



## INTERROGATING SMART CITIES IN INDIA: DISCUSSING STRENGTHS AND LIMITATIONS OF ITS IMPACT ON HEALTH AND ENVIRONMENT

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### ABSTRACT

This paper attempts to explore the determination of health and environmental outcomes of smart cities mission (MoHuA, India) and other urban development programs in India. It assesses the programs, evaluates their successes and failures, outlines their complications and gaps in addressing the urban health and environment concerns specific to India and its potential health and environmental impact. The paper further looks at how models adopted by the WHO, World Bank and urban health experts seek to address these gaps, which projects in India could potentially benefit from. The paper concluded by calling for what urban health experts call, 'descriptive urban health frameworks' which addresses some of the challenges posed by India's Smart Cities programs. This paper finally concludes by suggesting that a more qualitative and equity informed urban health framework is necessary to address the gaps that smart cities program in India fail to address. By highlighting issues of sanitation, water, housing, poverty, marginalization and inequalities, the paper calls for a more nuanced approach in addressing the needs of cities, within the context of urban health and environment.

**KEYWORDS :** Urban Health, Urban Development, Health and Environment, Urban Health Frameworks, Sustainable Environment, Smart City.

### INTRODUCTION:

#### Urban health

Urban health has become a fascinating source of topic for many, but broadly industrialization in European cities from times of the renaissance till date seem to lay the context upon which issues of health became salient and important. The high disease burden that these cities accumulated led to declining life expectancy and what has been referred to as "urban graveyard effect" or "urban penalty. Epidemics like cholera and influenza outbreak in the early 19<sup>th</sup> centuries led to the European countries taking stock of health and cities and developed improvements and innovations in promoting urban health standards to solve emerging health crises.

#### Urban health frameworks

Today urban health is beyond traditional epidemiological health narratives that not only focus on diagnostic and health determinants that address preventing disease burdens and outbreaks, but they also qualitatively analyse how social, economic and political access to rights and services, including structural and distributional effects of poverty, violence, exclusion and marginalization affect urban health and its workings.

Urban health frameworks are frameworks that seek to evaluate how health determinants are as much impacted by population distribution patterns as well as social and economic issues that surround communities, their access to basic infrastructure and socio-economic rights. Thus, urban health as a determinant of social and economic development rarely functions in this analysis.

#### Urban Development

Urban development refers to development of a non-rural character by "its intensity, scale and cultural and economic organization." It is mostly characterized by progressive reliance on infrastructural and reticulated services like greenery, water supply, basic sanitation and health and other public goods and facilities recognized by democratic countries to be important for the health of cities and their efficient functioning and management.

#### Environment and Health

A clean environment is essential for well-being and health. According to the WHO, Environment 24% of all global deaths are directly linked to the environment, which roughly marks upto 13.7 million deaths annually.

#### Broadlyspeaking, four things take top priority under this framework:

- 1) Clean Air
- 2) Safe Drinking Water
- 3) Nutritious Food
- 4) Shelter

The World Health Organization further emphasizes that stable climate, safe use of chemicals, sanitation and hygiene, clean air, adequate water, healthy and safe workplaces, sound agricultural practices, protection from radiation, and built environments, health-supportive cities and a preserved nature are all prerequisites for good health. Environmental health broadly identifies various aspects of human health which is further determined by biological, physical and chemical, social and psychosocial factors that affect, influence or come from the environment.

#### Sustainable Environment

According to the UN, environmental sustainability is about "acting in a way that ensures future generations have the natural resources available to live an equal, if not better, way of life as current generations." Alternative definitions include "the capacity to improve quality of human life while living within the Earth's carrying capacity for supporting ecosystems."

#### Smart City

There are numerous definitions that define smart cities. For IBM, the international corporation defines it as "one that makes optimal use of all interconnected information available today to better understand and control its operations and optimize the use of limited resources." The government of india defines smart cities to drive economic growth and improve the quality of life of people by enabling what it calls LAD: Local Area Development and harnessing technology, especially technology that leads to smart outcomes.

According to the UN, the number of people living in cities has increased dramatically (367 million) and is likely to increase threefold by 2050. In the midst of this prognosis, the levels of urbanization and industrialization is bound to exponentially increase in several years and the proliferation of this expansion means that India's urban population is likely to face unprecedented challenges in health and environment. As the threat of climate change and poor health indicators rise in the context of increasing gentrification, inequalities and privatization in India and across the world, there is an urgent need to identify challenges with respect to cities, migration, infrastructure and nature of its impact on human health. Urban health has been a significant source of scholarship and policy work, and India has vowed to maintain some of its international commitments with respect to urban health via international agreements and domestic laws. Galea and Vlahov, leading proponents of the new urban health movement, define urban health research as an exploration of "the relationship between the urban environment and population distribution of health and disease" (Galea & Vlahov 2005: 342) This definition is salient if we are to understand how urban health plays a vital role in sustainable, environmentally conscious and community-driven urban futures.

India, under the Swachh Bharat Abhiyaan, has launched indicators and

analysis methods to evaluate and assess the impact of urbanization on cleanliness, hygiene and sanitation in all villages, cities and towns across India. Despite various development projects and urbanization boom in India, Sanitation is one of the key challenges that urban policies in India face, especially open defecation, lack of basic sanitary facilities for the majority dominated underclasses and health concerns, related or unrelated, to it. The Smart Cities Mission (hereinafter referred as SCM) was inaugurated on the 25th of June, 2015, a joint effort undertaken by the Ministry of Housing and Urban Affairs (MoHUA), and all state and union territory (UT) governments. In India one hundred cities and towns have been selected under the SCM, under a two-stage competition which broadly took into account population size, rate of urban development and statutory towns and regulations, among other key urban indicators.

Among its various aims, the Mission aims to use "technology to optimize outcomes and enable local area development to drive economic growth and improve people's quality of life," and ensures that cities are liveable, inclusive, sustainable and having flourishing economies that offer numerous opportunities to people to pursue their diverse interests." This essentially means that the current model will reconvert, redevelop or retrofit particular areas of land (i.e. Area Development Plans) in the named 100 cities and make them "smart."

MoHUA has opened a number of programmes to enhance the SCM's impact.

#### Some of the programs are discussed above:

On 23 February 2021 Digital infrastructure and tools to ensure data availability and skill building are being created under a National Urban Digital Mission (NUDM) was launched. India Urban Data Exchange (IUDX), among others, were a few adopted models, which contained open-source platforms providing necessary data on key urban indicators. Smart Cities Open Data Portal is an example of such open platforming. Smart Code, another initiative, is said to enhance software development pertaining to demand of cities, offering data and solutions for urban problems. Forums such as National Urban Learning Platform (NULP) also conduct online training programs to facilitate partnerships and develop leadership skills. Among its key outcomes, it consolidates skills, engages knowledge creators and focuses on access for stakeholders and civil participants.

The ministry also introduced another parameter to assess this via a more qualitative framework. Ease of Living Index, (hereinafter called EoLI) has been enumerated for 110 odd cities to notify city regulators of the wellbeing of their fellow citizens. EoLI further also delineates the gaps in urban policies, planning and implementation initiatives, offering opportunities to assess the cities in their respective population categories. For example, Bengaluru and Shimla have been ranked at the top in this regard, while Srinagar and Muzaffarpur score at the bottom. Another index called the Municipal Performance Index (MPI) 2020 has also been inundated for similar evaluations. This illustrates the quality of urban governance, regulations, and city management systems. Under this paradigm, municipal councils such as Indore and New Delhi are placed first and second in their respective population categories, while Guwahati and Shillong were ranked last.

#### Aims/Objectives:

The smart city programs highlighted above reveal certain the strengths and limitations of the kind of projects undertaken by India, and the issue with smart cities generally. While it is true that concerted efforts by the Indian government have been made with respect to rising industrialization, globalization and privatization of the economy, the fact that health and environment has taken a complete backseat means that cities will likely become unliveable and unsustainable. Smart city projects in India have had to balance to create developmental models that cater to both general economic growth but also environmental and health concerns of all people.

India's urban population, owing to alarming rates of migration, industrialization, development projects and increasing employment in tertiary and secondary sectors is experiencing exponential transformation of health indicators, such as exacerbating environmental conditions, social unrest, and overburdened public urban infrastructure. In light of this substantial neoliberal urbanisation, this paper aims to examine its impact on human health and the environment.

#### METHODOLOGY:

The paper was reviewed with the help of search options available within electronic journal databases such as science @ direct, InfoTrack, web of knowledge, and other databases. The review literature search took place between November of 2021 to February 2022. These were identified by looking at the key terms such as urban health, smart cities, urban health frameworks, urban public health and others. Only peer reviewed or proper publications were selected to further scout articles and reviews for further selection. The journals that were given preference were mostly Scopus-indexed, PubMed, and web of science.

Most journals mentioned here are reputed, peer reviewed and relate directly to urban health, public health and cities and health. The paper looked for literature using the key words such as "urban health," "smart cities", "environment and urban health," "urban health frameworks", "sustainable environment," and mostly researched closely related words identified by the databases.

The secondary literature was also further scouted from within the articles that contained citations of interest, which was explored further. Therefore, this paper searched for articles that was cited within those literature reviews, to further look at approaches to urban health and finding possible connections with smart cities. There has been no focused attention on the intersection between urban health and smart cities. In this scenario, we used discrete pathways for either entity with the search process described above. Other sites such as the WHO, UN, and other international organizations were used for definitions, reports and data.

#### DISCUSSION AND ANALYSIS:

Implementation process in Smart City Mission is concerning. Over the six-year period of the Mission, less than half of the projects had been completed.

Even though the Swachh Bharat Abhiyan and Smart cities Mission do underline various important social and development indicators to promote urbanization and do develop certain indicators to measure health and environment, it is only addressing these concerns in an oblique and tangential sense. As some commentators observe, there is also no express completion of the projects, with many asserting that "[In Punjab] Despite being selected as one of 20 cities for the smart caps, no projects have been completed."

What both programs fail to evaluate are important health, environment and safety indicators. These are not adequately accounted for or represented in the following the following smart city programs that other countries and important agencies account for, including the WHO. For example, WHO proposes Health indicators propose that measure progress on the environment, social equity and impact of sustainable cities. Slum housing enhancements "that benefit health – as measured by well-defined actions for safe, resilient, and climate-adapted structures with admission to clean energy and basic utilities; Slum housing improvements that benefit health – as measured by well-defined measures for safe, resilient, and climate-adapted structures with access to clean energy and basic utilities." Slum housing improvements that benefit health – as measured by well-defined measures for safe, In terms of particle pollution in urban areas, according to WHO air quality criteria; The municipal councils of Indore and New Delhi were placed first and second in their respective population categories (over and under one million), respectively, while Guwahati and Shillong were ranked last.

A safe and efficient transport system - including walking, cycling, and public transport Governance indicators measure how cities take health into account in urban planning and building rules, as well as in monitoring air/water quality and sanitation issues. Services such as health care, parks, fresh food markets, and waste management are considered indicators of access to important urban services for public health and sustainable cities. Also, institutions such as The World Bank also prescribe a corporate strategy on urban development (World Bank 2000a) and addresses the urban environment as part of enhancing urban liveability. The corporate environment strategy emphasises the organization's importance by stating its goals of increasing the quality of life, improving the quality of growth, and preserving regional and global commons. This conceptual underpinning allowed in 2002 the Bank's Urban Environment Thematic Group was created, to expand the brown agenda identified at the 1992 Earth Summit to incorporate several new and emerging concerns. The enlarged agenda, which drew on both environmental and urban development corporate strategies,

was characterised as four major urban environmental goals:  
 "Goal 1: Protect and improve environmental health in urban areas.  
 Goal 2: Conserve water, soil, and air quality in urban areas from contamination and pollution. Goal 3: Reduce the urban impact on natural resources at the regional and global scales.  
 Goal 4: Prevent and reduce the effects of natural disasters and climate change on cities."

Among the most obvious threats to urban environments are air pollution, water pollution, and collapsed waste management systems. The provision of basic amenities is a severe problem in many cities. These shortfalls are documented in numerous city development plans produced for the Jawaharlal Nehru National Urban Renewal Mission (JNNURM 2011) For example, the study revealed that more than 60 per cent of Mumbai's population are slum dwellers and account for overwhelming unhygienic and unsanitary environmental concerns, including toxic water and air quality, lack of basic sanitation, toilets, open defecation, poor health and economic indicators, lowest incomes, crime and violence, gender violence and various other forms of social and economic exploitation.

Another significant factor influencing health is water. Wastewater significantly factors into urban health as it is often associated with infectious and non-infectious diseases. Only 35% of the wastewater is produced in class I cities (metropolitan populations exceeding 100,000 persons), and II<sup>nd</sup> class towns/villages (ranging between 50,000-100,000). The wastewater from such data suggests that even processed wastewater has immense implications for posing health hazards in human populations.

Each sector's projects contribute in different ways to achieving the city's environmental goals: Water and sanitation initiatives are primarily focused on providing sanitation services such storm water drainage systems, treatment plants sewage lines, wastewater.

Urban development projects largely manage such sanitation and water services. Solid waste management, Slum upgrading initiatives, solid waste management, management projects and disaster prevention include other important urban policies. Waste management and reuse, including though not by any means exhaustive focus on hazardous and toxic waste, treatment of effluents/faecal matter, and setting up of pollution control boards. While others focus on reducing emissions; and minimizing ozone-depleting substances.

Some urban health initiatives take the resolve to conserve energy, which seeks to substitute fossils and other depletable substances with renewable energy and endeavours to stop greenhouse emissions, and climate change. (This is more common in first world, high income or middle-income countries in the Europe and Central Asia) As part of urban mobility, transportation initiatives primarily address the reduction or prevention of automobile emissions, and they frequently provide resources for air quality monitoring systems. (Bhardwaj 2005).

## CONCLUSION:

Cities are complex systems, and there is no one size fits all approach. As recent scholarship suggests that without highlighting the vast disparities in health, water, sanitation and housing services, there needs to be greater attention by politicians, statesmen, policymakers, and others that address the inequalities that urban poor suffer and the impact that it has on the urban environment and health. Thus, sustainable urban environments is a challenging goal and the smart city programs make no mention of the amelioration of urban poverty and the impact it has on the indicators mentioned. No single strategy suffices the ability to achieve tomorrow's sustainable cities. The challenges resist simple narratives, because the factors intersect and overlap, and often in ways that requires the attention of health experts, anthropologists, urban health experts and marginalization. Improving urban air quality; municipal solid waste alternatives; municipal water management; reducing urban energy consumption are all important indicators that many assessments and evaluations that are not accounted for in Indian parameters, much less attention is paid to marginalization, income and economic inequalities, governance, administration and urban environment.

Smart Cities must address the issues and their concordant solutions in greatly influencing community health outcomes. Housing, transportation, social services, and other city-scale issues, for example, can have a significant impact on urban populations' overall

health and well-being. In their 2016 literature review published in the *Lancet*, Giles-Corti and colleagues demonstrate "direct and indirect pathways by which urban and transportation planning affect health." For example, transport policies can influence transport mode outcomes (e.g., proportion of commuters using active transportation modes), which influences "population-level risk exposures related to traffic, air pollution, noise, and sedentary behaviours, all of which contribute to health, environment and well-being."

The alternative view of urban health is that it is a field that is impacted by a variety of factors and is simultaneously affected by them. Thus, urban health must necessarily go beyond the usual demographic analysis of health status of urban populations. Alongside examining health inequities, secondary concerns must be addressed, as in what does health need for urban development? Is Land Area Development offered by smart cities evaluate the health outcomes of populations? Does it account for whether the health care sector is fit to react to (re-emerging; tropical, infectious, non-infectious and chronic illnesses)? How can urban environments be designed to provide healthier living conditions, by both taking into account urban health systems and urban environments, without leaving out urban society? The smart cities program's approach to launch development areas without how they connect to issues of poverty, inequalities and social environments is concerning.

One of the ways I suggest Smart City Programs to include health and environment into their agendas is to qualitatively look at an urban health framework and triangulate various data from each concern. As the world bank suggests, without addressing the gaps of inadequate sanitation and urban health environments, smart cities' and their reliance on technology and land development areas is not enough to fulfil sustainable, environmentally friendly, and inclusive cities.

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