The Urban World
Quarterly Publication

Regional Centre for Urban and Environmental Studies
All India Institute of Local Self-Government, Mumbai

RCUES
Mumbai

Regional Centre for Urban & Environmental Studies (RCUES), Mumbai
(Supported by the Ministry of Housing and Urban Affairs, Government of India & Accredited under Capacity Building Commission's National Standards)

All India Institute of Local Self-Government (AIILSG) established in 1926, is a premier & autonomous research and training institution in India. It is a guide to Urban Local Bodies (ULBs) and contributed to the principles and practice of urban governance, education, research and capacity building.

The Regional Centre for Urban & Environmental Studies (RCUES) anchored by All India Institute of Local Self Government (AIILSG), Mumbai, was established in 1968 & supported by the Ministry of Housing and Urban Affairs (MoHUA), Government of India (GoI). The MoHUA, GoI has formed National Review and Monitoring Committee (NRMC) for RCUES, Mumbai in 2018 under the Chairmanship of the Secretary, MoHUA, GoI. The Principal Secretary, Urban Development Department (UDD), Government of Maharashtra (GoM) is the ex-officio Chairperson of the Advisory Committee (AC) of RCUES, Mumbai, which is established by MoHUA, GoI.

RCUES, Mumbai has received an Accreditation Certificate under the Capacity Building Commission's National Standards. RCUES, Mumbai is registered on Integrated Government Online Training (iGOT) platform of Karmayogi Bharat, GoI and associated with Amrit Gyan Kosh under Mission Karmayogi, GoI. RCUES, Mumbai is empaneled as Swachhata Knowledge Partner (SKP) for capacity building & technical support to ULBs under Swachh Bharat Mission (SBM) 2.0, MoHUA, GoI & also registered as a Partner with Swachhata Hi Seva (SHS) 2024 Portal.

RCUES, Mumbai as a National Training Institute (NTI), undertakes capacity building initiatives for elected representatives, municipal functionaries & mission functionaries from the States of Maharashtra, Goa, Gujarat, Rajasthan and UTs of Diu, Daman, Dadra Nagar Haveli & Lakshadweep from the western region and Assam & Tripura from northeast region. Over the years, RCUES, Mumbai has been working in close coordination with states and Urban Local Bodies (ULBs) to provide strategic, advisory, technical and capacity building support focusing on preparing action plans/strategies, technical assessment reports, urban plans such as DPRs, CSPs, CDPs as well as providing on-ground support by engaging with communities for assessment and improvement in infrastructure service delivery in cities.

RCUES, Mumbai has initiated Training Needs Assessments (TNA) and impact assessment to better understand the effectiveness of their training programs. This approach helps identify knowledge/skill gaps and measure the outcomes of training initiatives. The assessments aim to enhance capacity building efforts and improve training program delivery.

Maharashtra Urban WASH and Environmental Coalition (Maha UWES-C) is a joint initiative of the RCUES of AIILSG, Mumbai, and UNICEF Maharashtra. In 2022, MoU is signed with the Directorate of Swachh Maharashtra Mission, Urban Development Department, Government of Maharashtra for building capacities, facilitating partnerships, and supporting innovations under Swachh Maharashtra Abhiyan - Urban 2.0 under Maha UWES-C.

In 2017, AIILSG was empaneled among one of the 35 agencies in India for conducting Integrated Capacity Building Programmes (ICBP). AIILSG Mumbai is supporting the states of Maharashtra, Rajasthan and Goa for the same.

RCUES, Mumbai is advancing capacity building initiatives by extending its efforts beyond training and workshops, urging strong collaboration with states and ULBs. Driven by a small but passionate team, it remains dedicated to empowering municipal officials, with the goal of strengthening governance, thereby enabling better cities.

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Editorial

Towards Responsive Urban Governance for the Cities of Tomorrow

As cities grow in scale and complexity, responsive urban governance has transitioned from being a desirable option to an essential imperative. Urban governance must evolve to meet the multifaceted challenges of rapid urbanization, deepening inequality, climate change, technological disruption, and rising aspirations of citizens. At the core of this, the new urban agenda is a holistic model that integrates participatory governance, smart sustainable practices, and digital systems to drive inclusive, swift, and accountable urban management.

Digital tools and e-governance are transforming urban governance by enhancing transparency, approachability, and citizen engagement. These innovations empower citizens, especially those traditionally underserved, to participate more meaningfully in civic engagement. Participatory governance mechanisms, such as local committees, digital platforms, and public consultations, embed citizen voices into decision-making, strengthening trust and promoting more liveable neighborhoods. By leveraging platforms such as online portals, mobile apps, and digital consultations, cities can expand opportunities for inclusive and participatory urban planning.

Smart and sustainable urbanism marks the convergence of technology, environmental stewardship, and inclusive governance to create resilient, equitable, and liveable urban spaces. These cities deploy tools such as sensors, data analytics, and intelligent infrastructure to optimize resource use, reduce emissions, and enhance public service delivery. Smart platforms are increasingly being used to streamline citizen services such as waste management, water distribution, public transport, and emergency response. By enabling real-time feedback loops and responsive systems, these technologies can significantly improve the accessibility, efficiency, and quality of urban services. However, the effectiveness of these technologies hinges on governance frameworks that are participatory, transparent, and attuned to local needs. The success of smart city initiatives depends on their alignment with long-term sustainability goals and their commitment to addressing social disparities.

In an era marked by intensifying urban challenges, responsive urban governance now stands as a critical mandate in the evolving landscape of urban management. Cities that harness participatory approaches, integrate smart technologies, and adopt inclusive digital platforms will pave the way for sustainable development. Community engagement through local forums, public consultations, and collaborative planning drives meaningful transformation.

Call for Research Papers!

The Regional Centre for Urban & Environmental Studies is pleased to invite contributions for Urban World in the form of articles and research papers from researchers, authors, publishers, academicians, administrative and executive officers, readers on the following themes –

1) Environmental Sustainability

2) Solid Waste Management

3) Women Empowerment

4) Safe Cities for Women

5) Responsive Urban Governance

6) Citizens Participation and Local Governance.

7) Sustainable Urban Transportation

Articles could be between 2000 to 4000 words. They may contain compatible tables, charts, graphs, etc. We reserve the right to edit for sense, style and space. Contributions may be e-mailed in digital form as a Word file to the Director, RCUES, Mumbai.

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Participatory Urban Governance – a Necessity

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Introduction

Today, the international consensus still thinks that urban governance is the factor for the reduction of poverty, quality of life and prosperous cities. Good urban governance is outcome-oriented and promotes the rights of cities by ensuring that citizens reap the benefits of urbanization. Thus, governance should be participatory, accountable, transparent, responsive, equitable, effective and inclusive.

Governance describes the process of decision-making and the process by which decisions are implemented. Good Governance comprises Eight Major Characteristics. These are Participation, Rule of law, Transparency, Responsiveness, Consensus orientation, Equity and inclusiveness, Effectiveness and efficiency, and Accountability. Good Governance ensures that city governance is inclusive, transparent and focused on meeting the needs of its citizens while considering social and environmental impacts.

Institutional Development in Urban Governance in India

Urban governance has assumed increasing importance as the capacity of a city is contingent upon its ability to govern itself. In the long history of local self-governments in India, June 1, 1993, has made a place for itself, as it is on this day that the 74th Constitutional Amendment Act (CAA), 1992, came into force. The 74th CAA, 1992, aims to accord constitutional status to municipal bodies by initiating a process of democratic decentralization. It was observed that what the Government of India sought to do through the Constitution Amendment was to lay down a basic framework which would ensure that the Urban Local Bodies (ULBs) were in a position to function effectively as democratic units of self-government.

It is imperative to note that this constitutional amendment was not merely a measure of administrative changes or recording finances. This has been a major systematic change in the country's structure of Governance since the year 1993 and represents a conscious multi-level democratic local attempt towards governance, to make urban governments responsive and closer to the people. ULBs have re-emerged in governance. The number of elected representatives in the urban local bodies constitutes the largest representative base of any democracy in the world.

The 74th CAA, 1992, referred to as the Nagar Palika Act, was adopted in June 1993 and mandated the introduction of the three-tier governance system-central, state and local. This put into place the legitimate and critical roles of local authorities in managing cities. Since then, the state governments across the country have passed the conforming

legislations in addition to appointing the State Election Commission and the State Finance Commission in keeping with the constitution provisions.

The 74th CAA, 1992 is an important pointer to the determination of the State to bestow power to the people to plan for themselves and participate in the decision-making process at the local level. These changes ought to be secured by the active participation of the citizenry in the formation, functioning and evolution of the local government. Thus, encouraging participation at the grassroots levels and empowering the local self-governments to prepare plans in a transparent and participatory manner.

The Constitution also provided for an additional tier with the formation of the Wards Committees, which may be set up in big cities at the state government's discretion. Apart from providing a platform of participation of the people in local self-governance, the Wards Committee is also expected to secure accountability of the elected representatives to the people.

The creation of Wards Committees, a sub-set of its organization, implies the division of a city or town for administrative purposes, thereby guaranteeing decentralization, however, the responsibilities and resources assigned will be the real measure of implementation. In Maharashtra, although the Ward Committees are essentially zonal committees, some specific functions are entrusted to the council or corporation, leaving certain issues to the ward committees.

While legal provisions for the constitution of ward committees have also been made in most of the states, the actual spirit of the Amendment is diffused since the state governments can club several wards together to form a single Ward Committee. Also, while they can be given wide range powers, this does not necessarily correlate with financial allocations. These Ward Committees are formed as critically important Conduits for local priorities and ensure accountability at the local level.

The formation and functioning of the Wards Committee would depend on three basic factors, namely the finances and other resources made available through the allocation from above, the professionalism of the personnel associated with the Ward Committees, and the local interaction which would get focused on the ward committee to improve the quality of life for the citizens at the city level. The Ward Committee concerns would seem to evolve from neighbourhood and broader scales of formation.

The subjects of concern may relate to
- Interactions of the comprehensive development plan for the city scale with the ward.
- Detailed concerns of planning district proposals, development schemes and allied subjects.
- The felt needs of existing and emerging conditions of the ward and boarding areas about the quality of life for the citizens.

None of the functions are of a simple nature and would require simple beginnings and progressive development of municipal capacities to handle complex civic issues.

For the first time, detailed guidelines were given for the classification of urban local bodies and the fair representation of all groups in governance. Ward committees, representing the smallest unit of governance, were introduced. This Amendment introduced the concept of decentralization of administration to the level of wards, which is the smallest unit of administration. Model municipal legislation, introduced by the Government of India had introduced a concept of participatory governance.

Functional Domain of the ULBs (Article 243W)

The Twelfth Schedule of the 74th CAA, 1992 provides the basis for state legislatures to assign functions to the urban local bodies in the respective States. As per the Twelfth Schedule, some Eighteen Tasks are defined as functional domains of the

ULBs and put on their agenda. Article 243W provides that the legislature of a State may, by law, endow the municipalities with powers and responsibilities for the preparation of plans for economic development and social justice and the performance of functions and the implementation of schemes as may be entrusted to them including those with reference to the functions listed in the Twelfth Schedule.

Demarcation of the Role and Functions of ULBs

There are two broad categories of municipal functions: the proactive and managerial. The proactive role includes those functions that local government has to take the lead in pre-empting and planning for services at the time of urban growth.

The managerial role includes those functions that a local body must routinely fulfil for the provision and maintenance of services. The inclusion of the Twelfth Schedule in the 74th CAA, 1992, is to demarcate and specify functions of local authorities to facilitate their autonomy in these areas. More importantly, it includes functions that facilitate local authorities to play a proactive role. This is especially useful for newly urbanized and urbanizing areas, i.e. small towns and cities that face high levels of urban poverty. Each locality may prioritize some of these functions over others in accordance with their own specific needs and interests. For instance, poverty alleviation as a function of the urban local bodies is an obligatory function in Kerala. In Tamil Nadu it is a discretionary function.

Functions under the Twelfth Schedule of 74th CAA, 1992 (Article 243W)

- Urban planning including town planning.
- Regulation of land-use and construction of buildings.
- Planning for economic and social development.
- Roads and bridges.
- Water supply for domestic, industrial and commercial purposes.
- Public health, sanitation conservancy and solid waste management.
- Fire services.
- Urban forestry, protection of the environment and promotion of ecological aspects.
- Safeguarding the interest of weaker sections of society, including the handicapped and mentally retarded.
- Slum improvement and upgradation.
- Urban poverty alleviation.
- Provision of urban amenities and facilities such as parks, gardens, playgrounds.
- Promotion of cultural, educational and aesthetic aspects.
- Burials and burial grounds; cremations, cremation grounds and electric crematoriums.
- Cattle ponds, prevention of cruelty to animals.
- Vital statistics including registration of births and deaths.
- Public amenities including street lighting, parking lots, bus stops and public conveniences.
- Regulation of slaughterhouses and tanneries.

As stated earlier, under the 74th CAA, 1992, the roles and responsibilities of urban local bodies have been enlarged, and new functions have been added to their activities under the 12th Schedule. As regards functional devolution, planning for economic development and social justice has been identified as the major responsibility of the municipal body in the 74th CAA, 1992. Urban forestry, protection of the environment and promotion of ecological aspects have been specifically mentioned in the 12th Schedule as a responsibility of the municipal bodies. With this Act in place, it is expected that management of the urban environment at the local level would become more effective, particularly if it is undertaken in partnership with various stakeholders.

Institutions of local self-government are the primary units of local self-governance that ensure and maintain a democratic society. They are the driving force in civic affairs as well as the social and economic life of the urban population. A decentralized system is crucial for the effectiveness of an urban local body. This implies devolution of power to municipal bodies and the active participation of grassroot organizations in civic affairs. It is achieved by the partnership of local self-governments with non-government organizations and community organizations. The degree to which urban local bodies are effective is determined not simply by the fact that they are or are not carrying out their functions. How they go about fulfilling these functions is a more significant measure of a vibrant democracy.

The 74th amendment has addressed several issues at the same time. Firstly, by giving constitutional status, urban local bodies can have true autonomy. Secondly, they have been given additional financial powers to discharge their functions smoothly. The election process has been put on a systematic track. Further, there is a positive change by giving special attention to gender and reservation to scheduled castes and scheduled tribes. The Ward committee participates in decision making by obtaining full information as to the municipal budget, including revenue items. This is giving them powers to scrutinize the budget and suggest improvements.

Model Nagara Raj Bill

Model Nagara Raj Bill was circulated by the Ministry of Urban Development, Government of India, and was conceived to institutionalize citizens' participation in municipal functions, e.g. settling priorities, budgeting provisions, etc., by setting up Area Sabhas. It has given further impetus to the idea of participation by constituting Area Sabha, which is a body of all the people registered in the electoral rolls pertaining to every polling booth in the Area, in a Municipality. Thus, every citizen will be a party to decisions which will finally affect them.

In the Model Nagara Raj Bill, all aspects of good governance, namely, transparency, accountability and participation, have been introduced.

Area Sabhas have been established to serve as the mechanism for achieving their anticipated objectives. The definition of Area Sabha includes all individuals listed on the electoral roll for each polling booth within a Municipality. All these provisions ensure participation, transparency and consensus. They also provide decentralization and delegation, which was a new feature. In a nutshell, they introduce good local governance.

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Good Governance in the Context of Urban Governance

The importance of sustainability in the urban setting cannot be over emphasized, as it concerns the very survival of a city. Clean environment and economic growth are complementary to each other and result in a vibrant community that sees itself as a 'stakeholder' in all aspects of daily life and helps in creating a sustainable environment. Other characteristics of sustainable urban development include Responsive, Adequate and Efficient Governance and basic services delivery which can meet the needs and requirements of the people and takes care of a sense of civic functions, community participation, a sense of identity, responsibilities, transparency and equity in local self-institutions.

Institutionalization of people's participation has many and far-reaching implications for the structuring and functioning of urban local bodies. The past experiments in this direction draw attention to several of these implementations.

The local government has the responsibility to delineate goals, to enable participation and create environmental conditions that can encourage spontaneous behaviour and action on the part of the people. It supports and coordinates the activities and various services provided by local governments. Participation becomes possible with the local government creating awareness about participation and involvement at all levels and instilling transparency in its functioning, which will bring the citizens closer to the local government.

The Local Government should create leadership of networks by developing communities, ensuring policy coherence across organizational departments and services and across organizational and sectoral borders and levels of governments. Similarly, it should aim to create a set of values and a sense of direction towards managing the expectations of citizens and other stakeholders so that they become more deeply committed to democratic processes and more engaged in policy-making and urban services delivery.

Local governments should balance strategic interests by involving the NGOs / CBOs/ Resident Welfare Associations through information, consultations and participation in local policies and services management. The interaction between the elected members, the municipal officials and the stakeholders should take place at the local level for local area planning and promoting good local governance.

Participation and Civic Engagement are Key Principles of Good Urban Governance

Effective reduction of urban poverty and social exclusion can be achieved through the participation of the urban poor in decision-making, formulation of policies, and implementation of local action plans. Experience has shown that the urban poor can be effective local development agents (UN-HABITAT, 2001).

Cities hold tremendous potential for social and economic development, but cities today also deny the benefits of urban life to the poor. There is an urgent need to enhance the capacity of local government and other institutions and focus attention on the needs of the urban poor. In this regard, the participation and involvement of women in local decision-making at all levels is critical, recognizing that women are one of the biggest levers for positive change in society.

Through community engagement and community structures, the objective is to ensure that the specific scheme and specific components under the scheme reach and benefit 'Vasti' residents who are most in need of the services at the community level.

Rebooting Community Structures

It is necessary to strengthen community structures for participatory local governance. Developing a community engagement process also envisages getting the support of local people to establish Vasti Vikas Yojana or Shezaar Samiti [SS]. This SS can be founded for the population of one to five units as one unit. SS is a formal arrangement and can be registered under the Act of the Charity Commissioner, or it can be a proposed registration. This SS can be comprised of Committee Members like President, Secretary, Treasurer, etc., and it is expected that 50% of them are women representatives. The members of SS will participate in the implementation to get the participation of people. There shall be an arrangement for awards to the outstandingly working SS and its volunteers (Vasti Mitra).

If we look at urban communities, there is no proper sense of community ownership towards cleaning their own settlements or other basic services delivery. The efforts could not substantially mobilize the local community people in various activities in service delivery in communities and build their capacities to enable them to evolve into the convergent structure at the community level.

The role and responsibility of community structures like SS should be as follows –
- To serve as a channel of information and communication among the families in urban slum clusters.
- To identify local problems and priorities.

- To represent the views of the groups in the neighbourhood committees, CBOs and other forms at the local level.
- To support planning, implementation and monitoring of activities at the neighbourhood / slum level.
- To foster and encourage participation in community improvement.
- To provide suggestions for group involvement in meeting needs at the community level.
- To provide feedback on the effectiveness of the delivery of services.
- To develop a community in association with ULB.
- To develop community involvement in cleanliness programme, including segregation of waste, waste collection and recycling.
- Empowering community structures – SS will need to ensure that the slum communities are informed about the needs of the community and deliver services in a timely and effective manner. This would indicate the necessity for empowering SS structures and strengthening their linkages with ULB programmes and services delivery at the slum/community level.

Strengthening of Shezaar Samiti [SS]
- It is necessary to orient SS members as community facilitators.
- Facilitate collaboration with SS and ULBs.
- Strengthening by empowering SS to address all issues related to sanitation and clean surroundings, skill development, health care services and livelihoods.
- SS should hold lane-wise interactions to sensitize community people about cleanliness concerns and needs of women, girls and all vulnerable groups.
- SS should organize a 'Road Show' in the community for sharing all information related to community issues. It should necessitate empowering the community structure of SS

and strengthening their linkages with ULB and building their capacities to enable into convergent structure at the community level.

• The formation of Shezaar Samiti envisages 50% representation for women. The principle of forming SS from neighbourhood enables the women to take part in needs assessment of services, collective action and measures at the community level.

Community Engagement and Participatory Governance

The Challenge of urbanization and particularly the speed of urban growth is most daunting and reflects the shortcomings of traditional approaches to urban management, which are incapable of coping with the speed and complexity of growing demands of citizens.

Citizens also play an important role in enabling participation. They do so by participating in managing their communities as an individual and as a group. Citizens' participation can therefore be understood as a Forum wherein people can participate in the decision-making process and are involved in the local affairs. Community participation shows that when people are given the chance to participate in the decision-making process, resulting policies are often the best possible solutions to any local problem. It would be interesting to note that community engagement is also an efficient method of recognizing problems which otherwise go unnoticed at the macro level.

It is seen that, in practical terms, effective and sustainable solutions to myriad urban problems can only be found in the act of collaboration and interaction between various urban stakeholders, ideally led by the city government. In essence, participatory governance is the only path available to urban local bodies to find out new innovative ways of working that draw on the resources, experience and capacities of various stakeholders in the city to complement the capacity of the municipal body.

Today, cities are under constant mounting pressure to provide basic services in the face of an ever-increasing urban population. Unregulated and unplanned growth of cities has left the urban centres with problems of slums, inadequate water supply, sanitation, solid waste management, public health care, environmental degradation and urban poverty.

Today, along with technological solutions, municipal bodies are also looking towards other innovative approaches to handle waste or other basic services. One of the emerging approaches is Participatory Governance – local government involving people (NGOs /CBOs/ RWAs) in the basic services delivery, good and responsive local governance.

Furthermore, participatory programmes will inculcate a change in attitude of municipal officials, who would not only need to interact with people, often of different socio-economic backgrounds, but also consider them central to the development process.

There is a wide range of ways in which the communities can be involved at the city level. Internationally, many viable examples involving citizens in SWM exist, such as Zabbaleen in Cairo, Barangaya in Philippines, Cardboarders in Bogota, Campre in Brazil, Tudo Limpo and All Clean Programme in Curitiba, SRRUS in Shanghai, Linis Ganda (Clean & Green) in Metro Manila, Scavenger Development Programme in Surbaya, Indonesia, which are indicative of various forms of

partnerships in solid waste management and clean city programmes.

Several models of people's participation in service delivery are available within the country, with the common objective as an instrument of service delivery and good governance.

Thus, people's participation, in the context of the present-day urban scene, is no longer a 'liberal idea'. It is a compelling necessity! People can be involved in clean city programmes or other civic services in several ways, ranging from awareness creation and mobilizing people's action to the provision of infrastructure and services.

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Ease of Doing Governance through E-governance: Exploring the Case of Brihanmumbai Municipal Corporation (BMC), Mumbai.

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Abstract

E-governance has gained momentum, particularly in the context of global governance of urban spaces. Cities in the developing world have been frequently criticized for being denied equality and overcrowding, sluggish governance, lack of housing and hygiene, poor quality of basic services, and rampant corruption. Therefore, technology, connectivity, and the Internet of Things (IoT) are now considered a possible solution to address these concerns. In this context, this paper attempts to study the electronic governance system of the Brihanmumbai Municipal Corporation (BMC). It purports to study it analytically and provides a descriptive understanding of the initiatives undertaken by the BMC and the implications of these initiatives for civic issues. The paper argues that electronic governance-related initiatives have the potential to bring 'ease of doing governance'; thus, urban local bodies will be better equipped to address key civic issues. While interviewing the BMC officer on the issue, the researcher found that what is lacking is inter-departmental coordination; there is also the presence of multiple agencies with overlapping responsibilities. In addition, the issue of the digital divide that exists in general in our country requires policy attention to achieve the goals of seamless e-governance and ease of governance. In the age of Internet of Things (IoT) and 5G technology, urban local bodies such as BMC need to reinvent itself continually to better deliver services electronically and make the process of governance uncomplicated in the true sense of the term.

Keywords: E-governance, Ease of doing governance, Civic issues, BMC.

Introduction

Urban spaces today have come to occupy a prominent space in the discourse on governance owing to phenomenal growth in the urban population worldwide. Currently, the most important objective driving various governments is how their governance can be made more efficient, effective, transparent, and accountable. In the age of information technology, it is incumbent upon institutions of governance to transform themselves into what is today popularly called electronically enabled governance / digital governance. This type of e-governance has gained momentum, particularly in the context of the convoluted nature of urban governance. Needless to state, this has happened because of the specific challenges that cities face, such as efficient service delivery, infrastructure development, transport, congestion, rising housing demands, solid waste management, social welfare, etc. Today, more than 60% of the world's population live in urban areas. Cities in different parts of the world are considered engines of growth and development. At the same time,

some cities in the developing world have been criticized for being denied equality, overcrowding, sluggish governance, lack of housing and hygiene, poor quality of basic services, and rampant corruption. India is no exception to this state of affairs in its own urban spaces. According to the 2011 census, 31.16% of the population lived in urban areas. India's urban population is expected to increase to 600 million by 2031. (Sahasranaman & Bettencourt, 2021) (Singh, 2018). These trends compel India to focus on how existing cities can be transformed and strengthened to withstand the challenges of approaching urban waves.

In this context, this paper attempts to study the electronic governance system and its initiatives and implications for the BMC. The city of Mumbai is always on the go and practically takes no pauses or seldom takes any pauses. This island city, with its huge population and elaborate government structure, increasingly requires an institutional setup that is always on the go. The urban local government unit of the city has a challenging task of meeting the service requirements of more than ten million persons. Hence, it is important to improve the interface between the government and citizens or various stakeholders. Accessibility, accountability, and transparency are the defining characteristics of an ideal governance system. Today, this can be achieved through the application of information technology and electronic governance. This paper primarily aims to examine the nature and functioning of the e-governance system for the BMC, Asia's richest municipal corporation. For this study, information and data were generated from secondary sources. Primary data were obtained by interviewing an IT officer working with the BMC. The paper tries to argue that 'ease of doing governance' is possible only when electronic governance system is well in place and is able to address the key civic issues. This paper is divided into three sections. The first section discusses the notion of governance and the rising importance of urban governance and traces the development of e-governance in India in general and in Mumbai. The second section discusses the various initiatives adopted by the BMC to deliver different services electronically. The final section explicates the challenges and fault lines in the entire process and discusses their critical aspects.

Governance and E-governance are the Defining Features of the Contemporary System

The idea of the welfare government performing practically all functions, from cradle to grave, grew rapidly during the post-World War II period. This was also a conspicuous way to contain the spread of communist influence throughout the world. Therefore, many capitalist states took a socialist government avatar on their own. However, this form of government started faltering in the early 1970s, and by the 1990s, the concept of less government and more governance started gaining momentum. International financial agencies such as the International Monetary Fund (IMF), World Bank (WB), and Asian Development Bank, through their advocacy discourse imposed on developing countries' ideas of a leaner and meaner government. This discourse was influenced by the works of Osborne (1993) and Gaibler's idea of 'Re-inventing Government', the concept of New Public Management, and the idea of Governance. This was intended to transform the archaic forms of government into governance, where control is loose, power diffused, and centers of decision are plural. Such reforms were also necessary for international players to penetrate the markets of some developing countries. This eventually blurs the boundaries between the public and private sectors. It popularized catchphrases such as networks, regulatory structures, public–private partnerships, joint ventures, and information technology-enabled governance or e-governance.

Stocker (1998) summarizes what has been discussed above with regard to what constitutes governance discourse in the following words –

* set of institutions and actors that includes government and beyond government elements;
* boundaries and responsibilities for tackling socio-economic issues are increasingly getting blurred;
* rooted in collective action but power dependence involved;
* autonomy and self-governing networks of actors;
* ability of government to steer or guide different actors in the process of governance. (Marinetto, 2003)

This emerging discourse on governance has influenced economic and political decisions in various developing countries. India, under the dictate of the IMF and WB, restructured its economy by announcing a new economic policy in 1991. The long-term barricaded economy was now open to embracing liberalization, globalization, and privatization. Joshi (2017) discusses in her work that this also necessitated the restructuring of polity, and India chose to embrace a new policy after the new economic policy in 1991. Therefore, in 1993, the Indian parliament passed the historic 73rd and 74th constitutional amendments to transfer decision-making powers to grassroots institutions. This unprecedented dispersal of powers to local units was necessary in the context of the possible loss of power in a rapidly globalizing India. The 74th constitutional amendment was a defining moment in the governance of cities, urban, and municipal areas in India. It recognized urban local bodies as the third tier of the government, which are democratic institutions based on the principles of self-government. They were accorded constitutional status. It initiated a process of democratic decentralization of functions, functionaries, and finance to ensure accountability, transparency, and responsiveness in the process of governance. The Act proposed different forms of local government for urban areas. The most important part of the amendment was that it added the 12th schedule to the Constitution, which comprises specific local-level functions (a total of 18 functions) that municipal corporations, municipal councils, or urban local bodies across India are required to perform.

The historic Act highlights the role these local institutions are expected to play in the age of rapid urbanization. Since the 1990s, the urban areas in India have gained significance because India is urbanizing rapidly. These urban areas attract investment, provide livelihood opportunities, and have tremendous potential to contribute to growth and development. In this context, the role of urban local bodies as a governance system has gained greater salience. India carefully noticed this urban turn and implemented an urban reform agenda (Shivaramakrishanan 2011). In 2005, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was announced with a specific objective to reform the way governance happens in urban centers in India. The idea of IT-enabled governance and e-governance received impetus, mainly through JNNURM. Later National e-Governance Plan (NeGP), comprehensive action plan by Government of India (2007) announced during 2003-2007 had the vision to "make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs". As many as thirty-one different Mission Mode Projects covering various domains have been initiated. However, e-governance projects across the country have not been able to achieve the desired impact and fulfil all their objectives. To transform the entire ecosystem of public services through information technology, the Government of India has launched the Digital India program with the vision to transform India into a digitally empowered society and knowledge

economy. The Digital India program is centered on three key vision areas: (1) Digital Infrastructure as a Core Utility to Every Citizen; (2) Governance and Services on Demand; and (3) Digital Empowerment of Citizens (Source: Ministry of Electronics & Information Technology, Government of India). These programs laid the framework for e-governance in India and highlighted the role of urban local institutions. Governance refers to the use of technology to offer better services to citizens and to improve internal efficiency and responsiveness. It includes three ways of communication that take place between the Government to Citizens, the Government to Business, and the Government to Government. It focuses on bringing governance to the doorstep of citizens to enable and empower them. E-governance aims to implement concepts such as single-window systems, citizen charters, accountability, and transparency.

Policy Context for Electronic Governance in Maharashtra

The Maharashtra has made pioneering efforts to draft its first e-governance policy. It was drafted by a committee headed by Padmashri Dr. Vijay P. Bhatkar and came into force in 2011. The vision of the policy is to transform governance and enrich lives through information and communication technology. It aimed to standardize and seamlessly implement e-governance projects across Maharashtra. The policy identified six pillars to achieve a vision of electronic governance in Maharashtra. (State of e-governance in Maharashtra, GoM 2014). These six pillars are as follows –

- Establishment of Policy / Legal Frameworks.
- Develop a strong capacity-building framework.
- Facilitate Abundant Funding.
- Institutional Framework.

- Build a common core e-governance infrastructure.
- Develop common state-wide projects.

Electronic Governance Initiatives undertaken by BMC, Mumbai

Although Maharashtra adopted a formal policy on e-governance in 2011, the state and cities such as Mumbai began experimenting with e-governance as per JNNURM's urban reform agenda much earlier. This section sheds light on the trajectory of such initiatives by BMC. From being a corporation created by the British before Independence to becoming a constitutionally recognized urban local body in the post-liberalization period, BMC has traversed a very long journey. Mumbai City, comprising an area of 480.24 sq.kms with a population of 1,24,42,373, as per the 2011 census, is the financial capital of the country, a major hub for livelihood opportunities, and attracts migratory populations from all over the country. This adds to everyday challenges to how a city is governed and how it can be governed effectively, efficiently, and easily. The BMC is divided into 24 wards, seven zones, and has 78 major departments that look after the important functions mentioned in the 12th Schedule of the Constitution of India.

To bring transparency and smooth collaboration within various departments and to enhance citizens' experience of the governance, BMC has embraced e-governance since 2007-08. The first point of electronic contact for citizens was the web Portal of BMC. The portal offers information about various aspects of the city and its governance structures and facilitates a variety of citizen services. (Source: BMC Website). As part of the JNNURM reforms, the National e-Governance Plan, and the Digital India Program, various e-governance-related initiatives and reforms have been implemented by the BMC, such as e-business, e-procurement, e-payments for services, and ease of lodging online

complaints. The entire process of introducing e-governance into the BMC was conducted in three phases. The first phase of this process focused on introducing digitization and automation to all departments. The second focused on making various services available through the medium of the web, and in the final phase, it aimed to enable citizens to avail app-based and mobile-based services. These reforms were announced to simplify procedures, reduce time, and improve interaction between the government and citizens. Currently, more than 120 different types of services are offered to the citizens of Mumbai online (see Table No.1 and List No.1). This has eased two-way interaction that takes place between the BMC and citizens. The BMC also interacts with its citizens through Twitter handles. However, the availability of online services alone does not make the lives of citizens easy. One of the most pressing problems citizens faces is how to interact with corporations speedily and efficiently when they have complaints regarding different issues that plague the city. For instance, these problems could be the unavailability of water, water contamination, potholes on roads, unhygienic conditions in public toilets, problems due to flooding, and many more issues encountered by citizens daily. It was observed that even if a citizen lodged a complaint, most of the time, these complaints were lost in the piles of files that are in a typical government office, or complaints would not be forwarded to the concerned authorities within the time stipulated in the Citizen's Charter. The Praja Foundation (a non-governmental organization that closely monitors the work of Mumbai and Delhi Municipal Corporations and urban issues in general) intervened in this matter to help BMC streamline this and create a platform whereby the interaction between the government and citizens can be eased. This also enabled citizens to respond to their concerns and complaints in a timely manner. The BMC thus introduced a Central Complaint Registration System in 2000, which works 24X7. Civic complaints pertaining to BMC were also registered on phone number 1916 in the central control room and sent to the concerned department through an online system. Complaints can also be tracked using the 'Check Complaint Status' provided by the BMC's Citizen Portal. A Unique Complaint Number (also called Transaction ID) is essential for the use of this facility. One of the important aspects of this facility is that it allows citizens to maintain their anonymity while filing the complaint and does not force the end-user to lodge a complaint by generating login credentials. In its efforts to deliver services to the next level and offer anytime-anywhere-service delivery, the BMC has taken the initiative to enable service delivery using mobile devices. To leverage the existing mobile service delivery platform and promptly roll out mobile-based services to citizens, the BMC engaged the Centre for Development of Advanced Computing-CDAC's Mobile Seva team to develop a mobile application. This mobile application, namely, MyBMC 24X7, helps citizens lodge their complaints, eases payment of water bills, property tax, and renews licenses from anywhere at any time, and accordingly makes their life stress-free and hassle-free. The corporation also instituted Citizens Facilitation Centers (CFCs) in each ward. In total, 240 such CFCs exist in the city. In order to meet the growing challenges of implementing e-governance programs, the BMC decided to have an independent IT cell since 2007-08. This department is responsible for formulating web-based programs on the SAP platform, according to the requirements of the BMC departments. The IT cell also conducts training programs for employees to acquaint them with the new technology and how it should be used for the benefit of citizens. Overall, these initiatives reflect the enthusiasm and efforts of the BMC to bring governance closer to people using information technology. The critical appraisal of these initiatives is discussed in the following section.

Has E-governance Eased the Governance Process?

The United Nations, over the last few years, has undertaken an exercise to measure the performance of countries as far as the implementation and progress of e-governance initiatives in different countries are concerned. This is done through an e-governance development survey and is measured in the form of an e-governance index. This index examines how e-government is facilitated by integrated policies and services across the three dimensions of sustainable development. According to the UN's (2018) report on e-governance, India achieved a score of 0.5669, which is just above the world average of 0.55. As per the report, our neighbouring nations, such as Sri Lanka, are also ahead of us. However, India's rank improved in one sub-index related to E-Participation, and it stands at the 15th position in 2018. This low global position is also indicative of the performance of our local institutions (UN, 2018).

To understand the ground-level challenges and issues in the process of e-governance, interviews with officers working in the IT cell of the BMC were conducted on October 15, 2019. BMC officers pointed out several important issues. First, although corporations have tried to introduce e-governance in all departments, few departments or their heads have resisted the change or are fiercely reluctant to embrace the process of digitization. This becomes the most important hurdle in the smooth operation of e-governance programs. Second, there are multiple agencies along with the BMC that have the power to perform different functions for the city. For instance, the Mumbai Metropolitan Region Development Authority (MMRDA), the Mumbai Urban Transport Project (MUTP), and the Metro Rail Vikas Corporation. This polycentric form of governance by Pethe et al. (2011) makes it very

complicated for the BMC to carry out its business in an integrated and smooth manner. These overlapping structures at times work as roadblocks in seamless working by a department or in the uninterrupted management of simple complaints such as the repair of potholes on the roads. According to the Praja White Paper Report, there is an overall vacancy of 34% in BMC, with 67% vacancy in the Disaster Management Cell and 40% vacancy in the Bridges Department (Praja 2017 & 2019). At the same time, despite regular training imparted through workshops and short-term courses organized by the BMC for their staff, the officers tend to have high vendor dependency. The vendors who are appointed to impart training to the staff need to be called repeatedly to explain things to already trained manpower. The IT officer working with BMC also pointed out that even if many services are made available online, the customer has to pay convenience charges levied by the respective banks many times while making online payments. This acts as a deterrent for many citizens and discourages them from using online services. Any governmental authority needs to understand that merely providing services online does not resolve the core problem. The BMC does not have any dedicated helplines to aid citizens in resolving the issues they encounter while using the services. The BMC currently uses IT cells to resolve such issues. It is also important to note that the success of e-governance initiatives depends not only on offering services online but also on setting benchmarks, revising them at regular intervals, and maintaining the quality of these services. This requires continuous training and updating of manpower. Finally, let us direct our attention to the most important issue of the Digital Divide that exists on a wide scale in India. Digital literacy and penetration levels are poor: only 18% of the

population uses the Internet, most of the content is in English; and 75% of the broadband connections are spatially concentrated in big cities (Chatterji 2018). According to a 2017 global survey by the Pew Research Centre (2019), only one in four Indian adults reported using the internet or owning a smartphone. The problem of the digital divide is compounded by the language divide that also exists in cities in particular and in India in general. BMC services that are available online are partially available in Marathi, which excludes a sizeable population from benefiting from these electronically delivered services.

Conclusion

At a time when the Internet of Things, 5G technology, and many such information technology-related inventions are shaping the course of governance across the globe, every effort made by the government to bring government services to online platforms is filled with new challenges. Hence, urban local bodies such as BMC need to reinvent themselves continually to better deliver services electronically and make the process of governance uncomplicated in the true sense of the term.

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Appendix - I

Table 1: Issues of Complaints included in Citizen's Charter

Sr. No.	Complaint	To be resolved (in days)
1	Drainage Chokes and Blockages	1
2	Overflowing Drains or Manholes	1
3	Odour (Foul Smell) from Drains	1
4	Replacement of Missing / Damaged Manhole	1
5	Raising of Manhole (except in Monsoon)	7
6	Cleaning of the Septic Tank	7
7	Repairs to Pipe Sewers / Main Sewers	7
8	Contaminated Water Supply	1
9	Leaks in Water Lines	7
10	Shortage of Water Supply	2

Sr. No.	Complaint	To be resolved (in days)
11	Burst Water Main	1
12	Garbage not lifted - Co-authorised Point	1
13	Collection point not attended properly	1
14	Garbage Lorry not reported for service/ Lorry not covered	1
15	Providing / Removing / Replacing Dustbins	8
16	Sweeping of the Road	1
17	Removal of Dead Animals	1
18	No Attendance at Public Toilets	2

Appendix - II

List No.1 Services Offered by BMC Online

- Birth Certificate (Duplicate)
- Death Certificate (Duplicate)
- Application for Birth Registration
- Application for Still Birth Registration
- Application for NRI Birth Registration
- Application for Registration of Home Births
- Application for Birth / Death Certificate Correction
- Application for Death Registration
- Renewal of Health License
- Duplicate of Health License
- Application for Health License
- Change / Transfer in the Constitution of Health License
- Change / Transfer in the Constitution of Health License
- Marriage Registration Application
- Duplicate Nursing Home Certificate
- Nursing Home Registration

- Transfer / Change of Nursing Home
- Renewal of License - Water Tanker
- Application for Water Tanker License
- Renewal for Dog License
- Application for Dog License
- Application for Dog License Cancellation
- Shop and Establishment Application for Renewal (Form B)
- Application for Registration (Form A)
- Notification of Change (Form E)
- Application for Renewal of Trade
- Application for Duplicate Trade License
- Application for Trade License
- Application for Supplementary Trade License
- Application for Amalgamation of Trade Licenses
- Application for Change in the Constitution of Trade License
- Application for Cancellation / Forfeit of Trade License
- Application for Restoration of Trade License
- Application for Renewal of Hoardings Licence
- Application for Duplicate Hoarding License
- Application for Change in Constitution of Hoarding License
- Application for Cancellation / Forfeit of Hoardings Licence
- Application for Restoration of Hoarding License
- Application for Renewal of Advertisement License
- Application for Duplicate Advertisement Licence
- Application for Advertisement License
- Application for Change in Constitution of Advertisement License
- Application for Cancellation / Forfeit of Advertisement Licence
- Application for Restoration Advertisement License
- Application for Renewal of Projection and Stall Board License
- Application for Duplicate Projection and Stallboard License
- Application for Projection and Stall Board License

- Application for Changes in Projection and Stall Board License
- Application for Cancellation / Forfeit of Projection and Stall Board License
- Application for Restoration of Projection and Stall Board License
- Application for Factory Permit / Flour Mill Permit
- Form 'C' - Factory Permit / Flour Mill Permit
- Transfer or Change in Constitution
- Cancellation of Factory Permit
- Restoration of Factory Permit
- Permission to cut a Tree / Branches of a Tree
- Application for issuing Permission on Municipal Roads for the following Category -
    1. Religious Permission
    2. Social Permission
    3. Political Permission
    4. Election Permission
    5. Shooting Permission
- Erection of Temporary Chowki
- Application for Water Trenches
- Application Ganesh Mandap Permission
- Navratri Mandap Permission
- Ganesh Mandap Renewal Application
- Application for issuing New Water Line Connection for the following Category -
    1. Buildings
    2. Slums (Stand Post Connection)
- Application for Deonar Abattoir License Renewal
- Application for Deonar Abattoir Registration
- Application for Deonar Abattoir License

Table 2: Good Practices for E-governance

TABLE 6B: GOOD PRACTICES THAT RESPOND TO THE FOLLOWING CRITERIA AND THEIR INDICATORS

Category 2: E-Governance Reform	Objective Criteria	Qualifying Indicators
E-Governance	Systems Improvement- Internally improve systems and procedures for back end increase in efficiency	Preparation of municipal E-Governance implementation plan
		Business process re-engineering
		IT cell recruitment, capacity building/PPP for setting up of E-gov portal
		Integration of GIS with property tax, water tax, etc collection systems
		All modules integrated with back-end accounting for real time entry of receipts and expenses
		Personnell management system including biometric registration, etc
		Assesst life-cycle management
		MIS, online document management system
	Accountability- Improving accountability by sharing relevant information in an efficient manner	Online citizen charter, relevant organizational disclosures mandated through RTI, etc.
		Availability of information in local language, transliteration
		Establishing kiosks, citizen facilitation/ information centers, etc.
	Transparency- inducing transparency related to processes for improved trust between ULB, citizen and other stakeholders	E-procurement
		E-monitoring
		Building plan approval
		Online grievance redressal
	Citizen empowerment	Sharing of critical data like, pollution level, green cover in the city, market information for empowering citizens with right information to aid in decision making

Source: Compendium of Good Practices titled 'Urban Reforms', 2015.

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Building Smarter, Sustainable Cities:
The Role of AI in Urban Governance

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Introduction

Urbanization is reshaping the world, and India is at the forefront of this transformation. With over 35% of its population residing in urban areas, India is expected to witness its urban population grow to 600 million by 2030. As cities expand, they increasingly act as economic and cultural hubs, contributing significantly to the nation's GDP while also amplifying social and environmental challenges. This rapid urbanization brings challenges such as overcrowding, resource scarcity, waste management issues, and environmental degradation. Traditional governance models often fall short of addressing the complexities of modern urban landscapes, necessitating innovative approaches.

Artificial Intelligence (AI) emerges as a game-changing solution to the complex challenges of urban governance. By leveraging AI for real-time data analysis, predictive modeling, and efficient resource allocation, cities can transition from reactive to proactive governance systems.

India, with its burgeoning urban population and ambitious sustainability goals, stands to benefit immensely from AI integration in urban governance. AI tools are already demonstrating potential in areas such as traffic management, waste segregation, and energy optimization, paving the way for smarter and more sustainable cities.

However, to realize these benefits, it is essential to address the challenges of AI adoption, including ethical considerations, data privacy, and the digital divide. This article explores the transformative role of AI in creating sustainable urban governance models that align with India's development trajectory.

The Status of Urban Governance in India

Urban India faces complex challenges arising from unplanned urbanization, population growth, and resource scarcity. According to the United Nations, India is expected to add 416 million urban dwellers by 2050, further straining existing infrastructure and services. Issues such as solid waste management, water supply inefficiencies, traffic congestion, and housing shortages dominate municipal agendas.

Programs like the Swachh Bharat Mission (SBM) and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) aim to address these challenges. For instance, under SBM, cities such as Indore have pioneered effective waste segregation and recycling practices, earning recognition as India's cleanest city in multiple consecutive Swachh Survekshan rankings. Similarly, Ahmedabad has integrated AI-powered tools for solid waste tracking, improving efficiency in collection and processing.

Despite notable advancements, urban governance in India is still constrained by systemic challenges that limit its effectiveness and adaptability. Municipal corporations, such as the Brihanmumbai Municipal Corporation (BMC), often operate within the confines of legacy systems that are not designed for modern, data-driven decision-making. These outdated frameworks make it difficult to implement innovative and efficient solutions.

For example, in Mumbai, waste disposal predominantly relies on traditional landfilling methods. This dependence stems from the limited adoption of advanced technologies like Artificial Intelligence (AI) in material recovery facilities, which could otherwise optimize waste segregation, recycling, and resource recovery processes. The absence of such technological integration not only hampers operational efficiency but also undermines efforts to establish sustainable waste management practices that align with global standards.

Fragmented governance structures exacerbate these issues, as seen in Delhi, where multiple agencies oversee overlapping responsibilities, creating bottlenecks in project execution. Informal workers, such as waste pickers, often remain excluded from governance frameworks, reducing system inclusivity and efficiency.

A shift toward AI-enabled governance, including predictive analytics for traffic management (e.g., Bengaluru's AI-based traffic flow optimization), can address these gaps, paving the way for efficient, sustainable, and resilient cities.

AI Applications in Sustainable Urban Governance

AI has immense potential to transform urban governance in India by enhancing service delivery, optimizing resource use, and fostering sustainable development. Here are key areas where AI is making an impact:

1. **Smart Infrastructure**

   AI-powered tools enable real-time monitoring and predictive maintenance of urban infrastructure. For example, Hyderabad has implemented AI-driven systems for monitoring water pipelines, reducing leakages, and optimizing water supply. Smart grids powered by AI help manage electricity distribution efficiently, minimizing power outages.

2. **Urban Planning and Development**

   AI assists in creating data-driven urban plans by analyzing spatial data, population trends, and environmental factors. For instance, Pune uses AI algorithms to identify flood-prone zones and develop proactive mitigation plans. This has improved resilience against climate-induced risks.

3. **Public Service Delivery**

   Cities like Chennai leverage AI to streamline waste management systems. AI tools in waste segregation and route optimization for garbage collection trucks have enhanced operational efficiency, reducing landfill dependency. Additionally, AI-based systems are used to predict service demands, improving water and electricity supply reliability.

4. **Mobility and Traffic Management**

   AI-enabled traffic management systems have transformed urban mobility. Bengaluru's Traffic Management Centre uses machine learning algorithms to optimize traffic flow, reducing congestion and emissions. Similarly, AI-powered

predictive tools in cities like Delhi assist public transport systems in scheduling and route planning.

5. Citizen Engagement and Grievance Redressal

AI chatbots and voice assistants facilitate real-time interaction between citizens and municipal authorities. Mumbai has introduced AI-driven chatbots for complaint registration and tracking, improving responsiveness and transparency. AI also supports e-governance initiatives by analyzing public sentiment to shape better policies.

6. Environmental Sustainability

AI is used to monitor air and water quality in cities like Delhi and Kolkata, where predictive analytics guide pollution control measures. AI also supports renewable energy integration, optimizing solar and wind energy distribution across urban grids.

AI adoption remains uneven, but its growing role in urban governance showcases its potential to address systemic inefficiencies and build smarter, more sustainable cities. Scaling these solutions requires robust policies, collaboration, and ethical AI practices.

Benefits of AI Adoption in Sustainable Urban Governance

The integration of AI in urban governance provides multiple benefits, addressing systemic inefficiencies while promoting sustainability.

1. Enhanced Efficiency and Productivity

AI tools streamline municipal operations by automating routine tasks such as data analysis,

complaint management, and resource allocation. This allows urban authorities to focus on strategic planning, significantly improving service delivery timelines and accuracy.

2. Environmental Management

AI-driven solutions aid in environmental management by monitoring air and water quality, predicting weather patterns, and optimizing waste management. For instance, AI can identify recyclable materials in waste streams, reducing landfill dependence and promoting circular economy practices.

3. Social Equity

AI enhances access to essential services by tailoring solutions to underserved communities. Predictive analytics can map resource needs, ensuring equitable distribution of water, electricity, and healthcare facilities. Moreover, AI-driven educational platforms empower marginalized groups by providing skill-building opportunities.

4. Data-Driven Decision-Making

AI enables informed policymaking by analyzing large datasets for actionable insights. Predictive models can forecast urban trends, such as population growth or traffic patterns, allowing municipalities to prepare proactively. Real-time analytics enhance responsiveness to emergencies, such as flood warnings or disease outbreaks.

5. Cost Optimization

AI reduces operational costs by improving resource utilization. For instance, optimizing energy consumption through AI-based systems can significantly cut municipal expenditure while reducing the carbon footprint of cities.

By integrating AI, cities can transition toward sustainable governance models that balance economic, environmental, and social priorities. However, realizing these benefits requires strong governance frameworks to ensure transparency and inclusivity in AI deployment.

Challenges and Risks of AI Adoption in Sustainable Urban Governance

While AI offers transformative potential for urban governance, its adoption comes with significant challenges and risks that require careful navigation.

1. **Data Privacy and Security**

   AI relies heavily on vast datasets, raising concerns about data privacy and security. In cities like Delhi, the integration of AI in traffic management has sparked debates over surveillance and misuse of personal data. Establishing robust data protection frameworks is essential to address these concerns.

2. **High Implementation Costs**

   The cost of AI technologies, including software, hardware, and skilled workforce, remains a significant barrier. For example, the Smart Cities Mission has seen limited AI deployment in smaller cities due to budgetary constraints. This creates a disparity between large metropolitan areas like Mumbai and smaller urban centers.

3. **Digital Divide**

   AI adoption risks excluding marginalized populations with limited digital literacy or access to technology. Efforts in Kolkata to implement AI-driven grievance redressal systems faced criticism for excluding citizens without smartphones or internet access. Bridging this digital divide is crucial for inclusivity.

4. **Ethical Concerns**

   AI systems may unintentionally reinforce existing biases. For instance, algorithms used for resource allocation in Bengaluru were found to favor affluent neighborhoods, highlighting the importance of unbiased data inputs and transparent algorithm design.

5. **Dependency on Technology**

   Over-reliance on AI could reduce human oversight, potentially leading to governance failures in critical scenarios. In Hyderabad, a temporary system failure in AI-powered water supply monitoring caused delays in identifying pipeline leaks, underscoring the need for backup mechanisms.

6. **Lack of Skilled Workforce**

   India faces a shortage of AI-skilled professionals within municipal bodies, hindering effective implementation. Capacity-building programs for urban planners and administrators are essential to address this gap.

To maximize AI's potential in urban governance, it is imperative to address these challenges through ethical frameworks, public-private collaborations, and inclusive policies that prioritize equity and accountability.

Policy Recommendations and Way Forward

To fully harness the potential of AI in sustainable urban governance, India must adopt a strategic, multi-faceted approach that emphasizes ethical

deployment, capacity building, and inclusivity. A robust AI policy framework is imperative, one that safeguards data privacy, ensures algorithmic transparency, and promotes accountability. Drawing inspiration from the EU's AI Act, India could formulate guidelines tailored to its unique urban challenges, fostering responsible and equitable AI adoption.

Strengthening the skills of municipal officials and urban planners is equally critical. Capacity-building programs, developed in collaboration with educational institutions and technology firms, can empower local authorities to leverage AI effectively. Cities like Pune, which have partnered with universities to offer AI-driven urban management courses, provide a promising model for others to emulate.

Bridging the digital divide is essential to ensure AI benefits are accessible to all, particularly underserved communities. Municipalities must invest in digital infrastructure and launch community-based initiatives to increase awareness and access. Simultaneously, public-private partnerships can accelerate AI innovation in urban governance, offering resources and expertise to address critical issues such as waste management, traffic optimization, and citizen engagement.

Collaborative governance, which brings together policymakers, industry leaders, civil society, and local communities, will be vital for sustainable AI integration. Bengaluru's participatory AI models, particularly in traffic management, demonstrate how such collaboration can foster trust and effectiveness. Moreover, fostering research and development through government grants and pilot projects can catalyze breakthroughs in renewable energy, climate resilience, and urban planning.

By prioritizing these strategies, India can not only address current urban governance challenges but also position itself as a global leader in AI-driven sustainable development, shaping a future that is both innovative and inclusive.

AI is not merely a technological advancement; it is a transformative tool that can redefine the landscape of urban governance in India. From optimizing resource allocation to enhancing citizen engagement, AI offers innovative solutions to complex urban challenges such as waste management, traffic congestion, and environmental sustainability. However, the journey toward AI integration requires a balance between leveraging its capabilities and addressing associated risks, including data privacy, ethical concerns, and inclusivity.

By formulating robust policy frameworks, investing in capacity building, and fostering collaborative governance, India can unlock AI's potential to create smarter, more resilient cities. The examples of Indore, Bengaluru, and Pune demonstrate how early adoption can yield significant benefits, offering a roadmap for other urban centers. As India's cities continue to grow, embracing AI as a strategic partner will be critical to achieving sustainable urban governance that prioritizes equity, efficiency, and innovation.

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ROUND & ABOUT

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India, a Solar Superpower

India's climate change strategy, as contained in its updated Nationally Determined Contributions (NDCs) and the National Action Plan on Climate Change (NAPCC), inter alia focuses on reducing emissions intensity by 45% by 2030, and derive 50% of its energy from non-fossil fuels by the same year and sustainable lifestyle as set out in the Mission LiFE. In natural energy sources, the focus is on the abundantly available solar energy. Simon Stiell, the Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC), during his visit to India in February 2025, described India as a Solar Superpower that is sharing its experience through the International Solar Alliance − co-founded by India and France. He said that India is a solar superpower, reaching 100 gigawatts in record time, putting the country on a path to meet India's ambitious 500 gigawatt target for clean energy.

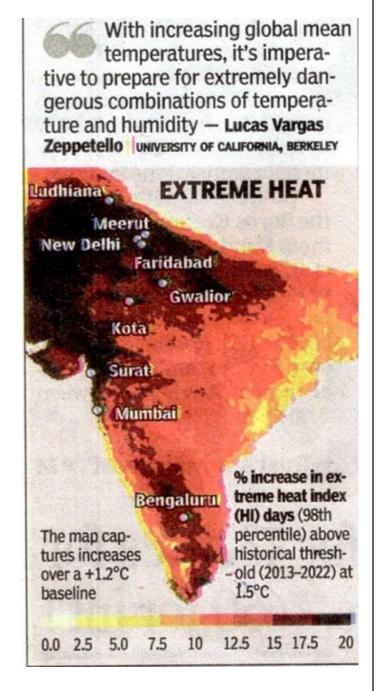*[Reference: The Economic Times, Mumbai, 17 February 2025]*

Heat Action Plans

Heatwaves are taking a heavy toll on human lives across the globe. These are one of the major impacts of climate change. The Indian Meteorological Department (IMD) has taken up various steps to improve monitoring and timely early warning, which helped minimizing loss of life and property. IMD, in collaboration with the National Disaster Management Authority (NDMA) and local health departments, has started Heat Action Plans (HAPs) in many parts of the country to forewarn about the heat waves and also advising action to be taken during such occasions. At present, the HAPs have been implemented in 23 States that are prone to high temperatures, leading to heat-wave conditions. The heat wave bulletin is issued daily at 1600 hrs. IST provides heat wave forecasts and warnings with 5-day forecasts. The impact of a heat wave expected over a region is being mentioned in colour codes (Green, Yellow, Orange, and Red), and also the specific impact is described in the text as per the NDMA guidelines. Bulletins are issued by Meteorological Centres / Regional Meteorological Centres at district levels.

Alarm of Heatwaves in Indian Cities

A recent international report inter alia, states that "without efficacious long-term strategies, India is likely to witness a higher number of heat-related fatalities due to more frequent, intense, and prolonged heat waves in forthcoming years". The study was co-authored by scholars from Sustainable Futures Collaborative, King's College London, Harvard University, Princeton University, and University of California, Berkeley. Utilizing climate models, the study identified nine cities − Bengaluru, Delhi, Faridabad, Gwalior, Kota, Ludhiana, Meerut, Mumbai, and Surat (with population exceeding 1 million), that are anticipated to experience the most substantial increases in hazardous heat index values, combining temperature and humidity to their recent averages.

The Government of Maharashtra is developing a Heat Resilience Framework for Mumbai, Thane and Nagpur in a pilot project which seeks to enhance preparedness and responsiveness during heatwave events. The framework will conduct a ward-level analysis to map areas facing the highest risk of heat duress, while assessing the cities' vulnerabilities on five parameters ranging from social to economic factors.

> With increasing global mean temperatures, it's imperative to prepare for extremely dangerous combinations of temperature and humidity — **Lucas Vargas Zeppetello** | UNIVERSITY OF CALIFORNIA, BERKELEY

EXTREME HEAT

Ludhiana
Meerut
New Delhi
Faridabad
Gwalior
Kota
Surat
Mumbai
Bengaluru

The map captures increases over a +1.2°C baseline

% increase in extreme heat index (HI) days (98th percentile) above historical threshold (2013–2022) at 1.5°C

0.0 2.5 5.0 7.5 10 12.5 15 17.5 20

[References: (1) https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1982978; (2) The Indian Express, Mumbai, 18 March 2025; (3) The Times of India, Mumbai, 19 March 2025]
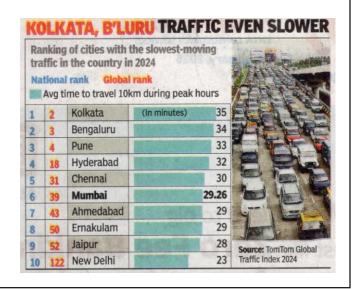
Pure Drinking Water from the Air!

The above caption does not refer to any magic show but is a reality. The ICICI Bank has adopted state-of-the-art technology to produce drinking water from atmospheric moisture. The Bank has installed Atmospheric Water Generators (AWGs) at five offices, one each in Bengaluru, Hyderabad, and Mumbai, and two in Chennai. These units have a production capacity of 8,000 litres of potable water a day, benefiting 4,200 employees. AWGs utilize innovative technology to convert atmospheric moisture into 100% microbe-free, fresh and clean drinking water. This initiative reduces the Bank's dependence on packaged water and aligns with its strategy for environmental and ecological conservation, led by the 4R (reduce, reuse, recycle, and responsible disposal) principle of environmental stewardship.

The fact is that the use of this technology has been done earlier in India in a conference and a tournament. This will gain currency for use at various high-end places.

[Reference: hashtag#ICICIBank hashtag#ICICIForWaterConservation- Linked in]

Increasing Traffic Woes in Cities

Ask any city dweller about his commuting in the city; he will definitely give vent to his woes about the time taken in road traffic by bus, car, auto rickshaw, bike, etc., and the ordeal he bears every day. Traffic index is one of the key parameters of judging the quality of life in cities. The 14th edition of TomTom Traffic Index has studied traffic patterns in 500 cities across 62 countries. The accompanying graphic from the report shows the ranking of Indian cities among the slowest-moving traffic.

KOLKATA, B'LURU TRAFFIC EVEN SLOWER

Ranking of cities with the slowest-moving traffic in the country in 2024

National rank	Global rank	City	Avg time to travel 10km during peak hours (In minutes)
1	2	Kolkata	35
2	3	Bengaluru	34
3	4	Pune	33
4	18	Hyderabad	32
5	31	Chennai	30
6	39	Mumbai	29.26
7	43	Ahmedabad	29
8	50	Ernakulam	29
9	52	Jaipur	28
10	122	New Delhi	23

Source: TomTom Global Traffic Index 2024

The reasons for this state of affairs are not far to seek. Road length in the cities is almost fixed, with few marginal additions occurring, and the number of vehicles coming on the road is increasing by the day. This is a situation of stalemate, with little chance of any improvement. Flyovers, underpasses, etc., may have helped a little in easing. Metro services are under construction in many cities; hence, the impact of metro services is yet to be seen. Though the majority of stakeholders are trying to address the scenario challenges, there is an urgent need for strengthening urban transport and integrating innovative solutions for sustainable urban mobility.

[Reference: The Times of India, Mumbai, 14 January 2025]

Smart Cities Mission Concludes

Cities have proved to be engines of growth of the national economy. They provide employment, sustain services and businesses, allow cultural and social activities to flourish, yet they were not in good shape. To improve upon this state of affairs, a major policy approach of the Government of India has been to frame national missions from 2005 onwards with ambitious and specific objectives, a time frame for its implementation and making available substantive grants, often in a sharing mode by the central government, state government and the urban local bodies. The strategy has worked well.

Smart Cities Mission is one of the missions in our recent observation, which was launched on 25 June 2015 and will now conclude on 31 March 2025. Its objectives include providing basic infrastructure, improving quality of life, a clean and sustainable environment, applying smart solutions, etc. Replying to a question in Rajya Sabha, the Hon'ble Minister for Housing and Urban Affairs stated that Rs. 47,538 crore out of Rs. 48,000 crore of central assistance has been released to the selected cities which have spent Rs. 45,772 crore. As stated, the cities have completed 7,491 projects worth Rs. 1.50 lakh crore with 567 projects (7%) worth Rs. 14,357 are ongoing.

[References: (1) The Indian Express, Mumbai, 15 March 2025; (2) Widely reported in the print media]

Half of the Sewage is Discharged into Water Bodies

The importance of rivers and other water bodies for human needs no emphasis.

They are so vital to our lives that they have assumed sacred status for a good reason. The country has embarked upon the ambitious path of having national missions, yet a recent statement by government on the floor of the Legislative Assembly in Maharashtra surprises us with shock. Mrs. Pankaja Munde, the Hon'ble Minister for Environment, said in reply to a question that "half of sewage from cities, towns and villages goes into the state's rivers untreated….". The graphic from The Times of India, Mumbai dated 18 March 2025 brings out some of the vital details.

Considering the enormity of the problem and huge potential damage to human lives who are using water from the rivers, it would be necessary to launch a State Mission to set up sewage disposal plants at all the places needed to address the issue and ensure safe disposal of the sewage.

[Reference: The Times of India, Mumbai, 18 March 2025]

'25% LOCAL BODY CAPEX FOR WASTE TREATMENT'

MAHARASHTRA'S POLLUTED RIVERS

55 Number of rivers in the state whose stretches have been found to be polluted*

*Finding of Central Pollution Control Board (CPCB)

Category ○ Rivers

Severely polluted
○ Mithi, Bhima, Mutha, Savitri

Highly polluted
○ Godavari, Kanhan, Mula, Mula, Mutha (another stretch), Pawana

Third most polluted
○ Chandrabhaga, Waghur, Darna, Titur, Ghod, Girna, Tapi, Indrayani, Krushna, Kundalika, Morna, Muchkundi, Nira, Patalganga, Rangavali, Surya, Wardha, Vainganga

Polluted
○ Bhatsa, Burai, Kalu, Kaan, Manjara, Mor, Pelhar, Panjhara, Koyna, Pedhi, Painganga, Purna, Sina, Urmodi, Vel, Venna, Vena

Moderately polluted
○ Amba, Amravati, Bindusara, Gomai, Bori, Vashishthi, Hiwara, Kolar, Tansa, Ulhas, Vaitarna

STATE'S RULES
➤ The state has made it mandatory for local self-government bodies in all cities, towns and villages to reserve 25% of their capital expenditure for treatment of sewage and solid waste
➤ As per the state directive, any treated water to be released in rivers or the sea should achieve a BOD* level up to 10 milligrams per litre

*Biochemical Oxygen Demand (BOD) measures the amount of oxygen consumed by microorganisms when breaking down organic matter in water, serving as an indicator of water quality and pollution levels

WHAT MINISTER SAID
➤ While industries are not allowed to release untreated waste into rivers, 29 municipal corporations in Maharashtra generate vast amounts of untreated sewage
➤ In 2018, nine rivers in Maharashtra recorded BOD levels above 30 mg per litre, which is considered extremely serious. The number of such rivers has now come down to three
➤ 155 operational sewage treatment plants (STPs) exist in Maharashtra currently, and 16 plants were recently added

" It is true that 55 rivers in Maharashtra were found to be polluted, primarily due to untreated sewage from urban areas being released into the water bodies
Pankaja Munde | ENVIRONMENT AND CLIMATE CHANGE MINISTER

Regional Centre for Urban and Environmental Studies, Mumbai
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◆

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◆

Project Management & Social Auditing.

◆

Information, Education & Communication (IEC) in Urban Sector.

◆

Training of Trainers (TOT) in Urban Management.

◆

Technical Advisory Services in the Urban Development Urban Management Sector

◆

Study Visits for ULBs for Experience Sharing and Cross Learning

◆

Community Based Interventions.

◆

Human Resources Development.

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Interdisciplinary Programmes.

◆

Knowledge Management.

◆

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