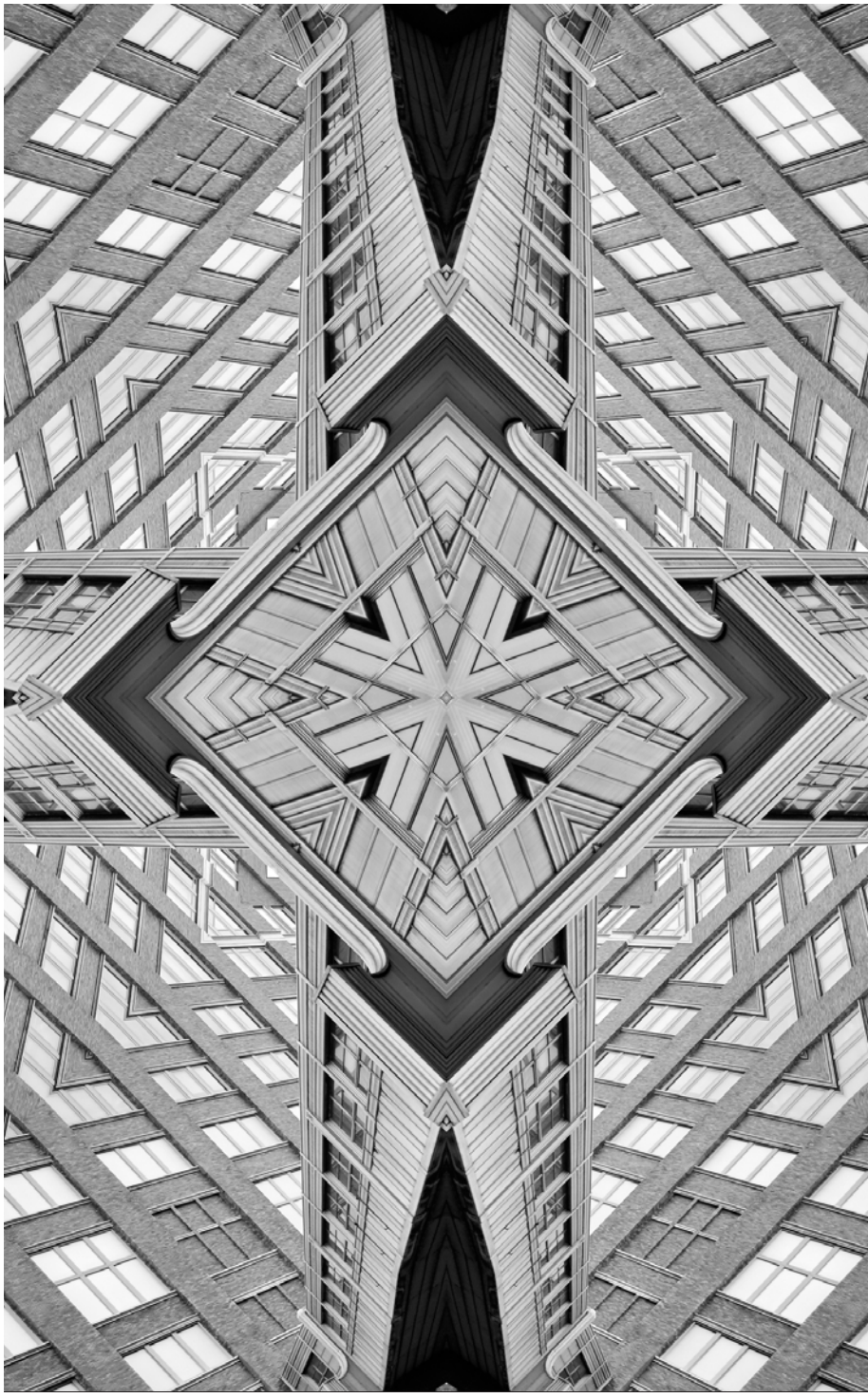
Issue Brief

ISSUE NO. 435
JANUARY 2021

ORF OBSERVER RESEARCH FOUNDATION



Health Infrastructure Planning Amid COVID-19: The Case of Mumbai

Sayli Udas-Mankikar

Abstract

The COVID-19 pandemic has caused unprecedented stress on India's urban public health infrastructure, underscoring the need for urban planning to account for increased demand for health amenities during crises. This paper evaluates the city of Mumbai's 1991 and 2034 development plans and finds inherent infrastructural inadequacies. It calls on urban-policymakers to complement development plans with robust dynamic health strategies that consider technological advances and epidemiological changes. Public-private partnerships should be encouraged to overcome the challenges of funding and technology adoption in health planning.

Attribution: Sayli Udas-Mankikar, "Health Infrastructure Planning Amid COVID-19: The Case of Mumbai," *ORF Issue Brief No. 435*, January 2021, Observer Research Foundation.

Introduction

Globally, the on-ground anti-COVID-19 strategy has been driven by urban local bodies:[1] they conduct tests, set up isolation facilities, and assist medical practitioners in treating patients. As COVID-19 infection numbers soared across India beginning March 2020 and hospitals reported shortages in beds and medical staff, local authorities began setting up isolation centres and makeshift health facilities in their jurisdictions.

Mumbai, India's financial centre and one of the world's most densely populated cities, struggled to handle the pandemic like many other metropolises. The city could not sufficiently provide for its residents' public health needs, exposing the already overburdened processes and systems that have plagued urban local bodies, which have been mandated by the Constitution to ensure adequate public health infrastructure and services. The Municipal Corporation of Greater Mumbai (MCGM) had to rely on private hospitals and set up quarantine facilities in sports centres and open grounds to tackle the outbreak.[2] Mumbai has since created temporary systems to deal with the pandemic.

> "A city's development plan must account for the provision of hospitals, health centres, nursing homes, dispensaries, clinics and health posts."

This paper makes an assessment of the capacity of Mumbai's development plans (DPs) to provide for the city's health needs. It studies the current 2034 DP and its predecessor (1991 DP) through an urban planning lens. Urban planning is concerned with integrating various physical, social and economic functions over a particular space,[3] to reduce imbalances in these functions in the areas being planned and distribute the benefits of urbanisation across the population for minimal disparities in access to resources.

Urban local bodies are tasked with preparing DPs for cities. DPs are statutory and include detailed strategies and proposals based on the people's socio-economic needs and aspirations and the available resources and priorities.[4] The plans calculate the amenities required by the city population as per the available area, and reserves spaces or create provisions for amenities like health facilities.

According to the 2014 Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines,[5] DPs should account for the provision of hospitals, health centres, nursing homes, dispensaries, clinics and health posts. The URDPFI also lays down the norms for providing such facilities based on the population size and ease of access.[6]

Urban Health Planning In Mumbai

Mumbai reported a high number of COVID-19 cases daily between April and June 2020.[7] During this time, shortages of public hospital beds and other medical facilities were widely reported,[8] highlighting the deficiencies in the city's public health infrastructure, the development of which is part of the city's DP. The MCGM prepares 20-year DPs for Mumbai—the 2034 DP is currently in force (since September 2018) and the previous plan, the 1991 DP, was in effect for nearly 30 years.[9]

To determine the amenities that should be included in the DP, the MCGM adheres to the functions listed in the Twelfth Schedule of the Constitution, which details the powers, authority and responsibilities of municipal bodies, including the provision of "public health, sanitation conservancy and solid waste management" facilities.[10] Additional duties are also determined by the Mumbai Municipal Corporation Act 1888 (MMC Act)[11] and the Maharashtra Regional and Town Planning Act, 1966 (MR&TP Act).[12]

> "Mumbai's development plans have failed to account for emergencies and mainly focus on reserving land for medical and other amenities."

Section 22 of the MR&TP Act discusses the provision of land for public amenities, such as for education, health, social and cultural purposes; for public entertainment and government use; as open spaces and for sports facilities; for transport and communication purposes; as community facilities; or for industrial and commercial functions.[13] Section 61 of the MMC Act lists the MCGM's obligatory duties, including "measures for preventing and checking the spread of dangerous diseases" and "establishing and maintaining public hospitals and dispensaries and carrying out other measures necessary for public medical relief".[14]

However, Mumbai's DPs have failed to account for emergencies and other events that could dictate development trends beyond the primary mandate of reserving land for medical (and other) amenities. In health emergency like the COVID-19 pandemic, protocols detailed in the National Disaster Management Plan (NDMP) are followed. The goal of the NDMP is to "make India disaster-resilient, achieve substantial disaster risk reduction, and significantly decrease the losses of life, livelihoods, and assets -- economic, physical, social, cultural and environmental -- by maximising the ability to cope with disasters at all levels of administration as well as among communities".[15] However, this vision is disconnected from the various aspects of planning and is thus tough to achieve.

Urban Health Planning In Mumbai

Although Mumbai is spread over a 603 square kilometre area, the MCGM oversees only 458 square kilometres and plans for only 415.05 square kilometres.[16] The rest of the Mumbai land is under the jurisdiction of multiple authorities, such as the Slum Rehabilitation Authority, the Special Purpose Authority (SPA) set up for Dharavi redevelopment, the Mumbai Port Trust, the Mumbai Metropolitan Region Development Authority and the Maharashtra Industrial Development Corporation, as well as the central government.[17] However, the MCGM's policies apply to all of Mumbai's approximately 12.4 million people.

Geographically, Mumbai is divided into Greater Mumbai in the south (island city), and the western and eastern suburbs in the north (suburban Mumbai). The Bombay City Improvement Trust was established in the aftermath of the 1898 plague epidemic and created the DP that extended the main city into the suburbs by joining the seven islands that now constitute Mumbai.[18]

Mumbai is divided into two district zones led by the Mumbai island city and Mumbai suburban collectorates, and further into 24 wards (nine under the island city limits and the rest in suburban Mumbai). Of the 458 square kilometres under the MCGM's jurisdiction, including areas under some SPAs, 387 square kilometres is in suburban Mumbai and the rest in the island city area. While 24 percent of the population resides in the island city area (which makes up for 15 percent of the total area), 76 percent live in suburban Mumbai.[19] Suburban Mumbai has seen rapid development and the DPs have been unable to keep pace with the changing needs of this area.

The MCGM provides primary level care through health posts, dispensaries and postpartum centres; secondary care through maternity clinics, peripheral and speciality hospitals; and tertiary care through hospitals, including medical colleges. Private dispensaries, nursing homes and hospitals make up for the deficit in the public health facilities. The total daily patient count is 35,600 in all corporation-run public hospitals (peripheral, major and specialised), 16,505 in dispensaries, and 1,600 in maternity homes.[20]

> "Mumbai's public health facilities include health posts, dispensaries, maternity clinics, speciality hospitals and medical colleges."

1991 Development Plan

The 1991 DP, based on the 1996 URDPFI Guidelines, came into force during India's economic liberalisation. It did not prepare for Mumbai's unprecedented growth and was widely criticised for its conservative population projections for 2001 (Census year)—while it planned for a projected population of 98.07 lakh people, Mumbai's population grew to 119.78 lakh by 2001.[21]

The DP proposed that the city's new wave of development be triggered by creating residential and commercial growth centres in the suburbs and the required amenities, including health, be planned differently for the island city and suburban Mumbai (see Table 1).

Table 1: Medical space provision standards under the 1991 DP

	Island city	Suburban Mumbai
Population	3085411	9356962
Proposed reservation dispensary	0.013 square meters pp	0.013 square meters pp
Proposed reservation Maternity Home	0.021 square meters pp	0.042 square meters pp
Proposed reservation Hospital	0.167 square meters pp	0.33 square meters pp
Space specification for dispensary	1 dispensary/50,000 population - Area of site 668.9 square meters, covering an area of 1.5 km radius	1 dispensary/50,000 population - Area of site 668.9 square meters, covering an area of 1.5 km radius
Space specification for maternity home	50 beds/ 1,00,000 population -Area of site, 41.8 square meters/bed	50 beds/1,00,000 population- Area of site,83.61 square meters/ bed
Space specification for hospital	4 beds/1,000 population- Area of site- 41.8 square meters	4 beds/1,000 population- Area of site- 83.61 square meters/bed

Source: Municipal Corporation of Greater Mumbai health department[22]

Although the planners were able to achieve some balance in providing medical infrastructure across the city, they were "unable and unwilling to address the reality in front of them" of the growing population and appeared to be "planning for an alternate, utopian/ideal future outcome".[23] This meant that the amenities and infrastructure eventually proved insufficient to cater to the growing population. The shortcomings of 1991 DP became more evident after the 2012 existing land use (ELU) study,[24] which the 2034 DP has attempted to address.

2012 Existing Land Use

At the start of the planning process, urban local bodies conduct ELU studies to map and describe the amount of land in each land use category (residential, industrial, commercial) and the distribution of uses throughout the study area.[25]

The 2012 ELU revealed that only 271.17 square kilometres (65.34 percent) of the 415.05 square kilometres of the MCGM's planning area was developed. Medical amenities were made available only on 31.84 kilometre—or 1.17 percent—of the developed land, amounting to 0.77 percent of the total planning area.[26] Provisions were made for private hospitals on 62.97 hectares of land (0.63 square kilometres) as opposed to 56.05 hectares (0.56 square kilometres) for municipal hospitals, and municipal and government hospitals in suburban Mumbai were allotted less land than in the island city (see Table 2).

Table 2: Break up of actual land used for medical amenities (in hectares)

Type	Total land	Island City	Suburban Mumbai
Municipal Hospital	56.05	32.7	23.35
Private Hospital	62.79	20.55	42.23
Government Hospital	58.57	54.18	4.39

Source: 2012 Existing Land Use[27]

In instances of public land being reserved for private hospitals, the MCGM grants several concessions, such as providing additional floor space for construction. In turn, the private hospitals are expected to provide free medical treatment to patients from economically weaker sections (to at least 20 percent of its total bed capacity) and treat at least 10 percent of people in its out-patient department free of cost.[28]

A study mapping the medical amenities in the MCGM's planning area[29] against the standards prescribed by the National Urban Health Mission (NUHM)[30] highlighted the shortage of medical facilities in the city—Mumbai currently has a 70 percent deficit in health posts and dispensaries, a 79 percent deficit in maternity homes and a 55 percent deficit in hospitals (see Table 3). Of these facilities, the MCGM operates 26 maternity homes, 160 dispensaries, 183 health posts and 24 small and big municipal hospitals, peripheral and specialised hospitals and medical colleges.

Table 3: Shortage of medical facilities in Mumbai in numbers

	Health posts and Dispensaries	Maternity homes/ wards + post-partum centres	Hospitals (Municipal + State-run)
Island City	118	13	12
Suburban Mumbai	225	36	16
Greater Mumbai	343	49	28
NUHM standards	1197	239	62 (50 General hospitals and 12 speciality hospitals)
Deficit (Units)	854	190	34
Deficit (Expressed as %)	70%	79%	55%

Source: MCGM preparatory study and ELU 2012 survey, UDRI, NGO Praja Report, NUHM[31]

There are also widespread discrepancies in health infrastructure planning for the island city and suburban Mumbai. Although only 24 percent of Mumbai's citizens reside in the island city, they have access to 12 public hospitals, while the 76 percent who live in the suburbs have access to only eight such hospitals.[32] This is grossly inadequate to meet the economically weaker section's needs, given that 76 percent of the total urban population is concentrated in suburban Mumbai[33] and heavily reliant on public health facilities. Only 31 percent of Mumbai's total population accesses public medical facilities, and 65 percent of the economically weaker section are forced to use private and charitable health facilities.[34]

Merely allocating space for medical facilities is insufficient. "The mere use of demographics can lead to overestimation or underestimation of required bed numbers. Therefore, in addition to demographic changes, the impact of technological advances, periodic crises, emerging diseases, and epidemiology must be accounted for" in urban plans.[35]

2034 Development Plan

The 2034 DP was formulated through a participative process to determine the needs of the city.[36] Meetings and interactions with health, education, social welfare, gender, housing and other experts were held to make the plan more integrated.

It did away with having separate provisions for the island city and suburban Mumbai and determined these based on the per capita benchmarks and the new population projection of 12.79 million for entire Mumbai. This ensures that high-density areas will have a greater provision of health amenities.

The DP also considered that several private dispensaries, maternity homes and consulting clinics are located on a single floor of a building used for residential/commercial purpose,[37] which was not considered and accounted for in the 2012 ELU. This is important because such facilities cater to the population and must be accounted for to get a realistic picture of medical facilities.

> "The 2034 Development Plan was formulated after meetings and interactions with health, education, social welfare, gender and housing experts and citizens."

It identified a health infrastructure provision of 0.419 per square metre per person to ensure that all amenities across the city get an equal reservation. Maternity homes have a fixed provision of 0.045 square metres per person, hospitals have 0.360 square metres per person, and dispensaries 0.014 square metres per person (see Table 4). To meet this requirement, Mumbai will need 537 hectares of land (121.18 hectares in the island city and 415.88 hectares in the suburbs). However, the 2034 DP earmarks only 403 hectares for health amenities, a shortfall of 134 hectares.[38]

Table 4: Medical amenity provision in 2034 DP

MEDICAL AMENITIES (0.419 square meters pp)	
Dispensary	0.014 square metres per person
Maternity home	0.045 square metres per person
Hospital	0.360 square metres per person

Spatial gaps are apparent when the provisions determined in the 2034 DP are compared to existing health amenities and projected demand (see Table 5). The gap analysis highlights what is required to meet the minimum health standards of 0.419 square meter per person of health amenities.

> "Mumbai needs 537 hectares of land to meet the health infrastructure requirements of the 2034 development plan. Only 403 hectares have been earmarked."

Table 5:
Spatial data on health amenities

	Area (Hectares)	Population (2011 censes)	Slum population (Census 2011)	Projected population (2034)	Designated area (already existing) for medical amenities (DP- 2034)	Reservation made in DP 2034	Total provision for DP 2034	Demand for DP 2034	Surplus/ Deficit land(2034)
Island City	7097	3085411	860100	2885894	161.2	17.89	179.09	121.18	(+)57.91
Western	22249	5527025	2359400	5849334	75.51	54.28	129.79	245.61	(-) 115.82
Eastern	16482	3829937	1988200	4055271	39.81	54.32	94.13	170.28	(-)76.15
Suburban Mumbai	38731	9356962	4347600	9904605	115.32	108.6	223.92	415.88	(-) 191.96
Greater Mumbai	45828	12442373	5207700	12790499	276.52	126.49	403.01	537.06	(-) 134.05

Source: 2034 DP, Census 2011, 2012 ELU[39]

The following inferences can be made from the spatial data (Table 5):

- Mumbai has a 134-hectares spatial gap for health amenities, even after creating space for new health amenities in the 2034 DP
- Suburban Mumbai has a deficit in health amenities. It requires 192 hectares of space to meet the medical needs of its population but currently has only 115.32 hectares. In contrast, the island city needs 58 hectares and has designated 161.2 hectares, almost double the land required for health amenities
- The existing developed area for health infrastructure is about 51 percent of the 2034 DP requirement

The 2034 DP has provided new locations for hospitals and institutes of medical research and has suggested that the "health services of the city will fare better if they are supported by greater space allocation to older nationally reputed hospitals or more branches at fresh locations in the city where space is available. The city should also encourage newer entrants in areas in which Greater Mumbai is deficient".[40]

Importantly, although private hospitals were previously allotted land on the condition of setting aside 10 percent of their beds for the economically weak, this has not been monitored.[41] Another issue impacting the implementation of the DPs and the augmentation of medical amenities is the unattractive land policies for private owners, such as the accommodation reservation rule,[42] which stipulates that a private landowner be adequately compensated for giving out part of their land for public use. If all reservations mentioned in the DP (59.43 million square metres) are to be acquired, the civic body will need to spend INR 12,198 billion (at 2013-14 prices).[43]

However, according to the 2034 DP, "reservations were still viewed as a negative imposition" by private owners. It added: "Since reservations are for the purpose of public amenities enjoyed by the entire city population at the cost of the reserved landowners, it is only fair and equitable that the reserved landowners get adequately compensated," but an "adequate compensation formulae had not been worked out by the policymakers making it difficult for land acquisition".[44]

Additionally, the costs required to acquire land for asset building are out of the reach of most urban local bodies in the country, including the MCGM since most of its funds are earmarked for wages and other administrative expenses.[45] Regulations such as the Rent Control Act (1947) and Urban Land Ceiling Act (1976) exacerbated land demand and saturated housing stocks, resulting in the city having the world's 16th highest residential property rates.[46]

Urban Budgets

An examination of the MCGM's three most-recent civic budgets shows that there were minor changes in revenue and capital expenditures related to public health facilities (see Table 6). In 2020-21, the civic body allotted INR 4260 crore (13 percent of its total budget) to run existing public health facilities, INR 3211 crore has been allotted for revenue expenditure (primarily administrative expenses) and INR 1049 crore for capital expenses (permanent repairs, purchasing equipment).[47]

Since 2018-19, despite an increase in the demand for facilities, almost the same percentage of financing has been allotted, leading to severe shortfalls in provision (as exposed during the COVID-19 crisis).

Table 6: A three-year expenditure evaluation for public health in the MCGM budget

	2020-21	% of total expenses	2019-20	% 2019-20	2018-19	% 2018-19
Revenue expenditure for public health	3211	17	3345	17	2905	16
Capital expenditure for public health	1049	7	806	7	732	8
Total MCGM budget	33441		30692		27258	
Public health expenditure as a % of budget	13		13		13	

Source: MCGM budget 2020-21[48]

An analysis of the MCGM budget shows that barely 17 percent of the city budget's total revenue is directed to expenses related to health amenities, which makes up only 7 percent of the asset creation in terms of capital expenses. This has been an important contributor to the poor implementation of the city's spatial health provisions.

The city and state governments must focus on improving Mumbai's health infrastructure to meet global standards and cater to the demands of the rapidly growing migrant population. Mumbai's private healthcare sector is of superior quality, and the governments must consider promoting it for health tourism to reap economic dividends. This will require additional funds to support the city, but recent changes to taxation laws[49] and policies have hit the city's revenue streams.[50]

The existing budgets need to be adequately complemented with a special investment fund to enhance Mumbai's health infrastructure[51] through public-private partnerships or health bonds.

> "The MCGM's inadequate budget for health amenities is an important factor in the poor implementation of Mumbai's spatial health provisions."

Poor Implementation

While funding remains a major challenge in achieving health infrastructure planning targets in cities, the implementation of DPs is another serious challenge. While there is great emphasis on planning, little attention is paid to the implementation process. An analysis of the 1991 DP reveals that only 33.65 percent of the actual plan was implemented; health amenities, which fall under social infrastructure, saw only 31.29 percent implementation (see Table 8).[52]

Table 8: DP 1991 implementation

SECTOR	AREA RESERVED (Ha)	IMPLEMENTED	% IMPLEMENTED
Physical infrastructure	1150	453	39.39
Social infrastructure	3195	1000	31.29
Others	5338	1806	33.83
TOTAL	**9683**	**3259**	**33.65**

Source: Revised Draft Development Plan Report 2014-34[53]

According to the 2034 DP, the poor implementation is attributable to two main factors—the inability to fund the implementation of the DP, and the disengagement of the DP from the annual budget formulation exercise. The "lack of resources for DP or disregard of DP leading to sizeable amenity deficits will only lead to [a] progressive drop in quality of life".[54]

Although the 2034 DP has identified a more robust source of funding for its implementation (the accommodation reservation rule), this will also not suffice to meet the city's growing demands and fulfil the health targets.

DPs are the outcome of a multi-layered process, with several revisions at the urban local body and state government level. The 2034 DP was adopted in September 2018 after a four-year delay. The 1991 DP also saw similar setbacks. A separate assessment of the finalisation process must be conducted to eliminate causes for delays in the spirit of the 74th Amendment of the Constitution.

In 2018, the MCGM proposed establishing a separate cell to oversee the DP's implementation, recruit professionals from the planning and geospatial sectors, create a databank and provide inputs to the MCGM's planning team.[55] However, no progress has yet been made on this front.

Conclusion

Sayli Udas-Mankikar *is a Senior Fellow at ORF Mumbai.*

Mumbai is illustrative of the massive challenges in providing healthcare access to urban populations, especially the poor. Despite having some of the finest healthcare institutions in the country, the city continues to suffer severe gaps in health planning. To be sure, these issues are not unique to Mumbai—most cites face similar problems, although differing in intensity given the area and population densities. Cities must urgently address their growing populations' health needs through sound urban planning and the timely implementation of plans, backed by sufficient funding. The planning and budgeting processes of municipal bodies must be aligned with land policies for better urban health planning.

Adopting a multi-government level approach to health provisions—where different levels of government oversee various facets of the healthcare sector (primary, secondary and tertiary services, and preventive, promotive and rehabilitative services)—could translate to better healthcare. For instance, municipal corporations can be responsible only for primary healthcare, which needs the most attention and can benefit from the corporations' devolved administration structure.

> "Inclusive systems and complementary policies are needed to build healthy cities."

City budgets are often insufficient to fulfil the responsibilities outlined in the Twelfth Schedule of the Constitution. Private investments in the health sector must be encouraged and streamlined through bonds, public-private partnerships, impact investment and other similar means to overcome the financing gap.

City-specific health master plans, such as those in Singapore,[56] or regional planning, as in Sri Lanka,[57] can also help cater to the specific needs of urban areas like Mumbai. Active citizen participation and feedback is an important part of this process.

In Mumbai, the COVID-19 pandemic has also revived debates on whether having a single authority, like a city chief executive officer or a directly appointed mayor, can ensure better administration in times of crises.[58] Having a directly elected mayor, like in London, could prove crucial for better governance and greater transparency. A healthy Mumbai cannot be achieved through the allocation of land and building infrastructure alone. Inclusive systems and complementary policies must supplement this to improve the quality of life and urban residents' accessibility to resources.

Endnotes

1 Saubhadra Chatterji, "Centre identifies 4 cities as role models for handling Covid-19 pandemic," *Hindustan Times*, May 25, 2020, https://www.hindustantimes.com/india-news/centre-identifies-4-model-cities-for-covid-handling/story-9dm4dVcsqvZU0YGWMynbEN.html

2 Yogita Limaye, "Mumbai: How Covid-19 has ravaged India's richest city," *BBC News*, May 27, 2020, https://www.bbc.com/news/world-asia-india-52798740

3 C. R. Pathak, " Spatial Planning in the Context of Decentralised Planning in Developing Countries: A Case Study of India," in *Dynamics and Conflict in Regional Structural Change*, ed. M. Chatterji and R. E. Kuenne (London: Palgrave Macmillan, 1990), pp. 243-244.

4 Government of India, *Urban and Regional Development Plans Formulation and Implementation Guidelines,* New Delhi: Ministry of Urban Affairs, 2015, http://tcpo.gov.in/sites/default/files/TCPO/schemes/URDPFI.pdf

5 Government of India, *Urban and Regional Development Plans Formulation and Implementation Guidelines*

6 Government of India, *Urban and Regional Development Plans Formulation and Implementation Guidelines*

7 M. S. Eeshanpriya, " Mumbai saw most Covid-19 deaths in May; fatalities on decline, says civic corporation," *Hindustan Times*, August 15, 2020, https://www.hindustantimes.com/mumbai-news/mumbai-saw-most-covid-19-deaths-in-may-fatalities-on-decline-says-civic-corporation/story-624LosXcu1mSSdJM5BdyHP.html

8 Kunal Purohit, " Coronavirus: All the reasons why Mumbai's mortality rate remains worryingly high," *Scroll,* August 14, 2020, https://scroll.in/article/970243/coronavirus-these-are-the-mistakes-that-have-led-to-a-high-mortality-rate-in-mumbai

9 "Mumbai DCPR 2034: Can it solve Mumbai's real estate problems?," *Housing.com*, November 18, 2020, https://housing.com/news/mumbai-dcpr-2034-solve-real-estate-problems/

10 P.M. Bakshi, The Constitution of India - 17th Edition (Universal, 2020), Schedule 12.

11 The Mumbai Municipal Corporation Act 1888, in the Bare Acts Live, http://www.bareactslive.com/MAH/MH167.HTM (accessed December 5, 2020). Bare Acts Live. http://www.bareactslive.com.

12 Government of Maharashtra, *The Maharashtra Regional and Town Planning Act, 1966* , Mumbai: Judiciary Department, 2015, https://mmrda.maharashtra.gov.in/documents/10180/6868243/MRTP+act+1966+Modified+upto+26+th+nov+2015.pdf/d87e0cb2-1674-406a-af50-87e36471509d;jsessionid=72D515E883081085AB86923A8D850AB5?version=1.0.

13 The Maharashtra Regional and Town Planning Act, 1966, pp. 20.

14 The Mumbai Municipal Corporation Act 1888, in the Bare Acts Live, http://www.bareactslive.com/MAH/MH167.HTM (accessed December 5, 2020). Bare Acts Live. http://www.bareactslive.com.

15 Government of India, *National Policy on Disaster Management 2009*, New Delhi:Ministry of Home Affairs, 2009, https://ndma.gov.in/index.php/publication/National_Policy

16 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, Mumbai: Government of Maharashtra Department of Urban Development, 2018, pp. 24.

Endnotes

17 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 1.

18 Mariam Dosal, "A Master Plan for the City: Looking at the Past," *Economic and Political Weekly*, 40 (2005): 3898.

19 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 24.

20 MCGM Budget 2020-21, Brihanmumbai Mahanagarpalika, (Municipal Corporation of Greater Mumbai, 2020), pp. 52.

21 Review of two development plans, in Shodhganga online library, https://shodhganga.inflibnet.ac.in/bitstream/10603/214644/9/09_chapter%203.pdf (accessed July 17, 2020). Shodhganga. https://shodhganga.inflibnet.ac.in

22 Prachi Merchant, Senior Urban Planner, MCGM, in an email to author, August 12, 2020.

23 "Review of two development plans"

24 Municipal Corporation of Greater Mumbai, *Comprehensive Mobility Plan (CMP) for Greater Mumbai*, Mumbai: Government of Maharashtra Department of Urban Development, 2018, https://portal.mcgm.gov.in/irj/go/km/docs/documents/MCGM%20Department%20List/Roads%20and%20Traffic/Docs/CMP%20for%20Greater%20Mumbai/Executive%20Summary/Executive%20Summary.pdf

25 Douglas Miskowiak, *Citizen's Guide to Future Land Use Mapping*, Wisconsin, Center for Land Use Education University or Wisconsin-Stevens Point, 2006 , *https://www.uwsp.edu/cnr-ap/clue/Documents/DataMappingGIS/Citizen_Guide_Future_Land_Use_Mapping.pdf*

26 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 24.

27 Development Plan for Greater Mumbai 2014-2034, Existing Land Use Maps and Report, Mumbai: MCGM, 2012

28 Government of Maharashtra, *The Development Control Regulations for Mumbai 1991*, (Mumbai: Urban Development Department) https://maharashtrahousingandbuildinglaws.com/the-development-control-regulations-for-greater-mumbai-1991/

29 "Planning for Mumbai, The Development plan for Greater Mumbai 2014-34", Urban Design Research Institute, Praja, (2014), https://www.slideshare.net/mumbaikaar/planning-for-mumbai-the-development-plan-for-greater-mumbai-2014-2034

30 National Health Mission, *National Urban Health Mission Guidelines*, (New Delhi: Ministry of Health, 2013), https://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=1232&lid=329

31 MCGM preparatory study and ELU 2012 survey, UDRI, NGO Praja Report, NUHM

32 MCGM preparatory study and ELU 2012 survey, UDRI, NGO Praja Report, NUHM

33 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 33

34 Planning for Mumbai, The Development plan for Greater Mumbai 2014-34, UDRI, Praja

Endnotes

35 Hamid Raghavi et al., Models and methods for determining the optimal number of beds in hospitals and regions: a systematic scoping review, in Springer Nature articles, BMC Health Services Research, https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-020-5023-z#citeas (accessed October 12, 2020). BMC Health Services Research. https://bmchealthservres.biomedcentral.com.

36 Puneet Bhatia, "Development Plan 2034: will it help Mumbai residents?," *Mint*, July 17, 2018, https://www.livemint.com/Money/dOxERVOmjg6StKdjvGPDXJ/Development-Plan-2034-will-it-help-Mumbai-residents.html

37 Prachi Merchant, Senior Urban Planner, MCGM, in an email to author, August 12, 2020.

38 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 71.

39 Revised Draft Development Plan 2034, Census of India 2011, Existing Land Use Maps and Report, MCGM, 2012

40 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 143.

41 Shweta Raut-Marathe, "Maharashtra charitable hospitals have long enjoyed perks – without meeting obligations to the poor," *Scroll(dot)in*, October 26, 2018, https://scroll.in/pulse/899432/maharashtra-charitable-hospitals-have-long-enjoyed-perks-without-meeting-obligations-to-the-poor

42 Sandeep A Ashar, "Mumbai: Giving up plots for public use will bring in rewards," *The Indian Express*, May 3, 2016, https://indianexpress.com/article/cities/mumbai/mumbai-giving-up-plots-for-public-use-will-bring-in-rewards-2781426/

43 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 189

44 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 129

45 Sayli Mankikar, "The Impact of GST on Municipal Finances in India: A Case Study of Mumbai", *ORF Issue Brief*, no 257 (2018), https://www.orfonline.org/wp-content/uploads/2018/09/ORF_Issue_Brief_257_GST-Municipal_N.pdf

46 Kailash Babar, " Mumbai is 16th most expensive prime residential property market in the world", *Economic Times*, May 7, 2019, https://economictimes.indiatimes.com/industry/services/property-/-cstruction/mumbai-is-16th-most-expensive-prime-residential-property-market-in-the-world/articleshow/68296245.cms?from=mdr

47 Statement of Praveen Pardeshi, "MCGM Budget 2020-21", (Speech made at the standing committee hall, Brihanmumbai Mahanagarpalika, Mumbai, February 4, 2020)

48 MCGM budget 2020-21

49 Sayli Mankikar, "The Impact of GST on Municipal Finances in India: A Case Study of Mumbai"

50 Sayli Udas-Mankikar, "Property tax reforms key for India's post-Covid urban transformation", the website of *Observer Research Foundation*, September 24, 2020, https://www.orfonline.org/expert-speak/property-tax-reforms-key-india-post-covid-urban-transformation/

Endnotes

51 Sayli Udas-Mankikar, "A fixed annual statutory fund could be the answer to cash strapped cities," the website of *Observer Research Foundat*ion, June 18,2020, https://www.orfonline.org/expert-speak/a-fixed-annual-statutory-fund-68090/

52 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 184.

53 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 184

54 Municipal Corporation of Greater Mumbai, *Revised Draft Development Plan 2034 (RDDP)*, pp. 185.

55 Arita Sarkar, "Development Plan 2034: Work on implementation likely to begin from Oct 1,"*The Indian Express*, July, 3, 2017, https://indianexpress.com/article/cities/mumbai/development-plan-2034-work-on-implementation-likely-to-begin-from-oct-1-4732519/

56 Ministry of Health, Singapore Government, *The Healthy Living Masterplan*, Singapore: Ministry of Health, 2012, https://www.moh.gov.sg/resources-statistics/reports/the-healthy-living-master-plan

57 Ministry of Health, Government of Sri Lanka, *National Health Strategic Master Plan*, Colombo: Ministry of Health, 2016 , http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/HMP2016-2025/Health%20%20Admin%20-%20%20HRH.pdf

58 Ramanath Jha, "Strengthening municipal leadership in India: The potential of directly elected mayors with executive powers", ORF Occasional Paper, September 04, 2018.

Images used in this paper are from Getty Images/Busà Photography.

20, Rouse Avenue Institutional Area,
New Delhi - 110 002, INDIA
Ph. : +91-11-35332000. **Fax :** +91-11-35332005
E-mail: contactus@orfonline.org
Website: www.orfonline.org