

SHELTER



Theme paper | Policy Review | Case Studies



Mind the gap: Leave no one and no place behind



UN HABITAT
FOR A BETTER URBAN FUTURE



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FROM THE EDITOR-IN-CHIEF

Each year since 1986, the World Habitat Day is being observed on the first Monday of October, followed by a month long of various activities on urban sustainability to mark the Urban October. The theme of World Habitat Day 2022 is '*Mind the Gap. Leave No One and No Place Behind*', which draws attention of the nations to look at the problem of growing inequality, vulnerabilities and challenges in cities and human settlements that have been exacerbated by the recent triple 'C' crises – COVID-19, Climate and Conflict, which have huge adverse impact on the lives and livelihoods across the globe. According to the UN-Habitat's World Cities Report, the number of people affected was between 119 and 124 million in 2020 and between 143 and 163 million in 2021. Tackling urban poverty and inequality have become an urgent global priority.

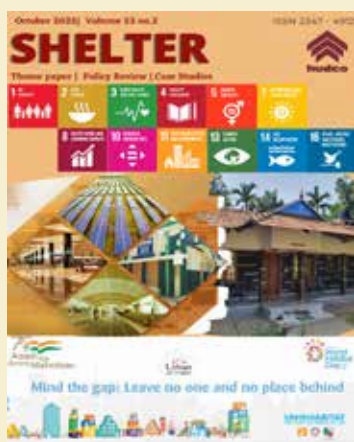
India is an integral part of the urban transformation that the world is witness to, and is gradually making the shift from 'rural' to 'urban'. Urbanisation is a necessary condition for economic growth as cities contribute to more than 60 per cent of the country's GDP. Cities offer opportunities for growth, innovation, entrepreneurship, cultural expression and social change. Yet, they have also been mired by lack of civic amenities, inadequate infrastructure, lack of inclusive, affordable and adequate housing, and poor living conditions for significant portions of their citizens. In this context, this year's theme reminds us to refocus our resolves to 'leave no one and no place behind' in our transformative journey towards achieving development agenda 2030. As local action is critical to achieve the sustainable development goals by 2030, this year's theme calls upon the national and local governments to identify 'who is being left behind by development processes'; in what ways; in which areas; and remove those underlying structural barriers that limit their inclusion. In the spirit of 'leave no one & no place behind', no target should be considered achieved unless met by lowest quintile of any population and at all places.

Sustainable, equitable and inclusive development has been the cornerstone of Govt. of India's economic growth model based on the motto of '*Sabka Sath Sabka Vikas Sabka Viswas Sabka Prayas*'. A number of schemes and programmes have been initiated on a mission mode to bring the poor and marginalized into the urban fabrics. With the aim to provide affordable housing for all, the Govt. of India implemented 'Pradhan Mantri Awas Yojana (PMAY)-Urban in 2015 under which more than 1.22 crore houses have been sanctioned. Similarly, the scheme of 'Affordable Rental Housing Complexes' (ARHCs) for urban migrants/ poor, introduced in 2020, aims to mitigate the hardships faced by the migrant labour force and other vulnerable groups, which will improve their living conditions and provide access to dignified and planned housing. Other programmes such as Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart Cities Mission, Jal Jeevan Mission, Deendayal Antyodaya Yojana- National Urban Livelihood Mission (DAY-NULM), PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi), Pradhan Mantri MUDRA Yojana (PMMY), National RUrban Mission (NRuM), Jan Dhan Yojana, Aspirational District Programme (ADP), etc. are also aiding in mainstreaming the poor and marginalized sections into urban fabric. The implementation of these programmes and projects are indicative of Government of India's commitment towards leaving no one and no place behind.

This volume of Shelter is based on the World Habitat Day theme of '*Mind the Gap. Leave No One and No Place Behind*' and contains an array of articles which provide diverse insights into a range of issues related the theme for building a better inclusive and equitable urban future. The theme papers highlight the issues relating to sustainable, inclusive & resilient cities based on the principle of 'leaving on one behind'; supply-side interventions for self-built housing; 'LiFE' movement as a new strategy for inclusive urbanism; and mainstreaming migrant households. The policy review section includes the reviews of two important Government of India programmes: the PMSVANidhi; and the PMAY-Urban and a third highlights need to develop research and evidence-based policies to mitigate and adapt to the threat of rising sea levels on coastal real estate & infrastructure. This volume also presents two case studies: BSUP project of Kolkata; and analysis of the Delhi- Unified Buildings Bye Laws with reference to the National Building Code (NBC).

Hope you enjoy reading this issue of Shelter. As always readers are encouraged to send in their comments (critiques, suggestions and observations) about the issue.

INSIDE



Theme

Each year since 1986, the World Habitat Day is being observed on the first Monday of October, followed by a month long of various activities on urban sustainability to mark the Urban October. The theme of World Habitat Day 2022 is 'Mind the Gap. Leave No One and No Place Behind', which draws attention of the nations to look at the problem of growing inequality, vulnerabilities and challenges in cities and human settlements that have been exacerbated by the recent triple 'C' crises – COVID-19, Climate and Conflict, which have huge adverse impact on the lives and livelihoods across the globe. According to the UNHabitat's World Cities Report, the number of people affected was between 119 and 124 million in 2020 and between 143 and 163 million in 2021. Tackling urban poverty and inequality have become an urgent global priority.

India is an integral part of the urban transformation that the world is witness to, and is gradually making the shift from 'rural' to 'urban'. Urbanisation is a necessary condition for economic growth as cities contribute to more than 60 per cent of the country's GDP.

Cities offer opportunities for growth, innovation, entrepreneurship, cultural expression and social change. Yet, they have also been mired by lack of civic amenities, inadequate infrastructure, lack of inclusive, affordable and adequate housing, and poor living conditions for significant portions of their citizens. In this context, this year's theme reminds us to refocus our resolves to 'leave no one and no place behind'.

Theme paper

- 03 | SDG 11 and the Transition to Sustainable, Inclusive, and Resilient Cities

Ms. Swati Singh Sambyal
Ms. Adishree Panda
Ms. Rinky Halder
Mr. Ankit Gupta

- 17 | Including the Urban Poor in India Through Supply-Side Interventions for Self-Built Housing

Ms. Banashree Banerjee

- 26 | LiFE- A New Strategy for Inclusive Urbanism

Mr. A. K. Jain

- 36 | A 'Mainstreaming' Approach to Uplifting Migrant Households

Ms. Mukta Naik

Policy Review

- 43 | Impact of Sea Level Rise on Coastal Real Estate and Infrastructure: An Agenda For Policy And Research

Prof. Piyush Tiwari
Dr. Mohit Kumar

- 53 | PMSVANidhi : A Model for Equity and Growth

Prof. K. K. Pandey

- 64 | Evaluation of the Uneven Outcomes of Pradhan Mantri Awas Yojana – Housing for All (Urban) Mission

Mr. Manav Khair
Dr. Shishir Kumar Jha

Case studies

- 71 | Basic Services For Urban Poor (BSUP) Programme: A Case Study Of A Slum Redevelopment Project In Kolkata, West Bengal

Ms. Debanjali Saha
Dr. Ruchita Gupta

- 82 | Analysis of the Delhi- Unified Buildings Bye Laws 2016 with respect to the Integration of Provisions of the National Building Code

Ar. Raja Singh
Prof. Manoj Mathur
Prof. Dr. Anil Dewan

IN THE BOX

Training Activities Conducted by Hudco's HSMI During FY 2022-23	2
Pradhan Mantri Awas Yojana- Urban: Achievement	81
General Guidelines: Check list for Submission of Articles	101

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TRAINING ACTIVITIES CONDUCTED BY HUDCO'S HSMI DURING FY 2022-23

HUDCO's HSMI has conducted 5 online Webinars and 3 online Training Programs for HUDCO employees, and 1 for Urban Local Bodies, State Agencies, Development Authorities of 2 days till September 2022. The Webinars had themes like 'Analysis of State Budgets' and 'Generation of business through Innovative projects', 'RBI regulatory framework for Non-Banking Financial Companies

(NBFC)- implications for HUDCO', 'Scope and Strategies for increasing Hudco's Consultancy based income', 'Only One Earth – World Environment Day' & 'Environmental Sustainability'. In addition, it has conducted two online Training Programs of two days each on topic 'Ind- AS Schedule-III Changes & Changes in CARO Reporting' for HUDCO employees. One online Training Programme

on 'Valuation of Real Estate' was conducted for HUDCO employees dealing with real estate in Corporate office and Regional offices. The online Training Programmes for Urban Local Bodies, State Agencies, Development Authorities on the theme 'Urban Landscapes for Universal Mobility & Accessibility in Smart Cities' was also organized for more than 60 professionals.



HUDCO's HSMI organized a Webinar for HUDCO officials on July 8, 2022 on 'RBI Regulatory Framework & Compliance for NBFCs-Implications for HUDCO'. Shri Md. Majidullah, DGM, RBI addressed the participants in the presence of Mr. M Nagaraj DCP and Mr. D Guhan DF



HSMI organised a webinar on 'Scope & Strategies for increasing HUDCO's Consultancy based income' addressed by Shri R.K. Gupta, ex CMD WAPCOS for HUDCO officers in presence of DCP Mr M Nagaraj, DF Mr D Guhan



Webinar on 'Environmental Sustainability' for HUDCO Officials was addressed by Shri Arupendra Nath Mullick



Webinar on the occasion of World Environment Day 2022 on the theme- Only one Earth- 'Living Sustainably in Harmony with Nature'. Prof. Dr. Sanjukta Bhaduri, and Dr. Bala Prasad (IFS), were speakers on the theme.

SDG 11 AND THE TRANSITION TO SUSTAINABLE, INCLUSIVE, AND RESILIENT CITIES

**MS. SWATI SINGH
SAMBYAL**

**MS. ADISHREE PANDA
MS. RINKY HALDAR
MR. ANKIT GUPTA**

"The 2030 Agenda for Sustainable Development and the New Urban Agenda have highlighted a central and transformative principle of 'Leave No One Behind' (LNOB) which "represents the unequivocal commitment of all United Nations Member States to eradicate poverty in all its forms, end discrimination and exclusion, and reduce the inequalities and vulnerabilities that leave people behind and undermine the potential of individuals and of humanity as a whole"

Key Words: Inclusion, Sustainable Urban Development, Sustainable Development Goals, Resilient Cities, Integrated Planning

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Building an equitable and sustainable urban future, inevitably a daunting task, requires an urgent course-correction to redress systemic, persistent, and emerging urban issues. Inequalities take various forms, old and new, between and within countries and cities. Crisis, such as the pandemic, and conflicts rapidly exacerbate and create new inequalities—access to vaccines, technology, education and income opportunities, environmental and climate inequalities, and migration. Cities with foresight to embed universal values and principles of "Leaving No One Behind" can deliver equity and inclusion as well as break spatial barriers of connectivity, proximity, and distance for city-regions and entire nations. Cities that adopt a rights-based approach to human settlements for citizens, investors, and visitors alike can create inclusive, resilient, and non-discriminatory societies and communities. It is imperative for cities in India to adopt participatory, integrated, and sustainable human settlement planning and management to address the needs of those who are furthest behind.

INTRODUCTION

Cities are complex systems that bring together diverse communities to work, live, and play. Just as the battle against climate change will be won or lost in cities, so too will the aspiration for sustainable, resilient, equitable, and just societies. By 2050, it is expected that 75 per cent of the world's population will live in cities, increasing from more than 50 per cent presently. As cities grow, especially in the Global South, it will be vital to invest in new policies, plans and partnerships that ensure universal access to all urban services. As we see increasing impacts from climate change, the most sustainable and resilient societies will be those that have resource-efficient systems in place to provide essential services to their residents and that are prepared to withstand and adapt to climate-induced disasters by leaving no one behind and leaving no place behind. Achieving these two mandates will help to provide and maintain quality of life for the world's growing urban population in the face of extreme weather activity,

Box 1: India's performance on SDG 11

The Government of India has placed high priority on **sustainability, environment, and inclusion** for transforming cities and city regions with implementation of national missions namely, Clean India, Housing for All, Smart Cities, National Mission for Clean Ganga, Digital India, amongst others to achieve SDG 11.

These missions have been instrumental in addressing basic urban necessities of affordable housing, sanitation, solid and liquid waste, infrastructure, urban renewal and retrofitting, as well as frontier themes of digital governance, technological innovations, smart solutions for economic growth and improving quality of life of people to achieve the targets of SDG 11.

- (i) **Social Inclusion and Ending Poverty:** Slums pervade almost all urban areas with 2,613 towns, or 64% of all towns (4,041) in the country reporting slums in 2011. Central and State governments have continued to actively design and implement complementary programmes and missions to provide better housing and infrastructure targeted in slums and informal settlements. Specifically, **In-Situ Slum Upgrading is one of the four strategic interventions under the Housing for All Mission**, through which 451,050 houses have been sanctioned as of November 2021.
- (ii) **Access to Adequate Housing:** The government's flagship, Housing for All mission has imbibed the principles under the Universal Declaration of Human Rights. Under the mission all eligible beneficiaries were provided assistance to either build or acquire an all-weather dwelling unit with basic civic and social amenities. **Light House Projects (LHPs)** are also being built as part of the Global Housing Technology Challenge-India (GHTC- India) initiative under the Pradhan Mantri Awas Yojana- Urban (PMAY-U). MoHUA is promoting LHPs as live laboratories for transfer of technology to the field. The primary goal is to encourage large scale participation of people to create technical awareness for on-site learning. Under PMAY Urban, a total investment of 108.361 billion USD has been made as of April 25, 2022, and that has resulted in 12.269 million houses being sanctioned, and 5.8 million houses completed/delivered to beneficiaries.
- (iii) **The Atal Mission for Rejuvenation and Urban Transformation (AMRUT)** was launched in 2015 by MoHUA to provide basic civic amenities, namely, water supply, sewerage and septage management, storm water drainage to reduce flooding, non-motorized urban transport and green space/parks in 500 cities to improve the quality of life with major focus to the poor and the disadvantaged. The mission facilitated investments of 3.522 million USD in over 4,000 projects across 500 cities. A key feature of the project was **green investments**, and to that effect, 62,78,571 streetlights have been replaced with LED lights against the target of 97,93,386 as of April 25, 2022. Furthermore, 52,327 **Capacity Building trainings** have been imparted to local officials and technical experts. In 2021, the mission was extended **AMRUT 2.0 was launched with an aim to provide 100% coverage of water supply to all households and 100% coverage of sewerage and septage in 500 AMRUT cities**. Outcome based funding is a major feature of AMRUT 2.0.
- (iv) **Swachh Bharat Mission:** To improve hygiene, waste management and sanitation across the country, Swachh Bharat Mission (Clean India Mission) was launched in 2014. In December 2019, the mission achieved its target of Open Defecation Free (ODF) status in all towns of 35 states / UTs, which were certified through third-party verification. More than 6 million individual household toilets and 6.2 million community and public toilets were constructed under the mission. Remarkable achievement has also been made in solid waste management, with over 100,000 tonnes per day of waste being processed out of the total waste of 145,574 tonnes per day that is being produced.

Source:

1. SDG India Index Baseline Report, 2018, https://www.niti.gov.in/sites/default/files/2020-07/SDX_Index_India_Baseline_Report_21-12-2018.pdf
2. Swachh Bharat Mission- Urban, <https://sbmurban.org/#>
3. AMRUT, <http://amrut.gov.in/content/>
4. PMAY-Urban, <https://pmaymis.gov.in/>

resource shortages, and population migration.

Sustainable Development Goal 11 (SDG 11) – making cities and human settlements inclusive, safe, resilient, and sustainable – of the 2030 Agenda for Sustainable Development highlights the important role that cities play in overcoming challenges in ways that allow them to continue to thrive and grow, while improving resource use and reducing pollution and poverty. *Box 1* elaborates on India’s performance on SDG 11 by implementation of national missions.

The interlinkages of SDG 11 with other goals and with other development agendas, such as the New Urban

Agenda, are extensive and wide-ranging. For instance, the goal on poverty is linked to access to land, slums, and inadequate housing; health is often affected by ‘place’; and gender equality can benefit from access to transportation, public spaces, water, sanitation & Hygiene (WASH) infrastructure, and participation in local governance and decision-making. Urban waste management is strongly associated to safe drinking water, sanitation, and hygiene; energy systems are critical for the development of safe, resilient, and sustainable human settlements; and inclusive and productive cities are important for entrepreneurship and

job creation. Similarly, intra-city and spatial inequalities are fundamental for understanding and addressing inequalities within cities and reduce growing polarization; and the efficient management of natural resources, safe disposal and treatment of toxic waste and pollutants can contribute to health, as well as responsible consumption and production. The goal on cities offers many opportunities to develop mitigation and adaptation strategies to address climate change especially through environmentally sustainable and resilient urban development.¹ *Table 1* highlights the interlinkages between SDG 11 and other SDGs.

Table 1: Nexus between SDG 11 and other SDGs

SDG 11 Target	Linkages to other SDGs
11.1 By 2030, ensure access for all to adequate, safe, and affordable housing and basic services and upgrade slums	1 NO POVERTY 3 GOOD HEALTH AND WELL-BEING 4 QUALITY EDUCATION 5 GENDER EQUALITY 6 CLEAN WATER AND SANITATION 7 AFFORDABLE AND CLEAN ENERGY 10 REDUCED INEQUALITIES
11.2 By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations	1 NO POVERTY 2 ZERO HUNGER 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 13 CLIMATE ACTION

1 Review of SDGs Implementation, 2018, https://sustainabledevelopment.un.org/content/documents/197282018_background_notes_SDG_11_v3.pdf

SDG 11 Target	Linkages to other SDGs
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlement planning and management in all countries	
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	    
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	    
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	    
11.7 By 2030, provide universal access to safe, inclusive, and accessible, green, and public spaces, in particular for women and children, older persons and persons with disabilities	   
11.a Support positive economic, social, and environmental links between urban, peri-urban, and rural areas by strengthening national and regional development planning	 
11.b By 2020, substantially increase the number of cities adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and disaster risk management.	   
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.	    

Source: The Urban Agenda Platform, 2022, <https://www.urbanagendaplatform.org/nexus#:~:text=11.2%20By%202030%2C%20provide%20access,of%20those%20in%20vulnerable%20>

India is a rapidly urbanizing country and is witnessing a steady increase in migration from rural areas to urban centres. This poses stress on the already overburdened infrastructure of the cities, such as housing, transportation services, and provision of clean water and sewage treatment. It is therefore essential to promote inclusive and sustainable urbanization as well develop capacity for participatory, integrated, and sustainable human settlement planning and management.

GENDER AND DISABILITY INCLUSION

In India, women account for 48.5 per cent of the total population and approximately 2.1 per cent of the total population live with either mental or physical disabilities (Census 2011). Despite this, the needs of vulnerable groups, including women, persons with disabilities, the elderly, among others, are often not prioritized in the urban design and planning processes. A combination of socio-economic factors among these vulnerable groups, including poverty, age, religion, caste, class, and ethnicity further intersect and compound the type of exclusions faced by them. Many barriers

that marginalised groups face in accessing urban services and infrastructure, social protection measures, employment opportunities, education and housing are caused due to limited implementation of national-level legal and planning mandates at the local level and lack of on-the-ground knowledge and tools to effectively incorporate gender and disability-inclusive strategies that leave these specific groups of people further and further behind.

Women, children, the transgender community, and persons with disabilities face additional challenges in accessing safe healthcare and sanitation facilities in cities due to low availability of accessible Water, Sanitation and Hygiene (WASH) infrastructure, stigma and shame associated with disability, lack of easily accessible gender-neutral facilities, and limited autonomy and decision-making power in the context of health and sexual and reproductive rights. Many of the gender- and inclusion-specific challenges arise in cities due to limited implementation of participatory and people-centric urban planning processes, lack of

consideration of the diversity of urban users and their varying needs, inconsistent or multiple policies and schemes which have dense information and are not easily understood by all, siloed departments working on urban planning, design, and service delivery with little interface among themselves, and lack of sex and disability disaggregated data to understand the needs.

To address these concerns and challenges, the 2030 Agenda for Sustainable Development and the New Urban Agenda have highlighted a central and transformative principle of '*Leave No One Behind*' (LNOB) which "represents the unequivocal commitment of all United Nations Member States to eradicate poverty in all its forms, end discrimination and exclusion, and reduce the inequalities and vulnerabilities that leave people behind and undermine the potential of individuals and of humanity as a whole"². LNOB entails focusing on the needs of the furthest behind and addressing the intersecting challenges faced by vulnerable groups, including ethnic and linguistic minorities, persons with disabilities, migrants, gender and sexual minorities, and the youth and elderly.

Several mandates and legislations have been put in place to facilitate the mainstreaming of the LNOB

² Leaving No One Behind: Equality and Non-Discrimination at the Heart of Sustainable Development, United Nations, 2017, https://unsceb.org/sites/default/files/imported_files/CEB%20equality%20framework-A4-web-rev3.pdf

principle into urban policy and planning processes at both the global and national levels. Globally, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)³ treaty 1979 is a tool that aims to improve the agency of women around the world to bring about changes in their daily lives. In countries that have ratified the treaty, CEDAW has worked towards addressing the effects of discrimination in different spheres, including violence, poverty, legal protections, and financial rights. Additionally, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) 2008 recognises the compounded discrimination and inequalities that are faced by vulnerable groups across gender and inclusion-aspects and factors. It has been designed by diverse stakeholders of the international community, including organizations of persons with disabilities (OPD), government bodies, non-governmental organizations, to protect persons with disabilities from stigma and discrimination,

ensure that they enjoy all human rights and fundamental freedoms, and be perceived and treated with respect and dignity⁴.

At the national level, the Rights of Persons with Disabilities Act (RPwD) 2016 aligns with the LNOB principle of securing the right to equality, the right to live with dignity and the right against discrimination of persons with disabilities. It obliges government departments, at multiple hierarchical levels, to take measures for ensuring that persons with disabilities from different demographic groups enjoy their rights equally with others. The Ministry of Social Justice and Empowerment works towards empowering persons with disabilities through campaigns, such as the Accessible India Campaign, skill development initiatives, and entrepreneurial schemes. Several urban missions by the Ministry of Housing and Urban Affairs (MoHUA), including the Smart Cities Mission, the Swachh Bharat Mission-Urban (SBM-U), and the Pradhan Mantri Awas Yojana-Urban (PMAY-U), are

also focusing on providing accessible infrastructure and services to build sustainable and inclusive Indian cities.

SANITATION AND WASTE MANAGEMENT

The Government of India has implemented several flagship missions — SBM 1.0 & 2.0, Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT) — to manage the issues of WASH and waste management. The launch of SBM-U on 2nd October 2014 placed the issue of sanitation at the center of the Government's developmental agenda in cities. This Mission has achieved significant levels of success against its three major objectives: (a) achieving 100 per cent Open Defecation Free (ODF) status; (b) ensuring 100 per cent scientific Solid Waste Management (SWM); and (c) behaviour change with massive engagement of citizens across all categories of society in its first phase. A major focus of the SBM-U has been to have gender-friendly and persons with disabilities-friendly features, for ease of access for all. SBM-U has emerged as the largest urban sanitation behaviour change program in the world and has been able to accelerate India's progress in ensuring availability and sustainable management of water and sanitation for all (aligning with SDG 6). The mission

3 Convention on the Elimination of All Forms of Discrimination against Women, 1979, <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-elimination-all-forms-discrimination-against-women#:~:text=On%2018%20December%201979%2C%20the,twentieth%20country%20had%20ratified%20it.>

4 United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), 2008, <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/optional-protocol-to-the-convention-on-the-rights-of-persons-with-disabilities.html>

focuses to ensure that every citizen of Urban India has access to safe sanitation infrastructure along with access to safe containment facilities for faecal sludge.

These initiatives have strengthened liquid and solid waste management and reduced the adverse per capita environmental impact on cities with people's participation. However, the enforcement of law and implementation of strategies is a big concern. The limited capacity of pollution control boards and urban local bodies (ULBs) point to the need for technological reinforcement to address issues related to vigilance and enforcement. Institutional and budgetary capacities of the ULBs need to be strengthened to ensure the smooth implementation of plans for air quality and waste management. Additional technology-based solutions such as fleet modernisation, strengthened inspection and maintenance systems, and electrification of fleets and technology-based enforcement in industries will be required for air pollution control. For waste management, fiscal mechanisms and business models need to be developed to treat it as a resource and

develop markets for its management.

The second phase of this mission, SBM-U⁵ 2.0, is focusing on enabling cities to enhance solid waste management and sanitation interventions by utilising digital tools and frameworks to contribute to the achievement of the SDGs. As per the SBM-U database, 6.16 million Individual Household Latrines, 0.59 million Community Toilets and Public Toilets have been constructed, and 4,324 cities are declared ODF which were the objectives set out in SBM-U in 2014. Under AMRUT, till July 2019, 109 Faecal Sludge Treatment Plants (FSTPs) have been completed, and approximately 200 are under construction which are likely to be completed soon as per the database of MoHUA. This achievement is commendable and the kind of progress that the sanitation sector has witnessed is exemplary.

While there has been significant physical progress, there is concern about inadequate attention towards inclusive and equitable approaches to benefit the most marginalized communities living in the cities. There is a growing realization that cities

need to focus on inclusiveness and equity going forward. Cities should aim to prioritize inclusive sanitation for the public/multiple stakeholders across the sanitation service chain, including the urban poor who can benefit from equitable and safe sanitation services. Delivery of equitable services needs effective planning and capacity building, furthering the role of authorities towards meeting the goal of sanitation for all. In this endeavour, inclusion and social equity should be embedded from the planning phase to the implementation and monitoring phases of sanitation programs and investments. Cities are required to encourage participation and empowerment of the marginalized in decision-making processes and service delivery.⁶

Even as the achievements over the last five years are laudable in terms of infrastructure creation, it becomes pertinent to evaluate the extent and mechanisms in which sanitation services are accessed by all. This further underscore the need for inclusion of marginalized in the full sanitation value chain and road map for policymakers in outlining a city-wide inclusive and accessible sanitation plan.

As the SDGs are based on the principle of Leave No

5 Swachh Bharat Mission- Urban2.0 <https://sbmurban.org/storage/app/media/pdf/swachh-bharat-2.pdf>

6 Inclusive_City_Sanitation_Framework_and_Checklist_2nd_November.pdf (nfssmalliance.org)

Image 1 Waste Assessment Survey carried out in Thiruvananthapuram (Kerala) by UN-Habitat India utilising the Waste Wise Cities Tool (WaCT)



One Behind (LNOB), goals and targets are to be met for people from all segments of society especially including the groups being left furthest behind. Therefore, it becomes imperative to interlink SDGs with SDG 11 towards reducing inequalities and promoting of all irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic status in the sanitation space.

INTEGRATED PLANNING APPROACHES ACROSS SECTORS

Urban development is a dynamic, diverse, and fluid phenomenon, while the local

and state level authorities have a static approach with traditional urban planning instruments, at times leading to haphazard responses to the cities' urban challenges. Most of the urban centres in India face issues of urban sprawl and inefficient land use, increase in vehicular traffic and worsening air pollution, and deteriorating quality of the public realm of cities. The lack of urban infrastructure for affordable housing, water supply, sanitation, and solid waste management has been a constant challenge, especially in informal settlements in urban areas.

Though cities are economic engines and shoulder the burden of urbanization and development, they can also widen existing inequalities and exclude certain socio-economic sections. The unprecedented development needs to be inclusive to be sustainable and to do so, spatially equitable distribution of resources, ensuring equal access by all, is crucial. Cities need to be designed, constructed, and managed to enable equal and inclusive access for all communities, whether for essential services or for recreation purposes. In doing so, spatial analyses of urban development and planning decisions are critical to understand how problems and their solutions play out in a city.

SCIAP (Sustainable City Integrated Approach Pilot), a project funded by the Global Environment Facility (GEF), is being implemented in the pilot cities of Mysuru, Guntur, Vijayawada, Bhopal, and Jaipur with the aim of enhancing urban local government's capacity to comprehend and plan for sustainable growth and development. The pilot cities are analysed for their climate performance using the urban sustainability assessment framework⁷ (USAF) across the twelve urban sectors to identify the prominent

7 Urban Sustainability Assessment Framework, 2022, UN-Habitat, [https://www.unhabitat.org.in/sciap-publications/draft-urban-sustainability-assessment-framework-\(usaf\)](https://www.unhabitat.org.in/sciap-publications/draft-urban-sustainability-assessment-framework-(usaf))

Box 2: Application of Form-based codes in Mysuru

As shown in Figure 1, the application of form-based codes for Vijayanagar Main Road, Mysuru establishes the importance of NMT friendly street that will facilitate a continuous public realm and help achieve a safe, efficient, affordable, integrated, and low-carbon transport system with active and vibrant street frontages.

Image 2: Vijayanagar Main Road, Mysuru (Before)



Source: UN-Habitat, India

Figure 1: Indicative Vijayanagar Main Road rendering (After)



Source: UN-Habitat, India Housing and Property

urban issues. Sustainable city strategies having specific actions and interventions for on-ground transformation and impact aligning with city's development vision have been proposed using nature-based solutions (NBS).

URBAN FORM, PUBLIC SPACE AND SAFETY

Urbanization is riddled with innumerable challenges of which provision of urban form, public space & safety plays an important role. In most cases of urban India, the form inevitably got developed over time in an unguided manner due to the absence of any pattern as rather prescribed (that can be promoted), instead being proscribed (that needs to be controlled), when it followed the function i.e. the strict segregation of land use categories across zones. As a result of these conventional practices cities experienced a spread-out, unwalkable, and unsustainable growth patterns.

Amongst the many tools available for human-scale based urban built environment, "form-based development codes" are effective planning and urban design tools in achieving the

city's aspiration of becoming modern while preserving the city's heritage sites, natural resources, green spaces, traditional vernacular buildings, and urban form. Form-based codes emphasize on the importance of physical form, ensuring the maintenance of the character of the built environment and predictable outcome of the new development. An application of Form-based codes in Mysuru is given in Box 2.

Public participation is a crucial element in developing form-based codes, especially for preserving the character of historic districts and resources and developing design standards. It is suggested that various public hearings and charrettes be conducted at various stages of the development of form-based codes to ensure large and very diverse representation of residents from the involved neighbourhoods. Targeted placemaking activities may help in both defining areas of specific urban morphology as well as in developing and validating design recommendations.

"Access to adequate housing can be a precondition for the

enjoyment of several human rights, including the rights to work, health, social security, vote, privacy or education." Therefore, an impact focus on the housing sector has the potential for a comprehensive improvement to the "standard of living" and "well-being" of communities by addressing poverty reduction, inclusion, safety, economic growth and prosperity, sustainability, climate mitigation and adaptation⁸.

The most prominent and visible housing challenge in most cities in India is that of slums and informal settlements. While there are multiple strategic interventions to respond to multiple deprivations experienced by residents in slums, urban retrofitting⁹ is considered most practical. Urban retrofitting encourages in-situ upgrading of housing, infrastructure, or both, over relocation and resettlement of informal settlements, where possible. In-situ urban retrofitting enables city governments to improve the standard of living and quality of life of its citizens through adequate housing for all, including for informal settlement dwellers living in deteriorating or vulnerable habitats. This strategic response allows informal settlement dwellers, who are often part of the informal economy, the opportunity to

8 Urban Sustainability Assessment Framework, 2022, UN-Habitat, <https://www.unhabitat.org.in/sciap-publications/draft-urban-sustainability-assessment-framework-usaf>

9 Sustainable City Strategy Bhopal, 2022, https://www.unhabitat.org.in/_files/ugd/cf3437_9c2b0d5a371147f3853cfbe5b9d8_230d.pdf

stay close to their workplaces, while also preserving their social and personal support networks.

The mixed-use, mixed income housing envisioned as part of the urban retrofitting strategy provides an opportunity for equitable amenities for all. In-situ infrastructure improvements can address the deprivation faced by vulnerable communities. This intervention could significantly benefit the time poverty faced by women and children. Accessible amenities could reduce additional time spent on travel for safe access to basic services, water supply, sanitation, while improving the leisure activity rate of women.

TRANSPORTATION

Public transportation is an essential component for building sustainable cities. Like many intermediate cities, Guntur, for example, does not have a formal public transport system and the city bus services are operated by both private and state government agencies with limited-service areas and supporting infrastructure, such as bus stops and public information system. Only 42 per cent of the city's population has access to public transport (bus stop)

within 500 m. of their homes, while peripheral areas and neighbourhoods away from major roads have limited or no access to it. In the absence of organized public transport, the city is dependent on personal motor vehicles and shared auto-rickshaws. During 2015-16, emissions from the city's transportation sector stood at 2,78,489 Mt CO₂-eq, which constituted 24.8 per cent of the city's total emissions.

The last comprehensive mobility plan for the city was prepared in 2004. Over the last one and half decades, the city has experienced significant population growth, area expansion and heightened economic activity. In the next four to five years, the city is estimated to become a million-plus city. There is an immediate need, therefore, for planning its urban transport system. The master plan for Guntur is also currently under revision, wherein various transportation studies are to be conducted. It is necessary that these recommendations are integrated under the umbrella of reduced carbon emissions and green mobility. This intervention recommends the preparation of a Low Carbon Comprehensive Mobility Plan (LCCMP), detailing

the required low carbon and green technologies needed for implementing the proposed projects/developments¹⁰. LCCMP will facilitate affordable, efficient, and accessible mobility systems which could support more women to travel. The involvement of more women and gender minorities in the transportation sector could create safer mobility systems. This would improve the WPR of women in Guntur.

WATER SUPPLY

Urban areas have recently been able to get Government attention and have recently focused on prioritizing urban infrastructures like water supply and sanitation. Understanding the need for piped water supply for a better urban future, the Ministry of Water Resources launched the Jal Jeevan Mission (JJM), which aims to provide 55 litres of piped water per capita per day in urban and rural areas. Since the Mission's launch in 2019, more than 6.90 crore rural households have been connected with tap water, taking the overall coverage to 52.95 per cent.

Another major challenge in planning for water security in urban areas is to augment water sources and ensure water replenishment. An assessment of water systems in Jaipur revealed that, the city relied on the Bisalpur dam

10 Sustainable City Strategy Guntur, 2022 https://www.unhabitat.org/in/_files/ugd/cf3437_3ddb5d6f9d84181a7fdac4217121e51.pdf

located 120 Km away to meet the water demand¹¹. Summer months pose a major challenge with increased water demand for cooling and scarce water availability, impacting the city residents mainly in informal settlements. Increased water theft using boosters forces the administration to cut off piped water supply and supply water through tankers.

During the assessment of available water resources in the urban area, it has been estimated that the city needs to harness the potential of rainwater. With the average annual rainfall of 540mm concentrated in the monsoon months, the rainwater can be harvested to meet the annual demand of about 2 million city residents. Which can further be enhanced by bringing down the water demand by using ISI rated water-efficient fixtures and using treated grey water for flushing and landscape.

SOLID WASTE MANAGEMENT

Solid waste management is one of India's biggest challenges. With growing cities, the quantity of solid waste generated has increased manifold with most cities

relying on a disposal-based system of incineration or landfill to handle the waste stream it results in higher economic costs and environmental consequences. Hence, there is a need to plan a comprehensive waste management approach that focuses on waste prevention that encourages the redesign of resource life cycles so that all products are reused, with the main aim of reducing waste volume reaching the disposal system.

Cities need to inculcate efficient solid waste management practices at the neighbourhood and city level, as in the case of Vijayawada Municipal Corporation¹². UN-Habitat assisted the city authorities to formulate draft Solid Waste Management and Sanitation Byelaws, 2021 and conducted workshops for the city residents to understand the trends of solid waste generated and propose strategies for better waste management. The residents were distributed waste collection bags to measure the average segregate dry and wet waste generated from the household. Workshop for the rag pickers was conducted to train them in segregating

dry waste for upcycling and re-cycling. With the support of city residents and local administration, there has been a significant reduction in waste volume reaching landfills.

GOVERNANCE AND DATA MANAGEMENT

The difficulty of informed and responsive urban planning is exacerbated by unavailability of data, which even if available, are often out-dated, unverified/ not validated. Data are often not available/ collected at a granular level (ward/neighbourhood) or are inadequate to provide analytical insights, which are crucial for planning and decision making. To facilitate spatial planning, access to timely, reliable, and relevant spatial data is a prerequisite.

In case of Mysuru, without key data sets, planning decisions are limited and lack fundamental and integrated information. Also, the rapid expansion of the city beyond the city corporation boundary, has also necessitated the requirement of centralized data management systems¹³. So, a centralized data management system that is shared between various administrative boundaries, and relevant departments to streamline decision making between government agencies was formulated as a part of strategic response. Incorporating an open-

11 City Profile and Diagnostics Report Jaipur, 2021, <https://www.unhabitat.org/in/sciap-publications/city-profile-and-diagnostic-report---jaipur>

12 City Profile and Diagnostics Report Vijayawada, 2021, <https://www.unhabitat.org/in/sciap-publications/city-profile-and-diagnostic-report---vijayawada>

13 City Profile and Diagnostics Report Mysuru, 2021, https://www.unhabitat.org.in/_files/ugd/cf3437_5b7c1e7fef449e78160ed5cc71cbcb7.pdf

source information and transparency increases citizen trust in government planning decisions, increases community engagement in urban environment as well as private investment.

This strategic response to improve the city's use of digital infrastructure provides great scope for gender mainstreaming in the city. Evidence-based planning decisions could be taken to identify gender gaps in mobility, infrastructure, employment opportunities, etc. The intervention contributes towards addressing the needs of marginalized groups, specifically women. It is recommended that key data sets for spatial planning be collected and assessed, disaggregated by gender, age, income (and religion, where relevant).

WAY FORWARD

Some key factors for our cities to consider for attaining inclusive and sustainable growth include:

- **Cleaner and greener cities:** 75 per cent of the infrastructure that will exist in 2050 does not exist today. This provides a unique opportunity to ensure that the infrastructure we build today for tomorrow is low-emission, resource-efficient, and resilient.

“Future-proofing” our infrastructure has many benefits:

- Creating incentives for investment in public transport and non-motorized transport infrastructure will improve air quality in cities and help to mitigate climate change.
- Creating frameworks towards zero emission, efficient, and climate-resilient buildings and construction sector will help to reduce energy demand.
- Investing in parks and green spaces in urban areas will help to ameliorate the urban heat island effect and improve air quality in urban spaces.
- Investing in natural or efficient water and waste treatment and management systems to improve water quality and sanitation in cities will reduce water-borne diseases and improve sanitation for poorer populations.
- **Resilience:** By strategically densifying, investing in renewable energy and sustainable building techniques,

valuing existing ecosystem services, and increasing usage of sustainable transportation, cities can both significantly contribute to the mitigation of harmful climate impacts and improve their own resilience to the inevitable resource shortages to come.

- **Inclusive urban spaces:** Economic and social inequality has been increasing in recent decades. Nowhere is this more evident than in cities, where resource shortages and access to services disproportionately impact the most marginalized groups and communities, often also exposing them to greater environmental risks. Policies and programmes that better support underserved and vulnerable populations, improve systems for participatory and democratic planning and decision-making, and provide affordable access to resources and urban services for all will be critical. By investing in equity and universal accessibility now, countries and cities can begin to close the inequality gap.

- **Mainstream gender, youth, persons with disability and culture in SDG 11 monitoring.** SDG 11 indicators must be disaggregated based on these parameters, making mainstreaming of this data and information a monitoring requirement for policy purposes as opposed to an inclusion-at-will or optional undertaking.
- **Governance structures and normative frameworks for disaster risk reduction in urban areas need to be strengthened,** including improving and enforcing land use plans and building codes. Disaster risk assessments should be a prerequisite for infrastructure and housing investments, including urban development, water and sanitation, energy and education infrastructure.
- **Promote a comprehensive and integrated approach to city development and management.** This is essential to ensure competing demands are properly considered, and that trade-offs and co-benefits are properly harnessed throughout the decision-making process and budget allocations, including

those between urban and peri-urban areas.

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INCLUDING THE URBAN POOR IN INDIA THROUGH SUPPLY-SIDE INTERVENTIONS FOR SELF-BUILT HOUSING

MS. BANASHREE BANERJEE

“Self-built housing is tailor made to household requirements and is responsive to the affordability of even the poorest households and fulfils the need for the supply of low income housing.”

Key Words: Self-built housing, land tenure security, informal sector, Micro finance, PMAY-BLC.

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Self-built housing is tailor made to household requirements and is responsive to the affordability of even the poorest households. It's scale far surpasses supply-driven public and private affordable housing solutions, and its popularity and feasibility have been amply demonstrated through the implementation of the Pradhan Mantri Awas Yojana (PMAY). There is a strong case for continuing government support to incremental housing to realise its full potential. Based on experience from India and elsewhere, this paper discusses how the remit of government interventions can be expanded in diverse ways towards achieving greater scale, equity, quality and sustainability of self-built housing, thereby moving towards the goal of 'leaving no one behind'.

CASE FOR SUPPORTING SELF-BUILT HOUSING

The Beneficiary Led Construction (BLC) component of Pradhan Mantri Awas Yojana-Urban (PMAY-U) scheme of the Government of India makes subsidy available to poor households to construct or improve houses on plots

owned by them. Thus, it supports a process, which is by far the most prevalent form of building among the poor and even middle income households. Self-built housing, also known variously as incremental housing, self-construction and home improvement, has made available a large stock of affordable housing in all class size of urban areas in India and across the world.

Millions of low-income people build their homes and neighbourhoods, often to surprisingly high standards, with assistance from building workers at a scale which has not been matched by the efforts of government or organised private sector. Such housing is invariably built incrementally as and when the need arises, or funds become available. Low-income families are spending hard-earned money, adding rooms and toilets or a second floor to their single-story dwellings, retrofitting their homes and changing temporary roofs to permanent ones. Not only is this way of building a method of achieving affordability and social equity, but it also

promotes local economic development when dwellings are used for income generating activities, including creating a stock of rental housing for low and middle income families and migrants.

Self-building and home improvement support the local construction industry that provides a significant source of employment to informal sector workforce such as masons, carpenters, plumbers, casual labour and material suppliers. It's employment potential is well-recognised and was the basis for the inclusion of the Scheme for Housing and Shelter Upgradation (SHASU) in slum areas as a component of Nehru Rojgar Yojana (NRY), a scheme of the Government of India implemented between 1989 and 1997 to support income generation of the urban poor (Government of India, 1998).

On an average more than sixty-two percent of the urban housing stock of 110.14 million in India is self-built (Government of India, 2013; Das, 2018), with higher rates in small and medium towns. Incremental housing takes place in urban slums, sites and services projects, relocation areas, unauthorised colonies, peri-urban areas and urban villages. Recent studies of

sites and services schemes have shown that incremental housing can reach densities comparable to medium-rise housing over a period of time (Owens et al, 2018).

Self-built housing is tailor made to household requirements and is responsive to the affordability of even the poorest households and fulfils the need for the supply of low-income housing. However, there are downsides to this building process: Very often incremental self-building results in very poor-quality housing stock that ignores critical aspects of health and safety; and the building process, even though low in cost, is not always good value for money. This is especially a matter of concern in cities where rising land values have prompted low-income dwellers to build vertically. On the other hand, a key facilitating factor for investment is security of land tenure, which is not available to a vast number of the urban poor. And many poor families are unable to build beyond a rudimentary shelter because they do not have access to affordable finance. Finally, much of the stock of self-built housing is in informal settlements, which lack basic services and social infrastructure.

The 7.36 million housing units sanctioned with a committed subsidy of Rs.150 thousand per unit between 2015 and 2022 under BLC, though numerically impressive, forms only a small proportion of the efforts of people in building for themselves. But what is significant here is that it is for the first time that such numbers have been reached by a public housing programme. It is even more significant that BLC amounts to more than 60% of all units sanctioned under PMAY-U¹. It has shown greater traction over mass housing supply by public and private institutions in the other verticals offered by the scheme (in-situ slum redevelopment, affordable housing in partnership, credit-linked subsidy scheme and affordable rental housing complexes). Its comparative popularity stems from the flexibility it offers to beneficiaries and indicates the huge demand for financial assistance in the self-build sector. It has emerged as a preferred option for public institutions because it creates the least responsibility and liability for them to achieve numerical targets (Roychoudhury et al, 2020). It is free from complexities of supply-side projects such as land assembly, negotiations with private builders, building and quality control of medium and high-rise structures.

1 (https://pmay-urban.gov.in/uploads/progress-pdfs/630c79cb23ad0-PMAY-U_Achievement_for-WEB-29082022.pdf)

It is, of course, not for the first time that a government programme in India has assisted self-build. The history of government support began with SHASU and was consolidated into the Valmiki Ambekar Awas Yojana (VAMBAY), under which 4,42,369 houses were constructed or improved in notified slum areas between 2001 and 2006 (Government of India, 2008). Economically weaker section households with secure tenure, either legal or with “no objection certificates” from land-owning organisations were eligible. In several cities, Pune, Chennai and Jabalpur to name a few, self-built housing in slums was included as part of the Basic Services for the Urban Poor (BSUP) component of Jawahar Nehru National Urban Renewal Mission (JNNURM). Legal land tenure was one of the criteria for inclusion.

While legal land tenure and income level remain the key eligibility criteria, the scale of assistance to self-constructed housing has vastly expanded under the BLC vertical in comparison with previous schemes. This, along with the prognosis that self-constructed housing will continue to dominate the affordable housing sector in the foreseeable future until other supply-side options become more viable,

leads to the conclusion that incremental housing provides an opportunity to address the housing shortages faced by millions in rapidly growing towns and cities.

LOOKING BACK TO GO FORWARD

There is a strong case for continuing government support to incremental housing to realise its full potential. While lessons from the management and implementation of BLC will be valuable for expanding the remit in diverse ways towards greater scale, equity and sustainability, a review of experience from India and elsewhere at this juncture may provide useful insights to go forward.

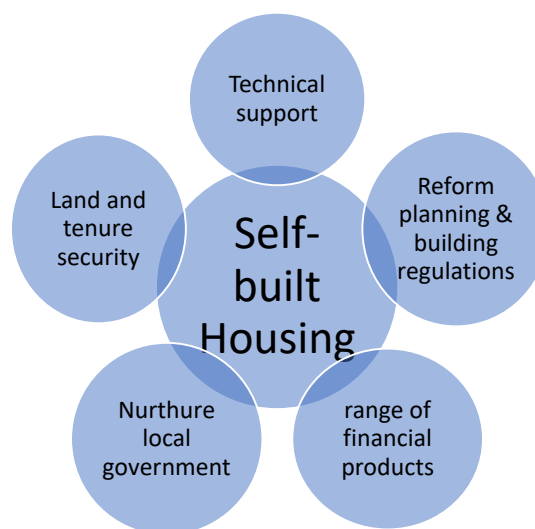
Literature and experience from across the world show that there are five critical

and inter-connected supply-side interventions that can catalyse improved housing quality, cost effectiveness and inclusion of self-built housing. These can broadly be categorised as: technical support for households and building workers; making available land and tenure security; offering a range of financial products; reforming planning and building regulations; and nurturing local government as a support institution (Figure 1). Experience shows that approaches that integrate these interventions have greater impact, although they are not easy to orchestrate.

Technical support to households and building workers

The Technology Sub-Mission of PMAY has been promoting

Figure 1: Critical Supply-side Interventions for Self-built Housing



innovative technologies and adaptation to local conditions of cost-effective technologies from across the globe. However, the focus has been on technologies that are pertinent to mass housing projects rather than to self-built housing. Consequently, there has been little effort to address the limitations of poor quality and unsafe construction, inherent in self-built housing or to validate local materials and technologies, which are commonly used for house-building in smaller towns and peri-urban areas, where most of the BLC assistance has gone (Mitra, 2021). Simply providing funding support to communities engaged in self-construction could lead to faster development of unsafe structures and underserved neighbourhoods in the near future.

The large-scale need for housing construction and improvement and regional diversities justify complimenting the present centralised approach of disseminating material and technology-based solutions of the present Technology Sub-Mission of PMAY with regionalised approaches (Mitra, 2021). The purpose would be to make available appropriate geo-climatic and socially adaptive local indigenous solutions, enhance local construction capacity,

provide access to appropriate building materials and technologies and provide information and offer advisory services to building workers and homeowners. Home builders require awareness, hand-holding and upgrading of building skills, which is a task that can be taken up by local institutions, run as entrepreneurial centres with a social objective. An effective strategy would be to use the network of Building Centres in the country to give technical support to incremental housing.

The Government of India had launched a National Network of Building Centers (Nirmithi Kendras or Nirman Kendras) in the 1980's with the aim to enable and empower people to build better by evolving appropriate housing delivery system with people's participation, by applying environment-friendly, ecologically appropriate, energy saving, disaster resistant and affordable housing solutions and by developing the right level of skills among the local artisans (Government of India, 2000). 385 building centres were set up with initial seed capital from HUDCO and technical support from BMTPC during the 1980's and 90's, some of which have sustained themselves and are still functioning well. For examples, Kerala

and Karnataka have district level centres, as part of state-wide networks. While most Building Centres in the country are government-sponsored, there are others that are managed by NGOs such as Development Alternatives in Delhi and Hunnershala in Bhuj, others have been set up by well-known professionals. Some are operated by local entrepreneurs such as MBS & Co in Imphal and Micro Home Solutions in Delhi. The experience from these building centres shows that knowledge building and transfer requires not only understanding of technology but also of people and places. There is a strong case for supporting the Building Centre model as a strategy for grass-roots entrepreneurship development and job creation in the building sector and linking it with people-driven home building efforts.

Other countries have adopted different approaches. For example, the Community Organization Development Institute (CODI), a unit of the National Housing Authority of Thailand, which gives techno-financial assistance to communities for land purchase and housing development has a team of young architects and engineers to work with community groups. Local universities also provide hand-holding support. This

model was introduced in several South-East Asian countries by the Asian Coalition of Housing Rights (ACHR) network of NGOs. Peruvian municipalities are assisted by universities and NGOs for technical assistance to self-build. In the case of cities like Medellin and Bogota in Colombia and Sao Paulo and Rio de Janeiro in Brazil, municipalities have their own technical support units and also involve professionals and NGOs.

A point to be noted is that unlike mass-housing, incremental housing is always work under progress and requires hand-holding support for an extended period of time for variable needs of specific building and retrofitting projects of households. This can only be provided by local institutions.

Nurturing local government as a support institution

By the principle of subsidiarity, self-built housing would best be managed and supported through local institutions. Local government institutions can play a major role in several ways in providing services, supporting households to build better and ensuring good quality supply of plots by the private sector. The evidence from various towns and cities of Madhya Pradesh points to the need for more

autonomy at the local levels in order to respond to local contexts more appropriately (Mitra, 2021).

The success of incremental housing initiatives in large part depends on the timing, standard, and level of infrastructure and services provision (Wakely and Riley, 2011), which is the responsibility of urban local bodies (ULBs). The large numbers of houses assisted with BLC funding have created the requirement for water, sanitation and other municipal services in existing informal settlements and in layouts and land distribution schemes of some state governments in peri-urban areas. The PMAY-U Guidelines (Government of India, 2015) do mention that there is a need for ULBs to ensure that all dwelling units constructed under the BLC vertical are serviced with required infrastructure. This responsibility requires funding support, especially in tier two and tier three towns, where most of the BLC units are located and where ULBs are under-resourced. The increased allocation and emphasis of the 15th Finance Commission on development of water supply, sanitation and health-care facilities in all urban settlements is a step which can greatly enhance the quality of BLC supported housing (Mitra, 2021).

ULBs can play a major part in ensuring quality housing by using regulations to ensure that private landowners and developers make provision for health and safety; land subdivisions with streets of appropriate widths; and community open spaces while bringing affordable plots into the market. Services can be provided incrementally but it is important to ensure land reservation for public services. ULBs can also undertake risk mitigation measures in areas prone to flooding, erosion or landslides and prevent new self-built housing from developing in such areas.

ULBs are in a good position to co-ordinate between different stakeholders in incremental housing – households, community based organisations, private sector service providers, and land owners, financing institutions, government departments, NGOs and building workers, thus enhancing local organisational capacity for incremental development and community asset management and maintenance.

An interesting example of support to incremental housing is the programme of the municipality of Mexico City, in which about 100,000 loans for house improvement or construction were given in 5 years mostly to households living in marginal areas. The

success of the programme was attributed to substantial resources invested by the municipality; terms of lending favourable to the poor (short term, demand based loans); large demand for low cost financing; technical assistance through a network of professionals managed by the municipality, whose costs were included in the loans; and the role of the coalition of housing NGOs in putting housing improvements for low-income households on the agenda of the municipal government and nurturing the program through its initial growth phase (Ortiz and Zarate, 2006).

Reforming the regulatory framework

Examples world-wide show that institutional finance for incremental housing is more effective when accompanied by measures that ensure minimum norms of health and safety, while at the same time keeping costs low. The requirement of a sanctioned building plan from local government as a condition for loan sanction is expected to ensure structural soundness and legality. However, most settlements of the poor, including regularized slums, unauthorized colonies and relocation areas do not conform with development control regulations, making it impossible for building plans to be sanctioned. They

can, at best, avail grants from government programmes or small loans from other sources. The contention is that unless there are measures to change the regulatory framework, poor people will not be able to graduate from the grey housing market.

Attempts in this direction are being made in different countries and cities, which provide a basis for learning and wider replication and regulatory reform. For example, 'The City Statute' of Brazil has a provision for demarcating areas as Special Social Interest Zones (ZIES) in Brazilian cities. Declaration of an area as ZEIS regularizes areas where the process of occupation has occurred regardless of urban planning norms and allows the development of urban regulations keeping in view the existing development, such as narrow streets and small plots. ZEIS is also used for vacant land earmarked for social housing, where it has proved to be an effective instrument for making land available for the poor in advantageous locations and developing it with appropriate affordable standards (Cities Alliance, 2010).

The Development Plan for Nagpur (1986-2011) included a specific zone, 'R-EWS Zone' for the Economically Weaker Section population. The area in this zone was proposed

for public housing or site and service schemes for the economically weaker section population or reserved for the already existing squatter settlements. All slums eligible for tenure regularization and rehabilitation were classified as R-EWS (Nagpur Improvement Trust, 1987). Such initiatives have been strengthened in Maharashtra urban areas by the Unified Development Control and Promotion Regulations for Maharashtra State - 2020, in which regulations specific to the nature of existing settlements apply in "Slum Improvement Zone". Reservations for small dwelling units/ plots have been classified as "Inclusive Housing" in the Development Control Rules (Government of Maharashtra, 2020).

Enabling access to land and enhancing land tenure security

BLC has made significant progress because public institutions have found it easier to deal with households with access to land for providing housing assistance (Kundu and Kumar, 2020). A point of concern is that the BLC component requires the possession of tenured land as a pre-requisite to availing funding assistance, this in effect excludes the poorest in towns and cities as they seldom have access to tenured land (Mitra, 2021). On the

other hand, a significant volume of self- construction takes place in urban settings on plots with some sort of tenure papers. The typical examples are:

- Sites and services schemes of public institutions;
- Slum/squatter relocation areas;
- Plots owned by poor households in urban villages;
- Ownership plots in peri-urban land subdivisions and sites without services in small and medium towns; and
- Plots in informal settlements which are part of tenure regularisation programmes.

Such situations have contributed to the success of BLC. In this regard, the most favourable conditions have been found in states which have legislation and mechanisms for land tenure regularisation. Madhya Pradesh and Chattisgarh have been granting tenure rights or “patta” to slum dwellers on government land through the Patta Act of 1984. Madhya Pradesh proactively used the Patta Act as a major enabling tool for making households in smaller urban centres eligible for the BLC component by granting 2.8

lakh pattas (Banerjee, 2022). The BLC component in Odisha is closely aligned with the ‘Jaga Mission’, a holistic approach to development of slum communities through granting land rights, improving basic services and housing. Andhra Pradesh and Telangana have been using their land revenue code to grant tenure to urban settlers on government land for government housing programmes. Towns in other states like Gujarat have allocated plots to the poor for BLC. Land being a state subject under the Indian Constitution, housing assistance can be substantially scaled up with complementary programmes of states to regularise tenure in informal settlements and allocate land for the poor.

While there is much to be said in favour of land tenure regularisation, it is a poor substitute for enhancing access to land for the poor to build on incrementally, especially in smaller urban centres, where land prices are still affordable. Encouraging private land subdivisions with small plots and undertaking sites and services projects with adequate space for facilities are options that can add value to assisted self-built housing. Countries like Tanzania, El Salvador and Pakistan, where governments have recognized the merit of the incremental development

approach, have sought to improve on it by enforcing minimum reservations for street widths, open space and space for education and health facilities, so as the area develops incrementally, it can over a period of time, become a complete housing environment.

Housing loans based on collective land tenure are an accepted strategy in Thailand as part of CODI’s work with poor communities to upgrade/ build their housing and purchase the land on which they live or another plot of land. The Community Mortgage Programme of the Philippines is also based on collective land ownership. Although such methods have not been used in India, there is a potential to take advantage of collective land ownership in housing co-operatives for incremental housing in secondary cities.

Diversifying the range of financial products

Secure land titles should provide a huge business opportunity for financing institutions to lend to low-income households to build or improve their homes. However, in practice there has been very limited penetration of conventional institutional finance for poor households, using property as collateral. This is despite specific clauses in state-level tenure

regularisation legislation allowing mortgage finance. These include the MP Patta Act 1984 (also applicable to CG), the Odisha Land Rights to Slum Dwellers Act, 2017 and the Punjab Slum Dwellers (Proprietary Rights) Act, 2020.

While the subsidy is significant (e.g., in Odisha, Rs. 1.5 lakh from the central government and Rs.0.5 lakh from the state government), most households still require a loan to construct a house. Public sector banks and housing finance institutions (HFIs) shortlisted for the purpose by PMAY-U are usually not interested in lending to EWS households for whom they cannot readily assess repayment capacity. Also, it may not be easy to repossess and sell these houses in case of default, so the loan may not be a typical secured housing loan (Das, 2018). This calls for development of financial products specifically for incremental housing and harnessing of existing non-conventional funding avenues to complement government assistance, or even as a substitute for it.

Studies show that there is a huge demand for loans of varying sizes and durations for incremental improvement of housing. In recent years a number of affordable housing finance companies (AHFC) have increased their activity in this segment

(Das, 2018). The Low Income Housing Finance project of the National Housing Bank (NHB) supported by the World Bank was highly targeted towards informal and low-income households and was delivered using a market-based mechanism through primary lending institutions (PLIs). Leveraging the NHB's apex role in the housing finance market, the project also supported the development of necessary market infrastructure to enable private sector financial institutions to expand lending to low-income households against informal incomes and informal property titles (World bank, 2019).

Micro-finance institutions (MFIs) and NGOs provide small loans for house construction or improvement. Apart from community involvement, such loans also build in financial inclusion of women, who are the main borrowers. For example, SEWA provides small loans to women for incremental housing, differentiating between secured and unsecured loans. Secured loans are backed by assets, such as jewellery or a lien on the client's fixed deposits held at SEWA Bank. Unsecured loans are backed by a lien on the client's demand deposits with the bank and guarantors. This makes it possible for them to provide funding for

incremental building even without formal tenure. DHAN Foundation, which works in 31 urban areas across 6 states makes micro-finance and technical assistance available to members of women self help groups (SHGs) for house improvement and construction on the strength of "entitlements, not titles". In Bangladesh, the Grameen Bank's housing loans are very popular and structured to suit the requirements of the poor with low-interest small loans with weekly repayments.

CONCLUSION

The role of self-built, incrementally developed housing cannot be underestimated in making available affordable housing and relieving housing congestion in a country like India, with its huge housing supply gap. It will continue to dominate the housing market until other scalable affordable housing supply options are made available, and complexities in housing delivery by the public sector and formal private developers are ironed out. The demand for the BLC component of PMAY-U has brought home this point and its implementation has flagged up issues which need attention going forward. Inclusion is not only about numbers but also quality, for which key supply-side interventions are needed

along with a catalytic role of public institutions to bring together stakeholders that can participate effectively at different levels of the process.

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LiFE- A NEW STRATEGY FOR INCLUSIVE URBANISM

MR. A.K. JAIN

“The paradigm of inclusive urbanism is closely intertwined with the lifestyle for environment. This requires working out new partnerships, financing and resource optimisation.”

Urban India is passing through rapid physical, socio-economic and environmental transformation besides increasing carbon footprints, climate change and disasters. The conflicts among spatial planning and sustainability are leading towards inequities, gender gap and urban dilapidation and degradation. There is a need to relook at the repertoire and processes of urban development which should bridge the gap between those in frontline and the have nots, and showpieces and the backyard slums. There is a need to shift from fossil fuel era to the circular concepts of inclusive planning, renewal, recycling and conservation. The recently launched ‘Lifestyle for the Environment (LiFE) Movement’ can be a game changer in this pursuit.

INTRODUCTION

On World Environment Day (5th June 2022), the Hon’ble Prime Minister Shri Narendra Modi launched the ‘Lifestyle for the Environment (LiFE) Movement’. This initiative recognises the threats of climate change, rise in global temperatures, changes in rainfall, floods, droughts, air pollution and water shortages. Increasing traffic, wastes and

stubble incineration, fossil fuel usage, carbon footprints and growing air conditioning are adversely affecting population’s health and productivity and agriculture yield. This may cause an increase in incidences of droughts, floods, cyclones, earthquakes, pandemics, urban heat islands and changes in microclimate due to radiant energy in the earth’s atmosphere. It stresses upon human-centric, collective efforts for sustainable development. The vision of LiFE is to live a lifestyle that focuses on the concepts of Reduce, Reuse and Recycle towards a simple and sustainable lifestyle by collective and individuals’ behaviour and actions. The experience of Swachh Bharat Mission (SBM) indicates that besides a robust plan, legal framework and financial allocations, the success of a mission hinges upon changing the behaviour of the people. Campaigns, such as clean and green city, wastewater recycling, saving water and energy, planting greenery, etc. can help the citizen to come together for Lifestyle

Key Words: LiFE, Inclusive Urbanism, Slums, Shelter, Local Economic Promotion, Waste Management, Green Energy,

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for the Environment Mission. Intelligent, smart, mobile based digital platforms can significantly enhance the citizen participation in the LiFE Mission on a sustainable basis.

INDIA'S URBAN MISSIONS

In India, its 8000 cities are the engines of growth, as well as manifest stark inequities and environmental degradation. They house largely marginalised communities, which include those below poverty line (about 1/6th), slum dwellers (about 1/6th), street children (about 1 %), unemployed (about 1/10th), homeless (1 to 2%), street vendors (about 2%), elderly (7.5%), disabled (2%), etc. About 100 million working women and about 56 million widows in India face the chronic shortage of safe and affordable housing. In this context during 2014-2022, the Government of India launched several urban missions, viz. Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Pradhan Mantri Awas Yojana, Heritage City Development and Augmentation Yojana (HRIDAY) and Swachh Bharat Mission (SBM). The plans for these missions including 500 cities under AMRUT have adopted the technique of Geo-database Creation, GIS based Master Plan Formulation and

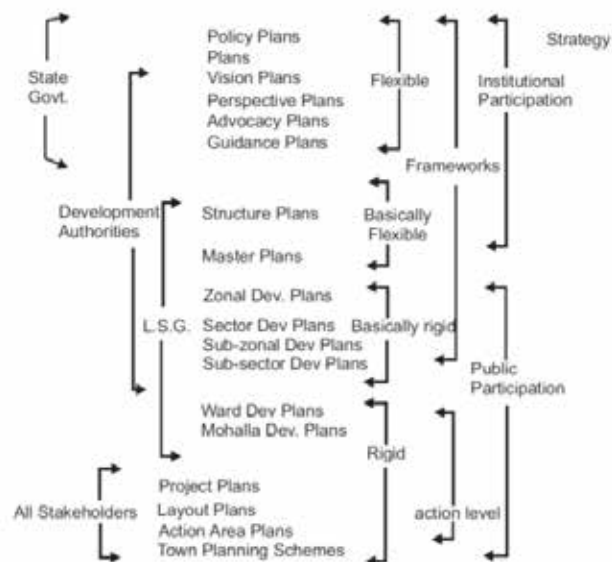
Capacity Building. An MoU has been signed between National Remote Sensing Centre (NRSC), Department of Space and Ministry of Housing and Urban Affairs for Geo-database Creation.

These Missions aim at low carbon urbanisation and the provision of housing and infrastructure services like water supply, sanitation and solid waste management, efficient urban transport, affordable housing for the poor, 24x7 power supply, IT connectivity and e-governance. These missions emphasize upon participatory planning and governance, livelihoods, connectivity and providing better education, healthcare, urban safety and smart services, which are intelligent, interconnected and instrumented.

INTEGRATED APPROACH FOR INCLUSIVE AND LOW CARBON CITY

The cornerstone of making a city inclusive and low carbon is to adopt an integrated approach towards the vulnerable (street children, women, elderly and disabled), the conservation of the natural resources and sustainable, low carbon services like drainage, water supply, air, sewerage, solid waste management, transportation and energy. The planning typology (Figure 1) can be segregated as per the domain (Governments at National, State & Municipal level, Development Authorities, PPP, etc.), levels (Local, Zonal, Master Plan, Policy Plan/Regional Plan) and time frame (short, medium and

Figure 1: Typologies of Plans for Integrated Development



Source: E.F.N. Ribeiro (2003)

long term).

At every stage public and institutional participation and lifestyle changes for environmental Protection are necessary. The critical areas of urban planning and development are:

- Local Economic Promotion and Jobs
- Slums, Street Children and Shelter
- Reducing Urban Footprint and Wastes
- Biodiversity, Greenery and Amenity Spaces
- Urban Heat Mitigation and climate resilience
- Water Conservation
- Decentralised and Intelligent Services
- Air Quality Management
- Clean Transport and Transit- Oriented Development
- Green Energy
- Green and Resilient Buildings

The paradigm of inclusive urbanism is closely intertwined with the lifestyle for environment. This requires working out new partnerships, financing and resource optimisation. In this digital age, all round disruptions are happening. The 20 year model of Master

Planning which was adopted during the 1950s does not address the changing patterns of economy, poverty, climate change, air and water pollution, public health, energy and sustainability. It is necessary that urban and regional plans are prepared for a five-year horizon, while their vision may extend to 20 years.

Local Economic Promotion and Jobs

In India, cities generate the country's 60% of GDP and 70% of the jobs. With Covid 19 pandemic, climate change and diminishing jobs, the factors of public health, creation of jobs, environmental sustainability and climate resilience have emerged as the key issues. Millions of jobs can be created by development of janta markets, workshops/ sheds, kiosks, shops, small offices, etc. For this at least 10 per cent area of shopping/commercial centres may be reserved for the informal sector (street vendors, kiosks, fruit and vegetable stalls, etc.). The residential areas also need a higher level of mixed use. Street vendors as per the National Policy for Urban Street Vendors, constitute about 2 per cent, or 8 million of India's urban population. They support a rising number of the urban poor with their cheap meals and wares. The study by National Alliance of Street Vendors of India

(NASVI 2000) estimates that 30 per cent of Mumbai's workforce has at least one meal a day from hawkers. More than 82 per cent people buy vegetables from vendors. According to the estimates, Mumbai has about 400,000 hawkers at the turn of the decade, and Delhi has about 3,00,000.

Writing about home-based enterprises and hawkers, Graham Tipple of the University of Newcastle upon Tyne concludes that "they should be accorded more attention by policy makers – not to control them, but to find ways of cooperating with entrepreneurs to assist them to be effective and efficient". Other reasons why cities need vendors on streets is because hawkers are the eyes of the street and prevent crime. Our city roads are safer because of them. However, they are often under the threat of eviction and have to pay bribes to work. The communities, CBOs and NGOs can assist the street vendors in the provision of basic civic facilities in Vending Zones, such as solid waste disposal, public toilets, design of mobile stalls/ push carts, electricity, drinking water, storage facilities and parking.

Street Children: Turning Beggars and Unemployed to Business

According to the UNICEF,

street children account for more than 11 million who are living on and off the streets. High density of street children can be observed near the railway stations, under flyovers, and in the slums, living in adverse and vulnerable conditions. The city is for everyone to live, learn and play. It has to be a catalyst in enhancing the relationship between city and street children and change their circumstances. In Bangladesh, almost 80 per cent of the poor families have been reached with micro-credit. An exclusive programme focusing on the beggars was also initiated where Grameen Bank gave micro-loans without interest with payment flexibility. They carry small merchandise such as toys or household items, while they go. The idea worked and many of them stopped begging completely and shifted to micro-businesses. Under the LiFE mission such programmes can be initiated by the local communities in association with the bankers and the municipal bodies.

Slums and Shelter

According to the Oxfam Report (2015), India has 172 million people below the poverty line. Many of the urban poor are slum dwellers and comprise of women, children, aged and disabled. They are malnourished, lack

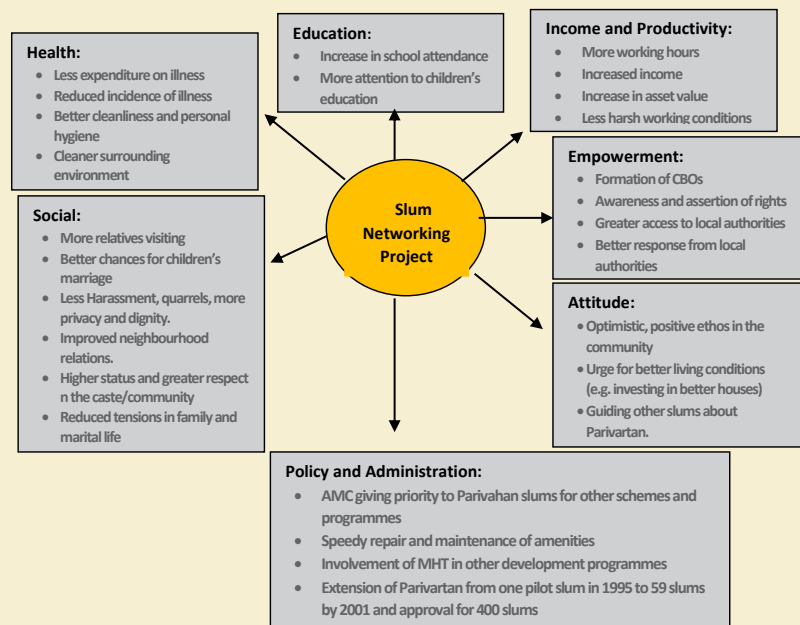
minimum shelter, sanitation and drinking water; they are illiterate; and cannot afford to send their children to the school. They are also at various risks, like the problems of unemployment, child labour, insecurity in old age, limited access to healthcare and unhygienic living conditions. They are caught in a cycle of perpetual poverty due to non-access to shelter, land, finance, employment and services. Participatory learning with the target groups provides useful clues towards adopting a 'needs based approach'.

In order to establish links between housing and poverty reduction, it is necessary to start with the following initiatives:

- In-situ slum rehabilitation, low-cost rental housing, night shelters, dormitories, hostels, orphanages, etc.
- Provision of basic services like sanitation, toilets, drinking water, electricity, drainage, dustbins, streetlights, etc.
- Skill development, education, literacy, healthcare and other community facilities.

A cooperative model and the slum networking can safeguard their tenure rights and resettlement. One example is the Slum Networking Project (SNP) in Ahmedabad (Figure 2) which was implemented by the

Figure 2: Slum Networking Project, Ahmedabad



Source: Ahmedabad Municipal Corporation

local communities with the support of the Cities Alliance and Water and Sanitation Programme. It empowers the slum population with social, economic and environmental justice and their relationship with the service agencies.

Reducing Urban Footprint and Urban Wastes

The urban footprint needs to be reduced so that it leads to travel reduction, economy of services and conservation of agricultural areas. The Indian cities offer scope of densification, especially along public transit corridors, and by redevelopment of the brownfields. The urban eco-system has been transformed by fourth industrial revolution. Accordingly, the urban processes need to change which are compatible to circular economy by adoption of new technologies, such as digital blockchain, Land Administration Domain Model (LADM) framework, combinatorial and discrete optimisation, algorithms, complexity theory, artificial intelligence, big data, and the ubiquitous cloud. The following are the focus areas of the LiFE Movement (Figure 3):

- **Refuse:** Whenever and wherever possible, the citizens should be helped to choose items that are not packaged in plastic, Styrofoam, single use

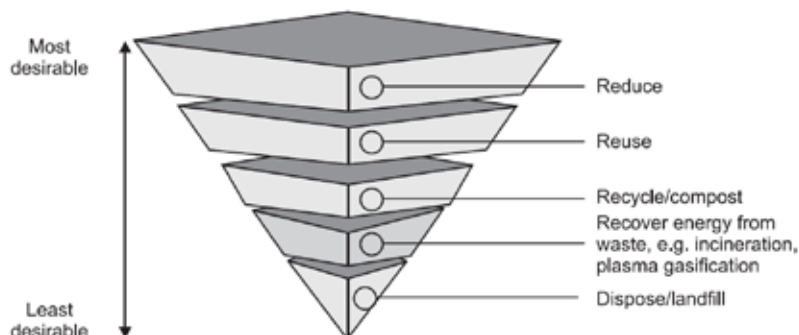
plastics, bottles and cans. Plastics can be replaced by more sustainable options like cloth/jute bags, reusable bottles and non-disposable utensils.

- **Reuse:** The consumers may be incentivised to use reusable paper, stainless steel, wood, ceramic and bamboo containers, utensils, bottles, bags, etc.
- **Reduce** waste, cut down the consumption of goods and packaged drinking water, go for disposable free parties and events. An important area of behaviour change relates to abandoning the widespread practice of chewing and spitting of tobacco, gutka and pan, resulting into disposal of millions of sachets every day. The LiFE movement can help the citizens to realise the health hazard and environmental

pollution caused by smoking and throwing of millions of cigarettes and beedi butts.

- **Recycle:** Keeping in view its life cycle, various wastes can be recycled into useful products. Construction and demolition waste can be recycled for various structural and non-structural uses. Three bin recycling with separate bins for trash, recyclable and compost is essential for this. Biotechnology, enzyme based STP, bio-remedial treatment, sludge gas/energy recovery, vermiculture, fossilization and composting options can be explored for waste treatment.
- **Recover:** The waste has potential to yield energy, fuels and raw materials for industry, buildings, roads, etc. The organic

Figure 3: Strategy of 5 Rs for Waste Management



Source: Ottawa.ca

wastes can produce biogas, which can be used as a fuel or electrical energy.

Biodiversity, Greenery and Amenity Spaces

A study of the present land use pattern in India indicates shortfall of land under forests and greens, while the lands under agricultural use are being increasingly converted for the highways, airports and settlements. It is estimated that an additional 2 to 3 million hectares would be required for human settlements during next 10 years. Sacrificing agricultural land for habitation implies reduction of land for producing food. The lands that sustain agriculture, biodiversity, surface water and groundwater, fragile and sensitive areas, coastal zones, etc. need protection and conservation.

A system of landscaped linkages connecting various parts of the city, water bodies and monuments can provide a sense of oasis and shelter from oppressive climate. Peripheral green belts can act as wind breakers, filters of SPM and dust-storms. The green buffers with indigenous trees, land formations, mounds, embankments, etc. also provide effective barriers to transmission of noise.

The development of greenways can be integrated

with the water bodies, drainage corridors and harvesting ponds, reservoirs and by sediment traps in the catchment zones. In water deficient, dry areas the landscape can be in form of Xeriscaping, which can reduce total water demand by as much as 50% to 90% by micro/just-in-time irrigation. Vertical gardens and urban farming can provide relief in the dense areas. Clean, blue and green networks- river front, canals, drains, water bodies, roads and parks are essential for a hygienic and healthy environment. Trees provide shade and moisture, and roadside trees and parks can reduce the temperature by up to 10°C. Covering exterior surfaces of a building with vegetation is also helpful.

In a city an overall area of 10 sq. m of greens per capita should be reserved for public greens at city, zonal and local levels. In built-up areas reservation of open space can be done by adopting appropriate regulations for redevelopment. The Government of Maharashtra has notified the regulations for Provision of Amenity Spaces and Open Recreational Spaces under Unified Development Control and Promotion Regulations (UDCPR 2020). These provisions oblige that a minimum 10% of space is reserved and provided in plots more than 4000 sqm against additional FSI or TDR

for garden, playground, and/or for a municipal school, hospital, fire brigade and housing for affected people. LiFE movement can play a vital role in this task by educating, mobilising and sensitising the citizens.

Urban Heat Mitigation and Climate Resilience

In a dense built-up area air rises over the warmer city and settles down in the cooler environs. The hot air dome and its effect on microclimate may persist until wind or rain disperses it. Increased aerodynamics of built-up areas cause rapid deceleration of wind compared with open countryside. It has been calculated that wind velocity within a city is half of what it is over open land. The mutations and reservation of greenery and open space in windward direction and cooler surface materials (roads, parking, buildings, roofs, etc.) help in mitigating the urban heat. The urban heat island effect has a direct bearing on the comfort conditions and increased heat results in more air-conditioning and higher use of energy. The LiFE movement can be a useful aid to reduce urban heat.

Water Conservation

Water scarcity has become a persisting problem in Indian cities due to climate change, pollution of rivers, water bodies and massive

construction. Several cities in India have become water stressed. Only 18% of the renewable water resource is being recycled, while 10% of the annual rainfall is being harvested in India. The issues of concern are increasing coliform levels and Biochemical Oxygen demand (BOD) in surface waters and increased concentration of nitrates in the groundwater. To overcome these problems, water sources need to be protected by sanitation/sewerage interception, and recycling and treatment of wastewater. Swales, porous paving, floating sub-strata in wastewater ponds, coupled bacterial micro-algae, biofilm, bio-drainage and storm surge gates in river, drains and canals and zero run off drainage, conserve water and save human settlements from floods. Water resources can be augmented through recharging of groundwater and by rainwater harvesting (not only in building, but also on roads, parks and parking areas), besides conservation of rivers and water bodies, water efficient taps/fittings, dual plumbing, curbing Non-Revenue Water and recycling of wastewater. Blockchain and SCADA systems can help in a more efficient 24x7 water supply of potable quality. The LiFE movement can help the citizen in a discernible impact on water conservation and recycling.

Decentralised and Intelligent Services

Surveys reveal that approximately 40% of urban population in India is not covered by sewerage, sanitation, drainage and solid waste disposal. Various alternative technologies based on decentralized systems can be explored. The use of IT, simulation, blockchain and automation can make the services smart and intelligent. The common method of land filling for solid waste disposal is an environmental disaster. Instead, decentralized systems based on 5 R strategy of waste management may be considered for solid and liquid waste management. Underground pneumatic conveying systems can be more hygienic, economical and avoid movement of trucks for transportation of wastes. Common utility ducts or tunnels carrying electricity, water, sewerage, wastes, cables and broadband internet minimize damage from traffic, road repairs, rains, etc. A series of low carbon zones across the city with co-located tri-generation energy systems (combining power, cooling and heating), and automated, segregated waste collection and recycling can lead to bundling 'green infrastructure' together. These areas can be one of the central areas of LiFE movement.

Air Quality Management

Air quality in Indian cities is deteriorating due to indiscriminate use of fossil fuels, coal-based energy plants and vehicular and industrial emissions. According to the surveys conducted by the CPCB ambient air quality in more than 20 Indian cities have reached a very critical situation. Relatively high levels of suspended particulate matter (SPM), dust, SO₂, NO₂, CO₂ and heavy metals, including lead content in the exhaust of automobiles and scooters, have been observed. The recent initiatives like electric and hydrogen powered vehicles, adoption of clean technologies, new emission norms, development of shared taxis, NMTs and mass rapid transport systems can reduce the pollution levels due to vehicular emissions. Airshed planning, continuous ventilation, use of cooler and light shaded surfaces/materials and water spray are some other methods to reduce air pollution.

Air quality data is significant to gaining a thorough understanding of local air pollution. Recent technological advancements have made it possible to gather data, with low-cost monitoring devices and advanced methods of collating and analysing it. Smart electricity poles with sensors

are available to monitor pollution parameters. The NDMC has been using them in New Delhi. The Google plans to map street by street air pollution. The active sensors will measure CO₂, CO, NO_x, NO₂, ozone and particulate matter. Such data can be used to identify major components, sources, quantification and plan to combat air pollution, including timelines and monitoring. Air quality concerns everyone, thus it can be a major focus area of the LiFE movement.

Clean Transport and Transit Oriented Development

Hon'ble Prime Minister of India Shri Narendra Modi, while inaugurating the Global Mobility Summit in September 2018, encapsulated 7 Cs of mobility-common, connected, convenient, congestion-free, charged, clean and cutting-edge. He underlined the need to use clean energy for transport as a powerful weapon against climate change, along with pollution-free clean drive. He championed the idea of clean kilometres which could be achieved through biofuels, electric charging and hybrid electric vehicles. The MoHUA has issued the Metro Rail Policy (2017) and Transit Oriented Development Policy (2017) which provide guidelines for promoting public transit (BRT, Metro

and trains) together with pedestrian and cycle lanes. These corridors can be flanked by public and semi-public, high-density developments. Multi-modal integration, last mile connectivity and e-governance are the pillars of sustainable urban mobility. River/water transport and ropeways can be explored, which are almost pollution free and cost-effective. Besides controlling growth of private vehicles, it is necessary to explore parking space in stilts, multi-level puzzle/skeleton structures, on roofs and in underground spaces. Seamless multimodal public transport system would work better by adoption of single ticketing and restructuring of land uses by transit-oriented development. The concept of 'walk to work' should be the basis of urban structure and city size.

The concepts of cordon pricing, minimum occupancy vehicles, ceiling on new registration of private vehicles and establishment of a Unified Metropolitan Transport Authority can also contribute towards a sustainable and clean urban transport. No horn campaign, rubberised roads, noise barriers/landscape along roads and at crossings, raised crosswalks, pedestrianisation and partial street closures fronting university, colleges, schools, hospitals, etc. are

some important measures for traffic noise reduction. Constitution of area-wise noise control circles and preparation of local Noise Monitoring and Control Plan (NMCP) can be taken up by the communities. As mobility concerns every citizen, they can significantly contribute in making it more accessible, sustainable, affordable and efficient.

Green Energy

Energy scenario in India is characterised by its increasing demand, which has been growing at the rate of about three times the population growth rate in the last two decades. Low carbon energy can be derived from renewable sources, such as biofuels, wind, tidal and solar power. The concept of energy efficiency, renewable energy and Zero-fossil Energy Development (ZED) can reduce the energy demand and consequential pollution. Smart Micro-Grids, Distributed Energy Systems (DES), Micro-Districts and Anchor Microgrids should be linked with renewable energy network.

The energy guzzling air-conditioning can be avoided by innovative methods like Net Zero Energy Design, variable refrigerant volume (VRV) system, earth air tunnel (EAT) and thermal storage. By HVAC and EAT

systems inside temperature of a building can be maintained at comfort level 27°C during summer and 19 to 24°C during winter. Lower ambient lighting with bionic controls and integration of natural light with high performance glazing combined with light sensors can save energy use in a building. Glazing synchronized lighting and bionic climate control systems can be designed to match building loads and schedules, segmented into multiple zones to allow intelligent controllability. Green roof, light coloured finishes and insulation can help to reduce energy demand. The buildings and communities should strive to become low or net-zero.

Rooftop solar panels and storage batteries can provide sustainable electricity instead of power plants. Rooftop vegetation, natural ventilation, insulation and white reflective paint can improve the building's thermal performance. Cool air in subterranean clay pipes can save hugely on air-conditioning and energy. Porous bricks and hollow concrete can lower the pavement surface temperature and air temperature. The energy sector offers a huge potential for citizen participation through the LiFE mission.

Green and Resilient Buildings

A low carbon and green building aim to be sustainable, comfortable and net zero in terms of energy and water use. As buildings are the largest energy users, incorporating energy efficiency, storage and renewable energy would make them sustainable. By passive design the building can be more climatically comfortable. It is necessary to specify building materials which are locally sourced and recycled from construction and demolition wastes, that are low carbon, have low embodied energy and require less energy for production and transportation to the site. Such materials include carbon-negative cements, low carbon steel, hydro bricks, hollow tiles, rapid walls, basalt, fibre composite bars, bamboo, etc. Products like Rhino Brick (Hyderabad) are mincing 20% plastic shreds and 80% sand and dust to make eco-bricks, large format hollow bricks and interlocking bricks. Paper and wood can be recycled to make tiles. Non-degradable plastic waste, like bottles, polyester bags, packings, etc. can be converted into colourful tiles. Other products include reused brick, steel, concrete, gypsum, sulphur, wood alternatives, reconstituted wooden pallets, combination of straw, bamboo, lime tiles, wood waste and cement for

wall, roof and partitions, boards, blocks, etc.

Building Information Models (BIM) can simulate the entire construction sequence beforehand addressing sustainability issues and reducing carbon emissions. Computer-Aided Manufacturing (CAM) and Computer Integrated Manufacturing (CIM) are useful in reducing emissions, dust and GH gases. The simulation of construction process enables better control of time, machine, expenditure and the manpower, and could reduce carbon emissions and costs by half to one-third. The citizens can play a constructive role in development of green buildings and communities with net zero water and energy.

BEHAVIOUR CHANGE STRATEGY

Small Strategic Interventions aligned with traditional knowledge, attitudes and practices (KAP) can immensely help to reduce consumption. The traditional principles of minimalism/aprighraha, kar seva, ahimsa, satvik eating, yoga, ayurveda, naturopathy and the vocation of recycling and repair of used clothes and equipment indicate an ingrained mindset and culture for the environment. Campaigns, such as clean and green city, waste recycling, saving water and energy, planting

trees, etc help citizens to come together and take pride in the traditional culture. The behaviour change at grassroots and abandoning environment endangering habits can make the LiFE mission a success. Technology plays an important role in involving the citizens in sustainable development and conservation of natural resources. Intelligent, smart, mobile based digital systems can significantly enhance the citizen participation and support in the LiFE Mission on a sustainable basis.

CONCLUSION

An inclusive city aims to leave no one and no place behind. It promotes creation of jobs, housing and shelter to all, climate and disaster resilience, climatic comfort and efficient services. The idea of equity cannot be accomplished without environmental justice. It must be sustainable and climate resilient. Optimum use and conservation of natural resources and new partnerships are critical elements of a equitable habitat. To be inclusive, the urban strategies must involve the women, who comprise nearly half of the population. An inclusive city is gender, elderly, children and disabled sensitive with adequate, safe and affordable spaces for living, playing, learning and working for all.

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A 'MAINSTREAMING' APPROACH TO UPLIFTING MIGRANT HOUSEHOLDS

MS. MUKTA NAIK

"Most importantly, mainstreaming involves embedding migration into mainstream policies, institutions and structures. This entails a broad-based approach rather than an issue-specific one."

Key Words: Migrants, mainstreaming, vulnerability, Portability, housing, registration and tracking.

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The Covid 19 migrant crisis could be seen as a watershed moment for policy in the realm of internal migration. Despite the lack of an omnibus migration policy, several disparate policy initiatives emerged at multiple levels of government, across various sectors leveraging multi-stakeholder collaborations. To stitch these responses together into a more coherent inclusionary policy framework for migrants, policy actors need to recognise the importance of migrants and their agency on the one hand, while seeking to redress their vulnerabilities. Based on a brief analysis of policy responses to the migrant crisis in India, this paper suggests that migration policy in India has already taken the initial steps towards adopting a 'mainstreaming' approach. Taking this momentum further through an enhanced understanding of migration processes, reflexive policy design, an iterative approach towards intervention and a systematic embedding of migration into mainstream policies, institutions and structures, India can contribute significantly towards fulfilling the SDGs and the 'Leave No One Behind' agenda.

INTRODUCTION

In 2020, the large-scale migrant exodus from urban centres to the refuge of their rural homes in the wake of the Covid19 national lockdown was a unique administrative challenge for the Indian states. The crisis highlighted several lacunae in the way interstate migrants were treated in destination states as compared to their source states; whereas the latter saw them as citizens, the former regarded them as workers. While questions over citizenship and inclusion are commonly raised in the context of international migration, the persistent vulnerabilities of internal migrants, who are Constitutionally guaranteed freedom of movement and residence anywhere within India, require closer examination.

For much of human existence, disasters have served as turning points, fostering innovations in technology, policy and politics. Can we hope that, in the years to come, India's Covid19 migrant crisis will also likely be seen as a watershed moment for

migration policy in India? In the spirit of 'Leave No One Behind' (LNOB), a powerful and transformative promise of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs), can this moment trigger the shift towards an inclusive and holistic policy approach that seeks to address multiple vulnerabilities as well as enhance the agency of migrant households? As this paper will outline, the wheels are already turning in migration policy; however, to make decisive strides, we will need to build a policy consensus around migrant inclusion to bring about a change.

THE AGENCY-VULNERABILITY PARADOX

At the outset, such a consensus must recognise the importance of migrants and their existing agency on the one hand, while seeking to redress the vulnerabilities they face on the other. Despite evidence of migrants' economic contribution, policy actors in India perceive migration negatively and see it primarily as a result of 'push' factors related to rural economic distress. This overwhelming 'sedentary bias' blinds policy actors to the existence of aspiration or non-economic reasons for migration (Centre for Policy Research & UNICEF

2021). For instance, young women may be motivated to migrate to seek autonomy from patriarchal restrictions. Laying out this essential paradox between agency and vulnerability is an important first step to disentangling the complex phenomenon of migration.

Migrant workers are crucial to India's economic growth story, powering important sectors like manufacturing and construction and performing low-skilled but essential jobs waste collection essential for the survival of cities. While rural distress is well acknowledged as a driver of migration, migrant households exert their agency through complex migration decisions regarding which members of the household move, where and for how long. As the pandemic demonstrated, they straddle rural and urban contexts to maximise the chances of survival and explore aspirations for social mobility. Migration is an integral aspect of India's demographic, economic and social transformation; as such, policy must support migrants in pursuing safe and viable migration pathways (International Labour Organisation 2020).

Yet, despite Constitutional guarantees of free movement within the country, internal migrants in India face

specific vulnerabilities and exclusions. Deshingkar et al (2022) articulate four interlinked issues that exacerbated the migrant crisis. First, labour market segmentation involving exploitative processes of recruitment, employment and reproduction of social hierarchies and prejudices places migrants at a relative disadvantage to local workers. This is especially accentuated for those disadvantaged in terms of caste, class and gender. Second, exclusionary forms of urbanisation make survival in cities difficult for migrants including struggles for adequate housing, access to social welfare and an over-reliance on social networks owing to poor governance. Third, migrants are unable to meet documentation standards, typically domicile or proof of residence, that make them eligible for social welfare or emergency support. Despite being Indian nationals, their regional identities and associated political citizenships deny them patronage at their employment locations. Fourth, migrants – especially those engaged in circular and seasonal migration – remain invisible in official datasets and are inadequately registered for schemes and benefits. This lack of reliable data exacerbates all the other forms of vulnerability and makes it particularly

challenging to evolve a rational policy response.

MIGRATION AS REFLECTED IN POLICY

Owing to the prevalence of economic framings, migration has been primarily addressed in policy through the lens of labour via legislations like the Interstate Migrant Workers (Regulation of Employment and Conditions of Service) Act, 1979. Migration has been strongly linked to work and was squarely under the purview of the Ministry of Labour and Employment (MoLE). The issue of migration appeared only fleetingly in other areas of policy. For example, the Right to Education Act 2009 mandates schools to admit migrant children and the Integrated Child Development Services (ICDS) scheme of the Ministry of Women and Child Development is also, in terms of intention, inclusive of migrants. Labour-centric frameworks have dwelt on problems related to informal employment and the challenges of delivering social protection to unorganised workers, with migrants as a subset of this dominant issue.

Owing to contrasting logics of universalisation and eligibility, migrants have

uncertain access to social welfare. While the former apply to specific sectors considered critical to human development like education, health and nutrition, most schemes are designed around eligibility requirements owing to fiscal and political considerations. Scheme design and implementation vary across levels of government as well as across rural and urban jurisdictions. While welfare schemes, formulated and funded by the Government of India, tend to be more universal in nature, state policies and schemes almost always include domicile as eligibility criteria (Centre for Policy Research & UNICEF 2021). Sectoral programs like the Building and Construction Workers Board, funded through a cess levied on construction, also – while centrally legislated – remained organised by states, which preferred to register their own residents (Roy et al 2017). The access to the Public Distribution System (PDS) also remained tied to specific locations, with ration cards tagged to specific fair price shops (Government of India 2017). At the same time, a strong sedentary bias and more effective decentralisation in rural contexts have retained the

focus on preventing migration through strengthening rural development while migrant inclusion in cities is severely constrained by a lack of capacity and resources (Xiang et al 2022).

In 2016-17, migration briefly received attention in policy circles. In the wake of the UN Habitat's efforts to evolve a New Urban Agenda and a growing conversation around India's efforts at meeting the SDGs, the erstwhile Ministry of Housing and Urban Poverty Alleviation, Govt. of India constituted an inter-ministerial Working Group on Migration to "address the impact of migration on housing, infrastructure and livelihoods"¹. The Working Group submitted its report in 2017 (Government of India 2017); however, the recommendations were not formally addressed at the time. With concerns over India's demographic dividend and economic future looming large, a chapter on internal migration and labour mobility was included in the 2016-17 Economic Survey. It emphasised the need to consider mobility as an important and desirable feature of India's economic landscape. However, these policy efforts did not gain further traction.

Thus, though policy experts and civil society had been raising the issue for some

1 The Terms of Reference of the Working Group on Migration. Ministry of Housing and Urban Poverty Alleviation, Housing Division, letter no O17034/18/2015-H/FTS-12940 dated 28th July 2015.

time and the government's own policy documents recognised the magnitude and complexity of the issue, before the pandemic, the inclusion of migrants was not taken up in a focused way in policy.

HOW THE WHEELS TURNED: RESPONSES TO THE MIGRANT CRISIS

The 2020 migrant crisis did not elicit a cohesive policy response from the government. The NITI Aayog made a promising start by convening a sub-group on the issue of migrant labour and drafting a policy document, but this has not yet been finalised. Instead, the crisis triggered several disparate relief measures and policy reactions located at multiple levels of government and across various sectors, which largely built on existing schemes and frameworks. Without getting into an exhaustive description, here is a brief summarisation under a few broad categories, viz. registration and tracking, portability, facilitation and housing.

Registration and tracking

Registration of migrants is a key feature of the Inter State Migrant Workmen Act (ISMWA) and though the Act has been weakly implemented, the notion that improved state response is contingent on robust systems to register and enumerate

migrants is well-embedded in the policy imagination. Pre-pandemic efforts to register migrants at source through panchayat level registers have now gained traction in several source states. Several state governments also captured data on migrants who returned during the pandemic and conducted skill mapping exercises with the intent of designing better interventions for livelihood support and skill development.

Conversations have also moved beyond the purview of work and employment. For example, in Maharashtra, the Women and Child Development Department has developed a system to enumerate and track women and children who migrate seasonally from vulnerable source areas to their work destinations in order to ensure continuity in the delivery of schemes related to maternal and child health and nutrition.

At the central level, MoLE has set up an E-Shram portal for self-registration of unorganised workers across India, on the behest of the Supreme Court. This is a first-time at-scale attempt to set up a digitally backed database that enables unique links to individual beneficiaries. The portal is expected to smoothen the delivery of welfare, though challenges related to identifying interstate

migrants as a specific subset are still being addressed.

It is also important to note that the unavailability of detailed migration tables from the last decadal Census in 2011, the delay of the 2021 Census and the failure of the National Sample Survey Organisation to regularly collect data on migration present a particular challenge where multiple registries co-exist without a reliable statistical base.

Portability

Advocates for migrant inclusion have, for a long time, highlighted the need for portability, i.e. ensuring that beneficiaries can access welfare regardless of location. In response, the One Nation One Ration Card (ONORC) was floated in 2019 as a key measure to make PDS benefits accessible to seasonal migrants. The distribution of free food grains through the PDS was a key element of the Government of India's pandemic relief package. State governments were urged to hasten the seeding of their ration card databases with Aadhaar information in order to enable portability under the ONORC system. While logistical and fiscal challenges remain in terms of implementation, this is a significant policy step forward in recognising and addressing mobility as a key axis of exclusion.

Facilitation

Prior to the pandemic, civil society organisations working with unorganised workers had already piloted the migrant resource centre (MRC) as a model to support migrants with reliable information and networks. Some state governments (e.g. Odisha) had set up MRCs in destination locations while partnerships between civil society employers and local governments were also operational (e.g. Tirupur). The pandemic has laid greater emphasis on the MRC as a model to address problems of information asymmetry and facilitation. In parallel, common service centres (CSCs) that connect citizens to government services through agents have also started to focus on migrants as a category of customers. For instance, Chalo Network identifies, trains and positions agents in migrant-sending and migrant-receiving communities to deliver services related to documentation and identity, financial inclusion, welfare and healthcare.

Housing

The Ministry of Urban Affairs, Govt. of India responded to the crisis by adding a rental housing component to the Government of India's

flagship housing programme, the Pradhan Mantri Awas Yojana. The Affordable Rental Housing Complexes (ARHC) scheme, announced in 2020, sought private sector participation to retrofit unoccupied public housing for rental purposes as well as build new affordable rental housing stock. While announced during the pandemic and framed in terms of a response to help the urban poor and facilitate the integration of migrant workers in cities, the scheme addresses a broader need to diversify urban housing supply. At present, as per the scheme's official website², nearly 30 retrofitting projects and one greenfield project is in the pipeline.

MAINSTREAMING AS A POLICY APPROACH

Scholars like Scholten (2019) who studied the migration policy responses in the European Union during the refugee crisis a few years ago realised that migration, akin to issues like gender and environment, had become a complex policy problem. Migration takes on many forms in terms of duration, frequency and spatiality. It is no longer sectorally aligned but embedded in almost every facet of development.

Hence, it is no longer possible to propose one-size-fits-all and simplistic policy approaches. Leaning on literature from complexity governance that rejects both overly rational approaches that are unable to address complex policy issues and chaotic approaches that rely on relativism, Scholten (2019) proposed mainstreaming as a middle path. Mainstreaming is a reflexive approach to policymaking, where actors understand the underlying causes and effects of both the policy problem as well as solutions and make adjustments over time. Instead of seeing migration as a stand-alone policy area, it focuses on actor networks and evolving processes to improve responses continually. Most importantly, mainstreaming involves embedding migration into mainstream policies, institutions and structures. This entails a broad-based approach rather than an issue-specific one.

A prima facie analysis of the policy responses described in the previous section indicates that 'mainstreaming' could be a plausible approach to thinking about migration policy in India. First, the responses show that migration as a policy issue is no longer strictly located under the purview of labour

² See <http://arhc.mohua.gov.in/>

and employment. Responses have moved beyond the framing of labour to examine migration as a broader developmental problem with implications for multiple sectors including education, health and food security and various vulnerable groups like women and children.

This indicates a second shift from the migrant worker towards seeing the migrant household as a focus of intervention. The large influx of returning migrants during the pandemic helped policy actors to broaden their perspectives to include migrating households as well as split households with migrant and left-behind members and garnered support for portability in the delivery of social welfare.

Third, the experiences of policy actors engendered

an appreciation of how fragmented governance structures currently are and highlighted the role of multiple stakeholders. Providing relief to returning migrants during Covid-19 required bureaucrats to coordinate with counterparts in other state governments and work in collaboration with other departments within the state. This highlighted the need for horizontal convergence across departments and multiple levels of government to effectively include migrants. Many of the successful solutions, for instance, the exercise of organising transport for returning migrants, were possible through complex collaborative arrangements with contributions from multiple stakeholders including state actors, NGOs, citizen volunteers and private corporations.

Fourth, we learn from the portability and registration solutions that policy initiatives are embedded within a broader trend of digital governance, but can only be effective if last mile delivery is optimised and feedback loops put in place. Lastly, responses were largely built on existing policies, whether articulated or in the pipeline. To an extent, solutions were adapted and replicated quickly across jurisdictions, through formal and informal sharing mechanisms. This demonstrates that migration as a policy domain requires to be seen as a contiguous process in which policy actors learn from and improve on previous experiences of their own and others.

While this is a good starting point, it is important to measure the progress of migrant-inclusive policy in empirical ways. One way to do so is through migration indices like DEMIG,³ Global Migration Barometer,⁴ Migrant Integration Policy Index (MIPEX)⁵ and MGI⁶ that were developed for international migration and used as strategic tools by countries to measure and evaluate policies and practices (Aggarwal et al., 2020). Building on the Migration Policy Integration Index (Huddleston et al., 2015),

3 DEMIG POLICY tracks more than 6,500 migration policy changes enacted by 45 countries around the world mostly in the 1945-2013 period.

4 Western Union commissioned the Economist Intelligence Unit to compile a migration index that ranks 61 countries by how attractive and accessible they are for migrants (the Global Migration Barometer), with a separate assessment of their need for migrants.

5 The Migrant Integration Policy Index (MIPEX) is a unique tool which measures policies to integrate migrants in countries across six continents, including all EU Member States (including the UK), other European countries (Albania, Iceland, North Macedonia, Moldova, Norway, Serbia, Switzerland, Russia, Turkey and Ukraine), Asian countries (China, India, Indonesia, Israel, Japan, Jordan, Saudi Arabia, South Korea, United Arab Emirates), North American countries (Canada, Mexico and the US), South American countries (Argentina, Brazil, Chile), South Africa, and Australia and New Zealand in Oceania.

6 The Migration Governance Indicators (MGI) is a tool based on policy inputs, which offers insights on policy levers that countries can use to develop their migration governance.

migration data and research organisation India, Migration Now, developed the Interstate Migrant Policy Index (IMPEX) in 2019 as an ex-ante policy evaluation exercise which ranks and compares the states of India (with each other) based on their migrant integration policies from a destination perspective. IMPEX evaluates existing policy measures across eight key welfare policy areas: housing, labour, education, healthcare and nutrition, child rights, political participation, social benefits and identity & registration. Iterative indices like the IMPEX can help track policy responses in the area of internal migration over time with particular attention to migrant integration and mainstreaming. A 2022 edition is awaited, which could help substantiate the prima facie analysis presented in this paper.

WAY FORWARD

While migration has not been a well-articulated policy agenda in India, the Covid19 migrant crisis triggered several disparate policy responses placing migration squarely on the policy radar. These evolving responses represent a moment of opportunity to uplift migrant households from poverty and debt traps by ensuring access to welfare,

empowering them to make informed migration choices and providing pathways for integration into urban economies. The brief analysis provided in this paper points towards mainstreaming as an appropriate policy framework for India to evolve its migration policy agenda. By steering the policy momentum towards an enhanced understanding of migration processes, reflexive policy design and an iterative approach towards intervention, India can contribute to the fulfilment of the SDGs and the LNOB agenda and bring succour to many needy households in a fractured, uncertain post-pandemic world.

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IMPACT OF FUTURE SEA LEVEL RISE ON COASTAL REAL ESTATE AND INFRASTRUCTURE IN INDIA

An Agenda For Policy And Research

**PROF. PIYUSH TIWARI
DR. MOHIT KUMAR**

"Though we have some information about potential SLR impacts along the coastline of few metropolitan cities, we still do not know how much area and how many people will be at risk for various levels of sea level rise scenarios in various other coastal regions of the country. An agenda for research should be on mapping the area and population vulnerable to SLR across every coastal district/ city."

Key Words: Sea level Rise (SLR), Coastal Real Estate, Disaster Risk Reduction, Financing, Urban Planning

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Sea level rise (SLR) is inevitable and so is the risk to the coastal populations and properties. Along the Indian coast, sea levels are rising faster than the global average. Metropolitan cities like Kolkata, Chennai, Kochi and Mumbai would be the most impacted because of sea level rise in future. Mumbai's sea level is estimated to rise to 0.12m by 2040 and a further by 0.21 m by 2060 compared to 0.04 m in 2020. The rise in sea level along Indian coast will pose risk of flash flooding and submergence of many significant coastal properties and road networks. Mumbai had suffered economic losses worth USD 1.75 billion between 2005 to 2015 due to floods. Developing policies to mitigate and adapt to the impacts of SLR in cities on Indian coastline is necessary. SDG 14 also recognizes the need for sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts. Vulnerability mapping of habitats along the coastline in advance will provide ample time to direct the efforts towards mitigation and adaptation. There is also a need to develop new market-based instruments to finance the cost

of disaster risk mitigation and adaptation.

INTRODUCTION

The average global sea level has increased by 76 mm in the last 25 years due to increasing concentrations of green house gases in the atmosphere (Willoughby et al., 2020). The three primary factors attributed to sea level rise (SLR) globally are thermal expansion, melting glaciers, and the loss of polar ice sheets. The main risks arising from a rising sea level are shoreline erosion and degradation, which are amplified by storm surge, permanent land inundation, and saltwater intrusion. Shoreline erosion can occur since rising sea level causes waves to push further inland, even during low-tide. Due to incessant growth of built areas in coastal towns, the natural channels for storm water to drain into the sea are lost. Furthermore, with high tide, the effect of storms are amplified as storm drains are unable to drain into the sea as the high tide (which coincides with storm) pushes the water back on the land. The rise in water table due to

sea level rise and ineffective natural drainage systems will cause permanent inundation of some parts of coastal land or result in chronic flooding. Intrusion of saltwater in ground water is leading to contamination of drinking water supplies and also damaging local agriculture (Alfarrah and Walraevens, 2018). Internationally, there is evidence that flooding risk causes loss in property values and permanent damage to some properties, which may even increase the cost of insurance (Bin et al., 2011).

The debate in India on the risk to properties in coastal areas due to sea level rise is still in very early stages. The socio-economic impact of sea-level rise on coastal towns and properties depends critically on our understanding of risk and its internalisation, and the measures that are instituted to mitigate the risk. The debate on allocation of risk (whether it's a private risk or a social risk) is also crucial to the design of solutions to mitigate and adapt to the risk. Nevertheless the magnitude of social, economic and property value at risk will require options for mitigation and adaptation to the risk.

In this paper, we argue that there is an urgent need to develop appropriate mitigation and adaptation strategies to address the risk that the sea level rise poses.

Section 2 briefly discusses the impact of sea level rise globally and in India on habitats and population. Through literature review, Section 3 highlights the towns and cities that will be highly impacted by sea level rise along the Indian coast. Mitigation and adapting measures will depend on the availability of finance. The financing of disaster management is discussed in section 4. Section 5 discussed the policy development that has impact on disaster risk management. Disaster risk management requires urban planning tools, as highlighted in Section 6. Market mechanisms to complement public finance are discussed in section 7. Section 8 presents preliminary conclusions and an agenda for policy and research.

SEA LEVEL RISE AND ITS PREDICTED IMPACT ON HUMANS AND THEIR HABITATS

The sea-level rise is inevitable and so is the risk to the coastal towns. Even under the most optimistic scenario and implementation of strategies to immediately cut carbon emissions, the sea level could still rise by another 0.5m by 2100 (Kulp and Strauss, 2019). Translating projections related to sea level rise into potential exposure of population to the risk posed by incidences of

flooding in coastal town and cities is critical for coastal planning and for assessing the benefits of climate mitigation measures as well as the costs of failure to act (Kulp and Strauss, 2019). At the global level, the total number of people living in areas which will be affected by flooding caused by sea level rise has been estimated to be 300 million by 2050, and 480 million by 2100 (Kulp and Strauss, 2019). These effects are not distributed uniformly across regions but there are geographical concentration. More than 70% of affected persons will be in eight Asian countries – China, Bangladesh, India, Thailand, Indonesia, Vietnam, Philippines and Japan (Kulp and Strauss, 2019).

Along the Indian coast, sea levels are rising faster than the global average (WMO, 2022). 36 million people who will live in coastal areas in India by 2100 will be affected by coastal flooding and inundation as a result of sea level rise, even if moderate cuts in CO₂ emissions are undertaken (Jayraman, 2019). This is about 8% of the world's population that will be affected by sea level rise. Metropolitan cities like Kolkata (population 4.5 million as per 2011 census), Chennai (population 4.6 million as per 2011 census), Kochi (population 0.6 million

as per 2011 census) and Mumbai (population 12.48 million as per 2011 census) would be the most impacted because of sea level rise in future (Jayraman, 2019). On the east coast of India, sea levels have risen at a rate of 30 mm per year in the Sundarbans delta in the last two decades, leading to 12% loss in the shoreline and causing displacement to approximately 1.5 million people from the delta (Sangomla, 2022).

MAPPING SEA LEVEL RISE ON INDIAN COAST

NASA (National Aeronautics and Space Administration) has developed a visualization

tool which showcases the impact of sea level rise along the Indian coast using IPCC (Intergovernmental Panel on Climate Change) projections (Figure 1). Key observations related to the sea level rise on Indian coast, according to NASA, are (<https://www.hindustantimes.com/environment/nasa-visualises-how-sea-levels-will-rise-in-indian-coastal-regions-101629257135231.html>):

1. By 2040, Mumbai's sea level will rise to 0.12m (Figure 1) and by 2060 it will rise to 0.21 m compared to 0.04m in 2020 based on an intermediate emission

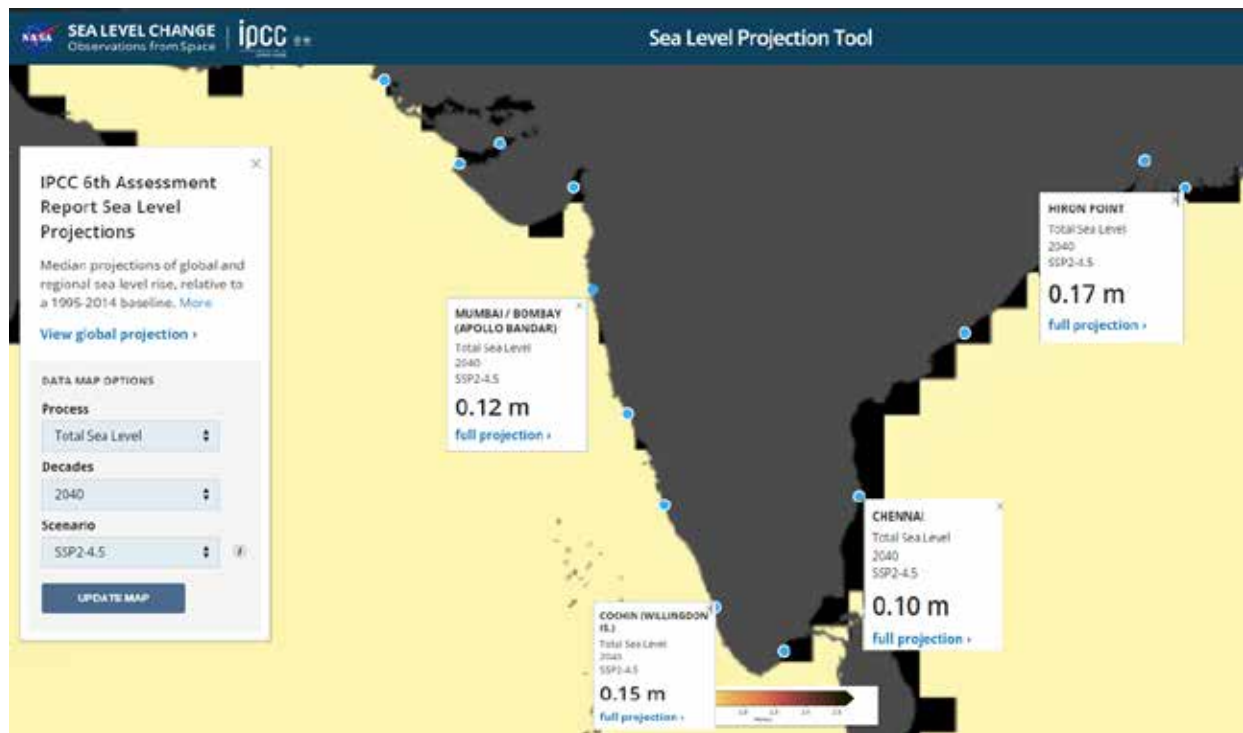
scenario (SSP2-4.5).

2. At Hiron Point in Sundarbans sea level will rise to 0.17m in 2040 compared to 0.06m in 2020 (Figure 1).
3. Chennai will see a 0.10m rise in 2040 compared to 0.03m in 2020 (Figure 1).
4. Cochin will likely see a sea level rise of 0.15m in 2040 compared to 0.06m (Figure 1).

IMPACT OF SEA LEVEL RISE ON COASTAL REAL ESTATE AND INFRASTRUCTURE

While a comprehensive modelling of the impact of sea

Figure 1: SLR visualization along the Indian coast



Source: Authors based on NASA, 2022

level rise on properties along the coast is not available, disparate information suggest that the rise in sea level along Indian coast will pose significant risk of flash flooding and submergence of many of the significant coastal properties and road networks. For example, 998 buildings and 24 km of road network in Mumbai will be impacted by future rise in sea levels by 2050 (Deccan Herald, 2022). During high tide, the number of buildings and road-length in Mumbai that would face the threat of submergence in the future SLR scenario rises to 2490 and 126 km respectively (RMSI, 2022). Key coastal properties under threat due to the SLR include Haji Ali Dargah, Jawaharlal Nehru Port Trust, Bandra-Worli Sea Link and the Western Express Highway. Similarly, 55 buildings in Chennai; 464 buildings in Kochi; 349 buildings in Trivandrum and 206 buildings in Visakhapatnam will be under risk of submergence due to SLR by 2050 (RMSI, 2022). Majority of these buildings will be residential complexes thereby impacting lives and livelihoods of many people. The flash floods which submerged Chennai in November 2015 caused economic losses to the extent of USD 2.2 billion (Business Line, 2018), making these floods most expensive ones in 2015. The insurance claims

by those who had insurance in Chennai was close to 1 billion USD (https://www.business-standard.com/article/current-affairs/chennai-floods-insurance-claims-touch-rs-4-800-crore-116012201026_1.html). This is huge considering that the penetration rate of non-life insurance in India is merely 1% (<https://www.statista.com/statistics/655395/life-and-non-life-insurance-penetration-india/>). Mumbai had suffered economic losses worth USD 1.75 billion between 2005 to 2015 due to floods (Pandey, 2019). The coastal megacities (having more than 10 million population) are losing at least USD 6 billion every year due to extreme flooding events and these losses will increase to USD 1 trillion annually by 2050 if no coping/adaptation strategies are developed and implemented in time (Pandey, 2019).

THE FUNDING GAP

The risk that the sea level rise poses will require disaster management efforts at the societal and individual property owner's level. Considering the scale of the funds required for disaster management (flooding is just one component of disasters that requires management besides drought, groundwater salinity, loss of land/revenue, damage to the infrastructure etc.), the Government of

India has established a total corpus of Rs. 1601 billion (USD 20 billion) for States for disaster management for the duration of 2021-26, of which the Union share is Rs. 1226 billion (USD 15 billion) and States share is Rs. 375 billion (USD 5 billion). This is as per the recommendations of 15th Finance Commission (XV-FC). In addition, the Commission has recommended that for cities with million plus population, a separate fund should be established. So far as the allocation of funds is concerned, the XV-FC has recommended allocation of Rs. 15 billion (USD 0.19 billion) to mitigate the risk of erosion across Indian states and Rs. 10 billion (USD 130 million) for re-settlement of people affected by erosion. In addition, the Commission has recommended allocation of Rs. 5 billion (USD 63 million) each to three most populous Indian coastal cities viz. Mumbai, Kolkata and Chennai for reducing the risk of flooding. When seen relative to the value of economic losses faced in Chennai and Mumbai, these funds are insufficient. The Commission also recommended employing market-based risk management instruments such as insurance schemes for providing financial assistance and relief against the disasters. XV-FC had proposed four insurance interventions, viz. National

Insurance scheme for Disaster related deaths, Synchronising Relief assistance with Crop insurance, Risk Pool for infrastructure protection & recovery, and Access to International Reinsurance for outlier hazard events. These insurance schemes will supposedly provide an additional layer of protection to people in the event of disasters.

While the recommendations of 15th Finance Commission mark an important beginning for proactive disaster management in India, the allocation of funds are inadequate considering the needs. The XV-FC has recommended establishment of separate funds at centre and state level, with major share being retained by the centre. The Finance Commission has stressed strengthening of local governing bodies would be necessary for implementation of disaster management plans. The non financial role for disaster risk management has been allocated to district disaster management authorities (DDMA) (Borah, 2020).

DISASTER MANAGEMENT POLICIES

The Sendai framework for disaster risk reduction 2015–2030, to which 187 countries are signatories, advocates 'substantial

reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries' (UN, 2015, 9). It emphasises 'enhancing disaster preparedness for better response and "build-back-better" in recovery, rehabilitation and reconstruction' as one of the four priority actions (UN, 2015, 11). Addressing the priorities for action proposed by the Sendai framework, India has prepared its National Disaster Management Plan (NDMP), 2016. Basing on the vision for the Sendai framework, India's NDMP aims to 'make India disaster resilient, achieve substantial disaster risk reduction, and significantly decrease the losses of life, livelihoods, and assets—economic, physical, social, cultural, and environmental—by maximising the ability to cope with disasters at all levels of administration as well as among communities (NDMA, 2016, 14).' Resilience at the administrative and community level is an important component of NDMP. While prevention of disasters is a major component of the plan, disasters in their entirety cannot be eliminated. Based on the National Policy for Disaster Management 2009 (NDMA, 2009), NDMP also provides a framework

for recovery and build-back-better. The framework provides for speedy, participative, inclusive reconstruction of housing and infrastructure and recognises the importance of rebuilding lives and livelihood of communities, and lists salient provisions of disaster recovery framework, but it lacks comprehensive rebuilding of all aspects of losses that disaster affected persons face.

No two disasters are similar and no two disaster risk would require similar response. Developing policies to mitigate and adapt to the impacts of SLR in cities is necessary, which requires data. The programs for mitigation and adaptation would emerge from policies. Given the limited availability of public finance for disaster management, vulnerability mapping of habitats along the coastline in advance will help in prioritising areas where disaster management efforts are required. With proper planning, risk to lives and livelihoods could be eliminated. We have an example of Odisha, a state along the eastern coast of India. The state has a coastline of 550 km out of which 28% was impacted by erosion during 1990 and 2016 (Panda, 2020). The villages of Satabhaya in Kendrapada district of Odisha suffered

heavy erosion due to SLR. The State launched a Resettlement and Rehabilitation Policy in 2011 for 571 affected families. These families were popular as India's first "climate refugees", and were compensated with houses, agricultural plots and other facilities at a place 12 km away from Satabhaya (Panda, 2020). With SLR in future, there will be many more climate refugees which needs to be saved and rehabilitated. We need to plan in advance for them.

THE ROLE OF URBAN PLANNING

Planning of coasts is a controversial issue given the importance of coasts in local economy. The Indian coastline underwent substantial modification due to an upsurge in developmental activities, which coupled with SLR, has led to severe coastal erosion. India has already lost 235 km² of land to coastal erosion between 1990 and 2016 (Panda, 2020). In 2019, the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India diluted the coastal protection rules [Earlier rules prohibited construction activity within the 100 metres of the High Tide Line (HTL), however, the new rules notified by the Ministry changed the no development zone to 10 metres from the HTL], thereby allowing more

construction of properties in the coastal zones potentially vulnerable to SLR. These coastal properties will be exposed to future sea level rise and associated flooding.

Urban planning provides an important instrument for sea level rise risk mitigation/adaptation efforts. The disaster management process should focus on sustainable adaptation which can ensure "socially and environmentally sustainable development pathways including both social justice and environmental integrity" (Hurlimann et al., 2014). The disaster risk reduction should be mainstreamed in all the development plans for coastal regions. Gradually the attempt should be to radically expand and enhance disaster risk reduction so that it becomes a normal routine exercise and fully institutionalized within the development agenda. The plans should include both structural and non-structural mitigation and adaptation measures. Structural mitigation measures would require investment on development of robust engineering measures which can resist the impact of hazard. Such measures, if developed in consonance with natural environment, will be long-lasting and more fruitful. Non-structural mitigation measures would involve expenditure on awareness

and capacity building, development of an early warning system, disaster risk reduction (DRR) policies, insurance mechanism to cover the loss of lives and properties. Adaptation efforts would require development of regional coastal adaptation plans outlining the potential risks due to SLR as well as strategies which can be adopted to address them. This part will also require funding towards development of community-led adaptation projects so that shortcomings in the efforts at local scale could be identified and remediated.

India has notified Coastal Regulation Zones (CRZ) regulations in 1991 dividing the landward area upto 500 meters from high tide line (HTL) into four zones and restricting the economic activities in each of these zones as per their ecological sensitivity (<https://www.thehindu.com/features/homes-and-gardens/Building-norms-for-coastal-zones/article14428006.ece>). CRZ-I include areas that are ecologically sensitive and important, such as national parks/marine parks, sanctuaries, reserve forests, wildlife habitats, mangroves, corals/coral reefs, areas close to breeding and spawning grounds of fish and other marine life. No new construction is permitted in

CRZ-I areas except (a) projects relating to the Department of Atomic Energy; (b) pipelines, conveying systems including transmission lines; and (c) exploration and extraction of oil and natural gas. CRZ-II covers areas that have already been developed up to or close to the shoreline. Construction of buildings is allowed in this zone but only on the landward side of the existing road or on the landward side of existing authorised structures. These newly constructed buildings shall have to adhere with the existing local town and country planning regulations including the existing norms of floor space index (FSI)/ floor area ratio (FAR). CRZ-III include rural coastal villages and coastal areas within municipal limits. In CRZ-III, areas upto 200 meters from the HTL are categorised as 'No Development Zone'. However, activities like agriculture, horticulture, salt-manufacturing are allowed. The land area between 200-500 meter falling in CRZ-III can be used for building constructions; however, only with approval from the MoEFCC (Ministry of Environment, Forests and Climate Change), Government of India. In addition, the construction activities between 200 and 500 metres of the HTL can be taken up if they follow the regulation that the total number of dwelling units

shall not be more than twice the number of existing units, the total covered area on all floors shall not exceed 33 per cent of the plot size, the overall height of construction shall not exceed 9 metres, and the construction shall not be more than 2 floors (ground plus one). CRZ-IV includes coastal areas in the Andaman & Nicobar (A& N), Lakshadweep and small islands, which are not regulated under CRZ-I, CRZ-II, or CRZ-III. In A&N islands, no new construction is allowed within 200 meter of HTL. Buildings can be constructed between 200 and 500 metres from the HTL but they will not have more than 2 floors, the total covered area on all floors will not be more than 50 per cent of the plot size, and the total height of construction should not exceed 9 metres. In Lakshadweep and small islands, construction may be allowed depending on the distance from the HTL and the size of the islands (Sundar, 2016). These regulations have been modified in 2019 by the Government to some extent with permission of construction allowed in some cases to even within 10 m of the HTL which further has accentuated the need to strengthen the planning regulations.

DEVELOPMENT OF PRIVATE MARKET FOR

FINANCING SLR RISK

The financing of disaster management assumes paramount importance in order to develop and implement mitigation/adaptation plans. In India, the source of most of the disaster management funding is government. The funding from the government is mostly directed towards relief and rehabilitation efforts. There is need for pre-emptive planning so that the shocks resulting from SLR can be sustainably absorbed by the coastal communities. Though disaster management authorities (both at central and state levels) have contributed to funding the cost of disaster management, there is a big gap between the requirements and availability of funds. Finance for disaster management in private markets through instruments such as insurance has been largely absent in India. Today, we can find a number of opportunities for private investment in the coastal risk reduction sector. For example, the private investment can be directly targeted to developing resilience for local business or asset. Concessional financing and blended finance opportunities enable private investors to invest in such projects. Concessional finance has been defined as below market rate finance provided by

major financial institutions, such as development banks and multilateral institutions to developing countries to accelerate development objectives (World Bank, 2021). Grants, loans and equity investments are the most common type of concessional finance products.

Concessional finance can help in addressing the globally significant development challenges such as climate change mitigation. Blended financing refers to the strategic use of public and philanthropic resources to mobilise private capital for development purposes (Kandasamy, 2022). This type of financing mechanism encourages the involvement of private investors along with public funding instruments in identifying and executing development projects. This type of financing structure typically involve use of instruments like grant capital, debt and equity. Blended financing has several benefits like pooling capital through various/multiple investors which may help in reducing the overall risk and enhance the success rate; and ensuring that projects succeed on achieving social and environmental objectives in addition to financial ones (Kandasamy, 2022).

In particular, when partnering on coastal resilience projects, financial institutions

could adjust cost of capital available for the private sector by adjusting premiums depending on whether the proposed investment includes nature-based solutions (such as development of mangrove corridor along the intertidal zone or belt of Casuarina plantations along the beach to protect the hinterland) and how this increases resilience. The emerging blue carbon market—which businesses are now looking at to offset some of their emissions—is also an opportunity to attract finance for the restoration and protection of coastal marine ecosystems. Development of an insurance market to cover the risk of SLR in coastal areas is another lucrative opportunity. The insurance industry need to understand and appropriately value the risk reduction achieved from natural coastal infrastructure investments, so as to price insurance products appropriately. The insurance market can be developed in following ways (<https://climatechampions.unfccc.int/a-guide-to-private-sector-investment-in-coastal-resilience/>):

1. The construction of natural coastal infrastructure can be financed by an institution/player so that the insurance premiums can be reduced.
2. Financial institutions

can mandate investees or borrowers to go for nature-based insurance.

3. Adoption of parametric insurance mechanism (a type of cover that pays out a pre-agreed amount to a policyholder according to pre-defined event characteristics or parameters) under which the damage to the policyholder is covered as per the incidence (such as storm surge, cyclone).

CONCLUSION

The coastal areas in India will face the risk of sea level rise in the not-so-distant future. This will impact the value of built assets on the coast adversely. Planning and investment at the coastal region and local building level will be necessary to mitigate and adapt to the risk. It is, therefore, important to develop mechanisms which could integrate mitigation and adaptation strategies in the development plans of coastal regions. At the property level, it is important that new market-based instruments are developed that will allow property owners to cover the potential losses. Financing of development plans will require that innovative financing mechanisms such as blue finance, blended finance, concessional financing, etc. are leveraged. These will help in developing

nature-based resilience to SLR. The coastal areas offer immense opportunities for economic gains, which creates opportunities for private players in financing of the risks posed by the SLR.

The Goal no. 14 of the United Nations 2030 Development Agenda- the Sustainable Development Goals (SDG)-calls upon member nations to 'conserve and sustainably use the oceans, seas and marine resources for sustainable development', by sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action. There is, therefore, need to develop research and evidence based policies to mitigate and adapt to the threat of rising sea levels. Though we have some information about potential SLR impacts along the coastline of few metropolitan cities, we still do not know how much area and how many people will be at risk for various levels of sea level rise scenarios in various other coastal regions of the country. An agenda for research should be on mapping the area and population vulnerable to SLR across every coastal district/city. This will help integrate the concept of DRR at the local level of planning and governance and every district/city will be able to

develop an action plan to mitigate/adapt to the risk of SLR and also estimate the resources (financial, physical and capacity) required to address the risk. The policy and research agenda should also focus on developing market-based instruments to finance the risk reduction measures. Private investors may be attracted to invest in nature-based solutions if they are financially viable. Pooling various investors with differing risk-return profiles and investment sources can bridge the funding gap. Finance for disaster management in private markets through instruments such as insurance has been largely absent in India. New insurance products (like parametric insurance) could be designed to cover the losses due to various events. However, the first step is to estimate the cost of mitigation and adaptation risk that coastal towns and cities face. In terms of measures that can be used for mitigation and adaptation of risk associated with sea level rise, international best practices could be reviewed. A holistic approach incorporating physical, socio-economical and financial aspects of the SLR risks will go a long way in protecting lives, livelihoods and coastal infrastructure against the eminent risk of sea level rise.

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PMSVANIDHI : A MODEL FOR EQUITY AND GROWTH

PROF. K K PANDEY

“PMSVANidhi provides a model to support street vendors to achieve equity and growth in the larger context to tap potential of urbanization (caused by structural transition) and nation building.”

The PMSVANidhi is a first of its kind and game changer initiative of Government of India (GoI) on equity and growth which also equates with the theme of Habitat Day-2022: ‘Mind the Gap, Leave No One & No Place Behind’. Initiated by Ministry of Housing and urban Affairs (MoHUA) during peak of COVID (June 01, 2020) to protect the livelihood of five million Urban Street Vendors (USVs), the scheme on its merit got extended from March, 2022 to December, 2024. The scheme, since inception, has facilitated in many ways: (i) the financial inclusion of USVs; (ii) ease to credit and market; (iii) prompt access to eight welfare schemes of GoI on insurance, health and social security; (iv) digitalization in transactions with 12.70 percent share in the average monthly Mobile Wallet Transactions (MWT); (v) regular supply of essential goods and services; and (vi) a model to mainstream micro-enterprises in India.

This paper elaborates the structure and performance of PMSVANidhi and discovers its unique character on scale (outreach to 85 % or 4.208 million USVs including 40 % women and 96% city governments),

speed (disbursement to 94% sanctions and access to welfare schemes to 93% USVs) and protection of livelihood (collateral free loan/ concessions and incentives). The success of the scheme is attributed to the team spirit in the intergovernmental system, bankers and USVs. PMSVANidhi initiated with a social cause also reaffirmed economic potential of urban poor in city economy. The mounting digital transactions add considerable amount of liquidity (Rs.0.353 trillion: 13 September, 2022) in the formal market supporting V-shape recovery of Indian economy. The scheme also augments Indian achievements on UNSDGs (United Nations Sustainable Development Goals). Accordingly, PMSVANidhi demonstrates a model on urban equity and growth, needs wider publicity and deserves nomination for international awards (Dubai International Award of Best Practices etc.) and HABITAT Scroll of Honour for 2023.

INTRODUCTION

PM Street Vendor's AtmaNirbhar Nidhi (PMSVANidhi) –the flexible, inclusive and path breaking

Key Words: PMSVANidhi, equity, growth

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initiative of GoI was launched on 1st June, 2020 to support one of the most vulnerable groups needing immediate relief for their livelihood- the urban street vendors- who were adversely affected by outbreak of COVID 19ⁱ. The scheme provided extra liquidity in the small capital base of urban street vendors /hawkers (USV) and developed a national data base, collateral-free working capital loan under three tranche of Rs. 10000 each, Rs. 20000 and Rs. 50000 subject to payment of earlier tranche, interest subsidy (7%) transferred in the USVs account quarterly, incentives up to Rs. 200 per/month on receiving digital payments from customers and access to social security (Insurance, health, etc.as per prevailing schemes)ⁱⁱ.

The scheme was conceived in a record time during the first wave of COVID19. The scheme was deliberated at the highest level and carried inspiration of Prime Minister with a concern on livelihood of urban street vendors and provide them financial support. The package of support was prepared with intensive discussions involving bankers, states and other urban sector stakeholders. The MoHUA adopted a dynamic process of regular monitoring, hand holding feedback and

corrective wherever required. The components of the scheme were modified and added from time to time on the basis of feedback from field. The states and urban local bodies (ULBs) took keen interest and the four layers (neighborhood, city, states and central) of government showed their ability to join hands in the interest of poor in a team India spirit.

EXTENSION OF SCHEME AND SCOPE OF WORK

Owing to its performance, the PMSVANidhi has been further extended by Cabinet Committee on Economic Affairs (CCEA) on 27 April 2022 from March 2022 till December 2024 with additional interest subvention of Rs.30000 millionⁱⁱⁱ. At the same time, scheme needs further consolidation during next fifteen months to expedite its coverage and facilitation as expected.

PERFORMANCE ANALYSES OF PMSVANidhi

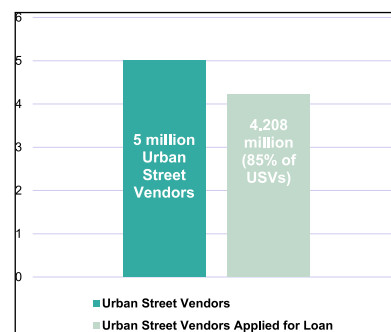
The scheme, while covering one of the most vulnerable sections of urban society which has sizable presence of five million micro enterprises with a fairly high share of women entrepreneurs and their household in urban areas, shows remarkable performance^{iv}. It has reduced intensity of urban poverty,

supported recovery of urban economy and ensured supply of essential goods during hard time of COVID when the city life came to an almost complete halt. The performance of PMSVANidhi in terms of scale, speed and outcome is fairly high and reaffirms commitment and dedication of a range of stakeholders:

Outreach

1. Outreach of the scheme with applications from 85% of five million USVs shows coverage of target group across the urban centers in the country

Chart 1: Outreach of PMSVANidhi

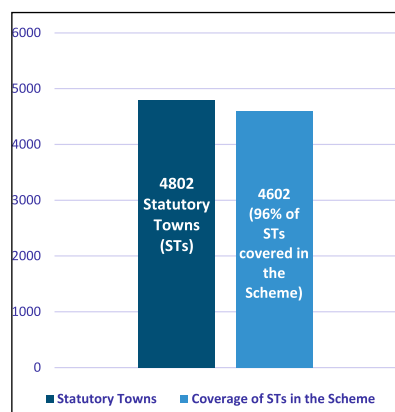


Source: MoHUA, 28th June, 2022

(Chart 1).

2. It is also noted that as on 13 September 2022, the scheme has excellent outreach to statutory towns and has covered 98 percent statutory towns (STs) being 4802^v. The number of ULBs covered under scheme is 4602 or 96 percent of all STs, as

Chart 2: Coverage of PMSVANidhi



Source: MoHUA, 13th September, 2022

reported by the Ministry in September 2022^{vi}.

- 40% beneficiaries are women indicating a major step on gender equity.
- Coverage of 4,604 ULBs which includes almost all the statutory towns.

Speed

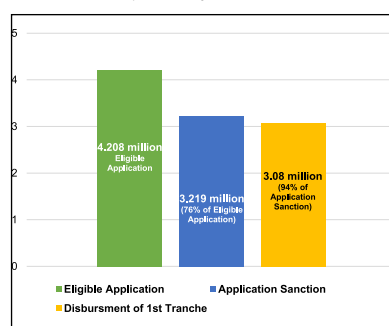
- It is further striking to note that 94% (3.08 million) of application sanctioned (3.219 million) have been disbursed the loan. These cover 76% of eligible applicants with a record disbursement of Rs.29540 million (13 September, 2022) (Chart 3). MoHUA launched its web portal dedicated to PMSVANidhi on 29 June, 2020 and Mobile App was launched on July 17, 2020. It facilitated

prompt reporting and resolution/ assessment of issues^{vii}.

- PMSVANidhi also provided convergence and synergy with welfare schemes. Eight schemes covering insurance, health and social security were brought under one umbrella to enable prosperity of USVS from the scheme 'SVANidhi se Samridhhi'^{viii}.

- Speed of disbursement needs to be further improved during the extension period to

Chart 3: Speed of Disbursement



Source: MoHUA, 20th June, 2022

encourage banks to minimize cases of go-slow approach, persuasion of USVs and communities to use digital transactions, extension of another tranche to beneficiaries if required and further integration of USVs with the formal sector in the economy (Box 1).

Outcome

- The scheme has shown multiple easing to USVs (working capital, subsidies/incentives and access to welfare schemes).
- It has ensured door to door delivery of basic amenities in a regular manner (vegetables, fruits, street food, tea/snacks, textile, apparel, artisan products, barber services, cobblers, pan products, laundry services etc) during hard

Box 1: Potential Barriers and Corrections

The barriers and potential corrections are equally important. As reported by urban functionaries attending IIPA course, there is a need to engage Banks further to expedite the processing of second and third tranche of working Capital loan.

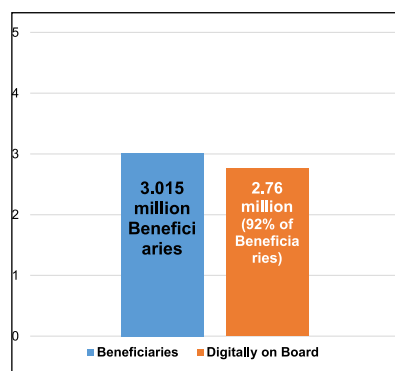
It is observed among several towns that 'delay' in the processing discourages the USVs to repeatedly approach banks at the cost of their daily income. As the situation is nearing normal the Urban Local Bodies (ULBs) should be able to spare more time to facilitate USVs for further consolidation and expansion.

Further, the USVs and community should be encouraged to use digital transactions which are safe and secure and positive for hygiene purpose.

time of COVID.

10. The scheme has established expansion of digital economy with potential of 10 % of MWT (Mobile Wallet Transactions) in 2022 to 25 % by December 2024. It is noted that 2760000 or 92 percent beneficiary USVs were digitally on board in June 2022 and 1.14 million (28, June) and 1.41 million on 13 September 2022 were digitally active^{ix} (Chart 4).

11. Further, 177 million
- Chart 4: Digitally Active USVs*



Source: MoHUA, 20th June, 2022

digital transactions have been done till May 17, 2022 for a value of Rs. 218,570 million^x. The number of digital transactions has further increased to 89 million with the accumulated value of Rs. 353,470 million as on 13 September 2022.

12. The average monthly value of digital transactions by USVs

during 13 May to 13 September, 2022 works out to Rs. 33750 million as against average MWT being Rs. 265830 million. Accordingly, the current MWT in India may be raised further by engaging remaining USVs to also become digitally active.^{xi}

13. PM SVANidhi, as indicated in Chart 5, has successfully established its outreach of 85 % of five million urban street vendors (USVs) who constitute over 21 percent of twenty million urban micro enterprises (UMEs)^{xii}.

14. PM SVANidhi, while inducing working capital to 3.22 million USVs with digital transactions of Rs.218570 million, had a multiplier effect on economy with B2B (Business to Business) and B2C (Business to Consumer) transactions leading to revitalization

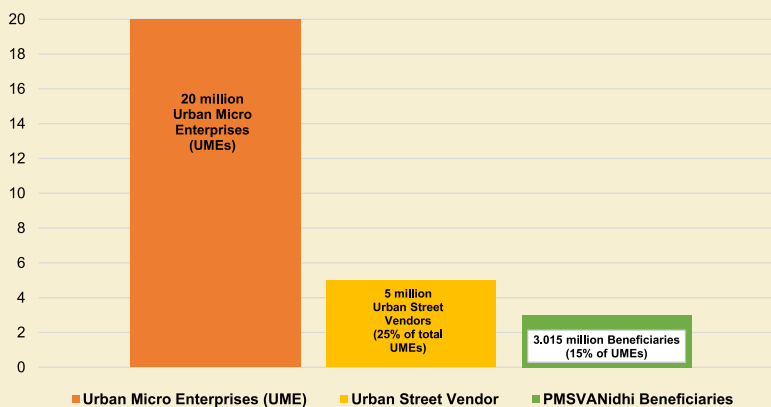
of value chain and supply chain during COVID period.

15. It has also promoted upward shift of MEs to small enterprise which needs further study to devise suitable strategies.
16. SVANidhi se Samriddhi is a facilitation creativity under the schemes, pooling together eight schemes of welfare measures with 46 lakhs eligible USV applicants. 30.98 lakh applications were received out of which 28.76 lakh or 93 percent have been sanctioned for benefit under respective welfare scheme^{xiii} (Table 1).

PMSVANIDHI AND MIND THE GAP, LEAVE NO ONE AND PLACE BEHIND

The scheme gives due cognizance to the informal nature of beneficiaries along

Chart 5: Urban Micro Enterprises, USVs and USVs under PMSVANidhi



Source: NSSO and MoHUA

Table 1: SVANidhi se Samriddhi: Structure and Progress

Schemes	About Scheme	Eligible	Applied	Sanctioned
PM Suraksha Bima Yojana	Accident insurance scheme launched by the Government of India.	19, 79, 849	13, 31, 031	12, 58, 256
PM Jeevan Jyoti Bima Yojana	It is a life insurance scheme that offers a cover of Rs. 2 lakh on the sudden demise of a policyholder.	14, 35, 509	9, 35, 175	8, 68, 810
PM Shram Yogi Mandhan Yojana	It is a voluntary and contributory pension and social security scheme for unorganised workers.	6, 07, 117	3, 89, 038	3, 36, 706
PM Jan Dhan Yojana	Ensure financial inclusion of every individual who is not having a bank account in India to provide access to financial services, i.e. Banking/ Savings and Deposit Accounts, Credit, Remittance, Pension and Insurance in an affordable manner to all.	2, 96, 181	1, 96, 499	1, 82, 209
One Nation One Ration Card	The government launched the One Nation One Ration Card scheme to facilitate the migrant ration cardholders to obtain foodgrains from any fair price shops in India.	2, 49, 503	2, 20, 095	2, 12, 050
Registration under BoCW	Provide financial support to Building and other Construction Workers from the Building Cess collected from Real Estate	22, 296	18, 813	11, 817
Janani Suraksha Yojana	Reducing maternal and infant mortality by promoting institutional delivery among pregnant women.	10, 746	6, 680	3, 831
PM Matru Vandana Yojana	Provide a direct cash benefit to pregnant and lactating women above the age of 19 or above for the first live birth.	1, 553	898	460
Total:		46, 02, 754	30, 98, 229	28, 74, 139

Source: <https://pmsvanidhi.qcin.org/account/landing-page> (as on 19th September, 2022)

with optimum coverage, reaching all USVs and take them in the formal system. In this regard, eligibility criteria were relaxed to cover all USVs. The process covers four types of USVs:

(i) Street vendors in possession of Certificate of Vending / Identity

Card issued by ULBs;
(ii) Vendors identified in the survey but not issued Certificate of Vending / Identity Card were given Provisional Certificate available online;
(iii) LoR (Letter of Recommendation) from

ULB's Town Vending Committee (TVC) was issued to USVs left out in survey or started vending after the survey; and

(iv) LoR was also given by ULBs to vendors vending in the geographical limits of the ULB but coming

Figure 1: Numerous sales transactions in a market full of street vendors



Source: <https://blog.synclarity.in/marketing/tag/sales>

from from peri-urban areas/rural areas.

Empirical data also show synergy of PMSVANidhi with theme of Habitat Day 2022. The picture is indicative of the vibrancy and activity in urban local markets where the street vendors bring the essential supplies (Figure 1). Almost all the themes of 2030 Agenda for sustainable development figure in the remarkable achievement of the scheme.

- (i) The scheme is unique for its outstanding outreach with the access to 85% of census size (5 million USVs).
- (ii) It has achieved financial inclusion of USVs to bring them in the mainstream.
- (iii) It has retained the

important segment (USVs) of urban poor in the city.

- (iv) Retaining USVs also kept supply of essential goods and service (vegetables, fruits, street food, barber shops, cobblers, Pan Kiosk, laundry etc) to urban dwellers in place during COVID pandemic.
- (v) PMSVANidhi developed a national data base of USVs which can be used to extend multiple support measures to beneficiaries.
- (vi) Promoted income enhancement among urban poor benefitting the households of USVs, thus, covering a larger chunk of urban poor.

(vii) It has a large share of women beneficiaries covering 40 % of USVs receiving the scheme. It is an important contribution towards gender equity and health /hygiene as well as impact on IMR, MMR (Infant/Maternal Mortality Rate) etc.

(viii) It provided a model of livelihood to poor through a well-designed package of loans, incentives and concessions.

FOCUS OF UNSDG AND WORLD HABITAT DAY 2022

Performance of PMSVANidhi in relation to main focus areas and UNSDGs as a whole is given in Table 2. This covers COVID, Conflict, Institutional

synergy and financial mechanism.

COVID

- (i) It has included all (no one left behind) in the fight against COVID. The USVs came in a regular touch of ULBs to also cover necessary facilitation on COVID if required.
- (ii) Retaining USVs also reduced threat of further communication of pandemic in their home place the remote areas.
- (iii) It has facilitated regular supply of goods and services (vegetables, fruits, street food, barber shops, cobblers, Pan Kiosk, laundry etc.) to urban society.

Conflict

- (iv) It has established social cohesion sense of gratitude and cooperation in the urban community at grass-root level. Municipal leaders and bankers are seen closer to USVs meaning a mutual trust and faith in each other (Box 2).
- (v) It has promoted sense of pride, self-dependence among USVs who were demoralized and adversely affected in their occupation by first wave of COVID 19.

- (vi) Support to USVs also reduced potential threat to lawlessness may be caused by some of the adversely affected USVs misguided by anti-social elements.

Institutional Synergy

- (vii) Governments in the Centre, State and ULBs joined hands for this pioneering programme along with bankers. Regular meetings, reporting and feedback is being maintained at different layers of government with MoHUA taking the lead in the centre.
- (viii) Institutional cooperation has created a convergence and synergy for outstanding outreach, scale, spread and outcome under the scheme.
- (ix) ULBs have emerged as focal point for inter-governmental and inter-institutional synergy.
- (x) This institutional synergy also creates a platform for wider replication and adaption for other programs.
- (xi) Welfare schemes of different Ministries, namely, Department of Financial Services, Ministry of Labour and Employment, Ministry of

Consumer Affairs, Food and Public Distribution, Ministry of Health and Family Welfare, and Ministry of Women and Child Development were brought together to facilitate USVs under *SVANidhi se Samridhi*.

Financial Mechanism

- (i) PMSVANidhi has shown innovative financial package as a model to facilitate poor at grass-root level in terms of working capital loan along with incentives and concessions in payment, interest subvention, and promotion of digital transaction.
- (ii) The scheme also includes facilitation for welfare schemes of GoI to USVs. Eight important schemes include: 1) PM Suraksha Bima Yojana, 2) PM Jeevan Jyoti Bima Yojana, 3) PM Shram Yogi Mandhan Yojana, 4) PM Jan Dhan Yojana, 5) One Nation One Ration Card, 6) Registration under BoCW, 7) Janani Suraksha Yojana and 8) PM Matru Vandana Yojana.
- (iii) The scheme also facilitates formalisation of urban micro enterprises to stimulate income, employment and productivity at grass-root level.

Box 2: Stakeholder Synergy through GANDHIGIRI for PMSVANidhi

The city of Gwalior in, Central India is one the several cities where USVs (Urban Street Vendors), local leaders and municipal officers convinced the Bankers who were initially adopting GO SLOW approach to quickly process the loan applications of USVs.

The Additional Municipal Commissioner in Gwalior went to Bank in the morning 28 October, 2021 along with street vendors, municipal officers and a few sanitation workers to request processing of cases as per a list of 36 USVs pending in the Bank.

The Bank staff got annoyed with the sudden arrival of group, but, the municipal and USV team applied positive and respectful attitude GANDHIGIRI (Non-violent/polite request), garlanded the Bank staff and cleaned the Bank premises.

This resulted into highly positive vibrations and the Branch officers cleared on the spot approval for 10 cases and assured quick approval on remaining 25 cases in the next couple of days. (Dainik Bhaskar Daily NewsPaper 28th October, 2021)

Urban functionaries attending IIPA courses from remote areas during last couple of months have also expressed proactive approach by team of municipal functionaries (elect and officials/staff) happened in Uri, Udhampur, Anantnag (Jammu and Kashmir), Coimbatore, etc.

Source: Dainik Bhaskar and participants of IIPA courses.

PMSVANIDHI CONTRIBUTION TO NATION TO ACHIEVE UNSDGS

PMSVANidhi is enabling GoI towards its commitment on UNSDGs. As is evident from Table 2, as many as nine Goals are covered by benefits drawn from PMSVANidhi. These include: SDG-11: Sustainable Cities & Community, SDG-1: No Poverty, SDG-3: Good Health & Well-being, SDG-5: Gender Equality, SDG-8: Decent Work and Economic Growth, SDG-9: Industry/Innovation, SDG-10: Reduced Inequalities, SDG-16: Strong Institutions and SDG-17: Partnership for the Goals

SDG-11: Sustainable Cities & Community

The PMSVANidhi is a key step contributing towards sustainable cities and community in India. It has activated lifeline of city (USVs) which was under threat of survival during collapse of city systems in the peak of COVID 19. In the absence of USVs and their business of essential goods and services the governments would have faced a major dilemma to meet peoples' expectations to seek basic goods and needs. At the same time, it has helped the USV community to be economically active and induce livelihood in low-income areas particularly

slums. Relief to USV and slums provided resilience to cities to continue with necessary functions and enable support system to facilitate hot spots and containment zones.

SDG-1: No Poverty

PMSVANidhi is also a milestone to move towards the UNSDG-No Poverty. It has sustained and improved the economic status of USVs which would have joined lower rank in income poverty which has wider repercussions in terms of multidimensional poverty. Income generation with induced working capital has provided a relative ease to USVs to be comfortable for necessary minimum expenditure on livelihood

(maintenance of household establishment).

SDG-3: Good Health & Well-Being

The Scheme has also contributed towards good health and well-being in the Indian community by retaining USVs in their work place during COVID time. The further outbreak of COVID was minimised to the native place of USVs and the journey which could have infected the USVs themselves or the people coming in their contact if any of them is infected. The improvement in the financial status of USVs also enabled them to take care of their households in terms of better access to water, clothes, food, and shelter. The scheme is in continuation of National Policy of Street Vendors which seeks to provide vending zone for USVs. It has added to value to USVs for more productive occupational operations with better hygiene and health for buyers and sellers.

SDG-5: Gender Equality

The beneficiary USVs constitute 40 percent share of women which is a major milestone for gender equity. Gender mainstreaming is a part of PMSVANidhi wherein women either the beneficiary or as family member of USV tends to benefit for raising their economic and social status.

SDG-8: Decent Work and Economic Growth

The scheme is lifting economic status of beneficiaries which is evident from increasing volume of business transactions as a result of induced working capital under the loan. The scheme is a boost to COVID hit economy and assisting for a 'V' shape recovery. It has linked USVs B2B and B2C (Business to Business and Business to Customer) transactions with value and supply chain. The digital footprints under PMSVANidhi has made a dent in the volume and size of Mobile Wallet transactions (MWT) in India with a potential to capture 25 percent share by December 2024. It will go a long way to have financial inclusion of USVs.

SDG-9: Industry/Innovation

The scheme is a game changer for micro enterprises (ME) and provide opportunity for upward movement from ME to small enterprise category for higher access to facilities and concessions along with integration with overall production process.

SDG-10: Reduced Inequalities

PMSVANidhi is a path breaking initiative to reduce inequalities among lowest strata (MEs) of income group who as per a recent study earn less than minimum

wages. The scheme brings income and dignity in the life of USVs in terms of growing business transactions and dedicated workplace (under the National Policy for Street Vendors:2014) to carry out their procurement and marketing of goods.

SDG-16: Strong Institutions

PMSVANidhi has shown emergence of a model to inter-governmental and inter-institutional cooperation to mainstream and formalise a largest group of micro enterprises. MoHUA, States and ULBs have come together under Prime Minister's ambitious initiative for USVs. It has demonstrated outstanding outreach in a record time with remarkable speed and protection of skills of small vendors/micro enterprises.

SDG-17: Partnership for the Goals

UNSDG 17 stands for partnership to achieve SDGs with a target. PMSVANidhi keeps in mind a record time to almost immediate delivery of support since its inception. Data also suggest the optimum coverage of USVs within a couple of months.

A MODEL FOR URBAN ECONOMIES

PMSVANidhi while covering 25 percent of urban micro (single worker/own account

–nonagricultural) enterprises has presented a model of formalisation of 40 million micro enterprises (evenly divided in urban/rural areas) out of 62 million MSMEs (73rd Round NSSO-2018)^{xiv}. These micro enterprises have vast potential to (i) upward growth (micro to small), (ii) employment elasticity of GDP, (iii) absorb youth (age group 15-29) falling under NEET (Not in Employment, Education and Training) in 2019 and (iv) bring a regional balance in the growth of manufacturing and services in India. These are commonly outside the formal system of credit, technology, marketing, social security and insurance with income lower than minimum wages/ barely enough to survive.

GENERIC AGENDA FOR INTER-COUNTRY ADAPTATION

PMSVANidhi provides a model to support street vendors to achieve equity and growth in the larger context to tap potential of urbanization (caused by structural transition) and nation building.

1. Develop a national data base on USVs.
2. Launch a dedicated web portal and Mobile App on USV facilitation for prompt access and reporting under scheme.
3. Devise a package of scheme for Urban Street Vendors to mainstream them in the formal economy with higher productivity and social protection.
4. Induce liquidity in the working capital base of USVs with collateral free loan.
5. Scheme should include disbursement in a couple of tranche subject to payment of earlier loan.
6. Include interest subvention to take bankers along.
7. Develop concessions and incentives as part of package based on timely payment, digital transactions, and environmental safeguards.
8. Tune the scheme to contribute towards achievement of national commitment on UNSDGs.
9. Establish intergovernmental and inter intuitional synergy with nodal role to city government at grass root level.
10. Also involve bankers, USVs in the process of synergy among layers of governments and formal institutions.
11. Encourage upward shift of USVs to the category of small enterprises.
12. Arrange vending zone at specific locations to facilitate smooth conduct of business by USVs.
13. Incentivize and encourage digital transactions by USVs.

FOLLOW UP

The achievements of the PMSVANidhi scheme in its current form needs further consolidation, including digital transaction, during next 15 months with coverage of remaining four per cent statutory towns, 10-15% USVs and extension of loan as per requirement and benefits under SVANidhi se Samriddhi. A detailed feedback is also required for Indian economy and socio-economic welfare measures, public sector missions, programs and schemes. The above generic agenda needs to be encouraged by international community seeking feedback from PMSVANidhi which deserve wider documentation, publicity, recognition and nominations for International/regional Best Practices awards (Dubai International Award of Best Practices etc.) and Habitat Scroll of Honor.

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Table 2: PMSVANidhi Performance and Focus Areas of Habitat Day 2022

Habitat Day 2022 Focus Area	PMSVANidhi Achievement
Urban Poverty and Growing Inequality	- Retained 5 million USV's in cities - Sustained their livelihood with a typology of assistance - Minimise growing inequality from potential threat from COVID - Financial Inclusion of Urban Poor - Provided access to USVs to eight welfare schemes of GoI
Sustainable City	- Maintained supply of essential goods under network of USVs - Development of a Data base - Model of livelihood to poor
COVID	- COVID protection to left behind - Limiting the spread of infection - Support package during COVID waves - Supply of essentials
Conflict	- Protected occupation of USVs - Avoided conflict /Developed social cohesion - Self-dependence among poor
Institutional Synergy	- Intergovernmental- Team India Approach - Involvement of Financial institutions/ Banks - Nodal role of ULBs - Synergy among stakeholders - Convergence-with GoI missions and welfare schemes
Finance Mechanism	- Innovative packaging of support - Mix of incentive, concession and loans - Formalisation of urban micro enterprises

- story-oPK5gtff1ZgX2pQI
bWyqbK.html
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all ULBs: September 2022
- transaction-value-india/
and Data from MoHUA
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September 13,2022.
- xi Raise number of digitally
active (1.41 million) USVs
further towards loans
disbursed (3.08 million
USVs).
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account for 40 percent of
3.2 million recipient of
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- xiii MoHUA website landing
page of PMSVANidhi
- v MoHUA,Status of
- ix MoHUA
- xiv MSME=Micro Small and
Medium Enterprises
- x <https://www.statista.com/statistics/731651/mobile-wallet->

EVALUATION OF THE UNEVEN OUTCOMES OF PRADHAN MANTRI AWAS YOJANA

- HOUSING FOR ALL MISSION

**MR. MANAV KHAIRE
DR. SHISHIR KUMAR
JHA**

“The affordability and accessibility constraint that pushes the urban poor into informal housing makes them the most vulnerable among all the target groups across the verticals. Since ISSR is the least performing scheme, there is an urgent need to revive it on design and implementation levels.”

KEYWORDS: Pradhan Mantri Awas Yojana – Housing for All (Urban), ISSR, CLSS, AHP, BLC

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The Pradhan Mantri Awas Yojana – Housing for All (Urban) mission (PMAY-U) that is implemented through various programme verticals completes its implementation term (2015-2022) of seven years in 2022. Though PMAY-U has outperformed previous central housing schemes, the outcome of different programme verticals within PMAY-U has been disproportional. Two of the verticals account for 80% of the scheme uptake, whereas the rest of the verticals are struggling to take off. Can we explain the uneven outcomes of verticals of PMAY-U? We examine this question using a comparative policy analysis approach to understand the variations in individual verticals’ policy designs that, in turn, affect their performance. The analysis suggests that the demand-pull strategies have translated into increased uptake of two verticals. In contrast, the verticals with a supply-push strategy have performed poorly over the years. This paper delves deeper into the differential policy designs of the PMAY-U verticals and their linkages with uneven outcomes.

INTRODUCTION: Uneven Outcome of PMAY-U verticals as of 2022

Implemented by the Ministry of Housing and Urban Affairs (MoHUA), the PMAY-U was initially designed to address the housing requirements of the Indian urban poor and slum dwellers through four programme verticals, and a fifth vertical was added in July 2020. These verticals are (1) “In-Situ” Slum Redevelopment (ISSR) Scheme that uses the land as a resource to rehabilitate slum dwellers with a financial assistance of ₹1 lakh (\$1255)¹ per housing unit, (2) Affordable Housing in Partnership (AHP) that provides financial assistance of ₹1.5 lakh (\$1883) per housing unit to affordable housing projects, (3) Beneficiary-Led Construction (BLC) that offers subsidy of ₹1.5 lakh (\$1883) to households for construction or enhancement of the house, (4) Credit Linked Subsidy Scheme (CLSS) that provides interest subsidy up to ₹2.67 lakh (\$3352) on home loans

taken by the beneficiaries, and (5) Affordable Rental Housing Complexes (ARHC) scheme launched in July 2020 to address the rental housing needs of urban migrants (MoHUA, 2021a). Since ARHC is a relatively new scheme, we restrict our discussions to the other four programme verticals.

The initiatory target of PMAY-U mission was to support the construction of 20 million housing units which was revised later to 11.22 million according to a demand assessment survey across the states (MoHUA, 2016). Against this demand, as of June 2022, 12.26 million houses were sanctioned under PMAY-U, out of which 10.1 million were grounded for construction and 6.1 million were completed. Out of 12.26 million sanctioned houses, 7.37 million (60.4%)

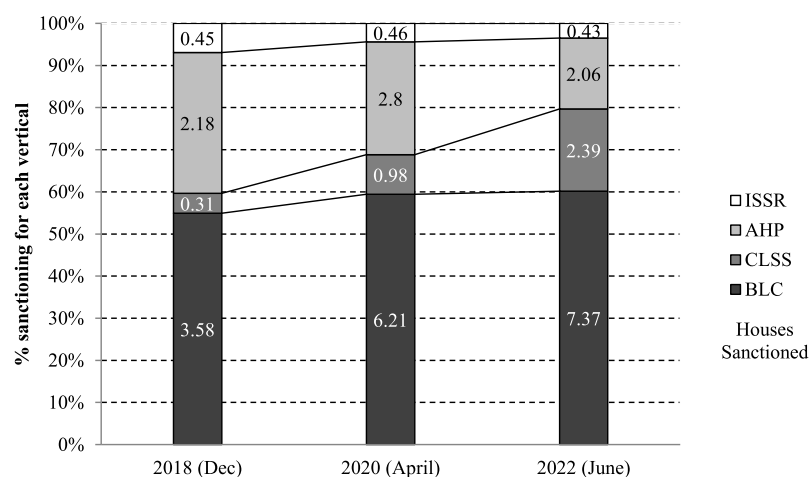
were under BLC, 2.39 million (19.6%) under CLSS, 2.06 million (16.8%) under AHP, and 0.43 million (3.5%) under ISSR (MoHUA, 2022).

Figure 1 presents the houses sanctioned under each of the four verticals in 2018, 2020, and 2022 respectively. There have been two opposite trends over the years. First, the sanctioning of houses under the BLC and CLSS verticals has steadily grown from 2018 to 2022. It was 60% in 2018 and currently accounts for 80% of the overall sanctions. Second, the sanctioning of houses under ISSR and AHP shows a decreasing trend and currently accounts for 20% of overall sanctioning reducing from 40% in 2018. Interestingly, the sanctioning of houses has been consistently low for ISSR vertical standing, currently at 3.5%. Kumar and Chattopadhyay

(2022) also highlight the underachievement of ISSR owing to the various legislative and administrative conflicts arising during project implementation.

If we shift focus from sanctioning to the funds released under PMAY-U, we find that the CLSS vertical currently accounts for 46% of funds consumed. As of June 2022, the total funds released stood at ₹120130 crores (\$15.08 billion), of which CLSS accounted for ₹55095 crores (\$6.91 billion) (MoHUA, 2022). While the CLSS vertical contributed 19.6% of overall house sanctioning under PMAY-U, surprisingly, it accounts for 46% of funds consumed, making it the most successful vertical under PMAY-U. Overall, the evidence indicates the uneven performance of four PMAY-U verticals depending on the distribution of sanctioning and further scheme uptake. Every vertical has a different design and operational framework depending on the unique objective it serves, which may partly explain the variable outcome of PMAY-U. Accordingly, the following research question guides this inquiry: What factors related to policy design and implementation strategies can explain the uneven outcome of PMAY-U verticals? We use a comparative policy analysis framework to investigate the

Figure 1: Housing units sanctioned for each vertical of PMAY-U



Source: MoHUA (2018, 2020, 2022)

reasons behind the variations between the verticals.

Comparative analysis of PMAY-U verticals

Comparative analysis in public policy entails using comparative logic to systematically investigate the similarities and differences across different policy

domains (Lodge, 2007). This comparative lens allows the researchers to understand the variations between different policies addressing the same problem (housing in this paper) and draw lessons for further policy development. We apply the comparative analysis approach to the policy design framework

proposed by Schneider and Ingram (1997) to compare four PMAY-U programme verticals. The policy design framework offers researchers an approach to comparing and analysing the fundamental elements of policies, including *goals*, *agents*, *target populations*, and *tools* that are common features

Table 1: Comparison of four PMAY-U programme verticals

	Credit Linked Subsidy Scheme (CLSS)	Beneficiary-Led Construction (BLC)	"In-Situ" Slum Redevelopment (ISSR)	Affordable Housing in Partnership (AHP)
Supply-side OR Demand-side	Demand-side	Demand-side	Supply-side	Supply-side
Category	Central Sector Scheme ²	Centrally Sponsored Scheme ³	Centrally Sponsored Scheme	Centrally Sponsored Scheme
Stage of policy intervention	Post-construction (after the home loan is sanctioned)	During construction	Initial ideation of the project	Before construction
Goals	Improving the housing affordability of low-income homebuyers by providing interest subsidy on home loans	Providing financial assistance to low-income households for the construction or enhancement of houses	Slum redevelopment and rehabilitation with the help of private players	Construction of affordable housing stock through Public-Private Partnerships (PPP)
Target population	Low-income homebuyers	Low-income households	Slum dwellers and urban poor, private developers, and private landowners	Low-income households and private developers
Agents	Central government, Central Nodal Agencies ⁴ , Housing Finance Institutions	Government (central and state) and Urban Local Bodies (ULBs)	Government (central, state, and ULBs), private landowners, private developers, and slum dwellers' associations	Government (central, state, and ULBs) and private developers
Tools	Direct interest subsidy on home loan released to the beneficiary	Direct financial assistance to the beneficiary for construction or enhancement of house	PPP using land as a resource	PPP through financial assistance to developers for each housing unit constructed

of all policies. To guide the empirical analysis, each of the elements is defined: (a) *goals* are the policy problems that are needed to be solved as an outcome of a particular policy, (b) *agents* refer to the institutions involved in the policy implementation, (c) *target population* denote individuals, groups, and organisations who are the targets of policy intervention, and (d) *tools* are the policy instruments used as a policy intervention to bring about the desired change (Schneider and Ingram, 1997).

Table 1 compares the four verticals of PMAY-U based on three aspects: (1) whether the scheme is supply-side or demand-side driven, (2) at what stage of housing is the policy intervention is made, and (3) individual verticals' policy design frameworks. Housing is a process that involves stages right from land acquisition to construction and final consumption. The stage at which the housing policy intervention is introduced affects gestation periods for the specific schemes. Further, the *agents* involved in the policy chain of each vertical are contingent upon the *target population*, *tools*, and the stage of policy intervention. Though all the verticals are designed to address the urban

housing issue, each scheme has discernible variations in policy designs and implementation strategies. We describe and compare the implementation strategies of the verticals in next sections.

Demand-pull bottom-up strategy (BLC and CLSS)

Both the successful verticals, namely BLC and CLSS, are demand-side schemes wherein the impetus for uptake of the scheme is driven by the beneficiaries who receive cash benefits directly to the bank account. The policy intervention under BLC is provided during the construction process of the house. Interested low-income households approach the concerned ULBs and apply for financial assistance. The ULBs perform the eligibility check and subsequent monitoring of the house construction to release the amount in 3 to 4 instalments tied to the construction progress. Though the final fund disbursement takes a relatively long time, the initial funds' allocation depends on the time taken by ULBs to assess applicants' eligibility which translates into a shorter gestation period. This scheme is simple to implement, involving the active participation of ULBs after beneficiaries apply for

the subsidy.

The CLSS policy intervention happens at the last stage of the housing process when low-income households have already entered a home loan to buy a house. Interested homebuyers apply for the subsidy at the lending institutions (like banks and housing finance companies) where they have home loan accounts. These lending institutions perform the means-testing for the applicants to determine their eligibility and then forward the information to the nodal agencies for further subsidy disbursement that is directly released to the beneficiaries' bank accounts. CLSS is the only Central Sector Scheme among the four verticals, while others are Centrally Sponsored Schemes. By design, all the funds for CLSS flow from the Central government without any financial or operational role of the state governments and ULBs. Overall, CLSS follows a lean implementation strategy involving only two agents, CNAs and housing finance lenders, drastically reducing the chances of multi-institutional conflicts. Lean implementation strategy and the low gestation period probably make the CLSS the most successful of all the verticals. There is a flip

side to this; with low turn-around time and fewer complexities, CLSS becomes an easy and efficient choice for policymakers. Kundu and Kumar (2017) highlighted the dilution of the inclusive and pro-poor agenda of PMAY-U when the policymakers enhanced the income limits for the eligibility criteria for availing of the interest subsidy to include Middle Income Group households with annual income up to ₹18 lakh.

Supply-push top-down strategies (ISSR and AHP)

The verticals, ISSR and AHP, constitute a top-down supply-push wherein the policy impetus flows from the top (government authorities) to the bottom (end beneficiary) of the policy chain. ISSR vertical follows PPP model in which the policy intervention starts at the very beginning, when slum dwellers and private players are approached for redevelopment by the authorities. ISSR vertical uses land as a resource to redevelop slums on government (central/state/ULBs) land or private land with the help of the private sector. The beneficiaries under ISSR receive housing along with basic civic services (like water supply, electricity, and sanitation)

and the private partners get free sale component in the form of extra Floor Space Index (FSI) or Transferable Development Rights (TDR). ISSR scheme implementation process involves the active participation of agents such as government authorities (central/state/ULB), private landowners, private developers, and slum dwellers' associations (Table 1). As multi-institutional interests are involved in the process, the time taken to resolve disagreements and conflicts leads to a higher gestation period for each project. Typically, the delay is attributable to land issues, tendering issues, financing issues with developers, delays in approvals, and negotiations with slum dwellers' associations (MoHUA, 2021b). Overall, the ISSR implementation is complex and involves delays owing to policy implementation that necessitates the involvement of multiple *agents*.

Similarly, the AHP vertical also follows the PPP model requiring consultations and negotiations between the government (state and/or ULBs) and private developers (Table 1). The policy intervention is planned before the construction of the project which involves a coordinated effort by two

agents, viz. government (central/state/ULB) and private sector affordable housing developers. Unlike the private players in ISSR who receive free sale component (FSI or TDR), under AHP, the developers only get central assistance of ₹1.5 lakh (\$1883) per housing unit constructed through the project. Moreover, to become eligible for assistance, the project has to build a minimum of 250 housing units, of which 35% must be allocated to low-income beneficiaries. These rather stringent eligibility criteria and lack of incentives like FSI and TDR make AHP an unattractive proposition for private players, affecting the uptake of this scheme among developers. Additionally, for a project to take off under AHP, the private developer has to find it profitable while meeting the eligibility criteria. All the negotiations and consultations during the project planning already account for a more extended gestation period.

CONCLUSIONS

Though the choice of policies by the central government is balanced between two supply-side (ISSR and AHP) and two demand-side (BLC and CLSS) policies, the current performance is lopsided towards the demand-side

verticals. On the policy design front, several factors affect the policy outcome. First, the supply-push top-down strategy (as in ISSR and AHP) heavily banking on the PPP model involving multiple *agents* leads to a longer gestation period due to multi-institutional conflicts. On the contrary, the demand-pull bottom-up strategy (as in BLC and CLSS) offers a comparatively lean policy implementation leading to a shorter gestation period. It is not to say that supply-side policies have a bad design, rather, it needs reassessment of in-depth engagement by all the policy agents towards a single goal of successful policy delivery.

Second, the extent of private participation embedded in the policy *tools* or instruments creates a conflict of interest for the public and private parties involved. For example, ISSR and AHP work on a PPP model that cannot take off until the interests of private parties are sufficiently met. The lack of interest shown by private players has been one of the reasons behind the reduced uptake of the verticals (Kumar and Chattopadhyay, 2022). Unless the private players find the specific project profitable and aligned with their interests, the implementation gets stuck in the planning stage,

delaying the gestation period. Conversely, no private players are involved in BLC implementation, and private lenders for implementing the CLSS scheme need minimum participation only for means-testing. This translates into a lean implementation framework that positively contributes to the scheme uptake.

Third, if we profile the economic characteristics of the *target group* beneficiaries for each vertical, there is a contrasting pattern. CLSS targets homebuyers, BLC targets homeowners who want to build/extend their homes, and AHP targets prospective low-income homebuyers who can afford a home through the housing market. These three schemes target households who are slightly better off economically to afford to buy a home through formal markets. On the contrary, ISSR is the scheme that caters to the needs of slum dwellers at the bottom of the Indian income pyramid. This target group has the lowest housing affordability, severely restricting their access to formal housing markets. The affordability and accessibility constraint that pushes the urban poor into informal housing makes them the most vulnerable among all the target groups

across the verticals. Since ISSR is the least performing scheme, there is an urgent need to revive it on design and implementation levels.

Lastly, invoking the central-state-local relationship through designing Centrally Sponsored Schemes (ISSR, AHP, and BLC) and Central Sector Schemes (CLSS) brings its own challenges. In the case of CLSS, the central government directly transfers the interest subsidy to the beneficiaries without any involvement of state or local authorities. While it reflects a relatively seamless policy strategy, it tends to circumvent the needs of the state and local authorities. As housing is a state subject in India, all the housing policy decisions necessitate the recognition of local housing markets and needs. Central Sector Schemes like CLSS tend to overlook these local level needs undermining the already strained central-state-local relationship.

In sum, the uneven performance of the PMAY-U verticals can be partly explained by variations in policy designs, as discussed in the paper. Some verticals like ISSR and AHP are bound to have a longer gestation period, multi-institutional conflicts, and lower uptake

owing to the complex policy design and implementation strategies. These shortcomings on the design level warrant more attention and more resources to be allocated to severely underperforming verticals like ISSR. Ensuring balanced performance of all the verticals is imperative to realising the inclusive “Housing for All” agenda undergirding the PMAY-U mission.

Notes

1. According to the Reserve Bank of India, 1 US\$ equalled ₹79.64 on July 12, 2022. We use this exchange rate to compute Indian Rupee (₹) to an equivalent amount of US\$.
2. Central Sector Schemes are the category of schemes that are fully funded by the Central government.
3. Centrally Sponsored Schemes are the category of schemes that are jointly funded by the Central government and the State government.
4. For the CLSS vertical, the Central government has

appointed three Central Nodal Agencies (CNAs), namely the National Housing Bank, Housing and Urban Development Corporation, and State Bank of India, to channelise the interest subsidy to the beneficiaries through housing finance lending institutions.

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BASIC SERVICES FOR URBAN POOR (BSUP) PROGRAMME

A Case Study Of A Slum Redevelopment Project In Kolkata, West Bengal

MS. DEBANJALI SAHA
DR. RUCHITA GUPTA

“The implementation of the programme, on the other hand, was intended to offer better social and physical infrastructure amenities that in turn have raised the level of living overall, produced a safe neighbourhood, and promoted social cohesiveness.”

Keywords: Redevelopment, Urban Slums, Policies, Affordable Housing, Infrastructure

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The increasing drift of urbanisation has resulted in the expansion of informal settlements and the ensuing imbalance between the demand and supply of affordable housing, which in turn has increased the need for shelter and related infrastructure in urban areas. The National Urban Housing and Habitat Policy (NUHHP) 2007 has given the nation the difficult objective of “Affordable Housing for All,” which has assumed special relevance in view of the current housing shortages. A vast majority of slums or informal settlements are located near the urban economic centres, which poses a great threat as well as challenge to the researchers and policymakers regarding the growing distress about the future of cities and the wellbeing of the communities. Therefore, this paper deals with the understanding and reviewing of one of the two sub-missions of JNNURM (Jawaharlal Nehru National Urban Renewal Mission) i.e., the Basic Services for Urban Poor (BSUP) programme implemented on a redevelopment project for slum inhabitants of Kolkata Municipal Corporation. This paper also highlights the

housing quality and services in the settlement, before and after the implementation of the redevelopment, and its impact on the quality of life. A quantitative approach was adopted to establish a rational nexus between affordability, adequacy, viability, and security of tenure, which form the conditions of housing. However, the slum improvement approach does not sustain over the long term, as redeveloped settlement shows severe levels of deterioration over time.

INTRODUCTION

Every country's urban areas are increasingly serving as the principal hubs of economic activity, housing both the formal and informal sectors of society (International Labour Conference, 2014). With a population of just under 7 billion, there are around 1 billion slum dwellers residing in the world (UN, Department of Social & Economic Affairs, 2011). Rapid urbanisation accelerates the migration of people from rural to urban settings while also expanding the supply-demand disparity and raising the need for housing, infrastructure-related services, and

amenities in urban areas (The Global Risks Report, 2015). According to Census 2011, India has a population of 1.2 billion citizens, with 31.2% or 377 million people residing in urban areas, which is expected to rise to 600 million people by 2031. Millions of people have migrated to urban agglomerations from rural and other less developed areas because of the potential for high incomes and a better standard of living (Evans et al., 2009). However, a large number of migrants lack the education and/or skills necessary to enter the middle or higher classes of the urban labour force. As a result, they either end up moving into existing congested settlements, squatting near economic centres within the city boundaries or merely settling along the periphery of urban regions (United Nations, 2003).

Urban housing is a vital component in the social and economic development of any country (Arku, G, 2006). In light of increasing slum population in India, it is necessary to give the issue of slums immediate attention in order to enact policies to address their huge proportion as a rising component of the urban landscape. However, the percentage of urban residents who live in slums is declining as a result of strong urban

policies and programmes that serve to improve the state of the current slums and eventually help to prevent the formation of new slums.

GOVERNMENT INTERVENTIONS FOR SLUM DWELLERS AND VULNERABLE SECTORS

The right to adequate housing is a basic human right as shelter is a basic human need. The provision of adequate housing is emerging as a major thrust area for the Government of India. With the skyrocketing increase in the cost of land, building materials, labour and infrastructure, affordable housing has become a distant dream for the economically weaker section and lower-income groups. As a result, several programmes and policies were developed and put into practice to efficiently and effectively stimulate urban growth as well as to provide housing for the most vulnerable groups (Harish S, 2021). Additionally, the viability of the project for the residents who will be living there is a crucial factor to be taken into account while planning an affordable slum rehabilitation housing project (Deb, 2016). For the residents to enjoy a higher standard of living, consideration should be given to the project's viability in the context of economic development opportunities like integration

with the urban fabric, employment generation, and adequate access to social infrastructures, like schools, colleges, and healthcare facilities, etc. Due to better chance of generating more income along with better infrastructure amenities, slums that are situated in or near employment centres or the centre of the city, have a greater chance of being viable. The condition of housing is, therefore, to develop a rational connection between affordability, adequacy, viability, and security of tenure (Harish S, 2021). Hence, the State Government's role and intervention become very essential in eliminating slum-like situations.

A Basic Services for Urban Poor (BSUP) project, under JNNURM which was launched in December 2005, from Kolkata is chosen as our research area for the critical case study analysis in this work. This BSUP programme includes upgrading housing as well as infrastructural amenities such as laying a water supply pipeline, repairing roads and walkways, and upgrading the drainage and sanitation system. In West Bengal, a total of 108 projects were proposed; however, only 97 of those projects were built, producing 1.06 lakh housing units. With a dwelling unit (DU) completion rate of 17.6%

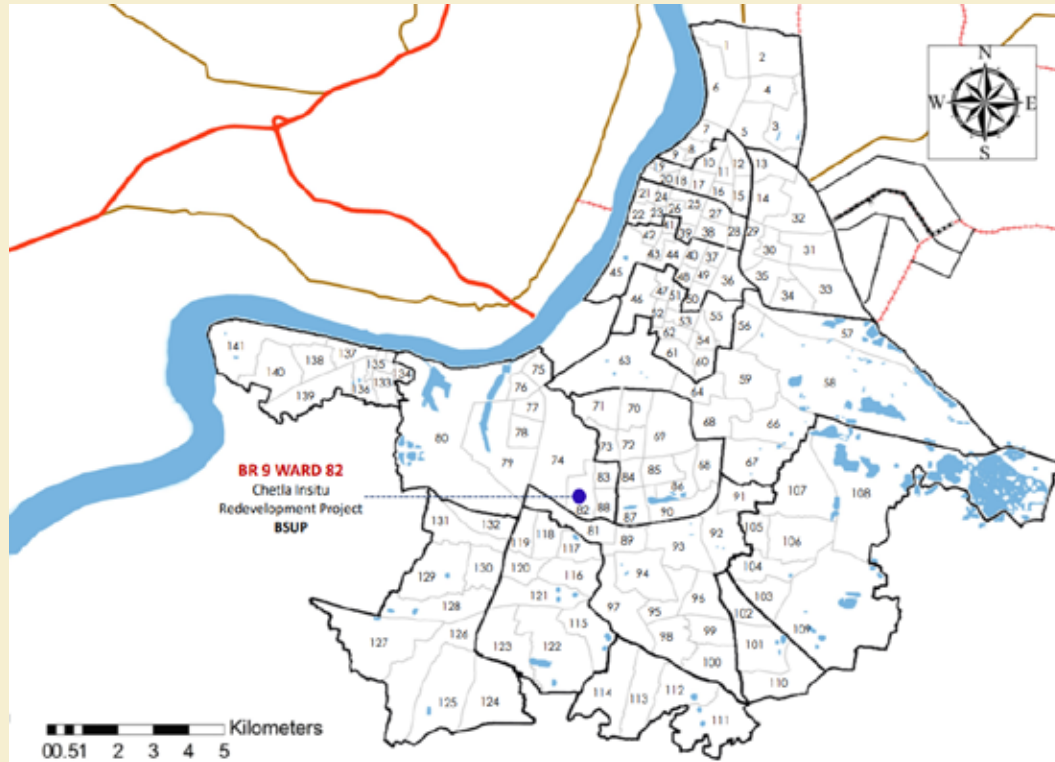
compared to other states, West Bengal has one of the largest numbers of projects and dwelling approvals for the BSUP policy, making it one of the most successful policies in the state to be implemented (MoUEPA, 2005). Out of the 11 projects that were suggested for Kolkata, 66% were in-situ redevelopment projects where the livelihood of the people was not disturbed, and 35% were relocation initiatives. However, only four projects—two of which relocated and two of which involved in-situ redevelopment—were ultimately put into action in the Kolkata Municipal Corporation (KMC) area.

For the funding, the central government share was 50%, where the first half was to be released after the state fund (30% share), and the remaining half was to be released incrementally. The beneficiaries paid 5% of the project share in installments. However, several slums of 40-45 years in Kolkata were not registered by the municipality, which prevents the residents (mostly migrants) from neighbouring districts and states from getting legal identity papers. Ironically, when evicted, they could not claim rehabilitation, as they did not have any documents as proof of address.

SLUM REDEVELOPMENT PROJECT UNDER BSUP IN KOLKATA

West Bengal, has a population of 9.13 crore and ranks as the fourth-most populated state, with about 31.35% of its residents living in slum areas (Census 2011). The criteria for the selection of the case study were based on infrastructure deficiency and vulnerability. The lack of water supply, sanitation, drains, and roads in slums were evaluated, and vulnerability was determined based on congestion, housing quality, income level, and minority population.

MAP 1: Location of Chetla In-situ Redevelopment Project In Ward Map of Kolkata



Source: KMC, Compiled by Authors (2020)

Following a reconnaissance study of all four projects, the one with the poorest infrastructure and most vulnerable current state was chosen for a survey. Therefore, for the purpose to evaluate the condition and quality of life in a slum rehabilitation project under Basic Services for Urban poor (BSUP), we have studied and surveyed the slums of Chetla which was an in-situ redevelopment project. This approach was implemented throughout the slum population for project delivery and addressed the overall housing and infrastructure services gap of an individual or the slum area as a whole.

Location

The BSUP colony is situated in Kolkata's ward 82 and

borough IX along Chetla Hat Road (Map 1). Prior to the BSUP project, in order to improve the deteriorating living circumstances of EWS in the neighbourhood, flats were approved for in-situ rehabilitation in Chetla under the Slum Redevelopment Scheme (1969). On the property, there was a body of water that was used for local fishing. Later, it was discovered that squatters had occupied some of the surrounding lands. Four towers were built in the region in 1969 as part of the Slum Redevelopment Scheme (1969), accommodating 160 DUs (G+3), but the households refused to pay rent beyond what they were already paying in the slums. Over the course of the year, the conditions of these dwellings

were deteriorated to the point where KMC and the Kolkata Environmental Improvement Program (KEIP) decided to demolish the four housing blocks and the water body on the site and redevelop the slums under JNNURM-BSUP Programme. Under the BSUP strategy, the KMC and KEIP built 10 dwelling complexes in 2006 for the site's slum redevelopment. A G+4 construction was built to replace the two demolished buildings, and some basic amenities and utilities were placed on the site. Phase- 1 (416 DU) of the BSUP project began construction work in 2006; phase 2 (64 DU) of the project began construction in 2011, and it was completed in 2013. Flats were distributed to the beneficiaries in 2013 (figure 1).

FIGURE 1: Location of Redeveloped Slums and their Transit Shelter



Source: Compiled by Authors (Primary Survey, 2020)

With a population of 2160 people and a site size of 1.09 hectares, the plan was implemented while maintaining a gross density of 396 DU/hectare. The cost of each unit was Rs 2.5 lakh, of which beneficiaries contributed 5%, or Rs 12,500. However, those who wanted a ground-floor apartment or one in a preferred location had to pay more. The beneficiaries were required to contribute 5% of the dwelling unit's cost, regardless of their income or financial situation. The state's portion was Rs. 75,000 (30%), the ULB (KMC) share was Rs. 44,500 (18%), and the central share was Rs. 1.18 lakh (47%). The state share received low-interest financing from the Asian Development Bank.

PROJECT DETAILS

The Kolkata Municipal

Corporation (KMC) has contributed to the process of locating, identifying, and prioritising the distribution of homes to the most vulnerable people. For eligibility, the BPL slum dwellers should have stayed in the slums prior to 1995. The site plan of Chetla In-situ Resettlement project is given at figure 2. Acquiring consent was not a problem (70%) and there was the willingness of the majority of the dwellers to shift to a permanently owned pucca structure. Women grantees received preference, and they were chosen by the revenue department. The beneficiaries were chosen using a digitalised lottery method in a way that automatically assigns households with physically disabled members on the first floor.

SLUM PROFILE AND CHARACTERISTICS

Socio- Economic Characteristics

The typical household size in the settlement was five people (figure 3), which accounts for 40% of the population. The joint family arrangement represented a significant number of household members. The majority of slum dwellers work for a daily wage (70%) or at a local store (33%), or they perform household cleaning activities (28%), where majorly women are involved (figure 4 & figure 5).

Due to its proximity to the city's central business district, the community had a low-income profile (figure 6). An average family size of five and more reduces a person's

Figure 2: Site Plan of Chetla In-situ Resettlement Project



Source: Compiled by Authors (Primary Survey, 2020)

Figure 3: Household Size

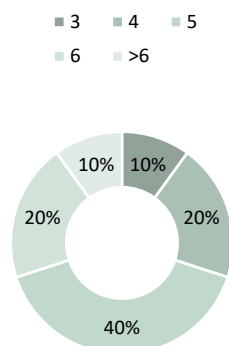


Figure 4: Employment Type

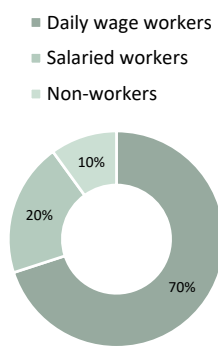
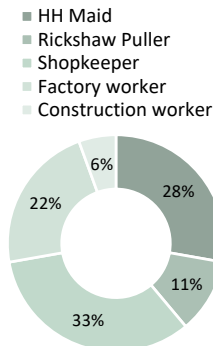


Figure 5: Type Of Occupation



Source: Compiled by Authors (Primary Survey, 2020)

potential to save money because most people make between Rs 2000 and Rs 5000 per month. The majority of revenue is spent on food and transportation, and ultimately, 50% of the income was saved mostly for medical expenses and the marriages of their children (figure 7).

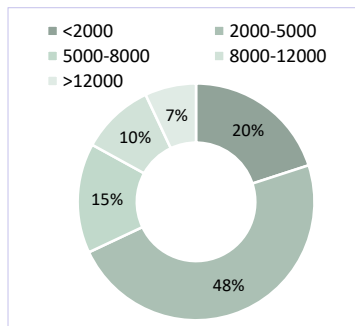
Housing Condition after Redevelopment

The ownership of the house was in the name of the wife or co-jointly owned. It was a G+4 structure, with no provision of elevators (image 1), with each apartment costing Rs. 2,50,000/-. Initially, the slum dwellers used to live in single-storied hutments, with plots having sizes varying from 15-35 sq.m, where 95% of the houses were kutcha with terracotta tiles roof. Though a large household size had to be accommodated, yet, the size of the unit that was provided after the reconstruction was quite small (12 sq.m). However, all the units are

pucca, but have a low quality of construction, with chunks of cement and plasters falling off. The corridors require artificial illumination even during the day because they are quite packed and dark being doubly loaded (image 3).

The total population catered by the Chetla BSUP project is 2160 housed in 480 dwelling units in 10 blocks (figure 8). The unit, which was provided, had a common multi-purpose room of size (3.2X1.5M) 10.08 sq.m and kitchen space of 1.8 sq.m. A common toilet was provided of size 14.5 sq.m. The total carpet area was 11.8 sq.m

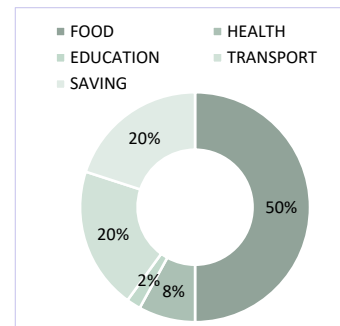
Figure 6: Household Monthly Income



per unit and the built-up area was 12.7 sq.m per unit, the super built-up area was 17.8 sq.m per unit. The dwelling units were extremely small to accommodate an average household size of 5-7 persons (figure 8). No assigned parking space was provided within the colony, and over a period the area has become congested. There was a garbage disposal issue all over the site. Few illegal dwellers had taken hold of dwelling units due to personal political influence. In some dwellings, the original allottees are not staying and have encroached on other slum locations and let-out the resettlement unit for rent at Rs 1000-1500 per month.

The beneficiary's contribution was an integral part of the project and that contribution was to be taken by the state government in the implementation of the project. The slum dwellers were important contributors to the vote bank. Hence, their right to housing was protected by

Figure 7: Monthly Households Expenditure



Source: Compiled by Authors (Primary Survey, 2020)

Images 1: G+ 4 structure without provision for lift



Images 2: Toilet door width was not according to standard



Images 3: Doubly loaded dark corridors



Source: Compiled by Authors (Primary Survey, 2020)

providing transit houses to 432 families. The cost of the land for projects was not provided under the programme and has been borne by the State government.

Infrastructure Characteristics

Basic urban infrastructure and services were provided in their new flats including in-house electric connection, access to community toilets as part of project design, public water supply connection, KMC catered for solid waste collection, 100% provision for drainage and access to Anganwadi within the site.

To comprehend the pre- and post-redevelopment circumstances and conditions of the slum dwellers, a comparative analysis was conducted (Table 1). The

Figure 8: Ground floor plan showing the block details



Source: Compiled by Author (Primary Survey, 2020)

residents claimed that before the redevelopment, the unclean and substandard living environments contributed to the spread of disease, increasing their health care expenses, demoralising or preventing them from working, and compromising the community's well-being. The implementation of the programme, on the other hand, was intended to offer better social and physical

infrastructure amenities that in turn have raised the level of living overall, produced a safe neighbourhood, and promoted social cohesiveness.

QUALITY OF LIFE

A qualitative technique was used to determine the effectiveness of specific scheme features in determining the quality of life of beneficiaries after the implementation of the

scheme. The parameters were predicated on the notion of different attributes and other criteria needed for grading. The overall analysis was based on the primary survey observations. The study measured the quality of life in the in-situ resettlement community based on five crucial parameters (F5): household satisfaction; stakeholder satisfaction; housing operating costs;

Table 1: Analysis of the settlement level infrastructure before and after the scheme

Sl. No.	ASPECTS	BEFORE THE SCHEME	AFTER SCHEME IMPLEMENTED
1.	Access	Access was uneven and narrow with a 3-4 meters wide road.	The access is from a 3.5-4 meters wide road. Long, dark and narrow passageways with no light and ventilation leading to the units.
2.	Water Supply	Community water tap (twice a day) with first half an hour of dirty water during monsoon seasons.	Common water connections for everyone, which are supplied by KMC twice daily for 4 hours.
3.	Toilet Facilities	Community toilets were constructed by KMC but open defecation was still observed.	Common toilet (male and female separate) facilities, each shared by 9 households. The toilets are ill-designed and do not follow any standards. It is difficult to enter from a 500mm toilet door.
4.	Garbage Disposal	There was no collection system and garbage was dumped in open.	KMC collects the garbage daily, but usually, people dump it here and there, wherever they get any open space.
5.	Drainage	Drainage pipes were provided under Calcutta Slum Improvement Programme 1974.	Closed and open drains are both provided along with stormwater drainage. However, overflow of drains is observed as people dump their waste in the drains.
6.	Electricity	Faulty electrical system with no meter connection.	24*7 metered electricity supply, with bills ranging from Rs 1000-1200/- in summer and Rs 400-500/- in winter.

Source: Compiled by Authors (2020)

quality-related; and infrastructure provisions. Using a three-point Likert scale, the best facilities were given a higher score (score 3), while the worst possible alternative received the lowest value (score 1), as shown in Table 2.

After calculating the combined average scores of five factors, we found that infrastructure provision received the

highest rating while housing operation costs received the lowest rating. This finding suggests that environmental and sustainable factors were not taken into account when planning the project's delivery.

CONCLUSION

For a successful and high success rate of any slum rehabilitation project, it

is important to consider the preferences of the target groups and a better connection between various stakeholders involved, for the timely completion of the project. Since affordability is crucial for gaining beneficiaries' consent, the slum resettlement project was evaluated from two viewpoints, namely financial affordability and affordability of non-housing components.

Table 2: Selected parameters for Quality of Life in insitu- slum resettlement project

Variables	Factors	Parameters	Score	Aggregate
F1	Households satisfaction	The functionality of the housing facility	2	1.75
		End user's satisfaction with the housing facility	1	
		Maintainability of housing facility	2	
		Safety performance (crime)	2	
F2	Stakeholders' Satisfaction	Timely completion of the project	1	1.66
		Project team satisfaction	2	
		Reduced occurrence of disputes and litigation	2	
F3	Housing Operation cost	The energy efficiency of the housing facility	1	1.33
		The reduced lifecycle cost of housing	2	
		Environmental performance of housing facility (Eco-friendly)	1	
F4	Quality related	Quality performance of the project	2	2.0
		Aesthetically pleasing view of completed house	3	
		Technology transfer	1	
		Technical specification of housing	2	
F5	Infrastructure provisions	Water supply	3	2.25
		Drainage and sewerage	2	
		Solid waste management	1	
		Electricity connection	3	

Source: Compiled by Authors (2020)

For the first part, it was found that the people could afford the 5% cost contribution from the beneficiary share since they received monthly microfinance instalments, which made it easy for them to repay the money within the allotted period. However, because of the higher overall cost brought on by the project's delay, the beneficiary contribution cost also increased, which caused some slum dwellers to experience housing hardship. The unit size was incredibly small, which turned out to be insufficient for them given the big family size and the pattern of space consumption, which brings us to the second point of non-housing considerations. Therefore, from these two points of affordability, it can be concluded that the housing was affordable to the majority of the slum dwellers but was not adequate or viable in terms of space and standards.

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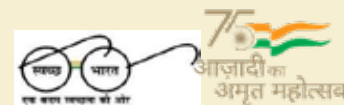
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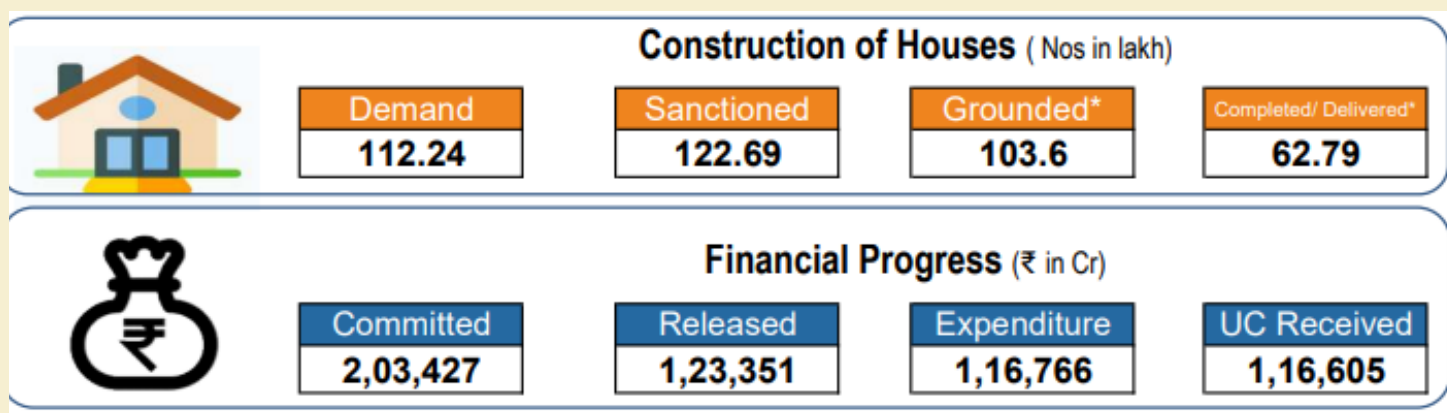


PMAY (U) Achievement (provisional)

[as on 19th September, 2022]



Overall Sanctions for 1.23 crore Houses



16 lakh houses are being constructed using New Technologies

Source: PMAY Dash Board, www.pmay-urban.gov.in, accessed on 21st September, 2022

ANALYSIS OF THE DELHI-UNIFIED BUILDINGS BYE LAWS 2016 WITH RESPECT TO THE INTEGRATION OF PROVISIONS OF THE NATIONAL BUILDING CODE

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“It is further recommended that the National Building Code, 2016 created after much deliberation, by an expert committee, must be adopted in total by all states and municipalities, as this will decrease any scope for discrepancy which may exist from city to city.”

Key Words: National Building Code 2016, Unified Building Bye Laws-2016, statutory provisions, Building regulation, advisory, law, adoption of guidelines

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The National Building Code has been created by the Bureau of Indian Standards and has been developed right since 1965, on the basis of recommendations to have uniform building guidelines which are updated regularly as improvements in the industry keep happening. But the National Building Code, as an advisory has to be adopted by the various land owning agencies and the municipalities in the state to make it binding. In Delhi, the Unified Building Bye Laws 2016 are applicable to 5 municipalities, which have to compulsorily enforce the bye law for sanctioning building permits within their jurisdictions. This paper analyses, clause by clause, the various provisions of the National Building Code, 2016 that have been adopted in the Unified Building Bye Laws, 2016 and thus made mandatory by law. It has been found that not all of the parts of the National Building Code have been adopted, but certain sections dealing with lighting, ventilation, water supply, drainage and structural design

have been adopted and made mandatory universally. There is a need to give universal statutory backing to all the provisions of the National Building Code as these are created by nationally renowned experts. Another advantage is that all the energies can be channelized on creating one document for the whole country instead of multiple local byelaws with variations and delays in updating the same.

INTRODUCTION

With the aim of maintaining public health in an urban development setting, buildings have been regulated by model housing laws. Looking back, in 1901, the tenement law was passed in New York. It aimed at including all the provisions which urban dwellers today take for granted. This included provisions for fire, light and ventilation, indoor plumbing and other measures. The effect of the enforcement of this was a dramatic improvement of housing conditions in 11 years after its passage. The mortality rate dropped from

20.057 per thousand in 1900 to 14.11 per thousand in 1912¹. In India too, the All India Sanitary Conference was held in 1914, which set out to highlight the 'main evils resulting from certain defects in the Bombay City Municipal Act and the Byelaws, there under. It was suggested in the conference that changes be made for improving health by increasing light, ventilation, appropriate open spaces, among other suggestions². This highlights the importance of byelaws as a public health measure for urban areas, and the deliberations made on it from more than a century.

HISTORY OF THE NATIONAL BUILDING CODE

In India, the states and the municipalities are empowered to make byelaws for controlling the built environment in the limits of the city. This meant that throughout India, across municipalities and states there were different bye laws that were in force. This fact was observed after the third Five Year Plan when the Planning

Commission decided that the whole gamut of operations involved in construction, such as administrative, organisational, financial and technical aspects should be studied in depth. In 1965, a panel of experts were appointed and a 'Report on Economies in Construction Cost' was published in 1968³. This report revealed that some of the prevailing methods of construction were outmoded, some designs were burdened with safety factors and municipal building byelaws at some places were out dated. This resulted in the recommendation that a 'National Building Code' be prepared to unify the building regulations throughout the country. The work was entrusted to the Indian Standards institute which is now called the Bureau of Indian Standards. The Bureau of Indian Standards set up a guiding committee, for preparation of the National Building Code with representatives from construction agencies, research institutions, municipal corporations and

other experts. The first version was published in 1970. This was revised in 1983 and a substantial revision was made in 2005. The current version is the National Building Code of 2016⁴, consists of 13 parts numbered from Part 0 to Part 12. These parts are composed in two voluminous books.

The Foreword of the current National Building Code, 2016 states that:

The Code contains regulations which can be immediately adopted or enacted for use by various departments, municipal administrations and public bodies. The provisions of this Code are intended to serve as a model for adoption by local bodies, Public Works Departments and other government construction departments, and other construction agencies. Existing PWD codes, municipal byelaws and other regulatory media could either be replaced by the National Building Code of India or suitably modified to cater to local requirements in accordance with the provisions of the Code.

This clearly means that the National Building Code, 2016 is a non-binding, advisory or a recommendatory document which has to be adopted in part or as a whole by the local bodies for it to be actually followed in the jurisdiction of

- 1 Russell Lopez, *Building American Public Health: Urban Planning, Architecture, and the Quest for Better Health in the United States*, Building American Public Health: Urban Planning, Architecture, and the Quest for Better Health in the United States (Palgrave Macmillan, 2012), <https://doi.org/10.1057/9781137002440>.
- 2 *Proceedings of the Third All-India Sanitary Conference Held at Lucknow, January 19th to 27th 1914* (Thacker, Spink & Co., 1914), <https://wellcomecollection.org/works/bha99znp/items?canvas=6>.
- 3 'Report on Economies in Construction Costs' (Planning Commission, 1968), <https://indianculture.gov.in/report-economies-construction-costs>.
- 4 'Report on Economies in Construction Costs' (Planning Commission, 1968), <https://indianculture.gov.in/report-economies-construction-costs>.

the local body which adopts it.

We shall analyse the status of adoption of the National Building Code-2016 (or previous versions) by the Delhi Development Authority in the Unified Building Bye Laws, 2016.

ABOUT THE UNIFIED BUILDING BYE LAWS-2016

Before looking directly at the Unified Building Bye-Laws, 2016⁵, the originating law must be taken into consideration since it has been created under the Delhi Development Act, 1957⁶ along with the Master Plan of Delhi. There is also the Delhi Municipal Corporation Act, 1957⁷ which clearly states two facts:

1. No building can be erected without the sanction of the Commissioner of the Municipal Body in Delhi.
2. The onus of creating the byelaws for sanction of buildings is to be created by the Central Government and not by the Municipality itself.

In this regard, the Delhi Development Authority, an organisation under the Central Government creates the bye laws for the whole of Delhi, in the areas under jurisdiction of the Delhi Development Authority. It goes on to state its exclusive role in creation of the Bye Laws for Delhi. The Delhi Municipal Corporation Act, 1957 states as follows:

332. Prohibition of building without sanction.—No person shall erect or commence to erect any building, or execute any of the works specified in section 334 except with the previous sanction of the Commissioner, not otherwise than in accordance with the provisions of this Chapter and of the bye-laws made under this Act in relation to the erection of buildings or execution of works [349A. Power of Central Government to make bye-laws.—(1) The Central Government may, by notification in the Official Gazette, make bye-laws for carrying out the provisions of this Chapter.

The Delhi Development Act, 1957, states as follows:

[53A. Restriction on power of a local authority to make rules, regulations or bye-laws in respect of certain matters.—(1) Notwithstanding anything contained in any law for the time being in force, no rule, regulation or bye-law shall be made or amended by a local authority in respect of matters specified in sub-section (2) unless the Authority, upon consideration of such rule, regulation or bye-law, certifies that it does not contravene any of the provisions of the master plan or the zonal development plan.

Under Section 57 read along with Section 13 of the Delhi Development Authority Act, 1957, the Delhi Development Authority (or DDA) enacts the Unified Building Byelaws.

The Sanctioning authorities under 1.4.10 of the Unified Building Bye Laws 2016 are:

1. The Delhi Development Authority,
2. New Delhi Municipal Council,
3. South Delhi Municipal Corporation,
4. North Delhi Municipal Corporation,
5. East Delhi Municipal Corporation,

5 'Unified Building Bye Laws for Delhi, 2016' (n.d.), http://119.226.139.196/tendernotices_docs/july2018/COMPENDIUM%20OF%20UBBL%20201605082020.pdf.

6 'Delhi Development Act, 1957', accessed 13 May 2022, <https://legislative.gov.in/sites/default/files/A1957-61.pdf>.

7 'Delhi Municipal Corporation Act, 1957' (n.d.), https://www.mha.gov.in/sites/default/files/DMC-Act-1957_0.pdf.

6. Delhi Cantonment Board

This means that authorities 2 to 6 are not responsible for the creation of the building byelaws, as stated earlier, but may be responsible for execution of the byelaws made by the Developing Authority. The DDA may also be one of the Sanctioning Authorities, apart from playing the role of creator of the building byelaws.

Need for the Study

The study is needed for there may be some confusion with respect to the applicability of the provisions of the National Building Code, 2016 (or earlier) for obtaining a building permit in Delhi or other urban areas in India. It studies the complete document of the Unified Building Bye Laws 2016 to see the various instances; the National Building Code may have been notified/adopted for a particular use case. This study compiles these

and presents a clear picture of the applicable portions of the National Building Code, 2016 (and earlier versions) in the Unified Building Bye Laws, 2016. This will provide clarity in knowing which provisions of the National Building Code, 2016 have been made mandatory by their application. The aim of the Study is to find out the provisions of the National Building Code, 2016 that have been adopted in the Unified Building Bye Laws, 2016.

The Unified Building Byelaws 2016 was studied to understand references made therein to National Building Code and compiled in a Table. The Table consisted of the following entries:

- Clause of the Unified Building Bye Laws 2016
- Provision from the National Building Code, 2016 (or earlier)
- Contents of the Clause

- Remarks.

A final analysis was then made with a list of the provisions from the National Building Code 2016 (and earlier versions) that have been included in the Unified Building Bye Laws, 2016. This will also indicate the provisions of the National Building Code, 2016 which will be deemed mandatory owing to their adoption in the Unified Building Bye Laws, 2016.

INTEGRATION OF THE NATIONAL BUILDING CODE, 2016 (AND EARLIER VERSIONS) INTO THE UNIFIED BUILDING BYELAWS, 2016

The clause by clause study of where all any provisions of the National Building Code, 2016 have been mentioned in the Unified Building Bye Laws, 2016 is tabulated in the Table 1 below:

Table 1: Analysis of the Inclusion of Provisions from the National Building Code into the Unified Building Bye Law, 2016

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
1.3.4 Information	No specific provision pointed out.	All documents such as Acts, Notifications, Rules & Regulations including BIS Codes, National Building Codes, Delhi Fire Service Rules, Indian Electricity Rules, etc. referred in these Building Bye-Laws shall be applicable as amended from time to time. Thus for the current status for any legal, official purpose, the amended provisions issued by the concerned Ministry/ departments(s) shall be followed.	This states that the concurrent version of the National Building Code 'referred in these Building Bye-Laws' shall be applicable
Appendix XIV Environmental Conditions for Buildings and Constructions (Category '1': 5000 sq. m to <20,000 sqm) And Category '2' 20,000 sq. m to <50,000 sq. m) and Category '3' (50,000 sq. m to <1,50,000 sq. m)	No specific provision has been mentioned. The most obvious reference is to Part 8, Section 1: Lighting and Ventilation of Buildings.	For indoor air quality the ventilation provisions as per National Building Code of India shall be made.	This is valid for the environmental clearances of only those buildings which fall in the built up category of 5000 sq.m up to 1,50,000 sq. m. This is not a blanket provision, as mentioned in Part 8, Section 1: Lighting and Ventilation in Buildings.
7.20 Lighting and Ventilation of Habitable Rooms read with 7.2.20	Part-VIII [incorrectly written as Part VII in the UBBL-2016] Building Services (Section-1 lighting and Ventilation of National Building Code of India, 2016)	7.2.20 Where the lighting and ventilation requirements are not fully met through day lighting and natural ventilation, the same shall be further ensured through artificial lighting and mechanical ventilation as given in part-VII Building services (Section-1 lighting and Ventilation of National Building Code of India). The latest version of the National Building Code of India shall be taken into account at the time of enforcement of these Building Bye-Laws.	This section specifically talks about Performance based Lighting and Ventilation.
7.23.1 f Special Requirements for Occupancy/ Land Development	Part VIII Section 1 Lighting and Ventilation of National Building code	There shall be provided at all time for each person employed in any room of factory at least 3.5 sq.m of floor space exclusive to that occupied by the machinery and a breathing space of at least 15 cum.	This is specific for industrial buildings, like factories.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
7.24 Special Provisions for Other Buildings which are not covered under MPD and Building Bye Laws	Special Provisions for Other Buildings which are not covered under MPD and Building Bye Laws:	For Hospitals, Hotels & Banquets Halls, Stadiums, Jails, Court Complexes, Art Galleries, Museums, Filling Stations, Bus Terminals/ Depot, Multi-storey Parking, Sports Complexes and any other special structures/ buildings, the provisions in the following documents shall apply: a. Development Control Regulations of MPD. b. National Building Code. c. Any other statutory provisions of Republic of India. d. International Guidelines of credential.	This is valid for all those buildings which are not included in the Masterplan Delhi or the Unified Building Byelaws, which in fact cover most residential, institutional buildings, hospitals etc.
7.28.3 Lifts and Escalators	No specific provision mentioned.	Mechanical Car Lift and Hoist: Shall be as per relevant provisions of IS codes/ National Building code/ manufacturer specifications	
Table 8.2 Note 2 Travel Distance for Occupancy and Type of Construction	No specific provision mentioned.	Ramps shall be counted as one of the means of escape wherever permitted in National Building Code.	This clause is only valid for High Rise Buildings, which are buildings above 15 m height. Most plotted residential buildings are below this height. Therefore all provisions are not universal.
8.4.5 h. Basements	Part 4: Fire and Life Safety, and Part 8: Building Services; Section 3: Air-conditioning, Heating and Mechanical Ventilation of National Building Code.	Mechanical extractors shall be designated to permit air changes per hour as required by NBC Part 4, Fire and Life Safety in case of fire or distress call. However, for normal operation, air changes schedule shall be as given in Part 8, Building Services, Section 3, Air-conditioning, Heating and Mechanical Ventilation of National Building Code.	This recognises the Part 4 and Part 8 (Section 3) for the purposes mentioned. This clause is only valid for High Rise Buildings, which are buildings above 15 m height. Most plotted residential buildings are below this height. Therefore all provisions are not universal.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
8.4.9 k Glass Façade/ Service Ducts/ Shafts/ Refuge Area/ Vents	Part V of the National Building Code, 2016 lists the IB codes that have been listed in the Unified Buildings Bye Laws 2016.	Glass quality shall be as per IS Codes given below in Table 8.3. 2553 (Part 1):1990 Specification for safety glass: Part 1 General purpose (third revision) 2835:1987 Specification for flat transparent sheet glass (third revision) 438:1994 Specification for silvered glass mirrors for general purposes (second revision) 5437:1994 Specification for figured rolled and wired glass (first revision). 14900:2000 Specification for transparent float glass. 16231:2014 (Part 4) Code of Practice on use of Glass in Buildings – Safety Related to Human Impact. <i>BIS Codes & National Building Code of India concerning standards, as amended from time to time; unless otherwise specified in these bye –laws shall be followed.</i>	This clause is only valid for High Rise Buildings, which are buildings above 15 m height. Most plotted residential buildings are below this height. Therefore all provisions are not universal. This is because the adoption is only for the High Rise Buildings.
9.1 Structural Safety	Part-VI structural design, section-1 loads, section-2 foundation, section-3 wood, section-4 masonry, section-5 concrete and section-6 steel	The structural design of foundation, masonry, timber, plain concrete, reinforced concrete, pre-stressed concrete and structural steel shall be carried out in accordance with Part-VI structural design, section-1 loads, section-2 foundation, section-3 wood, section-4 masonry, section-5 concrete and section-6 steel of National Building Code of India taking into consideration all relevant standards prescribed by Bureau of Indian Standards including the standard given in IS-Code 13920-2016, 4326-1993, 13828- 1993, 13827-1993, 13935-1993, 456:2000, 800-1984, 801-1975, 875 (Part 2):1987, 875 (Part 3):1987, 875 (Part 4):1987, 875 (Part 5):1987, 883:1966, 1904:1987, 1905:1987, 2911 (Part 1): Section 1: 1979, 1893-2002 for general structural safety, cyclone/wind protection, Earthquake protection.	This appears to be universally applicable.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
9.2.4 Quality of Materials and Workmanship	Part-V Building Materials and Part-VII Construction Practices and Safety	All material and workmanship shall be of good quality conforming generally to accepted standards of Central Public Works Department and Indian Standard Specification and Codes as included in Part-V Building Materials and Part-VII Construction Practices and Safety of National Building Code of India.	This appears to be universally applicable.
9.2.5 Control of Signs (Hoardings) and Outdoor Display Structures.	Appears to be Part 10, Section 2: Signs And Outdoor Display Structures	No advertising signs (including hoarding) on buildings or on land shall be displayed without the prior approval of the Sanctioning Authority. The standards specified in National Building Code of India as amendments time to time shall be applicable.	This only talks about hoardings for advertising, but gives this specific provision a universal applicability.
9.3 Fire Safety	Part 4: Fire and Life Safety	Rule 27 of Delhi Fire Service Rules shall be marked fire and life safety measures as per the National Building Code of India concerning minimum standards for fire prevention and fire protection as covered under Rule 33 of the Delhi Fire Service Rules	This makes Part 4: Fire and Life Safety valid only for Certain Buildings (High Rise) like Residential buildings above 15 m, educational, mercantile and institutional above 9m, etc., as per Rule 27 of Delhi Fire Service Rules, 2010. This means it is not universally applicable.
9.3.2 Pressurization of Staircases (Protected Escape Routes)	Part 4: Fire and Life Safety	For pressurization specifications of various building components refer NBC Chapter 4 Fire and Life Safety.	This makes Part 4: Fire and Life Safety valid only for Certain Buildings (High Rise) like Residential buildings above 15 m, educational, mercantile and institutional above 9m, etc., as per Rule 27 of Delhi Fire Service Rules, 2010. This means it is not universally applicable.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
9.3.9 Provision of First Aid, Fixed Fire Installation and Fire Fighting Appliances	Part 4: Fire and Life Safety	The fire fighting measures shall be provided on all floor including basements, occupied terrace, lift rooms etc. as per the National Building Code of India, Part 4, Fire and Life Safety, (Minimum requirement for fire fighting appliances) as applicable with reference to the height and class of occupancy.	This makes Part 4: Fire and Life Safety valid only for Certain Buildings (High Rise) like Residential buildings above 15 m, educational, mercantile and institutional above 9m, etc., as per Rule 27 of Delhi Fire Service Rules, 2010. This means it is not universally applicable.
9.4 Building Services: General	Part-VIII Building Services, Section-2 Electrical Installation, Section-3 Air conditioning and heating, Section-5 installation of Lifts and Escalators	The Planning design and installation of electrical installations, air conditioning installation of lifts and escalators should be carried out in accordance with Part-VIII Building Services, Section-2 Electrical Installation, Section-3 Air conditioning and heating, Section-5 installation of Lifts and Escalators of National Building Code of India.	These provisions appear to be universally applicable.
9.4.4 Plumbing Services	Part-IX Plumbing Services, section-1 water supply; Section-2 Drainage and Sanitation and Section-3 Gas Supply	The planning, design, construction and installation of water supply, drainage and sanitation and gas supply system shall be in accordance with Part-IX Plumbing Services, section-1 water supply; Section-2 Drainage and Sanitation and Section-3 Gas Supply of National Building Code of India.	These provisions appear to be universally applicable.
Table 9.15 Sanitary Requirements for Large Stations and Airports.	Part ix Section 2- Drainage and Sanitation	Note: Provision for wash basins, baths including shower stalls, shall be in accordance with Part ix Section 2- Drainage and Sanitation of National Building Code of India and amendments time to time.	This provision is Valid for Airports ad Large Stations only, but the NBC Part is otherwise universally applicable.
Annexure VI Master Plan Delhi- 2021, Development Control (DC)#	Not Specifically Mentioned	MPD 2021, provides the guide for the preparation of Layout Plans under the various regulations including norms for facilities and circulation system whereas Service Plans for the provision of physical infrastructure like, Water supply, Sewage, Drainage etc. have to conform to the Municipal Bye Laws as provided in the National Building Code.	Reference is made with respect to the Development Control Rules and General Building Requirements

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
Annexure VII 1: Protection from Earthquakes	Part 6: Structural Safety	In those areas where there are no dangers of soil liquefaction or settlements or landslides, all building structures and infrastructures should be designed using the relevant Indian Standards as provided in the Building Regulations and the National Building Code	This is to be read with Part 6 of Structural Safety which is already universally applicable.
Annexure VII 2: Protection from cyclonic wind damage	Part 6: Structural Safety	Buildings, structures and infrastructures in the cyclone prone areas should be designed according to the Indian Standards and Guidelines as provided in the Regulations and the National Building Code.	This is to be read with Part 6 of Structural Safety which is already universally applicable.
Annexure X: 3 b Provisions for Green Buildings- Energy efficiency in HVAC	Part 8, section 3 Building Services HVAC	The inside design conditions of a conditioned space shall conform to National Building Code 2005 (Part 8, section 3) The outside design conditions shall conform to National Building Code 2005 (Part 8, section 3)	Energy Efficiency for HVAC, mandatory only for Commercial buildings.
Chapter 2: g Service Plans		Service plans of building services such as plumbing, HVAC, installation of electrical fittings, etc., as per NBC norms and standards are to be shown on the same scale as that of the building plan.	This is as per the NBC Norms which have been otherwise made mandatory.
Chapter 2: j Requirement of Site	Part III : Development Control Rules And General Building Requirements	Distance from Electric Lines: No verandah, balcony, or the like shall be allowed to be erected or any additions or alterations made to a building within the space between the building and overhead electric supply line in accordance with the Indian Electricity Rules (National Electric Code 2011, Clause 3.2) and its amendments from time to time The distances provided in NBC (Part III) are indicated.	The Part 3 is the general guidelines, or model development guidelines. Making this mandatory will over rule all bye laws.
7.4.13 Basement	Part 4: Fire and Life Safety	For basement of size more than 200sq.m. of BUA, the Fire Safety measures as per NBC –Part 4 norms shall be followed. <i>*BUA- Built up area</i>	This appears to be a universally mandatory provision.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
7.23.3 Assembly buildings	Part 6: Section 1 3.2.1.1 Assembly buildings — These shall include any building or part of a building where groups of people congregate or gather for amusement, recreation, social, religious, patriotic, civil, travel and similar purposes; for example, theatres, motion picture houses, assembly halls, city halls, marriage halls, town halls, auditoria, exhibition halls, museums, skating rinks, gymnasiums, restaurants (also used as assembly halls), place of worship, dance halls, club rooms, passenger stations and terminals of air, surface and other public transportation services, recreation piers and stadia, etc.	Assembly Buildings (Cinema, Theatres, Multiplex, Auditorium, Museum, Exhibition hall, Gymnasium, Stadia, Restaurant, Club room etc.) Definition of Assembly Buildings as per NBC shall be followed.	This is for the sake of definition.
7.23.3 d Design Guidelines for Assembly Buildings	At various Sections.	Design Guidelines for Assembly Buildings, if not provided in these bye -laws and MPD then in-force, the NBC guidelines or any other statutory provisions of Republic of India shall be followed.	This is an exceptional rule for Assembly buildings.
8.4.3 g Stairways	Part 4, Fire and Life safety Table no1 to 18	Access to main staircase shall be gained through adequate fire resistance rating (Refer NBC Part 4, Fire and Life safety Table no1 to 18) Automatic closing doors placed in the enclosing walls of the staircases. It shall be a swing type door opening in the direction of the escape.	Only valid for High Rise Developments.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
8.4.3 k Stairways	Part 4, Fire and Life safety	In case of single staircase it shall terminate at the ground floor level and the access to the basement shall be by a separate staircase. However, the second staircase shall lead to basement levels provided the same is separated at ground level by either a ventilated lobby with discharge points at two different ends or through enclosures with fire resistance rating door (Refer NBC Part 4, Fire and Life safety) or through a fire protected corridor.	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.4.4 Lifts	Part 4, Fire and Life safety	Lifts Walls of lift enclosures and lift lobby shall have fire rating of two hour; Lift lobby doors in lift enclosures shall have fire resistance Lifts if communicating with the basement, the lift lobby of the basements shall be pressurized as suggested in clause 8.5.4(f) and 8.5.4(h) with self-closing door with fire resistance rating For Pressurization Specifications of various building components refer NBC Chapter 4 Fire and Life Safety Clause 4.10	-do-
8.4.5 Basements	Part 4, Fire and Life safety (most related)	The staircase of basements shall be of enclosed type having fire resistance rating The staircase shall communicate with basement through a lobby with self-closing doors with fire resistance rating as per relevant NBC code mentioned above. For travel distance table 8.2 given below should be followed. If travel distance exceeds that given in the table below, additional staircases shall be provided. Mechanical extractors shall be designated to permit air changes per hour as required by NBC Part 4, Fire and Life Safety in case of fire or distress call Boiler room shall be provided at the first basement along the periphery wall with fire resistance rating	-do-

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
8.4.6 Compartmentalisation	Part 4, Fire and Life safety (most related)	The building shall be suitably compartmentalized so that fire/smoke remains confined to the area where fire Incident has occurred and does not spread to the remaining part of the building. All floors shall be compartmented as per NBC	-do-
8.4.7 Ramps	Part 4, Fire and Life safety (most related)	All structural design/safety aspects as per latest BIS Codes & NBC, shall be complied along with consideration of weight of Fire Engine & its manoeuvrings Minimum size of the car lift shall be as per NBC norms.	-do-
8.4.9 h Glass Façade/ Service Ducts/Shafts/ Refuge Area/ Vents	Part 4, Fire and Life safety (most related)	Service ducts and shafts shall be enclosed by walls and doors with fire resistance rating (Refer NBC)	-do-
8.5.2 Electrical Services	Part 4, Fire and Life safety and Part 8, Section 2: Electrical and Allied Installations. (most related)	Separate circuits for water pumps, lifts, staircases and corridor lighting and blowers for pressurizing system shall be provided directly from the main switchgear panel (for detailed specifications refer NBC).	-do-
8.5.4 Air Conditioning	Part 4, Fire and Life safety and Part 8; Section 3: Air Conditioning, Heating and Mechanical Ventilation. (most related)	The air filters of the air-handling units shall be of non-combustible materials or fire rated (refer NBC)	-do-
8.5.6 Gas Supply	Part 4, Fire and Life safety and Part 9; Section 4: Gas Supply (most related)	For detailed information on gas pipe installations, refer NBC.	-do-
8.10 General features – free from FAR calculations (subject to Fire Safety Clearance and other mandatory clearances):	Part 4, Fire and Life safety and Part 8; Section 5: Installation of Lifts, Escalators and Moving Walks. (most related)	The lift lobby preventing stake and plume effect as per NBC norms and as approved by the Fire Services, shall be free from FAR calculations. For size of lift lobby See 8.4.4. (a).	-do-

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
9.31 Fire Escape Staircase	Part 4, Fire and Life safety (most related)	The route and enclosure to fire escape shall be free of obstructions at all times, except a doorway leading to the fire escape which shall have the required fire resistance. Fire escape shall be constructed of non-combustible materials of required fire resistance (refer NBC Part 4). Unprotected steel frame staircase will not be accepted as fire escape. The staircase enclosure if on external wall of the building shall be ventilated to atmosphere at each landing or in case it is in the core of the building it shall be maintained at a positive pressure as mentioned in NBC part IV, Fire and Life Safety, with both automatic and manual operation facilities and fire alarm systems.	Only valid for buildings as per Section 27 and 33 of the Delhi Fire Service Rules, 2010 (Refer 9.3 of the UBBL-2016)
9.3.2 Pressurization of Staircases (Protected Escape Routes)	Part 4: Fire and Life Safety. (most related)	For pressurization specifications of various building components refer NBC Chapter 4 Fire and Life Safety.	-do-
10.1 Provisions and applicability of Green Buildings	Not specified, but maybe suggesting Part 11: Approach to Sustainability. (most related)	<i>The schemes/ projects formulated on the basis of provisions given in Master plan/ Zonal Development Plan will require approval as indicated: {Chapter 3 of these Bye-Laws, NBC (latest), ECBC 2007 or latest, BEE Star rating/ IGBC/ GRIHA Certification} Provisions and applicability for various plot sizes (all use premises)</i>	Valid for all buildings of plot size more than 105 sq. m. (This excludes a major chunk of plotted residential building stock of Delhi)
11.3 Applicability of Provisions for Universal Design for Persons with Disabilities, elderly and Children	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	<i>For additional and detailed requirements other than specified in these Unified Building bye- Laws 2016, the Harmonized Guidelines and Space Standards for Barrier Free Built Environment for Persons with Disability and Elderly Persons – February 2016 published by Ministry of Urban Development, Govt. of India shall be followed along with NBC Chapter 3-Clause 13 Requirements for accessibility in Built environment for elders and persons with disabilities and Annex B: Anthropometrics and Requirements for Accessibility in Built-Environment for Elders and Persons with Disabilities.</i>	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
11.4.3 Tactile Ground Surface Indicators (TGSi): Tactile Guiding and Warning Blocks:	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	Tactile ground surface indicators or tactile guiding and warning tiles/blocks aid blind and vision impaired pedestrians negotiate the built environment shall be provided as per NBC norms in force.	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
11.5.1 Building Requirements – Approach to Plinth Level	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	<i>Note: For Details of Doors, Windows, Operational Control and devices and other building requirements, Signages, Escalators etc. the standards specified in NBC Chapter 3 - Clause 13 Requirements for accessibility in Built environment for elders and persons with disabilities and Annex B: Anthropometrics and Requirements for Accessibility in Built-Environment for Elders and Persons with Disabilities shall have to be followed as amended from time to time.</i>	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
11.8.1 k Toilet Rooms and Sanitary Rooms	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	Visual contrast and lighting, emergency assistance alarm, as per NBC in force.	-do-
11.8.2.1 f Type A accessible toilet room shall meet the following requirements	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	It shall have a water-closet; grab bars, and washbasin, essential washroom accessories, an alarm to seek emergency help, complying with NBC in force.	-do-
11.8.4 a Grab Bars for Toilet Rooms and Sanitary Rooms	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	Grab bars as per NBC norm in force shall be provided in toilet or sanitary rooms in accordance with this clause.	-do-

Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
11.13.2 Accessible Changing Rooms	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	The minimum number of accessible changing rooms should be provided depending on the type and use of the building. In the event that changing rooms are provided alongside a toilet area, these should comply with the specifications as per NBC in force. An alarm/call bell/switch shall be provided as per NBC in force.	-do-
Table 13.2; 1: Hospital/Tertiary Health Care Centre		No height restriction subject to clearance from AAI, DFS, DMA, NMA to process the proposed revision of NBC as soon as possible. Till the time the NBC is revised, Delhi Fire Service (DFS) may allow no restrictions of height for health care facilities with commensurate fire and life safety measures, subject to clearance from AAI, DFS, MA, NMA and other statutory provisions	Exclusion is made for Healthcare Buildings Height Clearance, provisionally.
Annexure V 2: Delhi Fire Service Rules, 2010 under Delhi Fire Service Act, 2007	Part 4: Fire and Life Safety.	Rule 33: The minimum standards for fire prevention and fire safety for buildings as may be applicable with reference to the height of the building and class of occupancy for the purposes of section 32 and section 35 of the Act shall be as are provided in the building byelaws or National Building Code of India 2005 Provided that classes of occupancies or buildings or premises for which fire prevention and fire safety measures are not provided in the building bye-laws or National Building Code of India 2005, the Director may require owner or occupier of such occupancies or buildings or premises to provide fire prevention and fire safety measures in accordance with international standards as may be provided by the Fire Prevention Wing.;	Only valid for buildings as per Section 27 and 32, 33 and 35 of the Delhi Fire Service Rules, 2010 (Refer 9.3 of the UBBL-2016)

ANALYSIS

In general, from the results tabulated above, it can be stated that the Unified Building Bye Laws 2016 have been selective in choosing the provisions of the National

Building Code 2016. On an analysis it was found that, there were various clauses that were universally applicable and there were others that selectively applicable. The list of clauses analysed, along with their applicability and

the riders are given in Table 2.

The following Parts and Sections mentioned in the National Building Code, 2016 (or earlier versions) appear to be given universal applicability across buildings:

Table 2: The analysis of the adopted provision of the National Building Code, 2016 in the UBBL-2016

Provision of the National Building Code, 2016	Whether adopted to be given universal applicability in the Unified Building Bye Laws 2016	If not universal, the limited conditions in which the provision of the National Building Code, 2016 is applicable to the UBBL-2016/Other Remarks.
Part 0: Integrated Approach-Prerequisite for Applying Provisions of the Code.	No	
Part 1: Definitions	No	
Part 2: Administration	No.	Service Plans (The drawings) for Building Services are to be made as per the NBC.
Part 3: Development Control Rules and General Building Requirements.	No. Part 3, Section 13-Development Control Rules and General Building requirements for Accessibility in Built Environment for elders and persons with Disabilities is universally applicable to Public Buildings.	Part 3, Section 13 not valid for general private residences and group residences (with exception to public spaces)
Part 4: Fire and Life Safety	No	-Valid only for High Rise Buildings defined as buildings with height ≥ 15 m, or defined in Section 27, 32, 33, and 35 of Delhi Fire Services Rules, 2010 -Appears to be universally valid for basements, more than 200 sq. m.
Part 5: Building Materials	Yes	
Part 6: Structural Design	Yes	
Part 7: Construction Management, Practices and Safety	Yes	

Part 8: Building Services		
Section 1: Lighting and Natural Ventilation	Yes	
Section 2: Electrical and Allied Installations	Yes	
Section 3: Air Conditioning, Heating and Mechanical Ventilation	Yes	
Section 4: Acoustics, Sound Insulation and Noise Control	No	
Section 5: Installation of Lifts, Escalators and Moving Walks 5A Lifts 5B Escalators and Moving Walks	Yes	
Section 6: Information and Communication Enabled Installations	No	
Part 9: Plumbing Services(Including Solid Waste Management)		
Section 1: Water Supply	Yes	
Section 2: Drainage and Sanitation	Yes	
Section 3: Solid Waste Management		
Section 4: Gas Supply	Yes	
Part 10: Landscape Development, Signs and Outdoor Display of Structures.		
Section 1: Landscape Planning, Design and Development	No	
Section 2: Signs and Outdoor Display Structure	No	Only Specific Provision of Permission for Outdoor Hoarding is universally applicable
Part 11: Approach to Sustainability	No	
Part 12: Asset and Facility Management	No	

1. Part V: Building Material
2. Part VI: Structural Design
3. Part VII: Construction Management, Practices and Safety
4. Part VIII, Section 1: Lighting and Natural Ventilation
5. Part VIII, Section 2: Electrical and Allied Installations
6. Part VIII, Section 3: Air Conditioning, Heating and Mechanical Ventilation
7. Part VIII, Section 5: Installation of Lifts, Escalators, and Moving Walks
8. Part IX, Section 1: Water Supply
9. Part IX, Section 2: Drainage and Sanitation
10. Part IX, Section 4: Gas Supply

CONCLUSION

For any provision of any guideline or advisory to be legally binding, it must be backed by a law duly promulgated by the legislature. Any document that is advisory in nature or is a guideline cannot be legally enforced. The mere nature of the National Building Code, created by the Bureau of Indian Standards, is advisory. The Unified Building Bye Laws, 2016 on the other hand is a document created

by law under the Delhi Development Authority Act, 1957 read along with the Delhi Municipal Corporation Act, 1957. The Unified Building Bye Laws 2016 have taken multiple provisions from the National Building Code 2016 and earlier versions. But it is appropriate to state that the whole of the National Building Code, 2016 has not been adopted in the Unified Building Byelaws, 2016. It can also mean that the whole National Building Code, 2016 (or earlier) is not a binding document. This would also mean that since the Unified Building Bye Laws, 2016 is the legally binding document, for obtaining building sanction/permit, the provisions of the National Building Code 2016 (and earlier versions) which have not been specifically included/adopted/referenced in the Unified Building Bye Laws 2016 are not mandatory but voluntary in nature. These are not legally binding. It is further recommended that the National Building Code, 2016 created after much deliberation, by an expert committee, must be adopted in total by all states and municipalities, as this will decrease any scope for discrepancy which may exist from city to city. This will also channelize the energies of the experts to create one expert document instead of repeating the exercise state

by state and municipality by municipality.

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GENERAL GUIDELINES: CHECKLIST FOR SUBMISSION OF ARTICLES

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2. The paper is typewritten, double-spaced, and formatted to print on 8.5" x 11" (or A4) size paper. It is written in the third person in a clear style, free of jargon.
3. The first page of the article includes the following:
 - i. the paper's title; and
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 - iii. the name(s), position(s), professional or academic affiliation(s), and email address(es) of the author(s), as well as the full postal address of the corresponding author;
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 - i. an introduction to the subject,
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 - iii. discussion of procedure,
 - iv. results,
 - v. conclusions,
 - vi. implications for practice and advancement of research,
 - vii. references,
 - viii. acknowledgments (optional; if funding for the research was received from non-personal sources, the sources must be identified in this section), and
 - ix. an autobiographical sketch.
5. Please ensure that:
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