



Redevelopment of slum interiors using sustainable practices

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Abstract

This research delves into the intricate phenomenon of slums, densely populated urban areas often synonymous with poverty, weak housing structures, and inadequate infrastructure. The historical prevalence of slums in the United States and Europe during the 19th to late 20th centuries has transformed into a contemporary global issue, persisting in developing and developed nations alike. Notably, the world's largest slum city exists in Orangi, Karachi, Pakistan. This study challenges the conventional view of slums as problems, positing them as solutions for economically challenged families unable to afford housing.

The aim of the research is to enhance the quality of life for the low-income demographic by facilitating housing access and improved sanitation through the implementation of recycled materials and sustainable practices. Objectives include studying the evolution of slums, understanding the challenges faced by slum dwellers, and examining the necessity for slum redevelopment to elevate living standards.

The scope of the study is centered on the importance of slum redevelopment, identification of slum characteristics, and an exploration of the concept of slum dwellings, with a focus on Indian conditions. The thrust of the research lies in the examination of recycled materials and their techniques. Case studies and literature reviews, such as effective slum management in Kalaburagi, Karnataka, and the urban poor living in slums in Raipur City, India, will contribute to a comprehensive understanding.

The methodology involves data collection from various resources, including net case studies, live case studies in areas like Bangarapanagar and Arundhathinagara in Bangalore, and rigorous analysis. The research aims to tackle the problems identified and propose meaningful measures. The conclusion will present hypotheses derived from the research and analysis, contributing valuable insights to the discourse on slum redevelopment and sustainable urban living. Slum redevelopment, sustainability, questionnaire, housing, poverty, infrastructure, sanitation, problem identification, data collection, global issue.

Keywords: Slum redevelopment, sustainability, questionnaire, housing, poverty, infrastructure, sanitation, problem identification, data collection, global issue

1. Introduction

India's development in the last 20 years has resulted in one of the largest human migrations in history, with people moving from the country's rural areas to its expanding cities. Even though it has stopped and is full of mistakes, the nation's continuous industrialization has and will continue to propel the transformation and migration of its primarily rural agricultural labor force into urban areas as industrial and service workers. India's urban infrastructure has become so overburdened by the mass migration that it is breaking down, resulting in sizable slums with inadequate protection, basic amenities, housing, and sanitary conditions. There is a wealth of evidence showing that the impoverished have come up with inventive ways to enhance their own living

circumstances.

In many 21st-century urban areas, slums or squatter colonies are an unavoidable feature. Approximately 8–9 million people, or over 40% of households, reside in slums in Mumbai, the financial hub of India and home to some of the most expensive real estate globally. The Indian Census defines slums as "unfit for human housing residential areas." It is interesting to note that even though Mumbai's slums are clearly everywhere, they only make up 6–8% of the city's total land area. In this regard, almost all Indian cities are dealing with comparable issues. According to the 2011 census, there are 14 million families living in Indian cities' slums (or about 70 million people, if one assumes that a family consists of five members on average).

1.1 The characteristics of a slum vary depending on the context, but they generally include the following

- Inadequate access to safe water and sanitation: Slum dwellers often lack.
- can make them vulnerable access to clean water and adequate sanitation facilities, which can lead to a number of health problems.
- Poor housing quality: Slum housing is often dilapidated and overcrowded, and it may lack basic amenities such as electricity and cooking facilities.
- Insecure tenure: Slum dwellers often live in informal settlements, which means that they do not have secure tenure over their land or housing. This to eviction or displacement.
- High levels of poverty and unemployment: Slum dwellers are often among the poorest and most marginalized members of society. They may have difficulty finding employment or accessing basic services.
- Limited access to education and healthcare: Slum dwellers may have limited access to education and healthcare services, which can further disadvantage them.

1.2 Other characteristics of slums may include

- High population density: Slums are often densely populated, which can lead to several social and environmental problems.
- Crime and violence: Slum environments can be associated with high rates of crime and violence.
- Environmental degradation: Slum environments can be characterized by poor sanitation, inadequate waste management, and other environmental problems.

It is important to note that not all slums share all of these characteristics. Some slums may be better off than others, and some may be improving over time. However, the characteristics listed above are generally associated with slums around the world.

2. Material and Methods

2.1 Research objectives

- To study the history and evolution of the slum
- To study the various problems faced by the slum dwellers
- To study the need of redevelopment of slums dwellings and to give better living standards, amenities, and a well-suited environment for the people to live and work in the slum

2.2 Scope and Limitations

The purpose of this study is

- To understand the importance of redevelopment of slum dwellings.
- To identify the slum characteristics
- While understanding the concept of slum dwellings, the scope and the application is limited only to the Indian conditions.

2.3 Research Design

This topic comes under Applied Research. Applied research refers to a systematic and practical investigation aimed at

solving specific problems or addressing practical issues in real-world settings. The primary goal of applied research is to produce solutions, innovations, or interventions that have direct and immediate relevance to the needs of a particular industry, community, or organization. This type of research is often focused on the application of knowledge to practical problems rather than the advancement of theoretical understanding.

Applied research is driven by the desire to solve practical problems and address specific issues faced by individuals, organizations, or communities. It seeks to provide tangible solutions that can be implemented in real-world scenarios.

The research questions in applied research are typically derived from real-world problems or challenges. Researchers identify problems, gather relevant data, and develop solutions that can be applied to improve a situation or address a specific need.

Applied research aims to generate actionable outcomes. This could include the development of new technologies, methodologies, policies, or interventions that can be directly applied to bring about positive change or improvement.

Applied research on redeveloping slums is a critical area of study that seeks to address the challenges faced by slum communities and find sustainable solutions for improving their living conditions. Slums are characterized by overcrowding, inadequate housing, lack of access to basic services, and social and economic marginalization.

2.4 Data collection

The primary data collection method that will be used is the Qualitative Method which does not include numerical values. And this is done in the following way:

Questionnaire method: This method of data collection is by doing a questionnaire survey for Civil Engineers, Architects, Interior Designers and Contractors. The questionnaire includes questions about sustainable practices and the materials which can be used for the slum interior redevelopment purpose. The respondents can give their opinion and suggestions.

2.5 Data Preparation

- Collecting basic demographic information such as their name, designation, and the experience in their respective field to understand the characteristics of the respondents.
- Asking the respondents questions related to sustainable materials and low-cost housing.

2.6 Describing the Data

- Creating visualisations like pie charts and bar graphs to represent the distribution of the data.
- Identifying the most and least popular choices from the survey sent across through Civil Engineers, Interior Designers, Architects and Contractors.

3. Results and Discussion

The success of slum redevelopment using sustainable practices is typically measured in terms of social, economic, and environmental outcomes. Many possible results can be expected from slum redevelopment.

Implementation of sustainable practices may result in the construction of safer, more resilient, and energy-efficient

housing for slum dwellers.

Upgraded infrastructure such as water supply, sanitation, waste management, and energy systems can lead to improved living conditions and reduced environmental impact.

Sustainable redevelopment projects often involve community engagement and empowerment, fostering a sense of ownership and pride among residents.

Introduction of sustainable economic activities, training programs, or micro-enterprises can contribute to poverty alleviation and improved livelihoods.

Adoption of sustainable construction materials and practices, green spaces, and waste reduction contribute to positive environmental outcomes.

Sustainable redevelopment may include measures to enhance the community's resilience to climate change, such as flood-resistant infrastructure or climate-smart housing.

Many obstacles will have to be faced during the redevelopment process of slums. Facing these obstacles is a bigger challenge. One of the biggest challenges is political interests, bureaucratic hurdles, and corruption which can pose obstacles to the smooth implementation of slum redevelopment projects.

Redevelopment projects often require substantial financial resources for infrastructure upgrades, housing construction, and community development. Securing funding from government bodies or other sources can be a significant challenge. Upgrading and providing essential infrastructure such as water supply, sanitation, electricity, and transportation in a way that meets the needs of a growing population can be logistically challenging. Balancing the need for redevelopment with environmental sustainability can be challenging. Construction and infrastructure projects can have environmental impacts, and mitigating these impacts is a key consideration.

Understanding and respecting the cultural practices, traditions, and social dynamics of the community is essential. Failure to do so can lead to resistance and challenges in the acceptance of redevelopment initiatives. Resettling residents during the redevelopment process can disrupt their livelihoods. Ensuring that residents have access to employment opportunities and essential services in the new location is crucial. Slum redevelopment should address socioeconomic inequalities. However, there may be challenges in ensuring that the benefits of redevelopment are equitably distributed among all residents.

The survey results provide valuable insights into the preferences and perspectives of respondents on low-cost housing. Firstly, it is notable that the majority of participants are Civil Engineers, suggesting a professional background in construction and design. The experience of the respondents spans a wide range, from 2 to 30 years, showcasing a diverse pool of expertise. Regarding design strategies for low-cost housing, a consensus emerges as the majority favor optimal space utilization.

Concrete flooring is identified as the preferred low-cost and sustainable material for flooring, while Gypsum Board with recycled content is the top choice for wall construction. Similarly, respondents favor

Gypsum ceiling tiles with recycled content for ceilings. In terms of sustainability practices, the majority express a preference for low flow fixtures to conserve water and

natural ventilation for energy conservation.

Beyond the specific survey questions, respondents suggest additional options for low-cost housing, including the use of thin concrete panels, locally available materials, alternative building materials like recycled aggregate and compressed plastic blocks, as well as the incorporation of earth materials.

These findings collectively underscore a strong inclination towards sustainable and cost-effective solutions in the realm of low-cost housing, with an emphasis on efficient design and environmentally friendly construction materials.

4. Conclusion

Redevelopment process includes addressing the problems faced by the slum dwellers and providing them a decent living condition with necessities of life. The overall process of redevelopment may seem challenging

In conclusion, slum redevelopment using sustainable practices presents a multifaceted challenge and opportunity. While the potential benefits are vast, encompassing social, economic, and environmental dimensions, the road to successful redevelopment is fraught with numerous obstacles. Political interests, bureaucratic hurdles, corruption, financial constraints, and logistical challenges pose formidable barriers to the implementation of sustainable slum redevelopment projects.

Addressing the diverse problems faced by slum dwellers requires a comprehensive approach that goes beyond mere infrastructure development. Overcrowded and substandard housing, inadequate sanitation, limited access to healthcare and education, precarious employment, and vulnerability to environmental hazards are among the myriad issues that need targeted attention.

To overcome these challenges, sustainable redevelopment initiatives must prioritize community engagement and empowerment, ensuring that the residents are active participants in the planning and implementation processes. Cultural sensitivity and a deep understanding of the social dynamics within the community are imperative to foster acceptance and avoid resistance.

Moreover, securing financial resources for infrastructure upgrades and community development, while balancing the need for redevelopment with environmental sustainability, demands innovative financing models and a commitment to green practices. Resettlement programs must prioritize the continuity of livelihoods and access to essential services for displaced residents.

Equally critical is the need to address the root causes of slum existence, including socioeconomic inequalities and limited opportunities for social and economic mobility. Sustainable redevelopment should not only uplift the physical infrastructure but also strive to break the cycle of poverty by providing avenues for education, formal employment, and social integration.

In essence, successful slum redevelopment requires a holistic and integrated approach that transcends mere physical transformations. It necessitates a commitment to social justice, environmental stewardship, and inclusive economic development to create lasting improvements in the lives of slum dwellers and foster resilient, sustainable communities.

Reflections - Slums often feature diverse and informal

housing structures. Surveying these varied constructions can be complex, requiring adaptability in data collection methods to capture the unique characteristics of each dwelling. Slum areas may lack proper documentation, making it challenging to obtain accurate data on property ownership, construction details, or demographic information. This can affect the precision of the survey. Some residents may resist the idea of redevelopment due to uncertainty, fear of displacement, or cultural attachments to their existing living spaces. Convincing the community about the benefits of redevelopment can be a significant challenge.

Impact - The redevelopment of slum interiors using sustainable practices has multifaceted positive impacts on society. It results in the creation of safer, healthier, and more comfortable living spaces through better ventilation, lighting, and structural improvements. Sustainable practices, including the use of eco-friendly materials and energy-efficient systems, minimize environmental impact, fostering an ecologically responsible approach. Additionally, such practices enhance the resilience of slum communities to climate change, mitigating risks associated with extreme weather events. Upgrading slum interiors with sustainable designs contributes to better public health by ensuring adequate sanitation, clean water supply, and proper waste management, preventing the spread of diseases. Improved living conditions positively influence educational outcomes by providing a conducive environment that encourages focus and contributes to overall educational attainment. In essence, sustainable redevelopment not only transforms physical spaces but also addresses environmental, health, and educational aspects for the holistic betterment of society.

Positioning - This research, as focused by me, an interior designer, revolves around the creation of a living condition for the people. Observing the day-to-day problems faced by the slum dwellers is saddening and providing them with a quality life is a responsibility. My passion lies in the utilization of sustainable practices to improve the lives of the people.

Compliance with ethical standards.

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6. References

1. Elgizawy SM, El-Haggar SM, Nassar K. Slum Development Using Zero Waste Concepts: Construction Waste Case Study. *Procedia Engineering*. 2016;145:1306–1313. <https://doi.org/10.1016/j.proeng.2016.04.168>
2. Goswami DS, Manna S. Urban Poor Living in Slums: A Case Study of Raipur City in India; c2013.
3. Shekhar S. Effective management of slums- Case study of Kalaburagi city, Karnataka, India. *Journal of Urban Management*. 2020;9(1):35–53. <https://doi.org/10.1016/j.jum.2019.09.001>
4. Open AI. 2023. ChatGPT [Large language model]. <https://chat.openai.com>

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