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Urban Resilience, Re-imagining India's Urban Future,
Role of Smart Cities, and Enhancing Urban Planning Capacities



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Editorial



The Institute of Town Planners, India (ITPI) set up in 1951-1952, celebrated its 70th year of establishment by organizing the National Town and Country Planners Conference on the theme “Urban India at 75: Spatial Planning Initiatives”, at Bhopal, coinciding with the 75th year of Independence of India. In this National Conference, the ITPI received 65 technical papers out of which a few selected papers have been identified for publication in this issue of the ITPI Journal.



The first paper is written by Ashok Kumar on the theme ‘The Ethic of Care and Kindness for Urban India at 75’. The author explains that longing for sustainable urbanization is naturally a laudable goal. Currently, Goal-11 and Goal-6 of the SDGs are designed to fulfil this aspiration. However, longing is not a sufficient condition for the achievement of sustainable urbanization. Longing is like compassion, which does show caring attitude of a person to assuage the suffering of the other person or group but does not involve appropriate actions to actually alleviate the suffering. In contrast to compassion, kindness involves actions undertaken to alleviate the suffering. The author argues that compassion and kindness, both are foundational to the ethics of care. This paper proposes that city planning should move from the ethics of justice to the ethics of care because ‘the ethics of care’ directly alleviates the suffering and vulnerabilities caused by unsustainable urbanization of the inter-connected world.

‘Fostering Urban Resilience in Indian Cities’ is the theme of the paper authored jointly by Neeraj Gupta and Niyati Gupta. This paper explores several urban development and policy initiatives taken up by the Government of India with respect to urban resilience and climate action. The paper focuses on emerging definitions of urban resilience, extreme climatic events, organizational structures, internal and external coordination efforts of various government and non-government institutions. Through the literature review of academic studies, urban development and policy initiatives, a considerable research gap from theory and practice is identified. Based on this examination, the key parameters are identified for resilient-city planning and development in the context of climate induced disasters and extreme climatic events. The paper ends with the discussion on the need for capacity building initiatives at all levels so that cities can adapt to climate resilience efforts.

P.P. Anil Kumar authored a paper on the theme ‘Re-imagining Urban India in Upcoming Decades’ and attempts to identify possible areas of sectoral interventions in the light of predicted urbanization focusing on quality of life, climate change, and a reliable economy as pillars of cities’ sustainable existence. It is argued that the existing research rarely links quality of life to the policies in force, degree of government interventions and future needs. Such a piecemeal approach to reviewing policy without understanding the efficacy of interventions is inadequate to solve fundamental problems in improving the quality of life in urban areas. In conclusion, the paper underlines that policy formulation, re-engineering, smart interventions, and regular monitoring and feedback system are mentioned as solutions and strategies to resolve sectoral deficiencies. The paper on the same theme titled as ‘Re-imagining India’s Urban Future for Resilient and Sustainable Cities’ is written by Ashwani Luthra who highlights that the government has been making sincere efforts through its policies and programs to deal with the challenges of urbanization. However, the recent pandemic has questioned the preparedness of the governments to develop resilient cities and communities of the future. It is proposed that India should make efforts to strategically channelize urban development in the context of COP 26 proceedings to create healthier, resilient and sustainable cities. Besides, follow urban



systems approach to urbanization, preparing natural resource plans, planned peri-urban development, developing IT inclusive cities and smart infrastructure, preparing smart city disaster management plans, developing 'walkable cities' and transit oriented development, and green mobility solutions to develop the future cities and communities as resilient and sustainable entities.

'Exploring the Role of Smart Cities in Shaping Sustainable Urban Development in India' is the theme of the paper authored by Saswat Bandyopadhyay who focuses on the Smart Cities Mission launched in 2014 to build 100 smart cities. He argues that the Mission is struggling to show any meaningful impacts on the ground. The Mission has come under severe criticism due to its lack of core focus, harboring superfluous ideas without much back-end research and innovation and for its Mission condition to create a special purpose vehicle (SPV) for project implementation. As a result, at the end of its Mission period, it is unclear whether the Mission would be continued in near future.

P.S.N. Rao, in his paper on the theme 'Town Planning Education and Practice in India: Need for Capacity Enhancement and Reforms' highlights that initially municipal bodies were the only organizations to look after towns and cities. Subsequently, town planning departments emerged. Improvement Trusts were also created in many towns. Later, various statutory bodies were set up and municipal functions got eroded. Slowly, a series of para-statal bodies also emerged and created a complex web of organizations in the city planning and administration framework. With reference to education delivery, Rao mentioned that in the earlier days, institutions were primarily in the government fold. However, the situation today has changed substantially with the mushrooming of private sector institutions and universities. To regulate these, the framework has also become complex through various actors viz. the Central government, state governments, UGC, AICTE and the Institute of Town Planners, India. Therefore, the Government of India has taken a serious view about the town and country planning profession and education and suggested reforms at various levels so that ultimately the profession and education could benefit from such reforms.

Sanjeev Vidyarthi in his paper titled 'How to Make and Keep Friends? Exploring the Field, Movement, and Discipline of Urban Planning in Contemporary India'. He argued that authorities currently prioritize urban planning in contemporary India due to a variety of factors including public demands for a better quality of city life. The state support is also evident in diverse ways, such as the establishment of new education institutes and generously funded urban development policies and programs. Such a shift was unthinkable just a few years ago. Leveraging the nationwide foundation laid down diligently by the ITPI, Indian planners can make new friends to grow the field, movement, and discipline of planning.

Kajri Misra, in her paper on the theme 'Enhancing Urban Planning Capacities: Are we Planners Missing the Forest for the Trees?' shows that the recent report of the NITI Aayog - Reforms in Urban Planning Capacity in India - recommends a variety of interventions to expand the capacities for urban planning in the country, is a welcome step. The recommendations are timely and important, and clearly in line with the urban scenario, the acute need for professional urban capacities and the planning community's overall views. There are, however, key assumptions on which acceptance and success of the recommendations rests. There are some important questions, she argues, which the professional planning community needs to urgently examine and address.

Prafulla Parlewar, Ph.D.
Editor, ITPI

Ashok Kumar, Ph.D.
Chief Editor & Secretary Publication



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The Ethic of Care and Kindness for Urban India at 75

Ashok Kumar, Ph.D.

Abstract

Longing for sustainable urbanization is naturally a laudable goal. Currently, Goal-11 and Goal-6 of the SDGs are designed to fulfil this aspiration. However, longing is not a sufficient condition for the achievement sustainable urbanization. Longing is like an ideal, which remains unfilled without concerted efforts, and is different from actual achievements. Longing is like compassion, which does show caring attitude of a person to assuage the suffering of the other person or group but does not involve appropriate actions to actually alleviate the suffering. In contrast to compassion, kindness involves actions undertaken to alleviate the suffering. Compassion and kindness, both are foundational to the ethics of care. This paper proposes that city planning should move from the ethics of justice to the ethics of care because 'the ethics of care' directly alleviates the suffering and vulnerabilities caused by unsustainable urbanization of the interconnected world.

1. INTRODUCTION

The first case of COVID - 19 was reported in the south Indian state of Kerala on 30 January 2020. By the end of February, a total of three cases were reported. All the three persons returned from Wuhan, China successfully recovered. In early March, new cases were being reported from across the country. It was only after about two months that the first lock down was announced on 24 March 2020 at short notice, seeking cooperation from all citizens for staying indoors, wearing masks when going out to buy essentials, keeping physical distance from others, and washing hands regularly after touching surfaces in public spaces (Musahar, 2020). Within hours, middle and elite classes panicked and frenzied shopping followed.

In the months of April and early May 2020, Government of India announced two more lock downs, shutting 1.3 billion citizens indoors. The lock down that ended on 17 May 2020 was comparatively less harsh on urban poor migrant workers such as plumbers, maids and some categories of industrial workers who were allowed to work. Second wave of COVID-19 hit India severely in April and May 2021. Governments were unable to control infections and deaths due to infections. For several weeks, Indian COVID-19 death count exceeded 4,000 persons per day. Contested data shows that over 5,000,000 Indian citizens died of COVID-19 by end of June 2021.

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Major fallout of lock downs was that the poor migrants and low income workers employed in the informal sector suffered a huge setback by the sudden loss of employment and income. Hunger and starvation appeared imminent. To avoid starvation, migrant workers left for their rural homes with whatever means of transportation they could get. Azim Premji University Report (2021) showed: “About 100 million lost jobs during the nationwide April-May 2020 lock down. Most were back at work by June 2020, but even by the end of 2020, about 15 million workers remained out of work. Incomes also remained depressed. For an average household of four members, the monthly per capita income in October 2020 (14,979) was still below its level in January 2020 (15,989) (Azim Premji University report (2021: 20).

Overall, COVID-19 unleashed suffering at an unprecedented scale. The second wave turned out to be highly disruptive. People were crying with pain outside hospitals due to unavailability of beds. Unavailability of oxygen in hospitals killed several hundred people. People living in the mega cities like Mumbai, Delhi, Bengaluru, Chennai, Kolkata, and Hyderabad suffered the most. Media showed dead bodies floating in the river Ganga; some were even buried along the river. Most important of all, middle classes suffered in spite of the fact that they had financial resources to secure health services. Nothing seems to work; health services were overwhelmed. In this period of darkness, a few civil service organizations tried to help people with food and medicines.

We argue below that the current economic and social systems could not cope with the suffering and vulnerabilities arising due to the pandemic. This was happening because the Indian society had financial resources but lacked compassion practice (see below for details).

The main purpose of the paper is to reflect on how planning and sustainable development would be viewed during and after the COVID-19 pandemic. Throughout this paper we have argued for sustainable development and its notable constituents like inclusivity, equity, valorization of all identities, and the right to the city. Majority of authors have attempted to develop the narrative of just and fair urbanization. We have devoted a lot of time and space discussing SDGs and sustainable urbanization, and spelled out several theoretical and practical opportunities to achieve these humanitarian and ecological ends. But SDGs and sustainable urbanization are to be achieved within the existing capitalist relations. Furthermore, we have discounted any occurrence of the global pandemic because it was unimaginable in 2019. The following account looks at the future of planning and sustainable development after COVID-19 pandemic ends.

2. THE ETHICS OF CARE

The ethics of care is not alien to India where diverse cultural and religious practices underpin the ethics of care. Disconnected from the state, in several instances,



the ethics of care is even institutionalized. Round the clock provision of food and lodging in Sikh religious places (*Gurudwaras*) to people of all faiths, cultures, ethnicity, and races is the most eminent example. Similarly these compassionate traditions also exist as part of other religions and cultural practices. According to Joan C. Tronto (2013) living well is centred on caring. She explains:

The key to living well, for all people, is to live a care-filled life, a life in which one is well cared for by others when one needs it, cares well for oneself, and has room to provide for the caring - for other people, animals, institutions, and ideals - that gives one's life its particular meaning. A truly free society makes people free to care. A truly equal society gives people equal chances to be well cared for, and to engage in caring relationships. A truly just society does not use the market to hide current and past injustices. The purpose of economic life is to support care, not the other way around. Production is not an end in itself, it is a means to the end of living as well as we can. And in a democratic society, this means everyone can live well, not just the few (Tronto, 2013: 170).

Modern city planning, a prominent legacy of the colonists who worked on the ethics of extraction, has concentrated on the neoliberal ethics, occasionally also talking about the ethics of justice, a western idea with philosophical history going back to the Greeks. Both the ethics of justice and the ethics of care are foundationally different, in fact opposite poles (Table 1).

Table 1: Defining Attributes of the Ethics of Justice and the Ethics of Care

S. No.	Ethics of Justice	Ethics of Care
1.	Fairness and equality	Care
2.	Verifiable and reliable decision making based on universal rules and principles.	Involvement, empathy and maintaining harmonious relations.
3.	Autonomy, objectivity and impartiality.	Holistic, contextual and need centred nature.
4.	Positivist rationality.	Extended communicative rationality.

Source: Botes (2000: 1072).

Next, why we should be focussed on our collective future? The next section provides some answers to this critical question.

3. OUR COLLECTIVE FUTURE

Several policy assumptions have been shattered since the last one and a half year of COVID-19 pandemic including irreversibility of class based human divisions under the capitalist system and consequent prevalence of inequity and inequality in our society. Assumptions about western individualism and Asian communitarianism i.e. socially and culturally constructed social identities would remain resolutely unaffected has been also shaken at the root. We have seen spatial connectedness



of slum population with middle class areas for wider spread of infections by the virus. Middle classes shutting their gates and doors on the poor maids have shown connectedness arising out of the fear of the COVID-19 infections. Mutual dependence of migrant workers and small and medium businesses is another illustration of human connectedness. Covering the period from 24th May 2021 to 3rd June 2021, the Confederation of Real Estate Developers Associations of India (2021: 5) showed that “92 % developers are facing labour shortage on their sites”. So, today we have arrived in a new era where economic and social devastation due to COVID-19 has compelled us to think about human and environmental inter-connectedness.

Oneness of humanity is no longer contained in sacred books. Human suffering due to COVID-19 pandemic has shown the significance of inter-relatedness, embeddedness and inter-connectedness among humans as well as with the environment. As we see in Douglas Adams’ (1987) “Dirk Gently’s Holistic Detective Agency”, Gently strongly believes in “the fundamental principle of inter-connectedness of everything”. In this line of thinking, we argue that ‘leaving behind’ (borrowing the phrase from the SDGs) even one COVID-19 positive person would wreak havoc with global population impacting not only global economy but everyday lived experiences. If our present and future destinies are profoundly interlinked, we need different kind of public policies, for example, on housing, infrastructure, environment, tourism, etc.

We argue that realization about inter-connectedness of everything during the on-going COVID-19 global pandemic presents a unique opportunity to policy designers, decision makers and those responsible for the implementation of these policy decisions for making a different world in line with our aspirations reflected through SDGs. Our lives are safe and secure only if all of us are healthy and not infected by the transmissible viruses of the present and future. Good or bad, our future will be collectively decided by all of us and the nature. Talking about the implications of the second wave of COVID-19, Biocon founder Kiran Mazumdar Shaw said “If India is not safe, I can tell you the world is not safe” (The Hindu, 6 May 2021).

In the introduction to this paper we already noted that decision makers will have to change path: “Politicians and powerful decision-makers have thoroughly resolved the issue of the irreconcilability of ecological crisis and economic growth by gentrifying the potential catastrophe of climate change into an economic opportunity. Foundational changes in our thinking about sustainability and sustainable urbanization must take place. We must also see planning in a new and transformative light, leading us towards systems that are foundationally different from the present ones. Planning must pursue ‘the demanding objectives of achieving inclusive, productive, equitable, and sustainable cities’. More



efforts to mitigate environmental degradation, sustained economic growth and improved social cohesion may contribute to achieving the SDGs” (Kumar, 2020).

But how do we expect decision makers to change when the current public policies are based on the capitalist principle of relentless production of surplus value and uneven distribution of resources among diverse classes and territories. Several influential scholars believe that markets are the best way to allocate resources in the world. Inevitability of the capitalist relations is normally accepted. These belief systems falsely assert that uneven development, prevalence of inequalities and inequities are the side effects of capitalist urbanization. Capitalists argue that it is inevitable to stop these powerful forces from being exclusionary (Harvey, 2007). Costs of uneven development and inequitable distribution of wealth are high but not fatal at global scale. Only during economic pandemics, people die in large numbers due to famines, hunger and inadequate public health services. Costs of viruses like COVID-19 pandemics are extremely high due to the large number of infections and fatalities impacting all spheres of life and society. Rising infections could ruin humanity and economy for long times to come. After effects of COVID-19 are much more than that of hundreds of Tsunamis. We need real transformations in the public sphere and public policy.

3.1 Human and Environmental Collective: Housing, Water and Economy

Fear of getting infected with COVID-19 from family members and unknown others presents an array of inclusionary opportunities for decision makers during the COVID-19 times. We cannot continue to produce public policies based on the principles of alterity because the ‘subaltern other’ is dead as far as the pandemics are concerned. We are all a global collective of humans and environments. Under normal circumstances, horribly unjust and occasionally fatal exclusions of the poor are considered commonplace. However, exclusion of positive persons during the COVID-19 are lethal and potentially could result in a large number of deaths in a short span of time, scaring middle and the elite classes out of their wits. It is time when shared future of the human race compels us to make inclusionary development policies whereby exclusion, indifference and fear would replace empathy, solidarity and care.

This opportunity presents an occasion to adopt the ethics of care for all citizens. Planners could play a critical role in averting this and similar other public health crises by shifting singular emphasis from GDP growth to human flourishing. For example, an elusive focus on GDP growth has resulted in vast supplies of elite and middle class houses in Indian cities at the direct cost of affordable housing for the low income residents, who really need it.

COVID - 19 has brought the issue of housing for the poor to a sharp focus. While massive number of middle class houses remains empty, urban poor have to live



in slums lacking most essential services. Without providing spacious houses for all citizens, which is not an impossibility within the available financial resources, there is no way governments can handle COVID-19 and similar pandemics in future. So, this is an occasion to create large scale low income housing stock, which could be given away to the urban poor on deferred rental basis. Planners should begin working on housing policies where poor also have access to affordable and decent sized dwelling units. Only then can we think of achieving the critical goal of physical distancing.

Washing hands on a regular basis is another policy for preventing the spread of COVID-19. In fact during COVID - 19 pandemic, water appears to have assumed the central place in the day to day conversations. To keep the COVID - 19 infections at bay, the epidemiologists advise citizens to wash hands at regular intervals. Since the virus is contagious and in spite of the fact that effective vaccines have been developed, the policy of washing hands regularly remains in operation till effective cure to prevent COVID-19 is discovered.

In a normal day, supply of water in an Indian city is inequitable even when one's household is connected to a water network. Those who are not connected to cities' water networks get even less water and it is of bad quality and expensive. Income poor living in poor areas have to buy water for drinking purposes as water is not supplied by local bodies. Water comes at a premium, making regular hand washing an impossibility. So, we need new thinking to frame new water policies, water policies based on compassion practice (see below). Planners can no longer afford to provide potable water only to middle classes and elites. They have to frame equitable water policies for all residents. Commodification and privatization of water is no longer a solution to fulfil water needs of the poor citizens. Outsourcing of water provisioning to the private sector does not work. Provisioning of potable water, being an essential survival service, clearly is the responsibility of the government, the core of which must be equitable distribution of good quality water. For instance, Government of the National Capital Territory of Delhi has shown the way for future water policy by allocating 20 kilo liters of water per month free of cost to all residents of Delhi. Those responsible for monitoring SDG-6 must ensure that governments take responsibility for providing basic services to all residents.

Third, hundred thousands of workers of all classes lost jobs in the private sector in spite of the fact that government suggested businesses not to lay off workers during the pandemic. India lost about "100 million ... jobs during the nationwide April-May 2020 lock down" (Azim Premji University report (2021: 20)). While Indian economy was beginning to recover, it plummeted further due to the second wave of COVID-19. Another large scale study found that nearly two-third respondents lost employment during lock down. The study also found



that “80 per cent of households experienced a reduction in food intake, more than 60 per cent did not have enough money for a week’s worth of essentials, and a third took a loan to cover expenses during the lock down” (Kesar et al., 2021: 1).

We have discussed housing, water and economy in the paper. Needless to say that equality and equity are central to the provisioning of other basic services such as mobility, education, health, etc. If capitalist mode of organizing economy or social relations generally proved to be ineffective during the COVID-19 pandemic, what is the alternative to alleviate human and environmental vulnerabilities and the suffering? Privileging the compassion practice or kindness, we propose below the ethics of care to assuage vulnerabilities and suffering. As we have seen in the last one year, if anything worked, it was kindness. Self-perpetuating madness of capital accumulation prolonged the human suffering and generated fear for future vulnerabilities.

4. THE ETHICS OF CARE: SOME FOUNDATIONAL CHANGES IN PUBLIC POLICIES

Everlasting devastating shortcomings and paradoxes of capitalist mode of production are frequently highlighted by scholars (Wolff, 2020; 2016; Harvey, 2006, 2014) and the longing for emancipation from the current economic and social systems is also repeatedly expressed (Wolff, 2012; Springer, 2020). What stands out during the pandemic is the production of new scholarship, seeking foundational changes in practicing sustainable urbanization and city planning with the hope of bringing comfort to the public and environment. Based on the ethics of care, a new paradigm of kindness in planning is being developed since the last three years (Forester, 2020a, 2020b; Forester and McKibbin, 2020; Chen and Xiang, 2020). We devote this last part of the paper discussing the main threads of the ethics of care paradigm, hoping to deepen the understanding of ‘kindness’ in planning practice and theory.

The ethics of care requires that we comprehend the idea of kindness. To clarify the notion of kindness, we need to contrast compassion with kindness. Compassion refers to “awareness of the suffering of others accompanied by a desire to take action to alleviate the suffering” (Lyles et al. 2017 as quoted by Forester, 2020a). Two elements are germane to generating compassion. First, compassion recognizes “common humanity, or the recognition of the similarity of the fundamental needs and aspirations between oneself and others, involves the recognition of the shared human desire for happiness and freedom from suffering” (Goldin and Jazaieri, 2017: 319). Second, as we have explained in the beginning of this paper, compassion is “an appreciation of the *de facto* inter-connectedness of all beings” (Goldin and Jazaieri, 2017: 319). When compassionate we recognize how deeply we are interconnected as humanity and nature to fulfil our basic survival needs as well as personal wellbeing. Interdependencies are intrinsic to compassion.



Compassion is a state of knowledge about the suffering of others and a state of realization to do something about alleviating the suffering. Compassion however does not involve practical action to assuage the suffering. Compassion displays our concern for the other's suffering; it shows our good intentions but without taking action.

Contrary to compassion, kindness involves actions aimed at assuaging human suffering and vulnerabilities and "actions [are] intended to benefit others" (Curry et al., 2018: 321). According to Cole-King and Gilbert, kindness means "sensitivity to the distress of ... others with a commitment to try and do something about it". In a similar vein, Forester defines kindness as "practical response to the suffering or vulnerabilities of another" (Forester, 2020b: 1). If planning is defined as a movement from knowledge to action, unlike compassion, kindness does involve action to resolve planning issues of urgent nature such as housing for the urban poor.

In Asian philosophy, the term kindness is replaced with 'compassion practice'. The Dalai Lama views compassion practice as "a bipartite mental behavioral process of thinking and acting: reaching the dual mental state through meditation or contemplation: and fulfilling the desire to help through actions that aim at assuaging the suffering of the other individual or group" (Chen and Xiang, 2020: 207). Both in eastern and western philosophies, action to alleviate the suffering of the other are an essential part of kindness or compassion practice. Further, compassion practice is healthy practice and is "mutually beneficial to both the compassion practitioner and recipient in their respective pursuits of happiness". As such, the more one practices compassion for others' wellbeing, the more one provides self-compassion for one's own happiness (Chen and Xiang, 2020: 208). Expending energies in practicing compassion increases, rather than reduces compassion practice, expanding human freedoms and happiness.

What are the essential conditions for practicing kindness or compassion practice? Forester (2020) argues that planners need deeper understanding of at least four elements to practice kindness. First, planning practitioners must be able to understand what the suffering 'other' is going through. Self-suffering by the compassion practitioner helps in comprehending the situation of the suffering being experienced by the compassion recipient. Past experience of the suffering by the compassion practitioner further helps understand the suffering of the others (Chen and Xiang, 2020: 208).

Water shortages, loss of loved ones and sickness became commonplace during the COVID-19 period. In this situation, city planners must further comprehend fears, anxiety, trauma, social and economic losses of communities before framing and implementing planning policies. If we do not do so, we may be regarded uncaring



and unresponsive. Policy of physical distancing is absolutely the right step to reduce COVID-19 infections. However, it is implemented without acknowledging lack of housing and access to water and sanitation in poor communities with devastating consequences for the poor.

Second, to practice genuine kindness, practitioner should know who is responsible or what has caused suffering. Without knowing reasons of the suffering and who is responsible for the suffering, planning interventions meant to alleviate the suffering may not prove to be effective. Recently an analysis of 913 counties in the U.S. was conducted to find out the relationship between density and the COVID-19 infection and mortality rates. The study concluded:

... we find that density is not linked to rates of COVID-19 infection, after controlling for metropolitan area population, socio-economic, and health care infrastructure in U.S. counties. Surprisingly, we find that COVID-19 death rates are lower in denser counties and higher in less dense counties, at a high level of statistical significance. This is likely due to better access to health care facilities and easier management of social distancing interventions such as sheltering in place. On the other hand, we find metropolitan population to have the third most significant relationship to COVID-19 death rates. These findings suggest that connectivity between counties matters more than county density for pandemic spread and lethality. The more connected the places (either compact or sprawling) in large metropolitan areas are, the harder they are hit by the pandemic (Hamidi et al. 2020: 506).

If density is blamed for increasing rates of the COVID-19 infections and fatalities and out of kindness, planners rushed to discard the compact city development; they may be erroneously recommending less-dense urban development, consuming more land and investing more public funds on developing infrastructure. Planners may not be also recommending better health and housing policies, the critical mitigating factors for reducing the COVID-19 infections and fatalities. So, to genuinely practice kindness, planners need to know what has caused the suffering.

Third, identification of pragmatic mitigating measures is critically important to assuage the suffering and vulnerabilities of the others. Lock down policy aimed at reducing contagion, actually enhanced infections due to high density living in Indian slums. For example, the number of COVID-19 infections rose sharply in Mumbai particularly during the second wave of the pandemic in May 2021. Another example is that greater emphasis promoting solidarity and mutual aid among communities would have served the poor better than state governments directly handing out rations, eliminating rent seekers.



Fourth, what motivates compassion practitioners to participate in a certain situation to reduce the suffering of fellow human beings? If planners participate in a certain situation and start providing solutions without careful consideration, communities may regard planners as condescending or missionaries but not partners. John Forester summarizes: “Empathy gone wrong can be humiliating, stigmatizing, presumptuous; Attributing responsibility wrongly can be victim-blaming or shaming; ‘Helping’ gone wrong can be condescending, misplaced; ‘Caring’ gone wrong can be pitying or self-righteous, and certainly even ‘listening’ gone wrong can be dismissive, and more (Forester, 2020b: 186).

The ethics of care stands on the strong shoulders of empathy; comprehension of causes of the suffering; recommending pragmatic measures based on understanding of causes of the suffering; and motivations of planners for participating to assuage the suffering and vulnerabilities.

5. CONCLUSIONS

Inter-connectedness and interdependence of human beings among us and between humanity and nature is the cornerstone of the ethics of care. In India, rivers are considered sacred but without the practice of kindness, without understanding reasons, without understanding who is responsible and causing the suffering to the river in the form of water pollution and without devising pragmatic policies to address the suffering, planners are going to be less effective in cleaning the rivers. Further, practitioners of kindness should also see what motivates their participation for reducing the suffering of fellow human beings and the nature. We would like to end the paper with an illustration about our inter-connectedness and interdependence. Based on the Assamese novel *Saba Kota Manuh* written by Yeshe Dorjee Thongchi, Shantannu Sen directed a film called ‘Water Burial’. The critically acclaimed film won the National Award in environment conservation in 2021. The film depicts a dark ritual of the Monpa tribe of Arunachal Pradesh. When a person of this tribe dies, the tribe cuts the body into 104 pieces and the pieces are thrown into the river for fishes to eat. So, inter-connectedness and interdependencies do not end even with death; its perpetual reproduction is the fact of humanity and nature, pointing towards our common future. “The silver lining to this virus, then, is that we are reawakening to the possibilities of our fundamental connection to one another (Springer, 2020: 115).

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Fostering Urban Resilience in Indian Cities

Neeraj Gupta and Niyati Gupta

Abstract

This paper explores several urban development and policy initiatives taken up by the government of India with respect to urban resilience and climate action. The focus is on emerging definitions of urban resilience, extreme climatic events, organizational structures, internal and external coordination efforts of various government and non-government institutions. The case study review conducted for six cities in India, presents a descriptive summary of how cities are structuring and coordinating resilience efforts. Through the literature review of academic studies, urban development and policy initiatives, a considerable research gap from theory and practice is identified. This is inclusive of urban planning and design approach and engagement of stakeholders. The key parameters are identified for the resilient-city planning and development in the context of climate induced disasters/extreme climatic events. The paper also discusses the need for capacity building initiatives at all levels so that cities can adapt for climate resilience. Capacity building at individual and organizational level will help urban local bodies to develop evidence-based action plans for climate and urban resilience.

1. INTRODUCTION

A significant increase in the urban population have been projected from 55 % to 68 % by 2050 (United Nations, 2017, 2018). Given the increased population density urban areas covers about 2 % of the planet's surface. Globally, cities, alone consume 75 % of the world's resource (Madlener, and Sunak,2011). Urban areas are responsible towards maximize the benefits of agglomeration economies and minimize negative impacts and externalities (Zhang, 2016).

The frequency of the climate induced disasters including floods, cyclones, droughts, heat waves, landslides, storms, avalanche and hurricanes have increased in the last five years as reported in the UN-Habitat Summit, 2017. The impact of these disasters is truly testing the resilience of urban systems.

Given the animosities of the urban pressures and resource consumption, aggravates the risks and vulnerability of cities. In the past 3 years from 2018, extreme climatic events including extreme precipitation and cyclones have affected the

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urban areas vastly. Cities including Surat, Coimbatore, Kochi, Bhopal, Siliguri and Bhubaneswar have been vastly impacted. These impacts are assessed from the perspective of loss and damages to the economy, community and critical infrastructure. In order to reduce the impacts resulting from a climatic disasters or extreme events, planning and development interventions in terms of capacity building of the professionals is vital.

In this paper a comprehensive review of the literature and existing policy and urban development initiatives have been studied on urban resilience. Through a three-stage process, the parameters of urban resilience have been identified. The corresponding three stages are: (i) selection of articles and policy documents through: Science Direct, Google Scholar; Gol database; (ii) screening of the selected articles and extraction of key terms; and (iii) refinement and frequency of occurrence analysis of the key terms identified for urban resilience.

In order to identify the parameters of urban resilience, terms such as 'Urban resilience', 'Resilient urban systems', 'Resilient cities' and 'Resilience in cities' have been used in the search string. The articles and other official Government of India documents selected for the paper are from 2010 to 2021. The selection of articles for the literature is on the basis of minimum number of citations as 50. The criteria for selecting six cities in India, is based on availability of the technical documents and gravity of the disaster impact on urban areas.

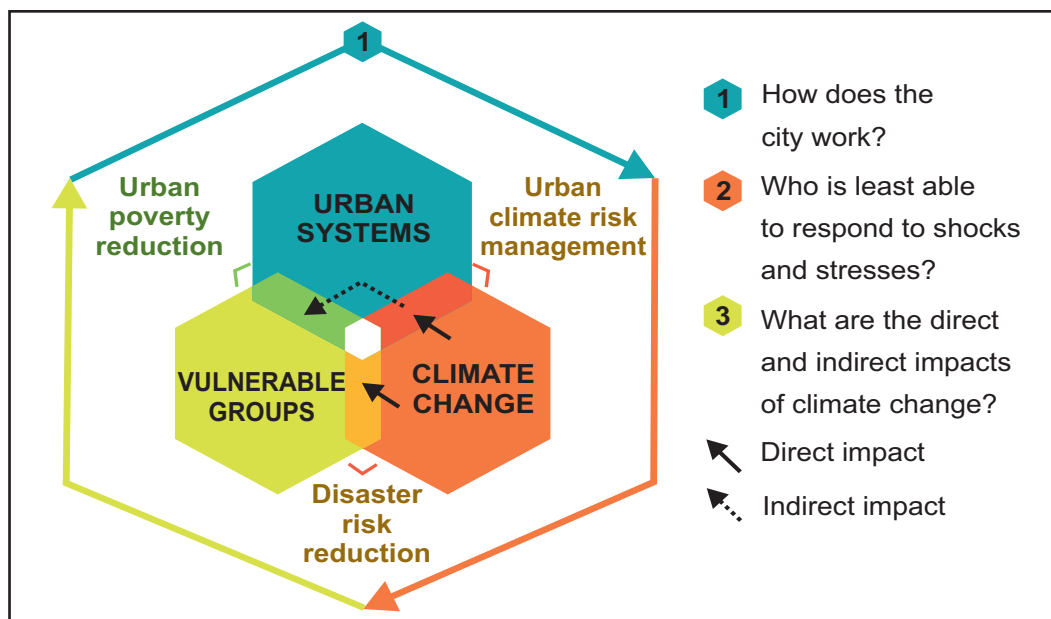
This paper identifies and describe the main characteristics of urban resilience, concept of resilience from various professional perspectives. It also presents the existing international agenda and developmental initiatives by the Government of India on resilient development of urban areas. It is observed that the policy responses are directly linked to local conditions. Hence, it is imperative for administrators, planners and other development professionals to invest in urban resilience and safeguard the wider goal of sustainable development.

2. CONCEPT OF URBAN RESILIENCE

The concept of urban resilience is essential to address the global issue of climate risk and extreme event impacts. It is also prudent to enhance the efforts of climate action plans at the national and state level (ACCRN, 2013). Urban resilience in the context of climate change is inclusive of:

- Critical infrastructure capacity of the urban areas to survive shocks and stresses;
- Responsive community action and ability to accommodate unprecedented changes;
- Robustness, recovery and adaptability of the city's institutional and governance structures; and

Fig. 1: Conceptualizing Urban Resilience



Source: ADB, 2014

- The concept of urban resilience and research questions which are taken up from Asian Development Bank in 2014 is well described in Figure - 1.

2.1 Resilience

The concept of resilience has been studied from the perspective of ecology, engineering, psychology, social sciences and business administration. Table - 1 gives the definitions of resilience and its corresponding dimensions. These definitions have been studied and referred to identify the dimensions of resilience which are common in all the definitions. These dimensions are, system's ability to respond, absorb, adapt and recover to the disaster shocks.

Table 1: Definition and Dimensions of Resilience

Source	Discipline	Definition	Dimension			
			Respond	Absorb	Adapt	Recover
Holling, 1973	Ecological Resilience	The ability of a system to return to its equilibrium state after a temporary disturbance. 'Resilience is here the system's ability to absorb disturbances before it changes the variables and processes that control behavior'.		✓		✓
Tisseron, 2007	Psychology Resilience	'The capacity to withstand traumatic situations and the ability to use a trauma as the start of something new'.	✓			



Dimension						
Source	Discipline	Definition	Respond	Absorb	Adapt	Recover
Dinh et al., 2012	Engineering Process	The ability to recover quickly after an upset.				✓
Neches & Madni, 2013	Engineering Power Sector	The ability of a system to adapt affordably and perform effectively across a wide range of operational contexts, where context is defined by mission, environment, threat, and force disposition.		✓	✓	
Liu et al., 2017	Engineering Transport	The survivability of power systems when experiencing extreme events	✓	✓		
Gauthier et al., 2018	Engineering Nuclear	The ability of a network to absorb and react to adverse events.		✓		
Longstaff et al., 2013	Engineering Socio - technical	In engineering: The capacity to rebound and recover; In business, psychology, social studies: The capability to maintain a desirable state; In ecology: The capacity of the systems to withstand stress; In social systems: The capability to adapt and thrive.	✓	✓	✓	
Pflanz and Levis, 2012	Engineering Tele-communication	The ability to survive and recover from disruption.				✓
Rose, 2007	Resilience Economics	The ability of an entity or system to maintain function (e.g., continue producing) when shocked, primarily a demand-side phenomenon involving users of inputs (customers) rather than producers (suppliers).		✓	✓	

Source: Collated by Authors

2.2 Risk

According to UNDP, 2012, risk is defined as ‘a measure of the expected losses (deaths, injuries, property, economic losses etc.) due to a hazard of a particular magnitude striking in a given area.’

The characteristics of risk in the context of climate change are:

- Uninterrupted functioning of critical infrastructure of urban areas against increased frequency of extreme weather/climatic events (floods, urban floods, landslides, cyclones, heat waves, avalanche, etc.);
- Location and regional specificity of climatic events and risk to community;



- Exposure (the effect of extreme weather event on the infrastructure); and
- Vulnerability of the exposed society, structure and systems to the hazard.

3rd UN World Conference on Disaster Risk Reduction on March 18, 2015 was held in Sendai, Japan. The Sendai Framework adopted by the G7 and later by G20 countries outlines the four priorities for action. These actions are prescribed to reduce the disaster risks in urban areas due to climate change. The priority areas are:

- Understanding disaster risk;
- Strengthening disaster risk governance to manage disaster risk;
- Investing in disaster reduction for resilience, and
- Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction.

3. VULNERABILITY

In the ISO / IEC 27000:2016, vulnerability is defined as “a weakness of an asset or control that can be exploited by one or more threats”. A control is measure that is modifying risk, threat is potential cause of an unwanted incident, which may result in harm to a system or organization (ISO/IEC 27000:2016). Societal vulnerability is a part of a disaster risk assessment and crucial information necessary for supplementing hazard and mitigation assessments. Identification and assessment of various vulnerabilities of societies, economies, institutional structures and environmental resource base are the basic information necessary for improving risk reduction and preparedness to natural hazards. Assessing vulnerability does not mean only to capture the human vulnerability but also to assess the resources available for dealing with the adverse event.

All the concepts of resilience, risks and vulnerability are coherent with each other and needs to be factored while outlining the implementation plans by the administrators, planners and other development professionals. In the next section of this paper, various policy initiatives and urban development strategies based on these concepts in the context of climate change have been summarized.

4. URBAN DEVELOPMENT AND POLICY INITIATIVES TO WITHSTAND CLIMATE-DISASTERS

4.1 Prime Minister’s Ten-Point Agenda

Indian Prime Minister outlined a 10 - point agenda towards disaster risk reduction in urban areas. This agenda addresses both long term and short-term issues of disaster risks towards infrastructure and financing. This agenda was formally delivered during the Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) between Global - 20 countries in 2016. The ten-point agenda on disaster risks also factor in the nuances of urban resilience in its development strategy. The highlights of the agenda is presented in Table - 2.

**Table 2: PM-Ten Point Agenda on Disaster Risk Reduction**

S. No.	Agenda Point
1	All development sectors must imbibe the principles of disaster risk management.
2	Risk coverage must include all, starting from poor households to SMEs to multi-national corporations to nation states.
3	Women's leadership and greater involvement should be central to disaster risk management.
4	Invest in risk mapping globally to improve global understanding of nature and disaster risks.
5	Leverage technology to enhance the efficiency of disaster risk management efforts.
6	Develop a network of universities to work on disaster-related issues.
7	Utilise the opportunities provided by social media and mobile technologies for disaster risk reduction.
8	Build on local capacity and initiative to enhance disaster risk reduction
9	Make use of every opportunity to learn from disasters, and to achieve that, there must be studies on the lessons after every disaster.
10	Bring about greater cohesion in international response to disasters.

Source: AMCDRR, 2016

4.2 Climate Action Plans

Cases of six cities in India are presented in table 3. The data for the case studies have been referred to and is collated by the authors. The key parameters identified for urban resilience is based on the actions taken up by the local bodies in the context of climate change. These actions points comes under the purview of (State Action Plan for Climate Change (SAPCC) and are undertaken by the urban local bodies (UBL).

Fig. 3: Climate Action Plans

S. No.	City	Key interventions	Source
1	Surat	<ul style="list-style-type: none"> An informal climate watch group created in 2009 was evolved into Surat Climate Change Trust. End-to-end early warning system for floods has been developed after going through the process of the City Resilience Strategy, 2010. Development of climate change modelling, simulating flooding and rainfall impact. Creation of database of vulnerable people to help develop bylaws during emergency situation. Appointment of a Chief Resilience Officer (CRO). Improvement of quality of data through comprehensive hydrological catchment modeling. Use of geographic information system (GIS)-based vulnerability assessment focusing on spatial and socio-economic vulnerability. Creation of a municipal budget line for climate change resilience action. 	ADB, 2014 ACCRN, 2018 NIUA, URU, 2020

S. No.	City	Key interventions	Source
		<ul style="list-style-type: none"> Appointment of 'Bicycle Mayor' to promote sustainable public mobility. 	
2	Bhubaneswar	<ul style="list-style-type: none"> Local resilience action plans based on risk and vulnerability assessment and the climate change scenario. The municipal corporation construct of bye-laws for formation of Transit Oriented Development (TOD) supportive zonal plan development. 20,000 street lights have been replaced for optimizing energy consumption. 	SAPCC, 2018-2023
3	Kochi	<ul style="list-style-type: none"> No climate focused actions by the local authorities, however due interventions given by the non-government institutions like IIHS and GIZ. Initiatives towards biodiversity and capping waste pollution and other emissions. 	ADB, 2014; NIUA, 2020
4	Bhopal	<ul style="list-style-type: none"> Green FAR introduced in Bhopal Master Plan as part of ecological conservation initiative. The Sustainable Cities Programme (SCP) under UN Habitat, India focused on capacity building, research and advisory work within the city. 	NIUA, URU, 2020
5	Coimbatore	<ul style="list-style-type: none"> The city mobility plan developed 10 years ago, however not been implemented and funded. Coimbatore Climate Resilient City Action Plan (CRCAP) has been ratified. Indian Institute of Human Settlements (IIHS) is working with the Nature conservancy to restore natural infrastructure, urban green footprint for Coimbatore city. 	NIUA, URU, 2020
6	Siliguri	<ul style="list-style-type: none"> 32000 streetlights have been converted to LED. 100 KwP solar rooftop is under installation with pilot project in two wards. First city to ratify the Climate Resilient City Action Plan (CRCAP). Drive for urban tree plantation under Green City Mission 	NIUA, URU, 2020

5. PARAMETERS OF RESILIENCE

Based on the review of the identified articles, policies development initiatives and case studies the parameters of urban resilience in the context of infrastructure and services are described in this section.

- Urban Housing:** Resilient housing to withstand extreme events including floods and cyclones are essential in the first place to tackle disaster. Vulnerability Atlas of India, created by the BMTPC in 2018 highlights the key areas of housing structures to withstand the potential impact.
- Communication (Telecommunication, Information Technology):** Robust communication systems and service including the early warning system is essential and key to quick response and disaster mitigation.



- **Water supply (Sanitation and Sewerage System):** Access to clean and safe drinking water crucial for survival especially in the wake of disasters. Given the high potency of infections and diseases, sanitation services is prudent.
- **Electricity Supply:** Power supply is key in ensuring uninterrupted supply of essential services including healthcare and communication.
- **Public Transportation (Road and Railways):** Transportation is important in evacuation and rescue operation and also plays an important role in relief operation, delivery of essentials and rehabilitation. It is one of the main components of supply chain in disaster management.
- **Health Services:** Health services are needed to work efficiently in case of disaster to cater the victims and in controlling communicable diseases.
- **Financial Services:** Working of the financial institutions and long fund delineation is essential for community resilience to withstand the disasters.
- **Food Supply:** Availability or food buffer so that it can be provided easily to the effected communities in case of disaster.
- **Emergency Services:** Inclusion of robust and reliable ambulatory services, along with coordination and working of the civic departments of fire, police, etc.

6. CAPACITY BUILDING FOR URBAN PLANNING

As India goes in for accelerated pace of urban development, there is a need for capacity building at all levels. In this context, Government of India (NITI Aayog) has proposed a report 'Reforms in Urban Planning Capacity in India' in September, 2021 which highlights the point of improving skill mapping and data capture of planning professionals, among other recommendations. The Committee recommends:

- constituting a statutory body under the Government of India under the name 'National Council of Town and Country Planners' which would ensure higher standards in planning. Their purpose may be ensuring qualified candidates, provide career counselling, provide suggestions to the AICTE for updating of their curriculum, conduct skill mapping of planners, etc.¹;
- establishing a National Digital Platform of Town and Country Planners which may function as a "marketplace between industry and the workforce"²;
- ensuring 'qualified' urban planners in service by states. The states are encouraged to update the qualification for entry level position of town planners to Postgraduate Degree (M.Tech. or M.Plan.) or Bachelor Degree

¹ *Reforms in Urban Planning Capacity in India, NITI Aayog, pp 103-104 (Sept 2021) Accessible at <https://www.niti.gov.in/sites/default/files/2021-09/UrbanPlanningCapacity-in-India-16092021.pdf>*

² *Id, pp 102-103.*



(B.Tech. or B.Plan.) or Integrated Degree (Integrated degree in Planning leading to Master of Planning);

- include the topic of “history of human settlements in the Indian subcontinent” in the teaching curriculum of all planners³.
- the central universities and technical institutions must establish a Department of Planning and Public Policy with specializations in ‘hill area planning’ in case of Himalayan region. These universities must offer post graduate degree programs to cater to the requirement of planners for proposed ‘500 Healthy Cities Program’⁴.
- development of rural area planning short term programs where planning education institutions may synergize with MoRD, MoPR and the respective state rural development departments⁵; and
- inclusion of planning as a discipline in NIRF⁶.

It is observed that the New Education Policy 2020, does not seem to have paid due attention to professional programs like architecture, town planning, etc. This may be due to reliance on the professional bodies governing these sectors. Thus, the onus of creating a foundation of young town planners that can serve in development authorities lies on the educational institutes. A quick glance at the curriculum at various planning courses in educational institutes will indicate that adequate attention is not paid to update the curriculum to include aspects related to natural disasters, urban resilience, extreme weather events, etc; that urban managers and planners are required to understand. There also is a gap in terms of developing skills of students at undergraduate and post graduate levels. UGC and NIDM have laid stress on including courses related to environmental planning, natural disasters and climate change, etc; in the UG curriculum and it is expected that all professional institutions will endeavour to incorporate these courses in various programs.

7. CONCLUSIONS

This paper summarizes the initiatives taken up by the international organizations and the Government of India on urban resilience in context of climate change. While elucidating on the concepts of resilience, risk and vulnerability, it is observed that all the concepts are vastly correlated. All the concepts need to be integrated for both short-term and long-term development plans by the administrators, policy makers and urban-planners.

The six cases of the Indian cities assist in identification of key characteristics of urban resilience. These characteristics are evidence-based urban actions for

3 *Id*, pp 99.

4 *Id*, pp 100.

5 *Id*, pp 100.

6 *Id*, pp 101.



climate and urban resilience, as adopted by the urban local bodies and other non-government organizations working locally. Through this method, key parameters of resilient infrastructure and services are identified.

Evidences from the Prime Minister-ten-point agenda and urban planning reforms prescribed by the Government of India's think tank, NITI Ayog calls for action by the town planners and city managers. While the agenda focuses on the issue of disaster risk mitigation and adaptation, various urban planning reforms focuses on the capacity building of the professionals for better implementation of the state action plans on climate change.

It is concluded that the collective working of the multiple government and non-government organizations can help addressing the wider agenda of the Sustainable Development Goals (SDGs) and prioritize urban resilience in urban planning strategies. The parameters identified for urban resilience forms a outline framework for development training modules for stakeholders engagement. In order to strengthen the institutional capacity on climate change adaptation and urban resilience, capacity building of the professionals including administrators, policy makers, urban planners, and other development professionals is vital.

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Re-imagining Urban India in Upcoming Decades

P. P. Anil Kumar, Ph.D.

Abstract

The paper attempts to identify possible areas of sectoral interventions in the light of predicted urbanization focusing on quality of life, climate change, and a reliable economy as pillars of cities' sustainable existence. The sectors considered are mobility, water supply and sanitation, energy, governance, urban sprawl, environmental quality maintenance, urban poverty and blight, housing, economy, aging population and amenities, climate change, and healthcare. The study presents a conceptual table listing the critical/priority sector for the upcoming three decades, 2020-30, 2030-40, and 2040-50, for each category of cities. The intent is to integrate the extent of government interventions in the sectors identified with the rising requirements due to urbanization. Existing research rarely links quality of life to the policies in force, degree of government interventions and future needs. Such a piecemeal approach to reviewing policy without understanding the efficacy of interventions is inadequate to solve fundamental problems in improving the quality of life in urban areas. In conclusion, policy formulation, re-engineering, smart interventions, and regular monitoring and feedback system are mentioned as solutions/strategies and thereby to resolve sectoral deficiencies.

1. INTRODUCTION

A globally accepted non-theoretical definition of an urban area is yet to be formulated, as the characteristics that differentiate urban and rural vary across nations. Yet, a consensus seems to exist that the term implies a high density of population and infrastructure, a densely built-up area with a significant positive contribution to a nation's economic growth. Based on these properties, being urban can turn out to be both a boon and bane in a given context. While deriving a definition for urban that is pertinent universally has been a challenge, urbanization, the process of urban areas growing and expanding, has been attempted to be defined by the UN's World Urbanization Prospects 2018 report. The report defines urbanization as "a complex socio-economic process that transforms the built environment, converting formerly rural into urban settlements, while also shifting the spatial distribution of a population from rural to urban areas. It includes changes in dominant occupations, lifestyle, culture, and behavior, and thus alters the demographic and social structure of both urban and rural areas. A major consequence of urbanization is a rise in the number, land area, and population size of urban settlements and in the number and share of urban residents compared to rural dwellers."

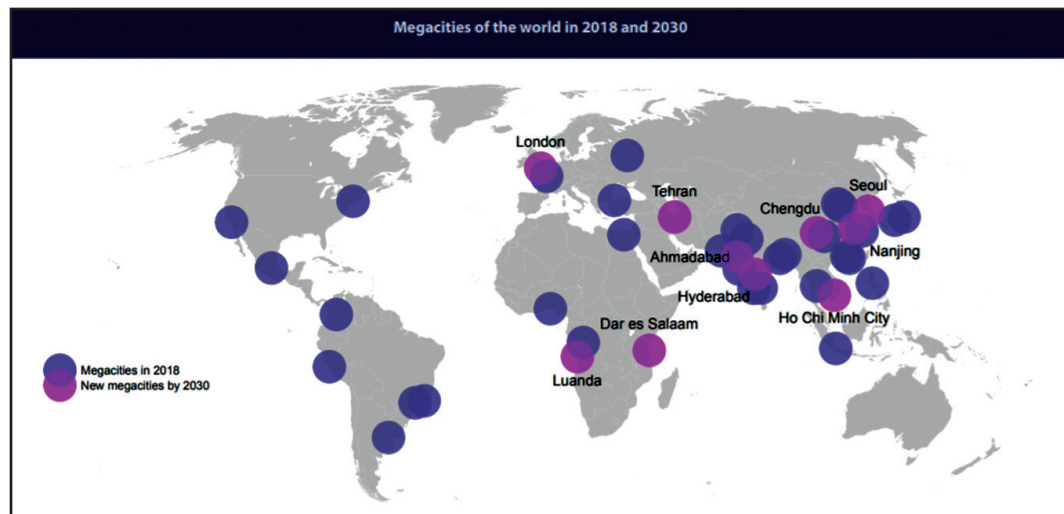
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Comprehensively, urbanization increases the number of people living in towns and cities as more people move from rural areas to urban areas to take up industrial and service sector pursuits leaving primary sector activities. It is a process necessary for increased income, and the prospects are several, including an increase in employment opportunities, better access to social and health facilities, and so on. Urban centers also become the major contributors to a nation's gross domestic product and thus can afford updated and upgraded infrastructure.

2. URBANIZATION AND POPULATION GROWTH

World over, the population in urban areas continues to increase as it attracts migrant population searching for a better quality of life. This trend is increasingly evident in the case of urban areas in developing countries than developed countries. Projections show that the total world population will achieve its 8th and 9th billion by 2023 and 2037, where it needs 14 years to increase by one billion. In the same period, the urban population will reach 5 and then 6 billion mark respectively. It will not take too long for the reported population growth of the World to be virtually the growth in urban population.

Fig. 1: Location of Mega Cities in the World.



Source: *World Urbanization Prospects: The 2018 Revision*

Note: Existing (2018) and Upcoming (2030) Mega cities are Concentrated in Less Developed Regions.

The distribution of the urban and total population worldwide amongst the developed and developing world is also a point of interest. As of 2018, less developed regions¹ of the World housed three times the urban population (3.2

¹ Less developed regions comprise all regions of Africa, Asia (excluding Japan), and Latin America and the Caribbean as well as Melanesia, Micronesia and Polynesia as per the *World Urbanization Prospects 2018* published by the Department of Economic and Social Affairs Population Division, United Nations.



billion), i.e., 76 % of the World's urban population, compared to developed regions (1.0 billion). By 2050, the same regions will account for 83 % of the World's urban population (Department of Economic and Social Affairs Population Division, 2019). Figure - 1 depicts the distribution of mega cities, cities with a population of more than 10 million, across the world as of 2018 and projected for 2030. Nine out of ten mega cities projected by 2030 are located in the developing world and out of these cities Ahmedabad and Hyderabad are located in India.

UN projects that China, India, and Nigeria combined will account for 37 percent of the increase of nearly 2.5 billion people in the World's urban population by 2050. India will contribute most to the urban increment with the addition of 416 million urban dwellers, nearly doubling the size of its urban population between 2018 and 2050 (Department of Economic and Social Affairs Population Division, 2019).

In 2020, India was home to 11 % of the World's urban population and 17.7 % of the total population. By 2050, the country will be housing 13 % of the World's urban population and 16.9 % of the total population. Urban residents will increase from 35 % in 2020 to more than 50 % in the country's population by 2050.

3. PRIORITIES OF URBAN INDIA

In India, the 2011 census categorizes an area as urban as per the following criteria

- All places with a municipality, corporation, cantonment board or notified town area committee, etc.;
- Minimum population of 5000;
- Density of 400 persons per square kilometer or higher; and
- At least 75 % of the male working population employed in non-agricultural activities

These urban areas are further classified based on population by the census 2011. Class - 1 Urban Agglomeration or towns are areas that have a population of 1,00,000 or above. Million plus UAs / towns have a population of one million or above. Mega cities are urban agglomerations with more than 10 million population. As per the 2011 census, there were three mega cities in India: Greater Mumbai, Delhi, and Kolkata. In 2018, the United Nations reported five mega cities, including Bangalore and Chennai in addition.

3.1 Current Scenario

Urbanization has created new employment opportunities, advancements in technology and infrastructure, and improved transportation and communication. Concurrently, with the unplanned growth, it has become impossible for cities to

Fig. 2: Urban Reform Schemes initiated by the Government of India to be checked for convergence when interventions are planned.



Source: Ministry of Housing and Urban Affairs, Government of India

provide even basic necessities to a significant part of the population, causing urban blight. Inadequate housing, sanitation and water, high-income inequality, and compromised quality of life are just some of the issues associated with rapid urbanization. As per the World Bank, slums account for a quarter of all urban housing in such cities. The Economist Intelligence Unit's Global Livability Index 2019 covered 140 cities and has ranked New Delhi and Mumbai at 118 and 119, pronouncing the sad predicament our cities are put into.

The Government of India (GoI) has taken steps to address these changes in the city structure in the decades to come. Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart Cities Mission, Pradhan Mantri Awas Yojana - Housing for All (Urban) (PMAY-U), and Swachh Bharat Mission (Urban) (SBM-U) are a few pivotal ones to mention (Figure - 2). But for these schemes to be truly fruitful and

delivering, it is essential to delve deeper into these.

3.2 Population Projections and Implications

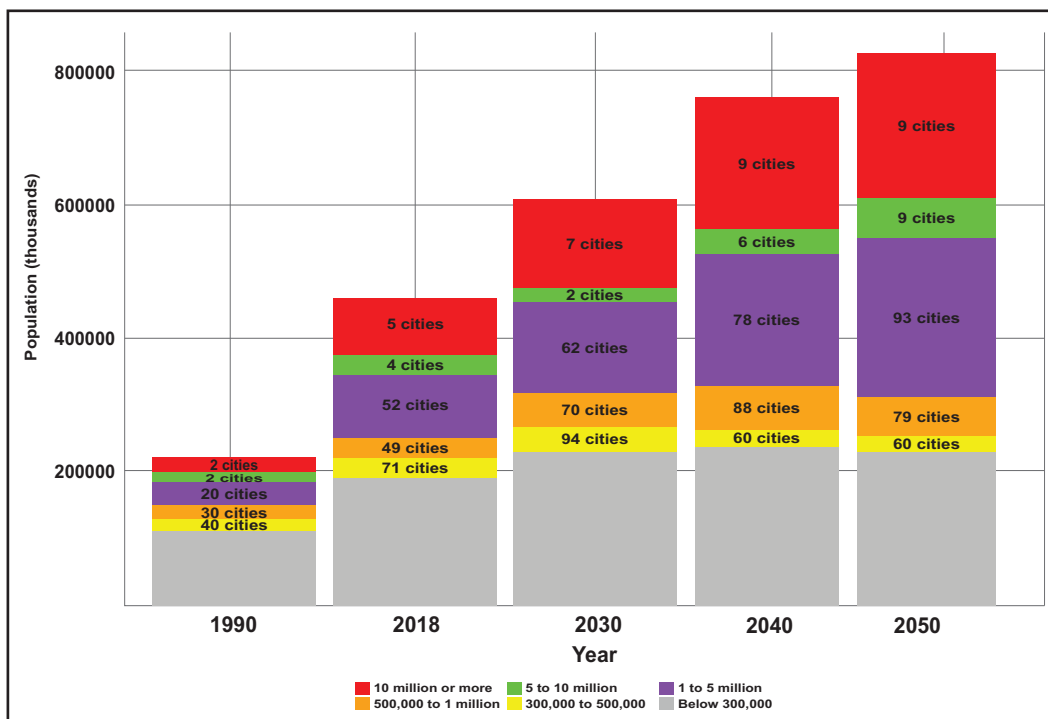
United Nations World Urbanization Prospects: The 2018 Revision classifies cities based on their population into six categories. The report projects the decadal increase in population and the number of urban settlements in each category until 2030. Trends regarding the growth in the number of Indian cities under the stated categories are projected to 2040 and 2050 by the author to assess potential implications. Critical Observations are:

- An increase in the category of 10 million-plus cities, from 5 to 9, indicates a substantial increase in the urban population in the decades ahead;
- There is a significant increase in population and number of settlements in other categories such as million-plus urban agglomeration or towns. The number of settlements in the 1 to 5 million category increases from 52 to 62 between 2018 and 2030. This growth continues, reaching 93 settlements by 2050. The class of cities with 5 to 10 million population also show a steady increase in number and population over the decades;
- For certain categories such as 3 to 5 lakh, the numbers stabilize post-2040; and

- The number of cities in the 5 to 10 million category decreases from 4 to 2 from 2018 to 2030, while the adjacent category of mega cities doubles up. By next decade, the category of 5 to 10 million increase by 4, bringing the total number of cities under the category to 6. The stated hike in number confirms that cities are constantly growing in population, irrespective of their scale. Consequently, short-term planning schemes and visions as we are used to are insufficient to address this rapid growth and corresponding changes in city structure.

From the Figure - 3, it can be inferred that the urban population doubles from 2018 to 2050. The number of urban settlements also increase substantially. Categories of cities with a population less than 5 million show a considerable increase in the number of settlements. A comparatively slower increase in higher-order cities may indicate them reaching closer to the possible carrying capacity, thereby exerting higher pressure on resources. The growth of urban India is also in part driven by Census towns, which are run by governing bodies under-equipped to deal with the burgeoning demands in urban infrastructure. This background demands an agenda-based program to identify specific deficiencies and to correct the same. As well as, such an agenda should cover existing programs of Government of India.

Fig. 3: Urban Population by Class of Urban Settlements, India (1990 to 2050)



Source: *World Urbanization Prospects: The 2018 Revision, Author*



3.3 SECTORAL DEFICIENCIES AND CITY CATEGORIES

As part of addressing the widening gulf between the rapidly increasing urban population (as reflected by the number of cities under respective categories) and their infrastructure expectations, identification of a set of critical sectors to be addressed in the decades to come is carried out.

- Mobility
- Energy
- Urban Sprawl
- Urban Poverty and Blight
- Economy
- Climate Change, and
- Water Supply and Sanitation
- Governance
- Environmental Quality Maintenance
- Housing
- Ageing Population and Amenities
- Healthcare.

These sectors cater to fulfilling basic needs and are essential for the quality of life of a city’s dwellers. These are determined based on the author’s experience with smart city transformation in India gathered as part of his authoring the text/reference book, Introduction to Smart Cities (Pearson, 2019). These sectors are given in Table - 1.

A matrix plotting the interaction of the listed sectors v/s the stated categories of the cities at a generic level can truly guide us on how to plan and address the identified deficiencies at the most important places where it matters. The

Table 1: Mapping Extent of Interventions in Sectors for Each Category of Cities

City Category	10 million +	5 to 10 million	1 to 5 million	5 lakh to 1 million	Below 5 lakh
Mobility					
Water Supply and Sanitation					
Energy					
Governance					
Urban Sprawl					
Environmental Quality Maintenance					
Urban Poverty and Blight					
Housing					
Economy					
Ageing Population and Amenities					
Climate Change					
Healthcare					

LEGEND

Major Intervention Moderate Intervention Moderate to Minor Intervention 	Minor Intervention Minor to No Intervention No Intervention
--	--

Source: Author



color codes designate the ongoing / consolidated existing interventions through central, state, or local government projects announced / formulated (these may be reflecting the various Government of India programs underway). The results will help strategize our dealing with the imminent danger of better managing the projected urbanization in India.

Significant observations arrived based on the matrix described are:

- The cities with a population greater than a million are the centers of the country's economic growth. The central and respective state governments have initiated several schemes to better the quality of urban life;
- The city categories of less than a million population face no sustained interventions by government bodies in the identified sectors. These categories had major interventions driven by individuals, NGOs, or other private sectors. When under-equipped, governing bodies could formulate policies to facilitate such interventions for the betterment of the urban areas; and
- All category of cities has consistently ignored to intervene in specific sectors. These include urban sprawl, aging population and amenities, and climate change. Interventions in these categories for a developing nation like India can be perceived to be expensive in terms of the current availability of resources. The Longitudinal Ageing Study in India 2020 reports that the population of the elderly will reach 319 million in 2050, comprising 19 % of the projected total population. Similarly, studies on climate changes show that India will be significantly impacted and witness extreme weather conditions. Such reports emphasize the need to plan for these eventualities even if they are not a concern in the current scenario.

Table - 1, also helps to identify critical sectors for each category of cities. Critical sectors are those under which no or only minor interventions are reported.

4. SOLUTIONS AND STRATEGIES

As part of re-imagining urban India, well laid out solutions and strategies to revitalise our urban areas is the imminent need. This section briefly outlines the solutions and strategies concerned with due regard to the city category-wise deficiencies as documented.

4.1 Sectors under Focus

The critical sectors with deficiency for each category identified are distributed across three decades (2020-30, 2030-40, 2040-50) to aid in visualizing an ideal case of sectoral priority to be assigned during the formulation of policies and planning strategies. (Table - 2). As discussed, considerable interventions are underway for most sectors in million-plus cities (though efficacy, equitable

**Table 2: Decadal Split up of Critical Sectors for Corresponding City Categories**

	2020-30	2030-40	2040-50
10 million +	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Environmental Quality and Maintenance 3. Ageing Population and Amenities 	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Environmental Quality and Maintenance 3. Ageing Population and Amenities 	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Environmental Quality and Maintenance 3. Ageing Population and Amenities
5 to 10 million	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Environmental Quality and Maintenance 3. Ageing Population and Amenities 	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Environmental Quality and Maintenance 3. Ageing Population and Amenities 	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Environmental Quality and Maintenance 3. Ageing Population and Amenities
1 to 5 million	<ol style="list-style-type: none"> 1. Energy 2. Ageing Population and Amenities 3. Climate Change 4. Urban Sprawl 	<ol style="list-style-type: none"> 1. Energy 2. Ageing Population and Amenities 3. Climate Change 4. Urban Sprawl 	<ol style="list-style-type: none"> 1. Energy 2. Ageing Population and Amenities 3. Climate Change 4. Urban Sprawl
Five lakh to 1 million	<ol style="list-style-type: none"> 1. Governance 2. Environmental Quality Maintenance 3. Housing 4. Urban Poverty and Blight 5. Urban Sprawl 	<ol style="list-style-type: none"> 1. Environmental Quality Maintenance 2. Housing 3. Urban Poverty and Blight 4. Climate Change 5. Ageing Population and Amenities 6. Urban Sprawl 	<ol style="list-style-type: none"> 1. Housing 2. Climate Change 3. Ageing Population and Amenities 4. Urban Sprawl
Below 5 lakh	<ol style="list-style-type: none"> 1. Water Supply and Sanitation 2. Governance 3. Environmental Quality and Maintenance 4. Housing 5. Climate Change 	<ol style="list-style-type: none"> 1. Mobility 2. Urban Sprawl 3. Environmental Quality and Maintenance 4. Urban Poverty and Blight 5. Housing 6. Economy 7. Ageing Population and Amenities 8. Climate Change 	<ol style="list-style-type: none"> 1. Urban Sprawl 2. Housing 3. Climate Change

reach, etc., are issues of concern). The critical sectors for this category are those which require sustained efforts over the coming decades to improve their urban quality of life. Consequently, the priority sectors in each decade remain the same.

During 2020-2030, Class - 1 cities should focus on fulfilling the population's basic needs, such as water supply, sanitation, and housing. Reforms in governance also are to be initiated in the same time line to ensure the effectiveness of follow-



up interventions. The subsequent decade includes targets to improve quality of life such as environmental quality and maintenance, urban poverty and blight, mobility, ageing population and amenities, etc.

Sectors such as housing and urban sprawl that have faced a significant shortage or lacked intervention for an extended period will need continued efforts to bridge the gap and are a part of the priority focus list in all three decades.

Formulating a long-term vision considering global factors for sectors such as climate change and the aging population is necessary to avoid catastrophes and shortfall as the need arises. These are also part of the priority list for all three decades for most categories of cities.

4.2 Strategies to Re-imagine

Based on the inferences briefed, it's important to strategize dealing with this phenomenal force of urbanization, especially in the light of the pandemic and climate change-induced pandemonium that the world is confronting. Following are the 4 critical steps in dealing with the exigencies of urbanization as documented. Each one, as listed, needs detailed deliberation as part of our efforts towards their plan of implementation under respective sectors in the category of the city where it matters, either in isolation or in groups.

Policy Formulation: Planning policies are the framework aiding in the conception to implementation of necessary action. Keeping long-term implications in the radar ensures the effectiveness and efficiency of policies. Carrying out timely revision of policies as required will help direct the growth of urban areas to benefit the population better.

Re-engineering: Post-independence, India is still not free from much of the path dependencies and inertia (may be part of the colonial hangover) that slow down progress from project conception to execution. However, continuing urbanization has changed the country's needs and aspirations of the people. Planning processes and associated workflow needs re-engineering to accommodate this change. Re-engineering should be sensitive to the existing workforce and other resources at disposal.

Smart Interventions: Smart cities have adopted innovations made possible with technology (especially ICT) to deal with urbanization. Adoption of similar resources will aid in mitigating issues of urbanization while introducing transparency, accessibility, and convenience to urban services. Constant and rapid up-gradation of technology, security threats, and inter-operability of systems are factors to be considered in the adaptation of smart interventions.



Regular Monitoring and Feedback System: Existing systems and policies fail to meet and adapt to the changing demands arising due to urbanization. Identifying the system's shortfalls will be easier with regular monitoring and feedback systems. The data so collected can be used to make informed decisions.

5. CONCLUSIONS

Re-imagining India's Urban Future starts with understanding critical areas requiring time-bound interventions and in what categories of cities. The paper intended to identify the same and state possible ways of gearing up and mitigating lacunae in planning. It also lays considerable emphasis on convergence with existing programs, plans, and funding options. The document has omitted sectors not coming under the purview of planning and where significant interventions are underway. Similar methodology can help identify critical sectors for different fields in tandem. The combined effort will result in resilient urban areas capable of adapting and growing as per the demands of urbanization.

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Re-imagining India's Urban Future for Resilient and Sustainable Cities

Ashwani Luthra, Ph.D.

Abstract

Fast urbanizing India to inhabit 45 percent or more persons in its towns and cities by 2050 is facing numerous physical, social, and environmental challenges such as decreasing land-man ratio, housing shortage, slums and squatters, traffic hazards, unsafe and insecure environs, water supply shortage, insanitary conditions, solid waste mis-management, environmental degradation, etc. Though the government has been making its sincere efforts through its policies and programs to deal with these challenges but the recent pandemic has questioned the preparedness of the governments to develop resilient cities and communities of the future. Strategic channelization of urban development in the context of COP 26 proceedings needs to be developed to create healthier, resilient and sustainable cities. Following urban systems approach to urbanization, preparing natural resource plans, planned peri-urban development, developing IT inclusive cities and smart infrastructure, preparing smart city disaster management plans, developing 'walkable cities' and transit oriented development, and green mobility solutions are suggested to develop the future cities and communities as resilient and sustainable entities.

1. INTRODUCTION

Productivity, inclusivity, resilience, and sustainability of towns and cities strongly determine the growth dynamics, socio-cultural transformations and quality of life of any country. The passionate young urban India at 75 is progressing rapidly as its pull forces have attracted mammoth foreign investments in the past two decades. The trends are continuing as India is seen as Asia's biggest market for consumer goods and technical skills as well as labour power. The contribution of the urban centres to the gross domestic product has more than doubled since independence, growing from 30 % in 1951 to 70 % in 2011 and is expected to touch 75 % mark by 2031 (Tewari, 2015). The corresponding six fold increment in its urban population at the same time speaks volumes of concerns. The present day urban settlements are facing structural and infra-structural distortions, which tend to challenge their resilience and sustainability. Urban land scarcity, housing shortage, mobility inefficiencies, environmental degradation, infra-structural deficiencies along with climate change and crumbled health sector during COVID-19 have questioned time and again the efforts being made by the government to develop resilient cities as perceived by United Nations, World Bank and other global organizations. As the world is urbanizing rapidly, strategic channelization of urban development becomes a very delicate issue to increase the resilience of the cities for sustainable living. Sincere efforts are essential to plan and augment

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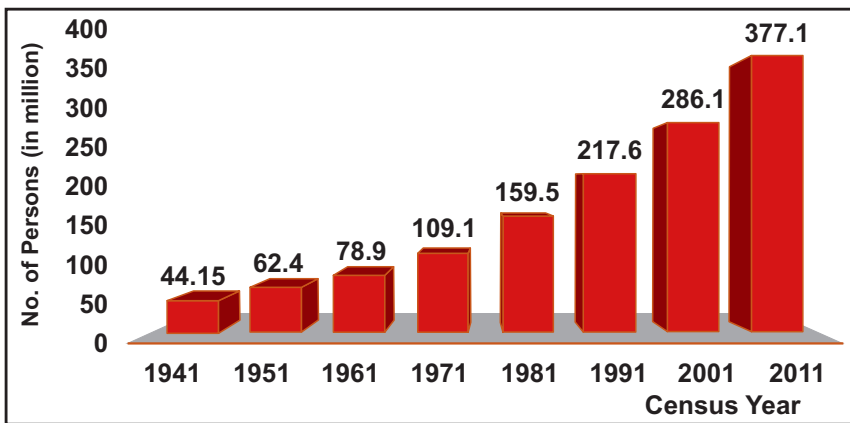


the resources to build quality urban environs having adequate infrastructure to absorb future shocks and stresses. United Nations Climate Change Conference (COP 26) concluded on November 13, 2021 is visualized as a landmark to make the future cities and communities healthier and resilient. India’s commitments on the recommendations of the conference are expected to bring radical change in its urban system and livability paradigms.

2. URBAN INDIA AT 75 - TRENDS OF URBANIZATION

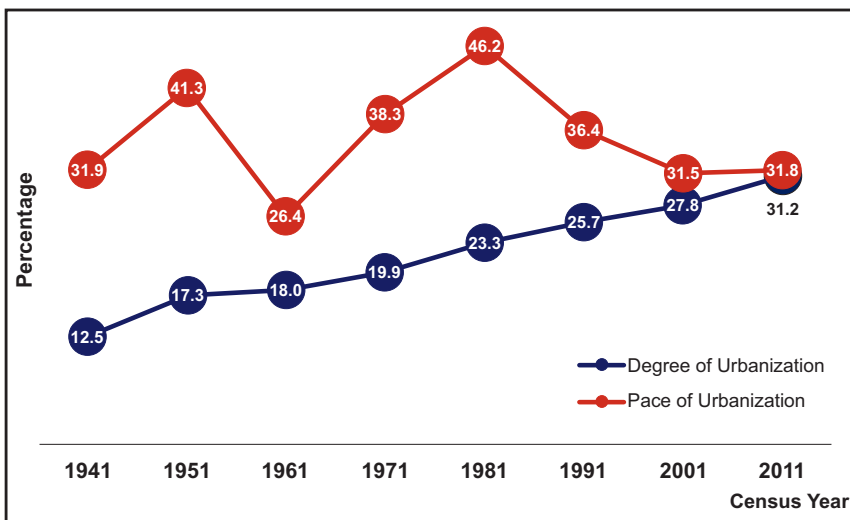
India is second largest urban system in the world after China with 377 million souls, out of total 1.21 billion, residing in 7935 urban settlements as per 2011 census. Urban population has registered more than 8.5 fold increment in the past seven census decades (Figure 1), reflecting India’s fast pace of urbanization.

Fig. 1: Indian Urban Population Growth Trends



Source: Census of India, 2011

Fig. 2: Degree and Pace of Urbanization in India



Source: Census of India, 2011

Whereas urban population just doubled in the first half of the 20th century, it rose by more than 4.58 times in its later half. But since 1961 Indian urban population is rising at much steeper rate. It is worth noticing that 90 million souls increased in the urban population in the first census decade of 21st century.

Though urban population is rising continuously showing high degree of urbanization in India in the past seven decades but pace of urbanization has slowed down since 1981 (Figure - 2). It is evident from the figure that degree of urbanization (percentage of urban population to total population) has varied between 2 % to 5 % during 1941-2011 and has ended up with 31.2 % in 2011, an increase of about 3.4 % during 2001-2011.

The pace of urbanization (decadal growth rate of urban population) has remained oscillating during 1941-1981 but since then India has experienced a fall (Figure 2). India touched 41 % urban growth rate mark in 1951 as an impact of post-independence migration, which fell to 26.4 % in 1951-1961 and again rose to 38.3 % and 46.2 % in 1961-1971 and 1971-1981 respectively. Since then urban population has been increasing at a decreasing rate to end up at 31.8 % in 2001-2011. But interesting to note is that except 1951-61, the pace of urbanization has remained more than 30 % from 1981 onwards.

It is worth noticing from Table - 1 that the urban population distribution is skewed towards bigger towns and cities. As per Census of India (2011), the number of towns has risen from 5161 in 2001 to 7933 in 2011, an increment of 1.54 times. But the distribution of urban population in these towns has been uneven. It is clear from the Table - 1 that whereas 8.54 % class - I towns (cities) were housing 68.61 % of the urban population in 2001, only 6.37 % cities accommodated about 60.33 % of the total urbanites if the country. Thus, the major brunt of urban population share is absorbed by the class - I towns of the country. Amongst these are the 50 metropolitan cities that inhabited about 42.3 % of the total urban population of the country (*ibid*). The table also reveals that 9.61 % class - II towns (large towns) accommodated about 9.72 % of the total urban population, whereas in 2011 only 7.63 % of this class towns inhabited 10.97 % of the total population. Thus, overall class - I and II towns (14 %) inhabited about 70 % of the total population of the country in 2011. The remaining 6823 towns (86 %) housed only 30 % urban population in 2011. In a way these class - III to VI towns are dependent on the class - I and II towns. Noteworthy is the share of class - III, IV and V towns that accounted for about 79 % but accommodated only about 28 % urban population in 2011.

Table 1: Class Wise Distribution of Towns and Population in India

Class of Town	2001		2011	
	No. of Towns	Population (Millions)	No. of Towns	Population (Millions)
I	441 (8.54)	196.3 (68.61)	505 (6.37)	227.10 (60.33)
II	496 (9.61)	27.8 (9.72)	605 (7.63)	41.30 (10.97)
III	1388 (26.89)	35.2 (12.30)	1905 (24.01)	58.20 (15.46)
IV	1563 (30.28)	19.5 (6.82)	2233 (28.15)	31.90 (8.48)
V	1041 (20.17)	6.7 (2.34)	2187 (27.57)	15.90 (4.22)
VI	232 (4.50)	0.7 (0.24)	489 (6.16)	2.00 (0.53)
Total	5161 (100.00)	286.1 (100.00)	7933 (100.00)	376.40 (100.00)

Note: Figures in parentheses are percentages from the column totals.

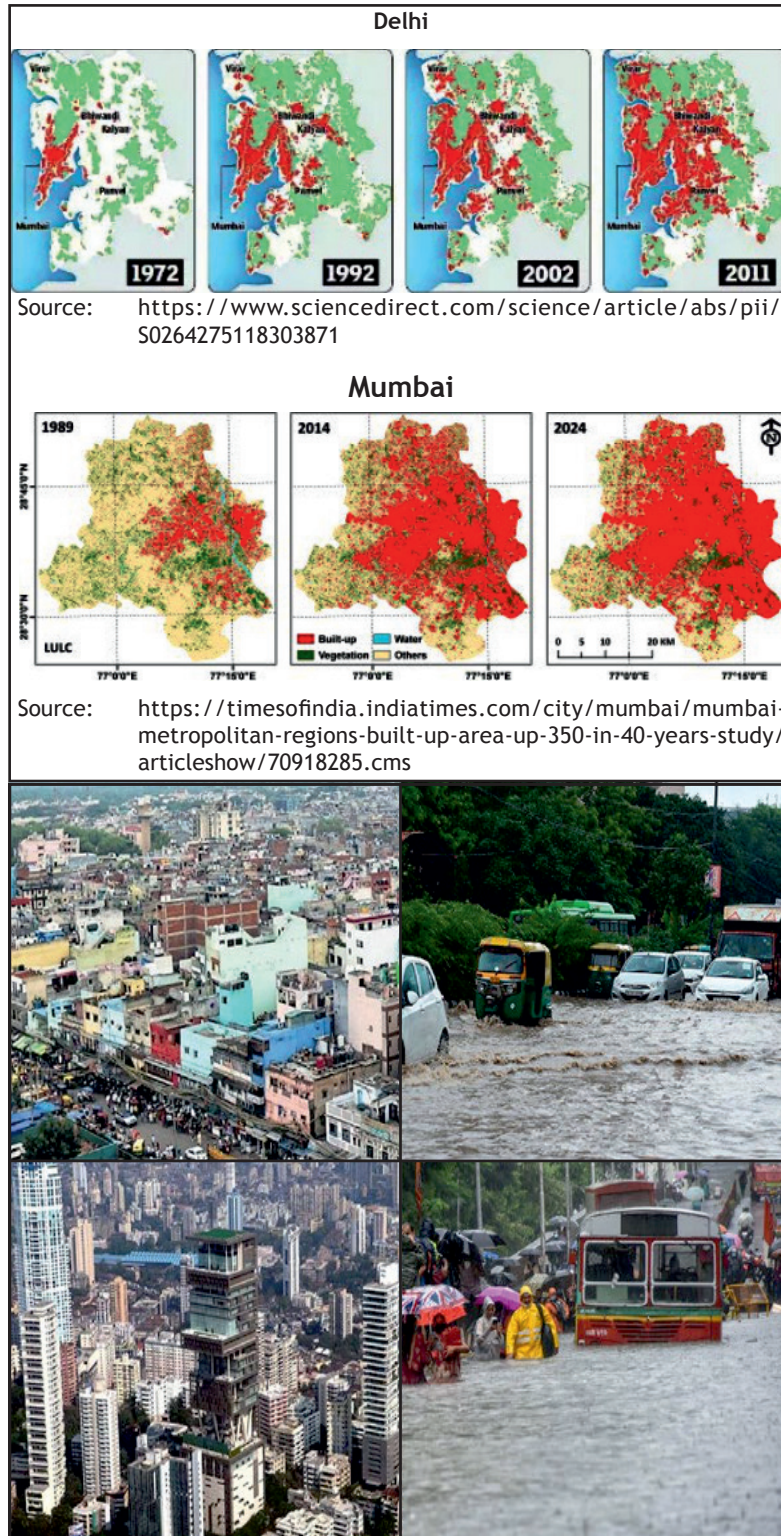
Source: Census of India, 2011

3. CURRENT URBAN CHALLENGES

It is worth noticing that the urbanization has occurred in an imbalanced manner. Agglomeration economies have led to the concentration of urban population in few bigger urban settlements. Hence, clustered entropy pattern of the urban settlements is observed in the country. Pressure of population on fewer cities result in spring up of many unauthorized colonies and posing serious social



Fig. 3: Urban Sprawl Resulting from Urbanization



and environmental challenges. The desired zoning regulations and building byelaws are grossly flouted in these colonies and basic amenities required to maintain better quality of life remain absent. Patchy low density green field developments, planned or unplanned, in the outskirts / periphery of cities create hurdles in the compact development of the settlement, which can benefit the inhabitants in number of ways. Usually, the utilities constructed for such colonies do not function well due to absence of trunk services. Rather they become threats to the natural environment and rural habitat. Also, uncontrolled urban explosion has posed serious infra-structural challenges to include reduced land-man ratio, housing shortage, rising slums and squatters, accrescent traffic, mobility (not) of all, drinking water shortage, insanitary conditions, solid waste mis-handling, rising pollution level, etc., thus making the cities less resilient and unsustainable communities to live.

The immediate impact of rising urban population rests on land tending from the sprawl of the cities leading to development of peri-urban areas (Figure - 3). In fact, insane polarized urbanization, overcrowding, unpalatable sprawl and brutal conversion of agricultural land to urban concrete mass have created heat is-

lands in the cities contributing to climate change and hence leading to global CO₂ increments and flooding. According to the National Aeronautics and Space Administration (NASA, 2021), “the planet’s average surface temperature has risen by about 1.18 degrees Celsius since the late 19th century, a change driven largely by increased carbon dioxide emissions into the atmosphere and other human activities. Most of the warming occurred in the past 40 years, with the seven most recent years being the warmest”. The heat islands and floods have emerged as the man-made pandemics to cause numerous health hazards and poor quality urban habitation.

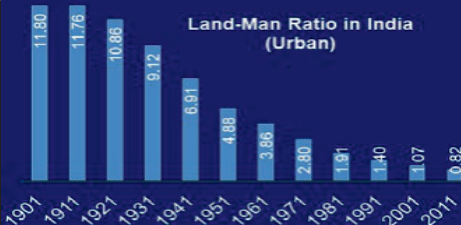
The central areas of the cities have emerged as high density compact mix-use developments over the years inviting large volumes of people and vehicles for various purposes. The older streets and roads of the areas are not able to with stand and sustain the changed role and pressure of the increased visitors. Therefore, congestion, unhealthy environs, insanitation, inadequacy of facilities and utilities are the common features of different communities in the central area. Such brown field develops are no way appreciated or desired by the inhabitants and the local bodies as it adversely impacts their quality of life.

The main transit routes of the cities bear most of the burden of unplanned conversion of land uses. Weak highway controls and absent enforcement tend to exploit the potentials of the highways and major city roads through ribbon development along them. Extensive violation of access control norms along these roads lead to unsafe and inconsistent traffic flows, man hours lost in journey, energy inefficiencies, and high vehicle emissions.

Conventional energy and fossil fuels usage to meet the residential, commercial, industrial and transport requirements of the urbanites pose serious challenges to the climate change through carbon dioxide emissions. Over the years, climate change has become a bigger urban challenge because the CO₂ emissions have increased very fast in the past few decades. The cases of respiratory, cardiovascular, neurological, cancer, obstructive pulmonary function, hypertension, etc.; are on the exponential height. Thus, the health of the city is in question.

A fact file of India’s urban challenges, for which cities are required to be re-imagined to make them resilient and sustainable, is presented in Table - 1.

Table 1: Reflections of India’s Urban Challenges

Challenge	Facts																										
Decreasing Land-Man Ratio	<ul style="list-style-type: none"> • India second preferred place for investment in real estate sector. • Reduction from 11.8 hectare / person (1901) to 0.82 hectare / person (2011). • Sharp fall in land-man ratio since 1951.  <table border="1" data-bbox="948 1591 1412 1814"> <caption>Land-Man Ratio in India (Urban)</caption> <thead> <tr> <th>Year</th> <th>Ratio (Hectare/Person)</th> </tr> </thead> <tbody> <tr><td>1901</td><td>11.80</td></tr> <tr><td>1911</td><td>11.76</td></tr> <tr><td>1921</td><td>10.86</td></tr> <tr><td>1931</td><td>9.12</td></tr> <tr><td>1941</td><td>6.91</td></tr> <tr><td>1951</td><td>4.88</td></tr> <tr><td>1961</td><td>3.86</td></tr> <tr><td>1971</td><td>2.80</td></tr> <tr><td>1981</td><td>1.91</td></tr> <tr><td>1991</td><td>1.40</td></tr> <tr><td>2001</td><td>1.07</td></tr> <tr><td>2011</td><td>0.82</td></tr> </tbody> </table>	Year	Ratio (Hectare/Person)	1901	11.80	1911	11.76	1921	10.86	1931	9.12	1941	6.91	1951	4.88	1961	3.86	1971	2.80	1981	1.91	1991	1.40	2001	1.07	2011	0.82
Year	Ratio (Hectare/Person)																										
1901	11.80																										
1911	11.76																										
1921	10.86																										
1931	9.12																										
1941	6.91																										
1951	4.88																										
1961	3.86																										
1971	2.80																										
1981	1.91																										
1991	1.40																										
2001	1.07																										
2011	0.82																										



Challenge	Facts	
<p>Housing Shortage and Slums</p>	<ul style="list-style-type: none"> • More than 3 times increase in housing shortage during 1961-2001. • Urban housing deficit at 29 million (2018), 95 % of the shortage in EWS. • Slum population - 65 million (2011). • One out of every six households in urban India (17.4 %) lives in slum (2011). • 1/3rd of all slum households in India live in metropolitan cities (2011). • 104.67 million slum dwellers in 2017 (McKinsey, 2010). 	
<p>Traffic Hazards</p>	<ul style="list-style-type: none"> • Mismatched vehicle-road length - CAGR for vehicles and road length 10.7 % and 3.4 % respectively (1981-2016). • More than 70 % two wheelers registered each year • High vehicle density - Mumbai (530), Pune (359), Kolkata (319), Chennai (297), Bangalore (149), and Delhi (108) in 2019. • Parking woes in every city. 	
<p>Unsafe Roads</p>	<ul style="list-style-type: none"> • 6th worst road safety record holder - 17 people die every hour on Indian roads. • 4.49 lakh plus accidents occurred on Indian road in 2019. • 1.51 lakh plus people killed in road accidents (2019). • 4.51 lakh plus persons seriously injured or disabled (2019). • 46 children die every day on Indian roads. • NHs and SHs comprise 2.03 % and 3.01 % of total road network but account for 35.7 % and 24.8 % of deaths respectively (2019). 	
<p>Water Supply Shortage</p>	<ul style="list-style-type: none"> • 40 % urbanites without access to public water supply (2015). • Average 69 LPCD as opposed to norm of 135 LPCD. • Poor quality drinking water. • 20.7 % households travel 100 meters to collect water, while 8.1 % households fetch water from a source located beyond 100 meters. 	

Challenge	Facts	
Insanitary Conditions	<ul style="list-style-type: none"> • 94 % towns without even partial sewage network. • Over 70 % urbanites have no access to toilets or sewerage system. • 67 lakh toilets constructed but not fully used by the public. • Only 21 % of the waste water generated is treated. • 2500 million liters and 4250 million liters sewer disposed directly into the Ganges and its tributaries respectively. 	
Solid Waste Management	<ul style="list-style-type: none"> • MSW generated by urbanites (million ton) - 83.8 (2015). • Per capita generation of MSW - 0.2 to 0.5 kg/person/day. • Solid waste rising at a rate of 5 % per annum. • 70 %-90 % and less than 50 % of MSW collected in metropolitan cities and smaller cities respectively. • Less than 30 % of the solid waste is segregated. 	
Environmental Degradation (Air Pollution)	<ul style="list-style-type: none"> • 12 out of 25 most polluted cities in the world are in India (2021) • Each bigger metro city contributes about 60 % CO₂ emission. • Delhi alone produces about 1.6 times and 3.5 times more pollution to that of Mumbai and Calcutta respectively. • India's transport sector responsible for 12.9 % of its GHG emissions. • About 92 % people live in areas exceeding WHO guideline for healthy air. • More than 50 % people live in areas not meeting WHO's least-stringent air quality target. • Around 7 million deaths each year due to exposure from outdoor and household air pollution. • Fifth highest mortality risk factor globally. 	<p>12 out of 25 most polluted cities of the world are in India</p>

The above mentioned challenges are merely the highlights of tangible urban living. The socio-cultural woes of the female gender, elders, children, migrants and the other inhabitants of the cities carry equal importance. Their housing, mobility and other infra-structural needs vary discretely in smaller towns, cities,



metropolises and the mega cities. The unprecedented urbanization trends have increased the magnitude of their woes exponentially.

4. WHY TO RE-IMAGINE URBAN FUTURE

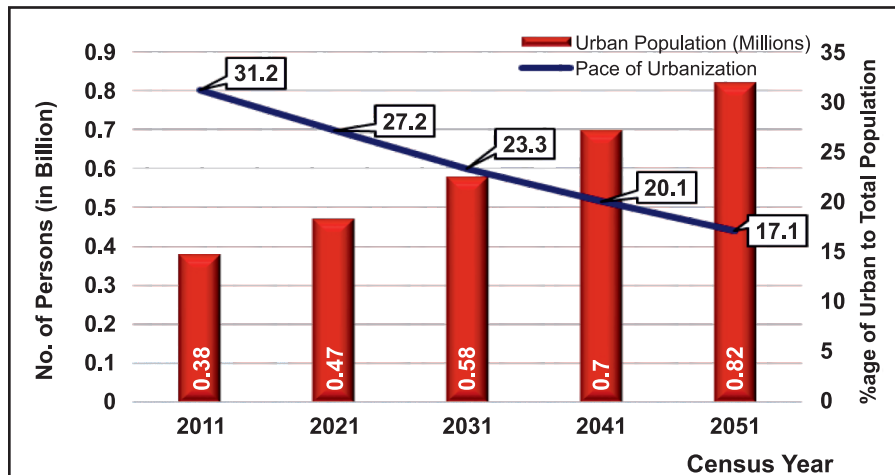
Urban settlements have emerged as the backbone of the economy of a nation. About 31 % urbanites of India have contributed about 63 % of the gross domestic product (GDP) of the country. The projections reveal that about 40 % Indians would be housing the urban settlements and they would contribute about 75 % towards the GDP by 2030 (MoHUA, 2015). But rising urban challenges on the one hand and the initiatives taken by the government to counter them on the other hand pave the way to appraise the trends and pattern of urbanization and its likely impacts on the urban habitation. It also leads to the way forwards to make the urban living more meaningful and appreciable.

4.1 Future Urbanization Trends

Rising trends of urban population are projected to continue in the coming decades as well. It is clear from Figure - 4 that urban population of India is expected to double in the next four census decades (2011-2051). It is anticipated that about 0.47 billion Indians will be inhabiting the urban settlements in 2021, which will nearly double by 2051. India is expected to accommodate 0.58

billion persons in its towns in 2031. As per the estimates, as much as 45 % of India's population shall be residing in urban settlements by 2051. Though future urban population shows growing trends but it is worth noticing that its pace of growth will slow down by almost half by 2051. It is clear from the figure that during 2011-2031 the growth rate of urban population will fall

Fig. 4: Future Trends of Urbanization of India



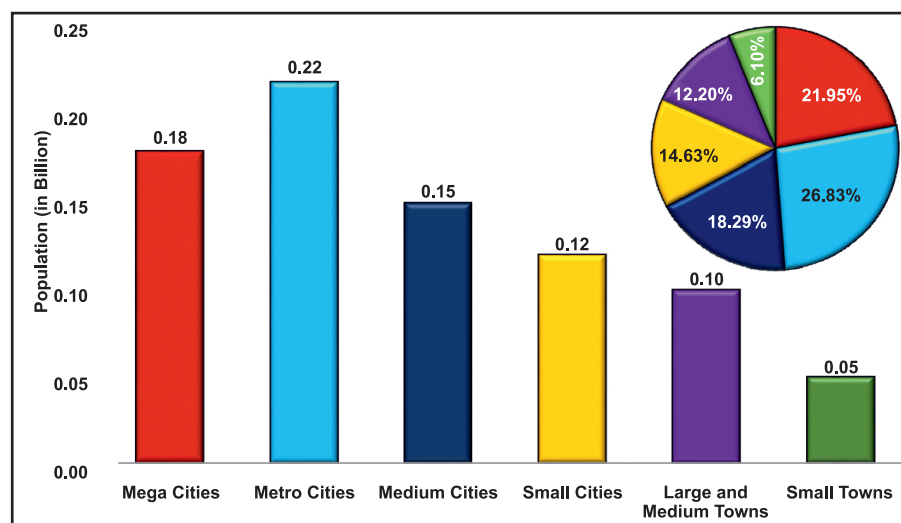
Source: <http://www.scribd.com/doc/38501574/4/PROJECTED-URBAN-POPULATION>

by about 4 % and subsequently during 2031-2051 it will further fall to 3 % each decade. Therefore, the urban population growing at 31.2 % now is expected to grow at 17.1 % by 2051.

Distribution of rising urban population has always remained a cause of concern to the planners because of its polarization tendencies. Thus, urbanization in

India has been lopsided towards class - I towns. The future trends also predicts that majority of the urban population shall settle in bigger settlements. As many as 0.40 out of 0.82 billion urbanites (48.79 %) are expected to inhabit in about 100 mega and metro cities in 2051 (Figure - 5). Another 0.15 and 0.12 billion population is expected to inhabit medium and small cities. Congregation of

Fig. 5: Distribution Pattern of Urban Population of India



Source: <http://www.scribd.com/doc/38501574/4/PROJECTED-URBAN-POPULATION>

economic activities and better infrastructure are the prime reasons for congregation of urban population in bigger cities. Even investors find the cities to be attractive for availability of skilled manpower and better infrastructure. Thus, future urbanization of India is anticipated to be yet more lopsided.

4.2 Urban Planning and Development Initiatives in India

As deficient or inefficient infrastructure has always remained one of the most challenging issue, the turn of the 20th century may be designated as a new era for urban reforms to plan, redevelop, and develop infrastructure in the towns and cities of India. The Jawaharlal Nehru National Urban Renewal Mission (JnNURM) (2005-2014) was a major initiative in this direction by the central government in the beginning of the 21st century. In May 2014, change of central government brought a series of flagship programs as efforts to create sustainable cities and communities. Following are the major plan / policy initiatives implemented in the country for environmentally resilient and sustainable development of the cities viz.,

- Jawaharlal Nehru National Urban Renewal Mission (JnNURM) - December 2005.
- National Action Plan on Climate Change (NAPCC), 2008 to include:
 - National Solar Mission;
 - National Mission for Enhanced Energy Efficiency;
 - National Mission on Sustainable Habitat;
 - National Water Mission;
 - National Mission for Sustaining the Himalayan Eco-system;
 - National Mission for a Green India;



- National Mission for Sustainable Agriculture; and
- National Mission on Strategic Knowledge for Climate Change.
- Rajiv Awas Yojana (RAY) - June 2009.
- National Ambient Air Quality Standards (NAAQS), 2009.
- Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- National Urban Livelihoods Mission - September 2013.
- The Swachh Bharat Mission (SBM) - October 2014.
- National Heritage City Development and Augmentation Yojana (HRIDAY) - January 2015.
- Smart Cities Mission (SCM) - June 2015.
- Pradhan Mantri Awas Yojana (PMAY) Urban - June 2015.
- Atal Mission for Rejuvenation and Urban Transformation (AMRUT) - June 2015.
- Green Highways (Plantation, Transplantation, Beautification & Maintenance) Policy, 2015.
- Shyama Prasad Mukherjee RURBAN Mission - February 2016.
- The Real Estate (Regulation and Development) Act, 2016 (May).
- Solid Waste Management Rules, 2016.
- Pradhan Mantri Ujjwala Yojana, 2016.
- National Urban Transport Policy, 2016.
- Graded Response Action Plan (GRAP), 2017.
- National Clean Air Programme (NCAP), 2019.
- Draft Guidelines for Setting up, Authorization and Operation of Authorized Vehicle Scrapping Facility, 2019.
- National Electric Mobility Mission Plan, 2020.
- Advanced Vehicle Emission and Fuel Quality Standards- BSIV from 2017 and BS-VI from 2020.
- The India Cooling Action Plan (ICAP), 2021.
- Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 2021.
- India's Net-zero Target at COP26 Summit, 2021.

The implementation of these plans and policy programs has brought major change in the landscape of the selected urban settlements by developing the housing, mobility and infra-structural projects of various kinds. The success of JnNRUM, Smart Cities, PMAY (urban), and AMRUT projects in the cities has established models in planning and development paradigms in the country. But they are considered as scanty projects implemented in the central or peri-urban areas of



the cities. Cities as a whole are yet to travel a long way to become resilient and sustainable entities. The outburst of recent COVID-19 pandemic has shown new directions in city planning and development to suggest new normals in living, travelling, infra-structural requirements and environment. India's initiatives through Make in India, Digital India, Self-reliant India (Atamnirbhar Bharat), Clean India, etc.; are some of the examples to raise the Indian settlements, cities and their inhabitants in particular, to a high level to cope up with the routine challenges and such epidemics or pandemic as well.

The recently concluded CoP26 in Glasgow, Scotland on November 13, 2021, health of the public remained the key agenda. All the participating nations in general and India in particular has committed for net zero emission by 2030 for better quality of life of the Indians. The conference has also stressed on healthy and green communities for resilient and sustainable living. It has recommended to prepare healthy climate plans to include energy systems and phasing out polluting fossil fuels that protect and improve climate to close the 1.5 degree Celsius gap to stay alive. It has come out with promoting sustainable, healthy urban design and transport systems, with improved land-use, access to green and blue public space, and priority for walking, cycling and public transport, and creating people-centred cities (WHO, 2021).

Re-imagining the future cities and communities as resilient and sustainable habitats has been the agenda of the Indian government due to its large urban population base and high volume of challenges impacting its livability conditions. Few innovative and ambitious projects of the Indian government that would have long lasting impacts on the urban habitat are:

- Developing the smart innovative projects of 100 Smart Cities under Smart Cities Mission (MoHUA, 2015);
- To construct 11.2 million houses for the urban poor by 2022 under PMAY (Urban) (MAHUA, 2015);
- Sagarmala Project for comprehensive development of India's 7,500 km coastline, 14,500 km of potentially navigable waterways and maritime sector (MoPSW, 2016);
- Bharatmala Priyojana to construct 83677 km (50 corridors) committed new highways to optimize the movement of goods and people across the nation (MoRTH, 2017);
 - Golden Quadrilateral, North-South Corridor, and East-West Corridor;
 - Eastern and Western Dedicated Freight Corridor; and
 - Development of Multi-modal Logistics Parks.
- National Clean Air Program for reducing the levels of air pollution by 20-30 % of PM2.5 and PM10 concentration by 2024 (MoEF, 2019);



- National Electric Mobility Mission Plan to promote mobility by electric vehicles in all the urban settlements across the nation by 2030 (MoHIPE, 2020);
- AMRUT 2.0 Mission to provide water tap connections to households in all statutory towns, provide sewerage / septage services in 500 AMRUT cities, and rejuvenation of water bodies and green spaces and parks (MoHUA, 2021); and
- Commitment to net zero and keep 1.5 degrees within reach by 2030 under CoP 26.

5. RECOMMENDATIONS FOR URBAN FUTURE

Keeping note of the rapidity of urbanization, infra-structural challenges, and urban reforms and initiatives taken by the government to meet national targets and the United Nations global goals and targets, the cities are required to be re-imagined, planned and developed with respect to the sustainable development goals and climate change issues by maintaining a balance between urbanization, urban growth and carbon emissions. Following are the recommendations for the future urban settlements in this regard.

Regionalization of urbanization should be the agenda of the government to develop a balanced hierarchical structure of urban settlements and to avoid lopsided urban population distribution pattern. Urban Systems Approach to Urbanization is the need of the hour. There is need to revisit the National Commission on Urbanization Report, 1988 to craft a new National Urbanization Policy (NUP) suiting the changed global and local social, economic, physical and environmental goals and objectives. Macro economic approach propagating decentralised distribution of economic activities should be the key to the NUP so that migration from rural or smaller urban settlements to bigger cities is controlled and congregation of urban problems and challenges is checked.

The primary reason for urban flooding is distortions with the natural drainage system. The cutting and filling activities, hence disturbing the contours of the area tend to result in blocking the passage of the storm-water. The contours and other natural resources are barely given due weight while preparing the Master Plan of the city. Though planning departments of the states have started preparing the GIS based Master Plans but still the contours and drainage systems are not given the due regard. The future cities should be imagined as safer and disaster resilient cities. Therefore, the local authorities should prepare Natural Resource Plans for their cities so that the GIS based Master Plans are prepared by considering them as base maps. Such an approach will save the natural resources such as water reservoirs, river beds, minerals, forest covers, etc.

Peri-Urban Development needs to be well planned and organized so that the ill effects of patchy and sporadic sprawl can be avoided. The greenfield development projects of the colonizers and under smart cities mission should have the element



of integration and sustainability. Low density development in the peri-urban area should be avoided with the aim to conserve the agricultural lands. Retrofitting and redevelopment projects should be undertaken in the brown field areas of the cities to improve their environs on the one side and reducing the pressure on green lands on the other side.

The growth pattern of the cities has revealed that over a period of time the smaller towns along the transport corridors submerge into the bigger / mother city, thus creating large urban regions. Also, at times the distances between the towns remain so short that they appear to be the same entities. Such conurbations and urban corridors should be identified meticulously to plan them as Twin City Developments. Such an approach will help in integrating the city infrastructure of both the towns and will make it affordable and efficient at the same time.

The COVID-19 pandemic has taught the world that digital technologies can save the mankind from various infectious diseases. Many personal, commercial and travel requirements have been met with digital transactions during the past pandemic year. Therefore, as a new normal digital technologies are expected to rule the world in almost all the spheres of human living. Therefore, there is need to plan and develop IT Inclusive Cities to make them competitive and resilient to routine as well as pandemic matters.

The cities of tomorrow would need Smart Infrastructure to meet the social, physical and mobility needs of their inhabitants. Inclusion of digital technologies in education, medical, banking, policing, postal, water, sanitation, mobility and governance sectors will improve the efficiency of the cities and also make them resilient during pandemic times. All the urban settlements, small or large, should be treated equally for this purpose.

The local bodies should be made responsible to prepare Smart City Disaster Management Plans for their respective cities having incorporation of smart evacuation and rehabilitation strategies to mitigate the natural and / or man-made disasters. The impacts of reverse migration as witnessed during COVID-19 conditions and displacements due to floods or earthquakes must be reduced.

With the aim to meet the net zero target and keep 1.5 degrees within reach, the policies should be oriented to plan for 'Walkable Cities', which include self-contained communities and decentralized distribution of activities to reduce the travel needs and trip lengths of their inhabitants. '15 Minutes City' concept is advocated to promote walkability and cycling, though in some context short bike ride or public transit trip is also included.

The Indian cities have largely developed and grown along the transit routes. Land use conversions favouring mix-use activities and high densities are common



features. Therefore, feasibility of bulk capacity high speed transit facility has become a reality, at least in the bigger cities. Transit Oriented Development (ToD) is seen as a viable option for the future cities to cater the travel needs of the inhabitants within half to one km area around the MRT / LRT / BRT stations. The last mile connectivity is planned to promote walkability, cycling or para-transit facility, preferably electric vehicle. If efforts are made to adopt these principles at the earliest, the net zero target and keeping the temperature rise within 1.5 degrees limit will not be a wonder.

Automobile is the major agent of CO₂ emissions contributing to climate change and its atrocities. The preference to private vehicles is on the account of absent or inefficient public transport system operating on the city routes. Introduction of reliable, safer, efficient and affordable World Class Transport System is expected to bring in mode shift tendencies among the private bikers and car drivers to meet their travel needs. This shift will bring down the traffic densities drastically and reduce the air pollution levels in the city.

Promote Green Mobility Solutions in the cities by introducing electric vehicles, be it private or public. Though the efforts on the same are on but clear cut policies and awareness programs need to be brought forward. Also, the necessary infrastructure such as electricity charging stations, preferably with solar panels, should be evenly distributed in the city to avoid inconvenience to the users. Non-motorized modes are usually the most neglected component in the city transport scenario. That is why they are the most vulnerable from pollution and safety point of views. Cities are required to prepare green mobility plans that promote and protect the pedestrians and cyclists. Principle of exclusivity within inclusivity needs be followed while proposing and developing the required infrastructure for them to make them attractive for effective use.

6. CONCLUSIONS

Unprecedented urbanization and its polarized distribution pattern is a cause of concern for the policy makers and planners because of imbalances existing in the infrastructure distribution and other urban challenges impacting the urban life adversely. Climate change and resilience are seen as two inter-linked areas asking for re-imagining the future urban settlements and living in them. Contemporary innovative planning and development strategies need to be evolved to protect the cities from natural and man-made disasters. The traditional master plan approach needs to have a base of natural resource plan along with scientific analysis of urbanization trends, patterns and sprawl. Smart, inclusive, digital infrastructure is going to be the key to counter the climate change, epidemics and pandemics in the time to come. Smart green transport solutions promoting walkability, cycling, electric mobility, and ToD solutions can be imagined in the future urban systems in the country.



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Exploring the Role of Smart Cities in Shaping Sustainable Urban Development in India

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Abstract

In response to massive urbanization challenge, a mission to build 100 smart cities was launched in 2014, covering 100 smart cities. However, after seven years since its inception, Indian smart cities are struggling to show any meaningful impacts on the ground. The mission has come under severe criticism due to its lack of core focus, for harbouring superfluous ideas without much back-end research and innovation and for its mission condition to create a special purpose vehicle (SPV) for project implementation. As a result, at the end of its mission period, it is unclear whether the mission would be continued in near future. This paper argues that, considering this massive gap in demand and supply of basic services, human and financial resources, Indian cities are left with very little choices, but to pro-actively explore the opportunities of applying digital technologies for optimization of urban systems and processes. Instead of focussing on several areas, the future version of this mission should entirely focus on the core urban challenges such as urban planning and land management, resilient service delivery and minimizing the externalities.

1. INTRODUCTION

The Prime Ministers' vision to build 100 Smart Indian cities was launched in 2014, through a pan India mission called Smart Cities Mission or SCM. The launch of SCM had generated a widespread euphoria among the urban professionals, all over the world. This was probably one of the first such national urban missions in India, generating so much of public attention in recent times. The SCM was also unique in its approach of city selection through a nation-wide competition, known as 'Smart cities challenge', provision of a seed capital of Rs. 500 crore, for every short listed city (instead a regular central supported urban scheme), formation of a city level special purpose vehicle (SPV) for program implementation. In many ways, the SCM brought together several new ideas and made a paradigm shift in its approach about how the national missions were conceptualized earlier.

During its initial phase, the SCM had garnered support from World Bank and had collaborated with global entities such as the Bloomberg Philanthropies and city of Barcelona, among the others. In absence of a very rigid mission definition or boundary conditions, during its initial years, the SCM became a platform for some cities like Pune, Goa, Bhubaneswar, Jaipur and a few others took the leadership in spearheading creative ideas towards managing urban development and citizens participation.

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However, despite its ‘dream like’ launch, the mission gradually started losing its steam over the years. From a mission with higher creative ideas, SCM slowly started drifting towards any other central supported urban scheme. Instead of becoming a cradle of urban innovation and partnership, the mission started showing signs of a “mission without a core idea or agenda”.

In absence of a core focus, over the past seven years, more than 25 diverse initiatives, ranging from, India urban observatory, urban data exchange, urban innovation stack, Smart Net, and a few others have been on boarded as a part of this mission.” Spatial fix approaches like the Nurturing neighborhoods, India cycles for Change and Streets for People, as well as a few standalone projects like automated “Smart Toilets” and development of Bicycle tracks in its mission cities have been taken up for implementation through this mission. Instead of funding innovative projects and generating ideas for meaningful private-public collaborations, the mission for smart cities started sprawling desperately in search of new ideas and a better foundation.

According to a recent analysis by India Spend, published on 24th June, 2021, which highlighted that 49 % of 5196 planned projects remain unfinished under the smart cities mission. Among the 33 cities which have completed their fifth year, about 42 % projects remain incomplete. Also, till June 2021, the smart cities could utilize only 69 % of the grants available to them. The key question, therefore, is, despite gaining massive public and political attention, why are the India Smart cities unable to deliver on their promises of building “liveable”, “sustainable” and “thriving” cities with opportunities for it’s residents?

Recently, the Honourable Prime Minister of India launched the next versions of AMRUT 2.0 and SBM 2.0, covering about 4700 Indian towns and cities. While these central missions became stronger and bolder, the future of Indian smart cities was discussed merely as “from a mission to movement”, giving a general sense of closure of this mission.

2. CHALLENGES OF INDIAN SMART CITIES

Some observers have pointed out about the “over-ambitious” and “illusive” nature of this mission and the administrative clutters created due to the formation of Smart City SPVs being the potential reasons. Some critics have also highlighted about the missions over dependence on the buzzwords and superfluous ideas from various global regions, forwarded without any conceptual grounding or probing for their localization in Indian context.

Another major aspect of this mission that, there has been an underlying assumption of positive impact of Information Technology on the urban morphology. Globally,



the role Information Technologies in shaping urban form and development are not quite proven and has been evolving.

Professor Robert Hollands of New Castle University, in his seminal work on Smart Cities (Hollands,2008), had critically interrogated the concept of smart cities. He also highlighted the aspects of limited availability of knowledge and understanding around this “urban labelling” phenomenon. Hollands further argued that the smart cities being developed under this “definitional impreciseness”, numerous unspoken assumptions, and underlying tendency of “self-congratulations”, expected to have more rhetoric’s and limited influence towards the meeting the challenges of urbanization.

3. SMART CITIES - WHAT VALUES DO THEY BRING TO INDIA’S URBAN DEVELOPMENT?

With about 7900 + towns and cities, expectation of 600 million+ urban residents by 2030 and with the burden of un-met affordable housing needs and basic services, India’s urbanization challenges are messy as well as massive. The challenges of urbanization often manifest in the form of overcrowding, congestion, insufficient infrastructure, inadequate service prioritization, mainly in terms of drinking water, sanitation, energy, transport, solid waste management, environmental degradation, and pollution, etc.

Indian cities are also at the forefront of the climate induced risks and vulnerabilities. Various future climate change scenarios such as RCP 4.5, major Indian cities are expected to have increased exposure to multi hazard and compound risks due to the climatic variabilities and change, under the moderate climate scenario during 2020-2039.

In response to India’s urbanization challenges, the High-Powered Committee (HPEC, 2011), had estimated about Rs. 39.0 lakh crore of capital investment in urban infrastructure by 2030. A similar estimate of USD 1.2 trillion was put forth by the Mc Kinsey Global Institute (MGI, 2012) towards the capital expenditure in next 20 years. In spite of their significant contributions to the national exchequer, Indian cities remain under invested, infrastructure wise. While India’s annual per capita investment on urban infrastructure was around USD 17, China spent around USD 116, and UK spent around USD 400.

Considering this massive gap in demand and availability of financial resources, Indian cities are left with very little choices, but to explore the opportunities of applying digital technologies for optimization of urban systems and processes.



As pointed out by Hollands, “Real smart cities will actually have to take much greater risks with technology, devolve power, tackle inequalities and redefine what they mean by smart itself”.

Various projections suggest that India will be home to over 600 million urban population, residing in 10000+ towns and cities by 2030. The process of urbanization also creates value and economic opportunities. If India must achieve its vision of becoming a USD 10 Trillion economy sooner, it will require continuous and strategic investments in its city system. The role of smart cities, thus, will be significant in this journey towards prosperity.

4. ROLE OF SMART CITIES IN SHAPING FUTURE URBAN DEVELOPMENT IN INDIA

Cities across the global regions are exploring digital technologies and artificial intelligence to modernize the processes of urban planning, land management and service delivery. Managing urban transactions through digital technologies have become one of the high priority areas for future cities.

India being on the forefront of rapid urbanization, climate change, massive backlog of un-met basic services and higher share of urban poverty and the role of cities in shaping the future economic trajectories, application of Internet of Things (IOT) and digital technologies, therefore, becomes essential for India in shaping its future urban development trajectories.

Thus, instead of side-lining, India should rather attempt to mainstream the notion of “smart cities” in its future trajectory of urban development. There is an emerging need to conceptualise a future version of Indian smart city, based on local research, collaboration, and partnerships, to leverage the opportunities of urbanization, while addressing the emerging challenges, at the same time.

However, to leverage the full potential of smart cities, the present approach towards building smart cities based on buzzwords and superfluous ideas need to be discarded. India’s mission of smart urban development must transform from its “directionless” approach towards the sound fundamentals of sustainable urban development.

5. FUTURE SMART CITIES- TRANSFORMING INDIA’S URBAN LANDSCAPE

To respond to India’s massive urbanization challenges, the next generation Smart Cities will have to engage with some of the core issues such as, urban planning and land management, basic services and managing externalities, among the others.

Traditionally, India have inherited an archaic and rigid form of urban planning and regulations, leading to pervasive outcomes in land, housing and in delivery of urban services. A typical urban plan in India is a long-term proposal for urban



land use and development control regulations. Such plans often lack a good road map towards infrastructure development and resource mobilization. As a result, majority of these planning proposals remain under realized on the ground.

In absence of any viable infrastructure proposals in these planning documents, various infrastructure sectoral plans such as, city water and sanitation, solid waste management, transport, urban renewal, etc., have started emerging, independently. These sectoral proposals were often structured as independent reports, with limited land use and cross sectoral linkages.

Since early 2000s, the strategic planning tools like City Development Strategies (CDS) gradually started making inroads, followed by City Development Plans (CDPs) and Slum Free City Plans, Under the National Urban Renewal Mission (JnNURM). This trend continued with the recent Smart City Plans (SCPs), HRIDAY City Heritage Plans (CHPs), and City Mobility Plans (CMP).

However, without an appropriate urban development framework, there has been a steady realization that, the direct investment in capital infrastructure assets is not sustainable without linking them with the city land use and property tax data. These emerging concerns are further exacerbated due to their inability to leverage the opportunity of land value capturing from the newly created infrastructure corridors.

Many Asian cities like Singapore, Seoul and several others have attempted to use digital technologies, artificial intelligence, and deep learning tools for transforming their urban planning, governance, and management practices through initiatives like geo-spatial mapping of real time urban transactions, land use change detection and creation of digital twins of the urban assets and infrastructure.

Considering that the present abysmal state of urban planning in India, in terms of the number of towns covered and the quality of these plans, rapid shift towards digital form of urban planning and land management in Indian cities becomes inevitable.

6. DELIVERY OF RESILIENT URBAN SERVICES

India is an important stakeholder in the global efforts towards the meeting the targets of Sustainable Development Goals (SDGs) by 2030. While responding to the legacy backlog issues of service delivery, Indian cities are also expected to meet the challenges of future urbanization. Reliable, adequate, and resilient provision of urban services is essential for safe, inclusive, and liveable future cities.

During the first phase of Smart Cities, application of technologies for monitoring urban service through Integrated Command and Control Centres (ICCC),



Supervisory Control and Data Acquisition (SCADA) and application of sensors, etc., have shown promising results in provision of basic services such as Water Supply, Sanitation, Solid Waste, Traffic, Flood monitoring and COVID-19 related response.

Also, given the history of low efficiency and systemic losses in urban basic service provisions, application of technologies is expected to play a significant role in optimizing the service spectrum and in building resilience. The future smart cities in India, thus, must consolidate the lessons learnt so far and build back better to respond the future urban development challenges of India.

7. URBAN DATA ANALYTICS AND RISK MANAGEMENT

From the experiences collated by far, the first version of Indian Smart cities has not been able to leverage the urban data for addressing the urban inequalities and climate change related risks.

Leveraging urban data and developing capabilities towards transactional analytics and predictive modelling should become an integral part of the future cities. These cities will be required to develop innovative protocols for data safeguards and Data Value capturing (DVC) to their advantage. In future cities, anticipating risks in advance would be much more cost effective than responding to post disaster recovery aspects.

Considering India's mammoth private sector capacity in urban data analytics, enabling framework would be required to develop value based, meaningful partnerships in urban data value capturing along with the ongoing efforts towards land value capturing. Future Smart cities may also create opportunities for the urban planning education in India to upscale its interface with the application of technologies in urban planning, governance, and management.

8. THE CULTURE OF CO-CREATION AND CO-OPERATION

Post COP 26, It is becoming increasingly clear that, given the warming trajectory, our urban areas will be subjected to increasing shocks and stresses. To respond to these increasing shocks and stresses as well as to unlock the economic potential, the future smart cities would require to actively foster the culture of collaboration and co-creation in sustainable urban development. Sustained response to climatic shocks and stresses, will require active collaboration between academia, private sector, and urban local bodies. Cities across the globe are actively inculcating the culture of co-creation and co-operation.

For a country like India with higher share of urban poverty, huge backlog of urban services and rapidly exacerbating climate shocks and stresses, the future cities will have to demonstrate leadership in empirically grounded smart urban solutions. Collaboration and co-creation will be the key in all future smart



cities, offering appropriate smart urban solutions. Indian cities and public hands, however, are seriously constrained with the archaic processes of public procurement, which has become a major for co-creation and partnerships. Future Indian cities must develop enabling framework for partnerships across the sectors and agencies.

9. MANAGING URBAN INEQUALITIES AND EXTERNALITIES

The process of urbanization and climate change are expected to continue the urban divide, inequalities, and the process of marginalization in cities. From the experiences of various global cities, India must accelerate the delivery of public goods and services to reduce the urban inequalities and to build resilience against the uncertainties of climate change. The next generation smart cities will have to play a significant role in reduction of the inequalities and divide.

The application of technology enabled spatial mapping, IOT enabled primary health care and education, management of COVID logistics and vaccine delivery have shown some promising results, validating the role of technologies bridging the gaps and reaching out to the most vulnerable. The future smart cities will have to proactively engage towards managing these challenges to ensure that the externalities are minimized and “No one is left behind” and e for making the urban habitats, safe, inclusive, and resilient.

10. CONCLUSIONS

After seven years of its launch, the initial results from India’s attempt to build 100 smart cities have not been very promising. This is largely due to the lack of definitional precision and core focus under the mission. At the same time, the mission has shown some very early but promising results of application of technologies in managing the process of urbanization and building resilience.

Also, from the experiences of Asian and global cities, it is increasingly clear that digital technologies, IOT and big data are expected to play in significant role in ensuring safe, inclusive, and resilient habitats. The relevance of these technological application is much higher for massive and messy urbanization processes such as in India.

While the first attempt to build Indian smart cities was largely based on buzzwords and quickly borrowed models, the next generation of Indian smart cities must be built through collaboration and partnerships, supported by continual research and development for localized solutions. It is increasingly clear that the Smart cities have significant role in ensuring Indian cities meeting the targets of Sustainable Development Goals (SDGs) and for making our habitats, safe, inclusive and resilient.



Town Planning Education and Practice in India: Need for Capacity Enhancement and Reforms

P. S. N. Rao, Ph.D.

Abstract

Initially, it was the municipal bodies who were the only apparatus to look after towns and cities. Subsequently, town planning departments emerged. Improvement Trusts were also created in many towns. Later, various statutory bodies were set up and municipal functions got eroded. Slowly, a series of para-statal bodies emerged and created a complex web or organizations in the city planning and administration framework. With reference to education delivery, while in the earlier days, institutions were primarily in the government fold, the situation today has changed substantially, with the mushrooming of private sector institutions and universities. Further, to regulate these, the framework has also become complex with various actors viz. the Central government, state governments, UGC, AICTE and the Institute of Town Planners, India. The Government of India has taken a serious view about the town and country planning profession and education and has urged for reforms at various levels so that ultimately, the profession and the future planners could benefit from the same.

1. INTRODUCTION

In the early forties of the twentieth century, only 14 percent of India's population lived in urban areas. However, after around sixty years, this figure has doubled. Soon, over half of India's population is slated to live in its cities and already, more than fifty percent of the GDP originates in the urban areas. The second round of doubling of India's urban population is likely to take much less time than previously. Today, India is the second largest urban system in the world with almost 11 percent of the total global urban population living in Indian cities! More than ever before, the Government of India has been spending substantial amount of its budget on urban development programmes and projects such as Pradhan Mantri Aawas Yojana - Housing for All, Smart Cities Mission, Global Housing Technology Challenge, Swaccha Bharat Abhiyaan, AMRUT, HRIDAY, etc. Indian cities today house some of the biggest multinational corporations and provide employment to cutting edge emerging professions. They also provide employment opportunities and income earning opportunities to a wide spectrum of middle and lower income population as well.

However, despite this seemingly prosperous side of Indian cities with modern buildings reaching out to the skies, there is a flip side too. Strained infrastructure and declining living conditions, spiralling property prices, increasing incidents of urban floods and other disasters point to the urgent need to take a serious look at the way urban development has been happening, identify problems and implement solutions.

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In this research, one of the areas under scrutiny in the recent past has been the town planning capacities in the country. This paper focuses on this crucial aspect of contemporary urbanism in India, within the context of a recent Advisory Committee Report titled “Reforms in Urban Planning Capacity in India” released in the month of September 2021 by NITI Aayog of the Government of India. Several stakeholders, including the Institute of Town Planners, India (ITPI), SPA New Delhi and others took active part in the deliberations of this Committee.

2. TOWN PLANNING EDUCATION

The setting up of the School of Town and Country Planning at New Delhi in the year 1955 was the first major step in the development of town planning education in India. This school, which later was renamed as School of Planning and Architecture (SPA), emerged as a premier national level institution and was accorded the status of a ‘deemed University’ in 1972 and an ‘Institution of National Importance’ in the year 2014. Subsequently, various other institutions also opened departments and started offering courses in town planning.

Unlike the various institutions and universities, the Institute of Town Planners, India conducts an examination, of the candidates possessing Bachelor’s degree in architecture or civil engineering or planning or Master’s degree in geography or sociology or economics, which has been recognized by the Board of Assessment for Educational Qualifications, setup by the Government of India, in 1963. On clearing this examination, one becomes an Associate of the Institute and the person is considered a ‘town planner’ for the purposes of promotion in various government departments. Over the years, this examination has become popular with in-service officers as well as many young scholars interested in town planning.

Town planning education in the universities has been mostly at the post graduate level. The initial course participants were mostly in-service officers from various departments from different parts of the country, while the teachers were mostly educated abroad. Over the years, the scenario has changed substantially; the percentage of sponsored in-service candidates has fallen and that of private candidates who have completed their bachelor’s degree has increased. In some universities, scholars from geography, economics and sociology background have also been made eligible to enter the profession of town planning. The teachers now are mostly trained in India itself. Further the course has extended its reach with a bachelor’s course in planning which is today operational in as many as five colleges. However, about 30 years ago, an undergraduate course in planning was also started, first at SPA New Delhi and subsequently, in various other institutions. Last year, an integrated UG+PG program has also been initiated at SPA New Delhi. Only time will tell how successful this option would be.

The format of town planning courses has more or less been the same at all the institutions. The ITPI has guidelines which the universities follow. The AICTE has



also initiated a Town Planning Board which also prescribes directions for the colleges to follow. However, each of the institutions offering courses in town planning are unique in their own way.

In the popular post graduate course, the first semester is usually devoted to introducing the students to the evolution of town planning concepts and takes the student through the fundamentals of planning. The second semester and third semester usually has specialized subjects and the fourth (final) semester is devoted to legislation and professional practice and thesis.

3. TOWN PLANNING PRACTICE

Town planning practice in the country started with public health concerns. The early laws of town planning laid a lot of emphasis on government town planning departments doing the planning and subsequently implementing the plans by way of town planning schemes or by way of acquiring land. Land pooling for readjustment and development through town planning schemes was popular in the initial years. However, this has changed substantially over the years and land acquisition became the major method of procuring land for development. However, with the amendments to the land acquisition law, a return to the land pooling methodology became inevitable in most states of the country. The emphasis later on shifted to funded projects for city extensions, mostly from national funding agencies such as the HUDCO or international funding agencies such as the World Bank.

Today, institutional funding for large scale land development projects has become very rare. Instead, most land development agencies expect that private real estate developers undertake the land development activity. At the same time, there has also emerged another disturbing trend of illegal colonization of land which is initially left unchecked and later, the state agencies are expected to regularize.

Initially, it was the municipal bodies who were the only apparatus to look after towns and cities. Subsequently, town planning departments emerged. Improvement Trusts were also created in many towns. Later, various statutory bodies were set up and municipal functions got eroded. Slowly, a series of para-statal bodies emerged and created a complex web or organizations in the city planning and administration framework. With the coming of the 74th Constitution Amendment Act in the year 1992, devolution of functions and functionaries were to be done and municipal bodies were to have become the prime movers for urban planning and development in the country. However, this did not really happen for a variety of reasons and the complex web of organizations continued to play its role.

A key function of planning, the preparation of a city wide plan called the 'master plan' has become a bone of contention time and again. As of date, unfortunately, only a third of Indian cities only have statutory plans or 'master plans'.



4. CONTEMPORARY THINKING AND EMERGING CONCERNS

Cities are today seen as 'engines of development'. The number of people coming to live in cities has been increasing and this is seen as an inevitable phenomenon. While this is also seen as a good sign of economic and social development, whether this is sustainable in the long run or not is a matter of debate. Today, the focus is more on efficiency in the use of scarce natural resources and ensuring that development does not affect climate change and life is sustainable.

Accordingly, the pedagogical changes in the education system include the following:

- There has been a major shift from the earlier 'city beautiful' land use based planning approaches to more contemporary approaches;
- There is an increasing emphasis now on a participative inclusive approach to planning, rather than a 'top down' approach;
- Environmental concerns have become central to town planning today;
- Economics and finance have also become very important ingredients in planning academics;
- Town planning today has increasingly become 'project' oriented; and
- New technology orientation viz. areal photography, drone surveying, GIS, etc., has become mandatory

Further, the overall format of town planning education has undergone quite a few structural changes over the past several decades. The major changes are:

- From a one year program, it has grown to a one and a half year and now a two year program;
- From a diploma, it has now grown to a degree;
- In addition to instruction at the post graduate level, undergraduate level and doctoral level programs have also been introduced; and
- An integrated UG+PG course has also been initiated.

In terms of education delivery, while in the earlier days, institutions were primarily in the government fold, the situation today has changed substantially, with the mushrooming of private sector institutions and universities. Further, to regulate these, the framework has also become complex with various actors viz. the Central government, state governments, UGC, AICTE and the Institute of Town Planners, India. Along with the proliferation of planning schools, the nomenclature of the degrees have also become wide and varied without any uniformity. This also leads to problems and lack of focused identity to the profession. Therefore, the system has only become much more complex than before.



In terms of planning practice, the methodologies have also changed:

- Earlier, planning was done as a centralised exercise, with land being acquired and made available for development;
- Today, with difficulties in acquisition of land, the emphasis is increasingly on private sector involvement;
- Private sector real estate entities are expected to deliver the goods of planning;
- The role of state machinery involved in planning has today become more of an approval agency rather than a planning agency; and
- The role of private sector consultants has also increased for contracting out a variety of planning activities

Therefore, in so far as the planning practice is concerned, there are many challenges which could be summarized as follows:

- A severe shortage of qualified planners in various government departments;
- Problems related to the recruitment rules (RRs) on account of which recruitment is often derailed and delayed;
- Unqualified persons occupying positions meant for town planners;
- Several positions of town planners lying vacant;
- A very low town planner to population ratio;
- Over burdened staff with poorly equipped office infrastructure;
- Low levels of exposure and skilling of town planners in most government departments;
- Little or no plan implementation, both for cities as well as regions;
- Sprawling illegal land colonization and regularization;
- Disconnect between plans and revenue records; and
- Grossly limited awareness of the town planning profession in the country.

5. NEED FOR CAPACITY ENHANCEMENT AND REFORM - THE AGENDA

The NITI Aayog Advisory Committee on Reforms in Urban Planning Capacity in India, September 2021 clearly identified several key issues and has made some significant recommendations as follows:

- **Programmatic interventions for planning ‘healthy cities’** - For long, the premise of town planning has been on ensuring a healthy physical envelope for the citizens to live, work and play. However, in recent times, cities have become highly polluted for a variety of reasons. The thinking now is



to have a concerted effort to develop at least 500 cities as 'healthy cities' with interventions in various areas to ensure a healthy environment for the people. The Ministry of Housing and Urban Affairs of the Government of India has been keenly propagating this idea.

- **Programmatic interventions for advancement in development control regulations** - It is believed in several quarters that the development control norms in our cities do not promote optimal utilisation of land. Therefore, the Committee recommended a complete revision of the development control norms so that the efficiency of urban land is optimized.
- **Ramping up human resources in public sector** - As per data provided by the TCPO of the Government of India, while there are about 8000 urban areas, there are only half the number of sanctioned positions of town planners; even so, 42 percent of these are lying vacant. It means that India does not have even 1 town planner per urban area. Therefore, there is an urgent need to create more positions.
- **Ensuring qualified urban planners in services** - While there is a numerical shortage of town planners, what is even more ironical is the fact that the recruitment rules do not even prescribe 'town planning' education as essential for the town planning positions. The urgent need is for amending the recruitment rules in the states so that qualified professionals occupy the positions.
- **Mainstreaming capacity building** - It has been observed that capacity building activity is viewed as a one time activity and not a continuous and ongoing process. There is hardly any budget allocation for capacity building. There is an urgent need for bringing capacity building to the centre stage so that officers get the skilling and exposure to the best practices and latest tools and techniques.
- **Rejuvenation of capacity building institutions** - There are central and state level capacity building institutions in the country which need to be strengthened and rejuvenated with quality faculty and infrastructure so that they can train the personnel at various levels.
- **Re-engineering urban planning governance** - The plethora of organizations involved in the urban planning process is a complex web and navigation becomes extremely difficult. Often, there are inter departmental coordination issues which makes working difficult. The 74th Constitution Amendment Act of 1992 has placed the urban local bodies at the centre of the urban governance structure. However, the same has hardly been implemented and things continue to be disorganised. The Committee recommended that the states should re-engineer and strengthen the urban governance structures for better working and efficiency.



- **Revision of town and country planning acts** - States have town and country planning acts for the purpose of planning urban areas. It was felt that these legislation need a review so that they can be made more appropriate to the present day context so as to enable faster plan preparation and implementation of both the urban as well as the rural areas.
- **Demystifying planning and involving citizens** - For the common man, town planning appears to be an activity that is technical in nature. While this may be so, the common man needs to know what planning can do for his daily life so that respect for the law can come about. There is thus a need for public participation on a large scale so that people can understand the benefits of master planning of urban areas and the roles of various agencies. The need is for awareness creation through various modes. In this context, the Committee recommended a Citizen Outreach Campaign so that planning can reach the people easily.
- **Building local urban leadership** - Local elected officials have a key role to play in municipal governance. The Mayors and other elected leaders need orientation to lead the institutions and people whom they represent. The Committee recommended orientation programmes for them to appreciate the benefits of urban planning.
- **Steps for enhancing role of private sector** - Today, the private sector has emerged in a big way in terms of consultancy companies and private professionals who are ready to offer specialised expertise to the government organizations. Therefore, in order to enhance the private sector participation, the Committee recommended measures to adopt fair processes for procuring technical consultancy services, particularly in the adoption of a quality and cost based selection system (QCBS).
- **Steps for strengthening urban planning education system** - While the planning education system in the country has its roots in western urban thought, there is an urgent need for solutions which are specific to Indian way of life. Therefore, the concepts need to be oriented to the Indian social and economic system.
- **Creation of a national digital platform of town and country planners** - This is an initiative recommended by the Committee wherein town and country planners all over the country can log in and fill up their data into a central digital platform so as to keep track of the available skill sets in the country. This is proposed to be done under the Urban Innovation Stack of the MoHUA of the Government of India. There is also a proposal for creating a self - registration of planners on this platform. This would also go a long way in helping prospective employers to source the human resource and improve the employability of professionals.



- **Constitution of a National Council of Town and Country Planners as a statutory body** - The Committee observed that since the town and country planners profession in the country is largely a misinterpreted profession, seen more as an extension of other professions and not as an independent one in its own right, it has proposed that there is an urgent need to bring in more structure, professionalism and identity. For this, the Committee proposed that a National Council of Town and Country Planners be constituted as a statutory body of the Government of India through the Act of Parliament of India.

6. CONCLUSIONS

In conclusion, it can be stated that the Government of India has taken a serious view about the town and country planning profession and education and has urged for reforms at various levels so that ultimately, the profession and the future planners could benefit from the same. It is now for the various bodies to initiate a dialogue on the way forward and initiate the necessary steps to strengthen the town and country planning profession and make it future ready to address the challenges of the changing times.

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How to Make and Keep Friends? Exploring the Field, Movement, and Discipline of Urban Planning in Contemporary India

Sanjeev Vidyarthi, Ph.D.

Abstract

Authorities currently prioritize urban planning in contemporary India due to a variety of factors including public demands for a better quality of city life. The state support is also evident in diverse ways, such as the establishment of new education institutes and generously funded urban development policies and programs. Such a shift was unthinkable just a few years ago. Leveraging the nationwide foundation laid down diligently by the ITPI, Indian planners can make new friends to grow the field, movement, and discipline of planning further.

1. INTRODUCTION

Lights are currently shining bright on the profession of urban planning in India. Faced simultaneously with myriad challenges and potent opportunities, such as rapid environmental degradation and tumultuous economic growth accompanying country's ongoing urbanization, cities and their issues not only populate the policy agenda but also attract rare political consensus across party lines. Not surprisingly, many of India's urban planning initiatives are matchless anywhere in the world (Vidyarthi, Hoch and Basmajian 2013). Examples include the generously funded centrally sponsored schemes (CSS), like the JnNURM and smart cities mission, promoting planned development of India's largest cities and their metropolitan regions. But where does the country stand in terms of overall urban planning capacity? What can planners do to make more friends and grow the field further?

Charlie Hoch (2011) has explained how the practice of urban planning comprises three distinct arenas of professional work: 'field,' 'movement,' and 'discipline.' This presentation begins by explaining these three domains useful to map and illustrate the terrain of Indian planning. The presentation then turns to reviewing the recently published report entitled Reforms in urban planning capacity in India. Published by the Niti Aayog in September 2021, the report summarizes the findings of a high-level committee tasked with exploring the status and potential of country's urban planning infrastructure. Paying attention to India's peculiarities as well as human side of the profession, such as the supply pipeline and regional distribution of trained practitioners, availability

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of teaching institutions, and the nature of employment landscape, the report recommends enhanced support for boosting country's urban planning capacity both in terms of trained workforce as well as the scope of formally organized planning activity.

Next, the presentation turns focus upon the nature and scope of urban planning in contemporary India. Who are the most important planning players in urban India? What is the contribution of ITPI in the story of Indian urban planning? Arguably, despite the many limitations and impediments, the planning profession and discipline have reached a certain maturity in the 75th year of the republic. Several phenomena support this assertion. Take for example the nationwide network of planning institutions: including the offices of various town planning organizations, urban development authorities and ITPI's regional centers and sub-centers, spread across all the state capitals and major regional cities dotting the country's vast geography (Fig. 1). Interlinked via many connections, such as similar plan-making practices, common procedural routines, and collectively shared knowledge base, these institutions constitute the foundational sub-structure of the vast country's urban planning apparatus. That is indeed a remarkable achievement, given that ITPI is a relatively new professional institution that started with a very small base in one single city after India's independence in 1947 (Ansari 1977).

However, it is increasingly clear that practitioners everywhere, and even more quickly in large, rapidly urbanizing countries like India, need to invite purposeful social engagement in an inclusive and equitable manner to collectively face the escalating challenges of 21st century urbanization. Therefore, important to pay attention to potential friends, helpful allies, and well-wishers, who can help expand the ambit of Indian urban planning beyond the conventional sphere of activity as well as improve the inclusive aspects of professional work. That's the focus of the following section. Finally, the presentation concludes by reiterating select ideas.

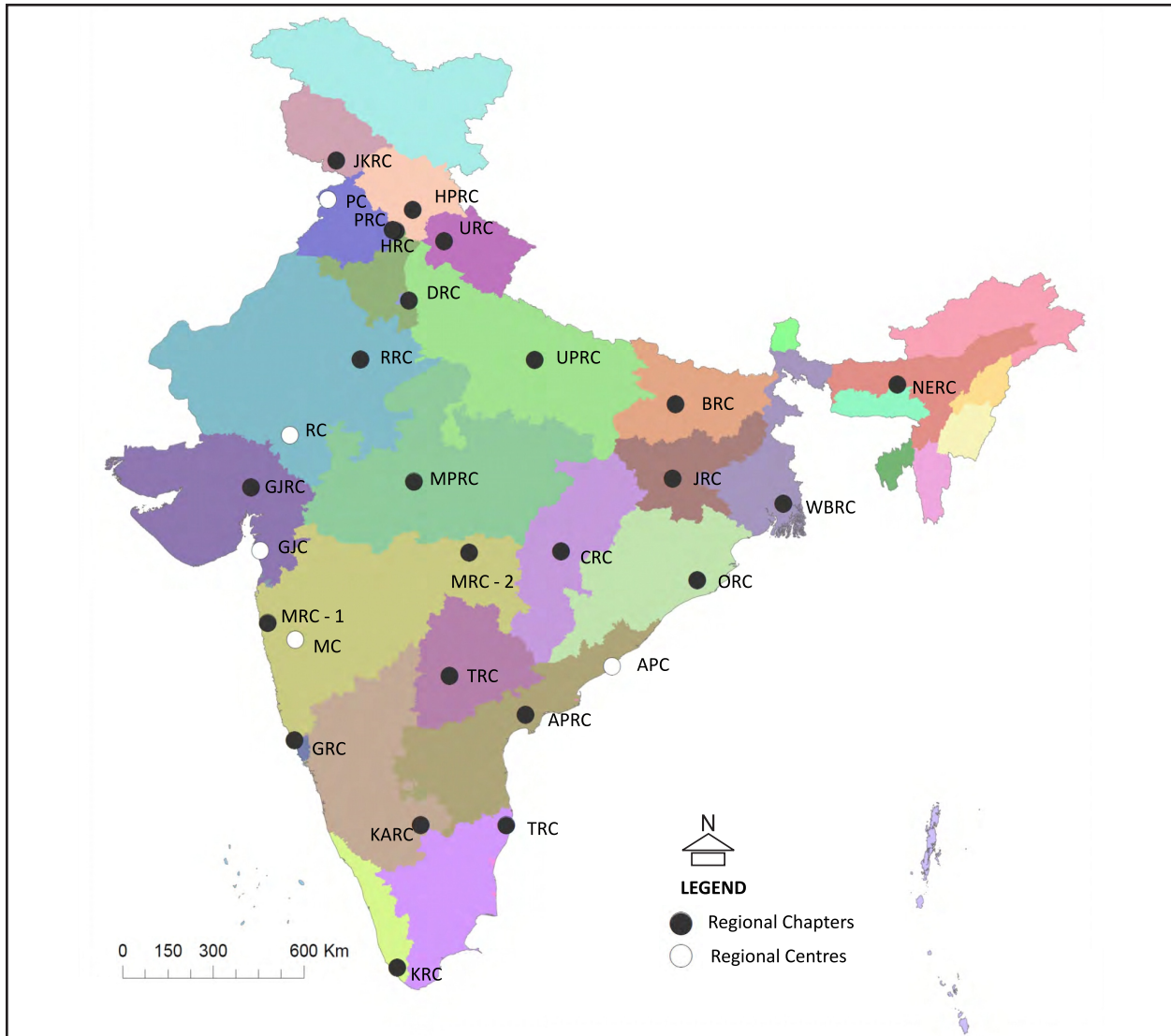
2. WHAT CONSTITUTES PROFESSIONAL URBAN PLANNING?

In the current age, professional urban planning work takes place in a variety of institutional settings while comprising a range of diverse activities. Employing a pragmatic lens, Charlie Hoch (2011) has argued that 'field,' 'movement,' and 'discipline' constitute the three distinctive arenas that make up the expansive gamut of professional planning work. The three are explained below.

2.1 Planning Field

According to Hoch, the professional planning field includes purposeful efforts by many actors to anticipate, influence and cope with urbanization and its

Fig. 1: Regional Chapters and Regional Centres of Institute of Town Planners, India, 2021



LIST OF REGIONAL CHAPTERS

S. No.	Code	Full Form
1.	APRC	Andhra Pradesh Regional Chapter
2.	BRC	Bihar Regional Chapter
3.	CRC	Chattisgarh Regional Chapter
4.	DRC	Delhi Regional Chapter
5.	GRC	Goa Regional Chapter
6.	GRC	Gujarat Regional Chapter
7.	HPRC	Himachal Pradesh Regional Chapter
8.	HRC	Haryana Regional Chapter
9.	JKRC	Jammu and Kashmir Regional Chapter
10.	JRC	Jharkhand Regional Chapter
11.	KARC	Karnataka Regional Chapter
12.	KRC	Kerala Regional Chapter

S. No.	Code	Full Form
13.	MPRC	Madhya Pradesh Regional Chapter
14.	MRC 1	Maharashtra (Mumbai) Regional Chapter
15.	MRC 2	Maharashtra (Nagpur) Regional Chapter
16.	NERC	North East Regional Chapter
17.	ORC	Odisha Regional Chapter
18.	PRC	Punjab Regional Chapter
19.	RRC	Rajasthan Regional Chapter
20.	TRC	Telangana Regional Chapter
21.	TRC	Tamilnadu Regional Chapter
22.	UPRC	Uttar Pradesh Regional Chapter
23.	URC	Uttarakhand Regional Chapter
24.	WBRC	West Bengal Regional Chapter

LIST OF REGIONAL CENTRES

S. No.	Code	Name
1.	APC	Andhra Pradesh Regional Centre- Vishakhapatnam Centre
2.	GC	Gujarat Regional Centre- Surat Centre
3.	MC	Maharashtra Regional Centre - Pune Centre
4.	PC	Punjab Regional Centre- Amritsar Centre
5.	RC	Rajasthan Regional Chapter- Udaipur Centre



effects. Urban planners contribute to the field, but the efforts of corporate firms, governments, non-profit actors, civic associations, community groups and countless individuals account for much of the practical advice used to make and maintain our cities. My own research corroborates how a broad spectrum of actors make different kinds of plans (formal, spontaneous, informal, tacit, impromptu, and more) that collectively shape the vast assortment of places constituting urban India (Vidyarthi et al. 2017). Thus, from this perspective, the field of urban planning is a vast one, encompassing many diverse actors and their divergent efforts in dynamic play. This is especially true for large, democratic societies such as those of India.

Typically, the entire field makes progress when the players engage in constructive, purposeful play, which often also helps resolve minor differences while promoting solidarity. Conversely, the field makes little or no progress when players bowl alone or play past each other instead of engaging. In contemporary India, the field of planning is certainly quite large and growing. For instance, it includes various arms of the national, provincial, and local governments trying to address India's ongoing urbanization. It also includes many business firms making locational decisions, real-estate developers, builders and contractors, home buyers, and housing finance companies. Current and foreseeable trends indicate that the planning field in India is poised to grow further (Kumar et al 2016).

2.2 Planning Movement

The urban planning movement, on the other hand, refers to collective efforts aimed at developing and promoting the practice of urban planning and city design as a legitimate and useful organized practice and profession. Various social, political, and civic associations and their members contribute to the movement via a wide range of venues like public exhibitions, professional conferences, and op-eds in the popular press. Professional associations, like the ITPI (Institute of Town Planners India) and the IIA (Indian Institute of Architects), represent significant but not exclusive planning movement institutions.

Important to keep in mind however that movements often ebb and flow in line with larger social priorities and the prevalent climate of opinion. For instance, currently the planning movement seem to be thriving in India as the combination of hard city life and growing public support propel the movement forward. This is evident, for instance, is the many professional conferences and policy symposiums organized by industry associations (such as FICCI, ASSOCHAM and CII) and the various planning and policy initiatives supported by the public media, neighborhood associations, local residents, and civil society.



2.3 Planning Discipline

The discipline in contrast, describes formal efforts to study and teach planning for places on the job, in the profession, and at the university. Disciplinary knowledge consists of ideas and tools that planners, designers, and implementers employ to do planning work. Here, it is important to keep in mind that the modern university tends to discipline knowledge into discrete silos whereas the professional planning work on the actual ground entails combining knowledge and experiential learning from a wide variety of sources including firsthand experience, prior efforts, and insights from allied professions such as law, public administration, geography, and landscape architecture. Thus, the scope and orientation of modern planning discipline is often inter-disciplinary in nature and hands-on in approach.

Like the field and movement, planning discipline has also done well in recent times. Both the numbers and geographical spread of educational institutions has increased with the emergence of a variety of institutes (Figure - 2). With these ideas in background, the presentation next turns to reviewing the report exploring India's overall planning capacity.

3. REVIEWING INDIA'S PLANNING CAPACITY

Authorities' priority for urban planning comes out clear in the report entitled Reforms in Urban Planning Capacity in India. Superintended by the Niti Aayog, state's top most policy making thinktank, the effort engaged officials' expertise and leadership across many different arms of the government concerned with urban planning. For instance, the 'advisory committee' overseeing the conception and making of this report, comprised top state bureaucrats from the ministries of housing and urban affairs, education, and *Panchayati Raj* as well as the institutional heads representing leading public players in the urban planning and higher education sectors like the UGC, AICTE, NIUA, SPA, CEPT and ITPI. Three thematic focuses of the report stand out. These include the composition of country's planning capacity, the supply and needs assessments of trained workforce, and the team-effort necessary for pursuing meaningful planning work.

First, the report identifies public sector, private sector, and education and research organizations as the three components / pillars of the country's overall planning capacity. As illustrated in Figure - 3, the trio captures some of the most important venues and actors of urban planning but can certainly be enlarged to invite the engagement of other significant allies like fellow practitioners (engineers, designers and social workers) working in the field, apart from potential supporters of the planning movement like public health practitioners, tourism industry, and progressive business leaders. More on this later.



Fig. 2: Planning Institutions Recognized by Institute of Town Planners, India, 2021

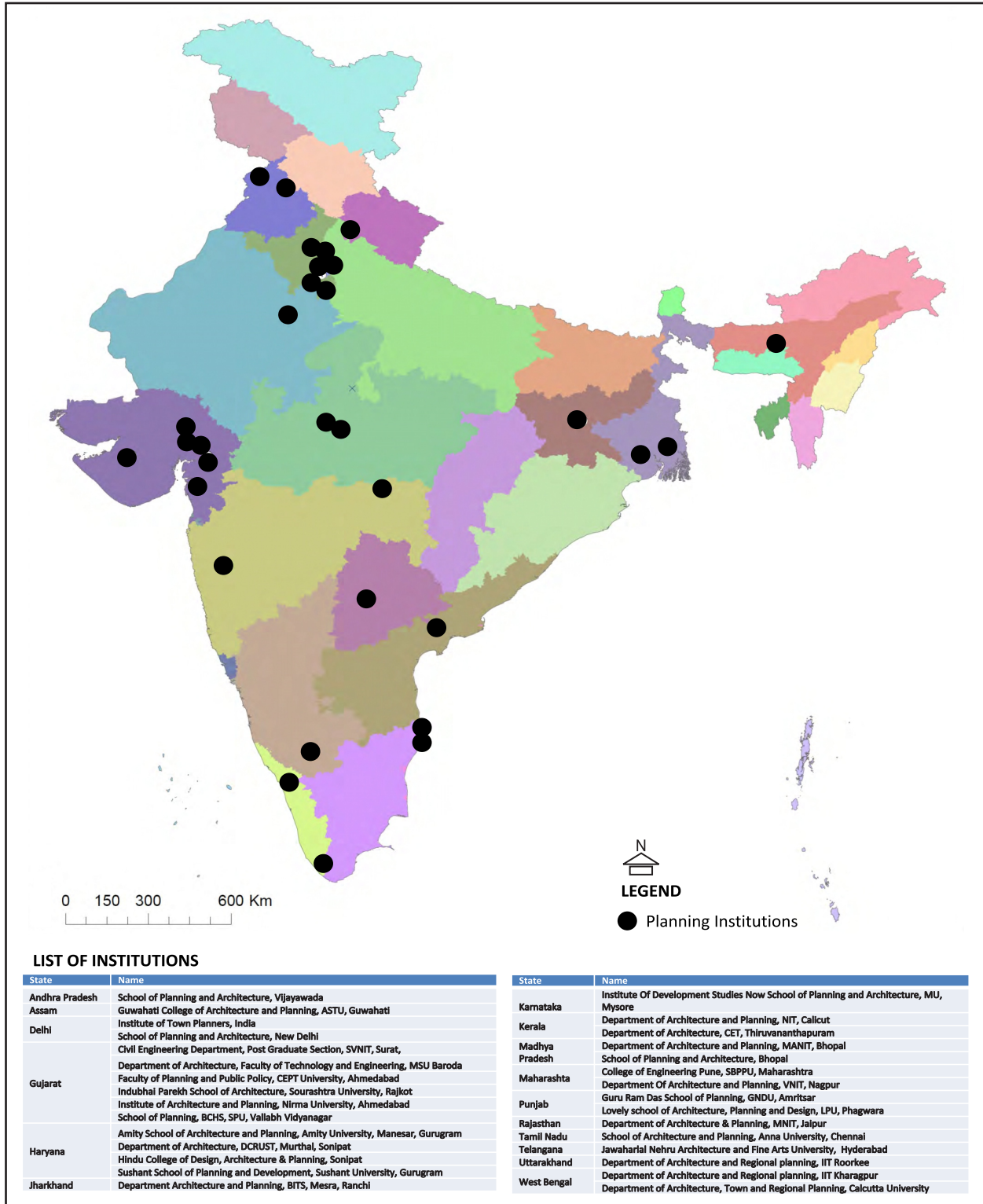
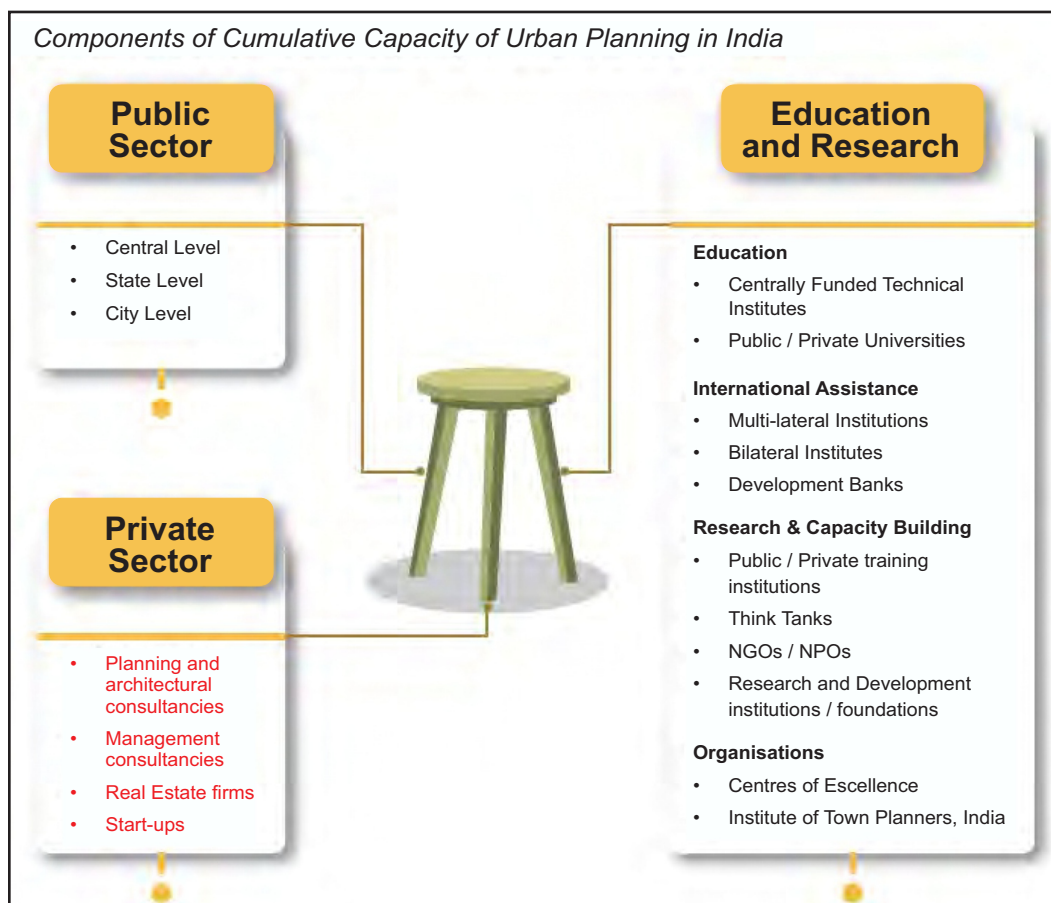


Fig. 3: Reforms in Urban Planning Capacity in India, (p. 25)



Second, the report presents the supply and needs assessments of trained planners for the current year and the horizon year 2030. Illustrating diverse scenarios based upon UDPFI’s recommendations as well as the recent studies conducted by TCPO and MGI, the report identifies that the needs of the state town planning departments alone involve about 12,213 planners, including an additional 8268 posts that need to be sanctioned, to meet the projected requirement in the year 2021 (Niti Aayog 2021, 59). On the supply side, again using a variety of scenarios, the reports estimates that approximately 17,000 trained planners might be available in the country currently (ibid, 75). However, the report underlines an important point about the cumulative and salutary effects of teamwork that needs be quoted in full:

It was strongly put forth by the Advisory Committee members and experts, during the second meeting, that even if the number of planners in the country is doubled or tripled, it will not be enough to raise the urban planning capacity in the country. Unless these planners are put together in teams in the public or



private sectors, this workforce shall remain un-utilized. Therefore, concerted efforts may be made to nurture the same before making a quantum jump towards increasing the supply, should it not be for a specific cohort requirement foreseen already (p 77).

So, what does this quote say about the nature and scope of urban planning in contemporary India? That's the focus of next section.

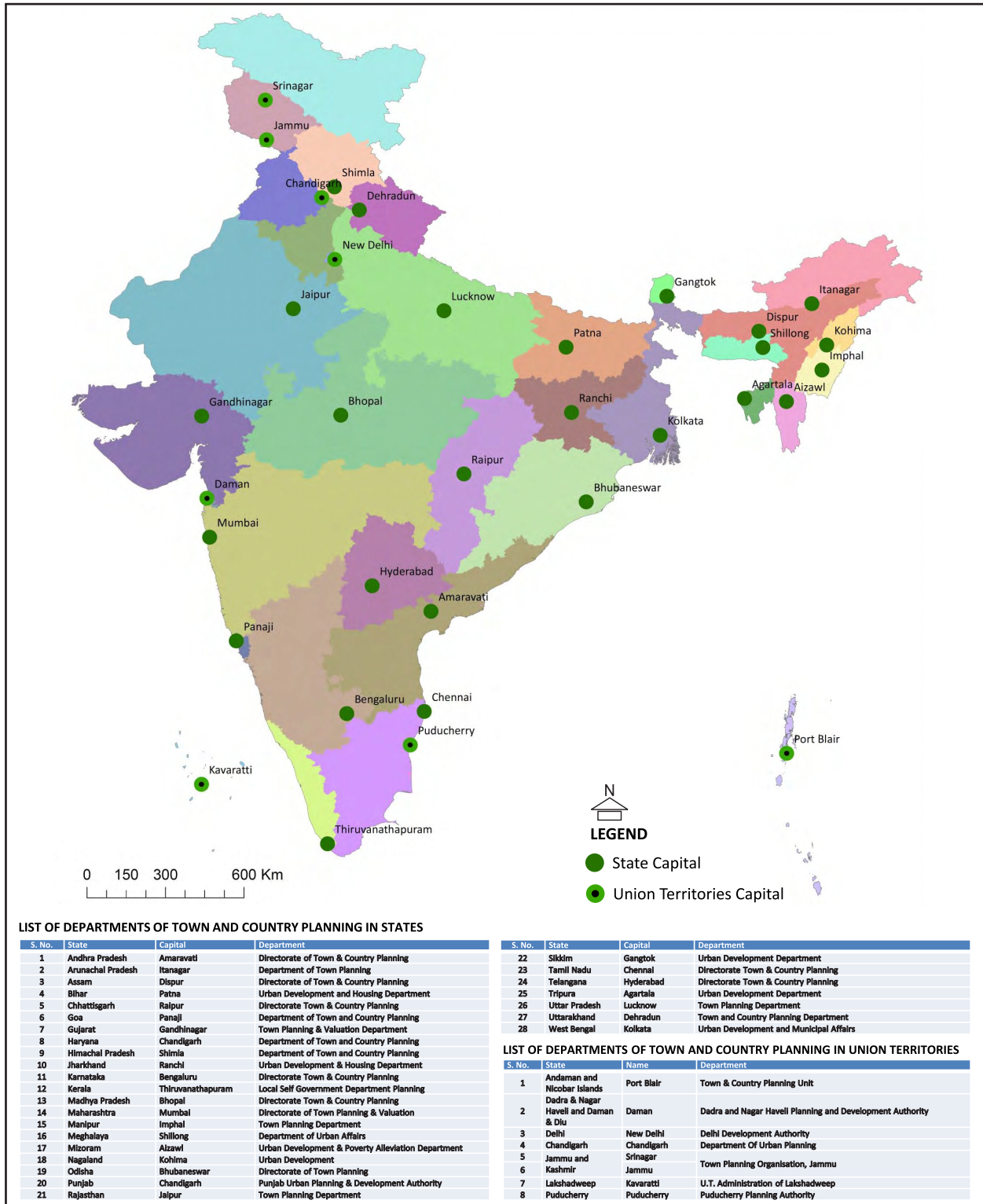
4. URBAN PLANNING IN CONTEMPORARY INDIA

Urban planning work does not take place in a social vacuum. Larger social, political context of the place invariably shapes the nature and scope of planning efforts in fundamental ways. Reflective planners pay attention to these framing ideas (Schon 1987). Contemporary India is no exception where the country's current milieu is marked by rapid economic transition, ever-deepening political democracy, and ongoing social change. Thus, India's rich and varied urban portfolio comprises many diligently designed policies and projects as well as ingenious planning interventions sponsored by powerful patrons pursuing varying outcomes on the actual ground.

For instance, some of the most influential patrons of urban planning in contemporary India include: State authorities and public sector agencies in fresh pursuit of nation-building; corporate firms and private developers of real-estate seeking profit and prestige; religious institutions (re)building pilgrim centers and remarkable temples; regional elites investing in local places; and the many members and supporters of civil society including progressive designers and social organizers promoting liberal ideas and inclusive actions in the public domain (Vidyarthi 2018).

Important to note that urban planning attracts wide interest across spatial scales in contemporary India (Vidyarthi 2018). For instance, many planning players and patrons are interested and invested in plans operating at the retail level. Examples include land use decisions in local places and building approvals at the level of individual plots. In contrast, fewer players focus on the Intermediate urban scale, which includes plans for urban public spaces and civic amenities. Prominent examples include plans for new airports (e.g., Bangalore and Jewar) and redevelopment of central places (Connaught place and the area surrounding Golden Temple for example). Plans aiming to tackle regional scale challenges such as traffic flows and environmental concerns perhaps find the fewest, but powerful allies, like the transportation engineers and a growing number of environmentalists, however. Arguably, Indian planners can reach out to the many latent constituencies and make new friends.

Fig. 4: Town and Country Planning Departments in India, 2021





In this sense, despite the many impediments and challenges of India's postcolonial / developing contexts and the small size of professional planning fraternity, the ITPI has done yeoman service by creating a nationwide sub-structure for the planning field within a few decades of independence. Today, as evident in Figure - 1, ITPI's centers and sub-centers are present across many of country's different states and culturally distinct regions. When seen in conjunction with the various offices of provincial town planning departments (Fig. 4) and a growing number of education institutions, these nodes constitute the foundation helpful for building a robust planning field and progressive planning movement befitting one of the largest countries of the world.

5. CONCLUSIONS

To summarize and conclude, authorities currently prioritize urban planning in contemporary India due to a variety of factors including public demands for a better quality of city life. The state support is also evident in diverse ways, such as the establishment of new education institutes and generously funded urban development policies and programs. Such a shift was unthinkable just a few years ago. Leveraging the nationwide foundation laid down diligently by the ITPI, Indian planners can make new friends to grow the field, movement, and discipline of planning further.

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Enhancing Urban Planning Capacities: Are we Planners Missing the Forest for the Trees?

Kajri Misra, Ph.D.

Abstract

As India faces rapid and extensive urbanization, ways to ensure sustainable and inclusive urban development acquire critical import, especially in face of the very slim and uneven development of the requisite professional capacities in the country. The recent Report of the NITI Aayog - Reforms in Urban Planning Capacity in India - recommending a variety of interventions to expand the capacities for Urban Planning in the country, is a very welcome step in the right direction. The recommendations are timely and important, and clearly in line with the urban scenario, the acute need for professional urban capacities and the Planning community's overall views. There are, however, key assumptions on which acceptance and success of the recommendations rest, and important related questions, which the professional Planning community needs to urgently examine and address. In this paper, I elaborate on some of these and suggest actions necessary to enhance the possibilities of transformative change in urban planning capacities.

1. INTRODUCTION

As India urbanizes rapidly, the challenges of ensuring well-served, sustainable and inclusive settlements loom large. A decade ago, a third of the people in the country lived in urban places (Census of India 2011), and more recent estimates by the UN and World Bank range from almost 40 to 63% (Mathur 2021). This population was spread over almost 8000 urban places in 2011 (Government of India), which number has also no doubt also grown substantially in the last decade. The current situation of housing and basic services for all, and resilience, environmental impacts, sustainability and other aspects of a good urban habitat are already troublesome, as has been often pointed out (Mathur 2021, Vaidya 2019, MoHUA 2019, Morris 2017). And as urban areas and the numbers of people living in them burgeon, the tasks of ensuring healthy, habitable and sustainable urban settlements becomes increasingly complex.

Few will disagree that these challenges cannot be addressed by “muddling through”; with piecemeal, uncoordinated, disparate and incoherent interventions, however well intended and resourced. Cities are complex entities - indeed, current understandings in complexity science place cities as among the most complex phenomena, and in systems thinking as open, complex, systems of systems (Batty 2011, 2020; Bettencourt 2013, n.d.). Clearly, coordinated and integrated interventions based on substantial knowledge and

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understanding of urban areas in all their complexity - as would be carried by specially educated urban professionals - is crucial for inclusive and sustainable urbanization. Professional expertise becomes even more necessary and urgent with cities emerging as the critical sites for transforming our environmental impacts and addressing climate change (UNEP 2021; UN-Habitat 2019; UCCRN 2015).

It is now well known that such expertise is very thin indeed in the country. Planners, of the various types required (spatial, urban, regional, sectoral, etc.) have been positioned as the central professionals in this regard, but the entire professional ecosystem of spatial Planning (including the number of planners) in the country is still slim, even missing in many areas. In other words, planning capacities in India are very weak, and need to be developed substantially. It is in this context that the recent Niti Aayog Report Reforms in Urban Planning Capacity in India (henceforth, the Report) is a timely and welcome step towards building these critical capacities. The Report, based on a systematic consideration of different aspects of the Urban Planning ecosystem, provides excellent recommendations to strengthen urban planning systems and professional planning capacities in the country, and if implemented fully, can go a long way to enabling effective interventions for sustainable urban development.

However, there are two issues. One, the Report has some important gaps and inconsistencies; these do not necessarily undermine the recommendations but do limit the extent of their effectiveness. In other words, the study and therefore the recommendations do not go far enough to ensure the substantially transformative effect in capacities that is aimed for (Section 2.3-vi, pp 29). But, while important, this is a lesser issue, explained perhaps by the limited charter set for the exercise. A more troubling issue is the fact that the entire exercise is premised on a major assumption - that enhanced capacities for urban planning are the key to better urban development. That is, the capacity of planning (as it exists in India) to deliver on the promise of inclusive and sustainable urban development, if the recommended changes are implemented is implicitly assumed. To what extent is that assumption appropriate and supported?

Leaving this assumption unquestioned is very problematic indeed, for, one, while planners understand the potential (and the limitations) of their professional expertise in achieving better settlements, this is clearly not widely understood by non-planners, key decision-makers and influencers, and the general populace. (In fact, the popular perception is that our cities are a mess because planners can't/ don't do their job!!) This lies at the root of the current situation of planning by non-planners, lack of visibility and a clear identity, etc., which is frequently acknowledged in the Report itself (pp xvii; pp 62-4.1-vii; pp 72-5.4-vii; pp 83-vi; pp 103-7.14-ii). And without attention to



the capacity of planning, these aspects are unlikely to improve. Two, unless the capacities of planning are examined and discussed, the lack of clear understanding of how and to what extent systematic planning can actually lead to better outcomes, and under what circumstances, can either impair the uptake and implementation of the recommendations, or, if this is done, set us up to fail. In sum, this implicit assumption flags a most critical aspect of the task of enhancing planning capacities - the urgent need to re-examine intrinsic characteristics of the planning profession (and education) in the country, and address issues which undermine the capacity of planning. Bypassing such introspection can undermine the overarching objectives of developing a strong planning ecosystem and capable planners.

In this paper, I discuss these unexplored issues. First in the following section, I briefly outline the structure and recommendations of the Niti Aayog Report, before pointing to some troubling gaps and inconsistencies. In the subsequent sections, I elaborate on the larger question of the capacity of planning, and the tasks ahead for strengthening the planning profession and education.

2. REFORMS IN URBAN PLANNING CAPACITY IN INDIA: THE NITI AAYOG REPORT

The much-awaited and welcome Niti Aayog Report on Reforms in Urban Planning Capacity in India (Niti Aayog, 2021) sets out the patterns of urbanization in the country (mostly till the last census), and the challenges this poses for livable, inclusive and sustainable urban development. The developmental imperatives, the international and national pressures to meet environmental commitments and service standards, and the complexity of urban issues, all of which make systematic professional interventions essential, are clearly laid out, pointing out the urgency and extent of need for professional urban planning. The skill sets carried by planners (at this time), their relevance, and the importance of recognizing planning as a distinct discipline is thus well illustrated. An important clarification provided is that “urban planning capacity” is understood in the Report as the ability of the country, states, ULBs and sectoral organizations to undertake urban planning and related tasks -focusing on systemic capacities, and not on “capacity-building” / retraining of existing personnel. Moreover, urban planning capacity is understood to be in a “cumulative”, across the public and private sectors (the demand side) and the professional planning education sector (the supply side).

In assessing the current state of urban planning capacity, the dismal picture is made amply clear in the Report. Legal provisions for planning, and institutional and organizational systems across the country are almost uniformly weak across states, with a few notable exceptions like Maharashtra and Gujarat. Planning functions are mostly not transferred to the municipal bodies as mandated in the



74th Amendment and 65% of the almost 8000 urban areas enumerated in the 2011 Census do not have Master Plans. A serious issue is the grossly inadequate number of planners in urban planning systems in the states - while TCPO and NIUA estimate that 12000 planners are required in state town and country planning departments, there are only one-third of that number of sanctioned posts (about 4000). Further, half of these positions are vacant, and in those which are filled, many incumbents do not have planning qualifications; since the planning profession is yet to acquire a strong identity and wide recognition of their special skills, positions are extensively filled with non-planners. Citizen awareness of planning, the processes entailed, and platforms for participation are also missing, further adding to the “invisibility” of planning and planners - and the lack of citizen involvement in planning.

Recommendations to address these issues include launching a “500 Healthy Cities” program, (presumably to provide opportunities for the kind of integrated urban planning necessary); ensuring that only qualified planners are engaged in urban planning systems and processes; restructuring urban governance legislation and statutes to clarify organizational responsibilities, strengthen planning and use of technology; re-activating capacity building of existing personnel, and steps to “demystify” planning and increase involvement of citizens. Systematic expansion of planning education, faculty development, standardization of degrees and inclusion as a distinct discipline / field for the National Institutional Ranking Framework (NIRF) is also recommended, as well as establishment of a statutory National Council of Town and Country Planners and a National Digital Platform of Town and Country Planners. The lack of legislative recognition of Planning (cf. the Architects Act) is also to be addressed.

While these recommendations can go a long way to improving urban planning capacities, there are some gaps and inconsistencies which would limit the extent to which the expected strengthening is achieved. The first is the focus on urban planning - not on “spatial planning”, which would have considered the development of a system of coordinated, multi-level and multi-scalar planning that is essential for substantial effect of urban planning. The experience of many countries illustrates this (Oxley et al 2009: OECD 2017). Rural, regional / sectoral, and higher-level economic development planning is mentioned in the Report, but not posited as equal or of organic importance to the success of urban planning. In fact, the noting of national and regional planning, and the skills required therein is confusingly titled as “scales of physical interventions in cities...” (Fig 5, pp 19). The notion of the linked, telescoping multi-level spatial planning that has been the basis of better serviced and controlled urban development in almost all developed countries - though specifics differ - is not discussed. Indeed, systematic processes of agro-climatic zonal planning and district spatial planning which were instituted in the 1970s do not find a mention



in the chapter on evolution of spatial planning in India, except tangentially in tracing the provisions of the five-year plans. Even if the concern is with cities, as the appropriate context for effective urban planning, other kinds and levels of spatial planning needed to be discussed and their links to the performance of urban plans of any kind must be flagged. How can appropriate blue-green urban plans be developed without a corresponding regional / watershed plan? Can effective urban planning ignore the regional patterns of settlement development, particularly in the hinterland? Perhaps this omission is because the Committee's mandate was urban planning, but why then the inclusion of rural and regional planning at all? A larger question is why the focus was not on strengthening capacities for spatial planning, instead of restricting it to urban planning - the rationale for this has not been discussed.

A similar issue emerges again in the central focus on development of master plans, conveying the understanding that a master plan is key to achieving the desired kinds of urban development. This is far from the reality - it is only when master-plans are set in and derived from a multi-level spatial planning process at least at regional / district and city development levels and reflect or coordinate with sectoral plans at the same levels, can the process yield the expected results. There are other aspects - such as the poor implementation, propensity for opportunistic alterations, etc.; which make it problematic. In fact, the existing form and process for master plans in the country have been noted by many to severely limit their efficacies, if not make them - in their current form - a problem rather than a solution. (Mahadevia and Joshi 2009; Ahluwalia, n.d; Nallathiga 2016; Al Waer 2013).

Yet another issue is the approach to change - the study and recommendations are based on the idea of "legislating change"; the focus is on policy, institutional and organizational reform of the ecosystem in which planners are / can be set. But can changes in laws, statutes and rules about preparation of plans and / or the recruitment of planners by themselves ensure (a) the extent and nature of planning that actually happens, or (b) who plans, (c) the recruitment of appropriate type and numbers of planners, and most crucially, (d) the legitimacy of planning and sanctity, legitimacy and implementation of plans? An illustrative parallel - many states have issued notifications for devolution of all or most of the functions mandated by the 74th amendment to the municipal governments, especially in conformation of the JnUURM conditionalities - but in practice few have been effectuated. In the same vein, though master plans have fixed, statutory status, they are frequently and extensively modified (often by keeping them as "draft"). What is inadequately addressed is the specific organizational structure reforms, the larger systemic changes and more importantly, the perceptual changes necessary - the motive force(s) that will enable plans (and planners) to actually (de facto) gain the requisite legitimacy and statutory authority. A number of recommendations to strengthen planning and planning capacities have



been made by various Committees and Task Forces over the last 2-3 decades - many outlined in the Report itself - but few have been implemented and fewer have had any effect - witness the current state of planning capacities in the country. What will ensure that the current situation really changes, and the transformations embodied in the *de jure* policy, institutional and organizational shifts recommended actually take effect?

These gaps and inconsistencies do not, of course, completely undermine the importance and potential effect of the recommendations, if they are fully effectuated. A bigger issue is the underlying assumption about the nature and efficacies of planning itself, and its potential to develop notably better cities and towns; to what extent can we (planners) actually deliver on that front? For the capacities of planning (and planners) is the other side of the coin of developing capacities for planning - both need attention if we are to enhance planning capacities in the country. I therefore discuss the former, rather uncomfortable question, and the related issues of the profession and planning education which are thereby flagged, in the next section.

3. CAPACITIES OF PLANNING

The exercise undertaken by the Advisory Committee and their recommendations in their Report rests largely on an implicit assumption - that strengthening urban planning capacities in the country will yield substantially “better” urban outcomes development, if not solve all the problems. The assumption is not completely unfounded, of course, as experience across countries with well-developed spatial planning systems illustrate (OECD 2017, Oxley 2009). However, it does signal a need to introspect on the capacities of the profession in the country, and the relevance and applicability of the present planning knowledge and skills in the Indian context.

Can planning - in the current state of the field in India - improve our urban areas very visibly and substantially? The answer is unclear - and certainly not an unequivocal ‘yes’. On the face of it there is little evidence. Though there does not seem to be any systematic study in this regard, arguably the country so far lacks even a few examples that demonstrate this capacity. While one could argue that in light of the poorly developed systems, structures and processes for planning - that is, the weak planning capacities in the country - there has been no opportunity for such effects to emerge. However, there are states and cities in the country where well-established systems, processes and expert capacities have been in place and functioning. Has it led to more inclusive, well-serviced and sustainable cities? Is there a substantial difference between Bharuch (in a state with better urban planning capacities) and Bhubaneswar (in a state with very weak urban planning capacities)? In the absence of systematic comparison, a

Table 1: Comparison of Status of Cities of Similar Size, Across States with “Well-Developed” and “Less-Developed” Planning Systems

City / State	Vadodara GJ	Ghaziabad UP	Rajkot GJ	Meerut UP	Nashik MH	Bhubaneswar OR	Thiruvananthapuram KR	Salem TN
2011 Census Population	1,670,806	1,648,643	1,286,678	1,305,429	1,486,053	843,402	743,691	829,267
Citizen Perception								
Air Pollution	57.11	87.30	55.68	72.34	37.50	43.67	46.18	51.19
Drinking Water Pollution and Inaccessibility	44.95	64.93	42.95	60.37	33.33	33.45	38.29	35.71
Dissatisfaction with Garbage Disposal	54.80	79.92	42.31	82.89	38.89	44.52	74.03	61.67
Dirty and Untidy	51.21	76.09	44.87	68.75	50.00	34.93	55.45	51.79
Noise and Light Pollution	62.13	64.84	57.89	58.13	58.33	53.82	44.23	60.71
Water Pollution	66.58	79.10	56.58	75.66	52.78	51.06	53.21	64.29
Dissatisfaction to Spend Time in the City	47.62	80.97	42.86	69.05	30.56	37.18	42.07	54.17
Dissatisfaction with Green and Parks in the City	47.50	67.69	48.03	54.37	19.44	31.08	46.47	44.64
Indices								
Traffic Index	100.22	241.08	78.32	--	63.41	90.47	189.69	79.64
Safety Index	66.94	40.11	64.05	31.38	77.04	66.76	60.46	75.60
Climate Index	--	65.98	52.91	59.62	--	50.25	64.78	--
Traffic commute time index	29.48	56.67	28.44	60.00	23.80	29.08	42.73	26.00
Pollution Index	64.39	93.08	59.84	81.43	45.69	48.54	55.90	61.07

Sources: <https://www.numbeo.com/>; <https://www.census2011.co.in>

quick look at perceptual data (Table - 1) shows that there is no stark difference - paraphrasing Tolstoy, every city is unhappy in its own way. Clearly, the difference between areas in the country with strong and weak (or absent) planning systems and capacities is not visibly substantial. That is, there is little evidence within the country that stronger planning capacities can lead to better urban areas.

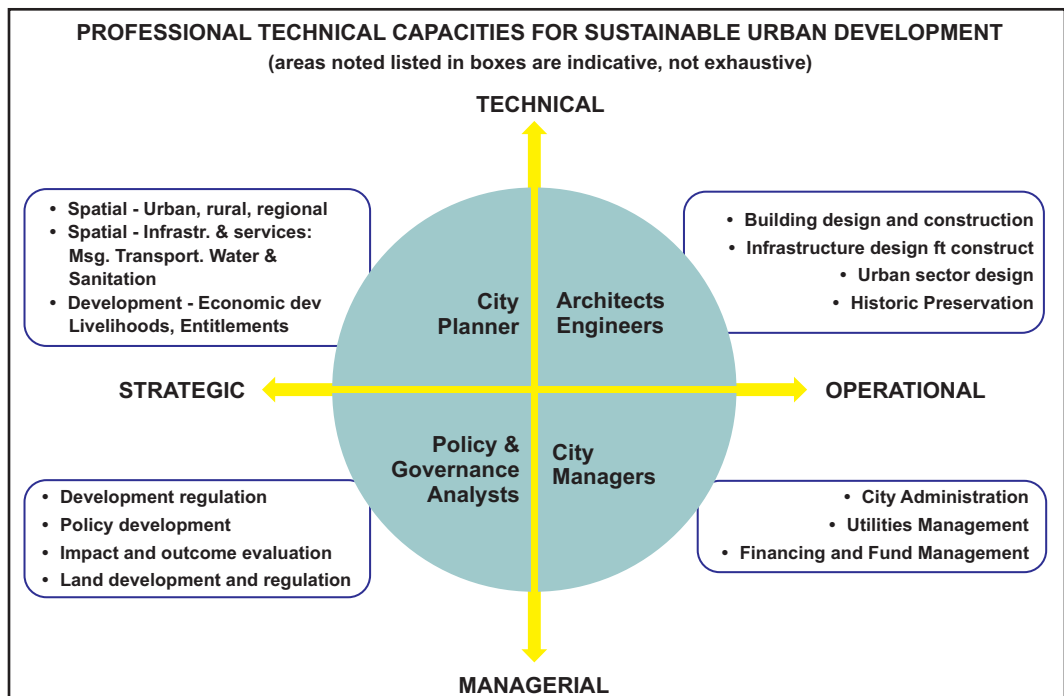
So, there are clearly questions of the capacity of planning, as it currently stands in India. This issue requires internal reflection and analysis by the profession, to understand why this is so - and more important, what needs to be done. For only when the capacities of planning are strengthened can the capacities for planning in the country be effectively strengthened.

There are possibly, two reasons for the questionable capacities of planning. The first is that the enabling factors for planning to actually have effect - such as (a) supportive governance contexts and (b) professional ecosystem within which planning can make a difference - do not exist even in the places where planning



capacities are better developed. On one hand the multiplicity of institutional structures with overlapping responsibilities and jurisdictions, the inadequate devolution of powers, poor implementation of plans (for a variety of reasons) are some of the widely recognized issues (and pointed out in the Report). On the other, the variety of professional expertise (in addition to planning), and the information required for plans to effectively guide urban development either do not exist or are equally marginalized. Planning (and plans) by itself cannot substantially impact the shape of cities without a range of other expertise to both complement and supplement - such as urban and public systems management, community organizing and development, planning information systems, among others - this has been noted both in the current Report (eg., on pg 5-viii; pp 18; pg 117), and by previous Committees (HPEC, MOUD 2011). So, for planning to be able to deliver, development of these other kinds of (adjacent) professional expertise is required. While the detailed analysis of the professional ecosystem necessary for inclusive and sustainable urban development is beyond the scope of this paper, it has been undertaken elsewhere (Misra, 2016). Emerging from the systematic studies and discussions of the Working Group for Professionalizing Urban Planning, Development and Management in Odisha in 2012-13, the following mapping of the required professional competencies emerged (Fig - 1).

Fig. 1: The Professional and Technical Ecosystem Necessary for Sustainable Urban Development



Source: Report of the Working Group for Professionalizing Urban Planning, Development and Management in Odisha, Department of Housing and Urban Development, Government of Odisha, 2013



The second likely reason is more internal to the profession and relates to its professional core. This is that the existing planning frameworks and approaches - largely borrowed from developed contexts with different histories and socio-cultural characteristics - are unsuitable for the Indian contexts. A large number of researchers, academics and practitioners have pointed to this. See, for example, observations by Bhan (2019), Morris (2017), Sundaresan (2011,2016), Roy (2009), Mahadevia and Joshi (2009); and from a practitioner's perspective, the critical assessment of current planning processes in the Report itself. In the former articulations, the issue that emerges is that we (the planning field in India) have failed to develop context-specific knowledge and understandings, and appropriate skill-sets. This is a sobering realization, for it is as the carriers of a set of unique and useful knowledge and skills that planners distinguish themselves - if this is either inadequate or contextually inappropriate, it is a serious issue and deserves introspection within the planning profession. For if that is correct, it is clearly at the root of the current scenario of poor standing, recognition and legitimacy of planning (and planners) and thereby, leads to the weak capacities for planning in the country.

This aspect - of a mismatch between current planning frameworks and approaches and the local contexts, and the inadequate development of context-specific understandings is discussed in the next section. It demands elaborate attention, for it flags an internal issue of the field and the profession - that the essential features of a robust profession are perhaps lacking, or at least, weakly developed. This can severely undermine any changes made to strengthen planning capacities.

4. THE ESSENTIALS OF A PROFESSION - DOES PLANNING HAVE THESE?

It is in offering a unique body of knowledge and skills which are valued by society (because it improves societal conditions) that professions earn legitimacy and recognition and grow. The current position of planning in the country strongly signals that our knowledge and skills are perhaps not delivering - for whatever reason. And this position is unlikely to change substantially unless the value of professional planning is demonstrated widely. In this regard, it is worthwhile to examine the characteristics that lead to the growth and institutionalization of successful profession, to assess where planning stands.

While there are various perspectives on the nature, identity and formation of a profession among those who study the development of professions, at least five essential characteristics are common to all understandings (Abadi, 2020). A profession acquires a distinct identity, succeeds and grows when it is based on -

- A distinct body of knowledge and skills founded on a systematic body of theory, which is:



- unique to the profession and clearly differentiate from adjacent occupations / professions; and
- valued by society, which is often (but not always) signified by some legal status;
- A system for education, testing and certification (that members carry the above);
- Regulative codes of professional conduct, with membership conditional on acceptance and adherence to these;
- A professional organization for self-regulation; and
- A distinct culture and identity with a common professional ethic, values, norms and attitudes.

It is the first characteristic which is crucial and in question here -Does Planning (as it stands now in the country) have a unique, distinct body of knowledge and skills, which are valued by society? I contend that we fail to an extent on both counts. What is the unique and distinct knowledge and skills that are carried by Planners and not by any adjacent professions? Achieving clarity on this - by defining clearly the unique and context-appropriate capabilities of planning - and ensuring this is widely understood by planners and relevant others, including the general population, is clearly the first distinct and critical responsibility ahead. This includes at least three tasks.

- Addressing content - Re-evaluating existing understandings and developing a body of context-appropriate understandings, knowledge, frameworks and approaches. Also, considering the extant theoretical bases for their relevance, and further developing adequate and locally relevant theory on which action can be predicated;
- Developing ecosystems for knowledge development - Instituting structures and systems for sustained revision and renewal of the knowledge base to continuously enlarge the body of unique and relevant professional competencies; and
- Ensuring wide transmission and institutionalization of context-appropriate knowledge and skills - by ensuring it feeds into education and practice, and continuously informs the planning structures and processes in place.

The second set of tasks have to do with “boundary definition”; the profession has to do a lot more “boundary work”. This entails systematic consideration of the overlaps with adjacent professions such as architecture, engineering and (business) management, which currently supplant planning in the realm of urban development, to identify overlaps and differences. It is the responsibility of the planning profession to amplify the differences with these adjacent professions, to



establish a distinct, differentiable and recognizable identity. Despite the substantial overlaps with adjacent fields like architecture, there are distinct knowledge, skills, abilities that planners (can) carry. Broadly speaking, the spatial imagination and abilities, and design and integration skills overlap with architecture; the three-dimensional understanding, systems design capabilities and project management skills are common with engineers. The spatial imagination, understanding of the urban (to an extent), and population structures and dispersal are shared with geography. There are, nevertheless, unique “core competence” of planners, which enable a unique role, and is premised on a core ethic - but perhaps these are not widely recognized even among us, nor sufficiently embodied in planning education. For example, planning is central about developing a path for the future, which no adjacent profession shares. Unlike architects who work for specified clients, planners work in and for the “public”, which can include a whole range of groups and multiple interests. Also, planners deal with the “commons” - at different scales and levels - instead of an individually owned / private domain - and though engineers also deal with public systems, they do not work with the socio-economic considerations and the integration of multiple systems and scales as planners do. Further, architects design, while planners use “design thinking” - especially in the resolution of wicked problems that characterise the public domain. Geographers do not carry the design sensibilities of architects and planners, or the technological understanding of engineers. And the list can go on - but suffice it here to reiterate that though there are overlaps, it is possible to discern a distinct and unique characteristics of the profession, and core domain of action. The question is - is this widely discussed? Is it clearly defined and articulated, commonly understood, and appreciated and accepted as key to the identity? And transmitted in planning education, through the curriculum and professional socialization? I fear we fall short; there is a need to introspect on these fronts and take measures to address the gaps.

In developing a distinct identity, it is equally important to not extend the overlaps with adjacent professions. The recent moves to extend planning to include management competencies, because these are required in the urban development domain in the neo-liberal trend of partnership approaches, innovative financing and novel organizational arrangements, is an example where the core competencies and thereby the identity of planning is diluted. Planning is about policy, forecasting, programming ends-means alignments, regulation, etc., while management - a well-developed field with substantial history and knowledge base - is about implementation (operations, finance, organizational coordination, etc.). There are also distinct differences in normative intent, value orientations, core knowledge and skills. Similar analyses can fruitfully be directed at the distinctions between public management / administration and planning.



These are critical issues (of our own making) that erase boundaries and undermine identity and standing of planning and the planning profession; but there are also others. An important one is the overwhelming focus on physical planning that erodes the distinctions between architecture, urban design and planning. The primary focus on physical planning with lesser importance accorded to the socio-economic, cultural and political dimensions, the historical role of architects and architecture in the evolution of planning as a discipline and profession, and the (historical) location of planning in architecture schools have all served to diffuse or even erase the boundaries. The planning profession now needs to work at developing (and visibilizing) the differences by addressing these legacy issues.

Finally, even as a distinct and unique body of knowledge, with distinct boundaries with other professions is (re)articulated and made widely apparent, the relevance and the societal value of planning needs to be also (re)established and strengthened. Does society value the core understandings and skills planners can offer? The evidence is clear that the answer is no - for if planning were valued, the profession and planning capacities would not be as marginalized and weak as it is today. To be valued, the profession must demonstrate its relevance - its utility and effectiveness in improving society. As pointed out earlier, this hasn't happened. This has perhaps less to do with the essential nature and intent of planning, than the poor context-appropriateness of the knowledge and approaches that are applied; the need for serious reflection, on developing and expanding a more relevant and contextually appropriate knowledge base has been discussed and length above but bears emphases. But, this also needs to be founded on and informed by a core professional ethic and common values, which articulate the societal contribution and value of planning as a field and profession. Unlike the more established professions - like medicine with its Hippocratic oath, or law which pursues justice - planning appears to lack a commonly articulated and widely accepted core professional ethic, principle or value. This also needs to be articulated and embodied in planning education and practice, and systematic efforts made for its play in the larger discourse.

The issues discussed at length above - development of a distinct and contextually relevant knowledge base, which will enable a demonstratable utility and societal value of planning - are key factors in the success of any efforts at strengthening planning capacities in the country. And these require internal work, within the profession, even as wider systemic changes are attempted.

5. CONCLUSIONS

The consideration of the state of urban planning in the country and recommendations by the Niti Aayog for strengthening planning capacities is an important move - not only towards application of professional expertise for inclusive and sustainable urbanization, but also in according greater scope and legitimacy to planning as a



profession. While the recommendations, if implemented, can go a long way to *de jure* strengthening planning systems and processes, their *de facto* effectuation and actually enabling more systematic planning and legitimacy to plans, rests on the assumption that planning can make a significant difference - that planning has the capacity to substantially improve urban conditions.

This is, however, a questionable assumption. For so far, this has not been demonstrated even in those places in the country where urban planning capacities are fairly strong and institutionalized. This could be due to the issues in urban governance and / or gaps in the professional ecosystems in which planning processes are set; or it may be due to the infirmities in, and poor context-appropriateness of the knowledge, frameworks and approaches used - the merits of either factor have not been debated here. For in either case, the absence of visible examples of the difference that systematic planning can make is clearly an important reason for the weak planning capacities; planning (and planners) have simply not been valued sufficiently. And unless these (internal) issues are addressed by the community, the excellent recommendations (and any other “external” efforts) are unlikely to transform planning capacities as desired.

What is important, therefore, is for the planning field to extensively introspect on the construction of the profession and its identity, particularly in respect of the distinctiveness and context-relevance of its core knowledge base, and its transmission in planning education. Clarity, reaffirmation and strengthening of the normative orientation, core competencies, ethical bases and values central to the professional identity are clearly urgent. And though not addressed here in detail, it is equally important to advocate for resolution of the urban governance issues and for developing other kinds of professional expertise that comprise the supportive ecosystem necessary for urban planning to be effective.

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Urban Resilience: Post Covid Strategies

R. Srinivas

Abstract

The emergence of COVID-19 throughout the world emphasizes the need to assess the pandemic resilient urban form to prevent infectious disease transmission. According to the lessons of the COVID-19 outbreak, the pandemic's unprecedented impact on every aspect of urban life has provided compelling data and information about how to improve crisis responses and recovery strategies. The paper aims to showcase that COVID-19 presents an opportunity for cities to learn from their experience in combatting the pandemic to be better prepared for future emergencies and revisiting the URDPFI Guidelines and Model Building Bye Laws duly highlighting the need for resilient cities.

1. INTRODUCTION

Presently, cities are larger and more diverse than ever. More than half of the world's population now lives in urban centers, and this proportion is expected to increase to nearly 70 percent by 2050. In India, out of the total population of 1210.2 million about 377.10 million (31 %) live in urban areas as per Census 2011. The figure is expected to increase to 600 million by 2031.

The process of urbanization has gathered considerable momentum over the last 50 years. The proportion of urban population to total population has increased from 17 percent in 1951 to 31 % in 2011 and this ratio is expected to cross 40 % by 2031. There has been fifteen-fold increase in the urban population from 25 million in 1901 to 377.10 million in 2011 where as the number of cities and has grown from 1967 in 1901 to 7933 which is almost four times. It is expected that half of the India's population will reside in more than 10,000 cities and towns by 2051.

While urbanization has certainly facilitated improve living conditions for millions of people around the world, there are often chronic economic and social disparities among city dwellers. In the developing world, one out of three urban residents still live in slums with inadequate basic services.

2. EMERGENCE OF PANDEMIC

The advent of COVID-19 pandemic totally disrupted the cities life. Pandemic has not only affected our personal lives but also magnified the gaps in the resilience of cities.

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It has forced the local governments to rethink the functioning of several services and industries including healthcare, manufacturing, food supplies, education, security, payments, transportation, etc. In fact, in a world of social distancing, digital processes help keep the economy operational.

With the onset of COVID-19 pandemic, everyday activities such as education, entertainment, communication and were shifted online. However, India's low number of internet users made the shift difficult once the nationwide lock down was announced in March 2020. Reportedly, 50 % of Indians do not have an internet connection. This lack of internet access has not only led to the exclusion of many from their daily activities but also caused problems in staying connected and remaining aware about the growing pandemic.

Urban local bodies and urban development authorities and other governmental agencies in the country have to make sure that essential services such as healthcare, education, transportation, electricity, water, etc.; are affected minimally.

Globally speaking it was observed that the highly urbanized countries viz, USA, UK, Germany, France while amongst developing countries India and Brazil largely were severely affected by the pandemic and it is also explained by the fact the virus spread was prominent in highly densely populated areas of the cities. Following were the most impacted areas due to virus spread. This is corroborated that Urbanization affects the epidemiology of emerging infectious diseases.

- Million plus cities like New York, London, Paris, Rio De Jenario and Mumbai had witnessed large number of positive cases during the first pandemic.
- 200,000 illegally subdivided hyper-dense dwellings— apartments, basements, attics, lofts and industrial sheds—across New York City were the worst affected concentrated mainly in the outer regions of Queens, the Bronx, and eastern Brooklyn (all COVID-19 hot spots 25 within the city) with density ranging between 15,000-20,000 persons per sq km.
- As per Greater London Authority, Greater London's 32 Boroughs, as many as 12 in Inner London have a population density of over 10,000 people per sq km. Boroughs of Hackney, Islington and Tower Hamlets have densities of close to 16,000 people per square kilometer, while in Kensington and Chelsea, Lambeth, Hammersmith and Fulham, Southwark and Westminster, the density is close to 13,000 people per sq km had the maximum number of cases.
- In Italy most corona virus affected cities and regions early in Italy are Lombardy, followed by Emilia- Romagna, Veneto, Marche, and Piemonte. Milan, the second most populous Italian city, is located in Lombardy while in France, Auvergne-Rhône-Alpes, Burgundy-Franche-Comté, Brittany, Grand Est, Hauts-de-France and Île- de-France were the most affected urban areas.



In India also the 53 million plus cities shared 68.55 % of the total cases in the first wave of pandemic. In May, 2020, Ministry of Health identified 733 districts which were broadly divided into Red Zones (130), Orange Zones (284) and Green Zones (319). Zone classification determined the kind of restrictions placed on the movement of people and supply of goods in a district. Further, 30 municipal areas were identified for stricter measures: Greater Mumbai, Greater Chennai, Ahmedabad, Thane, Delhi, Indore, Pune, Kolkata, Jaipur, Nashik, Jodhpur, Agra, Tiruvallur, Aurangabad, Cuddalore, Greater Hyderabad, Surat, Chengalpattu, Ariyalur, Howrah, Kurnool, Bhopal, Amritsar, Villupuram, Vadodara, Udaipur, Palghar, Berhampur, Solapur, and Meerut.

3. PANDEMIC AND CHALLENGES

It may be stated that over the past century more and more of rural dwellers have flocked to cities for work opportunities, and to be close to the sources of all our daily needs, from food to healthcare. As the world's cities have grown, urban planning and design have actually made many of them healthy alternatives to suburban or rural living.

But that's not to say that city life is best when it comes to infectious diseases. In a pandemic, busy urban centres have been big part of the problem. Without speedy and efficient public health measures to counter the infection's spread, the bigger and more well-connected a city, the faster it will travel. Precisely because they are hubs for transnational commerce and mobility, densely populated and hyper-connected cities can amplify pandemic risk. In another 10 years, an estimated 20 % of the world's population will live in urban environments with a limited access to appropriate water, health, and sanitation infrastructures. Without proper sanitation or access to clean water to wash this is where epidemics have the most potential to start and spread.

In recent years, calls for cities to focus on health in their planning have been growing. For the resilient, sustainable cities we all want and need, urban plans to be designed, evaluated and approved using a health lens. There are few examples of this: since 2016, the National Parks Board of Singapore has been building therapeutic gardens in public parks to boost the mental and emotional well-being of citizens. In Tokyo, citizens are working with urban planners to greenify their neighborhoods to improve their health.

Localization can also help with another sticking point in the fight against contagion - mass public transport. While hailed as an environmental solution to the pollution caused by individual car usage, public transport may not be ideal in a pandemic situation. So, cities would need to make more provisions for cycling, and cities may need to offer more paths and small roads so there are alternative ways to get around, so commuters are not all collectively on the same road or in the same public transport.



In order to prepare against such shocks and stresses and minimize disruption, cities need to become resilient so that they can prevent, minimize and effectively manage these scenarios. In fact, to survive, adapt and grow through shocks and stresses, such resilience practices must be supported by a strong underlying foundation of adaptability. Adaptive resilience or the ability to be prepared for and respond to the city's unique challenges and problems helps maximize benefits for cities.

As per 69th round of NSSO, built-up area per family for the poorest is 60 % of the urban population i.e. 380 sq ft. The average space per person, excluding the circulation area in the house, is 72 sq ft. This is even less than the built-up area of 96 sq ft recommended for a prisoner in India . The average per capita space for the owners of rented house or slum dwellers in city areas is only 42 sq ft. In recent past, FSI has been used as a tool of planning is rooted with the idea of tradability and maximizing the profit. Leverage for providing additional dwelling units for Slum Redevelopment is the what required. Optimum FSI and density management along PPP role in providing the housing for slums will certainly can be thought of by the city development authorities.

COVID-19 presents a unique opportunity for cities to learn from their experience in combatting the virus to be better prepared for future emergencies. The pandemic's unprecedented impact on every aspect of urban life has provided compelling data and information about how to improve crisis responses and recovery strategies. This also gives an opportunity to revisit both the documents viz., Urban and Regional Development Plan Formulation and Implementation Guidelines, 2014; and Model Building Bye Laws, 2016 .

Through the study of the last few centuries, it can be observed that pandemics are regular occurrences and they strike at the interval of each few decades. These pandemics are generally caused by viruses that migrate from animal to human through physical contact in farms (pig farm, poultry farm) or animal markets. Once it is transmitted to the humans, the spread within the human population is extremely rapid. Some example of such spreads are the Spanish flu of 1920s, the SARS virus of 2002, swine flu of 2009 and the present COVID-19 epidemic. In earlier times, when the settlements were small and not so well connected, the spread was localized and could be contained in a region. In the present day, since the transportation is very rapid through air and rail, the spread of virus has the potential to cause a pandemic in very short time.

The conscious urban planning cities can be made more resilient to pandemics, should they arise in future. Since pandemics spread through close human contact and through contaminated air and surfaces, if conscious steps are taken to mitigate such conditions, the cities can become more resilient. The aim should be to:



- Decongest the crowded conditions on roads, public areas and markets;
- Plan neighborhood with hygienic environmental conditions (sunlight and air);
- Make offices and institutional buildings better accessible and less congested;
- Promote well distributed transport network with variety of modal choice; and
- Leverage technology for information management.

These interventions can be made at the level of urban planning and management and through building design and building operations, the same are explained in next section.

4. URBAN PLANNING AND MANAGEMENT

4.1 Need for Open Spaces

Many of the cities do not have open grounds that can be used for setting up of temporary markets, camps or such facilities. In most cities, the traditional market places are highly congested with heavy pedestrian movements. Closing down such markets for long durations has economic ramifications. Therefore, well distributed open grounds in the city can be used for setting up of temporary markets. The peripheries of these grounds should be designed so as to allow the movement of goods vehicles for loading and unloading. Parks and gardens have limited utility for such purpose. For example, In Japan, open neighborhood parks are a part of local area planning. These parks act as refuge during times of fire or earth quake and also it can be converted for setting up emergency shelters with toilets or other such temporary facilities.

4.2 Dense Residential Areas and Slums

Most of the metro cities have dense residential areas with poor hygienic conditions and sub-standard road network. In Delhi for example, parts of Karol Bagh and Old Rajender Nagar have streets with extremely narrow especially back alleys, creating very high chances of spreading of pandemic. Such areas are also equally vulnerable for fire (as it would rapidly spread and fire tenders cannot enter such narrow lanes) and earthquake (as buildings would collapse on street possibly burying people who are trying to escape).

There is high scope of redevelopment using land readjustment and amalgamation of plots to create higher amount of built space, by going higher and moving buildings physically away from each other and creating larger amount of public realm on the ground. There are already such examples available from Japan, with densities and land availability similar to Indian cities, many of the practices can be adopted after making some contextual changes.

4.3 Public Markets

The public market areas should be laid out with proper light and ventilation, allowing for social distancing. Provisions may also be made for hand wash and sanitization for visitors in the public areas.



4.4 Urban Transport

During such times when public transport is shut down or available on a limited scale, the dependence would increase on private vehicles. People who cannot use cars or two wheelers would rely on cycling or pedestrian movement. In such case, since the availability of Non-Motorized Transport (NMT) infrastructure is very limited, such movements become very difficult and risky. It is therefore required to develop a robust infrastructure for NMT, which can be very helpful in reducing the crowding of roads and public transport. It also provides all suitable conditions for maintaining physical distancing.

Staggering of timing of various offices and institutions in a given locality can be immensely helpful in bringing down the crowd on the streets and in public transport. A staggering of 15 minutes also helps immensely in managing the peak traffic.

4.5 Management of Biomedical Waste

The biomedical waste which as per norms is to be collected and disposed of separately gets mixed up with Municipal Solid Waste and may trigger further health hazards. Highly hazardous waste from hospitals and the disposals of masks and other such things of personal hygiene should be done separately. Temporary waste collection bins can be set up in residential areas and other areas of high footfall where general public can dispose of such biomedical waste.

4.6 Use of Suitable Apps

App can be developed for density assessment, wherein a simple location-based application which tracks density can facilitate citizens to check the live feed of public spaces before going. Visit to places that are crowded can thus be avoided.

5. BUILDING DESIGN FEATURES

5.1 Building Automation

The technologies that can minimize human touch can be effectively used in public buildings and institutional buildings. Lighting and with motion sensor, motion sensor doors, lifts that can operate with an app or with voice commands, security systems with face recognition. Sanitary fittings that allow for sensor based operation, etc., can be quite useful in the rest-rooms of institutional buildings that have high usage through out the day.

5.2 Sunlight and Natural Ventilation

Many of the modern office and institutional buildings (Including Room 123-C, 120-G in Nirman Bhawan) rely on ventilation through AC and there is limited supply of fresh air and sun light. Furthermore, we are accustomed to use AC as only a cooling device and not for ventilation. So in closed spaces in cooler days,



there is very low ventilation when AC is not running. This creates condition for higher transmission.

As a solution, building design should incorporate features such a louvres and openable windows which allow flow of natural air. Similarly, allowing sunlight during the day may also improve the hygiene in the closed building environment.

5.3 Movement and Circulation

Gates may be located at multiple points in an institutional or large residential society and operated in such a way that flow of the people is well distributed and overcrowding at gates is avoided.

As a counter thought, is that each of the above solution like additional space, additional equipment, additional building materials (partitions, etc.), in fact comes at a cost beside additional human resource (more security for additional entry / exit gates, etc.). In long run, once the memory of pandemic fades from the public psyche, there are chances that the solution offered may be not given due attention and economics may outweigh other considerations.

6. PLAUSIBLE AREAS OF AMENDMENTS IN THE URBAN AND REGIONAL DEVELOPMENT PLAN FORMULATION AND IMPLEMENTATION GUIDELINES - 2014

In recognition of the need of modification in Urban Plan Development policies for building “Pandemic Resilient” cities / urban areas, the following broad lines are to be embraced while recommending strategies, approach with Norms and Standards for formulating “Regional Plans / Policies - Master Plans - Zonal Plans - Local level plans - Action plans”:

- Decongest Urban Centres- Especially slow moving pedestrian precincts that have been planned / achieved much higher occupant load in an effort to earn high positive returns of investment over High Land Values;
- Recommend Urban Design and Forms to streamline and regulate footfalls and movement in such intensive zones, including instilling measures for personal hygiene and safety; and
- Recommend preparation of “Emergency Plans/SOP” by all relevant agencies that operate / provide services in such central zones and institute a mechanism of triggering such emergency plans as per pre-set protocol during such emergencies as ‘a pandemic’.

The plausible sections of amendments in the Urban and Regional Development Plan Formulation and Implementation (URDPFI) Guidelines - 2014 are given in Table - 1.

**Table 1: Suggested Amendments**

Sl.	Section No and Title	Proposed modification in policy and norms
1	1.5.5 Special Purpose Plan (SPP)	Special plan to trigger Emergency Operations including change in occupancy and use of buildings that have been planned prior to arrest and mitigate the pandemic.
2	2.2.5 Contents of SPP	All conceived measures for Pandemic Resilience may be built as a plan under item 11 of Section 2.2.5.1
3	3.4.2 E-Governance	E-Modules must include “Current footfalls by commercial plots” besides “Hospital Management Infosys.” And other public utility apps for real-time estimates of crowding.
4	4.5.2 Delineation	“Vulnerable regions” - health threats posed by immediate urban environment may be conceived and adopted.
5	5.3 Land use distribution	Cities / Towns having densities those specified in Table - 5.1 to essentially plan and adopt Health Emergency plans. Also undertake” fringe area development” for decongestion.
		Recommendation of minimum provision of Parks and water bodies to be stated under Table - 5.2. Since Master Plans have now migrated to GIS base, the area reservation under “Green parks” and “water bodies” are to be exclusively monitored w.r.t such planned standards.
6	8.4 Social Infrastructure	All such infrastructure with recommendations of norms for service population may need revision with time-scheduling of activities to achieve “Social distancing” objectives with limited head-counts in a given period of time. Only such infrastructure to be considered which can afford time-separation of similar or dissimilar activities. This scheduling may be drawn up in the Strategy Plan along with the Master Plan to be implemented by a regulating agency by means of a scheduler and dashboard.
7	8.4.3 Healthcare facilities	All healthcare facilities existing and proposed may be graded as per their level of facilities offered (including specified capacity of ICU beds) and ‘Resilience Plan’ in this sector to be prepared with emergency convertibility of such select facilities to “Infectious disease handling units” with set protocols to be formulated.
8	8.4.5 Open spaces	Provisions to be enforced by resolution by the relevant Authority under such relevant Act.
9	8.4.7 Distribution Services	“Area requirement” for any category requiring congregation of people, to be re-visited in consultation with planning and health experts.
10	8.5 Commercial Activities	Table - 8.62 may require amendments for the “area standards” prescribed for every 1000 persons availing the facility.
11	8.5.4 Urban Street Vendors	Section 8.5.4.1 may also stipulate “Layout Plan” from the planning authority for such vending zones with clear “Urban Design Forms” for streamlined crowd behavior with safe social segregation and distancing.
		Section 8.5.4.4 may be re-looked for the minimum space and dimension standards prescribed for Vehicular, NMT and pedestrian access into such vending zones for safe distancing.



Sl.	Section No and Title	Proposed modification in policy and norms
12	8.6.5 Norms for other facilities	“Area requirement” for postal and banking facilities may require re-validation for safe distancing.
13	9.5 Special Requirement	As per the requirement of such “Urban spaces” used for mass congregation or public facilities, context specific Form Based Codes (FBCs) shall be precisely effective including the material distinction. Local bodies shall be required to frame up such FBCs for planning and implementation by relevant zones, with participative inclusion of stakeholders.

7. OTHER STEPS TOWARDS PANDEMIC RESILIENCE WITH REFERENCE TO USE OF DIGITAL TECHNOLOGY

It is important to address digital infrastructure as one of the solutions to rectifying these gaps, and to focus on how cities can be pandemic proof in the future by employing suitable digital transformations. Digital resilience implies bridging the digital divide which requires governments to be proactive in providing and monitoring the use of the technology among all social groups.

The ambit our of cities go beyond establishing infrastructure with competent technology - it must also ensure accessibility and inclusivity of and for all the citizens using this technology. The increased online activity demands steep bandwidth usage, which has in turn put a lot of pressure on internet service providers.

The pandemic has magnified the issues within Indian cities and deficient preparedness for the same. A plethora of hurdles ranging from small personal problems to major national concerns have risen which asks for cities to be resilient in order to ensure secure and steady lives for its citizens.

Despite its devastating human, social and economic cost, COVID-19 can spur urban leaders to build long-term resilience against future shocks, including a potentially imminent second wave. The pandemic for cities has enabled right lessons to become more resilient, and a warning about the perils of not acting now. In the next 100 days of recovery programs, cities must take the correct measures.

Critically, these measures must be designed and implemented with one eye on the immediate potential threat of another COVID-19 wave and other eye on their adaptability for multiple external shocks. Thus, infrastructure planning and projects should incorporate social safety nets for vulnerable groups and envisage how they can be swiftly identified and located in an emergency. Infrastructure should also be “green” to ensure environmental resilience.

Urban Policy makers must have policies and protocols in place that will allow cities to operate in multiple modes, from full-crisis lock downs through phased re-opening to an eventual return to normal activity - but always with the potential to



go rapidly into reverse gear. We in India strongly feel that COVID-19 accelerated the shift to a new urban paradigm towards inclusive of green and smart cities.

It has been understood and appreciated that how cities can navigate this perilous journey in the wake of a catastrophe by harnessing smart city technologies, from mobile phone tracking apps to locate and suppress infections to data analytics that enable real-time monitoring and management of essential services and infrastructure. At each stage of the journey, there is a relevant watchword: sense the approaching threat; move swiftly to defend and reinforce vulnerable points; respond by implementing structured, informed decisions; and recover after identifying key assets and data indicators that trigger recovery measures.

COVID-19 has been a reminder that cities should partner and collaborate with national governments to ensure a consistent set of policies and coordinated actions. While most cities can count on the national government's support during major emergencies, that's not always the case, even in developed countries. Cities must become more self-reliant and innovative, enlisting all stakeholders in crisis response and recovery planning.

The essence of resilience lies in enhancing the system to be prepared for different challenges, instead of just preventing or mitigating loss of assets in the face of adversities. Such preparedness combines the responsive capacities of different systems with futuristic, risk-aware and robust stress management mechanisms.

Digital transformation is a key enabler of such adaptive resilience. It is a one-stop solution for preparing for disasters and calamities (through early warning data enabled forecast systems) or improving citizen involvement (through digital platforms) among others.

Digital practices increase adaptiveness of a city's management capabilities and processes by shortening time to acquire information and increasing agility. Such a transformation also entails digital inclusion of citizens by empowering them socially and economically, through digital tools and infrastructure. As a result, citizens can contribute to wealth creation through widespread participation in economic activities.

Digital inclusion is also catalyzing long overdue human-centric, technologically inclusive cities. Despite digitizing processes and systems, a city cannot truly become technologically inclusive without harnessing the power of data it produces. A data layer supported by strong governance, security protocols and robust management is a key enabler. Hence, governments must put their efforts into building a data foundation with proper security and protection measures in place, comprising of different sources of internal and external data.

As cities restart and rebuild their economy amidst COVID-19, payment transactions and mobility information can provide insights needed by local governments



to decide which industries to open first, and how to manage public transport systems effectively.

The pandemic provides a once-in-a-generation opportunity to reset the social contract between citizens, cities, governments and corporations, elevating a commitment to support the vulnerable, protect natural systems, build a sustainable economy, and address coming threats together. Cities have access to an effective approach to building a safer and more equitable world, by prioritizing urban resilience.

Decentralized urbanization holds the key to healthy urban growth. (Moving away from Primate Centric Urbanization). Decentralized governance will assist several viable cities to grow and share amongst them the urbanization pressures that are currently concentrated on a handful of urban centres. There is a need to streamline the Integrated Development of small and medium towns scheme from the point of view of densities with greater financial capacity, functional liberty, and empowerment.

Health facilities in the containment zone must be geo-tagged and information should be made available through mobile applications in view of any epidemic / pandemic.

7.1 Role of Smart Cities

Smart cities played a pivotal role in combatting the COVID-19 crisis across cities in the nation. Smart city component as Integrated Command and Control Centres (ICCC) has been implemented by 74 cities, has been effectively put to use for city operation management and converted in to COVID-19 war-rooms for analyzing city-specific data, co-ordination with states, city agencies and connecting with the citizens. The ICCCs are now powerhouse of latest technologies used to monitor city administrations besides how technology is impacting the citizen livelihood, which is making the difference at large. ICCC facility help city responded by ensuring 24x7 “war-room” for multiple departments to coordinate surveillance, contact tracing, helplines, quarantine tracing, etc. Further, live data visualization and data based decision making was facilitated for city authorities. One stop shop for all initiatives for the following services was introduced:

- Citizen helpline, complaint platform, counselling, tele-medicine centre, etc.;
- Field visits, MMUs¹, sanitization efforts coordinated centrally;
- Virtual training centre for healthcare and relief staff;
- The ICCC played a very significant role and notable actions taken by them are highlighted below:
 - Data integrated onto single platform for better insights enabling accurate decisions in a tough environment;
 - Process change alongside tech implementation e.g. using PAS² and VMD³ for city wide messaging; and



- Ecosystem of partners to deliver outcomes such as public sector, NGOs etc. in city's response e.g. Bhopal took HP & PwC's help to build its ICCO COVID-19 tracking dashboard

8. DIRECTIONS GIVEN BY MINISTRY OF HEALTH ON 30.4.2020

Under the directions of the Honourable Prime Minister, a High level Group of Ministers (GoM) was constituted on 3rd February, 2020 to review, monitor and evaluate the preparedness and response measures being taken regarding management of COVID-19 in the country. Based on the detailed deliberations, Ministry of Health issued directions on 30.4.2020 on pandemic containment to all the states and UTs while delineating the containment zones with following tasks:

- Mapping of cases and contacts;
- Geographical dispersion of cases and contacts;
- Area with well demarcated perimeter; and
- Enforceability by the local authorities.

Depending on above factors:

- For colony / *mohallas* / municipal wards or police-station area / municipal zones / towns, etc.; as appropriate can be designated as containment zones;
- Rural areas - villages / clusters of villages or group of police stations / gram *panchayats* / blocks, etc.; as appropriate can be designated as containment zones;
- Area should be appropriately defined by the district administration / local urban body with technical inputs from local level. In the spirit of effective containment, it is advisable to be on the side of caution; and
- Buffer zone around containment zone has to be demarcated.

9. INPUTS TO MINISTRY OF HEALTH PRIOR TO FIRST LOCK DOWN

In response to cabinet note on examination of the subject, 'Situation arising out of corona virus in Delhi and NCR', Ministry of Housing and Urban Affairs gave the following inputs to contain the spread of COVID virus.

- While approving the layouts / building plan, clear cut marking of space for isolated ward has to be ensured. The isolation ward should not function as temporary arrangement and every hospital must certify that they have space for isolation ward while obtaining the Occupancy - cum-completion certificate;
- All hospitals must be geo-tagged so as to facilitate visit of affected persons without any delay. Buildings should be properly sanitized, especially those areas that are damp and there is restricted sunlight; and
- While preparing building design, it has to be ensured that proper sunlight is accessed in the buildings, especially hospital buildings that are frequented by the patients.



9.1 GIS Mapping for Vulnerable Areas

- Prepare GIS map of a city where the incidences of virus spread or areas vulnerable to virus (areas to be mapped where the visits may be restricted)

9.2 Perform Routine Environmental Cleaning

- Routinely clean all frequently touched surfaces in the workplace, such as workstations, counter-tops, and doorknobs. Use the cleaning agents that are usually used in these areas and follow the directions on the label;
- Additional disinfection beyond routine cleaning is recommended at this time; and
- Provide disposable wipes so that commonly used surfaces (for example, doorknobs, keyboards, remote controls, desks) can be wiped down by employees before each use.

10. CONCLUSIONS

In pandemic scenario, cities and towns are at the frontline of safeguarding their citizens from unforeseen shocks and challenges - whether economic, physical, social, or environmental. The pandemic has amplified the vulnerability of cities urban structure, service systems, and societies and further entrenched socio-economic inequalities in the city ecosystems. Addressing these vulnerabilities and inequalities demands the development of holistic and integrated solutions that enhance citywide urban resilience and prioritize the expansion of adaptive capacities of the most vulnerable citizens who are typically most adversely impacted by these significant shocks.

There is a need for revisiting the planning guidelines and building regulations to ensure pandemic resilience. How cities are going to tackle the density management along with redistribution of population will have to be seen as one of the challenges of urban planning. With the availability of disaggregated data and possibilities of micro zonation through strong interface of GIS and Integrated Command and Control Centre would certainly facilitate streamlining the decision making to curb the virus spread.

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