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Sustainable Urban Upgrading of Informal Housing: A Proposed Approach in Developing Countries

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Abstract: This paper examines the sustainable urban upgrading approach for informal housing as an effective solution in developing countries. It aims to understand the economic, social, and environmental factors that play a role in informal housing areas. The study was conducted based on a theoretical approach and an in-depth analysis of the literature on housing and sustainable development. Moreover, field investigations of informal housing areas in India and Jakarta, including population economics, social activities, and spatial conditions, were conducted. The study found that developing informal housing involves understanding the sustainability framework, including economic, social, and environmental dimensions. Therefore, the approach taken by housing policymakers toward informal settlements should not only concentrate on the urban aspect or enhancing the physical environment; rather, these policies should focus on improving the standard of living and fostering social interaction in informal communities.

Keywords: informal housing, urban upgrading, built environment, informal communities, sustainability.

Introduction

Over a billion people reside in slums that lack basic necessities. Moreover, almost 25% of the world's population lives in informal settlements (Friesen et al., 2018). The increasing demand for housing and the inadequacies of regional policies in population and resource distribution inevitably lead to the housing problems faced by impoverished communities (UN-Habitat, 2015). The growth of informal housing is one of the consequences of regional development policies that prioritize large cities at the expense of small towns and rural areas (Niu et al., 2021).

The shortage of housing cannot keep up with the high demand from the urban poor and recent migrants, leading to the expansion of informal settlements on land inside or outside cities. Poor land management and ineffective housing policies that fail to address the needs of vulnerable groups contribute to the emergence of informal settlements (Abdelhalim, 2010). Housing market dynamics, urban governance, and housing policies all impact the expansion of informal settlements. Furthermore, the growth of informal settlements in large cities is influenced by demographic, economic, and spatial factors (Mahabir et al., 2016). Due to the lack of housing options for the urban poor, affordable housing in developing nations continues to fall short of actual demand (Alhajri, 2022). The housing market remains inaccessible to these socioeconomic groups (Alzamil, 2024). The high cost of land and construction, coupled with the shortage of housing options tailored to the needs of impoverished communities, has made providing adequate housing for the urban poor a significant challenge for many governments in developing nations (Alzamil, 2018).

In actuality, informal settlements offer a way of life centered on an unofficial economy, and factors related to the housing market, urban governance, and housing policies significantly impact their expansion (Brown & McGranahan, 2016). Stated differently, informal settlements serve as both a source and a cover for the informal economy rather than merely being a collection of run-down housing environments that should be eliminated. Since many developing nations lack the

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infrastructure, amenities, and housing necessary to accommodate the growing number of people moving into cities, they are ill-equipped to handle the challenges posed by the growth of informal settlements (Bayuma & Abebe, 2024). Furthermore, the solutions proposed to address informal settlements often fail to fully consider the population's needs and available financial resources (Nuhu et al., 2023). Therefore, to empower the populace and integrate them into the urban context, it is necessary to consider sustainable solutions that improve the livelihoods of informal communities (Werthmann & Beardsley, 2008).

1. The Problem

In developing countries, between 20% and 80% of the urban population lives in informal settlements (Shahraki et al., 2020). The spread of informal settlements is the result of a lack of urban planning consistent with a sustainability framework (Atkinson, 2024). People have created self-managed informal settlements as a result of an unsustainable housing system, including land management policies, building regulations, and subsidy programs (Nassar & Elsayed, 2018).

Urban planners have worked to optimize the residential environment since the end of the nineteenth century in an effort to raise social values and improve living conditions (Gillette, 2012). To address informal settlements, the majority of housing policies have concentrated on either relocating informal communities to new settlement areas or renovating existing urban structures and replacing them with new urban fabrics. However, these solutions fall well short of comprehending the economic environment of informal communities, including opportunities for livelihood and revenue streams (Agyabeng et al., 2022). Informal settlement resettlement initiatives frequently fail because they do not consider residents' living conditions and economic prospects.

Furthermore, families will not be able to afford the true cost of affordable housing within city limits due to expropriation and compensation expenses, which will eventually lead to the creation of new informal settlements (Nassar & Elsayed, 2018). The economic resources of developing nations are depleted by comprehensive development policies for informal housing areas, which also yield no returns that would entice the private sector to invest in their development (Alzamil, 2011). To address the issue of informal settlements in developing nations, it is necessary to implement sustainable solutions that focus on enhancing livelihoods as a long-term strategy.

2. Theoretical Framework

2.1 The concept of informal housing

Despite the abundance of literature on informal housing, there is no single definition of the term. Informal housing is usually defined according to its urban, legal, or regulatory dimensions. These residential communities, according to UN-Habitat, are built on public lands without legal title and, as such, lack a tenure system that would prevent forced eviction. Alzamil (2011) indicates that informal housing refers to residential areas created by locals in accordance with their needs and living conditions outside formal planning authorities.

Informal housing is one of the social efforts to address the housing crisis, often involving the construction of housing units on unsuitable land and in violation of urban planning regulations. Usually, informal housing inhabitants live in remote locations such as plains, mountains, or public lands, where construction is carried out piecemeal until self-sufficient residential settlements are achieved. Informal settlements are expanding on marginal land or near key city areas in developing nations (UN-Habitat, 2007). Given their informal establishment and noncompliance with urban laws, these settlements are frequently characterized by a deteriorating urban environment, inadequate water supply, poor sanitation, and insufficient waste disposal systems.

2.2 Causes of informal housing

Informal settlements have proliferated on the outskirts of cities or in uncontrolled areas due to a lack of housing stock that aligns with the economic capacity of low-income individuals, inadequate

housing policies, and insufficient support programs. Moreover, informal settlements have spread in many developing countries as a result of increasing poverty and social marginalization. Cities have expanded, and industrial and business centers have become concentrated in a manner that is not compatible with urban sustainability (Torres Parra et al., 2024).

Therefore, population migration and the demand for more affordable housing have increased, leading to the spread of informal settlements as an inevitable solution to accommodate the poor. Accordingly, the phenomenon of informal settlements is a response to cities' incapacity to handle the social and economic diversity of their populations, exacerbating social inequality and contradicting social justice ideals (Alzamil, 2011).

2.3 Sustainable development principles

The sustainable development goals (SDGs) aim to provide urban environments that ensure justice, health, education, and resilience to natural disasters. The goal of SDG 11, target 11.1, is "Ensuring access for all by 2030 to adequate, safe, and affordable housing and basic services." Nonetheless, UN-Habitat reports that each year, about two million people, mostly informal residents, are forcibly evicted. As a result of these forced evictions, the impoverished lack access to suitable housing (UN-Habitat, 2016, p. 13).

Therefore, many studies indicate that sustainable residential environments are those that achieve functional quality in physical structure, economic diversity, and social suitability within a framework that is consistent with the natural environment and available resources (Elgohary et al., 2024).

2.4 Sustainable urban upgrading of informal housing

Numerous studies have been conducted to address and integrate informal settlements into the urban environment. Despite the large body of research on informal settlements, little is known about the various roles that upgrading informal areas plays in the economies of cities and their inhabitants or how much the residents of informal settlements contribute to the sustainable growth of the urban area (Agyabeng et al., 2022). Many developing countries do not have a sustainable plan in place to address the growth of informal settlements. The physical infrastructure of informal settlements, including the state of the buildings, infrastructure, and public services, is covered by the majority of housing policies.

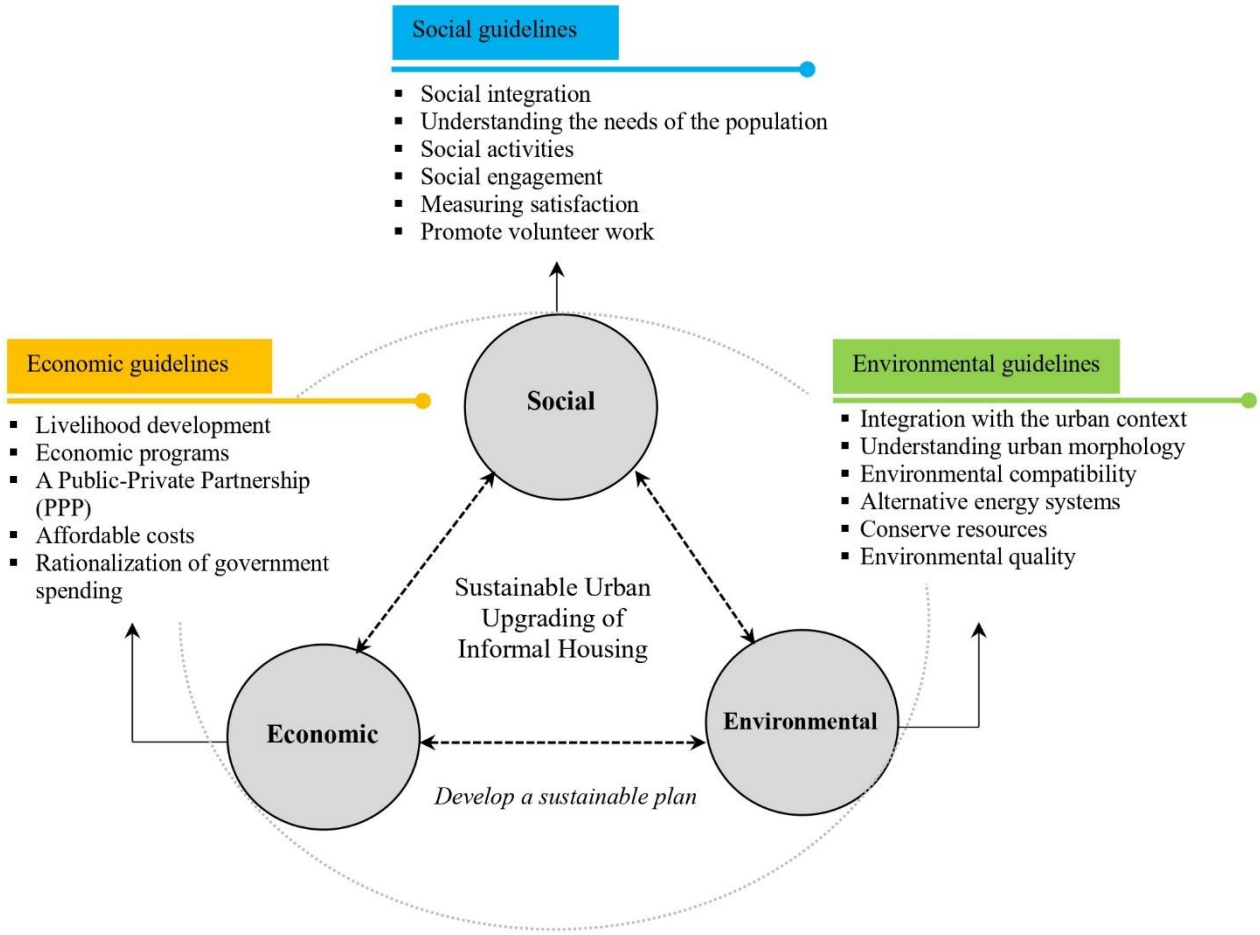
Although some strategies offer housing projects to settle informal residents, they fall short of addressing the population's social and economic needs. Furthermore, residents are unable to develop and enhance their lifestyles due to the lack of a sustainable economic foundation in new settlement projects. In general, many housing projects seek to satisfy housing demands without boosting local economies.

In his 2000 book *Housing and Urbanization: Building Solutions for People and Cities*, Charles Correa argues that policies focused on clearing out informal settlements and offering compensation will not provide locals with access to affordable housing outside the informal market. Public housing projects often fail to provide a housing model that accommodates the informal population, including job opportunities. Furthermore, social marginalization is exacerbated by the fact that most urban poor settlement projects are located far from city centers, employment opportunities, and services. Therefore, developing on-site solutions can be more sustainable, as residents often prefer informal settlements because they align with their economic and social patterns.

In his 2000 book *Housing by People: Towards Autonomy in Building Environments*, John Turner argues that housing policies should offer a sustainable framework for enhancing the living conditions of people in informal settlements, including boosting community involvement and strengthening local economies. Turner (2000) highlights that informal settlements represent a complete system, a way of life, and social values rather than merely a physical setting. As a result, sustainable urban upgrading of informal housing entails developing the best strategies and tools to improve living conditions and foster community growth, ultimately leading to their integration into the urban environment.

As a result, decision-makers in many developing nations struggle with their strategic perspective on what informal settlements offer in the city's social and economic context. The creation of urban environments that fail to adapt to societal demands and enhance livelihoods stems from the shortsighted perception of informal settlements as merely a physical issue (Alzamil, 2020). Some governments in developing countries attempt to dismantle informal settlements, which disrupts the social structure and dismantles patterns of informal economic livelihood. However, these policies do not provide economic opportunities or integrated settlement projects that meet the needs of the people living in these settlements (Alzamil, 2011). Therefore, to ensure their integration into a sustainable urban context, the removal of informal areas must be combined with social and economic programs (See Fig. 1).

Fig 1. Sustainable urban upgrading of informal housing

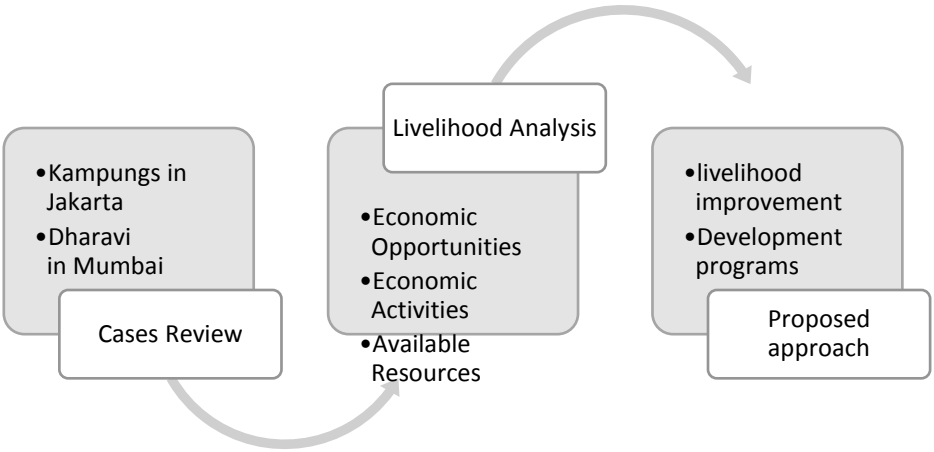


Source: Author, based on Elgohary et al. (2024); Alzamil (2011); Turner (2000); Atkinson (2024); Nuhu et al. (2023).

3. Methodology

This paper relied on a theoretical approach and an in-depth analysis of various studies and literature on informal housing in developing countries. First, the study reviewed the concepts of informal housing and the reasons for its emergence within the framework of urban sustainability. Second, it analyzed the experiences of developing countries in addressing informal settlements and the patterns of urban environment formation, particularly economic activity and living systems. Third, the study examined the economic aspects and means of subsistence of the populace in the cases of Dharavi in Mumbai, India, and Kampung in Jakarta. The study focused on understanding common economic factors in informal areas, such as available resources, economic opportunities, social activities, and spatial location. Finally, the study proposed a sustainable approach for upgrading informal settlements in the third phase.

Fig 2. Scheme of the research methodology



Source: Author

4. Results

Informal settlements are prevalent in many developing countries due to urban poverty and weak housing support programs for low-income groups. Informal settlement residents face the risk of eviction due to a lack of tenure security. Moreover, these environments lack adequate water supplies and are vulnerable to social risks and diseases (Alzamil, 2011). Many developing countries implement various policies to address informal settlements, ranging from allowing residents to settle or improving the areas to forced evictions. These solutions also include alternative housing programs and projects, such as public housing and site upgrading (Nassar & Elsayed, 2018). The policy a developing country adopts depends on environmental, social, spatial, and economic conditions. Government agencies may allow informal settlement residents to remain on-site in an attempt to empower them during a housing crisis. However, forced evictions may occur when informal settlements become associated with crime, drugs, or terrorism (Atkinson, 2024). Despite efforts to address informal housing areas, interventions often focus on urban environment improvement rather than comprehensively understanding the needs and economic conditions of the population (Supriatna, 2017).

4.1 Dharavi in Mumbai

In Mumbai, I visited the Dharavi settlement, a densely populated area with a density of over 277,136 people per square kilometer. Dharavi has about 15,000 one-room factories, employing a quarter of a million people. The people of Dharavi live in an informal manner, using the ground floor for small businesses and shops during the day. At night, some workers use the upper floors of the shops to sleep with family members. Most residents lack sanitation infrastructure and clean water, relying on water vendors for their supply. There is only one public toilet for about 1,500 people (Dey & Iulo, 2021). Residents remain attached to the neighborhood because it serves as a source of livelihood, with many working in the leather, textile, and pottery industries. The total economic returns are estimated at more than one billion U.S. dollars (Samuel & Venkat, 2018).

Dharavi residents engage in informal economic activities, including waste recycling, which is estimated to account for over 80% of the dry waste generated in Mumbai (McDougall, 2007). Many residents collect and sort solid waste such as car batteries, computer parts, paper and plastic bags, cardboard boxes, and electrical wires (Dey & Iulo, 2021). Dharavi also has factories that recycle used beverage cans and soap. These economic activities employ over 250,000 people, as shown in Figure 3. Additionally, residents engage in a variety of economic activities, including food sales, light manufacturing, and household production.

Fig 3. Economic activities in Dharavi, India.

Source: Author (field visit, 2018).

4.2 Kampungs in Jakarta

In Jakarta, informal settlements emerged as a response to population growth in the city. The city experienced urban expansion, especially with real estate developers taking over the housing and construction sector without effective programs for low-income people, which led to the spread of informal settlements (kampungs; Nurdiansyah, 2018). Kampungs have expanded due to the lack of alternative housing options for the urban poor. About 40% of households live below the poverty line and are unable to access the formal housing market. Also, more than 25% of Jakarta's population resides in 450 kampungs (UN-Habitat, 2003).

Kampungs are self-sufficient slums often built on informal land along coastlines or railway lines. Some kampungs lie outside Jakarta's urban development boundaries, but the city's urban expansion has brought them within the urban limits (Alzamil, 2020). In addition, other kampungs are built on agricultural land or in public spaces, making them informal. These areas do not have secure tenure because they are located in places unsuitable for settlement and lack government permits, and their residents continue to resist forced eviction policies. Some research and government reports indicate that only 20% of the total villages in Jakarta can be classified as formal housing (Widoyoko, 2007).

The kampungs lack infrastructure such as clean water supply, power, sanitation, and waste disposal systems, as shown in Figure 4. Kampung residents engage in various economic activities depending on location, including fishing, trading, and household production. The local government has implemented Kampung Improvement Policies (KIP) to provide basic needs, but this has not been accompanied by comprehensive social and economic programs to improve livelihoods (Alzamil, 2018). As a result, policies to upgrade informal settlements can be effective only when combined with economic and social development programs (Nurdiansyah, 2018).

Fig 4. Economic activities In Kampung, Jakarta

Source: Author (field visit, 2016).

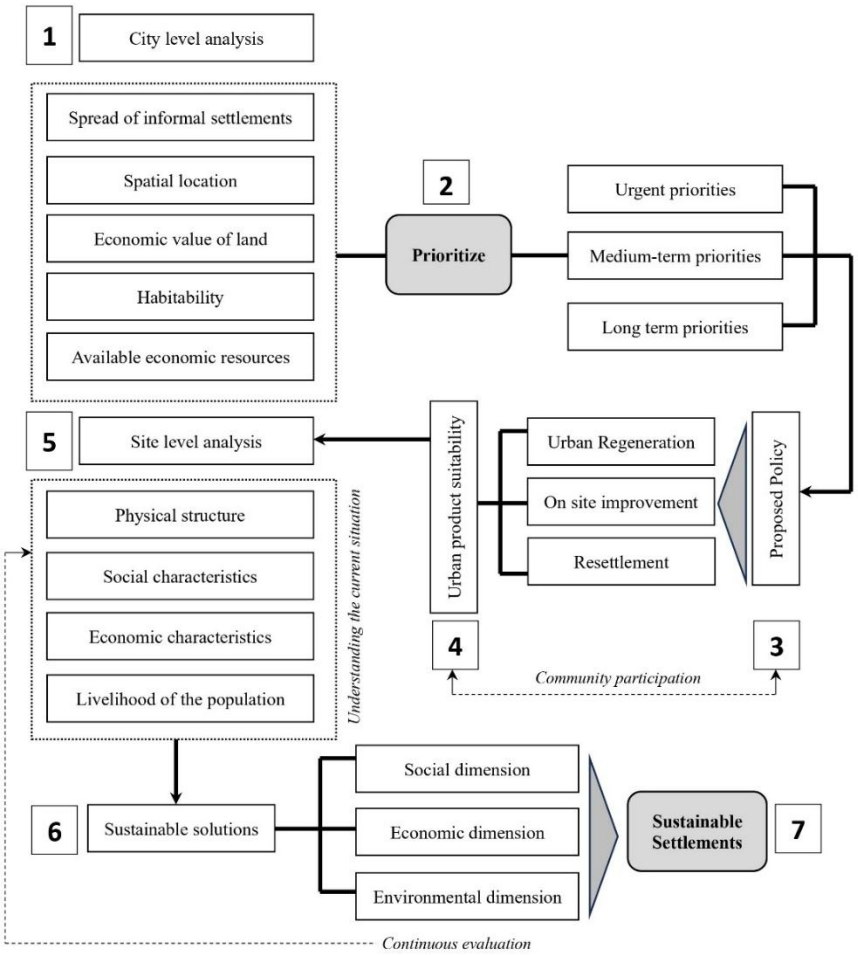
5. Discussion

The emergence of informal settlements in developing countries results from the failure of housing policies to provide adequate housing for the poor that meets economic, social, and environmental requirements. Sustainable solutions for informal settlements must consider the availability of economic infrastructure, including places of work or economic production. Sustainable urban upgrading of informal settlements maintains social structure, improves livelihoods, and utilizes resources for both the present and the future (Nassar & Elsayed, 2018).

The results of the study indicate that residents of informal settlements are attached to their spatial environment and work in jobs such as food vending, waste sorting, or manufacturing. Therefore, residents of informal settlements need comprehensive programs that account for the physical structure along with the economic and social framework. The first step in developing effective solutions for informal settlements depends on analyzing their economic and social structure and upgrading it as a sustainable approach (Turner, 2000).

Figure 5 illustrates the stages of developing effective policies for informal settlements in developing countries. The proposed approach begins by analyzing the spatial location of informal settlements at the city level, along with the economic resources and social structure. This analysis helps identify priorities for addressing informal settlements and proposing appropriate policies. The success of this policy depends on examining informal settlements, including the economics of the population, livelihoods, and social characteristics within the framework of sustainability dimensions.

Fig 5. Sustainable urban upgrading of informal housing: A proposed approach in developing countries



Source: Author

6. Conclusion

This paper sheds light on the urban upgrading approach for informal settlements as a sustainable solution in developing countries. Many solutions have failed to address informal settlements because they focused on the urban dimension in isolation from economic and social conditions. Therefore, this paper proposes to develop a comprehensive model that considers the analysis of the physical structure, living conditions, and social systems in informal settlements.

Modern policies for addressing informal settlements tend to stabilize the population and provide appropriate means to improve their living conditions, especially given the lack of financial resources in developing countries. Sustainable urban upgrading of informal settlements requires improving living conditions, which is a continuous process that considers the needs of the population, community organization, and self-resources, along with providing financial, technical, and human resources.

This approach emphasizes leveraging community efforts in managing the urban environment and creating job opportunities for local residents to upgrade informal settlements. In conclusion, the paper recommends developing a sustainable model for dealing with informal settlements that takes into account the economic, social, and environmental dimensions of urban development or improvement processes.

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