

Addressing Urban Slums and Sustainability - Case of Dharavi, Mumbai

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Abstract

Over the last 30–40 years, cities have been overwhelmed by the speed of population growth. Both Natural increases and migration occur. Successful and prosperous cities are falling behind in infrastructure, health care, and education provision. An increase in the proportion of people living in informal settlements has also been observed. Many Indian cities have 50-70% of their population living in informal settlements, commonly referred to as slums or shantytowns. The research aims to study these settlements as homes to millions of people, many of whom live in extreme poverty, including Dharavi and Mumbai, with a population estimated to be between 700,000 and 1 million people. Residents of Dharavi's settlements are also vulnerable to natural disasters, such as floods and landslides, as well as social and economic challenges, such as unemployment and crime.

The Indian government has launched various initiatives to address the challenges faced by residents of informal settlements, such as the Pradhan Mantri Awas Yojana (PMAY) scheme, which aims to provide affordable housing by 2022, and Swachh Bharat Abhiyan (Clean India Mission), which aims to improve sanitation and hygiene in urban areas. Despite these efforts, the challenges faced by the residents of informal settlements in India continue to be significant. Urban regeneration can contribute to the fulfillment of these goals by improving the living conditions of residents in vulnerable neighborhoods, such as Dharavi. This research aims to identify adequate ways to upgrade infrastructure and provide access to basic services. This study attempts to identify how urban regeneration can help reduce poverty and improve residents' health and well-being. This study focuses on government schemes/policies to identify how to provide affordable, adequate, and viable housing. The research further examines that can also contribute to environmental sustainability by promoting the more efficient use of resources and reducing pollution.

However, there are also challenges associated with urban politics in Indian cities, such as a lack of political will and financial resources to support the initiatives. There is also a need for greater community participation in planning and implementing urban regeneration projects. The millennium development goals encourage local and city governments to provide water and sanitation. SDGs understand the multidimensional nature of poverty. Thus, there is a commitment to eliminate poverty. The new urban agenda and SDGs depend heavily on local governments and civil societies. These are the actors that drive these changes. Strong democratic processes and social movements are critical to poverty reduction.

While there are challenges associated with Indian cities, continued efforts and investment with said organizations/actors in this area can make a significant difference in the lives of millions of people living in vulnerable neighborhoods.

Keywords: *Population growth, Informal settlements, Urban regeneration, Environmental sustainability*

1. Introduction

1.1 Problem Statement with its Background

Mumbai, one of the world's most populous cities, grapples with providing adequate housing and basic services for its residents. The exponential growth of informal settlements, exemplified by Dharavi, not only presents urban sustainability challenges but also offers potential avenues for development.

The dearth of affordable options in the formal housing market has led migrants to seek shelter in informal settlements such as Dharavi, offering cost-effective living options near employment hubs. Dharavi, with an estimated population of one million by 2030 in a mere 2.1 square kilometers, epitomizes the high population density in this region. Census data indicate a notable increase of 13 million slum residents from 2001 to 2011, primarily attributed to changes in slum definition (*Census,2011*). Mumbai recorded the second-highest percentage of the slum population among million-plus cities (41.8%). The current population of Dharavi is 340,922 as per the 2011 Census, with a subsequent increase to 450,000 in 2014 as per the *NSDF*.

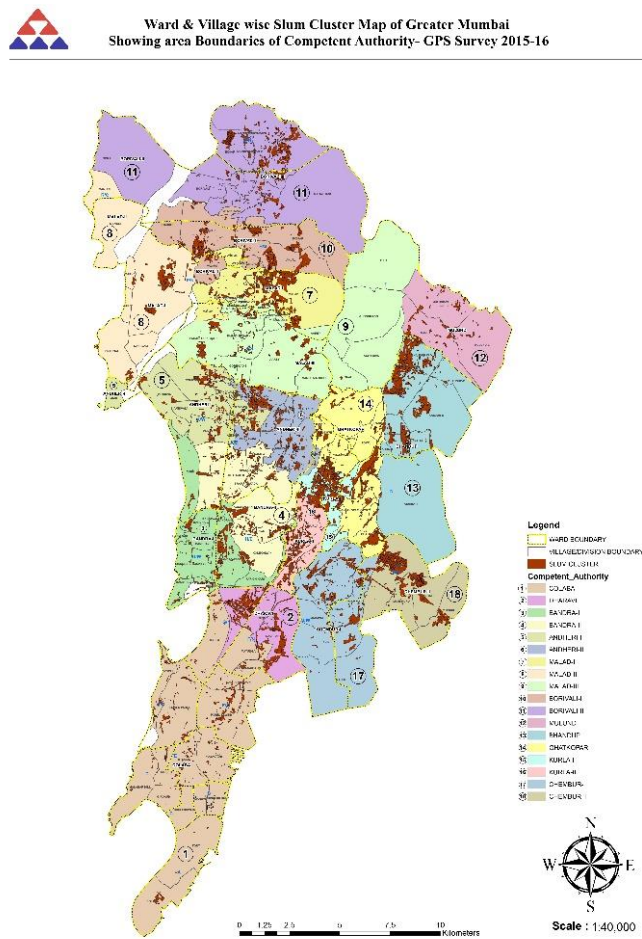


Figure 1 Slum Cluster Mapping of Mumbai City 2015-16; Source: SRA

Approximately 1420 people per hectare inhabit informal and vulnerable settlements, implying the challenges faced by one-fourth of the city's population concerning health, safety, prosperity, and opportunities. Rapid population growth has outpaced the development of essential amenities, leading to overcrowding and an increase in resources. The absence of proper waste management systems results in unhygienic living conditions, which increase the risk of diseases and health issues. The lack of adequate healthcare facilities and schools further impacts the quality of life and prospects for residents, especially for vulnerable groups, such as children and the elderly.

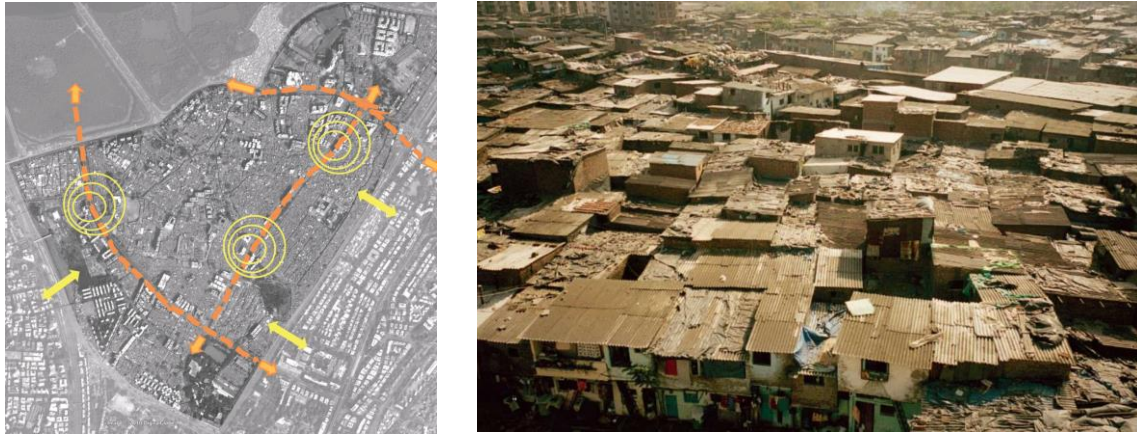


Figure 2 Dharavi Slums, Mumbai

Understanding the developmental challenges in Dharavi is of paramount importance for Mumbai's urban planning and sustainability efforts. To address these issues, the United Nations' New Urban Agenda advocates sustainable urban development, inclusive planning, and equitable growth (*UN-Habitat*). This study sheds light on the pressing need for affordable housing, basic services, and improved infrastructure. While considering the fulfillment of the New Urban Agenda, this study aims to explore the socio-economic and environmental disadvantages of Dharavi, the requirements of urban action, public policies, and government initiatives, and the need for equitable resilience based on the Sustainable Development Goals (SDGs). Addressing these challenges will not only enhance the living conditions of Dharavi residents but also contribute to the overall urban development and economic growth of Mumbai. As Dharavi is known for its thriving informal economy, which includes small-scale industries such as leather goods manufacturing, textiles, pottery, and recycling, successful redevelopment plans can serve as a model for other informal settlements across the country and beyond.

1.2 Aim and Objectives

This study aims to examine urban sustainability challenges and development opportunities in Dharavi; Mumbai's informal settlements. The research question seeks to understand how the lack of affordable housing and basic services in informal settlements impacts the overall urban sustainability of the city, and how targeted redevelopment initiatives or government policies for dwellers can provide development opportunities.

Objectives:

1. To analyze the demographic and socioeconomic characteristics of Dharavi's population based on existing census data and literature, highlight housing conditions and access to basic services.
 1. To assess the impact of informal settlements on urban sustainability in Mumbai
 2. To investigate the effectiveness of previous redevelopment initiatives and government policies in Dharavi through a review of the literature and official records, and assessing their implications on housing, infrastructure, and livelihood opportunities.
 3. To propose a research strategy that involves interviews with key stakeholders, including government agencies, NGOs, and community members, to understand the challenges faced and potential opportunities for the regeneration of Dharavi.
 4. To formulate policy recommendations based on the study's findings to address urban sustainability challenges in Dharavi and improve overall living conditions and development prospects in informal settlements.

2. Methodology

The research design employed a mixed-methods approach, integrating quantitative data analysis from existing census data and a literature review with qualitative data collection through interviews with stakeholders.

Data Collection Methods	Objective	Data Type	Participants
Quantitative Data Analysis	comprehensive understanding of the demographic and socioeconomic characteristics of Dharavi's population	Existing Census Data, related government documents	Demographic and Socioeconomic Characteristics of Dharavi
Literature Review	Explore and understand facts and status	Published Studies and Reports by National & State Government, UN & SDGs	-
Qualitative Data Collection	offers insights into the challenges faced, community perspectives, and the effectiveness of previous redevelopment projects	Interviews	Government Agencies, NGOs, Community Leaders, Residents

3. Scope and Limitations:

The scope of this study was limited to the examination of urban sustainability challenges and development opportunities in Dharavi, Mumbai. While efforts will be made to obtain accurate data and representative samples for interviews, there may be limitations concerning data availability, reliability, and potential biases in qualitative responses. Additionally, the study's focus on Dharavi may not fully capture the broader complexities of the urban sustainability challenges in Mumbai and other informal settlements in the city. Interviews may be subject to respondent bias as participants may provide socially desirable responses or hold specific views. This study aimed to provide valuable insights into the specific case of Dharavi and contribute to broader discussions on urban development and sustainability.

4. Literature Review

Informal Settlements are usually seen as synonymous with slums, with a focus on the formal status of land, structure, and services. They are defined by three main criteria according to Habitat III Issue Paper #2210, which are already covered in the definition of slums. These are:




1. Inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing,
2. The neighborhoods usually lack or are cut off from formal basic services and city Infrastructure, and
3. The housing may not comply with current planning and building regulations, is often situated in geographically and environmentally hazardous areas, and may lack a municipal permit. Informal settlements can be occupied by all income levels of urban residents, affluent, and the poor.

5. Results / Findings & Discussions

Informal settlements, such as Dharavi, have a significant impact on urban sustainability in Mumbai. While they provide housing and economic opportunities for many residents, they also present challenges related to infrastructure, living conditions, and environmental sustainability. To address this issue and build sustainable cities and communities, SDGs and New Urban Agenda propose that by 2030, the goal is to ensure that everyone has access to proper and safe housing, as well as basic services such as water, sanitation, and electricity (SDG's, UN-Habitat).

The history of SDGs, especially target 11.1 in Mumbai, dates back to the adoption of the Sustainable Development Goals by the United Nations in September 2015. Post-2015, the Government of India, along with local authorities in Mumbai, recognized the urgency of addressing the issue of slums and inadequate housing. Several initiatives have been launched to improve living conditions and upgrade slums (*Mumbai's Development Plan 2034*).

5.1 Analysis of Government Initiatives and redevelopment proposals

Government Policies & Schemes	Objectives	Approach	Progress	Challenges/gaps	Plan of Action for Future
Slum Rehabilitation Authority (SRA) 	Redevelop Slum areas, Rehabilitate Slum dwellers into better living conditions	Public-private partnership with Developers	Built 2.36 lakh houses, about 5,20,645 houses are proposed to be built Tenement's areas varied from 180 sq ft to 225 sq ft (in 1995) to 265 sq ft in 2009 to 300 sq ft now.	Land acquisition, Funding constraints, Oppositions from Slum Dwellers	Streamline project approvals and funding, Internal Disputes
Maharashtra Housing and Area Development Authority (MHADA) 	Provide affordable housing, Improve living conditions	State government-led housing schemes Mumbai Slum Improvement Board formed in November	Case Study: Work of Redevelopment of transit camp situated at CTS No. 2/501, Dharavi, Mumbai - 17 2160 transit tenements are physically completed. <i>Limited info available on total tenements*</i>	Slow implementation, land availability, Limited housing supply	Continue efforts to expedite redevelopment and supply affordable housing
Mumbai Development Plan 2034 	Upgrade slum infrastructure and housing, Preserve local character	Comprehensive, mixed-use & inclusive planning and urban development Initiatives for redevelopment and rehabilitation	The Dharavi redevelopment project's proposed total area increased to 259 hectares, including land parcels from Rail Development Authority	Lack of community participation, Funding, Coordinating with multiple agencies for the execution	Strengthen community engagement and funding


<p>Maharashtra Slum Areas Improvement, Clearance, and Redevelopment Act</p>	<p>provides the legal framework for slum redevelopment and rehabilitation projects in the state</p>	<p>Protection of Slum Dwellers' Rights</p> <p>promote sustainable and inclusive development while ensuring the welfare of slum residents.</p>	<p>Facilitated the redevelopment of some slums, leading to improved living conditions for residents.</p> <p><i>Limited info. available on no of projects*</i></p>	<p>Complex implementation such as land acquisition, funding constraints, bureaucratic processes, and resistance from slum dwellers in some cases.</p>	<p>Continue legislation enacted by the state government to address the challenges related to slums</p>
<p>Swacch Bharat Abhiyaan</p> 	<p>Improve cleanliness and sanitation</p>	<p>Community awareness and waste management</p>	<p>Over 80% of the city's plastic waste, is sorted, washed, dried, dyed, and turned into plastic pellets, ready to be reused</p> <p>Construction of Public Toilets</p>	<p>Behavior change, waste segregation</p>	<p>Promote sanitation and waste management,</p> <p>Engage the community in recycling</p>

Table 1 Analysis of Government Initiatives and redevelopment proposals

These initiatives aim to provide better infrastructure, sanitation facilities, and access to basic services for slum dwellers. However, despite these efforts, challenges persist owing to the rapid pace of urbanization and limited resources. Upgrading slums while ensuring the sustainable development of the city is a complex task. Issues such as land availability, the resettlement of slum dwellers, and funding constraints posed significant hurdles.

5.1 Voices of Stakeholders

Stakeholder collaboration and active community engagement are essential to address the multifaceted challenges in Dharavi. Meaningful community engagement, transparent communication, and participatory decision-making processes can help build trust and ensure that the interests and well-being of the residents are safeguarded throughout the urban regeneration process. Stakeholders involved in Dharavi slums encompass a diverse group of governmental and non-governmental entities working together to address the challenges.

<p>Low interest, low influence – keep informed</p> <p>Academic and Research Institutions UDRI ,WRI,UrbZ, StudioPod, P K Das Associates etc.</p>	<p>High interest, low influence – keep informed and consult</p> <p>NGOs and Community-Based Organizations Mumbai First, Nagar Ngo, Citispace, ORF</p>
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<p>Low interest, high influence – keep informed and consult regularly</p> <p>Local community, slum dwellers International Development Agencies</p>	<p>High interest, high influence – partners to manage & collaborate with.</p> <p>Municipal Corporation of Greater Mumbai (MCGM), SRA, MHADA, Urban Development Department (UDD)</p> <p>Private Developers & Companies UNDP, TATA, L&T, WRI, Reliance etc.</p>
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Table 2 Key Stakeholders

Dharavi slum dwellers' opinions and statements regarding government initiatives and redevelopment plans are diverse and varied, reflecting the complex and multifaceted nature of the issue. Some common sentiments expressed by the Dharavi slum dwellers are as follows

Stakeholder	Opinion
<p>Government Authorities (MCGM & SRA)</p>	<p>Supportive of the redevelopment as a means to improve living conditions and infrastructure in Dharavi.</p> <p>Concerned about challenges related to funding, bureaucratic processes, and coordination with other agencies.</p> <p>Emphasize the need for stakeholder collaboration and community participation in planning and implementation.</p>
<p>Slum Dwellers</p>	<p>Diverse opinions, with some supporting redevelopment for better housing and amenities.</p> <p>Concerned about potential displacement and uncertainty regarding alternative housing options and compensation.</p> <p>Call for greater inclusion in decision-making and a transparent process to address their needs and concerns.</p> <p>lack of clarity about property ownership and tenure rights among slum dwellers</p> <p>Worrying about redevelopment might disrupt the social fabric of the neighborhood and affect their cultural identity.</p> <p>Fear of redevelopment might lead to the loss of livelihoods and economic opportunities.</p>
<p>NGOs</p>	<p>Generally supportive of government initiatives but highlight the importance of including the community's voice.</p> <p>Advocate for transparency, accountability, and equitable distribution of benefits from redevelopment projects.</p> <p>Raise concerns about potential displacement and the need for fair compensation for affected slum dwellers.</p>
<p>Community Leaders</p>	<p>Express mixed opinions, with some supporting redevelopment for improved living</p>

	<p>conditions and amenities.</p> <p>Highlight the importance of preserving the social fabric and cultural identity of the community during the process.</p> <p>Advocate for increased community participation and representation in decision-making for redevelopment plans</p>
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Table 3 Stakeholder's Opinions



Figure 3 Slum Dwellers, Dharavi

Success Story of Stakeholders:

The "Dharavi Model" refers to the successful approach taken by the authorities and local community in Dharavi, Mumbai, to tackle the COVID-19 pandemic. Dharavi, with its high population density and limited resources, presents a significant challenge for managing the spread of the virus. However, the model's success garnered international recognition, as it effectively contained the outbreak and reduced the number of COVID-19 cases in the area.

The Dharavi Model was instrumental in controlling the spread of COVID-19 in this area. The concerted efforts of the local community, government, and healthcare workers have resulted in a significant reduction in the number of cases. The successful containment of the virus in Dharavi serves as a remarkable example for other urban areas with similar challenges. The lessons learned from the Dharavi Model have been applied in other regions and cities facing COVID-19 outbreaks, emphasizing the importance of community involvement, proactive testing and tracing, and strengthening healthcare infrastructure.

Effective engagement between governmental and non-governmental stakeholders is vital to ensure sustainable and inclusive development, improved living conditions, and enhanced livelihood opportunities for Dharavi residents.

6. Conclusion & Recommendations

The urban regeneration of vulnerable neighborhoods, exemplified by Dharavi in Mumbai, is a pressing issue that requires urgent attention. High population density, limited access to basic services, and inadequate housing in informal settlements pose significant challenges to urban sustainability in cities. However, the case study also revealed potential development opportunities that can be unlocked through targeted urban regeneration initiatives.

Various government policies and schemes have been implemented to address the challenges faced by the residents of informal settlements. Although these initiatives have shown some progress, there are still gaps

and challenges to overcome. The lack of political will, funding constraints, bureaucratic processes, and resistance from slum dwellers have hindered the smooth implementation of urban regeneration projects.

This research highlights the importance of stakeholder collaboration and community participation in addressing the complexities of urban regeneration. Active engagement with academic institutions, NGOs, community-based organizations, local communities, and international development agencies is crucial for successful and sustainable development.

Recommendations:

Holistic Planning: Develop integrated urban plans that address housing, infrastructure, and livelihood opportunities simultaneously, taking into account the needs and aspirations of residents.

Strengthening Community Participation: Engaging with the local community and slum dwellers is essential in the planning and implementation of urban regeneration projects. Encouraging participation and seeking input will ensure that the initiatives are inclusive and meet the actual needs of the residents.

Improve Funding Mechanisms: To overcome funding constraints, the government must explore innovative funding mechanisms and public-private partnerships to ensure adequate resources for urban regeneration projects.

Streamline Bureaucratic Processes: Simplifying administrative procedures and streamlining bureaucratic processes can expedite project approval and implementation, reduce delays, and enhance the efficiency of initiatives.

Enhance Data Collection and Monitoring: Comprehensive data collection and regular monitoring of progress are essential for evidence-based decision making and evaluation of project outcomes. This will enable continuous improvements in future urban regeneration.

Foster Collaboration Among Stakeholders: Collaborative efforts among governmental and non-governmental stakeholders, private developers, and international development agencies are vital to successful urban regeneration. Building partnerships will enhance collective impact and resource mobilization.

Prioritize Environmental Sustainability: Emphasize environmentally sustainable practices and resource-efficient technologies in urban regeneration projects to promote environmental preservation and reduce pollution.

Embrace Technological Innovations: Utilize digital technologies and smart solutions to improve service delivery and infrastructure management in vulnerable neighborhoods like Dharavi.

Strengthening Capacity Building: Capacity building initiatives for local authorities, community leaders, and residents will enhance their ability to contribute to urban planning and development processes.

By incorporating these recommendations into future urban regeneration initiatives, Mumbai can make substantial progress in improving the living conditions of vulnerable neighborhoods and achieving urban sustainability goals.

In conclusion, the urban regeneration of Dharavi and other informal settlements in Mumbai presents a significant opportunity to address the challenges of urbanization, poverty, and inadequate housing. It requires concerted efforts by governmental and non-governmental stakeholders, active community participation, and commitment to sustainable development principles. By learning from past experiences, fostering collaboration, and embracing innovative approaches, Mumbai can create a model for inclusive and resilient urban development that can inspire other cities to face similar challenges. The success of urban regeneration in Dharavi will have a far-reaching impact on the overall urban sustainability of the city, thereby enhancing the quality of life and opportunities for its residents.

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