

# Brownfield Regeneration: A possible Panacea to Zambia's Housing Deficit and Urban Decay?

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**Purpose:** Zambia is grappling with a housing deficit officially estimated at 1.5 million units and projected to reach 3.3 million by 2030. To address the current deficit, the government anticipates constructing about 149,000 units per annum or 222, 000 to avoid the 2030 projection. Simultaneously, many African cities are struggling to deal with urban decay, a condition that can be attributed to urban sprawl, poor planning, urbanization, increased population growth and many more. It has been observed that combating the housing deficit does not consider the current stock of properties which are now degenerated. New construction focuses on the use of greenfields and neglects the positives offered by the reuse of brownfields. It has further been observed from developed countries that after huge parcels of greenfields have been developed into '*concrete jungles*', development is being re-directed to incorporate nature-based practices to combat societal challenges.

**Design/Methodology:** This paper therefore questions whether Africa, after taking stock of existing properties that have become derelict, could contemplate ways to regenerate them to combat the housing deficit.

**Findings:** This paper finds that challenges such as re-zoning, contamination and ownership issues will need to be addressed to ensure a sustainable process of regeneration. Additionally, greenfields require provision of services which tends to be a costly exercise while brownfields are often properties with services already in place.

**Practical implications:** This paper argues for the inclusion of already existing stock in spatial planning and housing plans and further suggests the increased maintenance and refurbishment of existing real estate is a possible solution to the urban decay challenge.

**Keywords:** Urban decay, housing deficit, brownfield regeneration, Zambia

## 1. INTRODUCTION

Zambia population is growing at a rate of 2.8% per annum, with 40% living in urban areas (Habitat for Humanity, n.d.). This population growth presents the government with the challenge of providing infrastructure such as for housing, transportation, energy systems, health and education (UN-DESA, 2018). The National Housing Policy developed for 2020 – 2024 reveals that the country is experiencing an urbanization rate of 4.5% per annum. Grappling with a housing deficit officially estimated at 1.5 million units and projected to reach 3.3 million by 2030, the government anticipates constructing about 149,000 units per annum or 222, 000 from 2015 to avoid the 2030 projection (MHID, 2020). The Ministry of Housing and Infrastructure Development (2020) reports that the projected housing deficit requires at least 196,000 hectares of land for human settlement.

To make available better provisions for the development and control of housing in the Country, the National Housing Authority (NHA) established by an Act of Parliament in 1971, was assigned to be the main housing developer in Zambia. But the NHA is grossly affected by erratic funding causing it to fail to service plots and develop a sizeable inventory (UNCTAD, 2015). Additionally, the establishment of the NHA led to the direct housing function being taken away from Local Authorities leaving them with the control over planning regulations and enforcement of building standards.

Zambia has a dual land management system where land is either state land controlled by Government Departments or customary land in the hands of chiefs or traditional leaders. These are both recognized as legitimate, however, tenure under the customary land remains insecure due to the restrictions to obtain official title. The Ministry of National Development Planning (2020) reported that most urban areas are experiencing land scarcity and are extending into customary areas. However, traditional leaders are reluctant to release land for development and thus the provision of serviced land for housing development is being impeded by the customary tenure system. The Zambia Habitat III (2015) further stated that the insufficient access to land by Local Authorities and individuals was a challenge that has led to the increase in informal settlements and land encroachments.

The Government of Zambia recognizes that the demand for serviced land is increasing and that a weak legal framework cannot address challenges. Through the Ministry of Lands and Natural Resources the National Land Policy (2021) was developed to provide a comprehensive framework for the management of land within the Country. This is also in response to the call made by the Zambia Habitat III (2015) for adequate, creative, and implementable planning and a supporting legal and institutional framework in order to counter the challenges hindering housing provision.

With funding to the responsible organizations being erratic and insufficient, and servicing of land being a challenge, it becomes an insurmountable task to meet the housing needs of the country. Thus, the MHID and other housing developers responsible for the provision of housing need to find creative ways to carry out the mandate. Therefore, this paper explores the use of derelict previously developed infrastructure also known as brownfields, to try and address this housing challenge.

### **1.1 Background to the study**

The World Bank (2016:1) suggests that “every city has pockets of underused land and distressed urban areas often the result of changes in urban development and productivity patterns”. Many cities are therefore experiencing what scholars are terming urban decay, urban shrinkage, or urban decline (Fol & Cunningham-Sabot, 2010; Haase et al., 2014; Hyra & Rugh, 2016). This condition of urban decline is an inevitable stage of the life cycle of cities, which is attributed partly to deindustrialization, age of cities, and changes in economic status (Alias, et al., 2016; Hwang & Woo, 2020). Thus, as cities cannot evade the onset of decay, understanding the way cities function can assist in managing its impact as it arises (Czamanski & Broitman, 2016; Fink, 2019). Concepts such as urban renewal, gentrification and regeneration have been suggested as solutions to the urban decay challenge (Amirtahmasebi et al., 2016; Kobayashi, 2020).

Visual evidence in the major Zambian central business districts (CBDs) and industrial areas located on the periphery of cities, reveal unused and underutilization of infrastructure. And yet the housing deficit continues to rise to alarming levels, and people continue to reside in unpleasant settlements, without adequate services and infrastructure.

## **1.2 Problem identification and description**

Zambia's growing population has resulted in high rural-urban migration which has also intensified the housing shortages (Habitat for Humanity, n.d.; Population Reference Bureau, 2019; MHID, 2020). This forces more people to live in unplanned settlements where housing is more affordable but often lack services such as electricity, water, and sanitation. The Centre for Affordable Housing Finance (CAHF, 2020) reports that although there are currently an estimated 3.6 million households available in Zambia, the country has a housing deficit of 1.5 million. In Lusaka and Copperbelt Provinces, an average of 85 percent of the population live in the urban areas while the other eight provinces of the Country have about 45 percent of their population living in urban areas. Although 89.2 percent of urban households had access to improved water sources, 64.9 percent use pit latrines as a toilet facility that is either owned or shared (CAHF, 2020). Thus, provision of suitable housing continues to be a challenge for the Zambian Government.

On the other hand, Zambian cities are experiencing urban decay and underutilization of infrastructure, and yet the country is battling with a growing housing deficit. Thus, this paper explores the use of these underutilized properties to address this housing deficit.

## **1.3 Research aim, objectives, and questions**

This paper aims to investigate the possibility of using brownfields to address the housing challenge in Zambia. It intends to expose how Africa, after taking stock of existing properties that have become derelict, could contemplate ways to regenerate them to combat the housing deficit.

The research seeks to answer the following questions:

1. What characteristics of brownfields make them suitable options for consideration to combat the housing deficit?
2. What challenges need to be addressed to ensure a sustainable regeneration process of the brownfields?

The issue of decaying urban environments is not a new one and has thus been in existence for a long time (Fol & Cunningham-Sabot, 2010; Cuthbert, 2017). This implies that predictably, there will be properties that are unused and underutilized due to impacts of urban decay. Spatial planning systems and processes must therefore include ways to manage it. With a growing housing deficit, and an unavoidable decaying urban landscape, Zambia imminently needs solutions to tackle both challenges. Research has shown successful renewal projects that have been able to provide housing using regenerated properties. Thus, this paper seeks to demonstrate that embracing the properties that are going through the urban decay process can combat the housing deficit challenge in Zambia.

## **2. LITERATURE REVIEW**

### **2.1 Conceptual and Theoretical Framework**

The literature review conducted focused on the concept of urban renewal as a solution to deteriorating urban landscapes. Brownfields' characteristics were examined, and challenges explored that would hinder the successful application of regeneration.

Couch (1990) suggested that urban renewal was a concept that was growing in importance due to the increasing urban population, as well as the continued expansion of cities into periphery areas. As the demand for urban space for development grows, this results in older areas being abandoned and derelict (Fatemi & Rahman, 2015). However, greenfields for development are limited hence the need for regeneration of derelict environments. Zijun (2019) therefore, suggests that urban renewal aims to improve the quality of the environment and solve urban decay. Tallon (2010) adds that urban renewal is no longer about the removal of derelict buildings but the multi-dimensional process of rejuvenating the community.

#### **2.1.1 Theoretical framework**

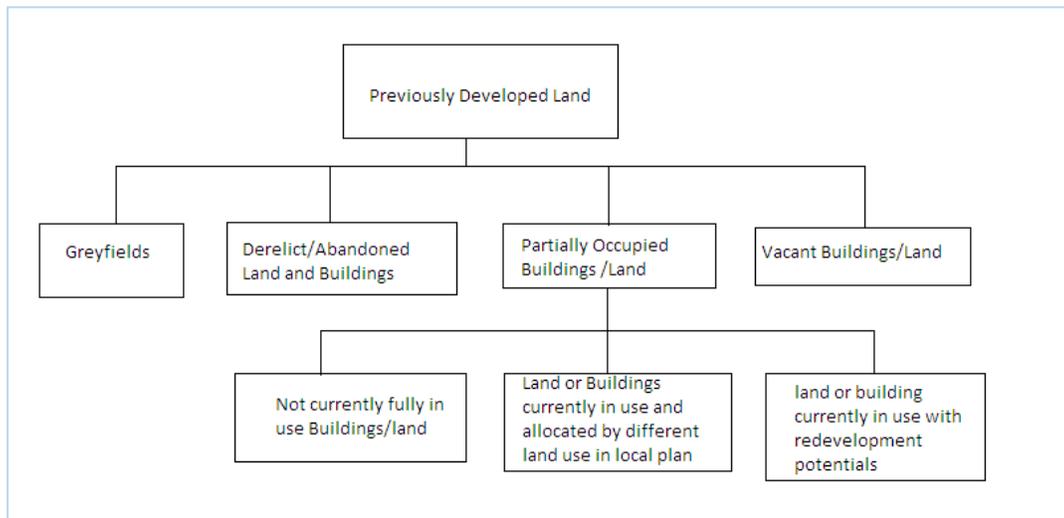
To understand brownfields and their impact on the urban landscape the theories of urban regeneration and new urbanism are considered. Urban regeneration has been suggested as one of the measures or solutions to managing the urban decay problem (Huiying et al., 2017; Ji & Oh, 2018). Roberts & Sykes (2008:17) define urban regeneration as the “comprehensive and integrated vision and action which leads to the resolution of urban problems, and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change”. This implies that regeneration must focus beyond the physical and include the revitalization of the economic, social, and environmental aspects of the society. Tsenkova (2002) adds that regeneration must include balanced incremental development which will attract new uses of the revitalized properties, as well as new investors and partnerships to ensure a progressive process. Thus, Lovering (2007:344) concluded that urban regeneration is creating improved living spaces by bringing about the New Urbanism in urban design.

New Urbanism is described as an alternative to conventionally developed suburban sprawl characterized by single use buildings and low-density zoning (Heins, 2015; Overstreet, 2021). It aims to create mixed-use, walkable communities which cause minimal damage to the environment and have greater density than conservative sprawl (Jacobsen, 2006). New Urbanism is an urban planning theory that seeks to redefine the nature of urban areas and create cohesive communities by incorporating traditional concepts of community participation, affordable housing; and social and economic diversity (Fulton, 1996). New Urbanism attempts to implement progressive zoning codes and other regulatory changes by suggesting an all-encompassing framework for developing the whole community and not individual buildings (Heins, 2015). According to the New Urbanists, traditional communities both urban and suburban, offer a better alternative because even though they may be crowded and busy, their physical forms are more adaptable and hence allow a more satisfying life. Thus, it is suggested that regeneration of decaying sites or properties adopt the New Urbanism perspective which promotes the greater integration of different land uses (Fulton, 1996).

## 2.2 Characteristics of brownfields

Inevitably, all cities will get to a point of decline, since studies have shown that it is an inexorable process (Haase et al., 2014; Alves et al., 2016). Fabiyi (2011) describes urban decay as a physical development which at times contains the social, economic and cultural dimensions. It is defined as the consequence of social and economic interactions that lead to physical decay of the urban landscape (Hwang & Woo, 2020). The Northeast Quadrant Specific Plan (2019:4.16-2) defines urban decay as “physical deterioration to properties or structures that is so prevalent, substantial, and lasting for a significant period of time that it impairs the proper utilization of the properties and structures, and the health, safety, and welfare of the surrounding community”. Indicators of urban decay include, among others, boarded up buildings, empty lots, and derelict properties, as well as social and economic distresses such as high crime and unemployment rates and closed businesses (Udeh & Okeke, 2018). Thus, urban decay can be described as a condition where previously productive properties are unusable due to their derelict state.

Previously productive properties that are currently in a dilapidated state and require some work to make them useful are often termed brownfields (Antucheviciene & Zavadskas, 2008; Science for Environment Policy, 2013). As a considerable number are often previously industrial properties, the aspect of factual or perceived contamination is sometimes included in the definition (National Round Table on the Environment and Economy, 2003; United States Environmental Protection Agency, 2019). Far (2011) suggests that there are various classifications of brownfields which are determined by the definition ascribed to them by a country or region. An example of the classifications is shown in Figure 1 below.



**Figure 1:** Classification of Brownfields according to Far, 2011.

Literature shows that brownfields are caused by deindustrialization, wars, and military operations as well as lack of finances for maintenance purposes (Franz et al, 2006; Pahlen & Glockner, 2004; Dokic & Sumpor, 2011). They have been known to cause environmental degradation due to contamination from manufacturing processes and the decline of neighbouring property values, as well as being havens for criminal activity (Hollander, 2010;

Wison, 2012; Elrahman, 2016). Thus, brownfields are often considered liabilities due to their negative impact on the quality of life of inhabitants of communities where they exist.

Despite these undesirable aspects associated with brownfields, the areas are considered assets due to several characteristics that make them suitable for consideration in spatial planning. They are often located in already developed and prime areas; thus, they are in close proximity to good road networks, commercial and residential zones and consequently accessible to potential sources of labour and other resources (Turvani & Tonin, 2008; Pippin, 2009; Papageorgiou & Kakana, 2018).

Additionally, information about the extent of urban decay or actual size of space being occupied by brownfields needs to be determined. With urban decay and the issue of brownfields being challenges that have existed for centuries, the extent of the problem is seldom understood. However, for countries that have carried out investigations to determine the extent, their findings are that brownfields are occupying considerable portions of land which have then been considered in developmental plans. Table 1 below shows the extent of brownfields in countries that have conducted surveys.

**Table 1:** Extent of brownfields in various countries.

<b>Country</b>	<b>Brownfield extent</b>
Germany	128,000 hectares
France	100,000 hectares
The Netherlands	Between 9,000 and 11,000 hectares
Belgium	9,000hectares
Lithuania	7,400 disused buildings on about 732hectares
Canada	30,000sites
United Kingdom	17,656 sites on about 28,000 hectares

Sources: Antucheviciene & Zavadskas, 2008; Environment and Energy Management Agency 2014; Greenland, 2018.

Development of Greenfields (new land) for infrastructure requires land that must be planned, surveyed, and serviced (Kasala & Burra, 2016). Iracheta et al. (2000) described serviced land as that provided for urban use and equipped with basic infrastructure which includes access to roads, electricity, water, sanitation, drainage systems, even telephone services. Although referring to site and services schemes, Akinsola et al (2014) and Ivanovic & Tamura (2014) discussed subdivision and preparation of urban land for residential buildings and the provision of various combinations of public utilities and community facilities. This implies that for any new development, the provided land must bring together a host of services by the local authorities and various service providers to ensure that the basic services are available. This can be a very costly exercise and local authorities or government organizations responsible for providing serviced land often fail to meet the demand (Akinsola et al, 2014; Kasala & Burra, 2016). Hence, the proposition of using brownfields which in most cases, already have these services in place as they were once productive properties. Additionally, restoring brownfields relieves the strain of

new land as many countries are dealing with restricted supply of land for development (Franz et al, 2006).

It has further been observed from developed countries that huge parcels of greenfields have been developed into 'concrete jungles' (Eldredge & Horenstein, 2014; Bingbing, 2017). UNESCO (2019:2) reports that "90percent of natural areas that host endemic species could disappear in the coming years as a result of urban sprawl". Elrahman (2016:28) provides that the US Council of Environmental Quality declared that "every acre of rectified brownfields saves 4.5acres of green space from being developed". Many cities have nothing much to offer in terms of natural beauty as waterways have been drained, forests chopped up, hills flattened and wildlife displaced and driven to extinction, resulting in high urban temperatures, increased air, water and soil pollution and unhealthy citizens (Fisher, 2016; McDonald et al, 2018). Therefore, development is being redirected to incorporate nature-based practices to combat societal challenges. Green spaces are being created under and above high-rise buildings, parks are being re-staffed and the environment that had been disturbed by urban development is steadily being improved (Eldredge & Horenstein, 2014; Izabela, 2016). Thus, this paper asserts that Africa needs takes stock of existing properties and reuse those that are underutilized, to prevent this 'concrete jungle' from being a future challenge for the continent.

### **2.3 Challenges of Brownfield regeneration**

Solutions to the challenge of brownfields includes redevelopment, regeneration, and remediation (as suggested by Perovic & Folic, 2012; Elrahman, 2016). Despite the various terms being suggested, they all refer to the process of making the derelict properties usable through application of corrective measures and activities. Thus, this paper suggests the regeneration of brownfields as a solution to dealing with the housing deficit being experienced in Zambia.

While understanding the characteristics of brownfields that make them suitable for consideration for housing development is important, it does not ensure a smooth regeneration process. A number of challenges have been identified by various studies, as provided below.

- **Size of brownfields:** as mentioned in Section 2.1 above, the extent of the urban decay and brownfield challenge cannot be grasped without an actual survey being carried out. And thus, many countries do not know how big a challenge they have to face. Additionally, the various definitions of brownfields pose the challenge of what constitutes a brownfield and what does not (Urkmez, 2016). This implies that some properties though derelict, unused or underutilized may not be considered as brownfields. Thus, the true extent of the problem will continue to evade those with the mandate to manage brownfields.
- **Ownership status of brownfields:** brownfields are properties that may be publicly or privately owned. In some instances, the owners might be insolvent or no longer existing or just not known, hence the term 'orphan brownfields or sites' (Dixon, 2000). The ownership of brownfields is a critical aspect to regeneration as the responsible party needs to spearhead the process. If the owner does not take a leading role, the organizations responsible for governance systems such as local authorities, may need to intervene through engaging the owner or even expropriation (Papageorgiou & Kakana, 2018).

- **Contamination:** this may be actual or perceived depending on the previous use of the brownfields. It is necessary to address this because clean-up of contaminated properties can be a very expensive exercise (United States Environmental Protection Agency, 2019).
- **Legal framework to support brownfield regeneration:** Beltrao & Kessler (2013) and the World Bank (2016) state that zoning and development controls are essential spatial planning tools that can support the creation of affordable housing. The legal framework available within a country will contribute to the success of housing development. Without suitable policies and laws to govern the process, brownfield regeneration may not be conducted in a sustainable manner. Bah et al, (2018) add that inadequate land policies result in backlogs of serviced land for housing development. With many countries dealing with derelict sites and brownfields from the public health and environmental management stances due to the issues of contamination and occupational health, deliberate policies, and laws to manage the challenge are limited. This offers countries such as Zambia the opportunity to examine the characteristics of its brownfields and formulate localized regeneration plans.
- **Use of regenerated brownfields:** although it may seem obvious that the objective of regeneration is to have usable properties, the use after the regeneration may be a challenge. Far (2011: 55) proposes the use of the regenerated properties for mixed use, recreational facilities, and commercial uses, since they are mostly used for housing in both the developed and developing countries. Pahlen & Glockner (2004) advise that there should be a relevant need for rehabilitating brownfields so that white elephants are not created.

#### **2.4 Success stories of brownfield regeneration**

Studies have shown that regeneration projects can be carried out successfully, such as in Colantonio & Dixon (2011); Tang (2013) and the World Bank (2016). Key to the process is the collaboration of key stakeholders and the active participation of the private sector to complement governments' efforts. The World Bank (2016) stresses the need to identify processes that are localized as no one approach is applicable to all situations, even within a country. Amirtahmasebi et al (2016) add that rehabilitating urban areas provides the opportunity for developing a new stream of affordable housing and public infrastructure that would benefit the community at large. Therefore, the regeneration process should be seen as an opportunity to do things better and for the good of the community. A few success stories are presented below.

In the United Kingdom, the growing trend between 1988 and 1993 was to convert brownfield into green spaces. Silverthorne (2006) stated that in that period 19% of the brownfield redevelopments were converted into green spaces which were more than any other use. An example of a brownfield redevelopment is the Salts Mill in Bradford, where a former textile mill was converted to mixed use incorporating an Information Technology Research facility, retail, cultural and commercial outlets with over 750 people employed on the site (Silverthorne, 2006).



<http://letsgowiththechildren.co.uk/places-to-go/salts-mill-at-saltaire-village/>

Date accessed: 20 May, 2021.

In Egypt, the Al Azhar Park, a public park, was rehabilitated under the Historic Cities Support Programme. The Park included the 12<sup>th</sup> Century Ayyubid Wall, 14<sup>th</sup> Century Umm Sultan Shaban Mosque, the 13<sup>th</sup> Century Khayrbek Complex and the Darb Shoughlan School. The US\$30million project evolved beyond the park to include the restoration of local housing in the surrounding area. Many jobs were created as the Aga Khan Trust for Culture, the organization responsible for the project, stimulated rehabilitation by keeping residents in their location, and helping create viable business through the provision of micro-credit and assisting owners restore crumbling houses (Ebrahim 2016).



[https://en.wikipedia.org/wiki/Al-Azhar\\_Park#/media/File:CairoAzharParkAyyubidWall.jpg](https://en.wikipedia.org/wiki/Al-Azhar_Park#/media/File:CairoAzharParkAyyubidWall.jpg)

Date accessed 20 May 2021.

In South Africa, the City of Johannesburg began to decline in the 1950s when the City Council moved to Braamfontein, a suburb north of the inner city. Many other businesses also moved out

of the inner city, leaving many buildings vacant and deteriorating services and infrastructure. Several attempts were made to rehabilitate the city such as the Central Johannesburg Partnership (CJP) a collaboration of the public and private sectors and community; as well as the Urban Renewal Strategy spearheaded by the Provincial government. Thus, many projects have been conducted which have changed the appearance of the city. An example is the Jewel City Precinct which covers six city blocks. The precinct was virtually closed due to the decline of the CBD. Diversity Urban Property Fund, a private venture, has invested almost R2billion (about US\$142.9million using R14 to US\$1 exchange rate, source Bloomberg.com 20/05/2021) to turn the old office buildings and warehouses into a secure inner-city neighborhood which includes 1,500 residential units, 10,000m<sup>2</sup> office space, as well as convenience retailer and food outlets. The project also includes the construction of two new residential blocks (Naidoo, 2020).



<https://urbanspace.org.za/2020/09/21/joburgs-jewel-city-set-for-further-r1bn-investment/>

Date accessed 20 May, 2021.

The above examples show the benefits of regeneration and its ability to eradicate urban decay. Examples of brownfield regeneration from Zambia, however, have focused on maintaining the use of the old industries and derelict blocks of properties. For instance, the derelict Nkana Hotel in Kitwe was redeveloped into Nkana Mall (below) which will house various commercial entities once the redevelopment process has been completed.



<https://twitter.com/iamkabamba/status/1268474718144921601/photo/1>

Date accessed 17 August 2021

As mentioned in Section 2.1.1 above, the New Urbanism theory suggests the regeneration of derelict properties by embracing mixed-use practices to create more aesthetically harmonious communities. With regeneration seeking to “turn insufficient land back to beneficial use”, proper coordination, supporting legislature and the participation of the community and other stakeholders will ensure a successful and viable process (Fatemi & Rahman, 2015:134).

### **3. METHODOLOGY**

The content analysis technique was adopted for this paper. Various data sources were reviewed which provided in-depth insights into the issues of urban decay and regeneration. The technique was selected due to its suitability for analyzing written and verbal messages to make valid inferences from data (USGAO, 2013; Erlingsson & Brysiewicz, 2017). A literature review of books, journal articles, reports both national and international, and various websites was conducted. Then the data was analysed, and inferences drawn to support the arguments made by this paper.

### **4. RESULTS AND DISCUSSION**

This paper set out to examine the management of brownfields and the general urban landscape in Zambia, with a view to provide evidence to support their re-use for housing. Various documents that showed the Zambian housing situation and plans developed for its administration were reviewed as presented below. The documents were reviewed based on the characteristics and challenges of brownfields as presented in Section 2 above.

**Table 2:** Various documents relating to the Zambian Housing Industry

Documents reviewed	Information required from the document
The 7 <sup>th</sup> National Development Plan (7NDP) - 2017-2021 The Revised 6 <sup>th</sup> National Development Plan (RSNDP) - 2013-2016 The Zambia Vision 2030	Zambia’s strategic direction with regards to housing development and management
The National Housing Policy 2020 – 2024 The National Housing Policy Implementation Plan 2020-2024 Ministry of Housing and Infrastructure Development Strategic Plan 2018 to 2021	Ministry of Housing and Infrastructure Development’s plan to execute its mandate of housing and infrastructure development
The National Housing Authority Act CAP 13 of 1994 The Housing (Statutory and Improvement Areas) Act, CAP 194, No 42 of 2010	Zambia’s definition of housing and the organizations responsible for housing development
The Urban and Regional Planning Act CAP 3 of 2015	The planning framework, guidelines, systems and processes for urban and regional planning for the Country.
Zambia Sustainable Development Goals Voluntary National Review 2020 The Habitat III Policy Paper The National Urban Policy Sub-Saharan African Report	Regional and global housing protocols, goals and directions
Zambia Housing Sector Profile (CAFH, 2020) 2015 Living Conditions Monitoring Survey Report	Housing industry performance and statistics

For brownfields to be addressed, they must be identified according to the definition determined by a country or region. In Zambia, brownfields are defined as “land that has been previously used but has subsequently become vacant, neglected or contaminated” (Zambia National Housing Policy, 2018 – 2021:vi). The National Housing Policy and the Policy Implementation Plans are the only documents that mention brownfields explicitly. In the National Housing Policy, the term only appears under the list of working definitions. In the National Housing Policy Implementation Plan however, the Ministry of Housing and Infrastructure Development aims to develop densification plans for greenfields and brownfields in Lusaka and Ndola Cities only. Thus, other policy documents and plans do not include brownfields management, development, or their use. The Revised 6<sup>th</sup> National Development Plan (2013-2016) mentions urban renewal as one of the growth areas under construction of housing. Although referring to urban shrinkage (urban decay), Haase et al. (2016: 106) state that explicit mention of the term creates a ‘stronger voice’. Thus, if brownfields were stated more in the various documents developed for urban management and housing, they would get more recognition and be considered more in spatial planning and management. Also, adding brownfields to the plans of urban renewal would also ensure they are considered for regeneration.

As a result of the poor consideration of brownfields, most of the plans for housing are for greenfields development. The Revised 6<sup>th</sup> NDP, 7<sup>th</sup> NDP, the National Housing Policy all refer to the provision of serviced land for housing development. Housing projects that have been undertaken and worth noting include the People's Process on Housing Poverty in Zambia (PPHPZ) 2019 launch of the 1,000 housing units for the vulnerable across the Country; 5,000 home development for the Zambian Air Force in Kabwe and Lusaka; 2,000 home development for the Zambian Army in Luapula; and the 2,350 housing units constructed for Civil Servants in 2020 by the Chinese firm AVIC International. The government also intends to carry out significant infrastructure development including housing in newly established districts. This also implies the considerable greenfields development plans for housing development.

One of the challenges of brownfields development mentioned in Section 2.2 above refers to the extent of the brownfields. None of the documents reviewed include the size of the brownfields. If the size is unknown, chances of the problem being trivialized are high and thus it may be assumed not to be a challenge worth undertaking. Thus, the extent of the brownfields needs to be known for proper spatial planning to be conducted.

Contamination is one of the key determinants of brownfields and thus it is included in the Zambian definition. However, most of the contamination in the Country refers to that brought about by mining operations such as lead in Kabwe and Mufulira towns (MMMD, 2016; Kribek et al, 2019). Therefore, limited information exists on contamination that would be found in commercial brownfields. And thus, contamination issues would be dealt with on a case-by-case basis for each brownfield.

Another challenge posed by brownfields is the use of the regenerated property. This determines the success of the process as the creation of white elephants so to speak would entail an unsuccessful regeneration process. According to the Urban and Regional Planning Act No 3 of 2015, one of the roles of the Regional Planning Authority is to plan and co-ordinate the provision of infrastructure and facilities for the region under its mandate. However, the practice often occurs in an ad hoc manner and is evidenced by informal dwellings. Taylor & Thole (2015) and Mulolwa (2016) also bemoan the seemingly randomized zoning of land for various purposes. Therefore, careful consideration must be made of the use of regenerated properties to ensure conformity with the regional plans established by the local authorities. This will also ensure functional efficiency and socioeconomic integration of activities, uses and facilities of the different regions as stipulated by the Urban and Regional Planning Act.

Governance responses to challenges play a critical role in ensuring their successful eradication. Without the support of a legal framework, implementation remains a strain as organizations mandated to deal with the challenges do not have the authority to enforce compliance. The Government is committed to facilitate the renewal of urban settlements by establishing the National Urban Renewal Programme (RSNDP, 2013 – 2016). However, it seems to lack the supporting policies and plans to ensure resources are provided for its implementation as well as evaluation systems to monitor and ensure its success. Therefore, the legal framework supporting the regeneration of brownfields remains limited. Brownfields are hence not recognized as either a challenge that needs to be dealt with, nor are they considered an opportunity that needs to be

explored. It is thus the view of this paper that the housing deficit continues to be a challenge because deliberate steps are not being taken to carry out regeneration of brownfields.

This paper is advocating for the use of brownfields to combat the housing deficit. The National Housing Policy 2018 – 2021 and the National Housing Policy Implementation Plan include densification of brownfields as a strategy for housing development. This includes the identification, mapping, and re-planning of blighted zones as an objective to promote the effective management of urbanization. However, all the other documents reviewed do not have similar plans to include brownfields and in particular for housing development.

## **5. CONCLUSION AND RECOMMENDATIONS**

This paper set out to explore the issue of brownfield regeneration with the view to suggest its use to combat the housing deficit being experienced by Zambia. It was observed from developed countries that the constant use of greenfields for infrastructure development leads to the creation of concrete jungles. The bulk of the documents examined also indicate that the focus of development lies in the use of greenfields. A review of the Zambian legal framework revealed that the issue of brownfields is not being sufficiently managed due to the lack of its inclusion. It was further revealed that the lack of explicit mention of brownfields in policies and strategies often result in poor consideration of brownfields. Despite the challenge of an inadequately structured legal framework, the Government of Zambia remains committed to ensuring that the urban spatial planning occurs within sustainable and efficient confines. With the additional challenge to supply serviced land for housing development, brownfields which often have services, makes their consideration a logical option.

This paper therefore recommends the adoption of brownfields in regional spatial plans and further proposes that steps be taken to assess the possibility of considering already existing infrastructure was presented. It is also anticipated that the Zambian policy makers could make more deliberate steps to address the issue of brownfields in general and specifically to address the housing deficit. An area for future research proposed by this paper is an exploration of the actual extent of Zambia's brownfields. This is suggested based on the finding that one of the challenges of brownfield management is the underestimation of the problem as the actual extent is not known.

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