

CONFERENCE RESEARCH PAPER

# Transforming Slums Through Urban Intensification

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## ABSTRACT

**BACKGROUND:** Urban intensification is a planning and redevelopment approach using land readjustment and redevelopment planning tools. It optimises the land in effective ways to accommodate urban growth in specific urban areas to ensure a sustainable urban environment. The argued advantages include urban sprawl control, urban land utilisation, reduction of land development cost, and the creation of compacted neighbourhoods.

**METHODS:** Based on a critical literature review, the paper examines the upgrading process of three informal settlements using a qualitative logical framework related to land location, property markets and development codes; such a logical framework can enhance the main urban factors that impact the upgrading process in developing cities. Most urban intensification platforms in developing countries neglect the role of the property market in the utilisation that financial resources can mediate the land and development resources available for redevelopment.

**RESULTS:** Urban expansion includes targeted slum dwellings through vertical expansion where there is no available greenfield land, and horizontal expansion in terms of available greenfield land; the development process must ensure accessible public amenities and pedestrian-friendly residential settlements. The property market platform must introduce housing finance that works for the urban poor and informal workers through fair interest rates, mortgage terms and down

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payment rates. They must create an appropriate partnership between private, public, and slum dweller sectors to ensure the accessibility of urban poor to redevelopment settlements while approaching inclusive development outcomes. It should take appropriate allocation of land value capture to ensure cost-efficient development processes into consideration. The planning and redevelopment process must ensure an appropriate land development code that makes use of available labour and worker skills in the construction process while utilising the housing area to ensure affordable housing units. There should also be a land readjustment plan that would allow liveable and well compacted residential settlements.

**CONCLUSIONS:** Developing cities face challenges of rising informal settlements. Many upgrading schemes have resulted in overpriced housing units, lack of public amenities and exclusion development schemes. Such outcomes have impacted the accessibility of slum dwellers to the slum redevelopment projects, causing many to lose their economic and social networks due to relocation, while the beneficiary groups lack access to decent public services. These situations require urban intensification that would utilise financial, human and land resources. Because of this, many lessons have been learned; specifically, that land value capture, housing financial markets, urban expansion and development codes can be driven by the three case studies of Kibera, Lideta and Dharavi to ensure a better quality of residential settlements.

**KEYWORDS:** *Slum Upgrading; Land Readjustment; Urban Intensification; Property Market*

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## INTRODUCTION

Informal settlements are characterised by a shortage of municipal public services related to public and social infrastructure. Many of these settlements lack 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 support slum upgrading programmes where slum dwellers skills and expectations are considered through participatory planning and development processes.

It is argued that such programmes improve the life of slum residents through an emphasis on social inclusion, economic development, and political representation. However, the programmes intended to upgrade slums often do not take account of the quality of urban space, especially with regard to 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 to the building façade, retail frontages and public space.

The high wave of urbanisation 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 dwellers having access to financial loans to improve their housing units; in addition, local governments can secure municipal bonds to finance larger infrastructure projects. However, 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 has limited their property market proposals to wealthy, high-income households. At the same time as informal slum settlements keep growing, luxury property developers allocate large land boundaries for high income residential development, further exacerbating spatial inequality and segregated residential settlements.

However, many government efforts in slum upgrading processes are limited towards land titling processes, where the remaining development is taken informally by community initiatives; this has resulted in poor quality of the built environment and chaotic residential settlements: “vernacular and innovation technologies, utilising 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 potential 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 based upgrading framework that would serve to enhance the quality of living space, built form and public realm.

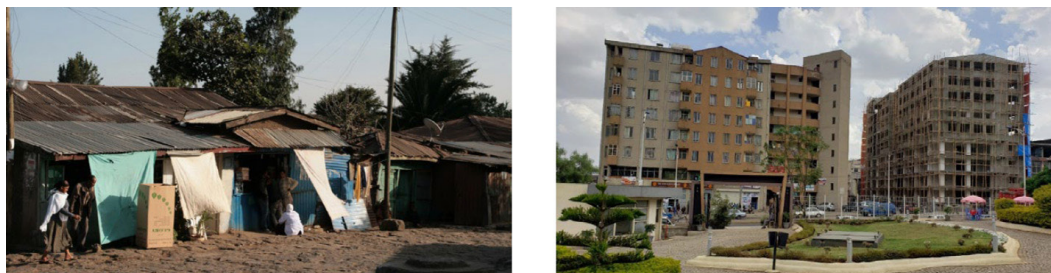
## BACKGROUND

Urban intensification is a planning and redevelopment approach that tends to optimise the land in effective ways to accommodate 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 utilisation, reduction in land development costs, and the creation of compacted neighbourhoods. 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).

In the context of developing cities (where poverty and informality are the mainstream), urban intensification introduces property market mechanisms and land development planning platforms that work for informal socio-economic networks through best utilisation 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)” (Garau *et al.*, 2005).

Such slum upgrading processes are not without their critics. For example, previous studies stated that Kibera’s upgrading approach is limited to infrastructure provision (Cronin and Guthrie, 2011). The on-site situation shows that many slum dwellers have enough income to cover the cost of redevelopment, but on-site government-led housing development schemes are only limited to a few. Research on the informal settlements in Dharavi, Mumbai, demonstrates that private sector involvement in slum upgrading processes 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; this has 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

found that many original residents tended to relocate out of the new redeveloped neighbourhood boundary due to the high price of new housing units (Mahendra *et al.*, 2020).



**Figure 1: Transferring Lideta Informal Settlement in Addis Ababa into a Well Compacted and Liveable Neighbourhood**

Source: Mahendra *et al.*, 2020

Slum re-development, therefore, often comes with a range of unintended negative consequences for the original residents and surrounding neighbourhoods. To achieve a sustainable slum redevelopment process, many aspects related to the implications of density and location of informal settlements need to be examined and understood. This includes market forces related to finance policy, the role of the 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 to land and building regulations, redevelopment schemes, land readjustment processes, and land development codes must be well maintained to ensure a liveable, affordable, and suitable urban form.

However, there exists a gap in the literature around a lack of systematic literature that takes an 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 is 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 the 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 mobilise the financial, human and land resources.

## METHODOLOGY

The paper will discuss the implications of informal settlements, the role of the property market in the upgrading process, and the urban form planning process in three informal settlements, Kibera,

in Nairobi, Dharavi in Mumbai and Lideta in Addis Ababa, based on the criticisms raised for the upgrading process by previous studies and research. These settlements have exposed different types of intensification processes of land planning techniques, financial market capacity and on-site social skills. However, due to a lack of co-ordination processes, 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 a qualitative logical framework related to land location, property markets and development codes; such a logical framework can enhance the main urban factors that impact the upgrading process in developing cities. Most urban intensification platforms in developing countries neglect the role of property markets in utilising financial resources that can mediate other land and development resources (Figure 2).



**Figure 2: Logical Framework to Review the Upgrading Process of Informal Settlement**

Source: Constructed by author

## RESULTS AND DISCUSSION

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

The urban settlement of slums can differ according to density, location and the upgrading approach taken by different sectors. This can be seen in the informal settlements of Kibera, Dharavi and Lideta.

To start with Kibera, the existing conditions show a population of about 800,000 within 2.56km<sup>2</sup>, a density of 312,500 people per km<sup>2</sup>; this is approximately 10 times higher than Manhattan. Due to lack of inclusive planning, Kibera was subject to overcrowding with most slum households living in a 9m<sup>2</sup> room unit associated with poor building structure and lack of sanitation and water supply networks. It should be noted that the Kibera area is only about 5% of the Nairobi city area, but it accommodates approximately half the city's population. As the slums are located at the edge of Nairobi city, there is a nearby greenfield land of 8km<sup>2</sup>; however, although this would have allowed a density reduction that could tackle the challenge of existing overcrowding, the land was not shared by the local government. The upgrading approach is only about improving the sanitation and water supply network; approximately 3,000 households are subject to improved government-led housing through a four-storey residential apartment complex. However, this complex is not associated with public amenities such as schools, gardens, health care units and other required economic activities.

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

In contrast, the Lideta informal settlement has 5,000 inhabitants living in about 0.98km<sup>2</sup>, a density of 5.617 inhabitants per km<sup>2</sup>. However, due to poor building structure and lack of adequate infrastructure, the area was subject to a gentrification plan through land readjustment and a neighbourhood design scheme with the objective of enhancing the quality of 0.22km<sup>2</sup> of the living space. The plan succeeded in developing a well compacted neighbourhood served with public amenities within walking distance, but due to overpriced rents 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 is because it informs whether the upgrading process imposes vertical or horizontal expansion. It should be noted that the available nearby greenfield land could play a major role in solving the overcrowding issue in high density slums without imposing relocation mechanisms that weaken the accessibility of slum dwellers to their social and economic networks. However, this was not taken into consideration during the Kibera upgrading process; therefore the issues of high density and overcrowded settlements are still challenging. Likewise, when there is a high density and overcrowded slum settlement located in an inner city with no nearby land for expansion, the only option for upgrading is to develop high rise buildings. To some extent this

was the approach taken by the Dharavi local government through a proposed three/four storey residential building, but it was not enough for all the slum dwellers and made many slum dwellers vulnerable to relocation. In contrast, the low density of Lideta informal settlement allowed a better redevelopment approach; it was also in the inner city. This approach was through a land readjustment plan, where original residents shared part of their land with the government to allow an inclusive redevelopment scheme. They did this by adopting a neighbourhood design approach to accommodate the original residents of the informal settlements in compact, multi-used and liveable residential developments.

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

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

First, Nairobi's housing financial policy facilitates the accessibility of slum dwellers through 33 financial institutions that set required accessibility measures of 11.6% mortgage rate, 10 year mortgage terms and 15% down payment (CAHF, 2020). However, it should be noted that the cost of the cheapest newly built houses is US\$25,185; this requires a monthly household income of US\$328.57 to cover the required house cost through financial institution loans. According to the Centre of Africa Housing Finance, only 12.34% of urban population households could afford this house with finance as the average monthly income is only US\$20.53.

Similarly, the Dharavi local government created a co-operation committee between the slum dwellers and the private sector to facilitate the development process. However, there was no accessible finance system due to unaffordability of the project and drop in housing prices.

The Addis local government developed a land value capture to finance the redevelopment of Lideta informal settlement. The 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 the 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> (Mahendra *et al.*, 2020), meaning that the development cost was recovered from about three hectares of land sold in auction with the initial investment from government and the development taken by private developer sectors. However, 75% of the population decided to relocate due to the long project time frame, high fees for the down payment and high rent of the newly constructed apartments.



High wave urbanisation imposes high rates of urban growth in Addis, Mumbai, and Nairobi. For instance, Nairobi's population in 2021 was estimated at 4,922,192 and is expected to reach 8,499,403 by 2035. However, the cities' property market has failed to facilitate the accessibility of slum dwellers to adequate housing. For the property market to work, the land value capture must be invested in affordable housing, while financial policies must introduce lower down payments, higher mortgage terms and lower mortgage rates. The policies must also provide a monthly housing allowance for low-income households. To avoid high rents, costly redeveloped housing and relocation throughout the redevelopment process, the local government should introduce land development policies to utilise the use of building material and available lands, while developing the land per housing unit rather than an 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 and the available land within the slum area, nearby greenfield, and existing density can determine whether the redevelopment process can be on a vertical or horizontal approach. However, the four-storey apartment development in Kibera has not secured public amenities such as green space, pedestrian friendly lanes, schools, and health care unit; it has only secured housing units for 3,000 households (Figure 3). The Dharavi redevelopment proposal (Figure 4) has shown a well compacted residential settlement served by public amenities, but it is only for about a quarter of the slum dwellers that live in the area, making the rest vulnerable to relocation. The Lideta redevelopment scheme shows a well compacted high rise development served by public amenities (Figure 5); however, the development lacks a pedestrian friendly infrastructure, and the apartments were overpriced.



**Figure 3: Kibera 3000 Housing Upgrading Project**

Source: Nairobi News, 2016





**Figure 4: Dharavi Development Plan Proposal**

Source: Vom, 2008



**Figure 5: Lideta Land Adjustment Redevelopment Scheme**

Source: Mahendra *et al.*, 2020

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

## CONCLUSIONS

Developing cities face challenges of rising informal settlements. Many of the upgrading schemes have resulted in overpriced housing units, lack of public amenities and exclusion development schemes; such outcomes have impacted the accessibility of slum dwellers to slum redevelopment projects, caused many to lose their economic and social networks due to relocation, while the beneficiary groups lack accessibility to decent public services. Such situations require urban intensification that would utilise financial, human and land resources. In that sense, many lessons learned with regard to the urban intensification process can be driven from the three case studies of Kibera, Lideta and Dharavi.

First, urban expansion should include targeted slum dwellers through vertical expansion where there is no available greenfield land, and horizontal expansion in terms of available greenfield land. The development process must ensure accessible public amenities and pedestrian friendly residential settlements. Second, the property market platform must introduce housing finance that works for the urban poor and informal workers through fair interest rates, mortgage terms and down payment rates. The creation of appropriate partnerships between the private, public and slum dweller sectors would ensure the accessibility of the urban poor to the redevelopment settlements, taking into consideration the appropriate allocation of land value capture to ensure cost-efficient development processes. The planning and redevelopment process must ensure appropriate land development codes that make use of available labour and worker skills in the construction process, while utilising the housing area to ensure affordable housing units, together with land readjustment plans that would allow liveable and well compacted residential settlements.

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## BIOGRAPHY



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