

CHAPTER - 17

DEVELOPMENT OF BENGALURU METROPOLITAN REGION



Summary

Bengaluru, which grew at a very fast pace from being a small town to a mega city has performed very well economically and therefore also in creating economic opportunities. It has clearly emerged as the most attractive city for startup companies and a favourite destination for tech-based capital investments. Bangalore Metropolitan Region (BMR) is one of the largest among the Metropolitan Regions in the country covering the entire Bangalore Urban, Bangalore Rural and Ramanagara districts measuring 8,005 sq. kilometres. Occupying less than 2% of the land area, these three districts contributed 37% of the State Domestic Product of Karnataka in 2015-16. The city has emerged as the number one city in the Ease of Living Index based ranking, primarily because of its performance on the economic front. However, this is not equally matched by its performance in terms of living conditions, especially for the poor, and in addressing climate change concerns, especially in terms of systemic and institutional reforms to make the city more inclusive and sustainable. Nevertheless, the potential to undertake such reforms is high and the real challenge is to make those happen through a right mix of policy choices and budget allocations.

A perusal of data and other forms of evidence point to the fact that while the city has been multicultural and inclusive when it comes to art, culture, food and educational institutions, the same cannot be said in the context of ensuring everyone's, especially the poor's, access to decent living through housing, water, sanitation and health care facilities. Relatively, its performance has been better in access to education and food. Multiplicity of institutions, including elected third tier municipal bodies and parastatals, that control resources and provide these services with overlapping functions and jurisdictions leads to diffused accountability and inefficient use of public resources.

Political economy plays a role as political representatives at both the levels of state government and local government have high stakes in this process. An institutional reform that addresses the issue of duplicity and parallel functioning in combination with solutions that pay attention to both social and technological factors would help Bengaluru better its performance on these counts as well. Such reforms will also release public resources simply by making delivery more efficient. In addition, the city needs to adopt additional taxation policies that incentivise use of equitable and sustainable practices. Some examples could be a progressive pricing of water, electricity and waste management linked with property zones and housing types or levying a tax on vacant houses beyond a stipulated time period. Private sector that has benefitted by using public policies and investments need to be made legally accountable to pay for better services and living conditions to those who they employ. Strengthening democratic practices by creating space for civil society and grassroot organisations in the decision-making as well delivery processes will also helpful in making the city more inclusive and sustainable.

17.1 Introduction: what the name of Bengaluru invokes

Bengaluru, the new official name of the Bangalore city, is an important reminder of the fact that Bangalore was indeed an 'uru' or a village to begin with and remained a small cantonment town, located on a high elevation with moderate climate, till about

1980. Since then, the population growth rate for the city has been very high and as a result it overtook two other south Indian cities, Chennai and Hyderabad, which unlike Bengaluru had respectively been a port city and a major princely state capital city for several hundred years.² This growth is often attributed to the emergence of Information Technology (IT) industry though that is telling only the half-truth, as we would discover later in this chapter.

Bengaluru has many names and all of those define one or the other distinguishing feature of the city: IT capital of India, silicon-valley of India, start-up capital and science city of the country, city of lakes, city of gardens, city of migrants – these are all the names that Bengaluru has earned for itself. The presence of sprawling nearly 100 square kilometre Lalbagh botanical garden founded by Hyder Ali in the 18th century in the midst of the city gives the landscape of the city a distinct character. The city boasts of a number of other gardens and lakes. Interestingly, as the newer names of IT city and Silicon-valley started getting bestowed upon the city, it remained less and less of a ‘city of gardens’ or a ‘land of lakes’ raising issues of environmental sustainability and also the very liveability of this fast-growing urban space. Once known to have more than 1000 lakes, it clearly had nearly 300 lakes as late as 1970s but the number now has dwindled to less than 200. While growing urbanisation is indeed inevitable, it is not necessary that it is always coupled with environmental degradation, congestion and sub-human living conditions for the poor or dispossessed. It is possible to build an inclusive and sustainable metropolitan-city but it calls for overt commitment, clear policy and planning, and concerted efforts on the part of both the government and citizens.

Like most Indian cities, Bengaluru also has grown in different directions and it is not always simple to define the city boundaries. The Bangalore Metropolitan Region Development Authority (BMRDA) defines the Bangalore Metropolitan Region (BMR) as ‘one of the largest among the Metropolitan Regions in the country covering the entire Bangalore Urban, Bangalore Rural and Ramanagara districts measuring 8,005 sq. kilometres.’ Its population is estimated to have touched 13 million. In this chapter, we discuss the aspect of living in Bengaluru city in its entirety followed by looking at its economy and governance, leading to what the implications could be for the impending annual state budget. We draw evidence from large datasets, as appropriate, as well as from small studies and voices, and analyse these from the perspective of the vision for an inclusive and sustainable Bengaluru.

17.2 Living in Bengaluru

The city ranks first in a recently released Ease of Living Index (EOLI) among 49 million plus cities.³ Several urban development schemes exist both with the support of central government and respective state government initiatives.⁴ In some ways, this index has attempted to see how these translate into the ease of living, measured through three pillars of quality of life, economic abilities and sustainability, and adding to that the scores from a Citizen Perception Survey. Bengaluru, with a score of only 66.70 as against

2 Introduction - Bangalore Metropolitan Region Development Authority(BMRDA) (karnataka.gov.in)

3 https://livabilitystore175634-prod.s3.amazonaws.com/public/docs/Ease_of_Living_Report.pdf

4 These schemes include Deen Dayal Antyodaya Yojana National Urban Livelihood Mission (DAY-NULM), Swachh Bharat Mission-Urban (SBM-U), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Pradhan Mantri Awas Yojana Urban (PMAY-U), Smart Cities Mission (SCM), Schemes/Projects for Urban Transport, and the Heritage City Development and Augmentation Yojana (HRIDAY). (Source: EoLI report)

a potential 100 manages to top the list in the entire country primarily because of its high score in economic abilities and sustainability, but also because of being one of the most consistent on all four counts, including quality of life and citizen perception, as compared to others (**Table 17.1**). However, it is also clear that the city has potential of improving its scores for quality of life and sustainability where cities with much lesser score in economic abilities have done better. Better performance on those counts is likely to improve the citizen perception as well.

Table 17.1: Scores and Ranking in the Ease of Living Index (EOLI) for Mega Indian cities

	Ease of Living Index (Combined)		Quality of Life (35% W)		Economic Abilities (15% W)		Sustainability (20% W)		Citizen Perception (30% W)	
	S	R	S	R	S	R	S	R	S	R
Bengaluru	66.70	1	55.67	12	78.82	1	59.97	13	78.00	42
Chennai	62.61	4	60.84	1	34.16	6	57.05	22	82.60	15
Hyderabad	55.40	24	51.28	34	30.05	11	58.69	17	70.70	90
Delhi	57.56	13	51.22	35	50.73	2	56.02	28	69.40	95
Greater Mumbai	58.23	10	51.12	36	32.12	8	60.74	11	77.90	44

W: Weightage, S: Score, R, Ranking

The quality of life here includes aspects of education, health, housing, shelter, water, sanitation, mobility, safety and security while economic ability looks at at the level of economic development and economic opportunities; sustainability includes environment, green spaces and buildings, energy consumption and city resilience. The chapter examines some of these aspects afresh in the following paragraphs. However, before that we discuss another index, Municipal Performance Index (MPI), where Bangalore with a score of 45 stands 31 among 51 large cities (Table 17.2). It is important to understand this contrast between EOLI and MPI to be able to identify areas that need attention.

In comparison to other mega Indian city corporations, Bengaluru has performed worse on many counts including technology, planning and finance while there is scope for improvement in services and governance. The adoption of technology for delivery of services is subject to digital literacy and access, and hence, a low ranking does not speak well of the IT city. However, more worrying are the aspects of finance and planning, where the city stands in the bottom half of ranking among the group of 51. These aspects are linked with governance structure and capacities, and the chapter discusses those as well.

Table 17.2: Scores and Ranking in the Municipal Performance Index (MPI) for Mega Indian cities

	MPI (Combined)		Services (30% W)		Finance (20% W)		Technology (15% W)		Urban Planning (15% W)		Governance (20% W)	
	S	R	S	R	S	R	S	R	S	R	S	R
Bengaluru	45.02	31	56	25	47.61	40	26.21	25	30.41	36	51.01	18
Chennai	48.74	18	59.39	17	66.00	3	29.97	18	26.01	44	46.63	25
Hyderabad	49.08	17	46.96	45	59.81	12	33.63	13	45.84	17	55.56	9
South Delhi	46.00	28	65.57	4	57.24	18	16.34	45	36.20	28	35.02	44
North Delhi	37.66	48	51.68	35	45.43	44	14.71	47	33.06	32	29.53	48
East Delhi	40.79	42	48.63	39	52.22	28	16.91	43	28.42	39	44.80	30
Greater Mumbai	54.36	8	56.95	21	44.02	45	34.67	11	71.49	2	62.74	3

W: Weightage, S: Score, R, Ranking

Notes:

1. Since Delhi has been trifurcated as South Delhi Municipal Corporation, North Delhi Municipal Corporation and East Delhi Municipal Corporation as municipalities of million + population, the Table includes all three.
2. Components of the indices

Services	Education, Health, Water and Waste Water, SWM & Sanitation , Registration & Permits, Infrastructure
Finances	Revenue Management, Expenditure Management, Fiscal Responsibility, Fiscal Decentralization
Technology	Digital Governance, Digital Access, Digital Literacy
Urban Planning	Plan Preparation, Plan Implementation, Plan Enforcement
Governance	Transparency & Accountability, Human Resources, Participation, Effectiveness

Bengaluru stands 13th in yet another ranking based on the first Sustainable Development Goals (SDG) Urban Index recently release by the Niti Aayog.⁵ The index categorises cities in four classes of achiever, frontrunner, performer and aspirant in descending order of performance. In line with its performance for the economic abilities pillar for the EOIL, Bengaluru has emerged as the only city in the country labelled as a 'frontrunner' in providing decent jobs and ensuring economic growth. But what is distressing is that this does not convert itself into well-being as the city is merely an aspirant when it comes to zero-hunger. This is despite the fact that Bangalore Urban has the lowest headcount ratio (2.31%) for multidimensional poverty among all the districts of Karnataka. This could perhaps be explained to some extent by the fact that Bangalore Rural and Ramanagara, the other two constituent districts of Bangalore Metropolitan area have high headcount ratios (8.39% and 8.77% respectively).⁶ This chapter tries to understand these contradictions and contrasts, and to identify ways of converting challenges into potentials. Here, in this

⁵ <https://sdgindiaindex.niti.gov.in/urban/#/ranking>

⁶ https://www.niti.gov.in/sites/default/files/2021-11/National_MPI_India-11242021.pdf (page110)

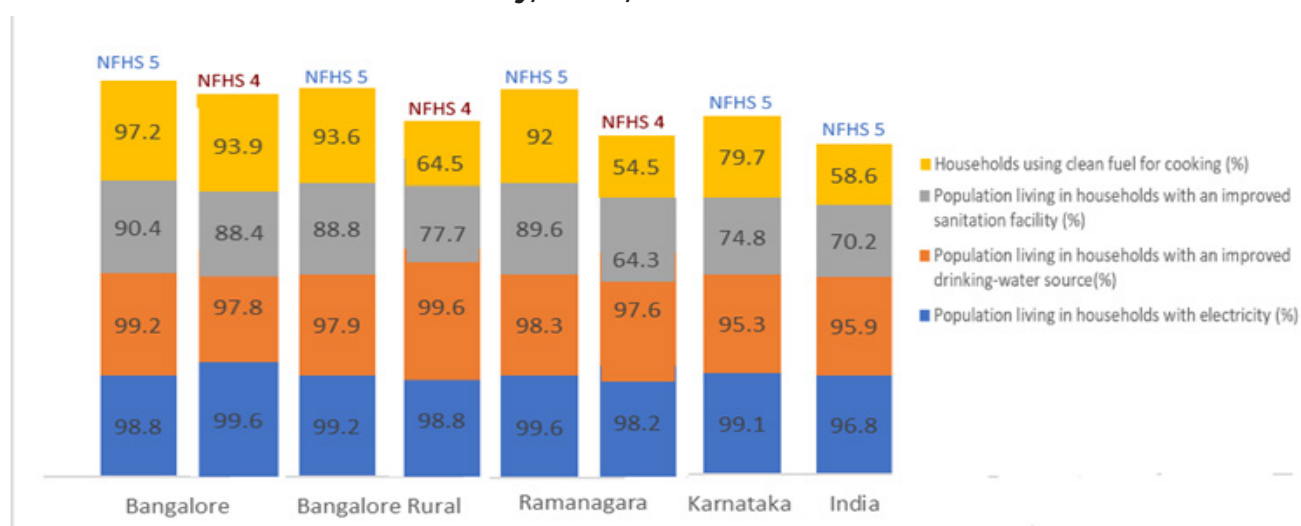
section, next, we try to understand and explore some of the constituents of these indices in detail using evidence from a variety of sources.

17.2.1 Housing and shelter

Housing is considered one of the most basic needs. The proportion of urban population living in slums and informal settlements are taken as one of the indicators for inadequate housing. Although the estimates vary, about 30% of the city's population lived in slums according to the Census of India, 2011. According to Karnataka Slum Development Board figures, 597 out of a total 2804, i.e., more than one-fifth of the total slum areas in state are in Bangalore City. All of these are not notified; 2397 slums are notified in the State and out of which 387 slums are notified in Bangalore City alone under the Karnataka Slum Areas (Improvement and Clearance) Act 1973. The Board estimates the slum population to be about 23% of the State's urban population.⁷ The SDG urban index reports Bengaluru having only about 8.39% of its population living in slums. This means that the proportion of population living in slums is estimated to have gone down in the city.

The access to basic facilities in notified slums tend to be better than unnotified ones. Basic amenities like water supply and electricity have a better coverage in the Bangalore Urban district than the rural districts. There is predominant use of LPG as the cooking fuel in the Bangalore Urban district whereas in the rural districts, firewood is being widely used for cooking (BMRDA, 2016). The recently released National Family Health Survey (NFHS 5) report concurs (**Figure 17.1**) Bengaluru's score for Housing and Shelter⁸ at around 85 as against a possible 100 in the EOLI is more on account of lower coverage of PMAY rather than slum population or electricity access (Ease of Living Index Report, 2020). This kind of statistics, however, can also be misleading, as using piped water or electricity can be

Figure 17.1: Living condition in Bangalore Metropolitan Region: electricity, water, sanitation and fuel



Source: National Family Health Survey 5, District Fact Sheets of Bangalore, Bangalore Rural and Ramanagara, Karnataka Fact Sheet and India Fact Sheet

<https://ksdb.karnataka.gov.in/page/Slums/Abstract+Details+Of+Slums/en>

Scores of Housing and Shelter = $(0.2 \times \text{Value of households with electrical connections} + 0.2 \times \text{Value of average length of electrical interruptions} + 0.2 \times \text{Value of beneficiaries Under PMAY} + 0.2 \times \text{Value of Slum Population})$

on account of shared sources, and also often intermittent and unreliable services, and therefore not indicator of living condition. For instance, a study on slum-dwellers in the city showed that more than 70 percent of the families in slums live in debt, and nearly 80 percent of are from the socio-economically deprived Scheduled Caste and Scheduled Tribe communities (Roy, D. et.al, 2018)

The poor also do not live only in slums.⁹ This is especially true for fast growing cities with high supply of migrant labourers working for informal sectors including emergent industries, to serve ever growing middle-class population and related public and private services, who create concentrics around the areas where the work-opportunities exist. The available evidence indicates towards poor living conditions of migrant labourers, especially the new immigrants. A recent study based on a survey of 500 workers in Bengaluru reported that they lived in shared spaces and half of those described them as congested (many just being a covered shed) with 17% using open space for toilets and 51% using shared or public toilets (Jha, et al, 2022; Forthcoming).

The issue of housing is linked with informality of the economy as well as how those planning a city view the physical space vis-à-vis all kinds of population that inhabit or are likely to inhabit the city. Bengaluru's revised structural plan for 2031, although shelved as a plan, provides good information and suggestions, and in the context of decongesting the central Bengaluru, recognises the fact that the present housing product mix generally offered by the new integrated townships range covers only high to upper middle- income group, while more than 80% of the estimated shortage of 2.56 million housing units by 2031 lies for economically weaker and low-income groups (BMRDA, 2016). This inequality also gets revealed by the fact that though the city faces the issue of inadequate housing for the poor, it is also turning into a city of empty houses on the other hand, especially since the arrival of Covid 19.¹⁰ Lockdowns, downturn of the economy, job losses and income losses – all have made thousands of individuals and families from cities including Bengaluru to move back to their natives to save rentals. Many IT and service based industrial houses have opted for long-term Work from Home policy, which has also translated into empty houses. However, it is important to remember that although it exacerbated due to Covid, 'empty houses' is not a new phenomenon for Indian cities.¹¹ Arguments for not only adequate and affordable but also viable housing for the poor to allow them to live in proximity to their livelihoods are strong and worth noting (Bhan, 2020).

The issue of housing is closely and deeply related with poverty and low incomes, living condition in general including access to services such as water, sanitation, education, health and transportation. However, the situation is even worse for a category of people who are often forgotten from the policy radar is that of homeless. Homeless are present in the city of Bengaluru as one of the most-deprived sections; the absence of shelter means absence of an address, which also means absence of all entitlements including the all-important right to vote as a citizen (King, et al, 2015).

9 According to some reports, the proportion of those living in 'slums' is nearly 20-25% of the city's population if one takes notified slums, (the government is responsible for providing some basic services to notified slums), non-notified slums, temporary squatter colonies, pavements and railway stations or labour camps that are temporary shelters provided by builders to migrant construction workers.

10 <https://www.deccanherald.com/city/top-bengaluru-stories/a-city-of-empty-houses-how-work-from-home-job-losses-hit-bengalurus-residential-rentals-934563.html>

11 Millions of empty homes, but migrants to Indian cities cannot rent them | Reuters

17.2.2 Water

Bengaluru scored less than average, which itself was a poor score of 32.7 on water, sanitation and waste management in the EOLI. This included aspects of share of households having piped water supply, connection to networked drainage and stormwater sewerage networks. This is indeed an undesirable feature for a city that got its pipeline for water supply as early as 1890s.¹² However, as is obvious, the later developments and expansions in the area of water, sanitation and waste management, which is also a major area of concern for the city, has not been able to match the fast pace of urbanisation and population growth. The 2011 census figures show that 77% houses used taps, 13% used tube well, 6% used handpump, 3% used well and 1% used other means as the main source of drinking water in Bangalore urban district as compared to 70%, 10%, 17%, 2% & 1% for Bangalore rural district and 76%, 12%, 8%, 3% and 1% for the entire metropolitan region respectively. But 61% had the location of water source within household premises, 28% near their premises and 11% away from their household premises in Bangalore urban district as compared to only 19%, 60% and 21% in Bangalore Rural district and 52%, 35% and 13% for the entire BMR (BMRDA, 2016, page 339).

The Bangalore Water Supply and Sewerage Board (BWSSB) was created in 1964 as an autonomous body responsible for provisioning of water supply and sanitation utilities for the Bruhat Bengaluru Mahanagara Palike (BBMP) area covering about 800 sq. km. Since 1974, the efforts to bring the Cauvery water to quench the city's thirst started with the Cauvery Water Supply Scheme-stage 1 which has now reached stage 4. Water drawing up to 1450 MLD (million litres daily) is being pumped from a distance of 120 km and against the gravity of over 500 m (from TK Halli station which is largest in Asia). The Cauvery stage 5 is in process and is expected to complete by 2022-23 which would add 750 MLD to the existing water supply. The pumping costs are very high amounting to about Rs. 40- 45 crore every month. The water supply of BBMP also includes about 400 MLD drawn from over 4 lakh borewells in the city.

The current shortfall in the water supply as estimated by BWSSB (2021) 650 MLD which is likely to go up to 1450 MLD by 2031. The Greater Bengaluru comprising 1250 KM receiving an average annual rainfall of 750 mm per year is expected to yield about 33 TMC of water. The use of water from the vast network of stormwater drains, together with rejuvenation of lakes from the STPs which gets diluted with rainwater help in recharging the ground water. However, Bengaluru and other major cities, have much poorer network of stormwater drainage system as compared to many smaller cities, as per the EOLI report. Added to this issue is the fact that older infrastructures are also in dire need of attention for maintenance and rejuvenation.

The piped treated water supply for the city started from drawing water from Hessarghatta lake in 1896 when city's population touched 2.5 lakhs, which was further augmented from Thippagondanahalli reservoir both of which were connected to the Arkavathi river basin which has now over years almost dried up and environmentalists are screaming for rejuvenation of the same. There has been a proposal of bringing Sharavathi river water to Bengaluru which is a 400 km away in the Western Ghats and have faced protests on ecological grounds.¹³ Ecological concerns and equitable distribution issues are critical and cannot be ignored while planning for the city's water supply. With no perennial

¹² Going strong: Bengaluru's first piped water system (deccanherald.com)

¹³ <https://bengaluru.citizenmatters.in/thirsty-city-tantrums-bengalurus-thirst-felt-400km-away-35859>

sources of water, the city's development has been totally driven by a reliance on the nearest perennial sources and the situation has become increasingly critical with the uncontrolled overexploitation of ground water resources.

Another major issue with water supply has been the experience of intermittency, which makes it non-dependable and therefore people tend to store disproportionate amount of water for fear of shortage and absence of supply. This variation in intermittency is often linked with socio-political positioning; low-income areas being more intermittent than high income areas. However, a rigorous analysis of data on piped-water supply in Bengaluru showed that 'household-level characteristics do not predict variation in service frequency or predictability. Variation occurs at the "valve area" ...and low-income valve areas receive more predictable and frequent service, on average' (Post et al, 2018). This paper, therefore, argues that the inequalities within networked services must be understood through the joint lenses of social structure and physical (network) structure, as 'favoured access to piped water or on-grid electricity cannot be targeted in the same way as favoured access to hospital beds or ration cards' (Post et al, 2018). In order to understand both technology and society, the responsible institutions such as BWSSB need to be well-resourced and capacitated. According to 74th constitutional amendment, the BWSSB should have become the water supply department of BBMP, but has so far remained a separate entity. The disconnect between the BWSSB and the local representatives became very prominent during the expansion of network to cover eight ULBs around BBMP (Kamath, Ranganathan and Baindur, 2009).

A look into the finances of the BWSSB¹⁴ indicates that more than 50 percent of the capital receipts are received as assistance from the State Government while the rest are from pro-rata charges and beneficiary capital contributions. The revenue expenditures are higher than the revenue receipts indicating a deficit. The Budgeted Estimates (BE) of 2021-22 indicate a Revenue Receipts of Rs 1650 crore while the revenue expenditure is estimated at Rs. 2950 crore. The estimated amounts for debt servicing and power charges are Rs. 778 crores and Rs.880 crores respectively while the amount to be collected as water and sewerage services from consumers is estimated Rs. 1425 crore. In the interest of the poor population, BBMP decided to foot the bills of households consuming less than 10k litres a month¹⁵ since April 2020 which is intended to benefit about 2.5 lakh families.

In this context, it may be useful to examine the issue of pricing and subsidy policy for water. While it is important to ensure clean water supply at no cost to low-income households and areas, it is also equally crucial to think of a differential pricing policy that makes the higher income groups free from subsidy. In addition, there could also be ways of taxing those who are benefitting from various other forms of subsidies in the form of tax holidays (e.g., IT industry and other ancillaries including real estate) to pay for the environmental protection of the rivers that Bengaluru is dependent on for its water supply.

Two other important issues related to this are ways of reaching consumers and creating space for citizens' voice. Most of the citizens are not aware of the fact that the water is pumped from such a distance and gradient. Reaching out to citizens to ensure rainwater harvesting, cleaner stormwater drains and lakes becomes very important, and it is here

14 <https://bwssb.karnataka.gov.in/storage/pdf-files/documents/Budget%202021-22.pdf>

15 <https://timesofindia.indiatimes.com/city/bengaluru/bbmp-to-foot-water-bill-for-households-using-up-to-10k-litres-a-month/articleshow/75260092.cms>

that local governments and local representatives play an important role. The messages relating to the importance of sustainable management of water resources through citizen partnership is a political step, which is needed in addition to technological solutions. Working with the local governments and citizens forums are critical for not only to ensure inclusiveness in the provisioning of services but also to bring in greater efficiency and accountability. The issues of illegal connections, unaccounted for water (UFW), rainwater harvesting, cleaner stormwater drains and lakes cannot be tackled comprehensively by ignoring the local support.

17.2.3 Municipal solid waste management and sanitation

Bangalore city generates about 6100 MT of municipal solid waste per day from about 135 lakh people covering 800 sq. km. The BBMP Solid Waste Management Department is responsible for door-to-door collection of waste, its transportation, processing and disposal, covering 198 wards divided into eight zones. Around 18500 sanitation workers, known as Pourakarmikas work to ensure 100 percent door to door collection from 37 lakh households, using 4665 motorised vehicles to keep the city clean. Of the collected waste, only 33% of the waste gets segregated at the source while only 53% of the waste gets processed. About 2750 tons per day is being taken to landfill which already has the 7 million tons of legacy waste. The BBMP has started biocapping which is expected to take five years to clear the legacy waste. The city has been declared as bin free city. A number of non-government organisations¹⁶, citizen forums, academicians have contributed to bring in changes in the solid waste management in the city.¹⁷ These forums have been interacting with the BBMP officials helping them to evolve to address the challenges in the solid waste management of the city including streamlining the administration and management of contracts.

In the year 2020, the BBMP started using the technology for many of the issues related to attendance of pourakarmikas, movement of garbage vehicles and compactors, and payment to pourakarmikas and contractors. The attendance of pourakarmikas which was done manually has been replaced with the radio frequency identification-based attendance (RFID). The adoption of technology-based solutions has been very effective in monitoring attendance, enforcing discipline and rigidity in the entire waste collection and transportation processes. This also has brought in transparency in the system especially the payment based on attendance, number of trips by auto tippers and compactors which are monitored on a real time basis. The number of incidents of fleet mismanagement has reduced to zero from 280 cases per year. This technological intervention is hailed by the Niti-Aayog for adoption by other cities (CSE, 2021). Nevertheless, as many civil society groups point out, all of Bengaluru's waste management woes are far from over, and call for better planning.¹⁸

A perusal of finances reveals that like water, the SWM costs also remain high as compared to the recovery. While the BBMP spends about 1622 crore (BE 2021-22) for SWM, the returns in the form of solid waste management cess is about 50-60 crore,¹⁹ which makes

¹⁶ <https://bengaluru.citizenmatters.in/six-amazing-groups-that-show-how-to-manage-waste-in-style-bangalore-6545>

¹⁷ This includes Hasiru Dala- www.hasirudala.in, Solid Waste Management round table- www.swmrt.com Saahas-<https://www.saahas.org/> and Daily Dump- <https://www.dailydump.org/>. This is not an exhaustive list.

¹⁸ <https://bangaloremirror.indiatimes.com/bangalore/cover-story/bengaluru-doesnt-have-a-concrete-plan/articleshow/88818640.cms>

it highly dependent on government allocations for its sustenance and improvement of the quality. A CAG audit on the Storm Water Drains in Bengaluru indicated that neither BBMP nor BWSSB had the comprehensive detailed map of the SWD which led to confusion in asset management and maintenance and even restoring the lakes. Such lapses call for better governance measures. A separate entity called Bengaluru Solid Waste Management Limited has been created under Registrar of companies to undertake this specialised activity in a comprehensive manner. However, an end-to-end scientific management of municipal solid waste demands greater involvement of citizenry, local resident welfare associations and local governments, calling for greater space for dialogue between citizens and the local governments to voice their opinion, concerns and suggestions for viable alternatives. This will also lead to greater owning-up of the system, which is essential for the sustainable waste management.

17.2.4 Transport

Transportation is an important component of any urban infrastructure where lakhs of people travel to work or for other purposes and back home everyday. The availability of sufficient, affordable and viable transportation systems for commuting makes any city more desirable to live. The city has buses, autos, cabs, local trains and metro rail as available options for public transportation. Added to this, there are a huge number of two wheelers and cars which also ply on the roads with many people also using personal vehicles. Severe traffic congestion has made the daily commute in Bengaluru challenging and time-taking. A recent survey conducted by Dutch real-time traffic information and services company, that calculated the TomTom Traffic Index of 2019, declared Bengaluru as the worst city in the world for traffic congestion, with people in the city spending extra 243 hours, about 10 days, three hours in traffic each year²⁰. One of the main causes for such distressed traffic is the high number of private vehicles plying on the roads. This happens due to many reasons including inadequate public transport, last mile connectivity issues and also the comfort of travel.

To understand the mobility standards in Indian cities, the EOLI used three indicators: availability of public transport, transport-related fatalities and road infrastructure. Bengaluru's score (48.40) is unfortunately far behind the top performer, Chennai (79.80), whose good performance is attributed to its well-connected and economical public transport system, which in turn could have also contributed to people's perception, where also the city performed better than Bengaluru. Chennai scored 92017.96 per lakh population for the availability of public transport as against a figure of 4409.62 for Bengaluru.

Bangalore Metropolitan Transport Corporation (BMTTC) is estimated to have had a daily ridership of 35.8 lakh in 2019²¹, 33 lakhs in 2020²² and less than 10 lakhs in 2021²³. This means that the share of buses among those who use public transport has declined.

19 <https://www.deccanherald.com/specials/point-blank/fixing-bengalurus-waste-management-issues-beyond-activism-934212.html>

20 <https://www.livemint.com/news/india/bengaluru-four-other-indian-cities-in-world-s-worst-traffic-list-11580365873632.html>

21 <https://timesofindia.indiatimes.com/city/bengaluru/as-commuters-shift-gears-bmtcs-daily-ridership-drops-to-36-lakh/articleshow/71238762.cms>

22 <https://www.statista.com/statistics/1240167/india-average-daily-ridership-of-buses-in-bengaluru/>

23 <https://www.statista.com/statistics/1240167/india-average-daily-ridership-of-buses-in-bengaluru/>

Although Bengaluru has one of the largest networks of buses and has been rated as the best, the services are considered insufficient²⁴. The data from the transport department shows that while vehicles rose by over 23 lakhs in 4.5 years preceding 2020, only 20 new buses were added to the fleet²⁵. Another issue is of the route rationalisation that should be done on a dynamic basis to gauge demand and necessity. Research suggests that commuters from Devanahalli and Hoskote Taluks prefer public bus services because of their cost-saving ticketing schemes but spend longer in commuting because of the longer routes (CBPS, 2014). The addition of flyovers and elevated corridors may reduce the traffic woes temporarily, but they will get clogged soon²⁶. There are studies that suggest restructuring of bus fares, routes and frequency to improve the ridership and lower the emissions in Bengaluru, and it may be worthwhile to see how relevant those are (Vajrapura, et al, 2019).

The Metro Rail system in Bengaluru has a coverage of about 56 kms across two lines. It began operations sometime in 2011 but since then, it reached an average daily ridership of 5.26 lakh pre-pandemic which declined to about 3 lakh passengers per day in the post-pandemic phase²⁷. Hence, compared to the buses, the ridership has remained low due to many factors including higher ticket cost and lower last mile connectivity. The Metro is, however, particularly useful for commuters who have to travel very far off distances to work or college, and increasing the coverage can go a long way in increasing the ridership once, post pandemic, people start going back to work and college in full capacity²⁸. However, the perpetual Metro constructions have added to various challenges including adding to the pollution. There is also a need to address the first and last mile connectivity issues, which has the potential to enhance the use of metro and reduce the use of personal vehicles^{29, 30}. Currently, autorickshaws and taxis act as ways of last mile connectivity for commuters using metro and buses. By 2019, we had about 1.94 lakhs autos were registered in Bengaluru to ply in the city and new licenses were being given out after a gap of seven years in 2019³¹. While this needs to be reviewed more frequently, there is also a need for bringing in more economical and environmentally friendly options, such as e-rickshaw, for the last mile connectivity.

24 https://www.business-standard.com/article/current-affairs/why-bengaluru-s-bus-system-is-india-s-best-and-loses-least-money-118081700117_1.html

25 <https://www.thenewsminute.com/article/easy-fix-bengaluru-s-perennial-traffic-problem-humble-bus-116965>

26 <https://www.bbc.com/news/world-asia-india-38155635>

27 <https://bangaloremirror.indiatimes.com/news/india/bengaluru-demand-for-tokens-grows-as-technical-glitches-mar-smart-card-metro-commute/articleshow/78708376.cms>
<https://timesofindia.indiatimes.com/city/bengaluru/remove-rs-50-min-balance-rule-demand-namma-metro-users/articleshow/77878735.cms>; https://en.wikipedia.org/wiki/Namma_Metro#cite_note-:5-6;
<https://www.thehindu.com/news/cities/bangalore/metro-ridership-touches-25-lakh-in-oct-all-time-high-since-july/article36935849.ece>, <https://www.thehindu.com/news/cities/bangalore/metro-ridership-touches-25-lakh-in-oct-all-time-high-since-july/article36935849.ece>

28 <https://www.thehindu.com/news/cities/bangalore/metro-ridership-touches-25-lakh-in-oct-all-time-high-since-july/article36935849.ece>

29 <https://timesofindia.indiatimes.com/city/bengaluru/bengalurus-last-mile-problem/articleshow/72622505.cms>

30 <https://timesofindia.indiatimes.com/city/bengaluru/bengalurus-last-mile-problem/articleshow/72622505.cms>

31 <https://economictimes.indiatimes.com/news/politics-and-nation/transport-dept-to-issue-new-auto-permits-after-7-yrs-in-bengaluru/articleshow/67345560.cms?from=mdr>

Suburban rail, an economical and environmentally-friendly option for per-urban areas and long distances, has remained somewhat neglected in Bengaluru till a recent announcement about recently about the Bengaluru Suburban Rail Project which was in the pipeline since 1983. It is expected to link Bengaluru to its satellite townships, suburbs, and surrounding rural areas, at about a length of 148.17 km³². Currently, it shares a small load, less than 2%, of public transport, with an estimated 1.5 lakh daily commuters in 2019³³, and indeed high potential for a wider role in future.

Hence, a long-term view along with a proper integration of all kinds of available modes of transportation are needed to manage and plan the issue at hand better instead of each of the different authorities working in silos without a larger vision in place³⁴. Bengaluru needs to adopt digitisation methods to plan the routes and timings of the bus and metro trains made available in apps so that travel time reduces, and commuters can plan their travel better. While some such apps exist now, the system is not dynamic as the information doesn't get updated real time especially for buses due to unpredictable traffic. Also, experimentation with integrating smart cards for both bus and metro train travel can go a long way in easing the burden of commuters. While GPS trackers have been installed in buses to experiment with their real time movements, this has not been very successful due to many technical glitches. Also important is to understand is that like all other services, transport is also unequal, and any planning for transport including the use of technology must take the needs of the poor also into account.³⁵

At the end of the 2018–19 financial year, Bangalore had more than 80 lakh four-wheeler vehicles registered in the city, the most in India after Delhi. Over 55 lakh two-wheelers (motorcycles) and 15 lakh cars together make up for close to 85 percent of the vehicles³⁶. Stringent measures such as stricter issuance of driving licences, congestion charges for central areas and fines for parking on the roadside need to be undertaken to bring in a system of discipline to the larger issue of transportation. This also needs to be integrated with planning for climate change as vehicle emissions is one of the most important cause of air pollution, which among other things, is also linked with health outcomes.

17.2.5 Health

Bengaluru performs poorly in health scores at less than 45 against an average of 50 and the best score of 80³⁷. In recent years, the country has moved towards health financing, i.e., using insurance for providing health care access rather than directly providing health care through public provisioning of facilities. Bengaluru is also covered under the health schemes of the State Government of Karnataka, like Arogya Shree, Rajiv Arogya Bhagya Scheme, Jyothi Sanjeevini Scheme, Janani Suraksha Yojana, but the coverage remains

32 <https://indianexpress.com/article/explained/explained-what-is-the-bengaluru-suburban-rail-project-and-how-will-it-help-people-living-in-and-around-the-city-7378128/>

33 <https://timesofindia.indiatimes.com/city/bengaluru/karnataka-over-1-5-lakh-commuters-take-suburban-train-daily/articleshow/72422518.cms>

34 <https://www.bbc.com/news/world-asia-india-38155635>

35 <https://www.99acres.com/articles/intra-city-mobility-and-social-inequality-in-indian-cities.html>

36 <https://timesofindia.indiatimes.com/city/bengaluru/how-many-vehicles-ply-on-city-roads-transport-dept-clueless/articleshow/77533015.cms>

37 The indicators are Household Expenditure on Health, Availability of Healthcare Professionals, Accredited Public Health Facilities and Availability of Hospital Beds as against Prevalence of Diseases

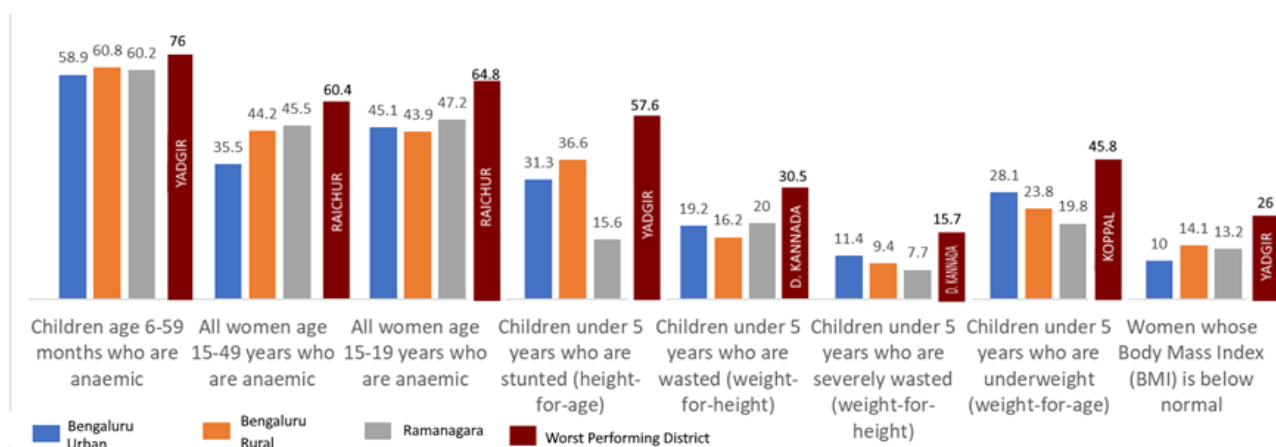
low, and also somewhat stagnant for all three districts under the Bengaluru Metropolitan Region (BMR). According to NFHS V report, Bengaluru Rural shows a decline in coverage of households with any usual member covered under a health insurance/financing scheme from 38.6% in 2015-16 (NFHSIV) to 34.9% in 2019-20 (NFHS V). Ramanagara showed a minute increase from 34.8% to 35.7% while Bengaluru registered a growth from 15.4% to 28.8% during the same period, though still remaining lower than other two districts.

This is indeed a concern, especially in view of the health status and disease prevalence. The city reflects a very good doctor-population ratio of 1:921 (as against the WHO standard of 1:1000) but this is perhaps a result of high number of private health care services, and therefore does not convert itself into health outcomes. All three districts of the MBR region report nearly 60 or higher percent of children aged 6-59 months as anaemic and the performance across major indicators of mother and child health are not encouraging (**Figure 17.2**). This is despite the fact that Bengaluru has performed relatively well as compared to other districts in distribution of folic acid tablets to pregnant women. But in general, the performance of the entire state does not seem very promising on this count (**Figure 17.3**).

The living conditions in low-income neighbourhoods are much worse, which also severely affect the health of the inhabitants. Research studies carried out in Bengaluru slums suggest that poor income security prevents slum dwellers even to screen themselves and many remain unaware of their disease condition prior to the screening conducted for the purposes of research (George and Wadugodapatiya, 2019). Even within these neighbourhoods, people living below the poverty line, women and aged have higher chances of having chronic conditions and repeated surveys shows that dependence on private health care had gone up over a period of three years, as the majority of patients (89.3 %) sought care from private health facilities. This also indicates towards a need for strengthening public health care facilities in these areas, especially for those who are more likely to have health condition and less likely to report the same (Gowda et al, 2015).

Bengaluru does not perform well in the public healthcare services. Its relatively higher score of 56 in the services vertical in the MPI is largely on account of high scores in education, land registration and certain transparency indicators; in health the score is

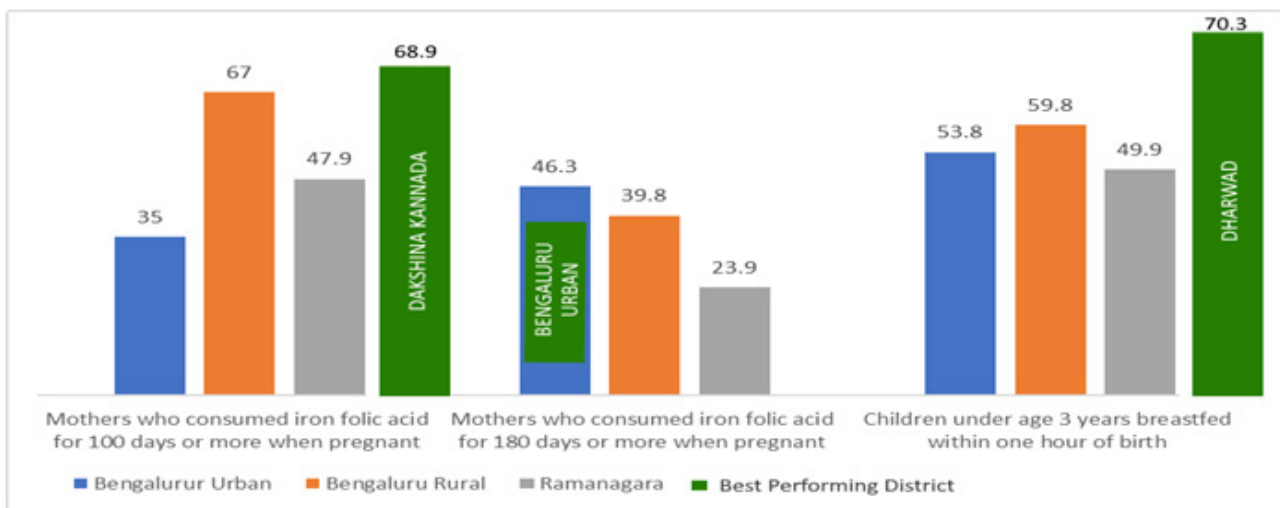
Figure 17.2: Selected Mother and Child Health Indicators, Bengaluru Metropolitan Region Districts, 2019-20



Source: NFHS V District Reports

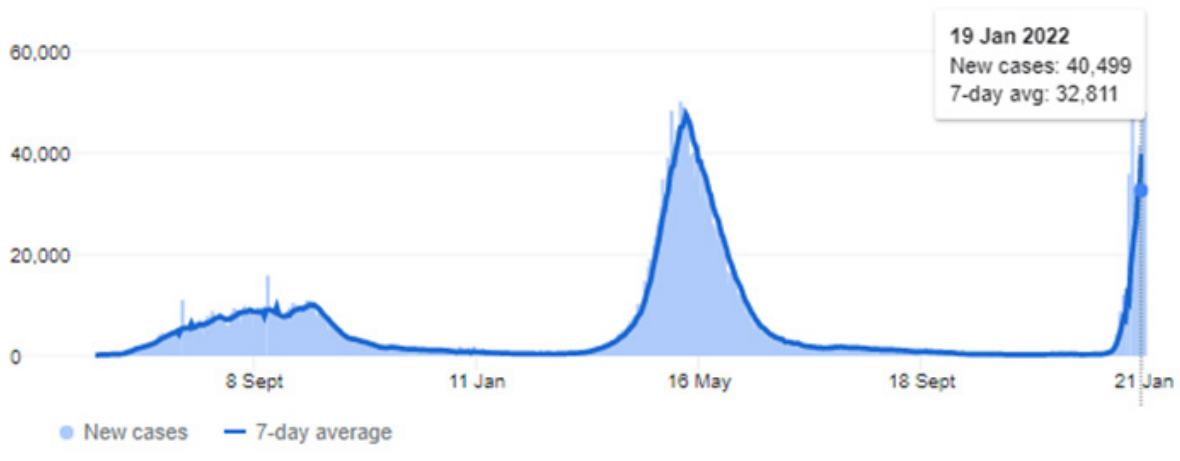
less even than the low national average of 26.72. Health here included primary healthcare institutions, vacancy of doctors and expenditure, and community healthcare workers. However, the city did rise to address Covid19 challenge and did fairly well in that regard. The city of Bengaluru like many other metros in India have been having a hard time dealing with the Covid19 pandemic because the city is an important hub for business activities and a centre for a floating population including international travellers (**Figure 17.4**). While the task was arduous, the government authorities, health departments and the city management have set records in many aspects of curbing and managing the Covid19 crisis. This includes Bengaluru being one of the four districts within the state to achieve 100% coverage in terms of people getting at least one dose of the vaccine. When the city started seeing positive Omicron cases, the BBMP has taken vigil, and had set up a framework to track, trace, and quarantine the primary and secondary contacts

Figure 17.3: Consumption of iron folic acid by pregnant mothers and breastfeeding within an hour of birth, Bengaluru Metropolitan Region districts, 2019-20



Source: NFHS V District Reports

Figure 17.4: Timeline of Covid19 Cases in Bengaluru



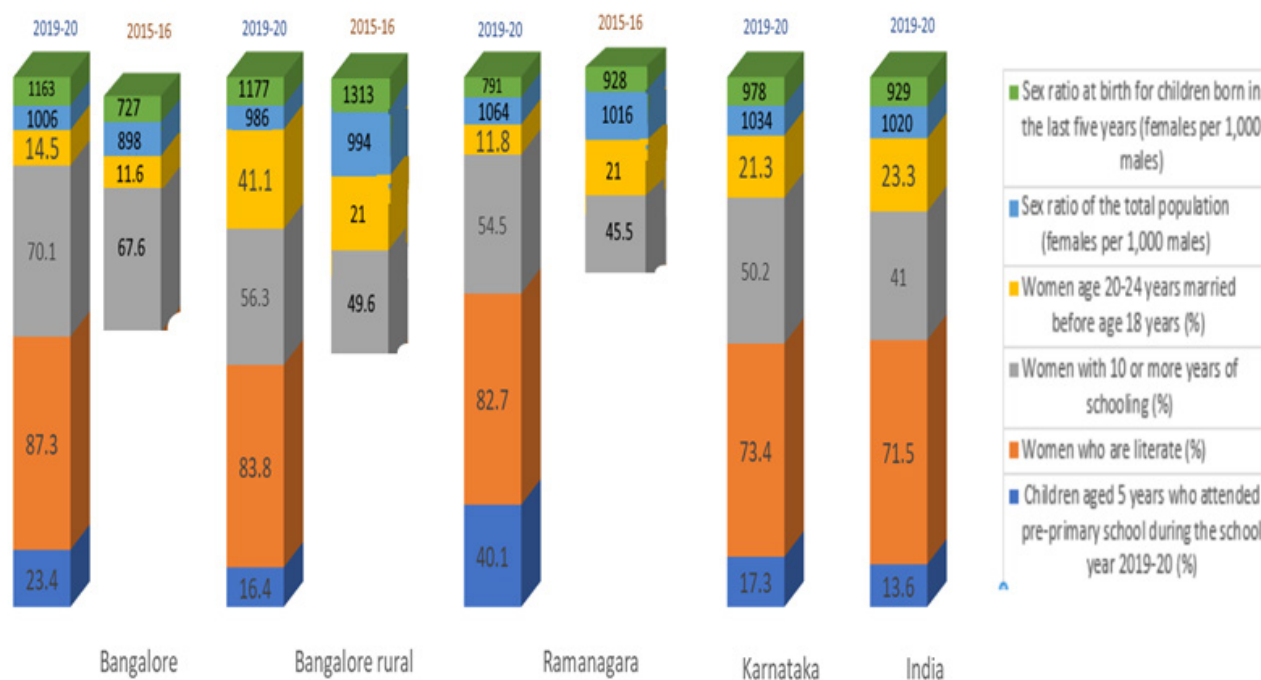
Source: JHU CSSE COVID-19 Data and Our World in Data

of the Covid19 positive patients³⁹. As a centre of booming gig economic activities, the city needed to strike the balance between preventive health care and economic wellbeing of the citizenry, and have attempted to do so⁴⁰.

17.2.6 Education

Education, as compared to health, has been a stronger area for Karnataka and that seems to be true for Bengaluru as well. Let us start the discussion on education by looking at women's literacy, as that has often been perceived as an important indicator of a society's development and an important determinant of children's schooling status. All three districts under BMR report higher literacy rates for women as compared to the national or state averages (Figure 17.5). This trend remains the same if we take the indicator of percentage of women with ten or more years of schooling where Karnataka fares much better than the national average. However, women's schooling is not necessarily translating itself into empowerment going by the age of marriage for a sizable section even though the proportion of those getting married before the age of 18 continues to

Figure 17.5: Selected Education and Empowerment Indicators in Bengaluru Metropolitan Region districts,



Source: National Family Health Survey 5, District Fact Sheets of Bangalore, Bangalore Rural and Ramanagara, Karnataka Fact Sheet and India Fact Sheet

38 "Four districts in Karnataka achieve 100% first-dose vaccination", The Times Of India, December 17, 2021. Retrieved from: <https://timesofindia.indiatimes.com/covid-19-bangalore/four-districts-in-karnataka-achieve-100-first-dose-vax-coverage/articleshow/88330952.cms>

39 "Omicron scare: Karnataka to up vigil, contacts to be traced within 24 hours", The Times Of India, December 23, 2021. Retrieved from: http://timesofindia.indiatimes.com/articleshow/88443255.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

40 "Bengaluru: BBMP orders shopping complexes, malls, theaters to enforce double jab mandate", the Times Of India, December 6, 2021. Retrieved from: http://timesofindia.indiatimes.com/articleshow/88114088.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

be below the state and national average. What really calls for attention is that though this proportion is declining for Bengaluru Rural and Ramanagara, it has increased for Bengaluru Urban district. The statistics about sex ratio at birth is even more intriguing and calls for immediate attention as this shows a significant decline for Bengaluru Urban as against a significant positive development in the other two districts.

Moving from women and empowerment to the status of schooling, we notice certain specific features. The pandemic has impacted the education at all levels but the impact on school and pre-school education is perhaps more severe simply because young children, unlike adult students, need greater opportunities for peer and face to face interactions with teachers for nurturing, learning and growing up. They are either less-prepared or even unprepared for any mode of distance learning. Given the much higher incidence of COVID 19 in Bengaluru and surrounding areas, children here have really suffered because of school clusters. This is obvious from whatever little data we have access to, as data collection itself also took a hit during the pandemic. The proportion of five year old children attending pre-primary or equivalent schooling is lower in Bengaluru city (23.4%) and Bengaluru Rural (16.4%) as compared to Ramanagara, which itself is also low at 40% (Figure 17.5).

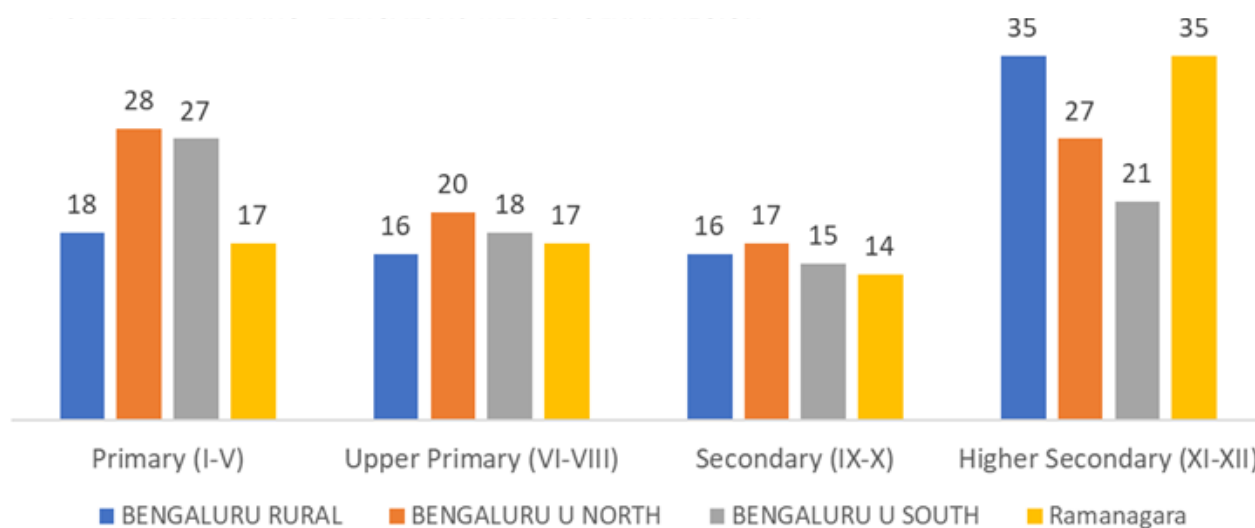
The issue of pre-school early childhood education, however, is a complex issue, especially in the light of greater entry of private providers. Anganwadis are meant to provide food, preschool education, primary healthcare, immunization, health check-up and referral services to children under 6 years of age and lactating mothers. The quality of the early childhood education has been often questioned there. However, a recent study conducted in BMR districts using a small but equal number of anganwadi and private pre-schools concluded that 'the quality of private preschools was neither significantly better than that of anganwadi centres, nor were they age-appropriate for ECCE aged children (Maithreyi, et al, 2020). This means that the understanding of quality for early stages education has to be more nuanced.

What is true for the early childhood education is true for schools also. While the government schools are subject to quality assessments by Karnataka School Quality Assessment and Accreditation Council (KSQAAC), private schools are not subject to any such assessments. The dependence on private schools is high in Bengaluru, as it has about 2100 government schools and 2850 private schools, many of those falling into-low budget school category. Many schools also closed down or are on the verge of closing down due to their inability to collect fees from students.⁴¹ This also threw a challenge to the public system as many of these children may look for government schools for enrolment and they have a right to be enrolled there. Whether the public system is ready for this challenge or not is something that deserves attention. The public system of government schools needs to be prepared with adequate infrastructure and teachers to be able to respond to this challenge. Considering the low Teacher Pupil Ratio (**Figure 17.6**), the three BMR districts have, teacher availability may not be an issue on the surface but the distribution of teachers across schools may pose an issue.

The school education in general has taken a bad hit during the pandemic. There has been widespread reporting of how frequent school closures have impacted children's learning as well as mental health. A field based study that included Karnataka reported

41 https://www.indiaspend.com/wp-content/uploads/2020/06/School-Readiness-_post-COVID-Report_Dream-a-Dream_06.06.2020.pdf; <https://medium.com/@vishaltalreja/the-brewing-crisis-in-the-affordable-private-schools-of-india-84f3ca17801f>

Figure 17.6: Pupil Teacher Ratio in Bengaluru (primary to higher secondary), 2019-20



Source: Government of Karnataka

how children have suffered learning loss in different subjects, and it is not only about losing the time that they could not attend school but also forgetting what they had already learnt (APU, 2021). These are not the losses that a short duration remedial measure can fix but calls for a much more comprehensive response in terms of planning for the next several years of curriculum delivery. It is also possible that school closure is linked with higher incidence of early marriage and child labour, especially as a large number of households have faced income and livelihood losses and therefore are resorting to withdrawal of children from schools due to not being able to pay the school fees and run the family or the need for additional income.

This also brings the issue of the access to education by the poor in the city. A recent study done with migrant workers in Bengaluru points out that though there was no difference in terms of schooling status of children among inter-state or intra-state migrant workers, a larger proportion of those who didn't know Kannada sent their children to private schools (Jha, Purohit and Sowmya, forthcoming), and therefore were more adversely affected because of unaffordability caused by lockdowns, income and livelihood losses.

Bengaluru has also emerged as an important destination for higher education not only for students from Karnataka but also from other parts of the country. The city is home to several state and private universities, highly recognised science, technology and management institutions, and a large number of colleges, especially engineering colleges and to a lesser extent medical colleges. This adds to the multi-cultural nature of the city while also adding to the economic activities due to higher demand for rentals as well as food and entertainment. However, the city does not have as many social science or humanities institutions despite having a long tradition and heritage of promoting art and cultural festivals, which we discuss next.

17.2.7 Art, culture and science

Bengaluru, known for its cosmopolitan culture, is also considered a thriving city for art and artists. Other than Delhi and Mumbai, this is the only city to boast the presence

of the National Gallery of Modern Art in addition to several private and government galleries. Both Kannada and English theatre have flourished in the city, which is also home to several theatre performing groups and a unique classical dance village called Nrityagram. The 'pub culture' in the city encourages its cosmopolitan image making it a desirable destination for living, especially for the youth, who are coming to the city in large numbers due to both education and employment opportunities. One of the biggest attractions of Bengaluru is the culture of *Darshini*, the south Indian fast food joints that can be found at every nook and corner selling hygienic food at a very affordable price, and therefore also helps in cutting across class divides.⁴²

The advent of technology is not new to the city as innovation in Science and Technology dates back to the early 1900s with contribution by scientific greats like Sir. M Vishveshwary whose pioneering works set the stage for establishing the city as a Science and Technology hub. The city of Nobel Laurate, Sir C V Raman, hosts many high-profile science institutions including the Indian Institute of Science and Raman Research Institute – the two institutions where Raman worked and perhaps 'shaped the future of Indian sciences' for several years to come (Narasimhan, 2008). Fundamental research in science has co-existed with technical institutions in Bengaluru. Currently housing the headquarters of Indian Science Research Organisation (ISRO) and Hindustan Aeronautics Limited (HAL), the city also boasted of many prestigious public sector undertakings such as Hindustan Machine Tools (HMT) in the past, and slowly gave way to IT as well as biochemical giants such as Infosys, Wipro and Biocon.

Bengaluru shares its border very closely with Andhra Pradesh and Tamil Nadu, and historically have been home to a large size of Telugu and Tamil speaking population, making the city truly multi-lingual. Culturally, the city has traditionally adapted to the needs of its increasing migrant population. For instance, it has been common for Tamil films to be premiered here, a rare occurrence for any other language film that usually gets premiered only in their own states. Several music festivals – both from Indian and western music traditions take place in the city, and so do other festivals such as kadle-kai or Avere kadu melas (festivals around peanuts and beans). The city has started being viewed as a melting pot in a similar manner as Mumbai or Delhi has been in the past.⁴³ The city has also been referred to as a 'Multiple City' given its 'myriad tongues, its multiple origins, the cacophony of soundtracks within curvilinear recountings' (De, 2008).

The multiple city has mostly survived the onslaught by fringe groups trying to attack its multiplicity on the name of promoting Kannada but serious efforts are needed not to allow such groups to thrive while also making clear policies for promotion of Kannada. Compulsory imposition of the language does not help but policies that promote gentle persuasion to enable migrant population to learn the local languages and appreciate its culture are indeed needed. For instance, free Kannada learning centres can be made easily accessible and may be a better way of promoting the use of Kannada than removing Hindi from signposts of metro rail stations. Inclusive language policies are critical for promoting local languages as well as for enabling greater assimilation – this is an important lesson that the experiences of the most multicultural countries like Canada and New Zealand teach us, and Bengaluru must also try to adopt to retain its beautiful 'multiple city' existence (Burnaby, 2008; Smythe, 2020).

42 <https://www.hotelsgiovani.com/darshinis-the-cornerstone-of-fast-food-culture-in-bangalore-latest-india-news/>

43 <https://www.thehindu.com/news/cities/bangalore/a-melting-pot-of-living-heritages/article31881120.ece>

17.2.8 Safety, freedom, commons and climate change

Safety matters and one way of viewing that is through the rate of crimes. Among 19 cities with more than two million population, Bengaluru emerges as fourth in terms of having the least crime rate⁴⁴ (401.9) in 2020, this being higher than that Kolkata (129.5), Hyderabad (233.0) and Mumbai (318.6) but much lower than that in Chennai (1937.1) and Delhi (1608.6) (NCBR 2021). The city is perceived as a safe city for girls and women compared to most other Indian cities. However, safety is only one aspect of freedom. ‘Development can be seen as a process of expanding the real freedoms that people enjoy’ (Sen, 1999, page 3). Sen argues for a broader definition of development that is not dependent on incomes and economic indicators alone, though they may play an important role in expanding the freedoms such as access to education and health facilities, but it also includes other aspects such as freedom of civil and political rights, and freedom from violence and subjugation (Sen, 1999). One way of examining a city’s ‘freedom’ could be from perspectives of accessibility to services and Commons by people in general and poor in particular.

The picture is mixed if we use some recent evidence to see the access to public services and commons by the poor in this city. For instance, a recent survey of low-income migrant workers in the city showed that only about 7-8% of them accessed public parks ever, and there was no difference among inter-state and intra-state migrant workers (Jha, Purohit and Sowmya, Forthcoming). This obviously shows that class and social relations play role in accessing Commons. The stories of lake restorations through community initiatives tell these stories as well.⁴⁵ The issue of lake restorations also takes us to the issue of environment and climate change, which is inherently linked with distributive justice.

Securing socially inclusive, economically viable, biodiversity-rich commons is one of the essential steps towards addressing climate change, and this is possible only when the local government bodies work in collaboration with both citizens and civil society groups (ESG, 2021). Climate change cannot be addressed in bits and pieces nor can it be responded to in a highly unequal socio-economic order. Each component of development and services need to be climate friendly and moving towards the goal of inclusion and equality to tackle climate change. This also means paying attention to certain critical elements while planning for and designing the development strategies for a city that is continuously growing and changing or is in ‘a state of flux’ so that the possibilities of adaptation and transitions across time and space are embedded into the design of the built environment (Mehrotra, 2020). This however, calls for a different approach as compared to what is largely present now in the city’s governance structure and economy, as we discuss next.

17.3 THE BENGALURU ECONOMY AND GOVERNANCE

17.3.1 The Bengaluru economy

Bengaluru Urban and Rural districts contribute to a sizeable share of the State Domestic Product (SDP) of Karnataka which was about 37% in 2015-16 while Ramanagara district

⁴⁴ National Crime Records Bureau defines crime rate as the number of incidents per 100,000 of the population.

⁴⁵ https://iasc-commons.org/blog/video_presentation/urban-commons-and-placemaking-exploring-diverse-socio-ecological-linkages-with-lake-commons-in-bangalore/

which also comes under the BMR contributed to about 2% of the state GSDP in the same year. For the land area that the BMR districts occupy in the state (less than 2%), its contribution in terms of economic activity is substantial. In terms of the nature of economic activities, the sectors are quite diverse and expansive from IT and Software related services to manufacturing of spacecraft. To cater to the needs of the IT industry, several technological hubs and industrial areas exist in Bengaluru. These spaces have enabled the industries to thrive and flourish, and many of the IT Parks have been declared as Special Economic Zones which have allowed for providing various incentives and tax holidays to encourage more investment.

In the Bengaluru manufacturing space, the textile industry forms a large part of this sector which is export intensive, and it is the country's largest manufacturing hub employing about 2.5 lakh workers, most of them are women⁴⁶. The state has actively focussed on this sector with its Textile Policy 2019-24 which proposed adopting the latest emerging technologies using advanced product methods resulting in smart value chains, also plans to attract investments of Rs.10000 crore creating about 5 lakh jobs in the state (Apoorva, et al, 2021). However, the pandemic has hit the sector badly and action needs to be employed by the state government to mitigate the difficulties arising out of global demand shortages in order to keep this sector going as it forms the primary source of employment to many women whose families are run on their income.

The emergence and fast growth of IT and Software Services in the city is partly due to the policies such as the IT Policy of 1997, which made Bengaluru the first city to establish the Software Technology Park of India. Complementing the FDI Policy under the famous LPG - Liberalisation, Privatisation, Globalisation – reforms of the union government, the SEZ policy played an enabling role. Other state policies such as the Karnataka i4 (IT, ITeS, Innovation and Incentives) Policy, Millennium Biotechnology Policy-II, Karnataka Biotech Policy and the Startup Policy (2015-2020) have together promoted research and innovation in these sectors. More recently, Artificial Intelligence, Machine Learning and Big Data have made inroads in Bengaluru's technology space and the city has been home to the largest number of start-up companies in India. According to a recent report on the funding of tech startups in India, the city has emerged as the top destination among startup hubs in seed stage funding, growth state capital and for growth stage capital in 2021. Bengaluru also raised the highest amount of bridge capital. The city received 21.3 billion USD of the total capital invested in 2021, which is much higher than that received by any other destination in India (Inc4Plus, 2021).

These industries have been instrumental in attracting talent to the city and providing employment to people with a diverse range of skills employing them both in the organised and the unorganised sectors. A large number of engineering colleges have attracted the youth to the city who then go on to stay for good employment prospects that the city offers. In October 2021, Bengaluru was considered one of the major hiring cities in India, showing a year-on-year growth rate of 85% compared to the previous year⁴⁷. Some surveys also showed that it is one of the cities creating the maximum number of jobs⁴⁸. A survey conducted by Randstad Insights Salary Trends Report 2019 showed that

46 <https://economictimes.indiatimes.com/industry/cons-products/garments-/textiles/bengalurus-garment-sector-has-a-big-covid-tear/articleshow/76254872.cms?from=mdr>

47 <https://www.thenewsminute.com/article/india-s-job-market-shows-19-uptick-october-bengaluru-sees-highest-hiring-growth-157190>

48 <https://timesofindia.indiatimes.com/business/india-business/bengaluru-top-city-for-hires-in-august/articleshow/86364220.cms>

people employed in formal sector in Bengaluru got paid much higher than any other city in India with an average salary of Rs.5.27 lakh per annum⁴⁹. This corroborates the findings of the LinkedIn US study, which mentioned that Bengaluru provides the most lucrative pays in India⁵⁰. The first Sustainable Development Goals (SDG) Urban Index recognised Bengaluru to be the only city which is providing decent jobs and ensuring economic growth in the country⁵¹. Hence, Bengaluru can aptly be called the 'migrant' city of India as it has created employment opportunities for people with varied range of skills, hence attracting labour from all over the country and perhaps investment from all over the world. Next, we look at the ease of investment in the city.

17.3.2 Ease of investment in the city

The various policy initiatives as discussed above have enabled Karnataka to raise private sector investment being one of the early starters for sectors such as IT, Biotech and BPO (Business Processes Outsourcing) which have catapulted it to high growth in the last few decades (Apoorva, et al, 2021). In a study conducted in 2016 by dealroom.co, which is the Mayor of London's international trade and investment agency, Bengaluru emerged as the world's fastest growing mature ecosystem among the cities of the world⁵². The state of Karnataka is also one of the highest recipients of FDI (Foreign Direct Investment) in the country, which stood at about USD 38,410 million (from 2007-08 to November 2020) forming eight percent of the all India FDI (DES,2021).

However, the recent trends show that although Karnataka is still a destination of consideration for investors, there has been a slight decline in the share of investments. In 2020, its share in investment proposals which was more than half of what it was across the country until May, declined to about 38% by end of September, and it recorded a growth rate of 10.3% as against the national growth rate of 46%.⁵³. Despite being a favoured destination, the last few years have posed many challenges to investors. First, the single window clearance system which was designed to make permissions and licences easier, is not working well on the ground compared to the neighbouring states where approvals are received at a much faster pace. Second, the rising land costs in Bengaluru and other parts of Karnataka are turning away investors to other locations closer to Bengaluru, like Hosur, where the land is available at half the cost. While usually 20% of the project costs was for land, in Bengaluru, it is reaching close to 40% making it not feasible for the investors to invest here⁵⁴. As a result, Karnataka's rank in the Ease of Doing Business by Niti Aayog in 2020 was 17, as compared to 8 in the previous year⁵⁵. Although it is desirable

49 <https://timesofindia.indiatimes.com/life-style/relationships/work/bengaluru-is-the-highest-paying-city-of-india-in-2019-finds-salary-trends-report/photostory/72899703.cms?picid=72899732>

50 <https://www.indiatoday.in/business/story/these-five-indian-cities-offer-the-best-job-opportunities-1394663-2018-11-23>

51 <https://theprint.in/economy/bengaluru-best-city-for-jobs-economic-growth-kolkata-worst-niti-aayogs-sdg-urban-index/771134/>

52 <https://timesofindia.indiatimes.com/business/india-business/bengaluru-worlds-fastest-growing-tech-hub-london-second-report/articleshow/80262770.cms>

53 <https://timesofindia.indiatimes.com/city/bengaluru/ktaka-investment-proposals-share-dips-but-most-in-india/articleshow/79357554.cms>

54 <https://timesofindia.indiatimes.com/city/bengaluru/rising-land-cost-is-driving-investment-out-of-ktaka/articleshow/79767213.cms>

55 <https://economictimes.indiatimes.com/news/politics-and-nation/fall-in-rankings-karnataka-may-register-protest-to-salvage-investment-image/articleshow/78140479.cms?from=mdr>

to develop other cities from Karnataka to attract investments and the government itself is developing policies towards this purpose, it should not happen on account of undesirable reasons and challenges.

The city's infrastructure has been a bottleneck in the last few years. The infrastructural planning has not been in congruence with the growing economic size of the city, in terms of the meteoric rise in commercial spaces and residential complexes to cater to the market demand. The Outer Ring Road (ORR) and the Peripheral Ring Road (PRR) which have been developed to act as the alternative routes to decongest the city are rife with pertinent problems. These include poor lighting, bad road construction with potholes, no regular upkeep of these roads, poor maintenance of pavements and other factors adding to the woe of citizens, especially the ones using two wheelers⁵⁶.

Major infrastructure projects bring many other contributions but also raise various concerns. For instance, the Outer Ring Road itself has engaged about 8.5 lakh employees who are significant contributors to the state and national GDP but the environmental costs of felling trees and cutting rocks have also been high. The Peripheral Ring Road is another project where 33,000 trees are proposed to be cut. This has not gone down well with environmentalists and rightly so, as the infrastructure development is literally killing the lung spaces of the city, once known as the Garden City for its trees and lakes. Bengaluru, nevertheless, despite challenges and concerns, remains a favourable destination for investments and the government should take measures to maintain its stature as a city which has always promoted entrepreneurship and innovation.

17.3.3 Governance of Bengaluru

The Bruhat Bengaluru Mahanagara Palike (BBMP) is the local government that is responsible for the governance of the area covering about 800 sq km. Prior to December 2020, the BBMP was governed under the Karnataka Municipal Corporations Act, 1976 and this was replaced by an exclusive Act for Bengaluru – Bruhat Bengaluru Mahanagara Palike Act 2020. Bangalore city corporation was formed by merging the city municipality and cantonment municipality. Its area has expanded more than ten times since its inception in 1949. In 2007, it became Bruhat Bengaluru Mahanagara Palike (BBMP) with induction of seven City Municipal Councils and one Town Municipal Council areas, which doubled the area from 225 to 709 sq. kms, which again increased to 741 sq. kms. when 110 additional villages were brought under BBMP.

The area of BBMP has 28 legislative constituencies and as many Members of Legislative Assembly – MLA). The parastatal agencies such as Bangalore Water Supply and Sewerage Board (BWSSB), Bangalore Metropolitan Transport Corporation (BMTCL) Bangalore Metro Rail Corporation Limited (BMRCL), Karnataka Slum Development Board (KSDB), Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) operate as independent bodies in the Bengaluru metropolitan region. Authorities which dwell upon the land uses like the Bangalore Development Authority (BDA) and Bangalore International Airport Area Planning Authority (BIAAPA) along with the authorities of the towns such as Devanahalli, Hosakote, Doddaballapur, Kanakapura, Bidadi, Channarayana, Magadi and Anekal come under Bangalore Metropolitan Region

56 <https://indianexpress.com/article/cities/bangalore/bengaluru-faulty-streetlights-potholes-make-orr-commute-dangerous-7098469/>

<https://www.thehindu.com/news/cities/bangalore/metro-work-motorists-demand-proper-upkeep-of-outer-ring-road/article37876289.ece>

Development Authority (BMRDA). The Electronic City Industrial Township Authority (EICITA) is an industrial authority with municipal taxing powers in the metropolitan region without democratically elected body.

Significant changes in the land use have happened in the last two decades in the Bangalore Metropolitan Region. The state government which had almost finalised the Bangalore Master Plan 2031 has shelved it and has now embarked on preparation of Bangalore Master Plan 2041 covering the entire metropolitan region for its planned land use. This can be a good opportunity for revamping the governance in the metropolitan region. The BBMP Act 2020 did not alter the role of BDA or the BWSSB to provide a greater role for the BBMP. The CAG audit⁵⁷ on the performance audit of 74th amendment indicated that the money transfers from states to ULBs including BBMP has reduced. It also clearly indicated that state needs to act towards ensuring the right level of autonomy to the ULBs to allow them to perform their functions allotted to them.

Several citizen organisations and forums have contributed to the thinking of the governance of Bangalore metropolitan region. Among them Bangalore Agenda Task Force (BATF), Agenda for Bangalore infrastructural Development (ABIDe) and Bangalore Political Action Committee (BPAC) are prominent. The expert committee for BBMP restructuring had drafted the Greater Bangalore governance bill for the perusal and consideration of government prior to BBMP Act 2020, which did not find place in the BBMP Act 2020⁵⁸. However, it offers various suggestions that can be considered for the development of the Bangalore metropolitan governance. What clearly emerges is that the political economy of overlapping interests is at work when it comes to governing Bengaluru. The citizen led forums have proposed and advocated for greater control of municipality on the affairs of the city on the lines of major cities in the world but the government has continued to stress on the creation of major specialised agencies for various services to have greater control on the affairs of the municipal body. The solution therefore lies in following a path in between which is politically viable and acceptable to both corporators as well as MLAs, and administratively more responsive to the needs of all sections of the citizenry. An imminent action in this aspect is the comprehensive CAG audit of BBMP for the period of last decade which has been pending despite insistence by MP and corporators.

17.4 HOPES, CHALLENGES AND WAY FORWARD

This is the concluding section that brings together the highlights and challenges and use those to provide pointers for the way forward. For future action, three major conclusions emerge from the analyses carried so far:

- a. **Maintaining the good performance where the city has been doing well.** This includes economic activities and enabling conditions for investment opportunities. This also includes maintenance and promotion of economic activities that have promoted equitable economic growth alongside inclusive culture, e.g., darshini food joints. This also means continuing to strengthen the policies and institutions that have made education as well as art, culture, theatre and music aspects of the city shine and perform better in various measurements.

57 https://cag.gov.in/cag_old/sites/default/files/audit_report_files/Rep_2_of_2020_74th_Constitutional_Amendment_Act_Karnataka.pdf

58 <https://clpr.org.in/wp-content/uploads/2018/10/Greater-Bengaluru-Governance-Bill-2018.pdf>

- b. Paying much higher attention both in terms of budget allocation and better governance to areas that need improvement.** A number of areas such as housing, health, transport, water and waste management fall in this category for Bengaluru.
- c. Making the governance systems, institutions and processes more transparent and accountable to people.** This implies that multiplicity of institutions and therefore control, which diffuses the accountability, must be addressed in a comprehensive manner to avoid duplicity of efforts as well as waste of resources.

Considering the fact that the contrast between economic development and quality of services is the sharpest for Bengaluru, as compared to any other Indian city (EOLI, 2021), and also noting that Bengaluru's climate change issues have not yet reached a state of no-return, and therefore reversible, three inter-connected guiding principles need to be the fundamental base for the city's future development process: (i) inclusive and equitable development (ii) environment friendly development, and (iii) transparent and accountable governance.

Translating these principles into reality will call for shifts in the planning and budgeting processes along with shifts in policy priorities and budget allocations. For instance, if we take housing as an example, the application of this principle would call for a number of actions. One action could be the promotion of not only low-cost housing but also of social renting provisions by taking cognizance of 'impermanence' and mobile nature of the working-class population in the city. Another action could be allowing the BBMP to (i) tax vacant houses as well as (ii) incentivise use of less-polluting materials for construction to gain additional resources while also disincentivising people to keep houses vacant or use polluting materials. Still another action could be to view housing as a 'composite' intervention to include access to electricity, clean fuel, clean water and sanitation, and clean as well as affordable transport, as essential part of that intervention, and plan accordingly. Such measures do not only make development more inclusive and equitable but also more efficient by saving resources that get wasted in parallel planning and implementation where similar activities are repeated several times using precious public resources. Similar examples can be drawn for transport and other sectors as well. Developing a set of general principles for governance including taxation can be drawn to guide these policy choices.

Another important aspect of Bengaluru's development process that needs to be encouraged is to create space for voices coming from diverse corners. It is next to impossible for the government alone to understand the needs and priorities of every section, and therefore creating spaces for citizen groups and civil society organisations by taking special note of those who remain voiceless, would itself make the governance more responsive. These spaces need to go beyond tokenism and beyond 'macro' units, e.g., if IT industry workers need to be heard, there has to be a separate provision for women workers there to voice their opinions and concerns, as these could be at variance from what men there may have to say. Hence, certain categories need special attention – women, migrant workers, homeless and slum dwellers including low-income neighbourhoods and youth, are some examples.

Considering that private investments are high in the city, it is also important to make them more accountable towards their own workers as well as towards the city in general. For instance, the plight of migrant workers' poor living condition widely reported during

the pandemic⁵⁹ exposed why it became necessary for workers to leave the city. This would not be the case if a comprehensive definition of housing exists and companies are made accountable to provide for that. Similarly, pollution caused by construction has social and economic costs with severe health implications, and all parties associated with such activities must be made more responsible by using a combination of policies where some are mandatory in nature while others could be using the principle of incentives and disincentives.

The final suggestion for the way forward relates to the use of technology for a more inclusive society. The use of technology has potential to improve service delivery and efficiency for all sections of society but it must be applied in combination with and equal attention to social issues. For instance, we discussed earlier in the context of water supply, how ignoring one at the cost of other could give us only partial solution, and therefore must be avoided. This applies equally forcefully to other services and sectors as well but the considerations for different sectors cannot be the same, as 'favoured access to piped water or on-grid electricity cannot be targeted in the same way as favoured access to hospital beds or ration cards' (Post et al, 2018). Also, important to add is that administrative decentralisation measures are essential for reforms in the BMR area and it calls for implementation of certain already committed provisions. For example, according to 74th constitutional amendment, the BWSSB should have become the water supply department of BBMP, but has so far remained a separate entity. Such disconnects adversely impact the functioning of institutions and need to be addressed urgently to allow Bengaluru to emerge as not only as an economic giant but also an inclusive city.

17.5 References

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