

AMAN SINGH RAJPUT

Analysing Spatial Growth in Peri-Urban Areas Using Spatial Metrics: Case Study of Indore

1

M.M. GOEL AND ISHU GARG

An Economic Analysis of Public Expenditure in Municipalities and Panchayats of Haryana

16

SUCHISMITA SATPATHY

Neoliberal Regime of Land Grabbing: A Study of Bhubaneswar

38

RAMAKRISHNA NALLATHIGA

Reforming Property Taxation: The Case of Municipal Corporation of Greater Mumbai

59

SIMRANJOT SINGH AND SANJAY MISHRA

Identifying and Reviewing Green Building Alternatives for Navi Mumbai

70

NEELIMA DESHMUKH

Major Challenges before Urban Local Bodies: Key Issues (A Case Study of Nagpur District)

95



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PAGE

Articles

- Analysing Spatial Growth in Peri-Urban Areas Using Spatial Metrics: Case Study of Indore
Aman Singh Rajput 1
- An Economic Analysis of Public Expenditure in Municipalities and Panchayats of Haryana
M.M. Goel and Ishu Garg 16
- Neoliberal Regime of Land Grabbing: A Study of Bhubaneswar
Suchismita Satpathy 38
- Reforming Property Taxation: The Case of Municipal Corporation of Greater Mumbai
Ramakrishna Nallathiga 59
- Identifying and Reviewing Green Building Alternatives for Navi Mumbai
Simranjot Singh and Sanjay Mishra 70
- Major Challenges before Urban Local Bodies: Key Issues (A Case Study of Nagpur District)
Neelima Deshmukh 95

Analysing Spatial Growth in Peri-Urban Areas Using Spatial Metrics: Case Study of Indore

AMAN SINGH RAJPUT*

ABSTRACT

Rate of urbanisation is rising in developing countries and the new trajectory of India's urbanisation states the growth of areas outside the administrative boundaries. With increasing urban population growth and its increasing demand for space, a wide range of land is required for habitation. Due to the limited and high valued land available within the city limits is leading to the extension of urban spatial growth outside the formal urban jurisdiction. This space is termed by scholars and researchers as 'peri-urban areas'. In this growing urbanisation for effective planning and management of land resources, the city's spatial growth patterns need to be quantified. Spatial metrics is a tool to study and analyse the pattern and structure of landscapes. The research is based on the application of the spatial metrics index for understanding the qualitative and quantitative nature of the built-up growth taking place in peri-urban areas. The research tries to evaluate the type and dynamics of the spatial growth pattern in the Indore peri-urban areas using spatial metrics over the built environment. It also explores the importance of the regional road network and the economic geography in the development of this zone and its related characteristics. The study of spatial growth of the city using spatial metrics enables the planners and policymakers to undertake the decision for sustainable development of the city.

Keywords: *Peri-urban areas, landscape expansion index, built-up intensity index, spatial metrics, built up analysis*

INTRODUCTION

The term peri-urban areas was first defined by T.L. Smith in 1992 as 'the built-up areas just outside the corporate limits of the city'.¹ Despite

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several attempts to define this space, there is no universally accepted definition. The definitions can be conceptualised under three heads – place, concept and process-based. These are majorly formed when developments such as a highway or a land-use change takes place in the rural areas. When a particularly rural area transforms into an urban area, it passes through a stage of ‘peri urbanisation’ and it is seen as a relative to what constitutes as an urban.^{2 & 3} The development of peri-urban areas is due to the pressure exerted by the inner city’s growth push. This pressure is major because of urban population growth and its increasing demand for space.

In the new trajectory of India’s urbanisation process, census towns show the higher increase in comparison to the statutory towns from 2001 to 2011⁴, indicating growth of areas outside administrative boundary. This economic development led to the increase of population density and built-up density outside formal urban jurisdiction.⁵ In the Indian context, the growth of peri-urban areas increased after the economic reforms of 1991.⁶ Under these reforms huge foreign direct investments were made for setting up technology-driven industries in urban areas. But, due to scarcity of land within the urban limits and speculative high land prices for the available land parcels, the areas just outside the city limits became favourable for such investment. Economic sectors like manufacturing, transport, storage and communication started growing at higher percentages in the sub-urban villages rather than the metropolitan core and sub-urban towns.⁷ This has led to comparative higher growth in peri-urban areas than their parent urban areas. Some other factors which act as a catalyst for the development of peri-urban areas include multiple local and state-level bodies and new authorities⁸, higher cost of living in the city and movement of people through gentrification process.⁹ The peri-urban areas are growing in the importance of urban and regional planning as they are the enablers of urban extension through the availability of land and water.

The spatial development of peri-urban areas is characterised as the expansion of an urban area in its surrounding environment. This process of urbanisation not only transforms rural areas to urban areas but also the landscape and associated socio-economic character of the region.¹⁰ The spatial expansion of the cities horizontally and vertically as well as the transformation of agricultural land to urban areas will be an important issue for urban and regional planners in India.¹¹ In this growing urbanisation for effective planning and management of land resources, the city’s spatial growth patterns need to be quantified. With this background, the research tries to analyse the spatial growth type and related dynamics in peri-urban areas around Indore Municipal

Corporation through the application of spatial metrics. This research is of importance to the planners and development policymakers to make informed decisions for planning and management of this zone.

Methodology

The research was conducted through image processing of the Landsat satellite imagery of the city acquired from the US Geological Survey for a different set of years. The years – 1991, 2001 and 2011 were chosen for the study in connotation to the statutory development plans of Indore in 1991 and 2021. Various bands of the acquired data were superimposed to create composite imagery for analysis. These were further processed to classify the image into land cover classes in built-up areas and non-built-up areas using supervised classification on GIS. Non-built-up areas include vegetation, shrubs, bushes, grasslands, open landscapes, agricultural lands, riverine vegetation, rivers and water bodies. To ensure the accuracy of the processed image kappa coefficients were calculated which were 0.86, 0.89, and 0.87 for the respective years. The minimum accuracy for a reliable land cover classification should be 80 per cent.¹² Then the processed Land Use and Land Cover (LULC) maps were used to extract the built-up areas and further spatial metrics were computed through geo-processing tools.

Spatial metrics is a tool to study and analyse the pattern and structure of landscapes. These were specifically used by landscape ecologists for quantifying the shapes and pattern of vegetation, however, in the modern times, it is used to study the land-use patterns to interpolate various urban growth models.¹³ These are further subdivided into three categories landscape, geospatial and spatial statistical metrics.

Urban Expansion Speed Index: The status of urban expansion is analysed using urban expansion speed. It can be mathematically defined as the average area developed per year.^{14 & 15} In the research, the positive value of the index means peri-urban areas are spatially expanding in the given period. Also, if the index value is negative, the spatial growth in peri-urban areas is shrinking. The equation to calculate the urban expansion speed index is as follows:

$$\text{Urban Expansion Speed Index [UES]} = \frac{\text{BUAn} + i - \text{BUAn}}{i}$$

Where BUAn and BUAn+i is the total area of urban built-up areas in n years and n+ i years respectively, the unit is km² and i is the total number of years.

Urban Expansion Intensity Index: As discussed in Section I, the

growth of peri-urban areas is majorly due to the impacts of growth inducing factors such as road network, economic development, major land uses or the terrain. As a result of these, certain directions around the city become favourable to the growth of peri-urban areas and are referred to as preference of urban development.¹⁵ This index is used to understand the spatial growth preference direction in peri-urban areas at a given period. In mathematical terms, it is defined¹⁶ as the percentage of urban expansion area occupied out of the total land area in a specific zone in the given time context.

$$\text{Urban Expansion Intensity Index [UEI]} = \frac{(\text{BUAn} + i - \text{BUAn})}{i} \times \frac{1}{\text{TLA}} \times 100$$

Where, UEI represents the annual average expansion intensity index of the *i*th spatial zone during the time quantum *t*, BUAn+*i* and BUAn represent the beginning and ending built-up area of *i*th spatial zone in km² and TLA represents the Total Land Area of spatial zone in the unit km². This index can be used for identifying the future potential direction of urban expansion in peri-urban areas as well as compares the intensity of growth in different time periods. The division standard of UEI¹⁷ is >1.92 – high-speed development; 1.05-1.92 – fast development; 0.59-1.05 – medium-speed development; 0.28-0.59 – low-speed development and 0-0.28 – slow development.

The overall peri-urban areas were divided into eight zones along the cardinal axis. These zones were intersected with the individual built-up areas extracted from LULC analysis to calculate the urban expansion intensity index for the corresponding years.

Landscape Expansion Index: It was proposed by Prof. Liu Xiaoping and is defined using buffer analysis of the feature. Buffer is defined as a zone of the specified distance around the feature. The index examines the feature by determining the entities occurring within or outside this buffer.¹⁸ The comparative advantage of this index is that apart from quantifying the spatial growth pattern of built-up areas it can examine its evolution process and its relationship with the spatial distribution of the built-up landscape. Landscape expansion index is calculated using the formula below:

$$\text{Landscape Expansion Index (LEI)} = \frac{A_o}{(A_o + A_v)} \times 100$$

Wherein *A_o* is the intersection between the buffer zone and the occupied feature and *A_v* is the intersection between the buffer zone and vacant category. The value of LEI varies from 0 to 100. Based on these values the entity class can be categorised into three types: (a) Infill development – new built-up area emerging up inside the hole

of already existing built-up area, (b) Edge Expansion – new built-up area spreads unidirectional in parallel strips from an edge and (c) Outlying development – the newly built-up area is isolated from the old patch.¹⁹ The value of LEI is 0 for outlying development, $0 < LEI \leq 50$ for edge expansion and $50 < LEI \leq 100$ for infill development. Outlying development or leapfrog development is the expansion of an urban area that requires the extension of supporting public facilities.²⁰ The landscape expansion index besides identifying the expansion types also describes the temporal process of pattern changes within the time periods. In the spatial planning domain, this index and its variants are an important tool for understanding the nexus and dynamics of urban growth. The buffers of 1 m were created around the new built-up patch developed in peri-urban areas and its area was calculated. The intersection of this buffer with the old built-up area patch was carried out to calculate the occupied area within the buffer. Using the formula of LEI, new built-up patches were classified into three classes of spatial growth.

Growth Density: Density, concerning planning means much the same as it does in ordinary languages, i.e. the number of objects such as people, dwelling units, economic activities, etc. per unit space. Information about density is of vital importance for planning purposes as most of the proposals are based upon its study. Density variations of a particular entity around a point help in revealing the growth patterns with reference to the point.²¹ It also helps in understanding the factors leading to such growth in the zones. It is defined as the ratio of the amount of urban land to the total land. The changes in this ratio temporally can help understand the growth of urban land uses in an area. Growth density as a means to understand the changes with increasing distance and its related intensity.^{22, 23} can be calculated as below:

$$\text{Growth Density [GD]} = \frac{AB}{n} \times \frac{100\%}{TB}$$

Where GD is the growth density of the urban growth type at the target buffer zone; TB is the total study area at the target buffer zone; AB is the newly developed urban area of the urban growth type at the target buffer zone; n is the year interval. This method is mostly applied in botanical science and micro organisms studies for analysing the impacts of growth and decline in species around the natural habitat present. In the same analogy, we have applied it around the city core for understanding the growth and decline of the particular spatial urban-type model and the reasons for its growth. All the three growth types' outlying, edge expansion and infill as identified in using the landscape

expansion index were analysed in this section in terms of their density from the municipal boundary with two km buffers zones. Therefore, for this, the zones of two km were created using the buffer tool from the municipal boundary. These buffer zones were then intersected with the individual built-up growth type in the two decades to calculate the growth density variations.

Case Study – Indore City Region

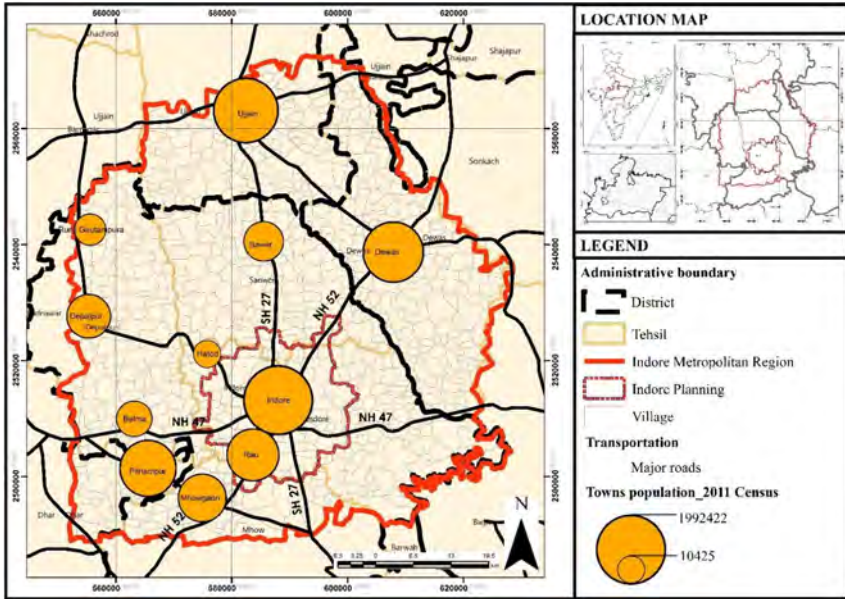
Indore – a tier II metropolitan city termed as the commercial capital of the state of Madhya Pradesh, is selected based on its population size, less geographical constraints to limit the city expansion and availability of secondary data (Fig. 1). The factors that lead to peri-urban area growth of Indore is its setting in the regional context. Indore and its immediate influence area have been defined as Indore Metropolitan region (refer Fig. 2) as per Indore Development Plan – 2021. It has seven major urban centres – Indore, Ujjain, Dewas, Depalpur, Sanwer, Pithampur and Mhow.²⁴ Industrial suburbs such as Pithampur, Mhow and Dhar are present in the south and south-western direction. Dewas and Ujjain, the religious hubs of the state are located in the north. Various economic activities such as transport Nagar and super corridor are also proposed just outside the municipal boundary. From a regional perspective, the city influences the urban fringe with economic activities. The productivity of the region strengthens the economy of the developing urban area. Indore is a commercial and industrial city, has a rapid pace of economic development and at the same time promotes increasing urbanisation in and around it.²⁵ It also serves as an educational, medical, industrial and trade hub in the western Madhya Pradesh. Another important factor for the growth of a peri-urban area of Indore is the network of roads connecting the city to nearby towns. The national and state highways passing through the Indore city (refer Fig. 2) like NH-52 connecting Delhi in the north to Mumbai in the south, NH-47 connecting to Ahmedabad in west and SH-27 connecting to the

Fig. 1: Indore Location Map



Source: Author.

**Fig. 2: Population Distribution in Urban Areas –
Indore Metropolitan Region, 2011**



Compiled from Census of India, 2011

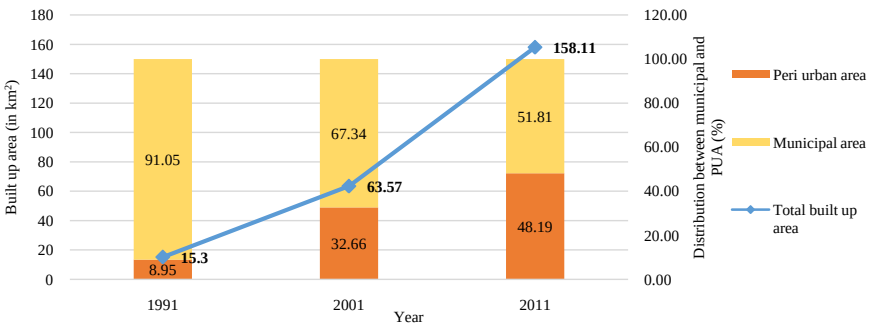
administrative capital of MP Bhopal in the east, has made the city a fast emerging transport and logistics hub of the country. For this research the peri-urban area considered is as per²⁶ i.e., an area lying between the municipal boundaries and planning boundary of the city.

RESULTS AND DISCUSSION

Spatial changes as the land cover change of built-up represent the growth pattern of the region. Land use land cover analysis reveals that the built-up area in Indore increased from 15.3 km² in 1991 to 158.11 km² in 2011. It was observed that the percentage distribution of this built up in the peri-urban area has increased from 8.95 per cent to 48.19 per cent (refer Graph 1). This spatial growth is linear and compact (refer Fig. 3) which is due to the transport network of radial and ring road respectively. The urban expansion speed in the peri-urban areas over the two decades reveals that peri-urban areas have spatially grown annually at a rate of 1.94 km² from 1991 to 2011 and increased to 5.54 km² from 2001 to 2011. Thus, it can be inferred that the growth of peri-urban areas around Indore Municipal Corporation has taken place at a rapid pace from 2001 to 2011.

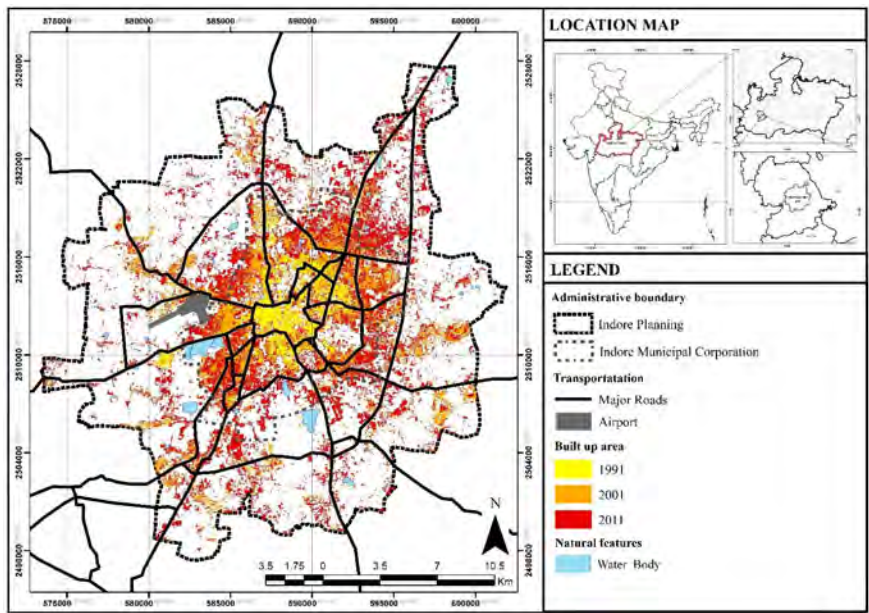
Urban Expansion Intensity Index: To further understand the

Graph 1: Built up area growth and its percentage distribution across municipal and peri-urban area, Indore, 1991 - 2011



Source: Author.

Fig. 3: Built-up Area Growth - Indore, 1991 - 2011



Source: Author.

growth factors for the development of peri-urban areas around Indore urban expansion intensity index was calculated by dividing the region into eight parts using the cardinal axis. The results reveal that from 2001-2011 the highest intensity growth is seen in the northeast direction, followed by north and south-east (refer Table 1). The least intensive development in the peri-urban areas is along the west direction followed by north-west. Comparatively, the urban expansion intensity in the peri-urban areas from 2001-2011 was more fast speed than 1991-2001

which was low and medium speed. This development in the southern direction is due to the extension of industrial activities to the periphery in the Mhow and Rau villages. Super corridor in the north and AB ring road connecting the north and south of NH - 3 plays a major role in the spatial development of the adjacent region (refer Fig. 4). The core areas of Indore are now getting depopulated and converting into commercial areas thus leading to the growth of urban areas at the outer core and periphery. The growth axes of the development pattern are south-west (towards Mhow) and North (towards Ujjain).²⁷ As per the study conducted by Kumar et al. (2007)²⁸ in Indore the development of the built-up land is sparse which is leading to haphazard urban growth in the city especially in the peripheral and rural-urban zones. The major constraint for spatial development in the west is the airport and environmentally sensitive zone in the south-east.

TABLE 1: URBAN EXPANSION INTENSITY INDEX - INDORE
PERI URBAN REGION, 1991 - 2011

Directions		Urban Expansion Intensity Index			
		1991 - 2001		2001 - 2011	
SE		0.57		1.46	
SW		0.64		1.42	
NE		0.44		2.74	
N		0.33		1.48	
S		0.47		1.34	
NW		0.36		1.14	
W		0.55		1.01	
E		0.74		1.25	
Legend	High speed	Fast	Medium speed	Low speed	Slow

Source: Author.

Landscape Expansion Index: Landscape expansion index analysis was calculated to understand the urban growth type of the newly grown patches in peri-urban areas. From 1991-2001, the new built-up patches were 91.6 per cent outlying type. This covered an area of 15.65 km² which is 80.7 per cent of the total new built-up area in the peri-urban zone. From 2001-2011, nearly 55.8 per cent of the new built-up growth patches were outlying type but covered an area of 31.9 per cent of the total new built-up area. 36.59 km² which is 66 per cent of the newly developed area (refer Table 2). This is because the newly developed built-up area from 2001-2011 came in the proximity of the built-up area developed from

TABLE 2: URBAN SPATIAL GROWTH TYPE - INDORE
PERI URBAN AREA, 1991 - 2011

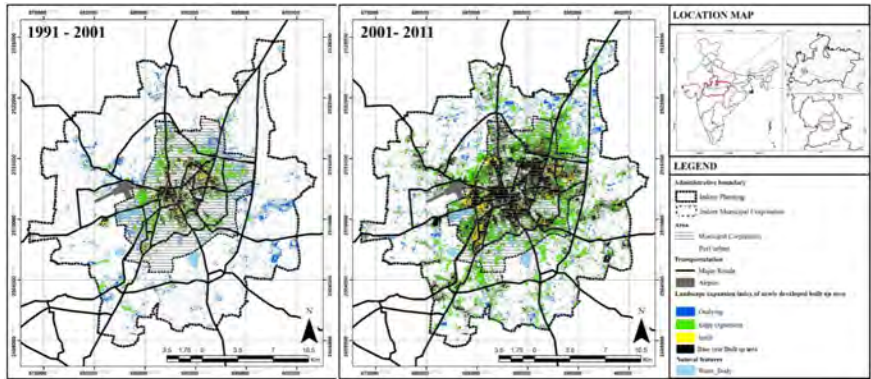
Growth type	1991 - 2001		2001 - 2011	
	Patch {in #} (%)	Area {in km ² } (%)	Patch {in #} (%)	Area {in km ² } (%)
Outlying	5082 (91.6)	15.65 (80.7)	5478 (55.8)	17.69 (31.9)
Edge expansion	413 (7.4)	3.49 (17.9)	3827 (38.9)	36.59 (66.0)
Infill	50 (0.9)	0.25 (1.2)	511 (5.2)	1.15 (2.0)
Total	5545	19.39	9816	55.44

Note: The values are calculated using the ArcGIS software and parenthesis represent the percentage.

Source: Author.

1991-2001. Based on the study of the distribution of population and built-up area, compact development took place within the Indore municipal corporation between 2000 and 2010 and there was an expansion of these settlements towards the municipal boundaries²⁹ (Kotharka and Bahadur, 2019). This indicates that the development was majorly edge expansion as they were the extension to the already existing built up. Majority of the edge extension is in the area between the municipal boundary and AB road (refer Fig. 4). Similarly Gupta et al. (2014)³⁰ analysed that the process of sub-urbanisation and ex-urbanization is prominent in Indore because of inner ring roads or commuter belt. This has led not only the people to occupy the land spaces outside but also categorically alter the land use pattern of the land encroached.³¹ This means that the AB road or ring road is inducing compact development in the region. Also, the overall urban growth development in Indore peri-urban areas is leapfrog.

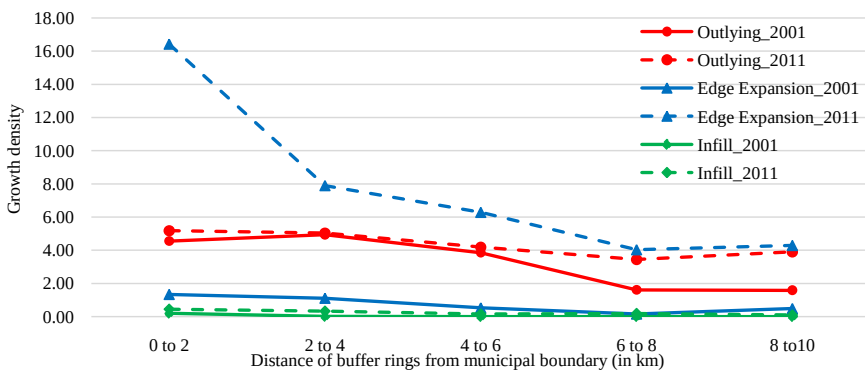
Fig. 4: Landscape Expansion Index - Indore,
1991 - 2001 and 2001 - 2011



Source: Author.

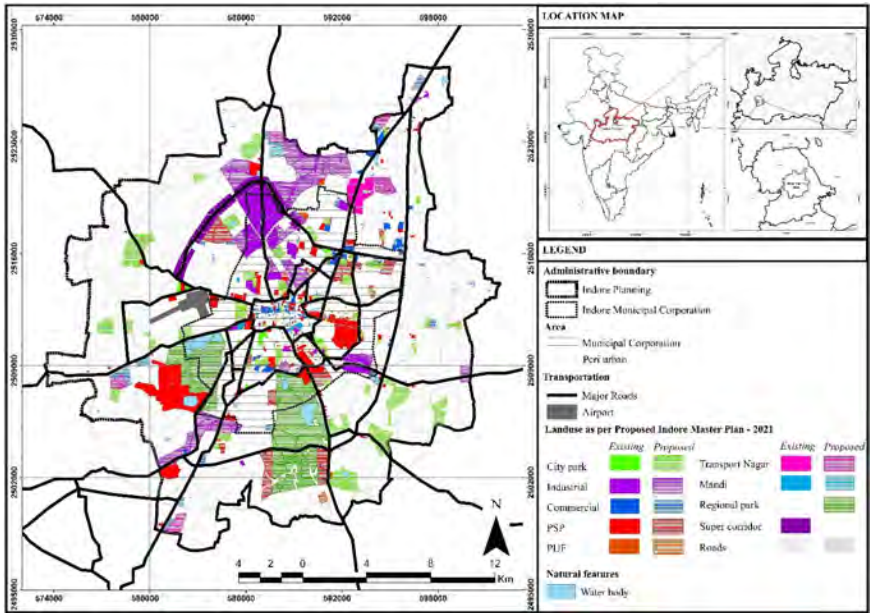
Growth Density: Furthermore, to understand the factors contributing to specific growth type in peri-urban areas the density parameter was applied. Growth type per unit area was calculated in the buffer zone of two km from the municipal area. The areal extent the outlying development is maximum from 1991-2001 and its density across the buffer in the given period is highest in the zone of 2-4 km. This is due to the inner ring road and the influence of Pithampur and Rau areas in the south. From 2001-2011, edge expansion development has the highest aerial extent, and its density is highest in the zone of 0-2 km (refer Graph 2). This is owing to the outlying development that took place between 1991-2001 in the next adjacent ring and also due to the development of outer ring road or AB road. From 1991-2001, it was observed that the infill type of development remained constant throughout the buffer zone and outlying development decreases with distance. The spatial development density variations from 2001-2011 reveal that the edge expansion is decreasing with increasing distance and outlying and infill development remains constant across the buffer. The residential development in 2006 exceeded by nearly 45 per cent to what was envisaged in Indore Development Plan-1991 due to lack of implementation mechanism and delay in the enforcement of Indore Development Plan 2021 (*ibid*). The growing population pressure and requirement of urban land for development led to unintended growth, development of slums, squatters and unauthorised colonies. This uneven expansion of the city is attributed to the 'regulatory fractures' and 'rent-seeking interest' by the private developers outside the municipal boundary.^{32 & 33} The institutional and legal process of development permissions is not clear in peri-urban areas due to the dynamic boundary changes.

Graph 2: Density Variations of Spatial Growth Types - Indore Peri-Urban Area, 1991 - 2011



Source: Author.

**Fig. 5: Proposed and Existing Major Land Uses –
Indore Master Plan, 2021**



Developed from Indore Development Plan, 2021

CONCLUSION

India’s growing urbanisation over the years and the pressure on the land resource within the urban administration, the growth of peri-urban areas is evident. For making the cities more liveable and fostering sustainable growth, an evidence-based planning and policy formulation approach needs to be adopted. On similar lines, the application of spatial metrics is used in the research for identifying the dynamics of spatial growth in the region, especially the peri-urban areas. Landscape expansion index has its importance in quantifying the urban built-up type to monitor the expansion of urban growth over different periods. This is helpful to planners and policymakers to monitor and understand the urban dynamics which are ever-changing due to technological advancement and development. From the research, it was evident that built-up area growth is much higher in the peri-urban areas as compared to the municipal area. This growth is haphazard and sparse. The spatial growth is prominent along the major regional roads connecting the city to major metropolitan centres and the economic geography of the city. The development of industrial land-uses is taking place outside the municipal limits which are acting as the catalyst of growth. Peri-urban areas are the future growth areas of any city. Thus, the identification of

patterns of spatial growth and its analysis in this region would help in effective land-use planning, ultimately focussing on sustainable urban landscape planning and management.

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An Economic Analysis of Public Expenditure in Municipalities and Panchayats of Haryana

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ABSTRACT

We are required to understand, analyse and interpret the public expenditure on Municipalities and Panchayats in India including Haryana as local governments have an important place in the age of fiscal federalism. The study reveals that public expenditure on Municipalities and Panchayats in Haryana has increased at an appreciable Compound Annual Growth Rate (CAGR) of 15.37 per cent for the period 2011-12 to 2020-21. It has been found that own resources of Municipalities and Panchayats are not sufficient to meet their expenditure requirements. Also, for some years, Municipalities and Panchayats have not utilised their entire resources. The delays involved in the provision of grants and other transfers towards Municipalities and Panchayats must be prevented. We can be hopeful for the things to take shape in the real sense by understanding and adopting the canons of public expenditure advocated by Dr B.R. Ambedkar that every Government should spend the resources garnered from the public not only according to rules, laws and regulations but should also see that 'faithfulness, wisdom and economy' are adhered to in the acts of expenditure by the Government of Haryana including Municipalities and Panchayats. To improve the functioning of Municipalities and Panchayats, we need manpower and elected representatives to be street SMART (Simple, Moral, Action Oriented, Responsive and Transparent). We have to adopt a sustainable fiscal path including judicious expenditure by keeping in mind the receipts that fall in the domain of needonomics (economics of needs).

Keywords: Municipalities, Panchayats, Canons of Public Expenditure by Ambedkar, Street SMART Model

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INTRODUCTION

Local governments have an important place in the age of fiscal federalism in India including Haryana. The role of local governments in the provision of local public goods is indispensable (Tiebout, 1956). Therefore, empowerment of the local governments is one of the priority areas for state governments in India. In this regard, Central Finance Commission as well as State Finance Commissions are constituted which recommend allocations of resources from Central as well as state governments to local government comprising Municipalities and Panchayats.

No doubt, Municipalities and the Panchayats directly deal with the local population and are the main providers of key services at the grassroots level to the citizens (Singh and Singh, 2015). Therefore, these institutions deserve adequate attention from their state governments. Accordingly, Haryana is also primarily responsible to regulate and coordinate with Municipalities (including Municipal Committees, Municipal Councils and Municipal Corporations) as well as Panchayats (including Zila Parishads, Panchayat Smitis and Gram Panchayats). In this regard, public expenditure on Municipalities and Panchayats by state government becomes relevant.

Review of Literature

To justify the need of the present research work, related literature has been reviewed as follows:

Aijaz (2007) examined the major issues and challenges for urban local governments in India. For this purpose, data on key urban local government characteristics – constitution and governance, duties, composition, management and finance practices, state/local-level initiatives and problems were collected from six urban centres situated in three northern/north-western states of Haryana, Rajasthan and Uttaranchal. The study revealed that urban local governments in India continue to remain plagued by numerous problems, which affect their performance in the efficient discharge of their duties. These problems relate to the extent of participation and rule of law in the municipal decision-making process, transparency in the planning and implementation of infrastructure projects, and level of efficiency in various municipal management and finance practices.

Bandyopadhyay (2012) assessed the performance of the urban local bodies in the state of Karnataka by using Data Envelopment Analysis. The study found that the overall average collection

efficiency of property taxes is lowest in the smallest cities and the highest in the medium size cities. Also only 27.5 per cent of the Operations & Maintenance (O&M) expenditure requirements were fulfilled by the own revenues of local bodies. Besides, the results revealed that the Municipalities on an average could reduce 27 per cent of their expenditures on O&M, labour and establishment to provide the same levels of services provided currently by them.

National Institute of Urban Affairs, New Delhi (2015) assessed the capacity building needs of Municipalities in India. The study identified some serious cause of concerns for Municipalities as discord in functional relations between the Municipalities and states, acute shortage of staff (technical and general) at all levels, frequent transfer of officers, lack of state level resource institutions which would be better equipped to handle local needs (with most capacity building efforts not based on demand but routine ad-hoc trainings) and absence of dedicated municipal cadre. The study recommended that Municipalities in India need to invest in systematic knowledge management. Rather than depending solely on capacity building activities that target individual capacity, the Municipalities should pursue institutionalisation of the capacity that is created. There is a need to include governance reforms within urban local bodies to complement capacity building initiatives so that the knowledge can be sustained in the mid- to long-run.

Muniswami (2018) examined the income and disbursement of Municipal Corporation of Kurnool in Rayalaseema region in Andhra Pradesh for the years 2007-08 to 2016-17. The study revealed that during 10 years the total receipts increased more than three times that is from ₹ 7405.77 lakh in 2007-08 to ₹ 28475.45 lakh in 2016-17; while for the same period total expenditure was raised by seven times from ₹ 3965.36 lakh to ₹ 28216 lakh. Besides, in 2007-08 the share of revenue receipts was less than half of total revenue receipts. But, by 2015-16 the share of revenue receipts increased to 76.02 per cent. Negative growth rate in total revenue receipts of Kurnool Municipal Corporation is registered in two out of 10 years of study.

After studying the literature, it has been identified that there exists no study which analyses in economic terms the public expenditure incurred on Municipalities and Panchayats for the State of Haryana.

Objectives of the Study

The main objective of the study is to make an economic analysis

of public expenditure on Municipalities and Panchayats in Haryana. However, the economic analysis is done under following sub-objectives:

1. To make a descriptive analysis of public expenditure on Municipalities and Panchayats via computing compound annual growth rates, and yearly percentage changes.
2. To examine the role of public expenditure on Municipalities and Panchayats in economic growth.
3. To investigate the determinants of public expenditure on Municipalities and Panchayats.
4. To measure the efficiency of Municipalities and Panchayats in the utilisation of resources.
5. To draw policy implications flowing from the results.

Research Methodology

Time Period

To achieve the objectives of the study, secondary data are used for the time period covering 10 years from 2011-12 to 2020-21.

Selection of Variables and Data Sources

In present context, the variable public expenditure on Municipalities and Panchayats is prepared by taking the summation of grants-in-aid and compensation and assignments to Municipalities and Panchayats. It is imperative to mention here that data as regards the finances of Municipalities and Panchayats in Haryana vary in different reports and documents of Government of Haryana. Even indicators of data are different in various reports. Despite that, data given in Finance Accounts (for various years), Government of Haryana have been helpful in making the variable public expenditure on Municipalities and Panchayats.

Besides, to examine the role of public expenditure on Municipalities and Panchayats in economic growth, Gross State Domestic Product (GSDP) is used as a proxy for economic growth. Moreover, keeping in mind the availability of data, three potential determinants of public expenditure on Municipalities and Panchayats are selected in terms of GSDP (income variable), consumer price index (inflation variable) and number of employees working in local bodies. However, the variables selected for the study along with their data sources are presented in Table 1.

TABLE 1: VARIABLES OF THE STUDY AND SOURCES OF DATA

Purpose	Variables	Symbol	Measurement Unit	Data Source
Objective 1	Grants-in-aid to Municipalities and Panchayats	PEMP (Public Expenditure on Municipalities and Panchayats)	₹ Crore	1. Finance Accounts (for various years), Government of Haryana 2. Budgetary Transfers to Local Bodies 2020-21, Government of Haryana
	Compensation and Assignments by State Government to Municipalities and Panchayats			
Objective 2	Gross State Domestic Product (at current prices) as a proxy of economic growth	GSDP	₹ Crore	1. Statistical Abstract of Haryana (for various years)
Objective 3	Gross State Domestic Product (at current prices)	GSDP	₹ Crore	
	Consumer Price Index for working class as an indicator of Inflation	CPI	Index	
	Number of Local Bodies Employees	LBE	Number	
Objective 4	Revenue and Expenditure of Municipalities and Panchayats	-	₹ Crore	1. Annual Technical Inspection Report on Panchayati Raj Institutions and Urban Local Bodies for the year 2014-15; 2. Annual Technical Inspection Report on Panchayati Raj Institutions and Urban Local Bodies for the year 2016-17.

Source: Researchers' Compilation.

Techniques Used For Economic Analysis

To facilitate the analysis, techniques are selected according to the requirement of particular objective. Statistical values are to be calculated with the help of Statistical Package for Social Sciences (SPSS: Version 20) and DEAP (Version 2.1). Also, some calculations are done with the help of MS-Excel. However, the following techniques are used in present study:

Percentage Change

In order to know the percentage change in the value of any variable over its previous year's value, the following formula is used:

$$\text{Percentage Change} = \frac{\text{Current Year's Value} - \text{Previous Year's Value}}{\text{Previous Year's Value}} \times 100$$

Compound Annual Growth Rate (CAGR)

Following Gujarati (2003, p. 178), an equation of exponential trend is in the form:

$$Y = AB^t \quad \dots(1)$$

(Where, $B = (1+r)$ and 'r' is the rate of compound growth)

Taking natural logarithm on both sides of equation (1), we get

$$\ln(Y) = \ln(A) + t\ln(B)$$

$$\text{Or } y = a + bt \quad [\text{Where, } y = \ln(A); b = \ln(B)]$$

Now, the application of Ordinary Least Square on the log-linear function (2) will give the estimates of parameters of a and b and in the form $\hat{a}$ and $\hat{b}$ respectively.

$$\text{Now, } \hat{b} = \ln(\hat{B}) \quad \text{or} \quad \hat{b} = \ln(\hat{1} + r)$$

Taking Anti-logarithm on both sides, we get $e^{\hat{b}} = 1 + r$

Thus, $r(\%) = (e^{\hat{b}} - 1) \times 100$ which is the required CAGR.

Linear Regression Model

To examine the role of public expenditure on Municipalities and Panchayats in economic growth, following linear regression model is fitted as adopted by Hariharan (2008):

$$GSDP_t = a + \beta PEMP_{t-k} + u_t, \dots \dots \dots (A)$$

Equation (1) explains that PEMP (Public Expenditure on Municipalities and Panchayats Bodies) of 't-k' period affect GSDP of 't'

period. Here, k stands for number of lag; u_t is random disturbance term. The significant value of regression coefficient or slope coefficient (β) confirms the impact of $PEMP_{t-k}$ on $GSDP_t$. Now, to estimate β , Ordinary Least Square (OLS) can be applied.

To investigate the determinants of public expenditure on Municipalities and Panchayats, following regression model is fitted:

$$PEMP_t = \alpha + \beta GSDP_{t-k} + \phi CPI_{t-k} + \lambda LBE_{t-k} + u_t \dots\dots\dots (B)$$

Equation (2) can be estimated by OLS, so that the impact of three independent variables on dependent variable ($PEMP_t$) can be known. The significant scores of β , ϕ and λ will ensure that $GSDP$, CPI , and LBE determine $PEMP$.

Data Envelopment Analysis (DEA)

DEA is used to measure the efficiency. In present context, output oriented version of DEA is applied because output orientation belongs to output maximisation for a given level of inputs and output maximisation is most appropriate for the public services because budgetary pressures prevent expansion of inputs to produce these services (Steering Committee, 1997). DEA model aiming at output maximisation for a given level of input, is given below:

Maximise F_n (Efficiency score for n^{th} year) with respect to weights ($w_1, w_2, \dots, w_n$) and F_n

Subject to the constraints:

$$\begin{aligned} \sum_{j=1}^N w_j y_{ij} - F_n y_{in} &\geq 0 & i=1,2,\dots,I \\ \sum_{j=1}^N w_j x_{kj} - x_{kn} &\leq 0 & k=1,2,\dots,K \\ \sum_{j=1}^N w_j &= 1 & j=1,2,\dots,n \\ w_j &\geq 0 & j=1,2,\dots,n \end{aligned}$$

This linear programme signifies that there are ' n ' number of years where ' K ' inputs are used to produce ' I ' outputs. The terms ' y_{in} ' and ' x_{kn} ' indicate the observed amounts of output ' i ' and input ' k ' respectively for n^{th} year. The term ' w_j ' express weights applied across n years; when linear program for n^{th} year is solved, these weights helps in determining the most efficient method of producing n^{th} year's output.

The efficiency score (F_n) for the n^{th} year should be maximised subject to a number of constraints. For the same, weights (w_j) and efficiency score (F_n) can be varied. Moreover, another important task of the weights is to form the hypothetical year (DMU) lying on the efficient frontier or isoquant.

Meanwhile, the first constraint indicates that the output of hypothetical weighted average has to be at least as great as n^{th} year's output scaled up by factor F_n . The second constraint state that weighted average of inputs cannot be larger than n 's input. Third constraint shows weights must sum to unity which has the effect of pulling in the efficient frontier (isoquant) to form a tighter envelope around the data. Fourth constraint implies the non-negativity of weights. However, the present linear programme has to be run for each year in the sample so that the full set of efficiency scores can be obtained.

Analyses and Interpretations

Descriptive Analysis of Public Expenditure on Municipalities and Panchayats

In present context, public expenditure incurred on Municipalities and Panchayats is the summation of grants-in-aid and compensation and assignments given to Municipalities and Panchayats for their functioning. Table 2 explores that public expenditure on Municipalities and Panchayats have grown from ₹ 1820.44 crore in 2011-12 to ₹ 4213.00 crore at the CAGR of 15.37 per cent. Moreover, highest percentage rise in public expenditure on Municipalities and Panchayats is 64.30 per cent for the year 2016-17.

From the perspective of grants-in-aid, highest CAGR that is 28.66 per cent is estimated for grants-in-aid received by Panchayats. During 2011-12 to 2013-14, and 2017-18, the size of grants-in-aid given to Municipalities is higher than the size of grants-in-aid received by Panchayats; however for the remaining years, the reverse has happened. Along with this, the values of percentage changes reveal that the allocation of funds varies over the years.

Besides, compensation and assignments by State government to Municipalities and Panchayats is increased from ₹ 99.42 crore in 2011-12 to ₹ 221.80 crore in 2018-19 at the CAGR of 21.65 per cent. However, after 2018-19, no funds are given as compensation and assignments by State government because schemes of excise duty share, and share of surcharge on VAT has been discontinued from the month of September, 2018 on the recommendation of the 5th State Finance Commission, Haryana(Finance Department, Haryana, 2020-21). However, public expenditure on Municipalities and Panchayats (PEMP) as a percentage of GSDP is found to vary between 0.33 per cent (lowest for the year 2013-14) and 0.80 per cent (highest for the year 2017-18). In terms of CAGR, PEMP as a percentage of GSDP is grown at the rate of 3.25 per cent.

TABLE 2: PUBLIC EXPENDITURE ON MUNICIPALITIES AND PANCHAYATS
IN HARYANA (Rs. in crore)

Years	Grants-in-aid (Centre and State)						Compensation and Assignments by State Government (c)				Public Expenditure on Municipalities and Panchayats (PEMP) (a)+(b)+(c)		PEMP as a % of GSDP
	Grants-in-aid to Municipalities (a)		Grants-in-aid to Panchayats (b)		Grants-in-aid to Municipalities and Panchayats (a)+(b)								
	Amount	% change	Amount	% change	Amount	% change	Amount	% change	Amount	% change	Amount	% change	
2011-12	923.65	---	797.37	---	1721.02	---	99.42	---	1820.44	---	0.61		
2012-13	1125.24	21.83	962.46	20.70	2087.70	21.31	101.89	2.48	2189.59	20.28	0.63		
2013-14	1136.98	1.04	38.22	-96.03	1175.20	-43.71	136.18	33.65	1311.38	-40.11	0.33		
2014-15	744.64	-34.51	1192.04	3018.89	1936.68	64.80	144.59	6.18	2081.27	58.71	0.48		
2015-16	1045.99	40.47	1261.94	5.86	2307.93	19.17	293.15	102.75	2601.08	24.98	0.52		
2016-17	1585.77	51.60	2263.80	79.39	3849.57	66.80	423.95	44.62	4273.52	64.30	0.76		
2017-18	2466.82	55.56	2283.43	0.87	4750.25	23.40	390.52	-7.89	5140.77	20.29	0.80		
2018-19	2092.31	-15.18	2547.17	11.55	4639.48	-2.33	221.80	-43.20	4861.28	-5.44	0.69		
2019-20	2279.46	8.94	3098.12	21.63	5377.58	15.91	---	---	5377.58	10.62	0.69		
2020-21 ^{BE}	1809.00	-20.64	2404.00	-22.40	4213.00	-21.66	---	---	4213.00	-21.66	0.55		
CAGR	11.52	---	28.66	---	16.18	---	21.65	---	15.37	---	3.25		

Source: 1. 'Finance Accounts' (Various Years), Government of Haryana.

2. Data for the year 2020-21 are taken from 'Budgetary Transfers To Local Bodies 2020-21', Government of Haryana

Note: BE stands for Budget estimate

Source: 1. 'Finance Accounts' (Various Years), Government of Haryana.
2. Data for the year 2020-21 are taken from 'Budgetary Transfers To Local Bodies 2020-21', Government of Haryana
Note: BE stands for Budget estimate

Role of PEMP (Public Expenditure on Municipalities and Panchayats) in Economic Growth

The role of PEMP (Public Expenditure on Municipalities and Panchayats) in economic growth (GSDP) is examined by estimating the equation (1) as presented in the section of research methodology. The results of estimation of equation (1) are highlighted in Table 3.

The results revealed that the PEMP positively affects GSDP up to three years as the slope coefficient up to $k=3$ are significant. That is PEMP of 't' period have significant positive impact on GSDP in 't', 't+1', 't+2', and 't+3' periods. But, the size of impact reduces in each coming period. It can be seen in Table 3 that an increase of ₹ one crore in PEMP in 't' period brings increments of ₹ 102.854 crore in same period, ₹ 94.618 crore in 't+1' period, ₹ 89.230 crore in 't+2' period, and ₹ 75.279 crore in 't+3' period.

But, the most significant impact of PEMP on GSDP can be seen for $k=1$, where the t-statistic of slope coefficient (β) is largest in comparison of other estimated models. Also, scores of R ($=0.938$), R^2 ($=0.881$), Adj. R^2 ($=0.863$) and F-statistic ($=51.593$) are also highest in comparison of other models. Here, the score of R indicates very high degree of correlation between PEMP and GSDP. The value of Adj. R^2 indicates that PEMP explains 86.3 per cent variations in GSDP. While the significant score of F-statistic confirms the overall significance of parameter of the fitted model. Also, for $k=0$ to 2, fitted models are free from autocorrelation. Thus, the estimated coefficients of these models can be used for predictions. In last two fitted models, no conclusion can be made with regard to the problem of autocorrelation because the computed score of DW-statistic falls in the inconclusive region.

Thus, the significant impact of PEMP on GSDP sustains up to three periods. Above all PEMP requires the time of one year to contribute most significantly to economic growth of Haryana.

Analysis of the Determinants of PEMP (Public Expenditure on Municipalities and Panchayats)

Among three potential determinants of PEMP, GSDP and CPI are found to grown at CAGR of 11.74 per cent and 5.55 per cent respectively for the time period 2011-12 to 2020-21. On the other hand, the number of LBE is declined from 13857 in 2011-12 to 12549 in 2020-21 at the CAGR of -1.78 per cent. However, GSDP is found to be highest that is ₹ 780612.35 crore for the year 2019-20; while CPI is largest (1281) for the year 2020-21; on the other hand, the number of LBE is highest (20248) during 2013-14.

TABLE 4: TREND OF POTENTIAL DETERMINANTS OF PELB

Years	GSDP (in ₹ crore)	CPI (in index number)	LBE (in number)
2011-12	297538.52	763	13857
2012-13	347032.01	832	13666
2013-14	400662.12	903	20248
2014-15	437144.71	959	13033
2015-16	495504.11	1016	12534
2016-17	561424.17	1068	12736
2017-18	644963.22	1094	12709
2018-19	704957.38	1141	12709
2019-20	780612.35	1215	14177
2020-21 ^{BE}	764872.41	1281	*12549
GSDP	11.74	5.55	-1.78

Source: Statistical Abstract of Haryana (for various years)

Note: *indicates the value is estimated in SPSS (version 20) by using linear trend method.

After examining the trend of GSDP, CPI and LBE, these potential determinants are fitted into Regression Model – B whose estimation' results are presented in Table 5.

It is clear from Table 5 that at $k=0$, the regression coefficients β and ϕ are significant. The score of β -coefficient is 0.019 which indicates that increase of ₹ one crore in GSDP in 't' period brings an increment of ₹ 0.019 crore in PEMP in 't' period; while the ϕ -coefficient scores -12.897 which means rise in CPI by 1 point causes a reduction in PEMP by ₹ 12.897 crore. But, LBE does not affect PEMP as the coefficient λ is insignificant. Also value of Adj. R^2 explores that the explanatory variables GSDP, CPI and LBE explain 89.6 per cent variations in PEMP. The significant score of F-statistic confirms that parameters of the fitted model are overall significant. Also the fitted model is free from the problem of autocorrelation.

For $k=1$, none of the regression coefficients is significant. Thus, GSDP, CPI and LBE do not determine PEMP in significant manner at $k=1$. But, the fitted model is good as explanatory variables are responsible for 64.4 per cent variations in dependent variable. Also, the F-statistic with significance level 0.044 confirms that the parameters of the model are overall significant.

For $k=2$, only ϕ -coefficient is significant which indicates that one

point rise in CPI in 't' period causes a rise of ₹ 26.329 crore in PEMP in 't+2' period. Also, the fitted model is good as explanatory variables are explaining 86.2 per cent variations in dependent variable. Besides, the significant score of F-statistic confirms the overall significance of regression parameters.

For $k=3$, the coefficients of GSDP and CPI are significant and indicate that increase in GSDP by ₹ one crore in 't' period causes reduction in PEMP by ₹ 0.023 crore after three years; but one point rise in CPI in 't' period brings an increase of ₹ 31.140 crore on PEMP after three years. Besides, 92.3 per cent variations in PEMP are explained by explanatory variables. Also, the parameters are overall significant as is confirmed by the significant score of F-statistic.

For $k=4$, the regression parameters are overall insignificant because F-statistic possess significance level 0.192. Moreover, individual coefficients are also not significant. Despite that, the explanatory variables are explaining 66.8 per cent variations in dependent variable.

On the whole, the results of regression model with no time lag ($k=0$) are most significant because the score of F-statistic is highest in comparison to all cases. Thus, GSDP as well as CPI have immediate significant impact on PEMP. Moreover, GSDP is a positive determinant of PEMP whereas CPI (inflation) negatively determines PEMP.

Efficiency of Municipalities and Panchayats in Utilisation of Resources

In order to judge the trends in funds utilisation by local bodies, Table 6 is given. Table 6 explores that Municipalities are ahead from Panchayats in case of the amounts of own revenues.

However, both Municipalities and Panchayats are dependent on grants-in-aid from Centre and State to fulfill their expenditure requirements. Moreover, CAGRs of revenue and expenditure of Municipalities are higher than the CAGRs of revenue and expenditure of Panchayats. Also for 2011-12, 2015-16 and 2016-17, the expenditures of Municipalities are higher than their revenues; similarly, during 2011-12 and 2012-13, deficit can be seen in case of Panchayats; thus, in remaining years, Municipalities and Panchayats have not utilised their entire funds.

Efficiency scores of Municipalities and Panchayats for resource utilisation are computed by using Data Envelopment Analysis (DEA) and presented in Table 7.

The results given in Table 7 can be explained as follows.

TABLE 6: RESOURCES AND UTILISATION OF FUNDS BY MUNICIPALITIES AND PANCHAYATS

(in ₹ crore)

Years	Revenue and Expenditure of Municipalities				Revenue and Expenditure of Panchayats					
	Revenue			Deficit/ Surplus	Expenditure		Revenue		Expenditure	Deficit/ Surplus
	Own	Others	Total		Own	Others	Total			
2011-12	675.56 (56.69)	516.14 (43.31)	1191.70	1366.31	-174.61	211.80 (15.24)	1178.13 (84.76)	1389.93	1409.32	-19.39
2012-13	471.00 (24.72)	1434.14 (75.28)	1905.14	1421.65	483.49	237.87 (14.55)	1396.44 (75.45)	1634.31	1639.47	-5.16
2013-14	1275.21 (48.27)	1366.01 (51.73)	2641.22	2258.44	382.78	259.65 (13.26)	1698.27 (86.74)	1957.92	1647.91	310.01
2014-15	570.55 (23.79)	1827.85 (76.21)	2398.40	2225.74	172.66	411.54 (23.60)	1332.23 (76.40)	1743.77	1657.43	86.34
2015-16	1259.35 (38.82)	1985.06 (61.18)	3244.41	3444.41	-200.00	282.06 (17.59)	1321.53 (82.41)	1603.59	1512.12	91.47
2016-17	1264.20 (28.58)	3159.14 (71.42)	4423.34	5214.69	-791.35	277.85 (11.37)	2165.11 (88.63)	2442.96	2365.20	77.76
2017-18	NA	NA	6332.65	3270.13	3062.52	NA	NA	NA	NA	NA
2018-19	NA	NA	5438.32	2950.51	2487.81	NA	NA	NA	NA	NA
CAGR	16.30	34.31	24.61	16.07	--	6.93	7.79	7.90	6.93	--

Source: 1. ‘Annual Technical Inspection Report on Panchayati Raj Institutions & Urban Local Bodies For The Year 2014-15’
2. ‘Annual Technical Inspection Report on Panchayati Raj Institutions & Urban Local Bodies For The Year 2016-17’
3. Data for 2017-18 and 2018-19 are taken from ‘Statistical Abstract of Haryana 2019-20’
4. Figures in parenthesis are percentage of total revenue which is computed by the researcher.

Source: 1. 'Annual Technical Inspection Report on Panchayati Raj Institutions & Urban Local Bodies For The Year 2014-15'
2. 'Annual Technical Inspection Report on Panchayati Raj Institutions & Urban Local Bodies For The Year 2016-17'
3. Data for 2017-18 and 2018-19 are taken from 'Statistical Abstract of Haryana 2019-20'
4. Figures in parenthesis are percentage of total revenue which is computed by the researcher.

TABLE 7: DEA EFFICIENCY SCORES OF MUNICIPALITIES AND PANCHAYATS CONSIDERING ONE INPUT (REVENUE OF MUNICIPALITIES AND PANCHAYATS) AND ONE OUTPUT (EXPENDITURE OF MUNICIPALITIES AND PANCHAYATS)

Years	Efficiency of Municipalities				Efficiency of Panchayats			
	Overall Technical Efficiency	Managerial Efficiency	Scale Efficiency	Returns to Scale	Overall Technical Efficiency	Managerial Efficiency	Scale Efficiency	Returns to Scale
2011-12	0.973	1.000	0.973	Increasing	1.000	1.000	1.000	Con-stant
2012-13	0.633	0.642	0.987	Increasing	0.989	1.000	0.989	DRS
2013-14	0.725	0.730	0.993	Increasing	0.830	0.854	0.972	DRS
2014-15	0.787	0.794	0.991	Increasing	0.937	0.954	0.983	DRS
2015-16	0.901	0.904	0.996	Increasing	0.930	0.939	0.991	DRS
2016-17	1.000	1.000	1.000	Constant	0.955	1.000	0.955	DRS
2017-18	0.438	0.627	0.698	Diminishing	-	-	-	-
2018-19	0.460	0.566	0.813	Diminishing	-	-	-	-
Mean	0.740	0.783	0.931	-	0.940	0.958	0.982	-

Source: Researchers' computations in DEAP software (Version 2.1)

Efficiency of Municipalities

- **Overall Technical Efficiency:** Municipalities are found to be overall technical efficient (capable in achieving maximum possible output from a given set of inputs) only during 2016-17 where efficiency score is one (100 per cent). But in the remaining years, there exists a potentiality of achieving more output with the utilisation of existing input. The mean score of overall technical efficiency is 0.740 thereby indicating the possibility of increase in output (expenditure) by 26 per cent with the existing level of input (revenue).
- **Managerial Efficiency:** During 2011-12 and 2016-17, Municipalities are managerially efficient in converting their input into output. On an average, managerial efficiency score is 0.783 thereby implying the possibility of raising the output (expenditure) of Municipalities by 21.7 per cent via improving the managerial practices involved in Municipalities.
- **Scale Efficiency and Returns to Scale:** Municipalities are found to operate at optimum scale only during 2016-17 as the scale efficiency score is one (100 per cent). But during 2011-12 to 2015-16, the scale of operations of Municipalities is less than optimum as increasing returns to scale are operating in these years. For example, in 2011-12, the Municipalities could raise their output (expenditure) by 2.7 per cent via increasing their scale of operations to the optimum level because increasing returns to scale are found to operate in that year. On the other hand, during 2017-18 and 2018-19, the scale of operations of Municipalities is too big (than optimum) because diminishing returns to scale are operating. Thus, in 2017-18, Municipalities could raise their output by 30.2 per cent by reducing their scale of operations up to optimum level. Finally, mean score of scale efficiency is 0.931 which indicates the potentiality of raising the output by 6.9 per cent via improving the scale of operations for the given input-output mix.

Efficiency of Panchayats

- **Overall Technical Efficiency:** During 2011-12, overall technical efficiency score is one (100 per cent) which shows that Panchayats have achieved optimum level of output (expenditure) with the existing level of input (revenue). But in the remaining years, inefficiency of Panchayats is visible. However, on an average, overall technical efficiency score is

0.940 which reveals that Panchayats could raise their output (expenditure) by 6.0 per cent with the existing level of input (revenue).

- **Managerial Efficiency:** During 2011-12, 2012-13 and 2016-17, Panchayats are managerially efficient in converting their input into output. On an average, managerial efficiency score is 0.958 which indicates that Panchayats could increase their output (expenditure) by 4.2 per cent via improving their managerial decision making.
- **Scale Efficiency and Returns to Scale:** During 2011-12, scale efficiency score of Panchayats is one, which indicates that Panchayats are scale efficient that is, they are operating at optimum scale. But in remaining years, Panchayats are found to be scale inefficient under the presence of diminishing returns to scale. This implies their scale of operations is too big than optimum. Thus, in the years of scale inefficiency, Panchayats could increase their output by reducing their scale of operations up to optimum level. Finally, mean score of scale efficiency is 0.982 which indicates the potentiality of raising the output by 1.8 per cent via improving the scale of operations for the given input-output mix.

Findings of the Study

The findings of the study can be summarised as follows:

- The study reveals that public expenditure on Municipalities and Panchayats have increased at an appreciable CAGR of 15.37 per cent for the period 2011-12 to 2020-21. It has been found that as a percentage of GSDP, public expenditure on Municipalities and Panchayats is quite low.
- The study shows that public expenditure on Municipalities and Panchayats significantly promotes economic growth. However, to influence economic growth in most significant manner, public expenditure on Municipalities and Panchayats requires a time lag of one year.
- It has been noted that GSDP and CPI (proxy for inflation) have immediate most significant impact on public expenditure on Municipalities and Panchayats. In this regard, GSDP is a positive determinant while CPI is a negative determinant. However, number of local bodies employees does not determine the public expenditure on Municipalities and Panchayats.

- It has been found that own resources of Municipalities and Panchayats are not sufficient to meet their expenditure requirements. Also, for some years, Municipalities and Panchayats have not utilised their entire resources.
- It has been observed that on an average both Municipalities as well as Panchayats are inefficient in utilisation of resources. However, in comparison of Municipalities, Panchayats are more efficient in resource utilisation. The results also reveal that Municipalities and Panchayats are managerially efficient for more number of years than the years of scale efficiency. Despite that average scale efficiency of both Municipalities and Panchayats is better than their managerial efficiency.

Policy Implications

- There is need to raise public expenditure on Municipalities and Panchayats in absolute terms and as a percentage of GSDP for the adequate functioning of these institutions as public expenditure incurred on these institutions contribute to over all economic growth.
- The delays involved in the provision of grants and other transfers towards Municipalities and Panchayats must be prevented. Because these delays not only affect the functioning of these institutions but also those private businesses who work in the projects undertaken by these institutions.
- There is need to raise GSDP as it enhances State's capacity to spend more on Municipalities and Panchayats. Since, increase in CPI (inflation) reduces public expenditure on Municipalities and Panchayats; therefore, control over inflation is very necessary.
- No doubt, Municipalities and Panchayats have not sufficient resources. Therefore, to fulfill their requirement and to keep them active, the provision of grants for these institutions must be based on their functioning requirements.
- There is emergence of making Municipalities and Panchayats as efficient by improving their managerial practices and their scale of operations. For this purpose, the regular monitoring of the performance of Municipalities and Panchayats is the need of the hour.
- The state government must have adequate control over

Municipalities and Panchayats to plug corrupt practices, wastage of resources and ensure judicious expenditure which falls in the domain of needonomics.

- We can be hopeful for the things to take shape in the real sense by understanding and adopting the canons of public expenditure advocated by Dr B.R. Ambedkar that every Government should spend the resources garnered from the public not only according to rules, laws and regulations but should also see that 'faithfulness, wisdom and economy' are adhered to in the acts of expenditure by the Government of Haryana including Municipalities and Panchayats.
- To improve the functioning of Municipalities and Panchayats, we need manpower and elected representatives to be street SMART (Simple, Moral, Action Oriented, Responsive and Transparent) in the strict sense.
- We have to adopt a sustainable fiscal path including judicious expenditure by keeping in mind the receipts that fall in the domain of needonomics (economics of needs).

Limitations of the Study

The present study is entirely based on secondary data and such data itself are subject to certain limitations. The major limitation is that the data on a specific variable published in one document do not match with the same variable's data given in another published document of the Government. Also econometric techniques used in the present study have their own limitations which cannot be ignored.

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Neoliberal Regime of Land Grabbing: A Study of Bhubaneswar

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ABSTRACT

Unprecedented urban growth in India is affecting urban land use and land distribution extensively. This article examines the effect of neoliberal policies and processes – namely accumulation, dispossession, conversion and annexation, on urban land use in Bhubaneswar. Indian government's smart city drive to control unplanned urban growth is also tampering with existing urban land use. Under this backdrop, the author first argues that the ultimate outcome of all this is land grabbing. Further examination also reveals that the existing theoretical perspectives offer only a partial understanding of the land grabbing process, with respect to Bhubaneswar. Complementing the theoretical gap, the use of 'regimes of dispossession' as a concept helps us to compare and critically interrogate the specific economic purposes that the state, at any given time, seeks to legitimise 'development'.

Keywords: *Smart City, Neoliberal Policies, Urban Space, Dispossession, Land Grabbing*

INTRODUCTION

Unprecedented urban growth in India is affecting urban land use and land distribution extensively at times leading to large scale urban land grabbing. Borras and Franco (2011) describe land grabbing as the 'catch-all phrase to refer to the current explosion of (trans) national commercial land transactions mainly revolving around the production and export of food, animal feed, biofuels, timber, and minerals.' There are number of studies available globally that examine the land grabbing in different parts of the world veiled under neoliberal policies. Ruling elite factions happily employ certain neoliberal reforms, such as removing investment regulations, capital restrictions, and state functions in Mozambique (Wittmeyer 2012; Kay 2015). Similar trend is described as agro-extractivism by Bernardo Mançano Fernandes (2019)

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identified as one of the components of the neoliberal agrarian question in Brazil. Agro-extractivism means building territorial policies to free lands for national and international corporations to produce large scale commodities for export. The history of neoliberal policymaking in Africa has so far been widely considered atrocious according to Harrison (2005) but the global financial crisis seems to have compelled a global shift away from the neoliberal Washington Consensus that was promoted by the International Monetary Fund (IMF) and World Bank during the 1980s and 1990s. The policies with state capitalism paired with regulation or restrictions on investment and the financial sector are more preferred. Thus, neoliberal economic policies and private construction projects on dispossessed land are responsible for contentious land wars and inequitable development in rural India (Levien 2015). In Africa, the perceptions of abundant cheap land, few overhead costs, and little government regulation have led to many ambitious and controversial deals or land grabs. Similarly in Indian cities like Bhubaneswar, while certain high-profile acquisitions like Vedanta university project have failed, these blunders have not short-circuited the approval of hundreds of other projects in this city.

Liberalisation of the economy has resulted in specific changes in the way cities are governed (Purcell 2002; Plyushteva 2009). While the Indian state dispossessed land for public sector industry and infrastructure for much of the 20th century, the adoption of neoliberal economic policies since the early 90's prompted India's state governments to become the brokers for private real estate capital for the Special Economic Zones (SEZs) (Levien 2018). With adoption of liberalisation policy in India, since the early 1990s, along with the governance system, the land use pattern in Bhubaneswar in the state of Odisha has changed significantly. Modern Bhubaneswar, the administrative headquarters of Odisha, was conceived during the late 1940s as a town of sixteen square kilometres for forty thousand people, located near the villages in the old temple town of Bhubaneswar. Gradually, the city annexed the surrounding open spaces and forest areas, its physical area expanding to 450 square kilometres by 2011. The city has also experienced exponential population growth, accommodating 8,40,000 people as per the census of 2011. It became a municipal corporation in 1994, a development that brought with it, changes in land, housing and building by-laws. Like other cities, land distribution and improvement practices have been subject to continuous bureaucratic and political interventions, affecting the land use pattern (Lin 2015). To add to these developments, under the Government of India's smart city initiative, Bhubaneswar was identified as one of the first cities to be brought under the Smart Cities Mission in 2015. Bhubaneswar competed with other Indian cities to grab the

one thousand crore rupees of central funding by demonstrating that it was equipped with adequate expertise, technology and participatory local governance to implement the smart city project. The smart city project especially targets the land use pattern by promoting mixed land use in area-based developments; planning for 'unplanned areas' containing a range of compatible activities and land uses close or related to one another in order to make land use more efficient. The states implementing the smart city project are bound to enable some flexibility in land use and building bye-laws in order to adapt to change, expand housing opportunities for all, create pedestrian-friendly localities, reduce congestion, air pollution and resource depletion, boost the local economy, promote citizen-administration interactions and ensure security, preserve and develop open spaces such as parks, playgrounds and recreational areas. In order to enhance the quality of life of citizens, the Smart City Project aims to reduce the urban heat effect, and promote a variety of transport options through transit-oriented development, public transport and para-transport connectivity, all these developments combined together increased the value of land in urban space production in the neoliberal market shelving the right to city of urban poor (Nair 2015).

This article examines the effect of neoliberal policies and processes—namely accumulation, dispossession, conversion and annexation, on urban land use in Bhubaneswar. The existing theoretical perspectives, like Marx's theory of use value, or modernist theory, or David Harvey's theory of 'accumulation by dispossession' do discuss the politics behind processes of possession, dispossession, the role of the domestic economy, the role of state capitalism and the changing urban culture. But the analysis of socio-spatial context of drastically changing political economy of land use in Bhubaneswar unfolds the specific modalities of expropriation of urban land under the neoliberal regime in India.

Urban Land: Use Value, Exchange Value and the Surplus Value

'Use value' provides the conceptual underpinning of traditional geographical and sociological treatments of land use problems (Harvey 1973). Use value is essentially tied to the physical properties of the commodity, that is, the material usages to which the object can actually be put, the basic human needs it fulfils. In the capitalist market, exchange value supersedes the use value (El-Barmelgy et al. 2014; Pivo 1984). Exchange value emerges when two commodities are exchanged in the open market because they are always being compared to a third term that functions as their "universal equivalent," money takes the form of that equivalence (Marx 1990). But money masks the real equivalent behind the exchange that is labour. The more labour it

takes to produce a product, the greater its value. The product produced becomes a commodity in the market with exchange value. Land and improvements to land are commodities in the contemporary capitalist economy. It is a kind of unproductive capital that accumulates based on surplus value that is indirectly appropriated from labour. In post-1990 Bhubaneswar, the accumulation of this capital was rampant without any organised resistance.

A patch of land or house may constitute a shelter for one person, a property investment for someone else, or to others a means of storing wealth, proximity to a workplace, a place having high status, a place with congestion, etc. So for different people it will have different use values. When we associate purposes and people with land, use value comes into existence. The most important issue is the purpose for which land is to be used, and which purpose is important to the state, does it want to use it for an IT space or golf course or industry or housing units or keep the land for agriculture? Here arises the need to define dispossession, because the changing land question in urban India revolves around contestations between the purposes for which land is dispossessed. Michael Levien defines dispossession as follows:

I argue that dispossession is fundamentally a social relation of coercive redistribution. While this relationship exists in probably all social formations, it is driven by different forms of accumulation and class interests under different historical phases of capitalism. We can thus think of dispossession as being organised into socially and historically specific regimes. Under different regimes of dispossession, states seek to redistribute resources to different classes (or class fractions) for different economic purposes. Given these purposes and interests, regimes of dispossession have different combinations of means – force, legitimacy, and material concessions – available for making people comply with their dispossession (Levien 2015: 2).

Thus the state has a critical role in the process of dispossession of land. Other than the pan-city model, the other three strategies of the smart city project—retrofitting, redevelopment, and greenfield development—explicitly involve the state's intervention in land use. Yet, neoliberalism emphasises minimal intervention by the state. The neoliberal urban development system, which is based on market-oriented dynamics, can, however only function well when land use decisions are regulated by the state. So land use planning and related institutions are needed to regulate the land and property market. Tuna Tasan-Kok (2012) asks why there has been a transformation from traditionally interventionist land use planning dynamics towards

neoliberal planning dynamics that require more flexible intervention mechanisms. The answer to this question possibly lies in Levien's (2015) idea of regimes of dispossession, where he argues that regimes of dispossession have different combinations of means available for making people comply with their dispossession and transformation from traditionally interventionist land use planning to neoliberal planning dynamics.

Many developments in the last decades have altered Bhubaneswar's land use experiences. One of these has been the contest between 'public' and 'private' uses of land that reflects the allocation of urban land to promote particular types of economic growth. Second, the politics of conversion of land from rural to urban usage in the urban periphery is crucial in land deals. Third, urban land issues are becoming even more important because of the growing demand for land for development projects. To make the situation worse, we have underdeveloped and poorly regulated land markets, ambiguous land rules, misuse/use of 'eminent domain', poor compensation for land acquired for 'public' projects, under-reporting of land values to avoid transaction costs, unabated land conversion in urban sprawl areas, interdepartmental conflicts on jurisdiction over urban land use, etc. A fourth important change relates to several new actors that have emerged in urban India in the post-1990s period, interfering with and influencing land use decisions (Zoomers 2010). They include environmentalists, realtors, IT companies, private banks, international financial consultants, architects, interior designers, Resident Welfare Associations, Non-Governmental Organisations (NGOs), domestic and foreign investors.

As a result of neoliberal political-economic developments, large-scale capital investments are mobilised in the city in the form of property development projects. These large scale capital investors are replacing small scale individual property owners in Bhubaneswar. This development in the property market has divided the urban land and city space into two parts, one dominated by large scale investments, and the other mostly controlled by small scale and individual property owners. While large investments are becoming part of visible formal growth of the city, the small scale individual property investments are forming a part of invisible informality. This invisible informality is surrounded with scepticism in purchase and sale of land at individual level, apprehension of getting cheated and fear of becoming a part of fraudulent land deals.

Creation of Private Space

Bureaucrats and Modernist theorists, believe that land grabbing

is the necessary cost of development. Bhubaneswar paid this cost in its early years, responding to the call of the Nehruvian model of development. The capital city was developed, various classes of housing units, market spaces and roads were designed, and many institutions came up without much opposition. Similarly, smart city project, it claims Bhubaneswar needs infrastructural developments, thus there is growing demand for land for development projects. So dispossession is inevitable. Such an approach to development displays dispossession as inevitable cost and ignores the experiences of the different dispossessed groups (Chuang 2015; Levien 2015; Makki 2014). Politics of representation is also shaped by the concrete questions of who owns, who occupies and who controls the city's public space. The growth of cultural consumption and industries catering to it fuel the city's symbolic economy. People who can afford to pay, can use culturally produced spaces like golf clubs, shopping malls and pubs. The number of such places has increased substantially in Bhubaneswar. Who controls the public space also controls the cultural production and the produced cultures control the cities. Both the processes reinforce each other. But the annexation of public space is becoming an important political issue today, with increasing privatisation of public space, rapid construction of special economic zones (SEZ) (Levien 2011, 2012, 2013). A sector-specific SEZ for IT/ITES (Information Technology Enabled Services) /IBPO (International Business Process Outsourcing) industries near Bhubaneswar (Info Valley) is being developed by the Odisha Industrial Infrastructure Development Corporation (IDCO) on 320 acres of land, along with an integrated township of over 180 acres. A dedicated park has been planned for the development of 63.229 acres of land at Andharua near Bhubaneswar and is under transfer to IDCO. A World Trade Centre is being planned by IDCO at Bhubaneswar to promote global networking and give international visibility to the industrial potential of the state. The Industries Department has been requested to facilitate the identification and transfer of suitable government land in and around Bhubaneswar for the establishment of the World Trade Centre. ASIDE (Assistance to States for Development of Export Infrastructure and Allied Activities) funds of Rupees Twelve crore have been allocated for the development of the project. Three SEZs have been started in Bhubaneswar in the last decade: the sector-specific IT/ITes SEZ at Chandaka Industrial Estate in Bhubaneswar (600 acres) developed by IDCO, Info City I (202 acres), and InfoCity II (660 acres). Of the various contesting forms of land uses the major driver of dispossession of land in Bhubaneswar is the IT sector. This clearly hints at the primacy accorded to the creation of IT space by the state, which considers the sector to be the prime mover of the city's economic growth

and this highlights the role of the state as a land broker for creation of private space.

Conversion of Land from Rural to Urban: Dispossession and Accumulation

Urbanisation through dispossession, expansion, reclassification and conversion are various processes experienced in the present pattern of urban growth (Chuang 2015; Bhaduri 2015; Makki 2013). On 18 July 2011, the Bhubaneswar Development Authority's (BDA) jurisdiction was increased from 450 square kilometres to 1,110 square kilometres with the addition of 351 more villages. As per the Vision 2030 document (BDA 2010), a total of 205 villages were under the BDA's jurisdiction in 2010, but after this 2011 notification, Pipili and Delang (in Puri district) were also included under the BDA. The total number of villages under the BDA is now 556. This includes 226 villages added from Khordha and 88 from Puri districts. In view of the dwindling open space in Bhubaneswar, the BDA in February 2012 (BDA -Planning and Building Standards Regulation 2012) banned individual constructions in eco-sensitive zones – Bharatpur in the north-west of the Bhubaneswar Development Plan Area (BDPA) comprising forest areas, and Nandankanan Wildlife Sanctuary in the north of the BDPA.

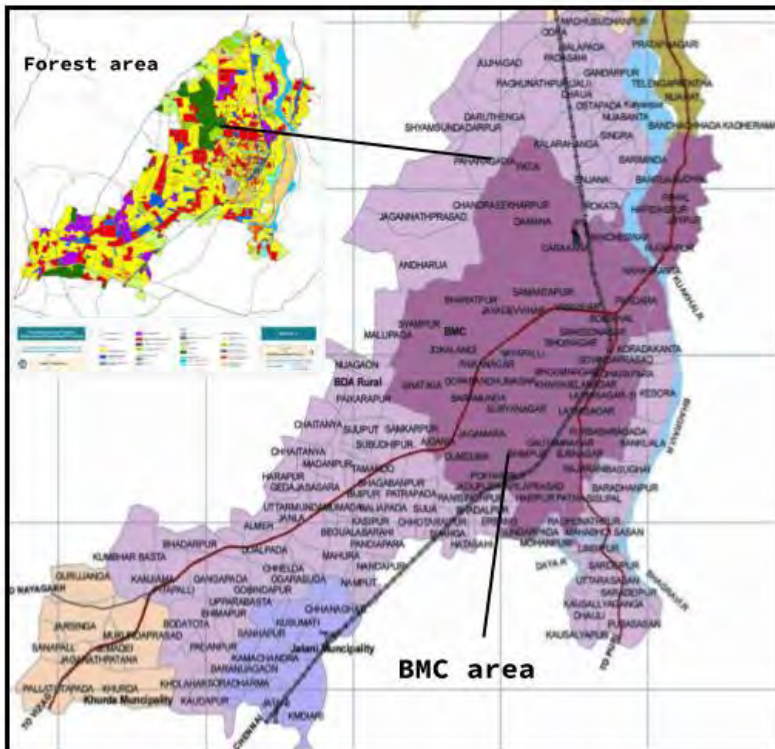
The Odisha government has declared thirteen more spots as eco-sensitive zones. This will permit the construction of five-star hotels, five-star lake resorts, picnic spots, international convention centres, hospitals, food courts and music pavilions, group housing, corporate-type housing with modern technology, theme parks and sports centres in these ecologically sensitive areas around the capital city. Big projects will foster orderly development in these areas, while plotted housing, small industries and small institutions will be completely banned in such areas to avoid messy construction. While this law benefits rich investors, it poses a threat to slum dwellers and tribal communities living in the forest areas surrounding Bhubaneswar.

The expansion of the city is going on at the cost of forest land. The area under the Chandaka-Dampara forest reserve to the north-west of Bhubaneswar is declining as the city expands in this direction. Bhubaneswar has engulfed the Bharatpur reserve forest. The growing cost of land in the city has resulted in the annexation of land in this area by land mafias and realtors. Land parcels bordering the sanctuary from Pathargadia to Jokalandi village, from Baranga to Gurujanga via Mendhasal, Chhatabar, from Baranga to Baanra, and Khurda to Haladia, have been sold out or are for sale. Real estate developers have acquired

a sizable area of land on the periphery and around Baanra. The Forest and Environment Department of the Government of Odisha argues that unless there is an urban limit or municipal limit, the sanctuary's landscape will be drastically affected and the wilderness value will be destroyed (Pattanaik 2010).

There are three slums on the Chandaka-Dampara sanctuary's boundary (See Map 1): Bharatpur, Saliasahi and Harekrushna Basti. The inhabitants of these slums are mainly construction workers. These people make use of water bodies and the biomass on a day-to-day basis. Immigrant labourers from tribal areas like Mayurbhanj and Keonjhar have settled near the Chandaka reserve forest boundary. They have cleared the vegetation, diverted the water channel and changed the land use in this area. Daruthenga village is infamous for illegal distillation units of *mahua* or honey molasses. As these units require huge quantities of firewood, the tribes are grabbing the forest land. The Odisha government has declared the forest area in Bharatpur as a

Map 1. Bhubaneswar Development Plan Area



Source: Vision 2030, IIT Kharagpur.

zone for scientific research, but the emphasis has been on horticultural development and not forest tree development. Expediting the conversion of the land further, the city planners are proposing an alternative road through the forest (Old *Ganjam* Road) as a bypass to the National Highway (NH) to tackle the problem of traffic jams on NH-5. IDCO has identified 736 acres of land at Ramdasapur for a tourism centre. A road running through the sanctuary from Daruthenga to Ramdasapur has been proposed, the development of which will make enforcement of the restriction on public thoroughfare difficult. Aonlapatna near Chandaka has been identified as an IT zone, and IDCO has earmarked 102 acres of land close to the sanctuary boundary for this use. As past experience has shown, this IT park area will encourage investors to develop civic amenities. This buffer zone will, therefore be annexed by the city in the near future, converting green land to brown and then built-up land.

The General Administration Department of the BMC has allotted 464.47 acres of land in the city in 377 cases between 2000 and 2012 to individuals, government offices, government undertakings, and private bodies for hotels, hospitals, educational institutions and NGOs, and 183.44 acres of land were allotted to various NGOs. The process of land allotment in 164 of these 377 cases lacked a defined policy and procedure. Audit scrutiny revealed that though the General Administration Department is leasing out land to IDCO and the BDA for industrial and residential purposes, respectively, these agencies are in turn allotting land to educational institutions, hotels and hospitals. Further, 11.8 acres of land, valued at Rs. 84.21 crore, were occupied by encroachers. The government has not done anything to settle the matter, and the grabbing of land goes on unabated.

The protest against the construction of the Vedanta University is one of the most important resistance movements against land grabbing in Odisha. Vedanta Aluminium submitted a proposal to establish the Vedanta University in 2006 on the Puri-Konark road. According to Mohapatra (2008), this university project is the biggest land grab case in the state of Odisha, surpassing all others. The project demanded 10,000 acres of land for the university, but in its Memorandum of Understanding (MoU), the government assured Vedanta that it would provide 6,000 acres of land. The MoU was signed, and the government committed to conferring university status by an Act of Parliament. It seems the aim of the project was 'to provide world-class education in Odisha, obviously not to the aspiring students of Odisha' (Satpathy 2015). The government had agreed not to interfere in the university's affairs and its jurisdiction. But the government has undertaken to provide concessions in taxes, including value added tax, stamp duty,

entry tax on construction materials, R&D equipment, lab equipment, etc. So the project will entail a loss of Rs 10,000 crore to the state exchequer. This project was suspended only when the masses came onto the streets. While some protestors believed that the university would promote western culture, others were concerned with environmental loss. Some others feared the loss of government control, as land use and zoning within a five kilometre radius of the university boundary could not be determined without consultation with Vedanta University. Yet the government promised a four-lane highway up to the project site; development of both sides of the road from Bhubaneswar to the project site would be under the control of the Odisha government and Vedanta for ensuring planned development. The government even ignored the loss of fertile agricultural land, displacement of thousands from 117 villages with insufficient compensation, water shortage in the surrounding area, submergence of nearby villages with flood water, impediments to the supply of clay pots to the Puri temple, and loss of the livelihoods of thousands of families. The rapid expansion of Bhubaneswar has now touched many villages near the proposed project site. However, as a result of pressure from all sides, the project has been stalled. It reveals that the Vedanta University project is nothing but a real estate deal in disguise and land grabbing in Bhubaneswar today is a political process of state redistribution, and not a functional response to over-accumulation. Dispossession for such projects serves private interests, not the public purpose and its developmental character is open to question.

Land Encroachment: Actors and Policies

According to the City Development Report (BMC & USAID 2006), the super-cyclone of 1999 changed the socio-economic map of Bhubaneswar, which in turn led to the large-scale proliferation of slums in the city. The decade 1991–2001 witnessed a 78 per cent growth in the slum population because of cyclones and the migration of people from the rural hinterland and other parts of the state, as well as from outside the state in search of employment, particularly in the construction sector. Most of the slums came up on encroached land belonging to the Government of Odisha and the railways; the availability of these vacant, unused lands motivated the migrants to settle here. Owing to the absence of planned economic activities and physical infrastructure, the slum dwellers live in deplorable living conditions. The BMC officials reported in 2006 that there were 250 slums within the BMC limits (BMC & USAID 2006). The 2011 census reports that 20.8 per cent of the total population of Bhubaneswar were slum dwellers. The total slum population in Bhubaneswar according to BMC was more than 308,000,

which constituted more than 37 per cent of the total population. Thus there is no unanimity in data regarding slum population. According to the BMC, there are 377 slums in Bhubaneswar (BMC Website). Of these, 99 are authorised. The highest number of slums emerged in the decade 1980–90, and it was during this period that the city experienced a very high rate of population growth. Slums in Bhubaneswar occupy about 5.3 per cent of the BMC's total area housing 37 per cent of the city's population.

Bhubaneswar Development Authority (BDA) is making efforts to create a slum-free city today under various state-led initiatives. The Rajiv Awas Yojana (RAY) action plan makes it mandatory to offer a timeline of activities for achieving a slum-free city but the way RAY house allocation happens, is very problematic. Ministry of Housing and Urban Development, Govt of Odisha found that of the 80 houses constructed for rehabilitation at Mahisakhal under RAY, the beneficiary list includes eight family members of deputy mayor of BMC Mrs. K Shanti, 37 government employees, 14 beneficiaries who already own houses in Bhubaneswar and seven beneficiaries are owners of land.

The pro-poor reforms under JNNURM include: (a) internal earmarking within local body budget funds for basic services to the urban poor and provision of basic services to the urban poor including security of tenure at affordable prices, improved housing, water supply and sanitation; (b) ensuring delivery of other already existing universal services of the government like education, health and social security; and (c) earmarking at least 20–25 per cent of developed land in all housing projects (both public and private agencies) for economically weaker sections or the lower-income group category with a system of cross-subsidisation.

The BDA's Plans and Building Regulation Act, 2008, reserves 10 per cent of all new housing projects for economically weaker sections and low-income groups. As reported in media, D. S. Tripathy, president, Confederation of Real Estate Developers' Association of India (CREDAI), Orissa Chapter, opposes the reservation of 10 per cent in the small scale housing projects, and wants BDA to allow the builders to build houses for lower-income groups and economically weaker sections within a 5-kilometre distance from the project site if there is any difficulty in building those houses on the project site. This suggestion is under the consideration of the BDA, which thinks it will expedite the growth of the city and make Bhubaneswar slum-free. Thus, land reserved for the urban poor in the development plans has actually been used for other purposes. As a result, the informal growth of the city continues unhindered. Of the total 1415 apartments constructed in

the last two decades, 583 are illegally constructed in the sense that they disobeyed the BDA guidelines, even 195 apartments got legal notice of getting demolished in April 2016. So informal housing is becoming a norm in the city.

According to CDP 2010 (Vision 2030), the city's population is expected to be about three million by 2030. To accommodate so many people in the city, an area of 9,286 acres has been earmarked for residential purposes. Of this, 400 acres have been earmarked for a Special Residential Zone (SRZ); the housing projects being developed on this SRZ will enjoy exemption from sales tax and value added tax. This seems to be a very philanthropic step by the planners. Yet, of the total residential area, only 0.043 per cent will be for weaker sections. As mentioned above, the city has a slum population of more than 37 per cent, this allocation of land is not sufficient to solve the problem when the rate of growth of slums is higher than the rate of growth of the city as a whole.

Most of the urban land belongs to the government, but there is a tendency among government officials to use the land for private purposes rather than for public space. The present government has been allocating thousands of acres of land to the ultra-rich, mostly non-*Odias*, and realtors for industrial and commercial hubs. The investors are provided with loans and land at concessional rates to facilitate the growth of Bhubaneswar. While being so generous to the rich, the government is demolishing slum after slum, as if poor people and slum dwellers have no right to earn their livelihood in Bhubaneswar. In January 2008, it demolished several kiosks run by unemployed youth in the slums.

The only people who have never faced any threat of eviction from encroached prime plots in the heart of the city are the milkmen. To ensure the right to a healthy environment for people in cities, the Orissa Assembly had included provisions under the Orissa Municipal Corporation Act, 2003, that cowsheds must be obliterated within the limits of the BMC with immediate effect. But the Orissa Milk Producers Association had moved the Orissa High Court against this new law. It requested the court to allow milk producers to continue plying their trade and to order the government to rehabilitate them in suitable places in the city before eviction. They further informed the court that the previous government had promised them that they would not be evicted from the city, and that they were ready to pay the price for the land they occupied. But the Orissa High Court rejected their plea. So the association appealed to the Supreme Court against the high court order. The Supreme Court, in deciding Civil Appeal No. 940 of 2006 arising

out of SLP (C) Nos 16362-16363 of 2004, made it absolutely clear that the milkmen must be evicted from the limits of the BMC and must not be rehabilitated anywhere in the city and its periphery. The right to the environment being a fundamental right, the court argued that it was the duty of the state to ensure that people had pollution-free surroundings. There is no legal concept that confers a legal right on an encroacher to be rehabilitated. It was further ordered that the milkmen should not even be allowed to put up cowsheds in villages bordering Bhubaneswar. So there was no legal problem at all with regard to the demolition of cowsheds and eviction of milkmen with their herds of cattle to free the city from the stink, flies, mosquitoes and malaria.

But it is surprising that even after this Supreme Court order, the city has a large number of cowsheds. It seems that the milkmen are the most secure encroachers of prime plots in Bhubaneswar (Pattanayak 2010). The question now is how the milkmen managed to secure their space. At present, there are 4,000 fully functional dairies or cowsheds on encroached government plots in the city of Bhubaneswar, from whom the officials concerned collect a bribe of Rs 4,000 per month per milkman through agents. So this is a monthly scam of Rs 16 million. It is an unofficial fee collected for the use of government plots for cowsheds. The milkmen have successfully negotiated with the administrators via informal means, pressurise, bribe and grab their share of city space and ensure their right to the city.

The kinds of bargaining politics and informal means deployed in such instances are beyond the purview of any particular theoretical strand. These are new strategies in the contemporary regimes of dispossession, where contestation is a major part of the land-grabbing process.

Increasing Demand of Land for Developmental Projects

Development projects in Bhubaneswar range from construction of high rise modern apartments to educational institutions. The pattern of conversion of land in Bhubaneswar is similar to the pattern of other Indian cities. The way housing units, office spaces and market spaces are commodified reveals that Lefebvre's idea of selling of the planning ideology perfectly suits the city (Lefebvre 1996), but Harvey's (2010) idea of reshaping the city for the absorption of surplus does not hold true. The way real estate deals are offered by developers to attract buyers is very important in influencing the urban space. What they are putting on sale is not just the housing, but rather urban planning and the urban lifestyle itself.

Other important developments influencing land use are the growth in corporate healthcare and private educational institutions. Though corporate healthcare facilities are targeted at and aim to profit from IT professionals, the new business class and the emerging middle class in the city, they attract many rural poor to the city for earning their livelihood as construction workers, hospital workers, sweepers and other menial workers. These migrants reside in the slums and provide the required 'labour' for the functioning of the so-called 'planned neighbourhoods'. Engineering colleges and private management schools mushroomed in Bhubaneswar after 1998. During 1996–2010, 53 private engineering colleges affiliated to the Biju Pattanaik University of Technology came up in Bhubaneswar (OJEE 2011). A few institutes of national importance, such as the International Institute of Information Technology, the National Institute of Science Education and Research, the Indian Institute of Technology (IIT), All India Institute of Medical Sciences (AIIMS) and Institute of Life Sciences (ILS) have also come up during this decade in the city. There is flow of private capital into the education and health sectors. Dispossession for such projects has involved combined means like material compensation, coercion and normative persuasion. The increasing price of land near the project area acts as material compensation for dispossession to a great extent. In such a situation, dispossession need not require coercive means. However, in Kasnapada near the newly opened IIT Bhubaneswar campus, villagers protested against real estate dealers and did not allow them to construct a road through their village. Often, violent encounters take place between real estate dealers and villagers. Villagers protest mainly because they believe that residential complexes have been constructed on fertile land, destroying thousands of acres of cashew trees and reducing the green cover; the construction of a road would further facilitate this process. They also observed that it was a profitable business for real estate people, who are cheating the illiterate villagers by paying them a very low price for the land and selling it to people outside at higher prices by emphasising the proximity of the location to the capital city.

Beyond Municipalism: Incomprehensible Developments in Temple City

Contemporary land use in Bhubaneswar is also dictated by factors that are not easily accommodated within the neoliberal political economy framework. The caste domination of land ownership testifies this fact. The temple city of Bhubaneswar was traditionally dominated both politically and economically by the *Brahmins* and *Kshatriyas*. The Bhubaneswar chapter of CREDAI has 55 real estate developers as its

members. Out of these, more than 30 are *Brahmins* and *Kshatriyas*, the traditional upper castes with surnames like Mishra, Pattanaik, Mohanty, Rath, Mohapatra and Samantaray. These people still dominate land market transactions even in the city, where the largest part of the land is owned by the state. Even after the creation of the capital city in proximity to it, these communities continue to influence urban land use. Though there is a change in the economy as reflected by the growing investments in the city, the social structure has not witnessed considerable change.

The land encroachment for religious purposes is another proof to this fact. Responding to four writ petitions on the question of whether unauthorised religious structures like temples, *gurudwaras*, mosques and churches can be allowed on public streets or public land in Cuttack – Bhubaneswar’s twin city – the Odisha High Court issued an order in January 2011 to the effect that religious institutions constructed after 1987 that did not find mention in the Record of Rights of 1987, that were constructed on government lands without permission from competent authorities, and that could not be regularised, should be demolished. This order notwithstanding, the construction of temples continues at its own pace, as a result of which on a two-kilometre stretch of road between the Jaydev Vihar flyover and the Commissionerate, seven temples may be seen on the roadside. According to Janaki Nair (2005), to consider all these activities solely from the point of view of their illegality and to read their meaning as tied closely to material interests in property is to refuse to acknowledge what is clearly a very important aspect of contemporary urban culture. There are many instances where material interests determine the use of public space, but the meaning of such activities is far from exhausted by the language of what she calls ‘municipalism’ or ‘economism’ (Nair 2005: 156). The killing of people by high-speed traffic has created a fear psychosis, and statues of gods and goddesses are installed as a symbol of frustration with the highways which split apart villages and cities. According to the Annual Crime Report of the Police Commissionerate, Bhubaneswar-Cuttack, the number of fatalities in road accidents in the twin cities increased from 625 in 2012 to 672 in 2013. The number of deaths from road accidents in the capital city increased from 158 in 2012 to 190 in 2013. Most of these accidents happened on NH-5 connecting Rasulgarh with Khordha.

Changing Land Use

In each master plan prepared for Bhubaneswar, an effort is made to balance the distribution of land among different uses, because land use is very important in determining the success of any plan. There has been a gradual increase in the share of land allotted for industrial and

commercial purposes under continuous pressure on the government from industrialists and business people. With the expansion of the city, the area under administrative use is declining. The share of open space and agricultural land, which stood at 20.92 per cent in Koenigsberger's Master Plan, came down to 5.98 per cent in the Comprehensive Development Plan (CDP) of 1988–2001 (Vision 2030). Likewise, water bodies have declined from 15.8 per cent to 5.18 per cent in the Vision 2030 plan. The planners are concerned more with resolving the conflict over land uses among different government agencies and clearly demarcating the land under their jurisdictions. Thus, the focus of master plans has never been socio-economic planning. The area earmarked for residential purposes has been encroached upon for non-residential activities, mainly commercial, industrial, educational and recreational, resulting in a mixed land use pattern in most parts of the city. There is a greater concentration of agricultural land in the north-west of the city. The percentage of forest and vegetation has declined alarmingly, with some portion of the forest being converted into agricultural land. In the western part of the city, a large portion of the land identified as agricultural land in previous plan documents is now shown as vacant land in Vision 2030 document, which means that people who were earlier cultivating on that patch of land have stopped doing so.

The growth of unplanned residential areas is higher compared to planned growth. Unplanned residential areas are emerging to the south-west and east of the planned city, and even in between planned units. The built-up area was 10 per cent in 1990, 20 per cent in 2000, and more than 25 per cent in 2009. The area under water bodies decreased from two per cent to one per cent over this period. Changes in vegetation were also observed, from more than 40 per cent in 1990, declining to 33 per cent in 2000 and 27 per cent in 2009 (Bart 2011). Hannes Bart observes that this decline happened first because of the construction of buildings on vacant plots within the city limits; and second, because of the growth of sub-urban settlements along the arterial routes on the outskirts of the city. He further emphasises that these are common features of Indian urbanisation. However, what makes Bhubaneswar a special case is the fact that there are large areas within the city limits that can be developed into modern urban, densely populated quarters rather than allowing the city to sprawl excessively. So the state's planning and decisions regarding land redistribution are important.

The American Conglomerate General Electric, Germany's Siemens, the multinational Hewlett Packard, the Dutch diversified technology major Philips, Korean steel giant Posco, the IT firm CISCO and real estate developer Gale International are becoming majority stakeholders in the urban revolution worldwide through smart city creation. In the

2014–15 budget, the government relaxed the area and capital conditions for foreign direct investment from 50,000 square metres to 20,000 square metres and from \$10 million to \$5 million respectively, with a three-year post-completion lock-in to incentivise FDI. Indian government's smart city drive to control unplanned urban growth is meddling with existing urban land use. But the main concern here relates to the right to the city of the urban poor, as the smart cities have not created space for them at all.

Neoliberal Regime of Dispossession

Examination of the effect of neoliberal policies on urban land use in Bhubaneswar reveals that the existing theoretical perspectives offer only a partial understanding of the land grabbing process in Bhubaneswar. The land redistribution experience in Bhubaneswar began with the formation of the state capital, when the prime purpose was planning for the administrative machinery and residential housing for government employees. The means of dispossession included persuasion and economic incentives. This regime was followed by institutional growth in the city characterised by state capitalism. During this period, bureaucratic intervention was higher, and land dispossession was considered the cost of development. The city experienced forced evictions as well, so that the means of dispossession included coercion along with persuasion and economic incentives. The 1990s regime of dispossession was characterised by an increase in the number of slums, the growth of private educational institutions, and a shift in the state's focus to the IT and health sectors. Land use was diversified and continuous bargaining between people and the government became a norm for dispossession. The contemporary regime of dispossession is different in the sense that the state is now acting as an agent of private capital, as seen in the case of the Vedanta University land grab case and SEZ allotments.

The concept of 'regimes of dispossession' helps us compare and critically interrogate the specific economic purposes that states, at any given time, seek to legitimise as 'development'. Moreover, it helps us understand the conditions under which dispossession is most likely to encounter non-compliance and be effectively stopped. According to Levien, the notion of 'regimes of dispossession' provides the basis for articulating a political economy of dispossession without the assumptions of economic progress or political inevitability (Levien 2015). However, the idea of regimes of dispossession does not explain one important land-related issue, that is, the criminalisation of the real estate sector. There is increasing involvement of land mafia in the real

estate business. There has also been growing resistance from different interest groups who have a stake in the land use. We have seen protests against projects like Kaling Nagar, Niyamgiri, and Vedanta University. What we find today is an increase in the number of alliances that have been formed across various marginalised groups, such as farmers, agriculturalists, small landowners, tribes, fishing communities, and others who depend on land for their livelihood.

On the one hand, real estate developers, investors and private corporations are urging national, state and city governments to ease restrictions on the transfer, sale, use and development of land. On the other hand, reports by Organisations like the Federation of Indian Chambers of Commerce and Industry (FICCI 2011) and the Centre for Monitoring Indian Economy (CMIE 2018) observe that the problem of projects getting stalled before completion continues to plague investments in India. Often, the alliances formed to resist land transfers get support from political parties; at other times, political parties influence and accelerate the process of land grabbing. While the alliances seem to foreground the use value of land, the investors are more interested in the exchange value of land, which they find generates huge profits. In the neoliberal period, the state is acting as a land broker for private capital, believing that land grabbing is necessary for the city's development. Using Levien's term, in the current 'regime of dispossession', what we see in Bhubaneswar is the use of multiple means of dispossession that legitimise the process of land grabbing.

CONCLUSION

Infrastructural deficit and poor urban services are in general associated with the uneven development of the out growth areas of Bhubaneswar. As the local government is struggling to deal with the changing urban landscape, it also has to manage various competing interests. On the one hand, state and local governments are trying to attract domestic and foreign private capital investments to their regions; on the other, they are struggling to provide basic urban infrastructure and governance services, mobilise local resources, provide proper city planning and deliver basic services at the local level to the city population, which is growing at an unprecedented rate. This has created a perfect space for non-state actors like corporate leaders, real estate developers, private investors, NGOs, resident welfare groups, landowners and farmers to push for an increased role in urban development and governance processes. Bhubaneswar needs to ensure the reinforcement of the urban land ceiling laws, need-based land conversion, freezing of sale of land near project areas, control of real estate transactions, transparency in land records, minimum required

supply of land for any institution and maintenance of the existing green cover. Under this context, we cannot simply reduce each act of the state to be the act of capitalism like the neomaxist, nor can we reduce the massive land grabbing as necessary cost of development like the modernist. Existing state actors are changing in response to the shifting social and political environment following the Central Government's urban policies. However, how Bhubaneswar responds to the policies are more crucial than what comes down from the Centre and the state in determining the future of this city.

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Reforming Property Taxation: The Case of Municipal Corporation of Greater Mumbai

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ABSTRACT

Municipal governments are required to provide various civic infrastructure services to the citizens and they levy different types of taxes and user charges/fees for raising revenue in order to meet the costs of providing such civic services. Property tax is considered as the backbone to the own source revenue of municipal governments in India. However, several Indian cities have not been able to tap the full potential of it for several reasons. One of the important issues affecting property tax revenue is that their taxation systems are designed on the basis of - Annual Rateable Value (ARV) of properties. Mumbai is the first Indian city to move away from ARV system towards adopting Capital Value (CV) based taxation of properties as a step forward. It also adopted a more rational Unit Area Method (UAM) for calculating property tax. The reforms led to gains in property tax revenue for the Municipal Corporation of Greater Mumbai (MCGM). This case describes the salient features of this property tax reform undertaken by the MCGM, which can be replicated by other Indian cities.

Keywords: *Property tax, ARV system, Capital Value, UAM and MCGM*

INTRODUCTION

Municipal or urban local governments are constitutionally obligated to provide various civic infrastructure services to the citizens in cities in India. In a scenario of rising population and increasing levels of urbanization, the burden of providing civic services is only rising in India (MGI 2010). The provision of these civic infrastructure services in cities requires a large amount of spending by the municipal governments, especially when we take into account of service backlogs

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(HPEC 2011). In order to meet the costs of providing these civic infrastructure services, the municipal bodies levy various taxes and user charges/fees that provide own source revenue. Although the municipal bodies do get grants-in-aid from the upper tiers of governments, they are primarily provided so as to fill the gap between own source revenue and expenditure obligations i.e., grants do not form an important parameter when it comes to planning, design and implementation of civic service delivery.

Property tax is an important source of tax revenue for the municipal governments that is their own source revenue and it is almost universal (Walters 2011). Property tax is considered as an appropriate tax because of the 'quid-pro-quo' principle i.e., the property owners are beneficiaries of the civic infrastructure services and will be willing to finance their provision by a local government institution (Oates 2005). It is also considered as appropriate for local governments because the properties are 'immobile' therefore cannot be exported/shifted to another location, which is unlike taxing the businesses which may quickly relocate to lower tax jurisdictions that results in tax export (Bahl and Linn 1992).

Taxing real property also leads to the formation of a 'lien' in the event of non-payment of tax by the property owner (Jacobus 2010). Property tax lien is a superior lien with the back-up of statutory powers with which the municipal government can attach the real property and take possession of it in the event of non-payment of tax, so as to recover the tax dues from its owner (ibid). In spite of such strong powers, the municipal governments in India have not been able to exploit the full potential of property tax revenue from their cities. There are several reasons for this given by the municipal finance experts (Mohanty 2016; Rao 2013):

- Property Tax base i.e., number of assessed properties on which property tax is levied, has been narrow in most Indian cities and it has not been growing over time, because municipal bodies in India are slow in identifying uncovered as well as new properties and assessing them regularly over time – particularly, in the peripheral areas.
- Revision of Property tax rate is also not taken up regularly by the municipal bodies in India, as it requires the vetting of the council of elected representatives of municipal body (which is difficult due to the political resistance) and also it requires taking the approval of the State government.

- Organisational inefficiencies of municipal governments with regard to the assessment of properties from time to time, calculating the tax, sending tax demand notices to owners, collecting tax at different outlets, resolving the issues of tax arrears, setting channels for grievances and dispute resolution, etc.

Nevertheless, improving the property tax revenue mobilisation by overcoming the above issues is a long way to go to achieve it i.e., it requires strong commitment of leadership and resources by the municipal government. It is here that the systemic improvements to taxation and innovations come into play, which emphasize on making the whole property taxation system to be made simple, transparent and accountable so that they become acceptable to the public and polity (Mohanty 2016). This requires the municipal governments moving away from current archaic property taxation systems and practices to adopting new systems that can improve revenue, as demonstrated by Hyderabad in the past (Mohanty 2003).

Indian cities have for long been following a system of property taxation based on the 'Annual Rateable Value (ARV)', which is based on the rental value of property and is known for it being a tax-assessor driven, non-transparent and complex system to understand (Karnik 2005). Several tax payers moved to courts in the past seeking clarity on taxation and protection from the arbitrariness of municipal tax officers. Also, the underlying distortions in rental markets of cities (due to the operation of rent control acts in cities) have dented the potential revenue considerably (as rent controlled properties contribute little or no tax) (Gnaneshwar 2009, Rao 2013).

In this context, the Capital Value (CV) based system of property taxation is considered to be a more appropriate choice as it detaches the tax base from 'assessed rental value' property' of the ARV system and moves towards the 'guided capital value of property' based on the exchange value of property (Karnik 2005). It can then be combined with other improvements in property taxation, which will render it simple, predictable and transparent. The Unit Area Method (UAM) is considered to be the appropriate one in this regard, which can make the property taxation more rational, simple, transparent and easy to understand. Cities like Bangalore have moved towards such methods for assessing tax and saw improvements in the mobilization of property tax revenue (Ahluwalia 2011).

The Municipal Corporation of Greater Mumbai (MCGM), the municipal local government of Mumbai city, is the first municipal

government in India to adopt the CV based property taxation system in India. It also adopted a UAM for the computation of tax which was simple, transparent and easy to understand, which gave rise to some significant improvements in property tax levy, collection and transparency. This paper is positioned in the above context as a useful one to elucidate the importance of property taxation reform so that it leads to improved property tax revenue that can be utilized by the municipal governments to provide better civic infrastructure services to the citizens.

Earlier System of Property Taxation

The MCGM is the urban local government concerned with the development of Mumbai city and also with the provision of all major civic infrastructure services to the citizens. The MCGM jurisdiction extends over an area of 432 sq km covering more than 12.45 million population contained within it (Census 2011). It provides a wide range of civic infrastructure services like water supply, sewerage, drainage, roads, street lights, solid waste management, parks and play grounds, education and healthcare services. Like any other urban local government, the MCGM also levies various taxes and charges/fees to recover the expenditure incurred on providing the civic services and also to meet the operation and maintenance costs of the civic infrastructure services. Property tax is an important means of realizing revenue, by levying a tax on the real properties within its jurisdiction.

For a long time, MCGM followed the property taxation based on the concept of levying tax on the (rental) income arising from the property, which is a legacy of the municipal finance system of the British rule in India. Municipal governments in Britain and several Commonwealth countries follow the principle of taxing the (rental) income accruing on the property, which they consider as legitimate taxation principle. This principle of property taxation has brought in the practice of 'Annual Rateable Value (ARV)' as the basis for property tax levy. The ARV of a property is assessed by the tax assessing officer of the municipal government, based on the survey of sample properties or records of rental transactions or registrations of rental agreements in the area in which the property is located.

The ARV based assessment of property value and the system of property taxation based on such assessed rental income from property have several practical constraints in the developed and developing country cities viz.,

- There are procedural issues associated with the assessment

of ARV of a property. In some localities in the cities, renting of property may be absent or present for a small number of properties, making it difficult to assess the rental value of real properties in such localities.

- There could be a systematic under-assessment of property values due to a limited number of rented properties getting registered (which alone are considered by municipal tax assessor in the process of tax assessment) and even they may not genuinely reflect prevalent market rent; also, all rental agreements are not renewed at the expiry of term which leads to the absence of new/revised rental value of property.
- A large number of properties came under the ambit of the Bombay Rent Control Act, 1947, which imposed ceilings on annual rents leviable on properties and they were later frozen for several decades. This led to negligible rental income accruing to owners of such rented properties and therefore negligible tax revenue to the MCGM. It also led to practices like 'hidden rent' (a higher amount charged by owner than standard rent), which is not reflected in the tax assessment.
- The rental value assessment of properties and taxation based on it under the ARV system gave a lot of discretionary powers to the tax assessor in the municipal body and it was also subjected to disputes between property owners and municipal body, some of them went to the court that took a long time to dispense them. The municipal body lost tax revenue in the meantime until the dispute is settled.
- The ARV based taxation also resulted into the spatial inequity of civic services in Mumbai. The rent controlled properties in South Mumbai were contributing hardly any tax revenue but getting good quality of civic infrastructure services, whereas the new properties in North Mumbai outside rent control act were contributing the most to the tax revenue but were not getting good quality civic infrastructure services.
- All the above shortcomings of the ARV system of property taxation have led to severe revenue shortage to the MCGM. Also, the property tax revenue had become stagnant in the MCGM for several years due to artificial low rents prevalent in rental property markets and non-revision of property tax rates for a long time. It paved the way for reforms in property taxation in Mumbai.

Property Taxation Reform in Mumbai

Some of the shortcomings of the ARV system were identified by a few European countries in the early to mid 1980s and they began to find alternates. One such alternate system of property taxation that has been accepted in some of these countries is the property taxation based on the 'Capital Value (CV)' of property. The CV based property taxation dwells on the transaction (purchase/sale) value of properties, which are mostly registered for securitising the transaction as required under the Transfer of Property Act. Therefore, it reflects 'market value' commanded by property when compared to 'imputed value' of it under ARV system. However, tax rate structure of CV based taxation system is different from that of ARV system. Therefore, it has to be devised based on the survey of properties while also subjecting to the principles of equity, effectiveness, acceptability and fairness.

The Unit Area Method (UAM) of computation of property tax was first done by the Patna Municipal Corporation, which was rather simple, transparent and easy to understand (Gnaseshwar 2009); the courts have also upheld such system. The UAM makes the entire tax assessment rather objective and the calculation of tax can even be done by the citizen to check if the tax assessor is levying the right tax amount or not. The UAM is based on the categories of the properties on the major parameters that determine its value, viz.,

- Location of property;
- Use of property;
- Construction type of property;
- Age of Property; and
- Amenities of property.

Property Tax Assessment Methodology

In the new approach to property taxation based on the CV adopted by the MCGM, it was proposed to adopt a simpler method for computation of property tax based on the following parameters of property value as featured in UAM assessment:

- Market Value of Property
- Area of the Property unit
- Construction Category
- User Category

- Age Category
- Floor rise Category
- Tax rate

(i) *Computation of (Guided) Market Value*

The parameter ‘Market Value of Property’ is actually ‘Guided Market Value of Property’ drawn from the *Ready Reckoner Guide* published by the MCGM, which gives both capital as well as rental values of properties in different localities in Mumbai as guiding figures for computations related to registration, stamp duty and taxation purposes. The *Ready Reckoner Guide* is prepared by the Valuation Department of the MCGM based on the survey of a sample of real properties in a locality, which is carried out in all major localities in Mumbai. It is published by the MCGM and available in the public domain.

(ii) *Area of the Property Unit*

The parameter ‘Area of the Property Unit’ refers to the built space of the property unit. It therefore, refers to the habitable area occupied by the property unit i.e., carpet area, and does not include the common area/ built space for uses like staircases, lobby and common facilities/ amenities.

(iii) *Weightage Sets for Other Categories*

For the remaining parameters, the MCGM has devised a weightage system, which assigns different weights to different categories. Each of them is based on the influence that they will have on the property value. The various categories and their weightage sets for each parameter are given through Table 1 to 4. The weightage set, however, is valid for properties/ houses developed and not for undeveloped/ vacant land.

TABLE 1: CONSTRUCTION CATEGORIES AND WEIGHTAGE SET OF PROPERTIES

<i>Construction Category</i>	<i>Construction Type</i>	<i>Weightage</i>
C1	<i>Pucca Building</i>	0.7
C2	<i>Kachha/ Semi-Permanent Structure</i>	0.5
C3	<i>Chawls</i>	0.5
C4	<i>RCC Structure</i>	1.0
C5	<i>(RCC Structure (Luxurious</i>	1.25
C6	<i>Bungalows</i>	1.25

Source: MCGM (2013)

TABLE 2: USER CATEGORIES AND WEIGHTAGE SET OF PROPERTIES

<i>User Category (UC)</i>	<i>User Type</i>	<i>Weightage</i>
U1	Residential	1.0
U2	(Commercial (Shops & Offices	1.25
U3	Industry/Factory	1.25
U4	Malls and multiplexes	1.25
U5	Hospitals	1.0
U6	(Hotels (below 5 star	1.0
U7	Hotels 5 Star	1.25
U8	Educational institution	0.7

Source: MCGM (2013)

TABLE 3: AGE CATEGORIES AND WEIGHTAGE SET

<i>Age Category (AC)</i>	<i>Year of Construction</i>	<i>Weightage</i>
A1	Pre 1940	0.5
A2	1941-1960	0.7
A3	1961-1970	0.8
A4	1971-1985	0.9
A5	Post 1985	1.0

Source: MCGM (2013)

TABLE 4: FLOOR CATEGORIES AND WEIGHTAGE SET

<i>Floor Category (AC)</i>	<i>Floor Level of Property</i>	<i>Weightage</i>
F1	Ground Floor to 4 th Floor	1.0
F2	5 th to 10 th Floor	1.05
F3	11 th to 25 th Floor	1.1
F4	21 st to 30 th Floor	1.15
F5	31 st to 50 th Floor	1.2
F6	51 st to 75 th Floor	1.25
F7	76 th to 100 th Floor	1.3
F8	Above 100 th Floor	1.35

Source: MCGM (2013)

(iv) Tax rates of Properties

Tax rates for the properties are also devised for various user categories by the MCGM. Property tax levied by the MCGM is a composite tax which consists of – general tax, fire tax, street tax, education cess, water tax, water benefit tax, sewerage tax, sewerage benefit tax, tree cess, State education cess and employment guarantee cess. The tax rates applicable to different users are shown in Table 5.

TABLE 5: TAX RATES AND USER CATEGORIES

<i>User Category (UC)</i>	<i>Description</i>	<i>Tax rate (%)</i>
U1	Residential Buildings	0.7887
U2	Open Land (Residential), Industrial Buildings, (Other Non-Residential Buildings (listed	1.407
U3	Developed Land, Open Land (Non-Residential), Non-Residential Buildings	1.759
U4	Commercial Properties	2.815
U5	Commercial Institutional Buildings	5.628

Source: MCGM (2013)

Computation of Property Tax

Based on the property unit falling in the various categories and other observations with regard to guided market value of property, the property tax can be computed using the following formula:

$$PT = r * MV * Area * CC * UC * AC * FC$$

Where:

- PT is Property Tax (in Rs)
- r is tax rate (%)
- MV is guided market value (Capital Value in Rs)
- Area is carpet area (sq ft)
- CC is Construction Category Weightage
- UC is User Category Weightage
- AC is Age Category Weightage
- FC is Floor Category Weightage (applicable to multi-storeyed RCC buildings)

Box 1 shows the examples of computation of property tax for hypothetical residential and commercial properties (for which the relevant data exists) in the jurisdiction of the MCGM.

Impact of Reforms on Property Tax Revenue

Property tax reforms in Mumbai were by all means not a simple exercise. The design of CV based taxation took a long time after performing a detailed analysis of how the new method of taxation would have an impact on the tax of individual properties. Certain safeguards were placed so that it would not result in disproportionate burden on tax payers, especially those of poor and low income groups. Public

Box 1: Examples of Property Tax Calculation

Residential Property

- Consider a residential property of RCC built after 1985 located on 16th floor with built-up area of 88 sq m whose market value is Rs 25480 per sq m
- Property tax = $(0.7887/100) \times 25480 \times 88 \times 1.0 \times 1.0 \times 1.0 \times 1.1$
= 19,453

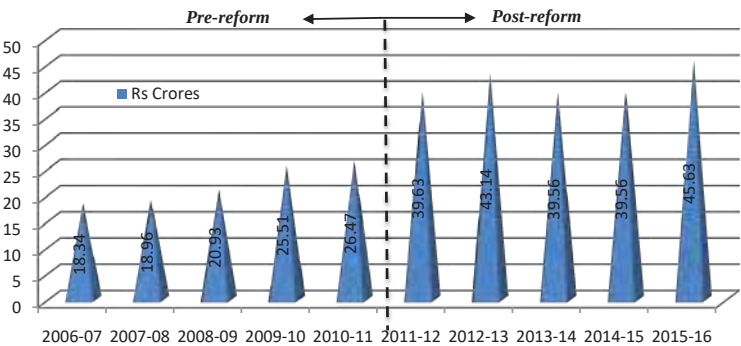
Commercial Property

- Consider an office property of RCC built after 1985 located on 21st floor with built-up area of 58 sq m whose market value is Rs 29480 per sq m
- Property tax = $(2.815/100) \times 29480 \times 58 \times 1.0 \times 1.25 \times 1.0 \times 1.15$
= 69,190

Source: Based on the MCGM Property Tax Manual

feedback was taken to understand their concerns and to address them in the adoption stage. The new method was also given wider coverage by bringing in media and civil society groups to take it to the citizens. The MCGM began adoption of new system partially by 2009-11 and completed it by 2011-12. The adoption of this new property taxation system based on the CV and UAM computation led to significant tax revenue improvements in the MCGM, as evident from Fig. 1.

Fig. 1: Trend of Property Tax Revenue of the MCGM



Source: Awasthi and Nagarajan (2020)

CONCLUSION AND DISCUSSION

Property tax is an important statutory tax and only lien with statutory powers to attach property. Yet, most of the Indian cities do not perform well on property tax revenue mobilization. The ARV

basis of taxation is considered to be one of the reasons for the under-performance on revenue mobilisation. Mumbai is the first Indian city to reform property taxation by adopting 'Capital Value' based system of property tax. It successfully implemented the property tax reform, got the results of revenue improvement due to the simplicity associated with the computation of property tax and easier understanding of the capital value of property by citizens. Given the success of this taxation reform other Indian cities can also move towards its successful adoption.

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Identifying and Reviewing Green Building Alternatives for Navi Mumbai

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SANJAY MISHRA**

ABSTRACT

The massive construction boom observed in Indian cities in the last two decades has resulted in a number of environmental issues such as pollution, urban heat islands, deterioration of green areas and natural vegetation; making the cities unliveable. Navi Mumbai, the city situated on the Indian west coast is surrounded by various ecologically sensitive elements both on land and in waters. As the city keeps on growing, these areas also become vulnerable so as the population residing in the city. The present article is an attempt to identify and review green building alternatives for the city by studying the various parameters and strategies given by different rating organisations in the context of Navi Mumbai and Indian scenario for sustainable development of the city in the future.

Keywords: *Green buildings, sustainable development, urban heat islands, natural vegetation, ecologically sensitive areas.*

INTRODUCTION

Buildings account for approximately 19 per cent of all Global Greenhouse Gas (GHG) emissions in the world, and about 31 per cent of global final energy demand (Šujanová, Rychtáriková, Mayor, & Hyder, 2019). As the urban population of the world grows, the green building concept has become a cornerstone of sustainable development for maintaining environmental, economic and social sustainability in the long term (Yoon & Lee, 2003). A green building refers to the exercise in which environmentally appropriate and resource-efficient strategies are practiced throughout the lifecycle of building (Chan, Darko, & Ameyaw,

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2017). A sustainable project is planned, constructed, operated and reused in an environmental and resource efficient manner (Akadiri, Chinyio, & Olomolaiye, 2012). Green buildings can also be defined as the structures that seek to minimise the overall impact of the built environment on human health and the natural environment by utilising electricity, water and other resources effectively and reducing waste, pollution and deterioration of the ecosystem. (USGBC, 2009). Green buildings offer opportunities to establish sustainable buildings, utilising integrated architecture strategy to reduce the ill-effects due to construction, on the atmosphere and the occupants (Ali & Al Nsairat, 2009). Cities create large amount of pollution and waste, placing both human and ecological safety under strain, but buildings themselves may provide a solution to the problem (Nowakowski, 2017).¹ Green building design not only has a positive impact on environment and public health but also helps to reduce operating costs, improves building performance and productivity of occupants and thereby creates a sustainable community (Fowler & Rauch, 2006).

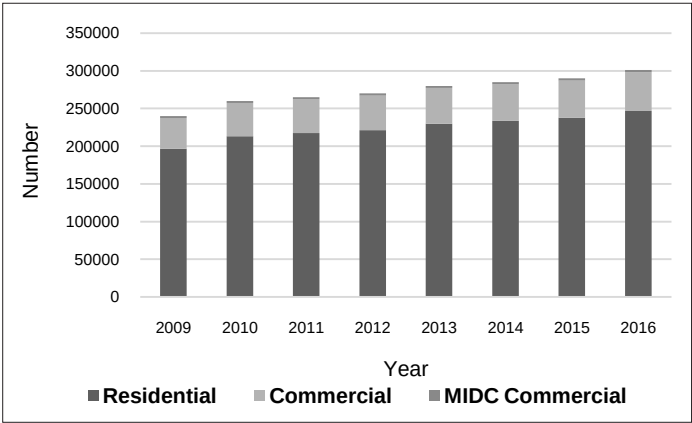
NAVI MUMBAI: A BRIEF DESCRIPTION

Established in 1972, Navi Mumbai is a planned city of India which is located on the west coast of the state of Maharashtra in Konkan division; this planned decentralisation resulted from efforts done by the government to make the city of Bombay (now Mumbai) more 'sustainable' (Bombay Metropolitan Regional Planning Board, 1973). For the individual development of the city, the city is divided into two parts known as North Navi Mumbai and South Navi Mumbai, which include the area from Kharghar to Uran, these are actually a group of islands located near the coast of north Konkan (19.0330° N, 73.0297° E). As per the reports of Census of India, the population of Navi Mumbai in 2011 was 1,120,547.²

Research Concern

Navi Mumbai is growing with decadal positive growth rate of 88.91 per cent recorded in 2001 (NMMC, 2017). The policy adopted by The Maharashtra Government resulted in industrial area development in Navi Mumbai which led to migration/re-location of people from Mumbai to Navi Mumbai for better lifestyle and job opportunities (NMMC, 2017). Developing industrial belt led to rapid industrialisation which has been among the prime economic drivers for the city. The population of nodal areas of city is expected to grow at faster rate resulting in increase in use of land resource for population accommodation. The number of properties in Navi Mumbai Municipal Corporation (NMMC) have increased by almost 25 per cent since 2009-10 as shown in Fig. 1.

Fig. 1: Trend of property development over the last eight years in Navi Mumbai



Source: Town Planning Department, NMMC.

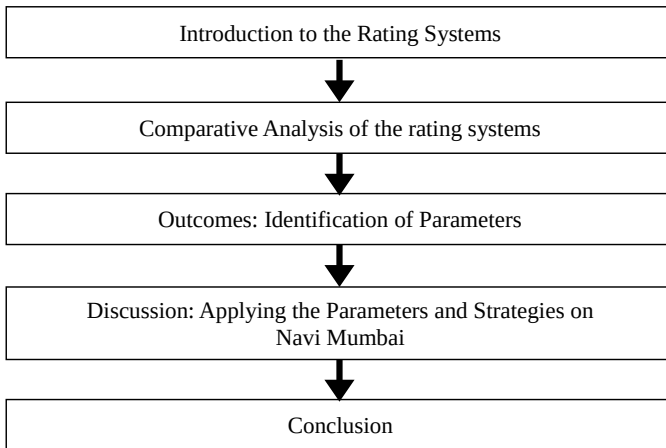
For the year 2016-17, residential properties recorded highest at 82 per cent of total properties, followed by commercial with 17 per cent and MIDC commercial with one per cent share. Also, a huge crisis emerged in the city as buildings were found unsafe to stay in over 53 societies (NMMC, 2017). The construction and use of buildings, driven by rapid urban expansion, is imposing tremendous pressures on the natural environment and public health. Urbanisation is often cited as a major reason for loss of native biodiversity and its replacement with non-native vegetation across the world (Mckinney, 2002). City is surrounded by ecologically sensitive areas important to the natural ecosystem of the city, such as mangroves, lakes and wetlands (NMMC, 2017). The impact of rapid urbanisation in Navi Mumbai is severe and environmental degradation is occurring rapidly. A green building approach is an alternative of sustainable growth ensuring, minimal impact on the environment throughout building's life. Using a green rating (assessment) system in the design/build process can produce significant benefits such as preventing local ecological degradation (habitat, air, soil, and water), improving public health and building performance through efficient site and building design, sustainable construction practices, and low impact building materials.

Research Methodology

For this study, different green building rating systems are studied and a list of green building alternatives is identified by analysing various parameters and strategies given by leading green building rating systems in India by a comparative analysis. These alternatives are then

reviewed in context of Navi Mumbai and Indian scenario to study their applicability. See Fig. 2 for further clarification.

Fig. 2: Research Methodology (Process Flow)



SUSTAINABILITY RATING SYSTEMS – INTRODUCTION

Green Rating for Integrated Habitat Assessment (GRIHA) rating system applies to new building stock – commercial, institutional and residential – of varied functions (GRIHA, 2020). Endorsed by the Ministry of New and Renewable Energy (MNRE), Government of India as of November 1, 2007, GRIHA is a five Star rating system, developed by the Energy and Resources Institute (TERI) and MNRE as an indigenous building rating system, especially for addressing and evaluating buildings which are not air conditioned or partly air conditioned (TERI, 2016). The Indian Green Building Council (IGBC) classification framework for new buildings is a voluntary, consensus-driven rating system focused on the quality of current materials and technologies. It is a part of the Confederation of Indian Industry (CII), formed in the year 2001 (IGBC, 2020). IGBC rating system focuses on designing environmentally sustainable buildings through architectural programmes, water efficiency, efficient waste management, energy efficiency, sustainable buildings, and occupant comfort and well-being (TERI, 2016). Leadership in Energy and Environmental Design (LEED) rating system is developed by USGBC (United States Green Building Council), United States, initially piloted in the US and later expanded to many countries across the world (USGBC, 2017). Green features such as sustainable design and architecture, site selection and planning, water conservation, energy efficiency, construction materials and

resources, indoor environmental quality, innovation and development are addressed in the rating system.

Comparative Analysis

Table 1 establishes a comparative relation between the different parameters and their respective strategies for green buildings and green developments that are given by IGBC, GRIHA and LEED. The parameters found common in all the three organisations are listed alongside to analyse the commonalities and differences in the strategies under those particular parameters. The strategies which come out to be common are highlighted providing analogous shade. The parameters strategies having no repetitions are also identified. The parameters and strategies which observe the maximum repetition tend to be the most important and rudimentary pertaining to green development. The parameters and strategies which are not or less repetitive, but are still important for green development are also identified. Hence, all the parameters and strategies which are repetitive/ basic and non-repetitive but still equally important, are identified which are cardinal for green development in Navi Mumbai.

Common Parameters and Strategies

These are the parameters and strategies which are common in the organisations under study, hence are rudimentary and cardinal for green building development and are to be included for green building solutions for Navi Mumbai.

- (i) ***Sustainable site planning:*** The strategy observing maximum repetition is designing to reduce the heat island effect. Other common strategies are to reduce soil erosion, preserving the topography, using natural and regional vegetation for landscaping purposes.
- (ii) ***Water efficiency:*** Reducing the use of water by using efficient low flow fixtures for different uses and rainwater harvesting are the most common strategies. Management and reduction of water usage for irrigation purposes for landscaping, reuse and treatment of water are also common.
- (iii) ***Energy efficiency:*** Using renewable and clean sources of energy, generated on-site or off-site is the most common strategy. Other repetitive strategies are energy monitoring and using efficient appliances, systems and lighting to reduce the usage of energy.

TABLE 1: TABLE SHOWING THE COMMON AND UNIQUE ELEMENTS IN
IGBC, GRIHA AND LEED

<i>IGBC</i>	<i>GRIHA</i>	<i>LEED</i>
<i>Site Selection and Planning</i>	<i>Site Planning</i>	<i>Sustainable Sites</i>
• Following local building regulations. • Preventing soil erosion. • Preserving natural topography and vegetation. • Preventing heat island effect caused by site activities. • Providing parking facilities for visitors and electric charging facility for vehicles. • Providing universal access. • Providing basic facilities for construction workforce.	• Site Selection by considering the surrounding natural environment. • Following low environmental impact principle. • Prevent urban heat island effect. • Considering imperviousness factor of site while designing.	• Discouraging green field developments. • Minimising building impact on ecosystems and waterways. • Encouraging regionally sound landscaping. • Managing storm-water runoff. • Promoting smart transportation choices and green energy solutions. • Reducing erosion and light pollution. • Reducing heat island effect. • Preventing construction pollution.
<i>Water Efficiency</i>	<i>Water</i>	<i>Water Efficiency</i>
• Promoting rainwater harvesting. • Using Water efficient fixtures. • Managing water used for landscaping. • Waste water treatment, reuse and water metering.	• Using low-flow fixtures and water efficient systems. • Reducing water used for landscaping. • Ensuring good water quality. • On-site water treatment and reuse to reduce water consumption. • Promoting rainwater recharge and recycle.	• To encourage smarter use of water indoor and outdoor. • Water reduction, through efficient and low flow appliances, fixtures and fittings inside. • Using water wisely for landscaping • Rainwater harvesting.
<i>Energy Efficiency</i>	<i>Energy</i>	<i>Energy and Atmosphere</i>
• Using CFC-free equipment. • Following Minimum energy performance principle. • Using renewable energy. • Using energy saving appliances and equipment. • Using distributed power generation. • Energy metering.	• Ensuring energy efficiency in the building. • Using renewable energy. • Using low ODP materials.	• Energy use commissioning. • Energy use monitoring. • Energy efficient design and construction. • Efficient appliances, systems, and lighting. • Using renewable and clean energy sources.

(contd. Table 1)

<i>Materials & Resources</i>	<i>Sustainable Building Materials & Solid Waste Management</i>	<i>Materials and Resources</i>
• Segregating household waste. • Managing organic waste. • Managing construction waste. • Using materials with recycled content and reusing the salvaged materials. • Using local materials for construction and finishing purposes of the buildings. • Using rapidly renewable building materials & certified wood.	• Using BIS recommended waste materials in building construction. • Reducing structural embodied energy of building. • Using low-environmental impact materials in building interiors. • Avoiding post-construction landfill. • Treat organic waste on site of generation.	• Encouraging use of sustainably grown, harvested, produced, and transported products/ materials. • Promoting waste reduction, reuse and recycling.
<i>Indoor Environmental Quality</i>	<i>Occupant Comfort and Well-Being</i>	<i>Indoor Environment Quality (IEQ)</i>
• Utilising day-lighting for visual comfort. • Providing fresh air ventilation and tobacco smoke control measures. • Using low VOC materials. • Providing cross ventilation and exhaust systems for thermal comfort.	• Achieving indoor visual comfort requirements. • Achieving indoor thermal comfort. • Achieving indoor acoustic comfort. • Providing healthy indoor air quality for the occupants of the building. • Using low-VOC materials and compounds in building interiors to decrease the indoor air pollution.	• Promoting strategies that can improve indoor air quality. • Providing access to daylight and views for visual comfort. • Improving acoustics.
<i>Innovation & Design Process</i>	<i>Socio-Economic Strategies</i>	<i>Awareness and Education</i>
• Innovation in design process. • IGBC Accredited Professional for innovative practices.	• Ensuring labour safety and sanitation. • Designing for Universal Accessibility. • Providing dedicated facilities for service staff. • Increasing environmental awareness.	• Encouraging home owners and real estate professionals for providing home owners, tenants, and building managers the education tools for making the buildings and surroundings green.

(contd. Table 1)

	<i>Performance Monitoring & Validation</i>	<i>Regional Priority</i>
	Using smart performance metering and monitoring systems Following operation & maintenance protocols. Practicing building performance assessment. Promoting innovation to enhance building performance.	Identifying and considering environmental concerns that are locally cardinal for different regions in the country (additional six LEED credits are given to project that addresses those local priorities selected for each region). A project earning a regional priority credit earns one additional bonus point in addition to any other initial points that have been awarded for that credit.
	<i>Construction Management</i>	<i>Locations and Linkages</i>
	- Controlling air/ water pollution and preserving/ protecting landscape during construction. - Efficiently managing construction practices	- Encouraging buildings constructed away from environmentally sensitive areas and promoting green field development. - Promoting buildings constructed/ located near existing infrastructure. - Encourage access to open space for walking and physical activity.
		<i>Innovation in Design</i>
		- Promoting projects that use innovative technologies/strategies (other than LEED credits requirement or green building practices which are not specified by LEED) to improve performance of building by providing bonus points. - Promoting projects ensuring a holistic, integrated approach to the design and construction phase.

Sources: (GRIHA, 2020); (Fithian & Sheets, 2009); (IGBC, 2020); (USGBC, 2017)

- (iv) **Building materials and resources:** Promoting reduction, reuse and recycling of different waste materials is a common strategy under this parameter. Other common strategies are to use local and environment-friendly materials and on-site treatment/ management of organic waste.
- (v) **Indoor environment quality:** Indoor air quality depends upon adequate air, light and acoustics. Hence the strategies are focused upon indoor air quality through adequate ventilation, cross ventilation, exhaust systems to ensure fresh air; providing daylight access and improving acoustics.

Unique Strategies

Besides the common parameters and strategies, a number of unique parameters and strategies are observed in the organisations under study. These unique elements are also to be considered as they fill the gaps left by each organisation under study. In other words, the lack of one organisation is to be filled by the abundance of the other.

IGBC

For site selection and planning, IGBC includes unique strategies focusing on consideration of local planning regulations. Providing parking facilities for visitors, charging stations for electric vehicles as a part of site planning and accounting requirements of Persons with Disabilities (PwDs) in designing processes. Energy efficiency strategies like using CFC (chlorofluorocarbons) free equipment, solar heating systems and distributed power generation. For materials and resources, the unique strategies include separation of household waste for efficient waste management. For indoor living environment, the unique strategies are to use low Volatile Organic Compounds (VOC) materials, paints & adhesives for finishing and other indoor construction purposes.

GRIHA

For site planning, the strategies for low impact design and site impervious factors are considered. For water and energy efficiency, the strategies of water quality enhancement and usage of low Ozone Depletion Potential (ODP) materials are taken into account respectively. For Sustainable Building Materials and Solid Waste Management, the unique strategies are to use Bureau of Indian Standards (BIS) recommended waste for construction purposes, reducing the embodied energy of building structure and avoiding post-construction landfill for efficient construction waste management. For occupant comfort and

well-being, the unique strategies are maintaining good indoor air quality by using low-Volatile Organic Compounds (VOC) paints and green compounds indoors. GRIHA further includes some important unique parameters which are not accounted in IGBC and LEED. The first is *socio-economic strategies*, second is *performance monitoring and validation* and the third is *construction management*. The *socio-economic strategies* include labour safety and sanitation measures. Design for universal accessibility so that every person is able to access the design features including the PwDs. Also including the dedicated facilities for service staff as design features to enhance user accessibility. Further, increasing the environmental awareness is also taken account. *Performance monitoring and validation* includes using the smart metering and monitoring systems, operation and maintenance protocols and performance assessments for final ratings. *Construction management* include the air and water pollution control, preservation and protection of landscape during the construction period and construction management practices.

LEED

Under site planning, the unique strategies are to discourage development on previously undeveloped land; minimising impact of building on surrounding ecosystems and waterways; controlling storm water run-off; promoting smart transport solutions and reducing pollution caused by different construction processes. For water efficiency, the strategies are aimed to encourage smarter use of water in building's indoors and outdoors. For energy efficiency, the strategies focus upon energy commissioning, efficient designing and construction processes. The strategies pertaining to materials and resources include the reduction of waste at a product's source. There are also unique parameters covered by LEED, which are not covered by IGBC and GRIHA. The first parameter is *awareness and education*, second is *regional priority*, third is *location and linkages* and the fourth is *innovation in design*. *Awareness and education* includes encouraging the homeowners and real estate professionals to provide homeowners, tenants, and building managers, the education tools required for making their home/ building green. *Regional priority* promotes the prioritising and considering regional environmental concerns that are locally most important for every region of the country by offering a project that earns a regional priority credit, one bonus point in addition to any points awarded for that credit. Under *location and linkages*, LEED encourages buildings being built away from environmentally sensitive areas, instead, being built in infill, previously developed, and other sites. LEED promotes structures constructed near already-existing infrastructure, community resources and transits. It also promotes accessibility to open space for walking and

physical activities. For *innovation and design*, LEED provides bonus points to projects using new and innovative technologies and strategies (other than what is required for LEED credits or other green building strategies which are not specified anywhere in LEED) to improve the performance of building. Also, to ensure a holistic and integrated approach in the design and construction phase, LEED rewards innovative projects though LEED accredited professionals.

Outcomes

In the above discussion, the common and unique parameters and strategies pertaining to green buildings are discussed for the respective organisations under study. Based on the discussion, concluding the common and unique elements from all the organisations under study, a list of important parameters and strategies which can be beneficial for green building development in Navi Mumbai, is shown in Table 2.

Discussion: Reviewing the Identified Parameters in Context of Navi Mumbai and Indian Scenario

As listed in Table 2, the various green building alternatives have been identified based on the analysis and discussion. These alternatives are categorised under different parameters and strategies. The applicability of these green building alternatives in Navi Mumbai is discussed ahead.

Sustainable Site Planning

Cities create a vividly differential environment from the surrounding areas, hence, effecting the nature and public health (Ramamurthy & Roy, 2019). Navi Mumbai encompasses various naturally sensitive areas “*ranging from low hills with tropical semi-evergreen, tropical moist deciduous, tropical dry deciduous, to marshlands, estuary and mangroves*” (NMMC, 2017). To ensure nature’s preservation and public health, green building alternatives of low impact and natural vegetation preserving strategies pertaining to sustainable site planning, become necessary for the city.

Water Efficiency

In India, rapid population growth in urban areas, especially in large urban communities, restricted sources to expand water flexibly, expanded interest and contamination and constrained reuse, have prompted a rising water frailty in urban areas (Shaban & Sattar, 2011). In 2011, urban population in India was 377 million with a domestic water demand of 50,895 million litres per day, it is estimated that by 2050, half of India’s population will live in urban areas and will face

TABLE 2: DERIVED LIST OF PARAMETERS AND STRATEGIES

Sl. No.	Parameters	Sub- Parameters	Strategies
1.	Sustainable Site Planning	Low impact design	• Design to mitigate urban heat island effect. • Discourage development on previously undeveloped land and promoting redevelopment and retrofitting practices. • Reducing erosion and light pollution. • Reducing heat island effect. • Controls storm-water runoff.
		Efficient landscaping	• Encourage regionally appropriate landscaping. • Preserving the natural and existing natural vegetation.
		Transport services	• Smart transportation choices. • Electric charging facility for vehicles. • Parking facilities for visitors.
		Usability and accessibility	• Design for differently abled. • Basic facilities for construction workforce. • Green home guidelines, design & post occupancy.
2.	Water Efficiency	Reducing water usage	• Using low-flow and water efficient fixtures, plumbing systems. • Management of irrigation systems and reducing landscape water demand. • Water metering.
		Reusing and Recycling of water	• Rainwater harvesting, roof and non-roof. • On-site water treatment and reuse.
3.	Energy Efficiency	Reducing energy usage	• Using low consumption and efficient appliances, systems, and lighting. • Efficient design and construction measures.
		Green energy and materials	• Use of renewable and clean energy sources generated on-site or off-site. • Solar energy harvesting for uses such as water heating systems. • Distributed power generation.
		Energy management	• Energy commissioning. • Efficient metering and monitoring of energy usage.

(contd. Table 2)

4.	Materials and Resources	Use of low-environmental impact materials	• Utilisation of BIS recommended waste materials in building structure. • Using low ODP materials. • Reused and recycled building materials. • Rapidly renewable building materials & certified wood.
		Local and recycled materials	• Encourage the selection of sustainably grown, harvested, produced, and transported products/ materials. • Using materials with recycled content and reuse of salvaged materials. • Promoting reduction of waste as well as reuse and recycling.
		Waste management	• Organic waste management, post occupancy. • Treat organic waste on-site. • Reduction of waste at a product's source. • Separation of household waste. • Handling of construction waste materials.
5.	Indoor Environment Quality and Sustainable Design	Indoor air quality	• Fresh air ventilation. • Using low-VOC materials and compounds in building interiors to decrease the indoor air pollution. • Using CFC free equipment. • Tobacco smoke control.
		Thermal comfort	• Exhaust systems. • Cross ventilation.
		Acoustics and visual comfort	• Improving acoustics using sound absorbing finishing materials and openings. • Achieving indoor visual comfort requirements. • Providing access to daylight and views through efficient designing measures.
6.	Social Awareness and Socio-Economic Strategies	Socio-economic strategies	• Labour safety and sanitation. • Design for universal accessibility to enable all the users to access all the features of a building. • Dedicated facilities for service staff.
		Awareness and education	• Increase in environmental awareness. • Encourage homeowners and real estate professionals to provide homeowners, tenants, and building managers the education tools necessary for making their home green.

(contd. Table 2)

7.	Performance Monitoring and Construction Management	Performance monitoring and validation	• Smart metering and monitoring. • Operation & Maintenance protocols. • Performance Assessment for Final Rating.
		Construction management	• Air and water pollution control. • Preserve and protect landscape during construction. • Construction Management Practices.
8.	Regional Priority, Location and Linkages	Regional priority	• Promoting and encouraging the projects considering regional environmental impacts.
		Location	• Encouraging buildings being built away from environmentally sensitive areas, instead, being built in infill, previously developed, and other sites. • Rewarding homes built near already-existing infrastructure, community resources and transit.
		Linkages	• Encourage access to open space for walking and physical activity and time spent outdoors.
9.	Innovation	Design innovation	• Encouraging projects that use new and innovative technologies/strategies to improve building's performance and environmental impacts. • Ensuring a holistic, integrated approach to the design and construction phase.
		Innovation in performance monitoring	• Encouraging innovative methods of monitoring the building performance pertaining to green practices.

Source: Derived from comparative analysis.

acute water problems (Ali M. Q., 2018). Also, this water shortage is now compounded with an estimated 20-25 per cent increase in water demand and generation of wastewater for hand washing purpose in these COVID-19 times in the country (Rohilla, 2020).

Navi Mumbai also faces severe water shortage, influencing 1.16 lakh individuals. The daily water requirement of the city is 335 million litres. But, only 305 million litres are provided by NMMC (Verma, 2016). Navi Mumbai consists of several water bodies such as 24 lakes, creek, ponds, wells and so on which are used for various domestic and industrial purposes in the city (NMMC, 2017). However, NMMC remains unable to deal with water shortage. The authority is seeking an alternative water source to decrease the demand from Morbe Dam (major water supplier for the region); also the administration has now

asked housing societies to dig bore wells to deal with the shortage of drinking water (Verma, 2016).

These solutions are having certain issues as the Central Ground Water Board (CGWB) says that the groundwater is not suitable for drinking as well as domestic uses (Verma, 2016). The groundwater is also prone to contamination from sewage disposal and excessive pumping may result in sea water intrusion (Verma, 2016). Hence, in Navi Mumbai digging of borewells, cannot be an optimum solution to the water shortage (Verma, 2016). The best solution for the water shortage is to reduce water wastage as recommended by experts (Verma, 2016). Water wastage can be efficiently avoided by practicing green strategies such as using low flow fixtures, managing irrigation practices, water metering, rainwater harvesting, etc.

Energy Efficiency

Concrete buildings are also the major contributors of negative impacts on the environment due to unsuitable use of energy. According to an estimate, heating, cooling, and lighting applications in buildings hold more than one-third of the world's primary energy demand (Yilmaz & Selbaş, 2018). Also, commercial and residential buildings consume 20 per cent to 40 per cent of energy produced globally (Hwang & Tan, 2012). The quantity of CO₂ emissions caused by electricity consumption is directly dependent on the process in which it is generated (TERI, 2013). Using conventional sources of energy results in various kinds of pollution, acid rain, and greenhouse gases (Salameh, 2014). On the other hand, green sources like solar energy technologies can be considered as almost absolutely clean and safe (Wang & Ge, 2016).

In India, coal-based power plants have a major share of almost 60 per cent in electricity generation as in March 2011 (TERI, 2013). In Navi Mumbai the emissions from electricity consumption have increased in the last five years from 1.38 million tonne CO₂ in 2007-08 to 1.98 million tonne CO₂ in 2011-12, almost 1.4 times, with a compound annual growth rate of 9.37 per cent (TERI, 2013). Also, for domestic purposes, the conventional fuels (coal, wood, kerosene, LPG) have become major contributors of PM10 emission load out of total area source emissions by adding 1.29 tonne of PM10 in the environment per day in Navi Mumbai (Maharashtra Pollution Control Board, 2019).

To mitigate these issues, reduction in energy use should be promoted and following environmental impacts of the buildings can be achieved through the application of sustainable sources of energy (Yilmaz & Selbaş, 2018). Also, about 47 per cent of total energy in Indian

residential buildings is used for ventilation controls alone (Indraganti, 2011) hence, sustainable designs should be promoted to minimise energy usage.

Materials and Resources

In India, urbanisation, industrialisation and economic growth lead to increase in Municipal Solid Waste (MSW) generation per person, as a result, solid waste management has become a prime issue for many urban local bodies in the country (Kumar, et al., 2017). In 2015, as per Central Pollution Control Board, urban India generated 62 million tonne of MSW which is 450 grams per capita per day. Nearly 82 per cent of MSW was collected, and the remaining 18 per cent consisted of litter. Treated waste was only 28 per cent of the collected waste, and the remaining 72 per cent was dumped openly (Sharma & Jain, 2019). The volume of waste is projected to increase from currently 64-72 million tonnes to 125 million tonnes by 2031 (Ahluwalia & Patel, 2018). The Ministry of Urban Development (MoUD) has recommended all the states to establish recycling facilities for Construction and Demolition (C&D) waste in all the cities having population of above one million to reduce the pressure on natural resources which are getting deteriorated for construction materials, leading to severe impact on the environment (Ministry of Housing & Urban Affairs, 2018).

Navi Mumbai generates around 600 metric tonne of MSW daily, of which nearly 66 per cent is biodegradable, this would translate to around 396 metric tonne of biodegradable waste per day. The remaining 34 per cent of the waste consists of either inert or recyclable materials like metal, glass, paper, plastic, rubber, leather and debris that go back to dumping sites (TERI, 2013). Also, the city generated 7500 metric tonne of C&D waste in the year 2018; all of this waste went untreated to the dumping sites and also no recycling of the waste was done (Maharashtra Pollution Control Board, 2019). Out of total waste generated in the city, 16 per cent goes to the landfills causing CO₂ equivalent emissions of 101258 metric tonne per year (TERI, 2013). These negative impacts to the environment can be curtailed by reducing the waste generation in the buildings; promoting segregation of waste at source for efficient management and treatment of the waste; promoting recycling of the C&D waste and other recycled/ environment friendly materials for construction purposes.

Indoor Environment Quality (IEQ)

People spend on an average 80-90 per cent of their lives inside buildings, hence, buildings must provide a healthy and comfortable

environment for individuals (Šujanová et al., 2019); (Nasline, 2017). IEQ of the building has an impact on the health, comfort and productivity of occupants (Haghlesan, 2013). The IEQ problem is more intense in offices, health and education buildings (Özdamar & Umaroğullari, 2018); this results in reduction in productivity of the occupants specially in the office buildings, hence this discomfort has a negative impact on the economy of India (Das, 2015).

Indoor Air Pollution (IAP) is caused by the addition of harmful chemicals/materials in the air indoors; this can be 10 times intense than air pollution outdoors, because enclosed spaces make the pollutants to aggregate (Kankaria, Nongkynrih, & Gupta, 2014). In India, about two million premature deaths occur per year due to negative impacts of IAP, here 44 per cent deaths are caused by pneumonia, 54 per cent by chronic obstructive pulmonary disease (COPD), and two per cent by lung cancer (Kankaria, et al., 2014).

Thermal comfort refers to *“that state of mind which exhibits satisfaction with the thermal conditions”* (Šujanová, et al., 2019). Visual comfort can be defined as *“lighting conditions and views from the workplace of occupant; inadequate lighting, especially glare reduces clear visibility”* (Horr, et al., 2016). The acoustic comfort refers to *“provide appropriate acoustic environment for the designed function of the structure and protecting the occupants from noise”* (Horr, et al., 2016). Poor thermal, visual and acoustic comfort affect the productivity and well-being of the occupants; poor thermal and visual comfort have direct impact on the energy consumption of the buildings (Amirkhani, Garcia-Hansen, Isoardi, & Allan, 2017); (Horr, et al., 2016).

To mitigate the issues of IEQ, sustainable design strategies are to be practiced where *“the traditional strategies (day lighting, solar energy and natural ventilation) are combined with the current innovative technologies, resulting into an integrated system. This system supports user control by focusing on environmental context and with expert mediation for environmental quality and resource responsiveness”* (Haghlesan, 2013). Green buildings use green materials with lower impacts on occupants' health and lower indoor pollution and have rich IEQ than non-green buildings (Ghodrati, Samari, & Shafiei, 2012).

The green building solutions for indoor air quality includes efficient ventilation, air filtration systems to restrain outer air pollutants, use of low-emitting building materials (low ODP materials, CFC free materials), effective management of IAQ through appropriate air handling systems, change in pattern of fuel use and public awareness (Haghlesan, 2013); (Horr, et al., 2016); (Kankaria, et al., 2014); (Šujanová, et al., 2019).

For efficient thermal comfort, the physical adaptation of the environment and design of building must be considered at design stage as alteration of structure is inefficient and expensive post construction; properly designed natural ventilation system provides energy savings considerably from cooling needs (Horr, et al., 2016). To achieve visual comfort, design solutions encouraging daylight harvesting should be considered, daylight harvesting can save 20-77 per cent lighting consumption of buildings and also has positive impact on the health of occupants (Amirkhani, et al., 2017). Acoustic problems need to be addressed at the design stages of the building, hence, it is important to know what will happen indoors and outdoors; strategies to achieve acoustic comfort includes absorption of sound using sound absorbing materials and ceiling tiles, blocking of sound with workstation panels and workspace layout, covering up of sound using electronic sound masking techniques, etc. (Horr, et al., 2016).

Social Awareness and Socio-Economic Strategies

A major role is played by construction sector in economic development (Chavan, 2015). Also, for a successful construction project, safety of the structures and labour is cardinal (Kanchana, Sivaprakash, & Joseph, 2015). Construction is an unorganised sector, hence, the rate of fatal injuries in the construction industry is higher than the national average for all industries (Singh, 2014). Construction labour in India holds 7.5 per cent in the total labour force of the world but contributes to 16.4 per cent of total fatal occupational accidents in the world (Kanchana, et al., 2015). In Navi Mumbai, according to a study, 60 per cent of the workers (sample) have health complications resulted by their work, nearly 15 per cent of the sample had an accident while working and 85 per cent of the labourers did not get any compensation for medical expenses (Naraparaju, 2014). Despite the high number of injuries, 87 per cent of the sample did not receive any safety training regarding their jobs; 86 per cent did not have any safety equipment available during work; also, 96 per cent did not have approach to any insurance policy for accidents and miss- happenings (Naraparaju, 2014).

To mitigate these issues, certain strategies can be beneficial such as organising public medical camps near construction sites, adequate insurance facilities for workers, creating awareness of construction workers' duty and rights, secure safety at construction sites, increasing concern of the workers and staff about safety through constant training for safe operations, regular tracking, scrutiny and safety audits (Chavan, 2015); (Singh, 2014). All accidents and miss- happenings can be avoided by efficient planning and application of safe practices at the site of work (Singh, 2014).

According to Census of India 2011, 2.21 per cent of population has some disability (Smart Cities Council India, 2015). Individuals with different abilities must be able to use buildings, without any difficulty or specific assistance (National Disability Authority, Ireland, 2017). Universal accessibility is to make PwDs live on their own and securing equal access to all in a given physical environment (Smart Cities Council India, 2015); therefore, it covers every individual regardless of age, size and anyone having any other physical condition or disability (National Disability Authority, Ireland, 2017).

So, an accessible building should be the one where there is no barrier for anyone in using all the facilities within (Accessible India Campaign, 2015) following universal design principles referring to design process where user diversity plays the central part so that the buildings' design fulfils requirements of users with varying abilities (National Disability Authority, Ireland, 2017). It should cover optimisations/ adaptations for PwDs in all services such as steps and ramps, corridors, entry gates, emergency exits, parking as well as indoor and outdoor facilities including lighting, signages, alarm systems and toilets (adaptation of toilets for wheel chair users), braille symbols and auditory signals in elevators or lifts (Accessible India Campaign, 2015).

Performance Monitoring and Construction Management

Building performance monitoring is required because usually buildings are unable to perform as designed or estimated, this difference between designed and actual performance is termed as performance gap (Ihasalo & Karjalainen, 2014) which should be minimum as possible. A simple approach for enhancing the performance of building is constant performance monitoring aiming at lowering energy consumption and enhancing IAQ by constant monitoring and analysing problems mostly related to lighting, heating, ventilation and air-conditioning (Ihasalo & Karjalainen, 2014).

The overall sustainability of the project also includes the sustainable construction process of the project (Hwang & Tan, 2012). Selecting materials and construction methods help to reduce energy use of building. Strategies for sustainable construction practices include using materials with low embodied energyⁱ (Akadiri, et al., 2012); waste management planning to reduce waste generated during construction; using recycled materials such as concrete aggregates; ensuring minimise construction pollution by managing soil erosion, waterway sedimentation and airborne dust generation; minimising the stress to existing natural environment by conserving natural habitat (Hwang & Tan, 2012).

Regional Priority, Location and Linkages

According to the U.K. Green Building Council, the building industry consumes about 400 million tons of materials a year, most of which have negative environmental effects (UKGBC, 2018). Moreover, research demonstrates that, owing to the “extraction of raw materials,” the goods used during a particular construction will often impact the natural environment. Similarly, a range of equipment and services that contract workers and construction companies typically use in the Navi Mumbai, such as on-site chemicals and also the fuel used by diggers and vehicles, will severely “*damage the public health and the climate.*” There will be no net depletion in natural resources when construction takes effect, as far as possible. Buildings should not be located on the sites environmentally sensitive for development.

Buildings in neighbourhoods that have been already built eliminates the need for new highways, roads, water pipes and other facilities. This will also promote the revitalisation of the area by the reuse and restoration of current buildings. Historic structures, abandoned land, brown fields and grey areas can be turned into green construction that benefits the local economy and enhances the character of the city (EPA, 2017).

Innovation

“In a period of rapid change, the only ones who survive are those who innovate and create change”- Peter Drucker)

Green building technologies are having increasing popularity in the construction industry worldwide because implementing green building technologies is a way to improve building sustainability efficiency (Chan, et al., 2017). It is a well-known fact that seven per cent of global CO₂ emissions are accounted for the cement industry (Girgin, 2014). Innovative strategies such as replacing the raw material CaCO₃ with MgCO₃ or manufacturing concrete without cement through 100 per cent fly ash are under progress to reduce this pollution in the huge building sector (Girgin, 2014). Regarding structural systems, the embodied carbon emission to ultimate strength ratios uncovers the significance of using recycled material instead of virgin one (e.g. steel, aluminium) as well as green concrete and masonry blocks by partially replacing cement with waste by-products such as fly ash, blast furnace slag, rice husk ash, etc. (Kuruşcu & Girgin, 2014).

CONCLUSION

The buildings contribute a significant share to the urban environment impacts. As the number grows in India for the construction

of buildings, the impact to the environment also increases. The growing cities surrounded by environmentally sensitive areas, like Navi Mumbai, are more vulnerable. In such a scenario, green building and sustainable building alternatives can significantly restrain these negative impacts, enhance the productivity of the occupants and performance of the buildings by promoting environment friendly practices in building construction, operation and maintenance. In this regard, a list of green building alternatives is prepared by analysing the parameters given by different green building rating systems. These parameters are reviewed in the context of Navi Mumbai and Indian scenario for studying the benefits of applicability of these green building parameters in the city. Navi Mumbai is a city of growth, transformations and rich in biodiversity. The rapid growth of population and the process of urbanisation of Navi Mumbai have resulted in an increasing demand for land in the city. It is not growing not only by population but also by changes in spatial dimensions. Hence, Stress on natural resources requires much attention to protect and conserve from degradation due to rapid transformation of natural resources to urban settlements for making the city a better place to live.

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Footnotes

1. High density urban areas which are built using green strategies in design and construction tend to be more energy efficient and cause less pollution. New researches are also revealing that green buildings can be good for health also.
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Endnotes

- i Energy consumed in mining, processing, manufacturing and transporting of the material is known as embodied energy (Akadiri, et al., 2012).

Major Challenges before Urban Local Bodies: Key Issues (A Case Study of Nagpur District)

NEELIMA DESHMUKH*

ABSTRACT

Third largest Metro city of Maharashtra, Sub-capital of the state and the nodal city of farmers suicide prone Vidarbha region, Nagpur is also a seat of political power and gateway to the eleven districts of Vidarbha region. In addition to many other routine factors for city's growing population, uncertain incomes, losses from agricultural crops, repeated fragmentations of family owned farm lands, unemployment in the rural areas are also leading to the continuous rural to urban migration with the hopes of better and decent life therein. This growing urbanisation trend is posing many threats and challenges to the Urban Local Bodies in delivering the objectives for which they have been created. The present article attempts to study, analyse and understand the major challenges, key issues of governance, various factors, intricacies, impact of currents and undercurrents of the political power affecting the various dimensions of the desired efficient performance of the urban governance of Nagpur Municipal Corporation.

Keywords: *e-Governance, Urbanisation, Digital India, Fiscal Decentralisation, Municipalities and Panchayats.*

Urbanisation and economic development have been two sides of the same coin, complementary to each other and necessary for raising the standard of life of citizens. Good governance is the soul of development, which is being instituted with well designed policies, programmes, schemes under Five-Year Plans and taken to the grassroots level through various ministries and institutions efficiently, with proper administration.

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The local governance comprises set of institutions, mechanisms, and processes through which citizens, pressure groups articulate their interests, needs and mediate their differences, exercise their rights and obligations at the local level. The building blocks of good local governance are many: such as citizen participation, partnership amongst the key actors at a local level capacity, across all the sectors, multiple flows of information institutions, of accountability, and pro-poor orientation. Local governance emphasises the need to look beyond the narrow perspectives of legal frameworks and the local government entities.

The local economic development is a transformation process of the way economic and political decisions are made at local level with the objective of improving the standards of the local society in an inclusive manner through efficient and sustainable use of the existing and potentially available resources.

In order to handle multiple challenges of emerging situations, the local government machinery has to be strengthened and empowered calling for its capacity building to respond to the dynamic demands and requirement of the society. Local government takes care of development and befitting service delivery issues both in rural as well as in urban areas through their respective institutions such as Panchayati Raj, Municipal Corporations and other allied agencies. In order to face the challenges of the herculean multidimensional tasks the administrative machinery needs to be strengthened and empowered appropriately with smart governance.

Trends of Urbanisation

The 2018 Revision of World Urbanisation Prospects produced by the Population Division of the UN Department of Economic and Social Affairs (UN DESA) notes that future increases in the size of the world's urban population are expected to be highly concentrated in just a few countries. Together, India, China and Nigeria will account for 35 per cent of the projected growth of the world's urban population between 2018 and 2050. By 2050, it is projected that India will have added 416 million urban dwellers, China will have 255 million and Nigeria 189 million urban dwellers. At present 54 per cent of world's population lives in urban areas and is expected to increase to 66 per cent by 2050. The projections show that urbanisation combined with the overall growth of world's population could add another 2.5 billion people to urban population in 2050 with close to 90 per cent of the increase concentrated in Asia and Africa.¹ Urbanisation and economic progress are directly related. India with about 7.5 per cent growth rate is amongst fastest

growing economies of the world and ranks third in terms of GDP at purchasing power parity but still it has lowest per capita income due to widespread poverty, unemployment, regional disparities, social inequality together with low level of urbanisation going on. The growth of Indian economy in recent times is mainly attributed to expansion of service, quaternary and quinary sectors mainly agglomerated in large cities.² Urban development is very fused, indivisibly linked to the provision of good quality amenities to all its citizens living in the urban areas and empowerment of Urban Local Bodies (ULBs) to enable them to be financially sustainable. Democratic institutions capable of providing standard and good quality services through improved infrastructure and better evolved service delivery ensure rapid economic and sustainable growth of the city.

India is witnessing an increased pace of urbanisation. Despite its population being predominantly rural, it is emerging as one of the fastest urbanising countries. It was the second largest system in the world with an urban population of 39.37 per cent in 2017. There has been a steady increase in the country's urban population over decades. Cities are emerging as the engines of national economy and generator of wealth. Cities are also the centres of technology, innovation, creativity and economic growth and employment reservoirs of skills knowledge. The urban population is expected to rise to around 38 per cent by 2026. Amongst its major states Tamil Nadu is the most urbanised one with 43.9 per cent population living in urban areas followed by Maharashtra with 46.7 per cent³ and Gujarat 37.4.⁴

India, with 2.4 per cent of the world's surface area, accounts for 17.5 per cent of its population. Uttar Pradesh is the most populous state with roughly 200 million people. Over half the population resides in the six most populous states, of Uttar Pradesh, Maharashtra, Bihar, West Bengal, Andhra Pradesh and Madhya Pradesh.

Nagpur's population has been increasing steadily since 1971. During the decade 1971-81, the population increased to 12.71 lakh from 8.66 lakh and reported a decadal change of 3.51 lakh and registered a decadal growth of 26 per cent. In the successive decade (1981-91), the city registered decadal change of 4.06 lakh population. This was followed by 4.24 lakh decadal change during the decade 1991- 01, reporting a decadal growth of 21 per cent. As indicated in Table 1, the decade 2001-2011 had registered the lowest decadal change. Discussions revealed that during this decade, NMC has witnessed only the natural growth, and the migration population accounts for only nominal growth.⁵

TABLE 1: POPULATION TREND IN NAGPUR CITY CENSUS YEAR

<i>Census Year</i>	<i>Population (in lakh)</i>	<i>Decadal change (in lakh)</i>	<i>Growth rate (%)</i>
1971	8.66	---	----
1981	12.17	3.51	40
1991	16.22	4.06	33
2001	20.52	4.29	26
2011	24.47	3.53	19

Source: Census of India, 2011, and Centre for Railway Information System (CRIS) analysis.

Overall, the population trends in the city show a declining growth rate over the decades. The reason for this is availability of limited economic opportunities in the city. Even though Nagpur is a base for various economic activities, is home to the much-planned Multi-modal International Cargo Hub and Airport at Nagpur (MIHAN) project, and has the potential for the development of IT parks, it could not tap the advantage of the projects and the economic activities. Hence, in-migration in Nagpur due to jobs or work related reasons was negligible. The city has witnessed less in-migration during the period 2001-2011. This indicates that, perhaps, Nagpur has been unable to provide adequate employment opportunities.

As the urban population and incomes increase, many cities experience a steady decline in the quality of physical environment. One finds stressed physical infrastructure, inadequate delivery of the basic services, air and water pollution and uncollected wastes, etc. exposing the citizens to harmful pathogens and bacteria. Deteriorating urban health has become a crucial issue because of the emergence, and spurt in some of the diseases related to poor living conditions and environmental sanitation. But certainly the urbanisation is inevitable and needs to be considered as positive in national development. The urbanisation trend prominently reflects the following features:

- (i) Increasing concentration of urban population in larger cities is one of the major factors of urban India. The trend of concentration of urban population in large cities and agglomeration is getting stronger;
- (ii) Slowing down of urbanisation during 1981 -1991 and 1991-2001 as compared to 1971-1981; and
- (iii) Large variation patterns of urbanisation in various states and cities (See Table 2).

TABLE 2: PAST TREND OF GROWTH OF METRO CITIES IN INDIA

<i>Particulars</i>	<i>Year</i>		
	1981	1991	2001
Number of Metro Cities (Population one Million+)	12	23	35
Population (Million)	42	70	108
Percentage of total population	26	32	37.8

Source: Census of India.

The concentration of urban population in large cities has led to tremendous pressure on the resources like water supply, sewerage, drainage, solid waste management, transport, parks and gardens along with the open spaces. It has also led to the deterioration of quality of city environments. In several cities problems of traffic congestion, pollution, poverty slums, crimes, and social unrest are assuming alarming proportions. Inadequate drainage system in cities like Mumbai results in floods and causes huge economic losses. Moreover, grossly inadequate housing that forces more than 50 per cent population in some metropolitan cities to live in slums severely affects the quality of life and lowers the well being of urban population. There is a need to design policies and programmes to cater to the future urban sprawl. The basic objective of the 11th Five-Year Plan is to address and implement inclusive growth.⁶

All round development of local community in true sense is possible only if the plans and programmes aimed at the development of rural citizens effectively reach the end users. This necessitates the governance to be highly effective. Eight essentials of good governance, i.e. participatory, consensus oriented, accountable, transparent, responsive, effective, efficient, equitable and inclusive that follow the rule of law, have therefore, to be realised at grassroots level to make it a success. Hence, the basic foundation of good, smart governance along e-governance can ensure New Public Management (NPM) approach facing the challenges of new era at the global level. Good governance through the use of ICT and internet services is a current trend to meet the objectives of development.

Good governance is aimed at tackling three basic problems in governance which are, systemic improvement in effectiveness of government's planned expenditure on new programmes, improvement in customer satisfaction on delivery of services and means and ways to combat corruption which pose a serious threat to the government's initiatives for overall development of local population.

e-Governance, Good Governance and Smart Governance

The Concept and the Objectives

As emphasised repeatedly, the administration doesn't function in isolation but in a complex supra environmental system responding to the ever changing demands and challenges from the emerging situations in the society. The process of governance and the policy framing in the public interest calls for the micro level planning. The administrative set-up needs to be transparent and sensitive to the crucial demands of people from legal provision and human rights perspectives also.

The Government of India in its 12th Five-Year Plan 2012-2017 has put emphasis on good governance and corrective measures for the benefit of rural population:

- (a) Strengthening of local institutions; (b) Re-structuring of centrally-sponsored schemes; (c) Independent evaluation of offices; (d) Improving public system delivery; (e) Dissemination of information; and (f) Combating corruption and civil services reforms.

e-governance is in its essence, the application of Information and Communication Technology (ICT) to create a Simple, Moral, Accountable, Responsive and Transparent System (SMART). Revolution in ICT has introduced a new agenda for the wider participation of the citizens in public affairs and is based on the four pillars of the Technology, Resources, People and Processes.

The basic objectives of e-governance are to:

1. Reduce red tapism, delays and inconveniences through technology interventions;
2. To promote knowledge sharing to realise continuous improvement in the quality of the governance.

The ICT tools are emerging as important instruments towards achieving the goal of good governance:

- a) Better service delivery to citizens;
- b) Ushering in transparency and accountability;
- c) Empowering people through information;
- d) Improved efficiency within the government set-ups; and
- e) Improve interface with business and industry.

Ministry of Communication and Information Technology,⁹ Government of India has taken concrete steps for introduction of

e-governance with a vision that “e-development of India as the engine for transition into a developed nation and an empowered society”. Main objectives of the ministry are as follows:

e-Government: Providing e-infrastructure for delivery of e-services.

Department of Information Technology, Government of India
(www.mit.gov.in)

e-Industry: Promotion of electronics hardware manufacturing and IT-ITeS industry.

e-Innovation/ R&D: Providing support for creation of innovative infrastructure in emerging areas of technology.

e-Education: Providing support for development of e-Skills and Knowledge network.

e-Security: Securing India’s cyber space.

The Government of India had laid down the emphasis on implementation of e-governance in 11th Five-Year Plan with an ambitious programme called National Rural e-governance Programme (NReGP). National e-governance Plan (NeGP) had been approved by the Government of India in 2006 to suffice the objectives and goals of local development.

Demographic profile of Nagpur District and City

The Nagpur district consists of Nagpur Municipal Corporation, Municipal Councils - 14 (including Nagpur rural), Panchayat *Samitis* - 13 and *Gram Panchayats*, 778. The total area covered is around 9897 sq. km. of which Nagpur city accounts for 217.65 sq. km. (2.2%). The population of the district (as per Census of India - 2001) was 40.51 lakhs of which 20.52 lakhs (about 50%) were in Nagpur city.

Relevance and Rationale of the Study

Development of the country is enhanced by its efficient governance. e-governance issues assume greater importance in the context of Nagpur district in the background of the various challenges arising from growing urban trends, implementation of Sustainable Development Goals, creation of Smart cities and AMRUT Mission, Development of MIHAN and SEZ, Establishment of Dry Port, Public Transportation through Metro Train, Challenges of Agro based society including farmers’ suicides in large numbers, Creation of health facilities and fighting with the pandemics like Corona and other diseases, disaster

management, floods and famine apart from improving the service delivery to citizens with the well spelled functions of local government. Nagpur is emerging not only as a Metro city but also the smart city working for its holistic development on war footing for meeting the global standards. The present study will certainly contribute in bridging the lopsided development gap between comparatively backward and forward regions of Vidarbha and Western Maharashtra respectively benefiting the progressive State of Maharashtra. Further outputs of this research would help local governments to locate, identify and improve upon the prevailing lacunae and deliver the services and functions more efficiently and successfully ensuring the Smart governance.

Observations

The major issues influencing the local development of the Nagpur district and various remedial measures that can improve the performance of e-governance programmes in urban -rural areas of Nagpur district in particular to improve the present scenario are focused around:

- 1) Institutional capacity building of these bodies;
- 2) Problems related to handle the issues of e-governance;
- 3) Financial problems,/ fiscal decentralisation;
- 4) Training and capacity building of its employees and staff;
- 5) Developing positive administrative culture;
- 6) Computer literacy, and awareness of development programmes amongst the citizens;
- 7) Strengthening the local planning process;
- 8) Promoting rural industrialisation for employment generation and stopping migration;
- 9) Developing the clusters with backward forward linkages;
- 10) Restructuring and redesigning 73rd and 74th Constitutional Amendment Acts (CAAs) to suit the changing needs and scenario;
- 11) Issues of efficient core service delivery of the municipal nature; and
- 12) Developing digital governance and professional work culture.

It has been observed that the facilities available and the issues mentioned above are being better handled and managed in urban government in comparison to that of rural government.

There is an acute need for developing industries so as to make the rural areas self-reliant, self-sustaining, providing the job opportunities, employment and other livelihood sources so that migration could be reasonably controlled. It is worth mentioning here that despite many standard reputed institutions of learning, the talented youth is forced to leave his place in search of appropriate job. Some of the findings of this study are based upon our joint research work with Bharti Polke conducted in 2014-15 for her Ph.D degree. The situation is much the same since then.

No doubt the development is moving ahead but at the snail's pace and needs to be expedited. For which the ICT and use of technology, e-governance play a crucial catalytic role, imparting transparency, corruption-free deals, contributing not only to the city but to Sustainable Development Goals (SDGs). But at the same time it is also not so easy to promote digital culture, implement the e-governance mode and paperless administration because of the various problems related to digital governance in urban local bodies.

Promoting and Facilitating Rural Industrialisation for the Development

In the background of Mahatma Gandhi's philosophy of self-reliance, the village development through sustenance assumes greater importance. Rural economy depends mainly upon agriculture and allied projects such as fishing, horticulture, animal husbandry, poultries and dairies, etc. Following are the major requirements of Vidharbha which needs to be fulfilled by the local bodies.

- (i) Matching growth of infrastructure in city;
- (ii) Satisfactory, efficient service delivery equivocally / uniformly throughout the city;
- (iii) Latest and advanced technical equipments, techniques and technologies;
- (iv) Promotion of rural industrialisation programmes;
- (v) Development of clusters and peri-urban areas making them self-sustainable and lucrative, so as to minimise the migration; and
- (vi) Inclusive, standard quality education and job opportunities.

All these needs have to be met by:

- (i) Political willpower, vision and flexible bureaucracy;

- (ii) Adequate resources;
- (iii) Advanced, sound palatable technologies;
- (iv) Administrative work culture;
- (v) Capacity building of the institutions for Smart Urban Governance;
- (vi) Relooking at the various, statutory and legal provisions, structure of the Institutions which have become obsolete, outdated, irrelevant and unsuitable to the current needs and requirements and redesigning/restructuring them in the present context meeting the purposes and challenges of 21st Century. The renewed Panchayati Raj Institutions are looked upon as an effective instrument of rural industrialisation and have become synonyms with each other. It is with this great expectation PRIs have been given exhaustive powers and position in the governance. The very reference of rural development, indicates solid linkage between the Panchayati Raj Institutions and public participation. Hence, all activities including that of industrial nature would fall within the preview of Panchayati Raj Administration.

Urban Governance and e-governance

Under urban governance sector, the need for augmenting the newly developed system by providing the required hardware and system was suggested by NMC officials. Also, in order to improve the coverage of the services and ensure that citizens get the most of the benefits from the recently implemented e-governance project, need of developing kiosks and facilitation centres was also identified.

Restructure the Fiscal Policies and Decentralisation: Strengthen the Finances of Local Bodies

For intertwining all these interacting factors, e-governance is the most suitable and essential instrument to meet the need of the hour. But all these factors ultimately revolve about strong, back bone of fiscal policies, stable finances, timely availability, sanction, release of disbursement in the matching proportion of grants and GST /CSTs in addition to their own resources by way of taxes collection through these local government organisations. It is necessary to re-emphasise that local bodies have always been witnessing financial crunches on account of the paucity of funds with their meagre resources, insufficient grants, budgetary allocations and depend mainly on the property taxes, inadequate grants from the government. The policy makers and

the leadership should focus upon this one point agenda to augment financial arrangements and restructure the organisation to expedite the development of the Nagpur District through the use of efficient ICT and latest technologies.

As expressed in the above mentioned elaborations, fiscal decentralisation, policies, devolution of power and functions should be supported with the appropriate finances, grants, taxes etc. to support and carry on the functions as mentioned in 73rd and 74th Amendment Acts respectively. Finance Commission should reconsider and enhance the grants taking into the consideration the new challenges and tasks ahead. The property tax structure in the concerned local area should also be redesigned and enhanced, system of tax collection should be improved, share in GST / CST should be transferred to them in time. This will certainly eliminate the mismatch between functions mentioned in the 11th and 12th Schedule.

Financial Status as Backbone of the System

It has been observed that the major constraint for the development work including that of digital governance, is shortage of funds and their timely availability. It is worthwhile to note the following points in this context:

Due to the economic slowdown in the country, declining construction activities, decreasing property tax collection, insufficient GST share and the wide gap created in the various sources of taxes to the local bodies most of the Municipal Corporations including Nagpur, Mumbai, Pune are facing financial bankruptcy. Nagpur Municipal Corporation is facing large deficit in their income. In the approved NMC budget of 2900 crore the expected income of NMC was 2900 crore against which it could collect only 1688 crore up to November 2020.⁷ Further as per the conventions the percentage of administrative expenditure allowed is maximum 35 per cent but due to low income, it is going beyond 50 per cent expenditure, hence the expenditure on the basic infrastructural activities is remarkably going down and the lack of basic facilities is felt acutely while the population keeps growing. The basic source of income of NMC is property and water taxes but it could collect barely 40 per cent of the target. It is worth mentioning here that cash strapped NMC has miserably failed to raise and spruce its potential earning source on account of the lapses by the e-governance cell because of which publication of assessment registers was delayed too much. Resultantly, the property tax demands also lagged behind the schedule creating the shortfall of the funds. The standing committee of NMC had the target of 509 crore to the tax department but they could not complete

even the 40 per cent tax collection. Additionally the controversies were created against taxes collected from the property owners who dragged NMC to the High Court.⁸ NMC is debt ridden with 529 crore amount, as mentioned in the white paper. NMC has to contribute the amount of 1994.67 crore⁹ towards its share for Smart City project, AMRUT MISSION, Bhandewadi STP project and transport project for the further development. 92.96 crore is its monthly establishment expenditure.

As against the approved budget of 2266.97 crore in 2017-18 out of the expected property tax collection of 392.19 crore, NMC could raise only 138.75 crore, resultantly the development work got stalled and remained pending. Smart City Mission is to be completed by June 2021,¹⁰ out of 21 related projects only two, i.e. KIOSKS and Safe and Smart City projects have been completed and the funds of 254 crore are lying unutilised. The compensation for the land acquired for the project has been paid to majority of land owners.¹¹ Outstanding dues of 600 crore from the previous year have been carried further resulting in the zoomed figure of 850 crore at the start of the financial year 2019-2020. So far NMC could collect 128.76 crore till December 14, 2020 as against the estimated figure of 223 crore. It is an extremely difficult task before NMC to net 810 crore property tax till this year ending.

TABLE 3

S.No.	Project wise Long Range Payables of NMC (3-5 years) in crore	As on 25 th January 2018 Approved Budget 2017-18 : 2266.97 crore
1.	Smart City Project 25% : 658.78	Electricity production from the solid waste : 90
2.	Amrut Mission 50% : 113.35	Share in NMRCL : 73
3.	Transport Project : 108	Share in SRA Project : 114.28
4.	Hudkeshwar-Narsala Development project 20% : 25	LED Project (84 Instalments) 270.28 annual exp. 38.64
5.	Bhandewadi STP Project : 130	
6.	Solid Waste Management project 75% : 211.78	Grand Total : 1994.67 crore

Source: Maharashtra Times, Nagpur Mahanagar, dated 25th January, 2018. pp. 3.

NMC finances have been hit because of Covid-19 pandemic. As a result only 1393 crore revenue receipts were generated up to December 2020, whereas it was Rs.1688 crore in December 2019. During this period government grant was Rs.200 crore whereas last year in 2019 it was 396 crore. Therefore not only development works are stalled but the routine and duty bound matters under Section 63 of NMC Act like repair of

roads, installation of new electric lights, laying new sewerage lines, fixing of covers on the chambers, etc. are also suffering.

Everybody, including all elected representatives, standing committee members, chairman, etc. have been harping upon this financial crunch since long, and asserting about raising a new revenue model and introduce the reforms in NMC which will enhance and improve the taxes collection through the dues of mobile towers, advertisement. hoardings, vendors, etc. But till now nothing has been done in this context.

Capital Investment Plan (CIP) : For Capacity Building of NMC

Based on the suggestions provided by NMC officials, strengthening the existing e – governance system, capacity building and strengthening of NMC administrative system have been identified. For all 62 e-governance application modules have been developed and different MIS reports are generated on the dashboard. The Capital Investment Plan has been presented in Table 4.

TABLE 4: URBAN GOVERNANCE – CAPITAL INVESTMENT PLAN PROJECT

<i>Urban Governance – Capital Investment Plan Project</i>	<i>Estimated cost in Rs. crore</i>	
A	Strengthening existing e-governance system	45.0
B	Capacity building	102.9
C	Strengthening of the NMC administrative system	12.5
Total investment (2041)	160.4	
Investment envisaged for 2021	80.2	

Project Details : Urban Governance

Based on CIP as summarised in the above section, key projects and project details for urban governance are presented in Table 5.

Develop Smart Villages in the Vicinity around Nagpur City

Identifying the growing population with the spread of city area of Nagpur to the tune of more than 25 km, it becomes the cause of worry for the policy makers, administrators, planners and the citizens to cater to the huge chunk of population imparting them good quality life. True to the spirit of *Aatm Nirbhar Bharat*, it is suggested that along with the smart cities, smart villages should also be developed. The newly emerged villages in the vicinity of industrial areas like MIHAN, Hingna, Butibori, Kamptee Road, etc. industrial areas can be clustered group wise

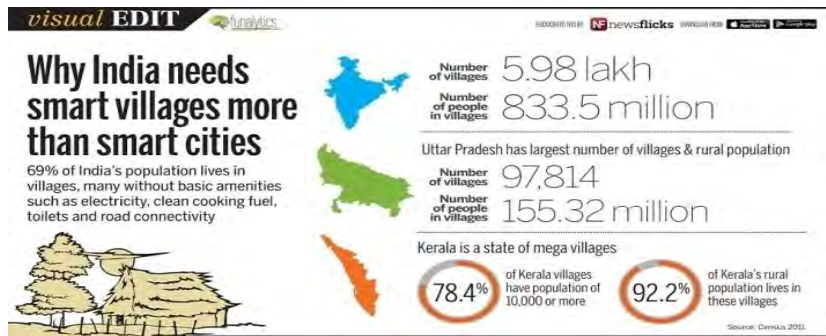
TABLE 5

Project details Components		Project Details
A	Strengthening existing e-governance system	• Various capacity building needs and requirements like indoor and outdoor trainings, exposure visits, technical studies, etc. have been identified • Capacity building requirement for NMC and needed investment has been considered for next 30 years.
B	Capacity building	• Various capacity building needs and requirements like indoor and outdoor trainings, exposure visits, technical studies, etc. have been identified • Capacity building requirement for NMC and needed investment has been considered for next 30 years.
C	Strengthening of the NMC administrative system	• Various projects for strengthening administrative system have been identified by NMC.

Source: City Development Plan Nagpur 2041.Final Report Capacity Building for Urban Development Project.

establishing smart villages like that of South Korea’s Seoul Metropolitan Government (SMG) which has developed various combined platforms providing solutions to the multiple issues of citizenry by sharing city news, enabling two-way communication between the government and citizens using social media services.

Fig. 1



Source: <http://www.dailymail.co.uk/indiahome/indianews/article2791612/visual-edit-india-needs-smart-vil;ages-smart-cites.html>

The aim of the Smart Village is to provide an integrated sustainable ecosystem with strong back up of digital technologies bringing easy access to the government services, diversified job opportunities, technology-based micro enterprises, cashless transactions, ATMs, IT based classrooms, etc. One such Smart Project sponsored by Nokia is coming up to develop 10 such villages in each state. The 1st phase of the project announced in May 2018 has pilot rolled down in Haryana and Tamil Nadu which plan to digitalise villages by developing them into hubs to provide them connectivity and enable the applications in the domain of healthcare, education, entertainment, digital finance and governance.¹²

Creation and Maintenance of Separate IT wing in NMC and ZP

The world is passing through technological revolution with information technology and a communication media occupying a centre stage. This is a great transition from traditional pattern of administration to New Public Administration system of governance. Though significantly late, India is marching ahead in the field of IT as never before and set to surpass all by clearing the deficits in near future. But it is yet to percolate to the last man at the grassroots level. As most of the schemes and programmes are implemented by these local government bodies, there is an acute need for e-governance-friendly strong network which will protect common citizens' interests. It is suggested that the wide network of kiosks like that of PCOs should be established throughout the district, well-connected to the head office and its branches even in remote areas, where anybody can go and get the services free of cost. This itself will cost huge expenditure, human resources, and well-advanced technology ensuring the good connectivity and a separate IT cell which would be focusing only on these aspects.

Presently there is no separate wing in these offices. Only a small cell consisting of three persons are working in the office of NMC. An independent separate, well-equipped office with appropriately qualified, competent, meritorious and well-trained staff in sufficient numbers should be created which will also impart the regular training to the staff and also handle awareness generation programmes for the commoners. This cell should be given maximum possible autonomy to decide upon the technical matters.

Problems regarding Digital Governance issues in Urban Local Bodies

Reluctance / unwillingness of the citizens for online financial transactions is another impediment to the e-governance process.

Training and capacity building of the staff with the desired and necessary standards at affordable cost, is the need of the hour. The Enterprise Resource Planning (ERP)'s integrated system needs to be rebuilt to ascertain smart governance has been developed by TCS Pune and e-Gov. Foundation, Bangalore in which earlier 62 modules have been redesigned and converted into 38 modules for the effective integration with Smart Cities and G2C -NMC/ G2C-G2G.

Sharing the Common Resources

In Nagpur many ambitious projects like Smart City, AMRUT MISSION, MIHAN along with the local government institutions have adopted the e-governance mode as a way of their routine administrative matters. It is suggested rather than each organisation spending the large amount to streamline the system individually, there should be one common platform for all of them for raising the necessary infrastructure, technologies, other resources and share them jointly as e-governance is inevitable and common essential facility for local bodies. Similarly the Smart City Centre and City Operation Centre (COC) meant for vigilance over the city, should be merged into one unit sharing the common resources jointly.

Focused efforts by the Rural Local Bodies to develop the Peri-urban areas as clusters and agglomerations

About the newly emerged 721 villages on the periphery of Nagpur, city poses serious consideration, as on today not much has been done by NMC and they have no clear-cut demarcated status. Only villages falling under Hudkeshwar and Narsala ward have been included in the city but others are still awaiting their term. However, the Shyamaprasad Mukherji Rurban Mission Scheme (SPMRM) of the Central Government National Rurban Mission (NrUM) under the Ministry of Rural Development is planning to develop 300 peri-urban areas as clusters, identified in rural India covering 35 States and UTs with the objective of bridging rural-urban divide and Nagpur is one of them. The District should take the benefits of this Institutional arrangement to implement the Mission in accordance with various Mission guidelines and frameworks.

Lack of Coordination between Urban-Rural Local Government Institutions and DPDC

The offices of the NMC and Zilla Parishad are located within the distance of hardly two km, but not worth mentionable interactions, networking and the common efforts to work in coordination for

district development issues, plans, and implementation are observed. Further there is also a lack of coordination with the District Planning Development Council (DPDC) where the Planning for the entire district is done in consonance with the local government bodies including the financial allotments reviews, reallocation of unspent grants, etc.

Mismatch between Functions Assigned and the Available Resources

Globally the role of the local government is very important in ensuring the public access to the essential goods and basic services, including most marginalised communities and the citizens. Many of the United Nations Sustainable Development Goals have targets that are directly or indirectly related to the responsibilities of local actors, observed UNICEF (2019).¹³

The Constitution of India provides functional domain through Schedule XII, of CAA under Article 243 G indicates list of 18 functions assigned to municipalities and have been classified by 11th-Finance Commission as, Core Functions, Developmental Functions, Welfare Functions, and Agency Functions. As observed by the various Committees and Commissions, local government of Nagpur also remains in fiscal stress as a routine feature.

On the one hand these bodies have very limited fiscal autonomy, on the other hand, the citizens' expectations to get the quality services increase with the passage of time. As these institutions remain stressed and dependent for their fiscal devolutions, it is pertinent to understand how their fiscal capacity could be improved upon so that they may augment their own resources to discharge their responsibilities. In order to perform these tasks the municipal government has to be financially sound with commensurate amount of powers for raising the resources. While the Constitution has specified and listed expenditure responsibilities it does not provide clear regime taxes and revenue resources of the municipal Government. As such it is clearly observed that there is a mismatch of the resources and responsibilities because of which most of the times it fails to deliver the expected results. Since the CAA 1992 does not empower them with any defined own sources of finance they are dependent at rationality of their respective states. Strengthening these local government bodies in terms of their fiscal capacity it is a very critical issue in discharging their mandated responsibilities, keeping in mind the changing situations.

With the rapid urbanisation process, the demographic, technological, socio-economic, financial, environmental challenges for the growing cities are posing the tough challenges before the government. The

responsibilities for managing these cities, are divided between the Centre, state, and local government for the practical purposes, the matching well coordinated governance at the institutional levels is still not visible. Even though 74th Constitutional Amendment has strengthened the Urban Local Bodies (ULBs) but its implementation and the enforcement of the XIIth Schedule tasks, effective decentralisation, financial dependence upon the State and Central bodies are still the cause of concern. Functional domain of ULGs is not updated as per Schedule XIIth of the Constitution. Ever since the implementation of 74th Amendment practically much has been written about the failures of the State government to implement the implied provisions during last 27 years but now with Smart cities project the situation is all the more unsatisfactory owing to the creation of another independent development body with the overlapping of the functions and powers of its elected representatives in particular. "The implementation failure" narratives tend to focus upon how the local governments are financially bound and do not have the administrative capacity to carry out its functions".¹⁴

Future Pathways

While the 74th Amendment has become a pivotal foundation for civic activism in many cities, it has certain inherent limitations as mentioned in the earlier elaborations. As the cities struggle to meet the basic needs of their inhabitants, there is an urgent need to re-examine the existing modes of organising the power in urban India. Unlike the 73rd Amendment which provides for three levels of Panchayats (village, *taluk* and district level) power in urban area is concentrated in a single municipal body, whether it is Municipal Corporation, Municipal Council or Nagar Parishad. However Nagpur city has grown exponentially over the last 25 years with crossing 10 million population mark (Presently about 46,53,570 lakh population after the last census in 2011).¹⁵ There is an acute need for rethinking about the present model of urban governance that vests power in a single authority of Nagpur Municipal Corporation neglecting the other units at the appropriate levels. While urban governance reforms can take multiple shapes, they must be grounded in the local government's political empowerment which will further enhance local democratic accountability.

Footnotes

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NOTES FOR CONTRIBUTORS

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