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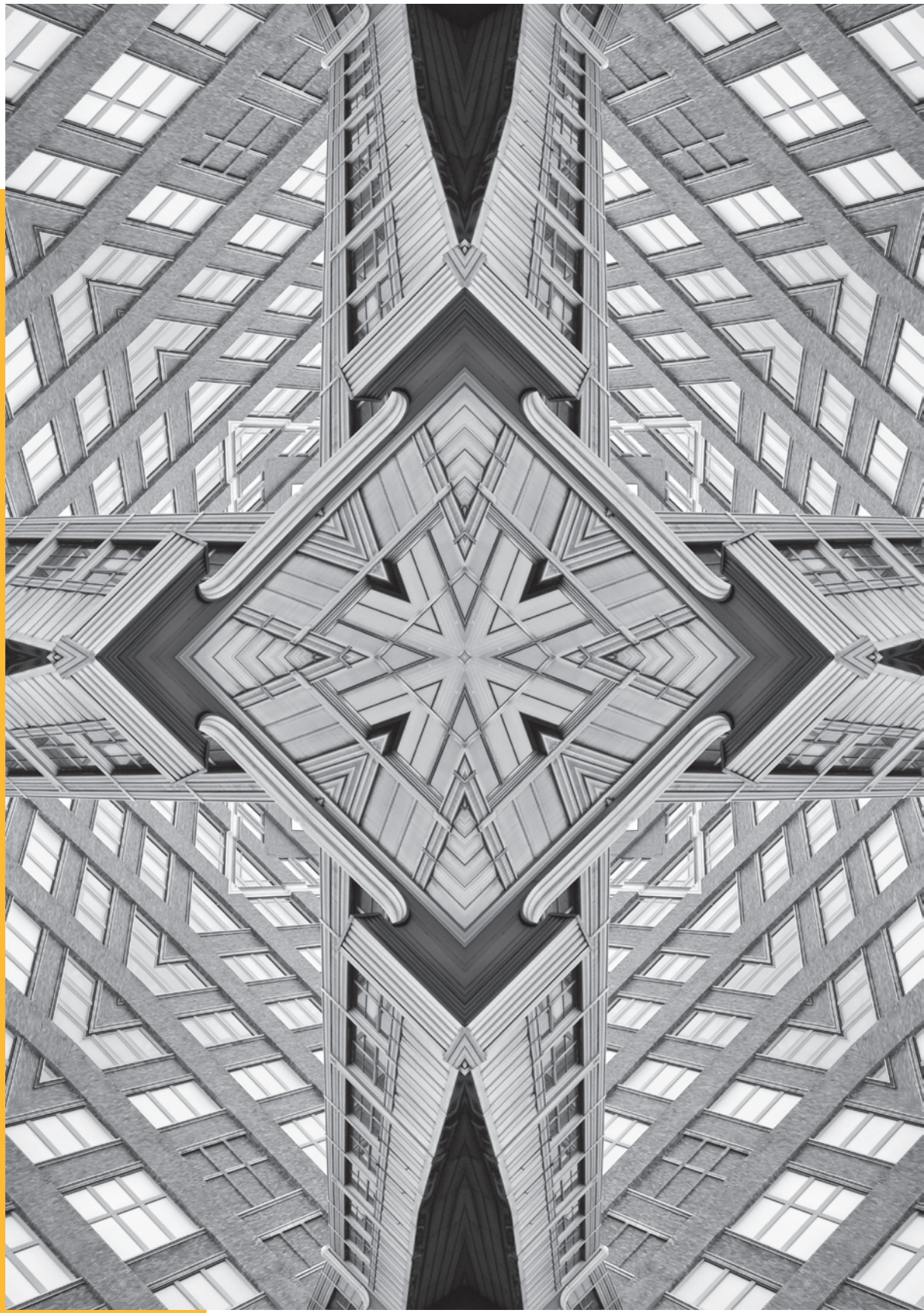
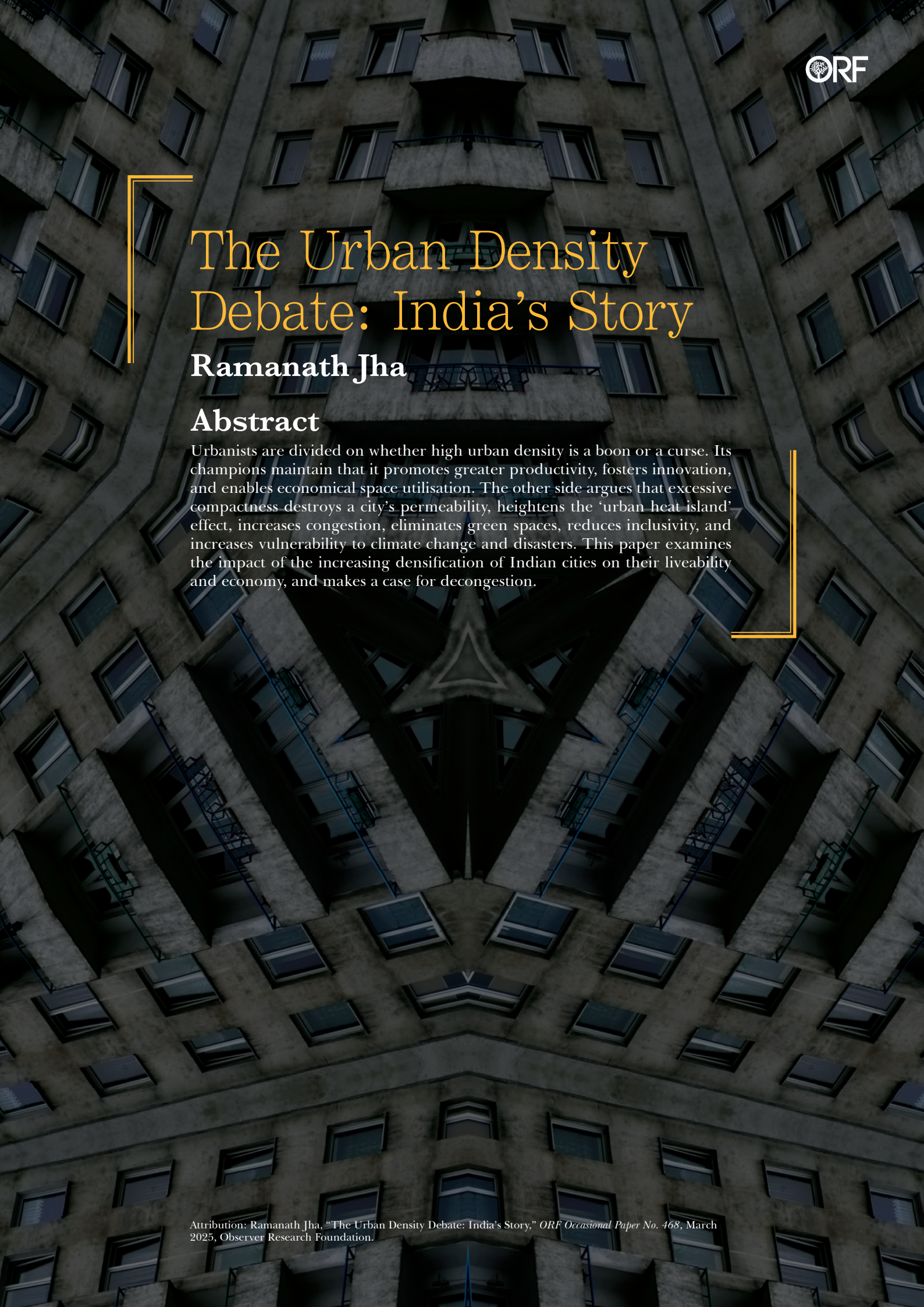


ISSUE NO. 468 MARCH 2025



The Urban Density Debate: India's Story

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Abstract

Urbanists are divided on whether high urban density is a boon or a curse. Its champions maintain that it promotes greater productivity, fosters innovation, and enables economical space utilisation. The other side argues that excessive compactness destroys a city's permeability, heightens the 'urban heat island' effect, increases congestion, eliminates green spaces, reduces inclusivity, and increases vulnerability to climate change and disasters. This paper examines the impact of the increasing densification of Indian cities on their liveability and economy, and makes a case for decongestion.

Attribution: Ramanath Jha, "The Urban Density Debate: India's Story," *ORF Occasional Paper No. 468*, March 2025, Observer Research Foundation.

'Urban Density', Defined

'Density', a concept borrowed from physics,[a] becomes more complex when applied to the study of cities.[1] In studies of urban housing, the term used is 'residential density', generally expressed as dwellings per hectare (dph).[2] While analysing overall construction in an urban area, the expression used is 'building density'. The total employment in a specific area is communicated as 'job density'. In many cities, people come in large numbers from outside city boundaries for a variety of purposes—to trade, to visit offices, to make purchases or deals, to depart or arrive by air or rail, to attend political rallies, sports events or musical concerts—and then leave at the end of the day for their destinations outside the city. Such cities witness different densities during day hours and outside of them. This has given rise to the expression 'fluctuating density'. In office-dominated areas of a city, people coming in are generally from within the city, arriving in the morning and leaving in the evening. This is more or less rhythmical, and volumes are more or less constant. This phenomenon is referred to as 'population density rhythm'.[3]

There is also 'internal density'[4]—the total number of people inside a building, generally measured in square metres per person. Other phrases used in this context are 'too dense', 'density done well', 'Goldilocks density'[b] and 'optimal quality density',[5] each referring to different things. How much is the optimal urban density that can be called 'good'? There are sharp differences of opinion, and what is considered high urban density by some may be regarded by others as 'urban sprawl'.[c,6]

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a Density = Mass / volume.

b Goldilocks' density recognises the value of urban density but does not want it to be pursued as a singular objective leading to the sacrifice of good, balanced liveability.

c 'Urban sprawl' denotes the outward expansion of a city into non-urban areas with low-density housing, commercial development and inefficient use of services. Such urban growth is generally loosely regulated.

Urban Density and Population Density

How do city populations increase? The first path is the normal rise of the internal urban population as a result of births outpacing deaths. The second is the geographical extension of a city's boundaries via the administrative act of subsuming adjoining peri-urban or rural areas. The third is through reclassification—settlements earlier classified as rural get labelled as urban by declaring an overgrown village as a municipality. The fourth is rural-to-urban and urban-to-urban migration.

This paper views 'urban density' solely in the context of 'population density'; other aspects of city density, such as building density or employment density, flow out of the demographic context. It also considers only the residential population of a city and not the floating population that comes for business during working hours and leaves thereafter. The focus is also not on the density of small, segmented areas of a city but on gross density.

Densities within particular areas of a city may be very high or very low, which has its own consequences. Dharavi, a 2.17-square-km area in Mumbai often described as the biggest slum in Asia, is also one of the densest in the world, with 850,000 people living in roughly 55,000 dwelling units, or a population density of 340,000 persons per square km.[7] A contrasting example would be the Garadagh district of Baku, the capital of Azerbaijan: it has an area of 1.8 square km and a population of 118, giving it a population density of 66 persons per square km.[8]

Table 1 lists some illustrative cities to emphasise the wide variation in urban density.

Table 1: Urban Density Variation

City	Country	Density per sq km
Manila	Philippines	74,750
Baghdad	Iraq	53,212
Mumbai	India	52,287
Dhaka	Bangladesh	47,056
Bengaluru	India	18,905
New York	US	16,844
Greater London	UK	9,094
Bangkok	Thailand	7,157
Minneapolis	US	4,899
Manchester	UK	4,176
Berlin	Germany	3,809

Source: World Population Review, "Population Density by City 2024"[9]

Urban density can be defined as the ratio of the total population of a city to the total footprint the city occupies.[10] Among countries, 13 of the 50 most populated cities in the world are in the Philippines, including four of the 10 densest urban human settlements.[11] Most of the densest cities, as shown in Table 1, are in the developing world. In the developed world, densities are typically much lower, even in the largest cities, and appreciably low in the smaller ones. Quite clearly, urban density across the world is asymmetrical; it is also dynamic.

Urban density can be either promoted or discouraged using various financing instruments. It can be incentivised through betterment levies, public-private partnerships to assist physical and social infrastructure, supporting select development through tax incentives, raising the floor space index (FSI)[d] permitted or by issuing municipal bonds.[12] The converse can be attempted through tax disincentives, restrictions on FSI, and zoning.[13] The efficacy of these measures, however, will vary, depending on the overall economic, demographic, and social context in which a city operates.

d Floor space index is the ratio of the total floor area of a building or buildings on a plot of land to the size of the land plot. It is an indicator of how much – and especially how high – one can build on a plot of land. Terms such as floor area ratio (FAR), floor space ratio, plot ratio and site ratio express the same concept.

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Cities can be made to undergo radical recalibration in density over a period of time. In the US, the beginning of the 20th century witnessed large numbers of rural residents moving to cities to seek economic opportunities.[14] As demand rose, developers added to the housing stock of those cities at a feverish pace. Within three decades (1900-1930), Detroit, for instance, saw a four-fold demographic increase, while Pittsburgh and New York doubled their populations.[15] However, in the 21st century, the most successful cities—New York, San Francisco, Los Angeles and Washington—have done a volte-face and taken an anti-density stand. They are now aiming to curtail the growth of their populations through tight zoning regulations that prohibit the construction of dense development.[16] New York, for example, has been divided into zones, with a maximum building height and extent of land use set for each zone. This was challenged in court as a violation of the US Constitution's Fifth Amendment, but the US Supreme Court validated the regulation's constitutionality,[17] ruling that "if they are not arbitrary or unreasonable, zoning ordinances are constitutional under the police power of local governments as long as they have some relation to public health, safety, morals, or general welfare."[18]

This resulted in the use of two land instruments (or two kinds of land classification): one aimed at segregating uses (such as residential, commercial, or industrial) and the other at regulating the intensity of land use (such as maximum residential density in a zone, captured through the concept of FSI). In effect, these regulations dampened the growth of density and promoted single-family homes.[19]

The Positives of Increased Urban Density

Given the high rate of rural-to-urban migration in India, some observers have advocated raising the permissible FSI in urban areas to meet the growing housing shortage[20] and thereby check the proliferation of unauthorised constructions.[21] They argue that states need to realign FSI regulations with the "evolving urban landscape and developmental needs."[22] In Mumbai, particularly, where the challenge for India is at its most acute, an architect[23] has observed that the mismatch between demand and supply could only be addressed by raising the FSI to a uniform 5, though the actual need was for at least 8.[24]

Some Western economists are also advocates of high urban density, quantifying their benefits.[25] They note that revenue and income generation in cities is almost always higher than in their surrounding peri-urban or rural areas.[26] They point out that the extent of economic activity in cities is closely related to demographic concentration, that while cities take up about 3 percent of the world's total landmass,[27] they generate more than 80 percent of the world's gross domestic product (GDP).[28]

This is perhaps the biggest benefit that is showcased—that urban density fosters economic growth. Bringing a large number of people in close proximity with one another fosters higher economic productivity, also known as 'agglomeration economies.'[e,29] Economists list three clear gains of agglomeration: greater sharing of inputs and infrastructure; a larger workforce pool with diverse skills; and better ability to exchange ideas and information, labelled as 'knowledge spillovers'.[30]

Some social scientists and urban planners too, share this view. They feel there should be no limits to urban density, even in the currently densest cities.[31] They point out that cities are primarily economic entities and prime generators of economic growth and national wealth.[32] Naturally, nations across the world are working towards the compact urban form,[33] so that there can be greater utilisation of resources available.

Some of the world's largest cities take up relatively little space. Tokyo, the number one city globally in terms of GDP, occupies 0.6 percent[34] of Japan's area but contributes 21 percent of its GDP.[35] Similarly, China's premier city, Shanghai, with a land area share of 0.1 percent, accounts for 3.8-5 percent

e The term 'agglomeration economies' refers to the geographic concentration of economic activity, also called clustering, and the benefits that accrue from it. Clustering happens when firms and people get located in very close proximity. This results in businesses profiting from one another, leading to superior economic performance for firms and workers.

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of its GDP.[36] New York City, the largest city in the US, occupies 1 percent of the country's area but contributes 8 percent of its GDP;[37] and Greater London has about 0.6 percent of the UK's area but is responsible for 23 percent of its economy.[38]

Similarly, Mumbai, India's richest city, occupies 0.01 percent of the country's territory but generates 6.6 percent of national GDP.[39] Overall, Indian cities take up just 3 percent of its land area but are home to over a third of its population and contribute 62 percent of its GDP.[40]

Geographers and social scientists have noted that urban density impacts a city's innovative capacity,[f] with high urban densities offering increased scope for seminal interaction and efficiency.[41] Studies have shown that 'production and exploitation of information externalities' (the same as 'knowledge spillovers') rises with higher density.[42] Density brings diversity, as the people congregating come from different knowledge backgrounds and geographical areas, and the greater their numbers, the more the diversity and analytical skills they bring in. Similarly, it has been found that 'patent intensity'[g] has a positive correlation with 'employment density'[h] in a city: all else being equal, if one city has twice the employment density of another, it will also have 20 percent higher patent intensity.[43] The densest cities play an enhanced role in the flow of ideas that engender innovation and growth.[44] It is also seen that high-tech industries have a propensity to cluster together, leading to 'urban creative-density' which is a catalyst for innovative processes.[45]

Spatial demographic concentration in cities also leads to economisation of space and its more efficient utilisation. It prevents the conversion of agricultural land into non-agricultural use, thereby reducing the negative impact of such conversion on food productivity and natural vegetation.[46] Farmers in the US have campaigned against the loss of their farmland due to expanding cities, which has led to several US states adopting farmland preservation programmes.[47] 'Right to farm' laws have been passed to protect farmers from nuisance lawsuits filed by entities seeking to take over farmland for non-farming activities.[48]

To protect farmland, some states also employ zoning regulations that dictate minimum land parcel size, list permissible uses of farmland,[i] and render sale for other uses, difficult.[49] The zoning regulations aim to minimise urban expansion into agricultural lands. If some other uses are allowed, they are

f 'Innovation' is defined as the novel application of economically valuable knowledge.

g 'Patent intensity' is defined as the per capita innovation rate.

h Employment density = jobs per square mile/square kilometre

i Only uses which have some relation to agriculture are permitted.

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highly restrictive in nature, with the ultimate objective of preventing erosion of the area's substantially rural character. Zoning regulations are also known to set urban growth boundaries (UGBs), thereby prescribing limits to a city's projected outward growth and forcing cities to plan growth inwards through increased FSI and density, resulting in more compact and efficient development occurring in existing urban neighbourhoods within the boundary.[50]

A further salutary advantage of high FSI is that while encouraging compactness, it also makes more space per person available. Studies have shown that every 20-percent increase in floor space at commercial centres is associated with a 4.5-percent increase in ride-sharing and transit use.[51] High FSI thereby contributes to ridership, fare box usage and viability of public transport systems. With more people living and working in an area, the distances of travel to office, home and market, become shorter. This improves overall efficiency by saving on commuting time,[52] also thereby sparing more time for socialising and family bonding, as well as instilling a feeling of greater security.[53] Where densities are low, people feel vulnerable and isolated.[54]

Indian planners have been using zoning tools too, seeking to contain urban sprawl by demarcating particular areas as 'agricultural zones' or 'no development zones,' to prevent quality agricultural land from being diverted for non-agricultural uses.[55] Zoning also helps foil attempts at stretching out built development into undeveloped areas far from the peripheries of the developed city that will eventually force the urban local body (ULB) in charge of the city to extend infrastructures at great cost to these fresh areas with very minimal returns. The idea is to promote dense development rather than a sprawl. However, as more people flock to an urban area, the need for more land to accommodate them also arises, leading to a gradual release of lands from agricultural and no-development zones.[56]

Density also has direct impact on consumption. It has been found that the higher the density of a geographical area, the greater the consumption of goods, which leads to increased volumes of shopping and variety of local shops and services in the area. The National Sample Survey Office (NSSO) for 2022-23 on household consumption showed that the average monthly per-capita consumption expenditure (MPCE) for urban areas was INR 6,459 as against INR 3,773 for rural areas, or 71-percent higher in urban areas than in rural.[57] Thus, not only does the average urban family have the capacity to spend more than its rural counterpart, but greater urban densities also increase urban consumption considerably.

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Juxtaposing the above data on a hypothetical scenario, it can be concluded that if 5,000 families resided in one square km of a city, they would consume goods worth INR 32.29 million per month, while 100 families in a village occupying the same space of one square km would consume a mere INR 377,000–urban consumption would be 85.95 times higher than rural. The data on online shopping is more revealing. A survey conducted in India between 2020 and 2021 found that 90 percent of online retail spending was from urban regions.[58] This means that 36 percent of India's population, as the urban share is estimated to be (2023),[59] made 90 percent of the country's online purchases.

A further significant consequence of high urban density is that it requires people to travel shorter distances and thus encourages walking. Studies have also concluded that high density is positively associated with the use of public transport,[60] demand for which increases as population density rises. On the other hand, low-density development promotes private vehicle dependency and discourages trips on foot, biking, and public transit. Further, as density increases and ridership goes up, the total cost per passenger mile goes down.[61] Fare box revenues rise, fuel costs and energy consumption dip, and operational expenses fall.[62] For the commuter too, not only is there more public transport available, but also the cost of such transport may fall. Since the public transit is spending less per kilometre, its savings may partially get passed on to the commuter, whose household outgo on transportation thereby reduces.[63]

The capital costs of public transits being high, they need to be supported by high densities to make them viable. This is why 'transit-oriented development' (TOD) has become an effective tool for urban planning across the globe. TOD promotes a model of urban development where housing, businesses, and amenities are concentrated within walking distances from the public transit, and thus brings commuters, services and activities together. It thereby supports public transport, supplemented by short-distance cycling or walking.[64]

TOD can be a great social tool as it brings large numbers of people together, developing complete neighbourhoods by integrating housing and employment in a small geographical area of the city.[65] This reduces isolation and social exclusion, especially for those who do not possess personal transport. It promotes community interaction and shared activities. Taken further, TOD can craft new neighbourhoods equipped with mixed uses, walking, cycling and public transport to maximise growth potential, promote short trips, minimise pollution, and enhance environmental quality.[66]

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A successful example of such planning is Hong Kong, with a population of around 7.5 million people,[67] which has one of the most efficient public transportation systems in the world. Its TOD policies have had a decisive influence on the shape of its urban landscape.[68] It has mixed-use development around its public transportation hubs, pedestrian-centric design, and compact development. Its public transportation system combines buses, trams, ferries, and the mass rail transit—all finely knit together, allowing the city's commuters to enjoy the convenience of seamless connectivity.[69] It moves about 12.4 million passengers per day, 42 percent of them by its mass transit railway (MTR) and is probably the sole public transportation system in the world that makes a profit.[70] Stockholm in Sweden, Curitiba in Brazil, Tokyo in Japan, Melbourne in Australia, and Seoul in South Korea are other examples of TOD planning that have bestowed on these cities a combination of efficient transport with sustainable growth, clean environment, high efficiency, and a vibrant urban life.[71]

TOD also has a positive impact on a city's freight transport.[j] Rising density, resulting in increased economic activities also hikes demand for urban freight transport. In a dense city, since distances are shorter, each freight vehicle can pick up more goods and deliver to more destinations than in diffuse ones, thereby servicing more citizens and more businesses in a given time frame. Greater freight transport efficiency directly contributes to greater competitiveness of goods in domestic as well as export markets,[72] and supports ease of doing business, while also economising on energy use, thus reducing pollution and promoting sustainability. Urban freight is estimated to account for 10 percent of India's freight-related carbon emissions and is the biggest contributor to in-city transport-related nitrogen oxide (NOx)[k] and particulate matter (PM)[l] emissions.[73]

With municipal services too, such as water, gas, electricity and waste disposal, as density rises, the per capita cost of providing them diminishes. The length of water and gas pipelines reduces as does that of electricity cables and wires; capital costs go down and there are fewer leakages over the shorter distances.

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j Freight transport refers to the total movement of goods from one place to another. Standard freight includes commercial goods, commodities and bulk merchandise.

k NOx: Nitrogen oxide and its various derivatives react either as gases in the air, or as acids in droplets of water, or as a salt. Together, these gases, acids and salts contribute to pollution and acid rain.

l Particulate Matter (PM) is a mixture of many chemical species, either directly emitted from sources or formed through chemical reactions in the atmosphere. Being inhalable, they can have adverse health consequences.

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Distances to be travelled to collect and transport waste get reduced, leading to fuel savings, less pollution, and quicker garbage collection trips, making the waste management system smaller, more economical and more efficient. Other social amenities of the city, such as playgrounds, gardens, swimming pools and libraries are also shared more.

Higher density can also positively impact housing affordability, as the cost of land per dwelling is reduced.[74] Since consumption items are available within shorter distances, fewer people acquire cars and parking space requirement also falls. A larger concentration of residents and the resultant larger demand from a smaller area sustains larger volumes of services and facilities,[75] giving residents a wider menu of options, be it in restaurants, theatres, cinemas or other avenues of entertainment and recreation.[76] The inter-reliant economic development may even create fresh employment.[77]

Some urbanists have also argued that greater urban density promotes greater urban sustainability, as densely occupied residential buildings result in dwelling size reduction and therefore, lower energy consumption.[78] Studies have further shown that the efficiency of energy consumption in service establishments is higher for densely populated cities, which promotes environment-friendly economic growth.[79] Indeed, a global study of nine regions found that megapolises consumed even less energy than megacities in six of them,[m] with the average energy drop being 29.88 percent. In the same vein, medium-sized cities were on average 18.35 percent more energy-efficient than small cities in six regions.[80]

In India, the importance of density was highlighted as early as 1983 by the Task Force on Housing and Urban Development's report to the Planning Commission.[81] It stated, "Most Indian cities, paradoxically enough, are not built densely enough, do not make use of modern construction technologies enough to augment their economic, manufacturing, servicing, wealth producing and residential viability. A very economical and practical way of rejuvenating such towns and cities... is to renew and re-densify their inefficiently used space and derelict structures." In actual practice, the regulations with respect to maximum Floor Area Ratio (FAR)/Floor Space Index (FSI) prevailing in Indian cities, even the largest ones, essentially set the rate of substitution between capital and land at very low and inflexible levels. In most cities around the world the FSI/FAR ratio is above 10, while in India it does not exceed 5 and is often much

m The nine regions studied were: North America, Eastern Europe, Western Europe, East Asia, South Asia, Central Asia, Southeast Asia, Africa and Oceania. Megapolises in the first six consumed less energy than metropolises. Medium sized cities were more energy efficient than small ones in North America, East Asia, Africa, Southeast Asia, Eastern Europe, and Central Asia.

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lower. In Mumbai, one of the most expensive real estate locations in the country, some areas have a base FSI limit as low as 1.33.[82] Nearly three decades after the Task Force's report, the 'compact city' idea again found support in the report of a high powered expert committee (HPEC) set up by the Ministry of Urban Development, which was submitted in March 2011.[83] It said: "A major challenge for urban planning in India is to allow the market to promote agglomeration and population density, while specifying within a planned framework the maximum floor space that may be built in given neighbourhoods."[84]

There is now general agreement in the developing countries that cities should work towards greater densities rather than thinning out population per square kilometre. It is extensively held that walkable, socially vibrant urbanism and healthy transit require FSI to be high. European cities that are recognised for their aesthetics all have high FSIs. This school of 'new urbanism'[85] abhors urban sprawl and cities based on motorised transport, calling them financially unviable and environmentally unsustainable, while rooting for cities with walkability, higher densities, mixed land use, green transportation, and mixed housing alongside traditional neighbourhoods.[86] They insist that high FSI does not necessarily lead to overcrowding, destruction of green spaces, monotony and lack of privacy.

The Negatives of Urban Density

High density is not without its downsides. One of the most obvious is that, after a certain level, density results in overcrowding. While perceptions of 'overcrowding' may be subjective, once residents begin to feel their city is crowded, there are negative fallouts—psychological, social, and even biological.

High density implies overcrowding—in residential buildings, on footpaths, in public transits, in restaurants, in playfields, and elsewhere. There will be more activity all around than in a lower-density space, and therefore more movement, more noise, more vehicles, more rush, more waiting time in accessing many services. It is true that people have a high ability to adapt and can do so to high density as well.[87] But high density also induces a feeling of lack of control, both of one's own behaviour and that of the environment around. For one, there are limits to how much information people can process in limited time spans,[88] while in high-density settings, the information available often exceeds this capacity and can have deleterious consequences, just as information overload in a computer system can lead it to make errors or even shut down. For another, excessive stimulation is often unpleasant for people, diminishing the quality of their performance of complex tasks and even leading to social withdrawal.[89]

Among the poorer populations, overcrowding means homes without proper ventilation and sanitation, making them more susceptible to diseases; there is also the challenge of lack of privacy, which leads to psychological frustrations and may cause depression.[90] A study of Mumbai slums with densities of more than 100,000 people per square km showed that residents face a high risk of mental disorder due to overcrowding.[91]

The Covid-19 pandemic hit cities with the highest urban densities the hardest, and indeed, since then, the enthusiasm for high urban density has diminished.[92,93] Studies of US cities show that, in April 2020, when the first wave of Covid-19 hit with full force, non-metropolitan areas had a death rate of 0.43 per 100,000 population; small metros of 0.72, and mid-sized metros of 0.85. In large metros with low-density suburbs, the rate was 0.94 deaths per 100,000 while in those with high-density ones, it was significantly higher at 1.59. In metros that were urban counties, it was 3.98.[94] As an April 2020 analysis in Bloomberg noted, "Density is a factor in this pandemic, as it has been in previous ones. The very same clustering of people that makes our great cities more innovative and productive also makes them, and us, vulnerable to infectious disease."[95]

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The same is true of India where, in April 2020, its 10 largest cities had over half the Covid-19 cases of the country.[96] Mumbai and Delhi, the two largest cities, together accounted for 30 percent of all cases.[97] Urban agglomeration requires people to come together, which goes against the basic principle of Covid-19 avoidance: social distancing. Among slum dwellers, who share many public amenities such as toilets and water collection, it is almost impossible to avoid crowding—which was the reason behind the very large number of COVID-19 cases in slums.[98]

Land prices are also impacted by population density, as space constraints push up land values.[99] Additional population raises the demand on urban land and hence its cost. As housing gets costlier, formal living space grows increasingly out of reach for the lower-middle class and the urban poor. They have no choice but to live on lands almost unfit for human habitation, often without proper shelter, food, sanitation, and safe drinking water.[100] The argument that densification of urban areas results in greater housing affordability has been debunked by the US's American Community Survey (ACS) for 2019.[101] The survey, carried out across 53 cities with more than 1 million population,[102] found that wherever urban density was below 3,500 per square mile, housing affordability was 'moderately unaffordable'; areas with densities of 3,500-4,499 per square mile had 'seriously unaffordable housing'; those with densities between 4,500 to 5,499 had 'severely unaffordable' housing; and urban areas with densities of 5,500 per square mile or more had 'even more severely unaffordable housing'.[103] India's situation is exemplified by the Delhi Master Plan 2041 (released in 2021) which estimated that 85 percent of the city's residents cannot afford to buy a regular shelter.[104] Nor is rented housing a long-term option as rent control laws in India, originally enacted to protect tenants, have ironically distorted the market to such an extent that house owners are reluctant to rent out dwellings for fear of tenants never vacating.[105]

Dense cities, especially those with a population of over 1 million, are also likely to face traffic congestion. The 2024 Traffic Index ranking by the Netherlands-based technology company, TomTom, using average travel time for 10 km in different cities during peak hours, includes all the metropolises of India, barring Delhi, in its list of 100 most congested cities: Kolkata, Bengaluru, Pune, Mumbai, Hyderabad, Chennai, and Ahmedabad. (Indeed, Kolkata, Bengaluru, and Pune are ranked as the world's second, third and fourth most congested, behind only Barranquilla in Colombia.)[106] Apart from the time lost in commuting, both air pollution and human stress rise due to slow-moving traffic.

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High urban density also reduces public open spaces and leads to trees being cut down on a large scale. India's Urban and Regional Development Plan Formulation and Implementation (URDPFI) guidelines stipulate that there should be 10-12 square metres of open space per person.[107] But since they are only guidelines, ways have been found around them to the extent that, in Mumbai, for instance, in some areas, public open spaces have diminished to levels as low as 1.24 square metres per person.[108] At times, Mumbai's residents have fought back—in April 2015, for instance, a draft development plan seeking to reduce the open space standard in the city from four square metres to two, evoked intense protests that Chief Minister of Maharashtra, Devendra Fadnavis directed the municipal corporation to cancel and reformulate it.[109] So too, protests in Guwahati, Assam, against the cutting down of several 100-year-old trees to build a flyover led to the project being dropped.[110] To be sure, many other cities continue to lose their green areas.

Climate change has made matters worse for high-density cities.[111] Indonesia's decision to build a new capital city called Nusantara from scratch, for instance, was mainly because its capital Jakarta is facing climate change-related difficulties.[112] It is widely maintained that the worst consequences of climate change are going to be in cities, which are already witnessing floods, cyclones, harsh winters, and oppressive heat waves of increasing frequency and intensity, which not only impact human life, livelihood, property and health, but also take a heavy toll on municipal infrastructure.[113] The worst impact is on the urban poor.[114] The more dense cities become, the more difficult are both mitigation and adaptation efforts to combat climate change.[115] The 'urban heat island' phenomenon increases with increased density.[116] Flood management becomes more difficult as stormwater drains are unable to handle surface run-off, while the reduced city permeability leads to less sub-watershed runoff,[117] worsening the flood situation in low-lying areas, and leaving less space available to shift populations affected by floods.

Similarly, increased urban density adversely impacts air quality.[118] Delhi's abysmal air quality in winter routinely makes global news. In January 2019, alarmed at the frightening increase of air pollution in cities, India launched the National Clean Air Programme (NCAP) across 131 cities, aiming to reduce air pollution by 40 percent by 2026.[n,119] However, its achievements so far have been mixed.[120] Biodiversity conservation—or the conservation of a wide variety of life forms, their ecological roles and genetic diversity—is also threatened by higher urban density.[121]

n The programme is a cross-sectoral initiative involving Ministries of Transport, Power, Construction, Agriculture, Rural Development, Environment and the states. Steps have also been taken to upgrade BS VI fuel from BS IV and reduce PM2.5 levels.

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Of the 17 Sustainable Development Goals (SDGs) the United Nations has formulated, SDG 11 aims explicitly to "make cities and human settlements inclusive, safe, resilient and sustainable."[122] Inclusion is the driving ideal for urban development, but most cities are not inclusive on important benchmarks, largely because their density drives up land prices, making liveability unaffordable for the poor. In New York City, the densest US city, for instance, out of a population of 19.8 million, about 23 percent live in poverty, and more than 130,000 are homeless, living in the city's shelter system.[123,124] In London, the United Kingdom's largest and densest city, 25 percent of its 9 million residents live in poverty.[125] The 'Inclusive London' document of 2018, produced by the Greater London Authority, admitted that the city had its fair share of long-standing inequalities and discrimination, including child poverty.[126] Clearly, even as dense cities provide jobs, they degrade living quality, especially for the poor.

Dense cities pose unique challenges to women too—they often lack enough hostels for working women and crèches or daycare centres for their children. Women often also get paid less than men for the same jobs.[127] Most cities are equally unfriendly to the elderly, providing neither sufficient amenities for their mobility nor enough retirement and assisted living homes for them. London's otherwise impressive public transport network, for instance, is in many areas inaccessible for older people or people with disabilities or reduced mobility.[128] In Indian cities too, the poor, the old, women and children[o] find themselves largely excluded from local policy.[129] Dense cities do not support social cohesion as social relationships, connectedness and orientation towards a common good get sacrificed in an inevitable fight for survival. Efficiency and productivity are the goals, neither of which gain from diverting resources to care for weaker sections or for social cohesion.[130]

High urban density also increases crime rates.[p] India's National Crime Records Bureau's (NCRB) annual report for 2022 shows that 19 of its metropolitan cities, which together account for 8.12 percent of the country's population, are responsible for 14.65 percent of its cognisable crimes.[131,132] In the US too, the 1994 Statistical Abstract showed that metropolitan cities had 79 percent more crime than other US cities and 300 percent more violence than rural areas.[133] Even among the metropolitan cities, New York and Los Angeles, which are the largest, have four times the crime rate of the others.[134]

o That playgrounds keep progressively shrinking is an equally pressing urban concern.

p The crime rate is the total volume of crime per 100,000 people in a calendar year.

The Negatives of Urban Density

The misgivings about unrestricted urban density are not new. In 1999, economist John Vernon Henderson noted that when resources are over-concentrated in very few locations, road congestion, living costs and costs of production rise to excessive levels, and the quality of service provision is dragged down.[135] He wrote, "The implication (seems to be) that there is an optimal degree of urban concentration, achieved by trading-off the social marginal benefits and costs of increasing urban concentration."[136]

The Future of Urban Density

Arguments in favour of increased urban density seem to emanate mostly from Western scholars and policymakers. Western cities, however, are not only far less dense than those in Asia, rarely crossing the 10,000 people per square km mark, they are also losing population, both due to low fertility rates and various economic issues, creating a phenomenon known as 'shrinking cities'.[137,138,139] They need to shore up their economy through a pro-growth strategy.

The situation is quite the opposite in India. Cities are extremely dense and urbanisation is set to increase for the next few decades.[140] Given the natural tendency of economies to agglomerate, Indian cities look set to grow even denser. India needs to decide at which cut-off point density becomes counterproductive even in economic terms.

Latest data suggests that when liveability falls drastically in cities, the economy is impacted as well.[141] This could be one of the reasons why Indian cities' contribution to GDP has stagnated at around 62 percent.[142] It is true that in past years it was this high density which enabled cities to contribute substantially to GDP, but such density is now becoming unsustainable. There is a need to ask the question of whether urban density in India should now be capped—something that China, for example, is already doing: the municipalities of Beijing and Shanghai are redistributing their populations by clearing certain areas within the city and settling them outside city limits.[143]

Technology opens up great possibilities for the decongestion of cities because in many instances, employees can now work for a company from anywhere, without necessarily congregating at an urban centre.[144,145] It can impact the choice of permanent location for many, triggering growth in smaller cities, pushing certain categories of workers to smaller urban settlements. It can push up the working age, enabling older people to continue remaining economically engaged.[146] It can enable decentralisation, as well as smarter and more efficient urban governance in areas such as traffic management and public transportation by using real-time data analytics.[147]

Conclusion

In urban planning, population projections should follow an optimum method based on accepted amenity standards. The maximum population and optimal density that a city can accept given its amenity standards should be calculated right from the beginning and land use plans made accordingly. This would guarantee maintenance of standards and quality of life. The optimal density could be decided with reference to standard of open space per person, the requirements of managing climate change and the city's capacity to provide and maintain needed infrastructure for that population.

However, the pressure of additional population seeking to move to the city will remain, and tackling it will need a two-fold strategy. The city could expand by bringing within itself additional areas for development to accommodate the extra population in consonance with stipulated standards, as was done, for instance, in September 2024 in Hyderabad, which merged 51 villages along its Outer Ring Road into 13 abutting municipalities.

At the same time, both at the national and state levels, plans for investment in potential cities and towns should be drawn up. Once the investments start flowing, they will create employment, which could prevent the further densification of already dense cities. NITI Aayog, in collaboration with the respective state governments, already has pilot projects to develop 'growth hubs' in Mumbai, Surat and Visakhapatnam, which will later be extended to more areas. Smaller cities need to be included in this programme. Decentralised urbanisation is clearly the key—or else the handful of megacities India already has will get denser, falter further in their quality of living, and become more unsustainable.

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Endnotes

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