R., Haindlmaier, G., and Kramar, H. (2010) The role of rankings in growing city competition. *Urban Research & Practice, 3*(3), 299-312. doi:10.1080/17535069.2010.524420

GIZ. (2019). *Bhubaneswar on the Move - Tools and Guidelines for City Bus Operations*. New Delhi: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Hollands, R. G. (2008) Will the real smart city please stand up? *City, 12*(3), 303-320. doi:10.1080/13604810802479126

Housing and Urban Development Department. (2022) Service Level Benchmark. Retrieved from http://www.urbanodisha.gov.in/Service_Level_Benchmark.aspx

Kalia, R. (1995) *Bhubaneswar: From a Temple Town to a Capital City*. Carbondale, Illinois: SIU Press.

Ministry of Housing and Urban Affairs. (2022). Dashboard - National Progress - Smart Cities Mission. Retrieved from https://smartcities.gov.in/dashboard

Mishra, P. (2021) Mo Cycle Project in Bhubaneswar: A Good Example Of Bad Planning. Retrieved from https://odishatv.in/news/opinion/mo-cycle-project-in-odisha-bhubaneswar-a-good-example-of-bad-planning-156930

NASSCOM. (2016) Strategic Review 2015. Retrieved from http://www.nasscom.org/indian-itbpo-industry

OECD. (2020) Measuring Smart City Performance. Retrieved from https://www.oecd.org/cfe/cities/Smart-cities-measurement-framework-scoping.pdf

Schiavone, F., Paolone, F., and Mancini, D. (2019) Business model innovation for urban smartization. *Technological Forecasting and Social Change, 142*, 210-219. doi: https://doi.org/10.1016/j.techfore.2018.10.028

Sharifi, A. (2020) A typology of smart city assessment tools and indicator sets. *Sustainable Cities and Society, 53*, 101936. doi: https://doi.org/10.1016/j.scs.2019.101936

Sharma, S. (2018) *Smart Cities Unbundled*. New Delhi: Bloomsbury.

Smart City Issues and Challenges with Focus on Bhubaneswar

Jayant K. Routray, Ph.D.

Abstract

This paper discusses on the concept of smart cities, requirements, and criteria of smart city, smart solutions, and also examines Bhubaneswar Smart city and its attributes. To assess whether a city qualifies as a smart city, several sets of criteria are explored as outlined by different authors. The main focus of the paper is to identify attributes of Bhubaneshwar city and 14 of these attributes have been identified. It is argued that currently Bhubaneswar stands at the starting phase of a smart city. The dream will be fulfilled with active participation of all stakeholders and concerned public and private agencies by involving communities and people of the city. Application and adoption of IoT in selected areas will follow. The author cautions that city governors and managers should pay attention to these 14 attributes and work out project activities following the sustainable path to make the city really a smart one.

1.　　INTRODUCTION

The word 'smart' is a prefix to too many things starting from smart phone to smart city. At present most of the individuals including government and private officials and professionals use and depend on smart phone every day minute-to-minute basis in daily life and for easy transaction of their routine and business activities, social interactions and communications from simple telephonic calls to video calls, taking pictures and preparing videos and sharing information in different social and official platforms. Smart phone is used intensively in different commercial platforms too. Smart phone is a multifunctional device that satisfies the needs of the children, young, working, nonworking and old population for multipurpose activities.

Let us take the analogy of a smart phone, try to link with the smart city, and understand the meaning of it. In a simple way, a smart city is a spatial platform, which provides multifunction and services that enable the citizens, users and functionaries in performing the best in an easier and faster way while minimizing/ overcoming the potential threats and negative impacts such as environmental degradation and pollution and others, simultaneously deriving the fullest benefits and satisfaction to users and providers by adapting Internet of Things (IoT) and Information Communication Technology (ICT).

This paper discusses on the concept of smart cities, requirements and criteria of smart city, smart cities and smart solutions, and Bhubaneswar Smart city and its attributes.

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2.   THE CONCEPT OF SMART CITY

The concept of smart city varies from scholar to scholar. The planners, professionals and people understand it differently. A smart city is seen as a determined geographical space able to manage resources (natural, human, equipment, housing, and infrastructure) as well as wastes generated by life style; it should be sustainable and must not be harmful to the environment (Gurrero-Perez, Gouzalez and Lopez, 2013). Barcelona City Council in Spain has defined the smart city as "a self-sufficient city of productive neighborhoods at human speed, inside a hyper-connected zero emissions metropolitan area". Different actors in specific fields relating to future cities over time have also used the terminology such as Garden Cities, Eco Cities, Green Cities, Livable Cities, Sustainable Cities, Compact Cities, Smart Cities, and Resilient Cities (Mior, Moonem, and Clark, 2014). Kondepudi (2014) defines a smart city as "A Smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects". A number of scholars for review and analytical research use this definition. A smart city is a place where traditional networks and services are made more flexible, efficient and sustainable with the use of information, digital and telecommunication technologies, to improve its operations for the benefit of its inhabitants (Mohanty, Choppali and Kougianos, 2016). In addition, other scholars have linked smart cities to Digital cities, Intelligent and Innovative cities.

Mitchell (2016) explains that Information Communication Technology (ICT) is essential in the smart city to (i) make efficient use of infrastructures that allows sustainable development from economic, social and cultural aspects; (ii) involve the citizen in local administration by employing an e-participation system; (iii) support learning from experience, adaptation and innovation so that to react more efficiently and more rapidly to various changes. The intelligence of the city (human, collective, and artificial) is created by interconnecting telecommunication networks and integrated system. In this context areas of applications are multidimensional and reflected in smart building (optimizing heating system, ventilation, and air-conditioning); education; medical and social care for women, children, aging and old people; smart energy (smart grid, smart metering of natural gas, water and electrical energy, on-line information of the consumption, wireless smart meters); smart utilities (water distribution, waste management with real time solid waste monitoring, Integrated supply system) supply and demand synchronization in the context of transportation around the supply chains of the cities, and smart and integrated transport (CCTV for traffic, parking, minimizing the impact on environment).

Eremia, Toma and Sanduleac (2017) have suggested five basic directions to make city smart. The directions are focused on clean energy sources, smart metering, and efficient public lighting, integration of electrical vehicle and active involvement of consumers. This perspective is centered on meeting energy needs and making the city free from air pollution. It is generally accepted that smart city model necessarily consists of six interrelated components – 'smart' government, 'smart' mobility, 'smart' environment, 'smart' living, and 'smart' people (Caraglin, Bo and Nijkamp, 2011). Each of these components includes a number of factors that must be simultaneously taken into account in the development of smart city model - logistic in practice (Tahir and Malek, 2016). 'The Little Book of Smart Cities' by Cavada, Hunt and Rogers (2017) briefly discusses on the concept, typology, and a few selected smart cities of Asia and Europe that is in line with other scholars. Mohanty, Choppali and Kougianos (2016) have stressed on Information and Communication Technology, which are enabling keys for transforming traditional to smart cities and discussion on technology frameworks – Internet of Things (IoT), and Big Data that make smart cities efficient and responsive.

3.   REQUIREMENTS AND CRITERIA OF SMART CITY

At present, smart cities are in the evolutionary process in developing countries. In general, the basic infrastructure facilities (road, power, gas, water, sewerage, and sanitation including solid waste networks, and internet connectivity) are in a poor state in meeting the citizen's current needs. Transforming cities to smart cities is a big challenge for the governments. To assess whether a city qualifies as a smart city, six criteria have been identified, viz. economy, mobility, environment, people, living, and governance (Tahir and Malek, 2017).

Javed and et al. (2022) suggests a system-of-systems approach for 360 degrees of smartness in smart city. The model suggests for the (a) Smart Life (Smart Health Care, Smart Communication, Smart Economy, Smart Transportation, Smart Factories); (b) Smart Citizen (Smart Homes, Smart Education, Smart Vehicles and Smart Business); (c) Smart Governance (Smart operations, Smart Law and Order, Smart Public Safety, Smart Identity); and (d) Smart Environment (Smart Power Management, Smart Waste Management, Smart Irrigation Management).

Based on an intensive literature review research, Daneva and Lazarov (2018) have followed the British Standards Institute framework for categorizing the data extracted from the papers to illustrate the requirements for the smart cities. The framework suggests four dimensions i.e. (i) End-to-End Experience referring to holistic descriptions of the behavior of a Sustainable Smart City; (ii) Architecture, referring to formal descriptions of information systems, in particular by defining components or building blocks and how they will work together; (iii) Security and privacy, referring to holistic description of technology

and policy aspects; as data is shared between services, concerns emerge over information security, data protection and privacy; (iv) Infrastructure, referring to the descriptions of the infrastructure facilitation for the interaction between elements within any subsystems as well as between the systems. This interaction is enabled and supported by ICT and Electronics.

End-to-End experience requirements mostly refer to instrumented system (abilities of collecting data, preparing data for analysis, and Transforming data); and regarding interconnected and intelligent smart systems are in fact quality requirements e.g. interoperability, distributedness of data mining processing or sematic integration. Architecture requirements that indicate requirements at sensor or network levels. The network level requirements deal with the rules postulating the communication of local networks and broader networks as Wi-Fi and 3 G/4 G/5 G. Security and privacy requirements focuses on the level of interconnected systems and identity management of citizens. The security requirements from a system-to-system perspective concerns with how the constituent systems self-organize themselves in a secure way to preserve the security properties of the composite system they make up together. Infrastructure requirements are concerned with physical space, urban locations, broadband elements and living lab positions.

Mohanty, Choppali and Kougianos (2017) in their article explains clearly the components and characteristics of smart cities, which are more or less similar to above discussions but with a difference. Smart cities have four themes (Society, Economy, Environment, and Governance). Broadly, the smart cities have eight components such as starting with (1) Smart Infrastructure, (2) Smart Building, (3) Smart Transportation, (4) Smart Energy, (5) Smart Healthcare & Education, (6) Smart Technology, (7) Smart Governance, and (8) Smart Citizen. All components are connected with Internet of Things (IoT). There are four attributes – sustainability, quality of life, urbanization and smartness. The following aspects are extracted from Mohanty and teal's work and presented below briefly to understand the nature and characteristics of smart cities.

3.1   Smart Infrastructure and Smart Building

In the context of smart cities, anything physical, electrical, and digital that is the backbone can be considered as its infrastructure. This includes road and railway network system, bridges, traffic light system, street light system, communication system, water supply system, gas supply system, smart power grid, smart meters, operational control and load balancing mechanisms, fire fighting system, hospital system, rapid transit system, waste management system, apartment homes, hotels, and digital library, etc. The backend of the smart infrastructure is the ICT infrastructure (communication infrastructure such as fiber optics, Wi-Fi networks, wireless hot spots as well as service oriented information systems).

A smart building can have different hardware, software, sensors, and smart appliances for different automated operations including data network, voice-over-IP (VoIP), video distribution and surveillance, access control, power management, and lighting control. In addition, the concept of green building for energy self-sufficiency from renewable sources and energy efficiency by the use of IoT for integrated solutions.

3.2   Smart Transportation or Intelligent Transport System (ITS)

This includes various types of communication and navigation systems in vehicles, between vehicles (car to car), and between vehicles and fixed locations (car to infrastructure). The technology includes sensors in vehicles for avoiding collision and anti-skidding to increase safety of the system. Radio frequency identification (RFID) based toll collection, RFID based passports, smart security vehicle number plates, Smart mobile phone apps for hiring and even tracking the exact location of taxis are part of the ITS.

3.3   Smart Energy

This refers to solar or wind and bio-gas energy (renewable and sustainable) with minimal / no environmental impacts. The smart energy system consist of intelligent integration of decentralized sustainable energy sources, efficient distribution and optimized power consumption with the adaption of ICT.

3.4   Smart Health Care

IoT facilitates tele-medicine, emergency response, and use of robots in surgery remotely, providing critical care and services to senior citizens, etc.

3.5   Smart Technology

Smart technology is key to design, implementation and operation of smart cities. Smart technology is a big basket of selected of technologies for different applications. Green or Clean and Renewable energy system, sustainable transport system, sustainable resource management, communication infrastructure, Global ICT Infrastructure, Social Network and Cyber Physical System and State of Art Technology constitute the parts of smart technology needed to make a city smart in management and delivering goods and services.

3.6   Smart City Design

The challenges of smart city design are many starting from design cost to operation efficiency, carbon emission, city growth, disaster resilience, reliable communication, information security, operation cost, city waste, city sustainability, system failure, data volume, and public safety.

3.7   The IoT in Smart Cities

IoT is the technical backbone of smart cities. The use of IoT can make the smart cities feasible. The use of smart phones, smart meters, smart sensors (RFID, IR

and GPS) are forms of IoT framework in smart cities. Smart cities can use IoT to build smart transportation, smart health care, and energy management. The four components of IoT are the Thing, the local area network (LAN), the Internet and the Cloud.

3.8 Big Data in Smart Cities

It refers to a collection of large and complex sets of data that is difficult to process using regular data management tools or traditional data processing applications. The challenges of Big Data are multi-fold including visualization, mining, analysis, capture, storage, search and sharing. Sophisticated data analysis tools and techniques are required to extract different patterns and interpret from the Big Data and smart cities due to its complexity, volume, variety, variability, and veracity.

4. SMART CITIES AND SMART SOLUTIONS

Some of the cities of the world are qualified and well known as the top smart cities. They are Singapore, Zurich, Oslo, Copenhagen, Auckland, Helsinki, Bilbao in France, and Dusseldorf in Germany. These cities meet the criteria of smart cities and provide the best living environment following the path of sustainable development. Barcelona in Spain in the EU is known for its strategies and reinventing activities technologically driven such as street light, waste disposal, city bike system, bus transit system, noise sensors, irrigation system for gardeners, and fab lab (digital fabrication laboratories).

State of Green of Denmark has identified top ten smart city solutions for meeting the global challenges and help cities becoming smart and sustainable, which are demonstrated in different cities. The solutions are - (1) one smart grid platform to share data about nine utilities and all types of consumption, optimize operations and improve maintenance of infrastructure; (2) use of sensors to ensure cost-efficient waste handling; (3) data driven traffic management to improve air quality; (4) combining multiple data sources in automatic water leakage management with intelligent valves and pumps for active pressure management in order to reduce the risk of bursts, GIS in real time hydraulic modelling and online management information for the weakest pipelines for reducing water leakage; (5) introduced software monitoring indoor climate and real-time management for full scale energy savings in public and private buildings; (6) digitization of district heating system, optimization to supply more buildings, and support carbon-neutral, and energy efficient future; (7) established Bio Refinery System for wastewater treatment, energy production and resource recovery system (all-in-one) by combining latest technologies in water purification, energy optimization, and bio-gas production; (8) intelligent street lighting with private partnerships involving more than 45 manufacturers of such products; and (9) created a light rail system to provide mobility networks around

Copenhagen by involving 10 municipalities, developing large data hubs for real time solutions, solving traffic congestions with the introduction of autonomous minibuses along the light rail system. There are many other practices available in other cities and countries for in-depth understanding and adaption for moving towards smart and sustainable cities in future. Research suggests (Adam Rujan, 2018) multiple benefits of smart cities. Smart cities make effective data driven decision making, enhance citizen and government engagements, create safer communities, reduce environmental foot print, improve transportation, increase digital equity, create new economic development, development opportunities, provide efficient public utilities, improve infrastructure, and increase workforce engagement.

5.   BHUBANESWAR SMART CITY

Bhubaneswar was selected as the first city of India in 2016 for special grant and assistance for becoming a smart city under the "Vision of Smart Cities Mission in India'. The overall objective of SCM is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment through the application of 'Smart' solutions. The smart city concept adopted in India is an urban renewal and retrofitting program for citizen friendly development. The focus is on infrastructure (physical, institutional, and social) for sustainable development. The features of the identified smart cities are targeted for mixed and flexible land use, housing for all, walkable localities, preserving and creating open spaces (parks, playground and recreational places), promoting a variety of transport options (mass transit), governance (accountability and transparency, online / mobile and e-services), identity of the city, specialized activity, applying smart city solutions to infrastructure and services, disaster risk reductions, and providing cheaper services, etc.

With this backdrop, the objective of Bhubaneswar Smart City is to - (1) promote the city as a lively city that gives a better quality of life to its citizens with a clean and sustainable environment; (2) enter into contacts, partnerships, service delivery arrangements with Indian as well foreign firms as may be required for the implementation of the Smart Cities Mission; (3) undertake comprehensive development by promoting mixed land use, provision of housing for all, the creation of walkable localities, preserving and developing open spaces, promoting a variety of transport options including transit-oriented development, public transport and last mile para-transport connectivity, making governance, citizen friendly and cost effective, giving identity to the city and applying smart solutions to infrastructure and services in order to make them better; and (4) undertake the review of activities of the Mission including budget implementation of projects under Smart City Proposal (SCP) and co-ordination with other missions / schemes and activities of various Ministries / Departments (https://smartcitybhubaneswar. gov.in/about-us/about-bhubaneswar-smart-city-ltd).

Bhubaneswar's proposal envisioned to retrofit and redevelop 985 acres distributed around main Railway Station in heart of the city to a vibrant 24x7 destination-The Bhubaneswar Town Centre District (BTCD). Bhubaneswar's state-of-the-art Intelligent City Operations and Management Centre (ICOMC) is at the core of its pan-city proposal (GOI, 2016).

It is managed by a Board of the Bhubaneswar Smart City Ltd. (BSCL) chaired by Development Commissioner-cum-Additional Chief Secretary (Planning and Convergence Department), Government of Odisha, consisting of Managing Director (Commissioner, BMC) and a full time Chief Executive Officer for managing day to day operations and business affairs. There are five technical divisions (Urban Planning and Engineering, Technology and Projects, Administration, Special Projects, Social Projects) each headed by a General Manager and supported by two other divisions (Company Affairs and Legal, and Finance).

6. BHUBANESWAR CITY PROFILE

In the post-independence period Bhubaneswar, town was designed and planned by German Architect Otto Konigsberger for a population size of 40,000 that came to existence in 1949 as the new State capital of Odisha. In 1950, the population of Bhubaneswar was only 15,000 and the current population is 1.26 million. The geographical area of the city at present is 186 sq km. It is above 45 m from the MSL. It has achieved the status of a metropolitan town with a current population growth of 2.6%. The population density is 6774 per sq km (2023) as against 2131 in 2011. Cuttack and Bhubaneswar are twin city with a current total population of 2.4 million in 2023 and together serve a surrounding regional population about 14 million and the urbanization level is 17.5% as per 2011 Census. Cuttack-Bhubaneswar as a regiopolis serve as a secondary city of the eastern region of the state covering the constituent districts of Bhadrak, Cuttack, Jagatsinghpur, Jajpur, Kendrapara, Khordha, and Puri. The city has spread over a rolling land with ridges and valleys. The land available for development around Bhubaneswar city is mostly by the government extending to a vast stretch of reserved forest with wild animals (elephants and tigers). Other towns such as Chowdwar, Puri, Khordha, Jatani, and Banki are located within a radial distance of 30 to 60 km. Functionally Bhubaneswar is evolved as an administrative-cum-service town and gradually diversified with trade and commerce, center for tertiary education, and health facilities. The software companies are being added on regular basis. With the addition of sports facilities for regional, national and international events, the city status changed to Info and Sports city. The city is a growth point in the East India almost equidistant from Kolkata, Vishakhapatnam and Ranchi. It attracts local and regional migrants and in the process of transforming to a cosmopolitan metropolis in few years' time.

7.   ATTRIBUTES AND PRELIMINARY ASSESSMENT OF THE STATUS WITH NEEDS AND GAPS OF BHUBANESWAR

- **Railway:** Bhubaneswar as a capital city along the eastern coastal region is well connected within the state, connected regionally and nationally to major towns and cities of the country. The current renovation of networks and stations with modern facilities in the region is improving the quality of services.

- **Airways:** Bhubaneswar as a node with connections to metropolitan and secondary cities are quite satisfactory. The internal air connectivity to Jharsuguda, Rourkela, and Jaipur have been added and will be intensified soon.

- **Roads:** Through the National Highway Network, Bhubaneswar is well connected within and outside state. The state highways and major district roads of the state has provided a very good road networks in the state and has connected down to villages except some isolated pockets in hilly regions of the state. The road quality is satisfactory but needs to be improved further to provide a moderate speed of 60 to 70 km per hour. The internal road system of Bhubaneswar has improved over the years. Major avenues have been constructed with foot and cycle paths but not adequate in terms of lanes to handle current traffic during peak hours. The service roads, wherever available are discontinuous, blocked by street vendors and road side business activities. Parallel roads are on the pipeline to ease out the traffic congestion but construction work is in a slow process due to no clearance of land at many locations. This is a major challenge in streamlining the internal road system.

- **Water Supply and Electricity:** Water supply is satisfactory with 24 hour supply in many colonies. Recently, the clean drinking water network is directly from the tap and is available at different locations for the city population. Electricity supply is satisfactory but not achieved yet 24 hours x 360 days' supply. Renewable energy system, particularly solar power should be intensified for street lighting, in public places and office building. Solar power use in private houses is insignificant due to lack of promotion and favorable policy instruments.

- **Drainage and Sewerage System:** The function of the natural drainage system's capacity is narrowed down due to unauthorized occupation along the drainage courses. In the city, the constructed drainage system is partly open and seems to be low capacity as reflected through water logging and flooding regularly in the rainy season. The modern sewerage system is in place now but not yet functional.

- **Solid Waste Disposal:** The service provided by the BMC is not adequate and not satisfactory despite the sincere efforts made by BMC by involving private companies and introducing a number of measures for waste separation, bio-

composting, and producing bio-manures. Availability of dumping yard is a regular issue for BMC.

- **Telephone and Internet:** The network is available by government and private companies and just satisfactory. The several measures needs to be taken up for improving the network efficiency, reduction, and competitive tariff system, and provision of free internet points in Ward Offices.

- **Traffic Management:** Roads are congested on peak hours due to low capacity, mixed traffic, and lack of alternative roads parallel to major streets. The light and signaling system is poor, becomes out of order many times, and is manually managed by traffic police persons. Traffic posts are located at the center on many locations; poor road design at the meeting points of roads, whether at T-junction, U-turns and even at major junctions (4 way junction); and positioning of the zebra crossings for pedestrians create complex problems for traffic management. Roadside commercial activities and associated parking, not following the track driving, and monopoly driving of the bikers and auto-rickshaws create further problems to traffic management. The road capacity in terms of width for public buses used for mass transit is inadequate and it becomes difficult at crossings for changing routes. A ring / circular road has been conceptualized to ease out the traffic problems. Additional challenges crop up due to free movement of domestic cows, buffaloes, and bulls on the streets.

- **Housing:** Demand increases for low cost and low rent houses for the migrants and city population. Need arises for coordination between public and private builders with rationalization of housing price. Housing for the slum population is the major issues, which is addressed through the Jaga Mission of Odisha Government's housing projects, but is not adequate to address the needs of the entire slum population, which constitutes about 1/3 of city population. It is necessary to introduce affordable and participatory housing schemes and undertaking various resettlement programs. Making the city free from slums is extremely challenging. However, within a radial distance of 10 km from the city center, a number of redevelopment programs should be undertaken to catalyze and support smart city development programs physically.

- **Trade and Commerce:** With growing population of Bhubaneswar, the trade and commercial activities are growing at a faster rate along the major road network system. This has direct implication in the flow and volume of traffic as well as parking areas. In addition, the informal trading and commercial activities along the roads make the problem more complex. The green vending zones and available of a few number kiosks provided by the BMC at few locations are not permanent solutions to address the demand of small and medium enterprises dealing with food items to durable goods on the street. Construction of new marketing complexes, renovation and expansion of old markets, focusing on neighborhood markets, and quick distribution of

available market units should be prioritized to support smart city operations. Due to fresh milk demand in the city, no neighborhood is free from milkmen with milch cattle. All such cattle units should be relocated and encouraged for small-scale dairy farming with linkages to bigger production units.

- **Greening the City:** The city has few pockets of urban forests and it is juxtaposed to the reserved forest area. Avenue plantation, neighborhood parks, play grounds, recreation and exercise grounds for all age groups, and community parks, household gardening wherever possible, urban agriculture, roof top gardens, etc., are the phenomena of greening the city. City government, private bodies and individuals need to make more efforts for intensifying the green coverage as much as possible while conserving the natural green forests and areas.

- **Social Climate:** As the city is growing, with addition of migrant population particularly in slums, the social climate is getting disturbed by rising a number criminal activities, sex and drug trades, thefts, burglaries, suicides and murders, and cyber-crimes.

- **Databases:** Databases owned by both public and private organizations are used by respective organizations but not shared to create a big database for managing the affairs of a smart city like Bhubaneswar, which is unknown about the available databases in the city.

- **IoT:** This is the backbone of any Smart City. Bhubaneswar Smart City Limited (BSCL) has planned for a 680 km of optic fiber cable network to provide robust internet connectivity to support CCTVs, public address system speakers, dynamic message signboards, traffic violation detection, system, and Wi-Fi access points. BMC provides a portal for citizen online services through a site <Bhubaneswar.Me> with multiple interfaces (websites, mobile apps, digital kiosks, and city call centers).

8.   CONCLUSIONS

Bhubaneswar's planning and development are currently managed by multiple agencies. Bhubaneswar Development Authority, Bhubaneswar Municipal Corporation, and Bhubaneswar Smart City Limited are the lead organizations. Coordination among these agencies and many others such as Water Corporation of Odisha, and Orissa Water Supply Sewerage Board, Transport Department, and Internet and Electricity providers is extremely important to pursue a common goal for integrated spatial (physical) development. This is very basic to support smart city development. The above discussion has highlighted the gaps and challenges of the attributes of Bhubaneswar city development. As far as the smart city is concerned, Bhubaneswar is at the beginning phase at present. The dream will be fulfilled with active participation of all stakeholders and concerned public and private agencies by involving communities and people of the city. Application and adoption of IoT in selected areas will follow systematically. City governors

and managers should pay attention to the attributes as mentioned before and work out project activities following the sustainable path to make the city really a smart one integrating with Cuttack city.

REFERENCES

Caragliu, A., Bo Del, C. and Nijkamp, P. (2009), "Smart Cities in Europe", *Journal of Urban Technology, Vol.48.*

Cavada, M., Hunt, D. and Rogers, C. *"The Little Book of SMART CITIES"*, Imagination Lancaster, 2017 (ISBN 978-0-70442-949-9).

Daneva, M. and Lazarov, B. (2018), *"Requirements of Smart Cities: Results from a Systematic Review of Literature,"* IEEE, 2018.

Eremia, M., Toma, L., and Sanduleac, M. (2017), *The Smart City Concept in the 21st Century,* Proceedia Engineering, 181 (12-19).

Government of India (2016), The Smart City Challenge Round 1: *Smart City Proposal Bhubaneswar.* New Delhi, India: Ministry of Urban Development.

Javed, A. R., Shahzad, F., Rehman, Sai fur., Zikria, Y. B., Razzak, I., Jali, Z. and Xu, G. (2022), *Future smart cities: requirements, emerging technologies, applications, challenges, and future aspects,* Cities, 129.

Kondepudi, S., (2014), *Smart Sustainable Cities Analysis of Definitions,* The Report, The IUT-T Focus Group for Smart Sustainable Cities, <https://www.itu.int/en/ITU-T/focusgroups/ssc/Pages/default.aspx>.

Mohanty, S. P., Choppali, U. and Kougianos, E. (2016), Everything You wanted to Know about Smart Cities", *IEEE Consumer Electronics Magazine,* Pp. 1-15.

Moir, E. Moonem, T. and Clark, G. (2014), *What are future cities? Origins, meaning, and uses,* Compiled by Business of Cities for the Foresight Future of Cities catapult, Government Office of Science, UK.

Rujan, A., (2018), *Thinking about becoming a smart city? 10 benefits of smart cities.*

State of Green (2019), 10 Examples of Smart City Solution, <stateofgreen.com/en/partners/state-of-green/news/10-examples-of-smart-city-solutions>.

Tahir, Z. and Malek, J. A. (2016), Main criteria in the development of smart cities determined using analytical methods, *Planning Malaysia, Vol. XIV,* and Pp. 1-14.

Additional Readings

Duster, S., Nastic, S. and Sceekic, O. (2017), *Smart Cities (The Internet of Things, People and System),* Springer, 2017.

Mahmood, Z. (Editor), 2018, *Smart Cities (Development and Governance Frameworks),* Springer.

Pelton, J. N. and Singh, I. B. (2019), *Smart Cities of Today and Tomorrow (Better Technology, Infrastructure and Security),* Springer.

Sun, H., Wang, C. and Ahmad, B. I. (2018) *From Internet of Things to Smart Cities (Enabling Technologies),* CRC Press (Taylor & Francis Group).

Key Issues and Challenges for Urban Planning to Achieve Sustainable Development Goal 11, in India

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Abstract

Sustainable urbanization remains integral part of sustainable development goals. For the first time planning has been accorded international status by including SDG 11 in the SDG 2030 Agenda. This paper analyses challenges faced by the Indian cities to achieve SDG 11. These challenges include most of the city challenges such as affordable housing, air and water pollution, public transport, solid waste management, energy, mitigation of climate change impacts and the challenge of huge investments. The author also lists important initiatives to achieve SDG 11, and concludes by saying to continue to work in this direction if SDG 11 is to be achieved.

1.   INTRODUCTION

India's urban population is estimated to increase by 140 million over the next 15 years, from 470 million in 2021 to 600 million by 2036 (*Athar et al., 2022*). By 2050, an estimated 7 out of 10 people will likely to live in urban areas. Cities are drivers of economic growth and contribute more than 80 per cent of global GDP. Further, cities are the engines of the economic growth and also played very important role in safeguarding the environment and biodiversity. There is a huge sustainable investment opportunities in the cities at present about 70 per cent of resources use cities as of 2015. Cities are continuously expanding in terms of geographical spread consuming agricultural lands for urban use. This is often accompanied by the building on the vacant lands as well as densifying the plots within the city. The faster growing cities have experienced economic growth and attracted people from rural areas.

The form of India's urban centres differs from those in developed countries due to their traditionally dense and mixed land use structure. As concepts such as Smart Growth, Compact Cities, and New Urbanism saturate the sustainability discourse, the validity of the argument that high density, compact and mixed-use cities might reduce car use and promote the use of alternative modes on the existence of a true causal mechanism between the built environment and travel behavior *(Giancarlos et al., 2017)*. Reduction in the use of public transport system and high level use of single occupancy vehicle due to inefficient public transportation systems added to traffic issues. As per a recent World Bank report, to efficiently meet the demand

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of the growing population, India will need approximately $ 840 billion in investment in urban infrastructure over the next 15 years. Of this, $ 450 billion investment needs are in basic municipal services such as water supply, sewerage, municipal solid waste management, storm water drainage, urban roads and street lighting. The balance $ 300 billion is needed for mass transit systems.

2.   SUSTAINABLE DEVELOPMENT GOAL 11

Sustainable Development Goal 11 is committed to making cities inclusive, safe, resilient and sustainable. Participatory planning can play an important role in the implementation of the Goal 11. Sustainable urbanization requires that cities generate adequate income and decent employment opportunities; provide the necessary infrastructure for water and sanitation, energy, transportation and communication; ensure equitable access to housing and services; minimize the number of people living in slums; and preserve a healthy environment within the city and surrounding areas" *(UN General Assembly, 2015)*. Sustainable urban planning is planning for urban areas in such a way so as to promote inter-generational equity while not putting any stress on the surroundings - economically, environmentally as well as socially.

Box 1: SDG 2030 Goal 11 Targets Linked to the Environment

- **Target 11.2:** By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations i.e. women, children, persons with disabilities and older persons
- **Target 11.3:** By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.
- **Target 11.4:** Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
- **Target 11.5:** By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.
- **Target 11.6:** By 2030, reduce the adverse per capita environmental impact of cities, by paying special attention to air quality and municipal and other waste management.
- **Target 11.7:** By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.
- **Target 11.a:** Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning.
- **Target 11.b:** By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

Source: UN General Assembly, 2022

In India with the adoption of SDG 2030 Agenda, the SDG 11 calls on UN member states to make cities inclusive, safe, resilient and sustainable by 2030 (Box 1), featuring targets for measuring this achievement including improving access to affordable housing, expanding public transit systems, improving resiliency to disasters, and ameliorating air and water pollution from unsustainable energy and waste disposal practices (Nirupam Bajpai and John Biberman, 2021). It is crucial that cities are strengthened in their roles as key development actors. The country continues to face major challenges in achieving SDG 11 of the 17 SDGs, which has pushed down its global ranking on SDG preparedness.

As per the Study conducted by the ADB, 2021 funding under Smart Cities Mission, the major grants allocated for mobility and connectivity i.e., 90 per cent of the grants or loans and remaining 10 per cent for health, education, housing, and water supply-related facilities, etc. To align with development process for achieving SDG 11 requires comprehensive approach with emphasis on water supply and sanitation.

3.   KEY ISSUES AND CHALLENGES FOR URBAN PLANNING

Sustainable urban planning has emerged as an essential goal to cope with the pressures of urbanization. National Commission on Urbanization in India, 1988 acknowledged the need for the promotion of flexibility in land use, adequate supply of land as well as efficiency and equity in the supply of land. It is high time that steps are taken to not just integrate the principles of sustainable development into the programs and policies of the country but also ensure their strict and proper implementation. The key issues and challenges for Urban Planning to achieve Sustainable Development Goal 11 in India are as follows.

3.1   Affordable Housing

In 2020, about one in four urban dwellers lived in slums or informal settlements in the World. Empirical analysis shows that a 1 per cent increase in urban population growth will increase the incidence of slums by 2.3 per cent and 5.3 per cent in Africa and Asia, respectively. The shortage of urban houses in India stood at approximately 19 million units in 2012 and it is expected to grow at a CAGR of 6.6 per cent for 10 years till 2022 (Press Trust of India, 2015). Of this, approximately 95.6 per cent of the shortage is expected to be from the EWS and LIG households, who cannot afford houses costing above Rs. 15 lakh, according to a KPMG report (KPMG, 2014). In India, PMAY-U is one of the largest housing programs in the world. To provide all-weather pucca houses to all eligible families with all basic civic amenities in the urban areas of the country to fulfill vision of 'Housing for All'. So far PMAY-U achieved a milestone of sanctioning more than 12.2 million houses. More than 10 million houses have been grounded for construction of which, more than 6 million houses have been completed and delivered to the beneficiaries (MoHUA, GOI, 2022).

3.2   Air and Water Pollution

One of the most pressing environmental issues in India is air pollution. Air pollution poses a significant threat to human health worldwide. According to the 2021 World Air Quality Report, India is home to 63 of the 100 most polluted cities, with New Delhi named the Capital with the worst air quality in the World. The study also found that PM 2.5 concentrations – tiny particles in the air that are 2.5 micrometers or smaller in length- in 48 per cent of the country's cities are more than 10 times higher than WHO air quality guideline level. In 2019, ambient air pollution from traffic, industry, power generation, waste burning and residential fuel combustion resulted in 4.2 million deaths. Current scientific evidence also suggests that air pollution weakens the immune system against infectious diseases. Evidence suggests that more than 80 per cent of city residents worldwide live with air pollution as much as 2.5 times higher than the World Health Organization's safety criteria (World Health Organization, 2021). India's National Strategy aims to reduce PM emissions by as much as 30 per cent by 2024. But, a report from the Centre for Research on Energy and Clean Air, finds that a total of 132 cities, up from 102 cities since the 2019 inception of the National Clean Air Program, have pollution levels below national standards.

Water Pollution in India an account for the loss of, up to half of GDP growth, as recent World Bank report suggests that, water pollution costs the Indian Government between USD$ 6.7 and $ 7.7 billion a year and is associated with a 9 per cent drop in agricultural revenues as well as a 16 per cent decreases in downstream agricultural yields. Despite several initiatives, 1.96 million urban homes in India have water contaminated with fluoride and arsenic (UNICEF India).

3.3   Public Transport

According to 2020 data from 1,510 cities around the world, only about 37 per cent of urban areas are served by public transport. Due to variations in population density within cities, this translates to 52 per cent of the urban population with convenient access to public transport (meaning that they reside within 500 metres walking distance of low-capacity transport systems – such as bus stops or trams – or within 1,000 metres of high-capacity systems, such as trains and ferries). City governments still have a massive task ahead of them in seeking to enhance the availability and use of accessible, inclusive, safe, reliable and efficient public transport systems.

The country has the second-largest road network in the world. In India, close to 36.5 million people, or 18 per cent of the population, use public transport services daily (*IDEF,2022*)[1].In India declining share of public transport as per the NITI Aayog's recent report on transforming mobility' India has 1.2 buses per 1,000 people, below developing nation benchmarks, with a vast disparity between

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1   *https://www.ibef.org/blogs/electrification-of-india-s-public-sector-transport*

states – 4.7 in Chandigarh versus 0.02 in Bihar,". Whereas in comparing with Thailand (8.6 per 1,000) and South Africa (6.1 per 1,000).

3.4   Solid Waste Management

In 2022, an average of 82 per cent of municipal solid waste globally was being collected and 55 per cent was being managed in controlled facilities. It is estimated that, urban India generates between 1.30 lakh to 1.50 lakh metric tons (MT) of Municipal Solid Waste every day and an average per capita waste generated a range between 0.330- 0.550 kilograms. This adds up to roughly 50 million MT per year at current rate this will jump to about 125 million MT a year by 2031 (NITI Aayog and CSE, 2021). Currently, about 5 per cent of the total collected waste is recycled, 18 per cent is composted and the remaining is dumped at landfill sites.

3.5   Energy

With regards to energy consumption, 18 per cent of the total energy is consumed by the transport sector. It is quite alarming that the road transport sector contributes 87 per cent to the emissions (around 123 million tons). According to data from a report by the Central Electricity Authority, about 60.2 per cent of India's energy is generated through fossil fuels, of which 51.9 per cent comes from coal power plants. The Government of India has set targets to reduce the economy's carbon intensity by 45 per cent by 2030 and achieve net zero emissions by 2070. It is possible only through the mass adoption of EVs, especially in the public transportation system. Out of the 5,60,493 EVs sold in India (from January 2022 to August 2022), two-wheelers and three-wheelers accounted for 94 per cent of the total, four-wheelers 5 per cent, and e-buses 0.2 per cent. Since e-buses account for a minor share of the EVs sold in the country, a monthly increase in the vehicle fleet is warranted to achieve the net zero emissions target by 2070.

3.6   Climate Change

Climate change overall threatens cities and their built infrastructure. Environmental disasters are more likely to occur with greater intensity; buildings, streets, and facilities are more likely to be damaged or destroyed. According to the Intergovernmental Panel on Climate Change (IPCC), India is the country expected to pay the highest prices for the impacts of the climate crisis. Aside from extreme weather events such as flash floods and widespread wildfires, the country often experiences long heat waves and droughts that dry up its water sources and compromise crops.

3.7   Investment

For achieving to Sustainable Development Goal 11 for making cities inclusive, safe, resilient and sustainable, India will require a sum of Rs. 131 lakh crore (USD 2067 billion) (UNDP and MOEFCC, 2015). This includes housing for all, development and planning of cities, efficient transport systems, public spaces

and other components of urban infrastructure costs. Of the Rs. 131 lakh crore required for such urban development, India at present faces a financial gap of Rs. 76 lakh crore (USD 1202 billion). The costs for disaster management are not included in this estimate at present. The government of India has already rolled out ambitious plans for sustainable urban development (Goal 11). The AMRUT (initial 500 cities) and 100 smart cities programs have a Central allocation of Rs. 98,000 crore (USD 15.6 billion) for a period of five years, while the Housing for all (urban) by 2022 has a Central allocation of Rs. 5625 crore (USD 893 million).

4.   GOVERNMENT OF INDIA'S INITIATIVES TOWARDS ACHIEVING SDG 11

- United Nations Framework Convention on Climate Change (UNFCCC), India announced its voluntary goal to reduce the emission intensity of its GDP by 20-25 per cent by 2020 in comparison to the 2005 level;

- The National Action Plan on Climate Change (NAPCC) is an initiative of the Government for addressing, combating and adapting to climate change;

- The National Clean Air Program (NCAP) is a national-level strategy to reduce air pollution levels across the country;

- The Ministry of Housing and Urban Affairs (MoHUA) is encouraging Indian cities through various initiatives and programs. The National Urban Transport Policy of India, 2006 clearly lists out the role of NMT as a last mile connector for the urban transport systems and as an independent mode for short distances (NUTP, 2006). Further, recognizes the huge deficit in urban transport services and infrastructure both in quality and quantity. The use of desirable modes of transport i.e. walking, bicycle, and public transport is declining and the use of undesirable modes, i.e. car, and two-wheelers is growing. As a result, congestion is increasing while urban mobility as well as road safety are declining, and pollution, use of fossil fuel, and accidents are rising day by day;

- National Mission for Sustainable Habitat under the Prime Ministers National Action Plan on Climate Change has constituted sub-committees for specially focusing on urban transport. The committee has listed eight primary principles to ensure sustainable approach to urban transport planning, of which first two are 'Walk' and 'Cycle' (NMSH, 2011);

- A working group on urban transport under 12th Five Year Plan document proposed to create dedicated funds to improve, maintain, and upgrade existing walking and cycling infrastructures (Planning Commission, 2011);

- The Smart Cities Mission initiatives have emphasized to promote mixed land use in area based development and creating walkable neighborhoods and further launched another national green recovery initiative i.e. the Streets for People with an aim to make Indian cities pedestrian friendly, lively, and safe. Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

have identified 500 cities; it will focus on the trust area of pedestrian, non-motorized and public transport facilities (MoUD, 2015); and

• NITI Aayog has developed an SDG index for urban centers in India, which measures the performance and achievements across the sectors.

5. CONCLUSIONS

Government of India has made a lot of attempts for effective implementation of the SDG 11. However, these efforts have not yet percolated to the city level, especially medium and small sized towns. According to OECD, (2022) estimates two thirds of the Sustainable Development Goals can only be achieved by action at the local and regional levels. Further, urban infrastructure and services influence is interlinked to number of other SDG goals and targets. Most of urban infrastructure and services are energy-intensive sectors, which will have a direct impact on Goal 6 - water sources; Goal 7 - energy; Goal 12 - sustainable consumption and production and impact on ecosystems, biodiversity and climate change (Goals 13,14,15). Unfortunately, in India today, urban planning focuses on motorized transport systems rather than non-motorized means. In fact, car ownership in Mumbai continues to be the lowest amongst the Tier 1 cities of India. Walkability is, therefore, an excellent urban planning strategy that can significantly reduce energy consumption.

REFERENCES

Athar, Sohaib; White, Roland; and Goyal, Harsh, (2022) *Financing India's urban infrastructure needs: Constraints to commercial financing and prospects for policy action (English)*. Washington, D.C.: World Bank Group.

Giancarlos Troncoso Parady, Giancarlos Troncoso Parady, Noboru Harata (2017) *Built environment and travel behavior: Validation and application of a continuous- treatment propensity score stratification method, Journal of Transport and Land Use,* Vol 10 No. 1.

KPMG, (2014) *Funding the vision. 'Housing for all by 2022'*. KPMG.

Ministry of Housing and Urban Affairs, Government of India (2022) *Discourses on Affordable Housing in India and Best Practices under PMAY-U*.

Nirupam Bajpai and John Biberman, (2021) *India's Smart City Program: Challenges and Opportunities*. ICT India Working Paper #62. Center for Sustainable Development, Earth Institute. Columbia University.

NITI Aayog and CSE, (2021) *Waste- Wise cities Best Practices in Municipal Solid Waste Management*. Center for Science and Environment, New Delhi.

OECD (2022) *A Territorial Approach to the Sustainable Development Goals*: Synthesis report

Press Trust of India, (2011) Rajiv *Awas Yojana for Slum Dwellers approved*.

UNDP and MOEFCC (2015) Achieving *the Sustainable Development Goals in India – A study of financial requirements and gaps*. Technology and Action for Rural Advancement a Social Enterprise of Development Alternative Groups. New Delhi.

United Nations (2022) *The Sustainable Development Goals Report 2022*. United Nations Publications, 300 East 42nd Street, New York, NY, 10017, United States of America.

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