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## Transforming Slums Through Urban Intensification

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### **Abstract**

*Unplanned rapid urbanization is leading to the mass formation of informal settlements in many developing cities around the world. It is estimated that globally approximately 30% of urban residents inhabit such informal settlements. These settlements are characterized by poor physical urban structures, insecure land tenure, overcrowding, and poor infrastructure. Current literature on slum upgrading mechanisms focus on economic and community trends driven by public health debates. These tend to place emphasis on the improvement of infrastructure by examining the role of microfinance and other community-based approaches to qualify, address and map the existing slum challenges. Other arguments in contemporary literature focus on the role the private sector can play in addressing the challenges and opportunities faced in the upgrading of slums. Despite the evolution of arguments in the literature, conflicting approaches have led to little progress being made to address the problems caused by the increase in slum settlements. The problem therefore exists as to how such informal settlements can be addressed and upgraded to enhance the liveability standards of public space and building units. Through a systematic and in-depth literature review, this paper aims to structure and analyse contemporary arguments around the implication of informal slum settlements, the impact of the property market on the redevelopment process, and the planning for sustainable urban form. The results reveal how land readjustment approach, financial systems, and development approach can impact both the public realm and physical structures whilst stimulating viable redevelopment processes for the slum settlements. This paper then sets out a future research agenda by identifying areas of literature that illustrate the greatest potential for tackling the problems presented by the growth in such informal slum settlements.*

**Keyword:** *slum upgrading, land readjustment, urban intensification, property market*

## Introduction

Informal settlements are characterized by a shortage of municipal public services related to public and social infrastructure. Many of these settlements are lacking adequate water supply, sanitation, security of tenure and adequate building structure. This increases the slum dwellers vulnerability to climate, crime, evictions, and health hazards. To mitigate such negative impacts many community sectors, government, private donors, and NGOs are supporting slum upgrading programs where slum dwellers skills and expectation are considered through participatory planning and development process.

It is argued such programmes improve the life of slum residents through an emphasis on social inclusion, economic development, and political representation. However, often the programmes intended to upgrade slums do not take account of the quality of urban space, especially with regard the spatial configuration between the built form and public space. This is of paramount importance as it is this spatial configuration that results in upgraded settlements having no adequate sidewalks, public space, or lighting, and often lacking suitable urban design with regard the building façade, retail frontages and public space.

The high wave of urbanization and lack of inclusive planning approach in developing cities have stimulated new financial markets of housing microfinance and private-public partnership infrastructure projects. This has resulted in slum dweller having access to financial loans to improve their housing units, and local governments can secure municipal bonds to finance larger infrastructure projects. But due to low financial collateral among slum dwellers, low government budget allocation, and lack of low income and informal market experience, as well as the low profit margins involved, the private residential property market have limited their property market proposals to wealthy, high-income households. Whilst informal slum settlements keep growing, the luxury property developers allocate large land boundaries for high income residential development. Therefore, exacerbates further spatial inequality and segregated residential settlements.

However, many governmental efforts in slum upgrading process are limited towards land titling process, where the rest of development are taken informally by community initiatives, which resulted in poor quality of built environment and chaotic residential settlement. “vernacular and innovation technologies, utilizing local and readily available material and suited to self-help and semi-skilled labour, must be developed to encourage the construction of functionally adaptable and climatically responsive buildings” (Steyn, 2011).

This research seeks to explore, understand, and structure the existing human, financial and land resources potentials that would enhance the urban form of informal settlements. The paper addresses the spatial physical character of upgraded residential settlements, examines the financial potential for residential

property markets, and introduces a form base upgrading framework that would serve to enhance the quality of living space, built form and public realm.

## **Background**

Urban intensification is a planning and redevelopment approach that tends to optimize the land in effective ways to accommodate the urban growth in specific urban areas to ensure sustainable urban environment, using land readjustment and redevelopment planning tools. The argued advantages include urban sprawl control, urban land utilization, reduction of land development cost, and the creation of compacted neighbourhood. Recent research conducted in four neighbourhoods in New Zealand shows that the “evaluations of housing intensification over the past decade clearly demonstrate housing satisfaction and liveability are the result of both the quality of the housing, and the amenity of the neighbourhood in which it is located” (PEN2PRINT, 2017)

Urban intensification in the context of developing cities challenges where poverty and informality are the mainstream shall introduce property market mechanism and land development planning platform that work for informal socio-economic networks through best utilization of available land, development, and financial resource. “The planning of new low-income settlements has to establish an optimum relationship between resources (financial, human, land)” (Pitero and Gabriella, 2005).

Such slum upgrading processes are not without their critics. For example, Previous study stated that the upgrading approach of Kibera are limited to infrastructure provision (Guthrie, 2011). On site situation shows that many slum dwellers have enough income to cover the cost redevelopment, but on-site government-led housing development scheme are only limited to few. Research on the informal settlements in Dharavi, Mumbai, demonstrates that the private sector involvement in slum upgrading process must adapt an inclusive framework that can be workable and adequate with the nature of economic and social networks of the informal settlements (Mukhija, 2010). A recent report also highlights an informal settlement redevelopment scheme in Lideta, Addis, using land value capture adopted by the local government, which have successfully developed a neighbourhood design proposal that transferred the informal settlement into well compacted neighbourhoods (Figure 1). These neighbourhoods have accessible public amenities and are maintained using a land readjustment and building code planning approach. However, the report did find that many original residents tended to relocate out of the new redeveloped neighbourhood boundary due to overprice of new housing unit (WRI, 2020).

Slum re-development, therefore, often comes with a range of unintended negative consequences for the original residents and surrounding neighbourhoods. Therefore, to achieve sustainable slum redevelopment process, many aspects related to the implication of density and location of informal settlement need to be examined and understood. This includes market forces related to finance policy, the role of private sector

and land value capture, and initiatives on a cost-effective redevelopment process. This is of paramount importance as the planning approach with regard land and building regulation, redevelopment schemes, land readjustment processes, and land development codes must be well maintained to ensure liveable, affordable, and suitable urban form.

However, there exists a gap in literature around a lack of systematic literature that takes a holistic approach to understand each contemporary argument. As research is often conducted with a specific focus, wider positive and negative implications are often not considered, and the direct and indirect relationship between initiatives not considered.

Through a systematic and in-depth literature review, this paper aims to structure and analyse contemporary arguments around the implication of informal slum settlements, the impact of the property market on the redevelopment process, and the planning for sustainable urban form. Specifically, this paper will examine literature around three informal settlements, in Nairobi, Mumbai and Addis Ababa to understand shared lessons, common themes, and the planning and development tools used to mobilize the financial, human and land resources.

## **Methodology**

The paper will discuss the implication of informal settlement, the role of property market in the upgrading process, and the urban form planning process in three informal settlement which are Kibera, in Nairobi, Dharavi in Mumbai and Lideta in Addis Ababa, based on the critics raised for the upgrading process by previous studies and research. These settlements have exposed to different type of intensification process of land planning techniques, financial market capacity and on-site social skills, but due to lack of coordination process, the upgraded settlements have not led to liveable, inclusive, and affordable residential settlements.

In that sense, the paper will examine the upgrading process of three informal settlements, using qualitative logical framework related to land location, property market and development code, such logical framework can enhance the main urban factors that impact the upgrading process in developing cities. Most urban intensification platforms in developing countries are neglecting the role of property market in utilisation the that financial resource which can mediating other land and development resources (Figure 2).

## **Results and Discussion**

### **The Impact of Density and Location on The Upgrading Process**

The urban settlement of slums can be differing according to density, its location and the upgrading approach taken by different sectors. This obviously noted in the informal settlement of Kibera, Dharavi and Lideta.

To start with Kibera, the existing conditions show about 800,000 population living in 2.56 km<sup>2</sup>, which means a density of 312,500 population per km<sup>2</sup>, which is approximately 10 times higher than Manhattan, due to lack of inclusive planning, Kibera was subject to overcrowding with most of slum households living in a 9 m<sup>2</sup> room unit associated with poor building structure and lack of sanitation and water supply networks. It shall be noted that the Kibera area is about only 5% of Nairobi city area, but it accommodates mostly half of the city population. However, due to slum being located at the edge of Nairobi city, there is a nearby greenfield land of 8 km<sup>2</sup>, but it was not shared by the local government to allow a density reduction that can tackle the challenge of existing overcrowding. While the upgrading approach is only about improving the sanitation and water supply network with about only 3000 households are subject to improved government-led housing through a four-story residential apartment which is not associated with public amenity such as schools, gardens, health care units and other required economic activities.

In comparison with Dharavi slum area, which is also characterised by lack of building structure, lack of sanitation and network, and above all overcrowding due to a density, where 500 000 slum dwellers living in 1.7 km<sup>2</sup> means a density about 294.11 population per km<sup>2</sup>. However, the upgrading approach tends to deal with challenge of overcrowding, by allowing a reduction of density from 500,000 population living in an area of 1.7km<sup>2</sup> to only 175,000 population living in 1.7km<sup>2</sup>, means an actual density reduction from 500, 000 to 103,000 population per km<sup>2</sup>. The upgrading approach led by local government was about allowing a construction of three-four multi story buildings to house the targeted 175,000 population, but due of Dharavi being located at the inner city with no nearby available land for expansion, the rest of 325,000 population was subject to relocation of the Dharavi area.

In contrast, Lideta informal settlement shows a low level of density with 5,000 inhabitants living in about .98 km<sup>2</sup>, means a density of 5.617 inhabitant per km<sup>2</sup>. However due to poor building structure and lack of adequate infrastructure. The area was subject to gentrification plan through land readjustment and neighbourhood design scheme with an objective to enhance the quality of living space for an area of 0.22 km<sup>2</sup>. The plan was succeeding in developing a well compacted neighbourhood served with walking distance public amenity, but due to overpriced rent rate the new redeveloped area was not accessible for all original slum dwellers.

The factor of slum location, density, and area is crucial in the slum upgrading and development process, this because it informs whether the upgrading process impose vertical or horizontal expansion. it shall be noted that the available nearby greenfield land can play a major role in solving the issue of the overcrowding oh high density slums area without imposing relocation mechanism which weaken the accessibility of slum dwellers to their social and economic networks. However, this was not taken into consideration during upgrading process of Kibera, thus it is still challenging the issue of high density and overcrowded settlement. Likewise, when there is a high density and overcrowded slum settlement located in inner city with no nearby

land for expansion, the only option for upgrading is to go for high rise building, to some extent this was the approach by the local government of Dharavi through a three-fourth multi story residential building proposed plan, but it was not enough to cover all the slum dwellers make many slums vulnerable to relocation. In contrast, the low density of Lideta informal settlement allow a better redeveloped approach regardless of being in the inner city, which approached through a land readjustment plan, where original residents shared part of their lands to government to allow an inclusive redevelopment scheme by adopting a neighbourhood design approach to accommodate the original resident of the informal settlements in well compacted, multi-used and liveable residential development.

### **The Impact of Property Market on The Upgrading Process**

Cities in developing countries tend to develop property markets mechanism that can facilitate the upgrading process. For example, Nairobi has introduced financial policy to facilitate the accessibility of urban poor to adequate housing. Also, Dharavi local government have created a joint cooperative platform between the private sector and slum dwellers to enhance the urban development of slum areas based on the community needs. Nevertheless, Addis Ababa local government have introduced a land value capture approach to facilitate the redevelopment of Lideta informal settlement. But these initiative and policy actions have not yet created a market conditions that work for the slum dwellers.

First, the housing financial policy of Nairobi facilities the accessibility of slum dwellers through 33 financial institution that set a required accessibility measures of 11.6% mortgage rate, 10 years mortgage term and 15% down payment (CAHF, 2020). However, it shall be noticed that cost of cheapest newly built house is \$25185, which require a monthly household income of \$32 857 to cover the required house cost through the financial institution loans. According to Centre of Africa Housing Finance, only 12.34 of urban population households could afford this house with finance, due to average monthly income of \$20.53.

Similarly, the Dharavi local government created a cooperation committee between the slum dwellers and private sector to facilitate the development process, but there was a lack of accessible finance system due to unaffordability of the project and drop in housing price.

Moreover, Addis local government developed a land value capture to finance the redevelopment of Lideta informal settlement, by which Lideta neighbourhood land readjustment plan designated about 0.05km<sup>2</sup> of land to be auctioned off to cover the cost of development, with Local Development Plan estimating that the land would be leased for an average of ETB 60 per m<sup>2</sup>. Land was leased for double the estimation at ETB 120 per m<sup>2</sup> (WRI, 2020), meaning that the development cost was recovered from about three hectares of land sold in auction. With the initial investment from government and development taken by private developer

sectors. However, 75% decide to relocate due to high project time frame than would be expected and due to high fees of the down payment and rent rate of newly constructed apartments.

High wave urbanization imposes high rate of urban growth in Addis, Mumbai, and Nairobi. For instance, Nairobi's 2021 population is now estimated at 4,922,192, expected to reach 8,499,403 in 2035. However, the property market of these cities has failed to facilitate the accessibility of slum dwellers to adequate housing. For the property market to be work, the land value capture must be invested in affordable housing, while the financial policy must introduce lower down payment rate, higher mortgage term and lower mortgage rate. Along with providing housing monthly allowance for low-income households. Nevertheless, to avoid high rent price, costly redeveloped housing and relocation throughout the redevelopment process, the local government shall introduce land development policy to utilize the use of building material and available lands, while develop the land per housing unit rather than area base scheme.

### **The Impact of Land Policy on The Upgrading Process**

Land use and development policy can play a major role in upgrading policy, the available land within the slum area, nearby greenfield, the existing density can determine whether the redevelopment process can be on vertical or horizontal approach. However, the four-story development apartment in Kibera have not secured public amenity such as green space, pedestrian friendly lanes, schools, and health care unit, it has only secured housing apartment units for only 3000 households (Figure 3). Nevertheless, Dharavi redevelopment proposal (Figure 4) have shown a well compacted residential settlement served by public amenity, but its only for about quarter of total slum dwellers lives in the area, making the rest vulnerable to relocation. On the other hand, Lideta redevelopment scheme shows well compacted high rise the development served by public amenity (Figure 5), but it lacks pedestrian friendly infrastructure, and the appartement was overpriced.

To avoid negative impact of relocation, overpriced apartments and exclusion in the redevelopment plans, local government must introduce land development policy to allow incremental development process through land pooling scheme, such approach can allow slum dwellers to locate in their area during the development and construction process. Nevertheless, the land redevelopment approach must introduce a design code that make use of existing skills and building materials to stimulate local economic development while lowering the cost of development.

### **Conclusions**

Developing cities face a challenge of the rising informal settlements, many of the upgrading scheme have result in overpriced housing units, lack of public amenity and exclusion development scheme, such outcome have impacted the accessibility of slum dwellers to slum redevelopment project, impose many to lose their economic and social networks due to relocation, while the beneficiary groups lack accessibility to decent public service. Such situation required urban intensification that would utilize the financial, human and land resources. In that sense, many lessons learned with regard the urban intensification process can be driven from the three case studies of Kibera, Lideta and Dharavi.

First, Urban expansion shall include targeted slum dwellers through vertical expansion in time of no available greenfield land and horizontal expansion in term of available greenfield land, while the development process must ensure accessible public amenity and pedestrian friendly residential settlement. Second, the property market platform must introduce housing finance that work for urban poor and informal worker through fair interest rate, mortgage term and down payment rate, while the create appropriate partnership between private public and slum dwellers sectors to ensure the accessibility of urban poor to the redevelopment settlement, while approaching inclusive development outcome, taking into consideration appropriate allocation of land value capture to ensure cost-efficient development process. Nevertheless, the planning and redevelopment process have to ensure appropriate land development code that make use of available labour and worker skills in the construction process, while utilizing the housing area to ensure affordable housing unit, along with land readjustment plan that would allow liveable and well compacted residential settlements.

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## APPENDIX 1



Figure 1 transferring Lideta informal settlement in Addis Ababa into well compacted and liveable neighbourhood (Source: WRI, 2020)

## APPENDIX 2



Figure 2 Logical framework to review the upgrading process of informal settlement

### APPENDIX 3



Figure 3 Kibera 3000 housing upgrading project (Source: Correspondent, 2016)

### APPENDIX 4



Figure 4 Dharavi development plan proposal (Source: Vom, S. 2019)

## APPENDIX 5



Figure 5 Lideta land adjustment redevelopment scheme (Source: WRI, 2020)