Doctoral Dissertation

Specifying the socio-physical characteristics of unplanned housing and informal green spaces in Luanda city, Angola.

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Abstract

Sub-Saharan African cities represent a major hotspot of urbanisation and urban growth. For the most part, this unprecedented urbanisation process is largely unplanned, spatially expansive and manifests in entrenched socio-spatial inequities in the urban environment. African cities, therefore, are at cross-roads in terms of fostering a sustainable and inclusive urban planning and development as part of its historically unprecedented urban transition. Achieving the UN Sustainable Development Goals (SDGs), which aims to "leave no one or place behind" demands a critical and empirically grounded contextual understanding of the multiple dimensions of urban living and its implications for planning for the rapidly urbanising cities on the African context.

This study contributes to the above discourse by focusing on the housing typologies and appropriation (indoor environment) and the availability, use, benefits and challenges of informal green spaces (outdoor environment) as perceived by residents in the Province of Luanda, the provincial capital of Angola—located on the south-western coast of Africa. Luanda, a primate city of more than 7 million people, constitutes more than one-third of the Angola's population. Although the city has seen high economic growth and infrastructure development following the end of the civil war, more than 80 percent of its population resides in some form of informal settlements (*musseques*) or unplanned neighbourhoods and poverty is endemic.

Drawing on the extant literature on unplanned urbanisation, informal settlements and with particular reference to the emerging concept of informal green spaces (IGS), this thesis analysed housing typologies across planned, unplanned and mixed neighbourhoods to comprehend the use and appropriation of housing space. It also extended such analysis to surrounding spaces of houses to understand the land uses and the distribution of facilities. In addition to housing analysis and characteristics, the study examined the outdoor living space from the aspect of informal green spaces to understand residents' perception and everyday use, benefits and challenges. The study employed qualitative methodologies including semi-structured interviews, physical measurements, space syntax, field observation, photography, mapping and a children's workshop as a form of local engagement.

The first part of the results indicated that in unplanned neighbourhoods, several housing activities occur outside of the house due to the lack of adequate space. The space syntax analysis revealed that unplanned and mixed housing had higher levels of connectivity and visual depth ratios as compared to the planned, implying higher levels of permeability and vision. Interestingly, incremental housing adjustments were recorded for all three areas of the neighbourhood, an indication that informal practices are not confined to unplanned housing areas.

Concerning informal green spaces, the study presented evidence that in the absence of planned urban green space, residents (both adults and children) relied on IGS for socio-cultural and ecological benefits. However, the planning regime does not recognize informal green spaces and there is no community system for their management. Thus, barriers to access such as animal attacks at IGS sites, poor maintenance, and criminal behaviour constrain residents, especially children's' access to the potential benefits of IGS.

Taken together, the study documents two important but severally challenged aspects of the urban environment in terms of housing and informal green spaces. The study recommends collaborative approaches to housing improvement through co-design, access to local building materials, decentralised planning reforms, contextual planning, and local participation. There is also the need for urban planning authorities to recognize and plan for informal green spaces while developing a new model for community-based management.

Overall, the study provides an entry for rethinking and reforming urban planning approaches in Luanda to build local capacity, empower citizens, integrate the needs and aspirations of the urban poor and promote citizen-led planning interventions that inculcate local knowledge and competencies to build a truly sustainable and inclusive Luanda—leaving no one behind.

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Acronyms and abbreviations

NISA	National Institute of Statistics of Angola- NISA
MEXT	Ministry of Education, Culture and Sports
NGO	Non-Governmental Organisation
UN	United Nations
UNHABITAT	United Nations Commission for Human Settlement
MGMP	Metropolitan General Master Plan
LPG	Luanda Provincial Government
LUPMI	Luanda Urban Planning and Management Institute
NA	National Assembly (NA)
CIOTU	Inter-ministerial Commission for Spatial Planning and Urban Planning
NCCTPUP	National Consultative Committee on Spatial Planning and Urban Planning
PCCTPUP	Provincial Consultative Committee on Spatial Planning and Urban Planning
CCMOTU	Municipal Consultative Committee on Spatial Planning and Urban Planning

Part I
INTRODUCTION AND CONTEXT

CHAPTER ONE
BACKGROUND AND SIGNIFICANCE

1.1 Introduction

Africa now accounts for the world's fastest rate of urbanisation, doubling its urban population growth rate between 1990 and 2018. Although the average rate of growth appears to be steady, the current trend in urbanisation is expected to persist until 2050 (UNDESA, 2018). However, there are significant variations across different cities in terms of urbanisation and urban growth as countries such as Angola, Ghana, South Africa, and Cote D'Ivoire are highly urbanised as compared to others such as Burundi, Congo, and Uganda. Despite these variations, African urbanisms commonly manifest in unplanned urbanisation, informality as the dominant mode socio-spatial production and structural inefficiencies in urban planning and development (Dodman et al, 2017; Okyere et al, 2022a; Okyere et al, 2022b). Particularly, in 2019, available records indicate that about 47 percent of Africa's urban population resided in unplanned settlements (including informal settlements) where housing conditions are poor, there is limited access to public spaces, and socio-ecological access to urban green spaces are severely declined or non-existent (Pieterse, 2017; Diko and Holstein, 2021).

Similarly, Luanda, the capital city of Angola is representative of the expansive and extensive nature of Africa's urbanisation and urban growth. The provincial city area accounts for about 30 percent of the national population and exerts a high urban primacy. Between 2005 and 2010, the population of the city more than doubled to 6.5 million, with an average annual rate of 5.79 percent (Government of Angola, 2014). Since the end of Portuguese colonial rule and the ensuing civil war that ended in 2002, rural-urban migration— driven by the impact of the war in rural areas and the disproportionate investment in the city— and naturally induced rapid urban growth. The city currently stands as a mosaic of socio-spatial inequalities in the urban environment. About 80 percent of inhabitants reside in unplanned housing or settlements (known locally as *"musseques")* which features poor housing conditions, inadequate access to basic infrastructure, limited availability and access to properly maintained green spaces and social deprivation. More so, two-thirds of city inhabitants live on less than 2 dollars a day. Following the civil war, oil-backed loans from the Chinese

government, short-lived economy growth and national ambitions to make Luanda a global city led to massive urban redevelopment projects including 685,000 state-led self-help housing, 115,000 government-led housing, 120,000 private sector led-housing, and 80,000 cooperative housing (Cain, 2014; Croese, 2017). Yet, what has emerged is characteristically urban fantasy projects (Watson, 2014) that show the disjuncture between government-led projects and the practices of the majority urban poor. Urban socio-spatial deprivation is endemic and the urban low-income struggles have even been worsened by the impact of the COVID-19 pandemic.

The persisting urban challenges in Angola have been noticed and investigated by several scholars in and out of Africa. For example, in a series of insightful empirical analysis, urban sociologist Croese has traced government-led urban housing projects and found that residential capitalism promoted by the central government has neither benefit the low-income nor improved urban plight compared to the middle and upper-class (Croese, 2012; 2017). In fact, in a more recent paper on urban sustainable development in Angola, (Croese et al 2021) note that housing projects that seek to brand as sustainable interventions disregard any functional improvements in local green spaces, which are integral part of the urban sustainable development goals. More recently, Cain (2021) have reported that mass housing and urban improvement projects have missed opportunities for holistic redevelopment that integrates local participation and improvement of low-income neighbourhoods inclusively and sustainably (See also Power, 2012; Rodrigues, 2016; Rodrigues and Frias, 2016; Gastrow, 2017).

Taking cognizance of the above, this thesis engages the housing and informal green space aspects of the urban living environment in Luanda. This thesis is premised on the realisation that in spite of the emerging body of scholarly discourse on post-civil war Luanda, there has been insufficient scholarship on key practices and relationships in Luanda's urbanism that concerns housing typology, characteristics and appropriation as well that the role of informal urban green spaces in improving local inhabitants' access to socio-ecological services in everyday urban life. Therefore, this study aims to narrow this gap by presenting the nuances of the socio-physical environment in Luanda. This thesis anticipates that such engagement of basic necessities of urban living can advance the growing discourse on the sustainable

development goals, foster contextually relevant practices, and integrate urban sustainable development principles in the praxis of urban planning and development of Luanda and Angolan cities and towns at large.

1.2 Problem Statement and Research Questions

Unplanned urbanisation and its manifest challenges in urban informality, access to essential infrastructure, water and sanitation, green spaces and the general quality of the urban built environment has received significant attention in the last two decades (See Pieterse, 2017, Nguluma, 2003; Okyere, 2017). In the global south and African cities in particular, attention have focused on urban planning and policies for sustainable urban development and management of urban spaces (Cobbinah et al, 2015; Mottelson & Venerandi, 2020).

In Angola, local and foreign researchers (e.g. Correia, 2012; Sambongo, 2016; Gastrow, 2016) have documented existential challenges in land tenure, poor quality of the urban environment, lack of decent and affordable housing and widening urban socio-spatial inequality between the higher and lower income class. Rapid urbanisation, fuelled by the civil war and rural-urban migration caused the population of Luanda to double in just two decades. The population of the city is projected be between 6.5 and 7 million people, one of the most urbanised in Africa. This created several housing challenges and spatial management problems as the war impacted a well-structured institutional planning and development.

Two of the significant impacts have been of housing, green spaces, and urban infrastructure. After the war in 2002, the government benefited from rising global oil prices and Chinese government loans to invest massively in urban housing and infrastructure. For example, the National Urbanism and Housing program was launched in 2009 to build 1 million houses (Croese, 2016). A new master plan, called the Luanda Master Plan, was also developed for the period 2015- 2030. The plan aimed to build new satellite towns, redevelop the inner-city areas such as the Bay area. In spite of these noble projects, many scholars have documented these initiatives benefited the upper and middle class and important issues such as housing improvement, provision and management of green spaces and land adjustment to improve access public open spaces were not effectively considered (e.g., Cain, 2014).

Therefore, issues that concern the 80 percent of the population who are living in unplanned housing, without access to essential infrastructure and engaged in informal employment have not been considered. Given that access to housing and neighbourhood facilities is essential to the wellbeing and quality of life of urban residents, these issues need to be properly understood and planned for. After all, these issues are also important aspects in the New Urban Agenda and the Sustainable Development Goals, especially goal 11.

In view of the foregoing, this study seeks to ask three questions that relate to the indoor and outdoor spaces of Luanda:

- What are the characteristics and use of housing across planned, mixed and unplanned neighbourhoods in inner city of Luanda (indoor environment)
- Given the extensive decline of urban green spaces, what is the current situation of informal green spaces and what are residents perceptions of its use, benefits and challenges in Luanda (Outdoor environment)

By combining indoor and outdoor components of the urban environment, this research seeks to capture the everyday nuances of public and private space in Luanda's urbanisms. This focus also helps to unravel modifications and transformation that influence the nature use of indoors and outdoors space. In fact, in the case of Luanda, empirical evidence on indoor and outdoor space is lacking and may impact how planning and development responds to the everyday realities of the urban vulnerable.

1.3 Geographical Scope

Angola is located in the southern African region and is bordered to the north by the Republic of Congo, the south by Namibia, the east by Zambia, and the west by the Gulf of Guinea. Historically, the country was plagued by approximately three decades of civil war from 1975 to 2002 (Pearce, 2015), which fueled massive movement of populations from rural and provincial areas to urban areas, especially Luanda, in search of security and better living conditions. Despite post-war reconstruction and development, especially through large scale housing and economic projects, poverty is still pronounced in the country. Angola's National Statistics Agency INE (2020) reports that 41 percent of the population live below the poverty

line (12,181 Kz/month; note that 1 USD = 653.78 Angolan Kwanza according to xe.com, 19 May 2021) with 44 percent of the total poor population residing in urban areas. This study is geographically situated in Luanda province of Angola (Figure 1). Luanda province is located in Angola's northern Atlantic coast, with an area of 2442.60 sq. km. The province is home to Luanda city, Angola's capital and biggest city in terms of population. The area exerts a strong urban primacy, with over 7million of Angola's 31 million population living in the Luanda province. Several of its districts like Cassenda, are confronted with structural challenges around planning and management of the urban environment including housing, open spaces, transportation infrastructure and green infrastructure. For this context, the housing environment, specifically the use and appropriation of housing and space was examined. Essentially, this is framed in this dissertation as the indoor situation.

The second study area was located in Funda commune on the outskirts of the Luanda. This district is considered to be the last green belt of Luanda as historical neglect and poor planning has meant that there is little integration of green spaces in urban development planning and the those available have expressed dramatic declines since independence from Portugal. Thematically, the study on Funda focused on the perception of the use and benefits of informal green space among children and adults. The focus on informal green space is borne out of the recognition that though there are widely available in the urban environment little attention has been paid to them in both planning, policy and the community management discourse to assure of their benefits in complementing the loss of formal urban green spaces. Later sections of this thesis will explain in detail the conceptualization of informal green space and the theoretical (and empirical) justification for its adoption in this study.

1.4 Organization of the Thesis

This thesis is organised into 7 chapters. Chapter 1 consists of the thesis background including introduction, problem statement, research questions and significance of the study. Chapter covers a brief literature review of underpinning concepts, namely informal settlements and informal green spaces. Chapters three includes a concise narrative about history and urban development of Luanda with particular attention to the issue of unplanned urban physical development. Chapter four describes the study methodology and tools employed for the study while chapters five, and six presents results and discussion on housing use and

characteristics, and informal green spaces experiences. Finally, chapter seven provides conclusions and their implications for theory and practice.

CHAPTER TWO: LITERATURE REVIEW
URBAN INFORMALITY AND INFORMAL GREEN SPACES

2.1 Introduction

Following the background to the study in chapter 1, this chapter presents a brief review of the literature on key issues in African urbanisms and for the purposes of this thesis, informal housing and informal green spaces. These are framed within the broader discourse on informalities and their socio-spatial manifestations.

2.2 Urban informality discourses in African urban realities

In the "peripheral" countries of the global South, informality is a structural phenomenon present in the urban landscape, spanning socioeconomic, political and cultural complexities. In the context of this work, informal is defined to included un-planned practices and is understood as everything that people do outside the institutional planning or regulatory system. We are however aware that in the peripheral metropolises of Urban South, this separation between planned and unplanned is not clear and applies only in theory (Oliveira, 2003). Put differently, the binaries between the formal and informal, planned and unplanned are blurry and in reality, highly interdependent (Okyere and Kita, 2015).

In African urban literature, postcolonial scholars have emphasized the need for a shift in the artificial binaries from formality/ informality to the socio-spatial constituents of urban living (Watson, 2009; 2010; Simone, 2003). For these scholars, the particularities of urban life in African cities implies that urban informality is not only a mode of urbanization (Roy, 2005) but a form and practice of urban life (Myers, 2010; Pieterse, 2017; Okyere and Kita, 2016; Watson, 2009). This strand of African scholarship calls for the need for institutional rethinking about global north research that impose western values of urban development into African urban space and planning. Given that historically, approaches to urban informality have often worked against the urban poor through strategies such eviction, displacement and resettlement and large-scale redevelopment of old neighborhoods, post-urban colonial urban scholarship presents a a strong force in reversing the conventional order (Obeng-Odoom, 2015; 2016).

Consequently, there is a growing emphasis on the importance of understanding the socio-spatial facets of the so-called informal enclaves, taking into account the historical and social specificities of each people, identifies and place. As (Kita et al, 2020) have argued, engaging the historical and socio-spatial structure of informality allows for the unravelling the potentials and opportunities for shaping the transition of spaces into places. In fact, in his insightful work, urban designer, David Gouverneur, goes further to assert that urban informality is not episodic but fluid and it is very important to plan and design for future informal settlements. (Okyere et al, 2022b), in their forthcoming work, identify examples of social innovative practices in informal settlements in Accra and thus proffer that co-production approaches can provide opportunities for planners and civil society groups to work together with informal residents to improve socio-spatial and environmental conditions.

The arguments for planning for and with informal settlements does not remove the sad reality that African urban governments continue to rely on western planning models that disregard the urban poors 'right to the city' (Harvey, 2006). Global capitalist logic of urban redevelopment, formalization and modernism are implicit in the displacement of urban informal residents (Santos, 2000; Harvey, 2006). Additionally, the structural characteristics of the urban State's economic-administrative policies loaded with nepotism, clientelism, institutionalized corruption, exclusion (Oliveira, 2015; Obeng-Odoom, 2015; 2016). In fact, global residential capitalists and their political partners seems to struggle with the reality that informality, to borrow the words of urban sociologist, Louis Wirth, is a dominant "way of life" (Wirth, 1927). In Luanda, for example, informality pervades all aspects of urban living, including housing, transport, land tenure and the economy. Therefore, denying informality is to uproot the entire existence of urbanity in Africa. Therefore, the Dubai syndrome, where African urban planners and politicians fashion their cities to the likes Dubai, Singapore and Hong Kong with all its skyscrapers and towers is an imposition of urban life from elsewhere (See Watson, 2014).

Therefore, futuristic urban elements and logics contrast with the sociocultural and economic contexts of African urban realities and are part of a race for "archaic" modernity characterized by an urbanization of consumption (Maricato, 2000; Gastrow, 2016). Unfortunately, this is common across many African cities such as Luanda, Nairobi, Accra, Lagos, and Kigali.

Unsurprisingly, the international press “Africa rising” narrative, makes foreign investment and capita flow easily into African cities like a scramble for urban space and redevelopment (Obeng-Odoom, 2009; Gastrow, 2016). Interestingly, urban informality still persists and so-called miracle investments have not address precarity in urban conditions across the continent.

In this reality, Luanda is inserted on the one hand with a context similar to other cities in the Urban South, although it simultaneously appears as a peculiar case, given the specificities of its historical process of urbanization based on nearly 40 years of war (1961 – 2002).) divided between; colonial war (1961-1975); civil war (1975-2002) and the 17 years after the war (2002-current) marked by large investments and economic growth that generated a “culture of immediacy” (Schubert, 2016). Here, both the government and the different actors in society immersed themselves in a race in search of rapid economic rise and social status sponsored mainly by the gains from oil - the main basis of the formal economy.

Although the governmental official actions of planning and restructuring the territory through tools such as the National Development Plan PND 2013-2017 (ANGOLA, 2012) and the Luanda’s Metropolitan General Master Plan PDGML 2015-2030 (IPGUL, 2015) the logics of informality connect with the patterns of formality or the officially planned. In order to understand the impact of informality on the structuring of urban and peri-urban space in Angola, the study is based on the analysis of residential and public spaces at times characterized by unplanned informal aspects, at times characterized by formal aspects, in the context of the center and Luanda periphery.

2.3 Informal Urban green space

Generally, urban green spaces (UGS)are used as an encompassing term for all areas of land that consist predominantly of unsealed, permeable surfaces (e.g., soil, grass or shrubs), irrespective of whether they are publicly accessible or managed—including parks, playgrounds and others intended for recreational use, among others (Swanwick et al., 2003; Toit et al, 2018). Similarly, Adjei Mensah (2014) uses the term to denote spaces that cover all public and private open spaces in urban areas predominantly covered by vegetation which are directly or indirectly available for use. Chen and Hu (2015, p. 33) provide a broader

definition of UGS 'as all land covered by vegetation within the urban environment.' While a plethora of definitions exist, it is generally agreed that UGS constitute two broad aspects: UGS such as parks, botanical gardens, playgrounds, and pockets of (semi) natural vegetation owned by public authorities; and UGS such as domestic gardens and allotments privately owned and restricted (Lategan and Cilliers, 2016).

More recently, a third dimension has emerged that include vacant lots, railway sidings, utility easements, spontaneous vegetation and others generally unconsidered in green space classifications (Lategan and Cilliers, 2016; Rupprecht & Byrne, 2014). A growing body of work now emphasizes the distinctiveness of the different forms of UGS that are unique in their management, planning and spontaneous patterns of growth, often embedded into the socio-spatial and economic differences within and between diverse residential geographies (Ward-Thompson, 2002; Rupprecht & Byrne, 2014a; Rupprecht et al., 2015). These have been framed as formal and informal UGS. According to Rupprecht et al. (2015) formal UGS includes public and private highly managed vegetated landscapes or spaces in urban areas. On the other hand, Informal urban green spaces (IGS) embody spontaneous vegetation that are mostly not considered in the planning or ecological regime. For the purposes of this paper and also given the disproportionate attention to formal green space in both research and practice, what follows primarily focuses on urban IGS.

Informal green spaces represent another typology within the formality–informality domain of UGS studies (see Rupprecht, 2014; Lindemann-Matthies & Marty 2013). However, it remains underexplored in the African context, despite their widespread presence (Rigolon et al, 2018) even in formal urban spaces. Many scholars view IGS as unplanned vegetation that are not usually considered in the planning and governance of both the urban and ecological spheres (Rupprecht, 2014; Rigolon et al, 2018). For Jorgensen and Tylecote, IGS are vegetated spaces that are 'ambivalent landscapes' due to the lack of clarity about land tenure, conservation, use, and even legitimacy (Imai, 2013) Such spaces may not be entirely informal but rather a deterioration of formerly planned green spaces. They include various elements such as utility corridors, street verges, vacant lots, waterway embankments, and railway verges that often grow excessively with spontaneous vegetation, (Fahrani & Maller, 2017). They are also usually poorly supervised or managed. While it is difficult to settle on a universal

definition of IGS given different geographic and socio-spatial realities, it is possible to understand their nature through identified characteristics in the literature (see Table 2.1).

Trait	Description	Reference
Liminal	Refers to situations of 'between-ness', hybridity or temporality. They are intermediary or ambiguous spaces that are difficult to categorise: 'loose space'. Boundaries and limits are not clear or breached, as is the divisions between public / private and controlled / neglected are blurred.	Kim et al 2020 et al; Diko 2019, Boulton et al, 2018
Ambivalent	They exist within formality and informality interface. Lack of clarity in land tenure, conservation, maintenance regimes, use, regulation and legitimacy.	Young 2010; Hagemann 2020
Spontaneous	Emerge and grow unchecked and borderless. Presenting a solid amount of artificial disarrangement and offhanded vegetation permeating part or the whole space; often grow excessively with spontaneous vegetation	Rupprecht 2014; Semeraro et al 2021
Management	Often depends on how people feel about it; the sense of belonging dictates how they are (un)managed: feelings of ownership, cultural beliefs, age, and level of neighbours' surveillance. Usually little to no maintenance at all.	Semeraro et al 2021; Lindemann-Matthies & Marty 2013; Lee et al 2015
Location	Spatially found in 'leftover-spaces' or remnant spaces. Conditioned within the social and the financial situation of the different residential zones they are situated. That is, IGS are directly related to the socio-economic condition of surrounding residents.	[Rupprecht et al 2016; Jorgensen & Tylecote 2007]
By-products	The outcome of changes: cycles of planning and (re)development of residential settlements. Not necessarily originated from urban decay but the result from differences in time as spatial by products policy or planning neglect.	Farahani & Maller 2017; Sweeney 2009
Fluid	Constantly changing in both form and growth in line with surrounding conditions and contexts.	Imai 2013

Table 2.1: Characteristics of Informal Green Spaces

Generally, most IGS share characteristics relating to ambiguities in land tenure, maintenance status, conservation, use, legitimacy, and supervision (Speer, 2015). Additionally, IGS have also been described as 'liminal ecologies' in the sense that culture and nature is broken and separation between private/public, controlled/neglected is not distinguish-able (Trigger & Head, 2010). As liminal spaces, IGS are usually confined to the margins of urban spaces, characterized by emergence and flux, fluidity and malleability, non-containment, or seclusion (Trigger & Head, 2010). In addition, Imai intimates that IGS are mainly characterized by interfaces of emergence, informality, and casualness (Head & Muir, 2006). That is, they are a

mixture of purposely planted and opportunistic species even though they may have been deliberatively planned and planted in the first place.

Although IGS are defined by different traits or characteristics, the classification (see Table 2) offered by Rupprecht and Byrne provides the most coherent and comprehensive understanding of the different types of IGS (Rupprecht, 2016). The classification shows the varying locations where IGS can be found and also indicate their various characteristics or traits. For example, while open camps may relate to vegetation in open spaces, gaps and lots may relate to spontaneous natural growth between walls or at abandoned lots, respectively. Despite their so-called marginality, IGS constitute an important aspect of cities in both the urban north and south as they have enormous potential for urban conservation and preservation of biodiversity (Kim, Rupprecht, Furuya, 2020; Farahani & Maller, 2017); Rigolon et al, 2018) In addition, IGS offer several benefits such as provisioning (dietary and medicinal), social, mental, and physical health benefits (Adegun, 2017). However, local perceptions, use and attachment to IGS depends on several factors such as feelings of ownership, cultural beliefs, age, level of neighbor's surveillance, and their conditions (McLain, 2014; Doron, 2000).

Unfortunately, poor conditions of IGS and limited integration into urban planning and land use management are widely persistent in cities of the global south, including sub-Saharan Africa (Adegun, 2017). In light of the expansive nature of Africa's urbanization and the alarming rate in the decline of UGS and lack of formal green spaces (Cobbinah et al, 2015); Evans et al 2016 IGS hold potential for improving access to important ecosystem services, especially for the majority of the urban population that are endemically deprived due to colonial and post-colonial planning regimes of urban planning and development practices (Cobbinah et al, 2021).

2.4 Children and Informal green space

Urban green spaces, whether formal/informal or public/private, intersect in many ways with the everyday experiences of children in the built environment. Studies show that spending time in natural environments, especially green spaces during childhood, is associated with increased pro-environmental behaviours in adulthood. Indeed, UGS offer several benefits to children in the urban environment (Tillmann & Gilliland, 2018; Tillman et al, 2018). According

to Sefcik et al., such benefits include higher levels of physical activity and lower incidence of depression, anxiety, and stress among children (Sefcik et al, 2020). Likewise, UGS foster unity and cordial relationships among children, their friends and neighbours. Tillmann et al. assert that children's physical, socio-emotional, and cognitive health are positively impacted and developed when there is frequent exposure to nature, including green spaces (Tillmann et al, 2019). Thus, the regularity in contact with green spaces minimizes common pediatric health conditions such as attention deficit hyperactivity disorder (Chawla, 2015).

Subsequently, understanding how children define, use, and perceive green spaces is very vital, especially during the formative stages of their life. Especially in impoverished urban or peri-urban settlements, green spaces also enhance children's welfare in many ways (Elsley, 2004; Simmons, 1994). More recent studies show that the availability of green spaces on school routes boosts children's educational performance as well as enriches their aesthetic appreciation (Lee et al, 2015; UNICEF, 2020).

Furthermore, green spaces serve as an essential part of children's lives, although their relationship with them depends on their subjective negative and positive perceptions (Chown, 2014). Hence, for children to benefit from green spaces, the social and physical aspects of these natural environment ought to be safe, secured, and accessible. This is particularly true in developing country contexts, where access to safe natural environments particularly for children in poor urban communities is rarely available (Louv, 2011). The United Nations Children's Fund considers it the right of children to freely play in parks and open spaces (Louv, 2011). However, when children perceive green spaces as negative, they withdraw and often spend more time in indoors on activities such as video games (Elsley, 2004) depriving them of cognitive, social, and health benefits of access to green spaces or nature. Being deprived of the natural environment may lead to nature deficit disorder (Louv, 2008) with effects such as low senses, attention difficulties, as well as increased rates of physical and mental illness (Christensen et al, 2017; Chawla, 2020) Hence, conditions that incite children's perception of green spaces (whether real or imagined) as threatening or places of danger such as crime, violence, poor supervision, and maintenance need to be carefully addressed in urban areas.

Therefore, engaging children's perception and use of green spaces provides valuable insights for urban planning authorities to create child friendly cities and urban spaces (Elsley, 2004; Hart, 2013; Hart, 2021). Fittingly, Hart proposes the 'ladder of children participation' (or ladder of youth participation), where the perceptions and lived experiences of children in the urban environment define and shape urban environmental planning decisions and programs. For Hart, simple activities like children's drawings, mapping, and shared experiences can innovatively direct policy and programs in a manner where children own and direct the process—beyond mere consultation or tokenism.

2.5 Chapter Conclusion

This chapter has presented a brief overview of the contestations around urban informality, state planning rationalities and persistence of informal practices a manifestation of African urbanism 'way of life'. It has also shed insights into the emerging concept of informal green spaces and its relevance for urban Africa where formal urban green space are in shape decline. In the following sections, the actual conditions that exemplify these concepts are presented and discussed.

CHAPTER THREE
URBAN DEVELOPMENT CONTEXT OF LUANDA CITY

3.1 Introduction

Following the literature review in the previous chapter, this section presents a brief overview of Luanda from the perspective of its history, urban development and conditions in the current urban. Environment. It also includes state planning strategies over the years and its ramifications for unplanned urbanisation.

3.2 Historical urban formation of Luanda City

The formation of the city of Luanda goes back to its founding by Portuguese navigator Paulo Dias de Novais. Paulo Dias de Novais in 1576, moved his camp and constructed a fort, a church and hospital (Bulfin, 2009). According to Bulfin (2009) although there were about a hundred Portuguese already in Luanda, the onset of physical change in the territory emerged after Paulo Dias de Novais arrival (I. Amaral, 1968). In subsequent centuries, Luanda served primarily as a port for shipping slaves to Rio de Janeiro, the capital of the Portuguese Empire at the time (Croese, 2016; Rodrigues, 2016). Bender (2004) records that socio-spatial changes in then Luanda emerged after Portuguese settlers moved in following the fall of the Portuguese monarchy and the new republic settler policy. This rise in settler population was joined by increasing number of those coming from the rural areas (Figure 3.1), leading to social formation that created a new 'spatialisation of socioeconomic difference' between Portuguese white population and native black population (Rodrigues & Frias, 2016).

During the colonial era, this distinct aspect socio-spatial reconfiguration consolidated in Luanda a spatial dichotomy of *cidade* (uptown and downtown) and *Musseque.* The *cidade* developed alongside beach and the foot of the hill contain port activities, commercial and residential functions (downtown) whereas the hill side, an administrative and political centre, housed defensive structures as well the settlements of powerful church and crown settlers (Rodrigues & Frias, 2016). Historical literature (Amaral, 1983; Bulfin, 2009; Clement & Egerton, 1957; Duffy, 1959; Mendes, 1988) on the city reveals that the downtown integrated diverse traders/merchants including natives (black and metsizos), Europeans and Brazilians. However,

the uptown, the powerful political center, was overwhelmingly Portuguese and less integrative.

On the contrary, the musseques (place of red sand- unplanned), located around the cidade, contained majority black native population who were left to their own devices to construct their homes (Bulfin, 2009). The conditions in the musseques became more pronounced following the abolition of the slave trade, as the economy connected to the slave trade was severly disrupted and merchants became bankrupt (Bulfin, 2009). Clement and Egerton (1957) observed that the although the Portuguese government was struggling to provide formal housing for its colonial officials and settler population, housing for the black native population in the musseques was considerably worse and slum-like. Mud house of dubious quality, surrounded formal Portuguese neighborhoods and the residential spaces of the black population had become informal (Clement & Egerton, 1957) . By the 1950s, authorities were clearing mud huts to replace them with concrete housing, even though the pace could hardly keep with demand. This nothwithstanding, attention was focused on increasing white settler population from Portugal to Luanda— lured with promises of good jobs, quality housing, and access to land— against housing for the black population confined to the musseques (Bulfin, 2009; Clement & Egerton, 1957). Given the shift from slave economy to commodities and agricultural exploitation, the difficulty of former African traders to transition to the new economy (Amaral, 1983) the rise in both settler population and those from Angolan provinces (less fortunate in terms of purchasing power and accesss to opportunity), spatial difference was visible socially and residentially in the musseques. Rodriguez (2009) adds that the mussquess growth in this era was also due to the accommodation of former middle class blacks who had lost homes due to expropriation of their lands for modernisation and city expansion.

The era of independence and the ensuing civil war ushered in new processes and forces that consolidated the musseques and the deplorable conditions therein. The population of Luanda grew exponentially due to the civil war and the rural exodus associated with it. The protracted period of the war, channelling of resources to the civil war, and the displacement of rural population from most of Angola's provines excerbated the housing and infrastructure deficits (Mendes, 1988; Rodrigues & Frias, 2016). During this period, parts of the *cidade* which was

left vacant by the fleeing Portuguese settlers experienced some form of precarity, increasing the extent of impovershment that had been previously confined to the musseques in the colonial period. However, the musseques grew both demographically and spatially, as mass of displaced rural migrants embarked on spontaneous and informal built houses to address accomodation needs (Workshop, 2011). By the 1980s, preciarious housing with limited infrastruture had become ubiquitous in the city's periphery, (not excluding the *cidade*) as more people sought a foothold in the safety of Luanda's outskirts (Cain, 2013). Between the first elections of 1991 and the end of the war in 2002, MPLA party introduced a free market economy that inserted the country into the global system, bringing in international investment partners and enterprenuers and thus, new socio-spatial transformations. In terms of housing, this was remarkbably seen in new formal housing for employees by the big international firms. These housing investments, which improved deteriorating conditions in the cidade, attracted the wealthy while slowly moving the inner city poor back to the peripheries (Buire, 2014; Cain, 2013; Rodrigues & Frias, 2016). Today, there is a residential configuration that mirrors the colonial spatial difference: upper class in formerly white neigborhoods and the native poor in the musequees.

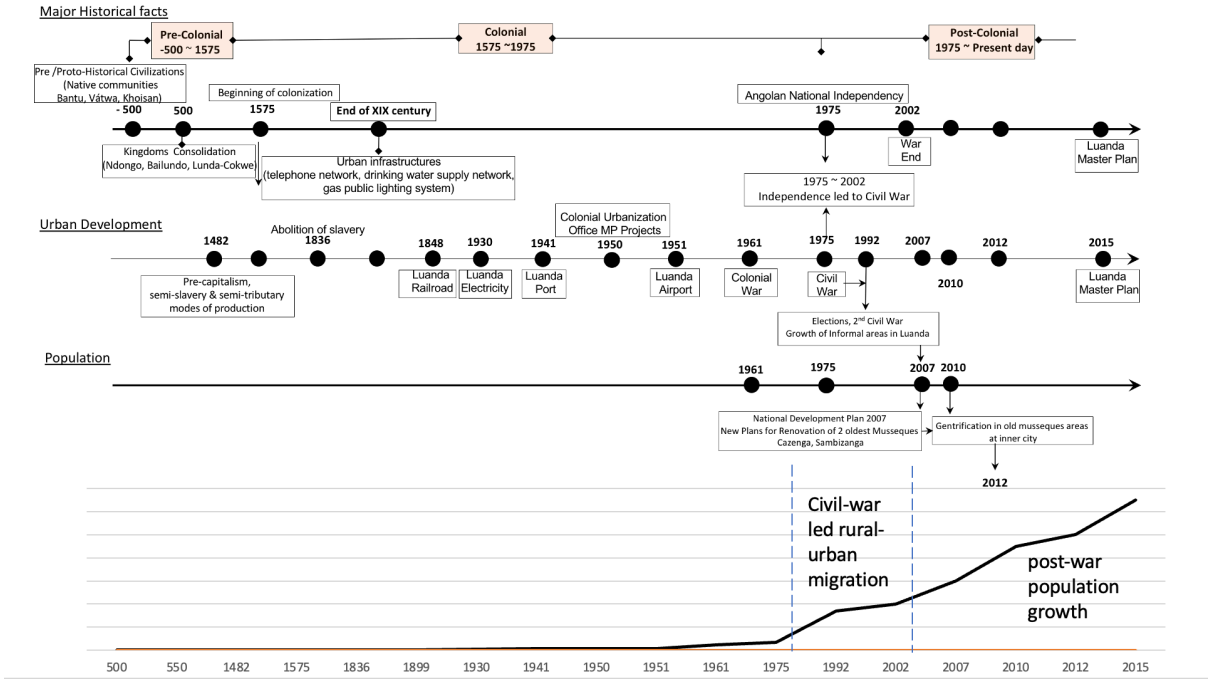


Figure 3.1 Timeline of major events in Luanda's urban formation

3.3 Challenges in the urban situation

The massive population movement into Luanda and other major cities without any effective planning response during the civil war is considered one of the main drivers of disorderly physical development in urban and peri-urban areas of Angola (Jenkins, Robson, Cain, 2002). Socio-economic inequality and deprivation are a persistent feature with strong spatial manifestations—that is, there is a clear division between residential areas of the low-income and higher-income in the city. Access to basic but quality urban infrastructure is tied to high income residential quarters whilst poorer areas are faced with irregular employment, erratic wages, and poor access to public infrastructure, and higher incidence of crime and violence (Cain, 2014).

In terms of urban governance and planning, the Province of Luanda is the main administrative body at the local level responsible for urban planning and development. Within the provincial structure are lower tiers of municipalities (7) and urban districts (6) responsible for administrative functions. Proper planning, as it relates to metropolitan and long-term urban development, is steered by national agencies, the Province, the Institute for Urban Planning and Management, and other local structures. While the city appears to follow a decentralized, multi-polar urban expansion program (Rodrigues & Frias, 2016) the reality is a centralized government model that is top-down and state-led that defines planning and urban development decisions (Gastrow, 2020; Castro & Reschilian, 2020).

Akin to urban planning in many cities of the global south Cobbinah, Erdiaw-Kwasie, Amoateng, 2015; Cobbinah & Darkwah, 2017) formal planning has not reached the low-income and peri-urban areas of Luanda like the Funda commune. The rapid growth of Luanda and other cities in Angola trails the provision of urban services and economic opportunities for urban residents who straddle between opportunities in both the rural and urban economies (Jenkins, Robson, Cain, 2002; Rodrigues & Frias, 2016). In March 2010, the *Gabinete de Reconstrucao Nacional* (GRN) was commissioned by the government of Angola to lead the efforts on urbanization and reconstruction. To effectively plan Luanda, the Urban Growth Management Plan was prepared in 2000 and later adopted as a law in 2011 as the Presidential Decree 59/11. This law subsequently underpinned different integrated plans aimed at tackling urban expansion and improving urban infrastructure in Luanda (Rodrigues & Frias, 2016).

Additionally, urban planning sought to re-envision Luanda through various plans to decentralize the city by creating new cities and industrial poles (Power, 2012), such as the Luanda Satellite City, which was designed for 890,000 people and Nova Vida, for 30,000 people (Watson, 2014). Unfortunately, the drive to promote effective planning in Luanda has occasioned concerns for segregation with limited impacts of planning on low income, informal, and/or peri-urban settlements as they are characterized by unequal access to infrastructure. The pursuit of a new socio-spatial configuration as part of a new planning paradigm (Rodrigues & Frias, 2016) through traditional master planning amidst weak institutional contexts (Smith & Jenkins, 2015) has meant that alternative strategies such as recognizing IGS as an opportunity to increase access to UGS is missing in urban planning practices.

Even though Luanda province offers a diverse and wonderful green landscape, the location of most green spaces is in the peripheral zones of the province, around 42 km away from urban centers. This imposes accessibility challenges due to long travel distance and a poor transportation system. Existing pockets of green spaces in the urban core date back to the colonial period, mainly in the historical city (Croese, Dominique, Raimundo, 2021) In addition, over the years, green spaces have given way to massive redevelopments in the province, leading to significant declines in availability and accessibility to UGS. A host of large-scale urban redevelopment and housing developments have claimed sustainability only in name—poorly integrating UGS planning especially in low-income areas of the province. Indeed, majority of residents in low-income areas express dissatisfaction with the availability and condition of green spaces (Croese et al, 2021). Unsurprisingly, the current Luanda Metropolitan plan—a project of the former Presidency and commended for being comprehensive—is yet to translate proposed strategies for ecology into concrete actions.

3.4 The State Urban Planning Strategies and Responses

In terms of urban governance and planning, the Province of Luanda is the main administrative body at the local level responsible for urban planning and development. Within the provincial structure are lower tiers of municipalities (7) and urban districts (6) responsible for administrative functions. Proper planning, as it relates to metropolitan and long-term urban

development, is steered by national agencies, the Province, the Institute for Urban Planning and Management, and other local structures (Table 3.1). While the city appears to follow a decentralized, multi-polar urban expansion program (Rodrigues & Frias, 2016) it is rather a centralized government model that is top-down and state-led that defines planning and development decisions (Gastrow, 2020; Castro, 2020).

Agencies/Bodies	Responsibilities
National Assembly	• Assess the annual and final execution reports of national territorial plans
Government	• Prepare the reports on the implementation of the Main Options for Spatial Planning and Urban Planning and the provincial, regional and sectoral plans for spatial planning and urban planning and submit them to the National Assembly for consideration
Ministry of Urban Planning and Housing	• Promote studies on the state of territorial planning with a view to formulating proposals for political, legislative and regulatory measures; • Promote urban and rural regeneration/requalification and the environmental enhancement of cities, as well as the monitoring of environmental variables in the urban context, in collaboration with the competent bodies; • \Ensure the preparation and promote the implementation of national geographic information management policies in the field of geodesy, land registry and rustic; • Supervise the execution of territorial plans
Provincial Government	• Observe and monitor compliance with the provisions of the Land Law, LOTU and its regulations
City Government	• Organize urban and suburban, intercity and intercommunal passenger and cargo transport; • Promote the planning and signalling of traffic and parking of motor vehicles in population agglomerates; • Promote lighting, road signs, toponymy and registration

Table 3.1 - Territorial and urban planning bodies and their competences (Source: LOTU)

Recent Projects in Luanda					
Types	**Names**	**Client**	**Author**	**Year**	**Source**
Urban Planning	Kilamba Centrality	Government of Luanda Province	Wang Jiong	2007/2011	Angolan News National Agency angop.ao 05.10.2013
Urban Development	Cazenga	Government of Luanda Province	Soares da Costa/Odebrecht	2011/2016	Angolan National Radio Station rna.ao 2.07.2013

Landscape	Nova Marginal de Luanda (Luanda's New Bay)	Public/Private	Mota Engil/Soares da Costa	2009/2012	motaengil.pt – 13.12.2013

Table 3.2- Table of Luanda's Urban interventions - Angolan National Development Plan 2007-2017. Source: Angolan News Agency 2013; Angolan National Radio Station 2013; Mota Engil 2013

Figure 3.2 – Government implemented urban scale projects in Luanda. a) Tabula rasa in Kilamba, b) Intervention in inner city in Sambizanga and c) Landscape project at Luanda's Bay area

State-led New Satellite (centralidade) housing projects

The creation of conditions for the construction of new urban centralities, urbanization, improvement of the network of urban infrastructure and social facilities, is one of the goals of the National Urbanism and Housing Program. From this governmental program several interventions have been made throughout Angola in general. The interventions range from urban design to the new centralities of Kilamba and Cacuaco (figure 3.2), requalification of entire neighbourhoods, such as the Bairro do Sambizanga and Cazenga (Figure 3.3; Figure 3.4), to landscape interventions such as Nova Baía de Luanda as shown in figure below.

Figure 3.3 – Governmental public and private implemented urban scale projects in Luanda. Source: IPGUL, Google.earth, Jornal de Angola

Figure 3.4 Kilamba Housing Project a) During construction and b) after construction (source Cain, JA) - Kilamba New City in Luanda, China's Largest Housing Project in Africa Source: Allan Cain, 2014

The first phase of the city of Kilamba, concluded in December 2012, was developed on an area of 1,000 hectares, with a total of 710 buildings and 20,000 apartments. It also includes 17 schools with playing fields, 24 nursery schools, 1 hospital and 240 ground floor shops.

Cooperative Housing

Those kind of residence communities are born by public-private initiative. They are often aimed at the public sector workers with allocation for others who can afford. The infra-structure is provided by the government while the plan and actual building is accorded by a contractor company and the owner of the house (See Figure 3.5)

Private Condominium

Private Condominium as the name indicates refers to houses normally built by private contractors as gated compounds targeting the wealthy class. The owner sometimes has the option of personalizing the plan before it is built for an extra fee. Equipped with houses and few very basic services in them such as leisure, pharmacy and small shops for the convenience of their residents (Figure 3.6).

Figure 3.5 - Cooperative Housing Lar do Patriota. The Most Successful Housing Cooperative in Luanda Source: Allan Cain/www.wikimapia.org 1097180

Figure 3.6 - Private Condominium Atlântico do Sul in Belas Municipality, Luanda Source: www.wikimapia.org/p/00/00/54/61/45_big.jpg The private sector b) condominium Imoluanda in Talatona, Belas municipality

In situ upgrading

These constructions are usually from self-assisted housing constructions in which the owner engages more in the process. Sometimes include social housing which are also called "evolving social housings". They are basically on-site housing improvements or new constructions by government with very basic structure and planned to be as much affordable for those living on minimum wage. They are incrementally upgraded and modified according to the owner's financial condition and will. Such housing sometimes caters to resettled residents from the inner city informal settlements (Figure 3.7).

Figure 3.7 In situ upgrading house, Luanda Source: Allan Cain 2020

3.5 Chapter conclusion

This chapter has documented a short historical narrative of Luanda's urban formation and how Portuguese colonial and post-colonial practices leave a legacy of urban socio-spatial difference across neighbourhoods and districts. It also shows recent state urban development and housing constructions to demonstrate how the urban poor are still left behind in the entire process. The next chapter focuses on the research methodology.

CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 Introduction

The previous chapter explored the conceptual and theoretical framework, which underpins this research through literature reviews. The case for this chapter is to define the procedures, methods, and instruments employed to address research questions. Issues of research design, data collection, techniques for data collection and analysis as well as the rationale for the selection of the specific case study are considered.

4.2 Research Approach

The study employed a case study design based on qualitative research methods. The case study design was appropriate due to exploratory nature of this research and the limited geographic scope of the target areas. In fact, there is no detailed existing map of the two study areas except for google base maps. This situation further justifies the case study design which is defined as 'an empirical inquiry that seeks to understand a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not evidently clear and in which multiple sources of evidence are used' (Yin 2004 in Okyere, 2017). In order to ground the case study, this thesis borrowed from urban sociology and international planning studies methods such as urban ethnography (non-participant observation) and qualitative content analysis. It needs mentioning that the weakness of the case study in offering little for generalisations or application to other areas applies to this study. Nonetheless, it is the aim of this study to offer context-specific understanding of selected two study sites instead of statistics inclined generalisations.

The first study area, Cassenda, is a semi-planned quarter of Maianga district. It is an important hub as it concentrates important functions: high-class residential, commercial and cultural facilities it hosts. For example, the only International Airport in Angola, the Luanda Mall (current only international airport) and public important institutions (air force, military facilities, Engineering National laboratory, National Statistical Institute). Yet, it has a mix of unplanned and planned urban neighbourhoods with some indigenous that seen no significant

improvement from local authorities since independence from Portugal. The co-existence of a so- called highly formalized area and an indigenous informal settlement was an interesting case from the researcher's perspective. Thus, the study area shows how the formal and informal can coexist, with no particular attention to the informal area.

The second study area was Funda—a peripheral commune in the municipality of Cacuaco, Luanda province. It is home to 209,387 inhabitants. The commune was selected because of its expansive greenery informal green spaces. The plan's failure to stress the significance and potential of IGS in the sustainable urban development of the province is a serious cause for concern. This is because the expansive greenery does not necessarily imply significance and barrier free access to local people (Croese, 2021).

4.3 Methods of Data Collection

Prior to the field work, a literature review was conducted through search of scholarly databases such as google scholar, science direct, and web of science. The field work began with preliminary observation of the study area. The preliminary observations helped establish rapport with local residents and community leaders, who in turn introduced the researcher to municipal staff for consent and support. Given public transport challenges and other security concerns, evening observations could not be carried out after 6:30 p.m. Furthermore, visual data were collected by taking photographs with a georeferenced mobile camera to mark locations. The study made extensive use of qualitative techniques: physical observation and non-participant observation, interviews and focus group discussions. The details of the various qualitative instruments are described below.

a) Interviews

There were two field visits that were organized in the process of data collection for this study. Before the interviews, an initial meeting was held with community and traditional leaders to explain the purpose of the research and to build rapport. The first fieldwork was undertaken from September to October, 201. About 50 houses were surveyed and households head were interviewed. The interviews were conducted in unplanned, planned and mixed zones. Vital information about residents' profiles, housing modifications and use of indoor spaces.

Interviews for the second fieldwork concerned adult and children experiences of informal green spaces from the perspective of distribution, perceived benefits, uses, and challenges. A total of 50 adults and 23 children were interviewed. The final sample size was informed by the saturation principle in qualitative research—the point at which further interviews yield no additional information and data collection is sufficient for analysis (Adams and Savahl, 2015). Adults and children were drawn from the same household. Following the first randomly selected interview, snowball sampling was used to contact other participants in each of the four quarter to select participants. Data collection took place over six weeks between September and October 2019. Interviews were conducted at late afternoon hours on weekdays (between 3 and 5pm).

b). Measurements

Physical measurements of surveyed houses were conducted during the study. A total of about 10 houses were surveyed based on the willingness and permission of house owners or tenants. Some residents were hesitant about measuring their houses due to privacy and security concerns.

c). Focused Group Discussion (FGDs)

In the study on informal green spaces, the FGDs were carried with three groups of children on two different occasions. The first FGD included 12 children (six boys and six girls) and the second group 11 children (six boys and five girls) and conducted during a weekday in an elementary school compound after school hours (around 2:30 p.m.). Four participants each were drawn from grades 4–6 with the assistance of class teachers based on the pupil's willingness to join the discussion and their interest in drawing exercises. The second FGD was also held at the elementary school premises with participants drawn from grades 1–5 during weekdays to generate more insights from younger pupils. The third FGD was conducted on a Saturday morning under a tree in the front yard of a parent's house. Participants consisted of thirteen children (seven boys and six girls) based on their responses to semi-structured interviews, their availability for further discussions, and consent from parents. All three FGDs were organized in the form of discussion and drawing exercises where participants were provided with color pencils, boards, and drawing papers. Discussion points included (i) IGS

use around Funda and reasons (ii) drawing competition to illustrate ideas for improving current state of IGS and children's own peer review of illustrations and (iii) perceived benefits of IGS and their constraints.

c) Direct Observation and Field Photography

Direct observations in both indoor and outdoor activities was carried out in both study areas. Observation of houses, housing conditions, use of space, the condition of informal green spaces were undertaken. Observations were supplemented with extensive use of physical photography which was georeferenced to provide spatially indicate data on shots.

4.4 Data Analysis

A variety of methods were used to analysed field data. Mapping was used to spatially analysed land uses and the distribution of facilities across the three selected neighbourhoods in Cassenda, the first study area. In other to comprehend housing modifications and use, drawings of plans and layouts were done using AutoCAD software. Additionally, space syntax was employed to examine the indoor housing environment through attributes connectivity, and visual depth.

In related to informal green spaces in the Funda, the second study site, a thematic content analysis was used in five steps. Step 1 involved familiarization with the data, reading, and re-reading of the transcripts, and noting down initial ideas. Step 2 comprised coding, which generally involves using words or phrases to assign attributes or interpretative meaning to transcripts to detect patterns or categories. In this study, codes such as fruits, vegetables, water, and animals, among others, were identified from the interviews. Codes were assigned to responses from each interview question. All codes were manually recorded into a database using Microsoft Excel. The codes were reviewed by each author and, where necessary, refined or new codes added. In Step 3, codes were compiled into themes based on patterns and detection of categories. For example, codes such as fruits and vegetables were categorized as food (see Table 4). In Step 4, identified codes were reviewed to achieve data coherence while preserving a clear distinction between themes. In Step 5, we defined, refined, and named the themes as well as selected corresponding verbatim quotes from children's responses.

4.5 Chapter Conclusion

This chapter briefly described the methodology adopted for this research. It has justified the adoption of the case study design and identified the qualitative research methods employed building on established tools in urbanism and urban sociological studies. Overall, it points to a variety of methods of data collection and analysis which enriches the comprehension of realities on the ground, as presented and discussed in the next chapters.

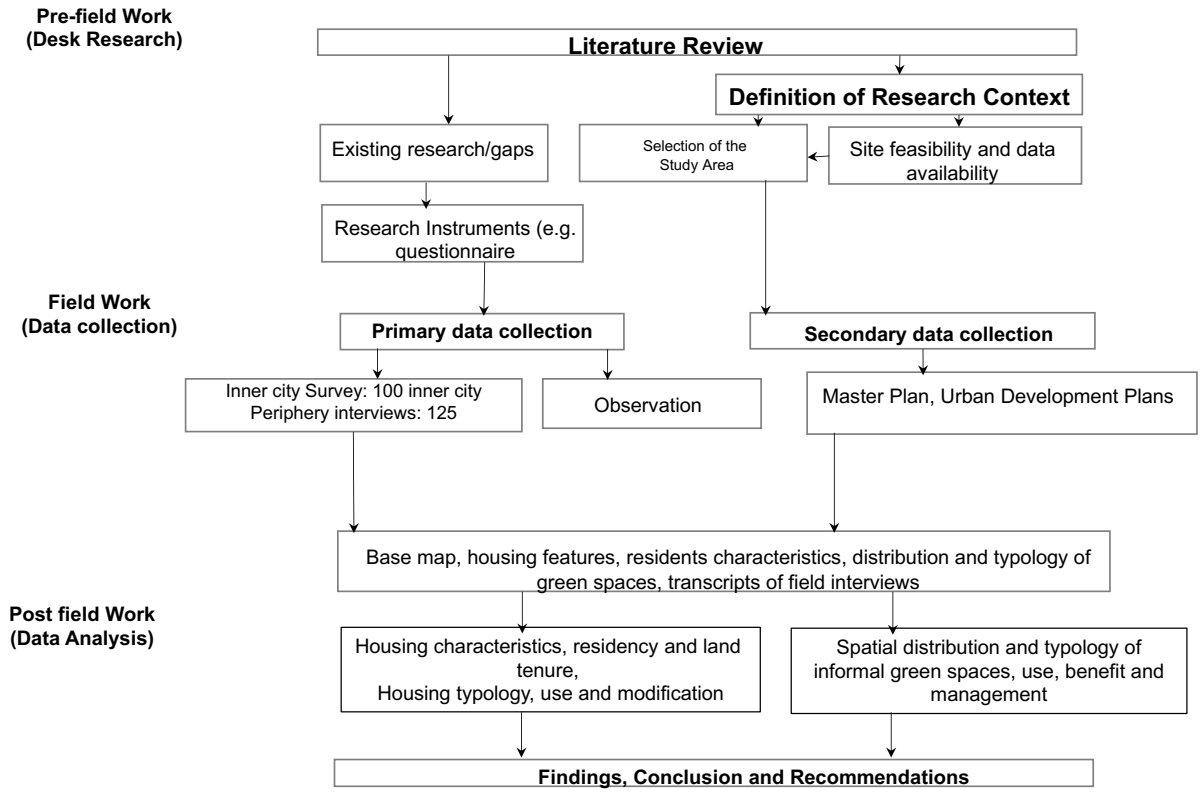


Figure 4.1 Research design and method framework

Part II
UNPLANNED URBAN ENVIRONMENT: HOUSING CHARACTERISTICS IN CASSENDA DISTRICT OF LUANDA

CHAPTER FIVE: HOUSING CHARACTERISTICS AND USE IN CASSENDA

5.1 Introduction

This chapter presents the results on neighbourhood characteristics, housing typologies, use and physical characteristics across planned, mixed and unplanned areas in Cassenda Luanda. It includes a space syntax analysis of the indoor housing environment to document the physical differences in connectivity, visual depth and angular orientations across the study sites.

5.2 Cassenda Neighbourhood

The quarter of Cassenda is located in the dense residential area of Luanda according to LUPMI - Luanda Urban Planning and Management Institute (IPGUL). The map below shows in different shades of blue the degree of inhabited parts of Luanda.

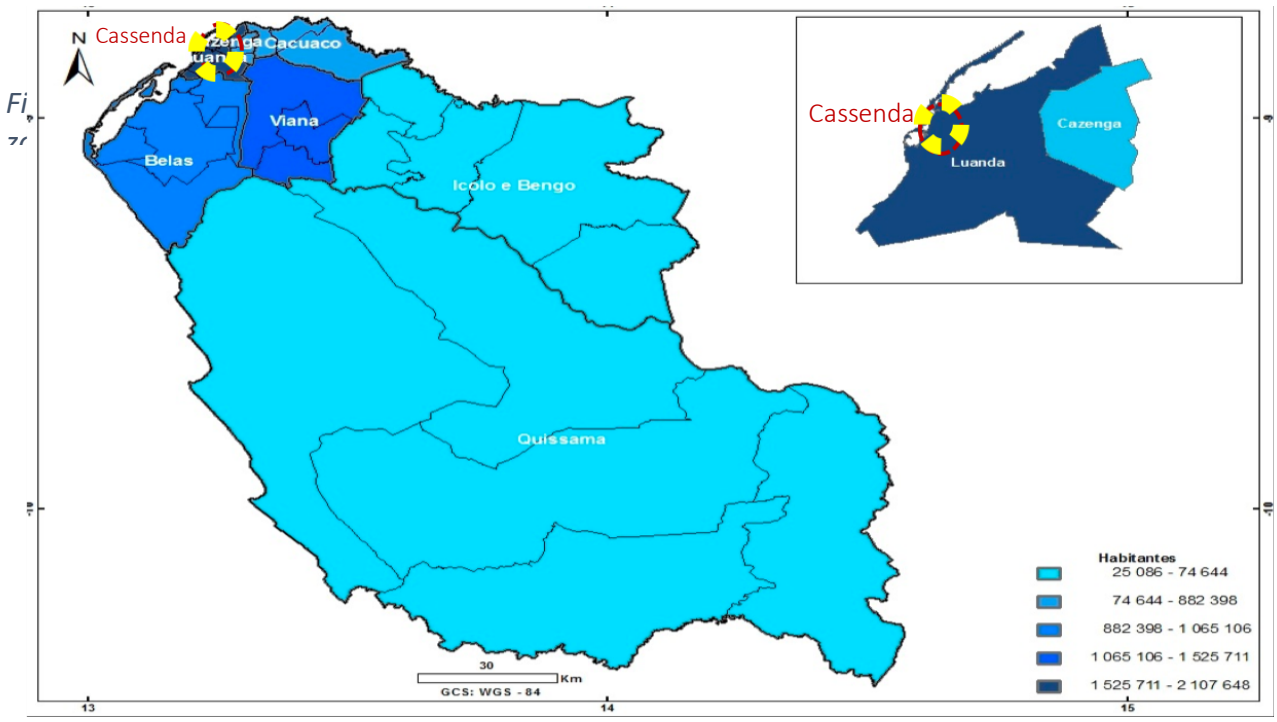


Figure 5.1 – Cassenda is located in the densest populated area of Luanda. Source: IPGUL modified by author.

The quarter is configured by the polygon formed by Ho Chi Min Avenue and Avenida Revolucão de Outubro, Rua do Engenharia Laboratory and streets 8 and 12 of the same neighborhood as shown in the figure 5.2. Avenida Revolución de Outubro represents the axis connecting the international airport to the city center; 21 de Janeiro Avenue is the axis that connects the South and the north of the capital and the Ho Chi Min Avenue connects it to the periphery zone, to the commercial and academic centres. These are three of the main Luandan avenues that positions Cassenda in one of the best locations on the capital. The map below shows Cassenda proximity to the airport.

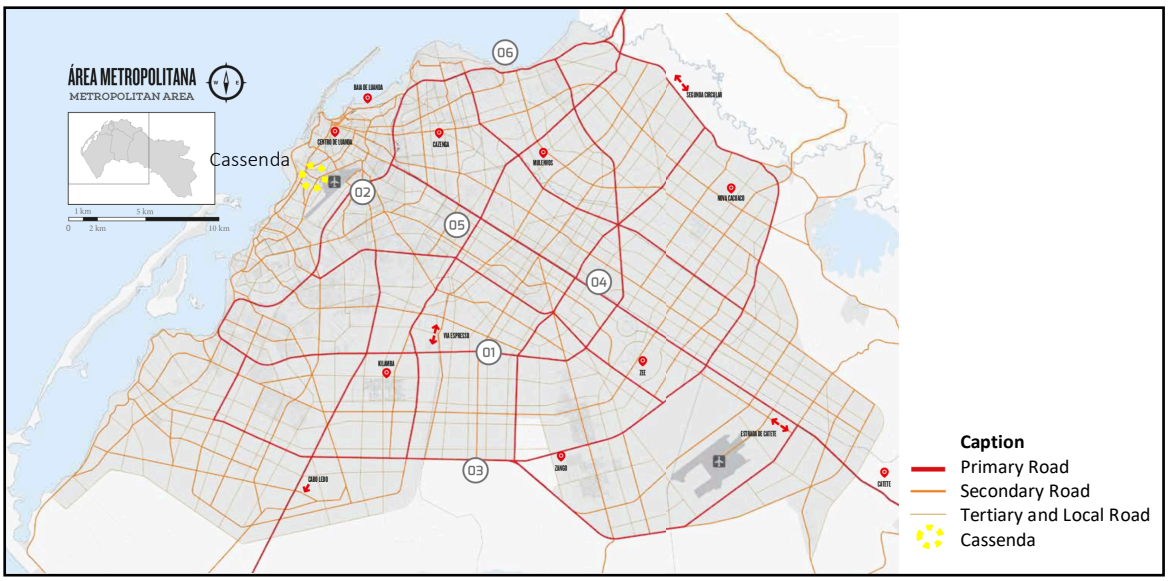


Figure 5.2- Cassenda's strategic location within Luanda's axes: beside an important facility such as the International Airport 4 de Fevereiro. Source: LUPMI, modified by author

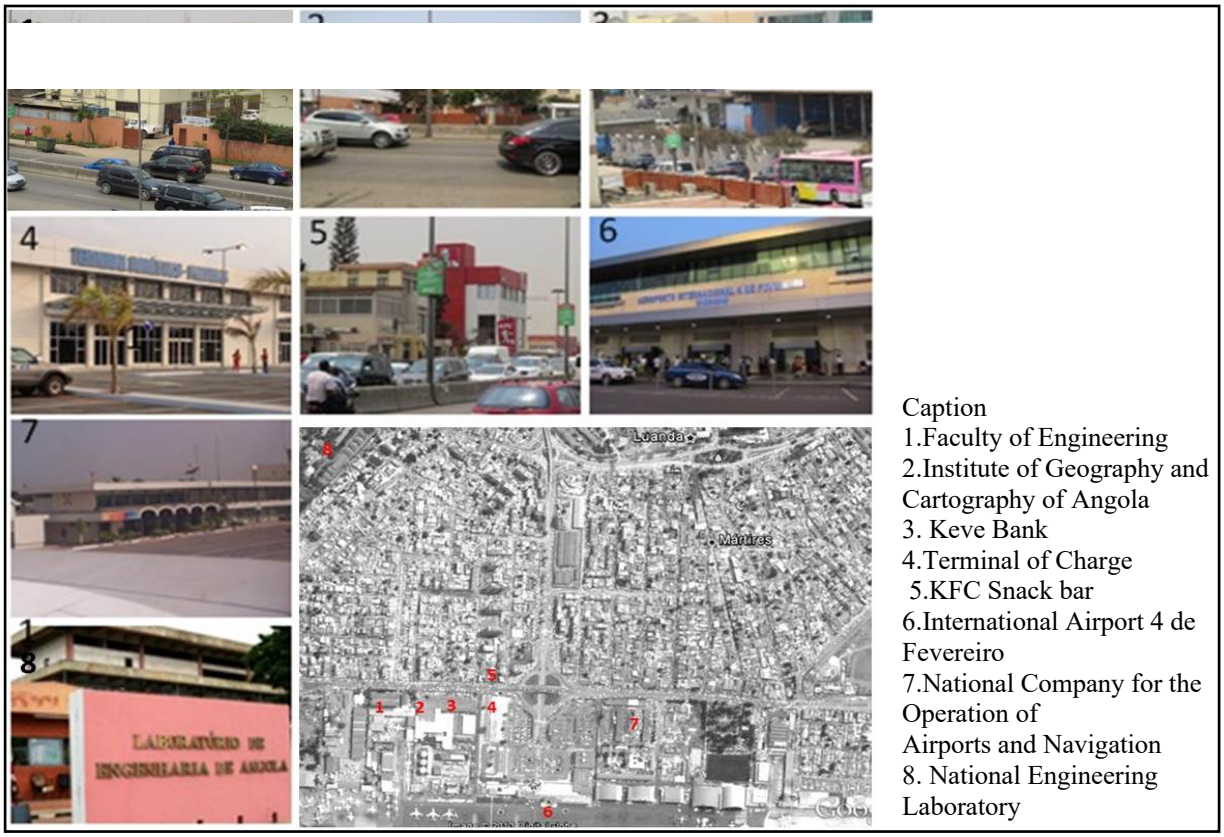
Cassenda neighbourhood was chosen because of the great importance it has for the uses (residential, educational, institutional), being one of the main accesses from the Luanda International Airport, and being a zone of great flow of people since it connects downtown to the new housing centres. Specifically, the criteria for selected was informed by:

The selection of Cassenda was based on the following criteria:

a) It is an inner-city mostly unplanned settlement with diversity or mixed patterns of housing, and residential profiles.
b) The proximity of the study location of the study area to formal facilities and services such (e.g., Airport, National Engineering Laboratory, National Statistics Institute,

National University of Agostinho Neto, churches, National Company of Airports and Navigation - ENANA)

c) The agreement of the residents to participate in the interviews and some even to measure their houses.



Caption
1.Faculty of Engineering
2.Institute of Geography and Cartography of Angola
3. Keve Bank
4.Terminal of Charge
5.KFC Snack bar
6.International Airport 4 de Fevereiro
7.National Company for the Operation of Airports and Navigation
8. National Engineering Laboratory

Figure 5.3 Images of important facilities in Cassenda quarter. Source: angolazebelo.ao; author

Figure 5.4 Residential neighborhood in Cassenda. Source: Author 2018

5.3 Socio-Physical analysis of Cassenda Neighbourhood

Different types of zones were observed in the study area with varied allotment and architectural typologies. These distinct characteristics were the reason for dividing the study area into 3 zones. These zones consist of *Planned, Mixed and Unplanned*. From the field and interviews with older residents of the neighborhood, it was concluded that certain areas of the Cassenda were actually planned and others were not. However, with the political and social changes that occurred in the pre-and post-independence period, a what we call in this work a '*mixed zone* ' – with evident characteristics of a planned settlement and also with characteristics of unplanned settlements – slowly emerged in the midst of constructions that had originally been planned. As a result, we have a diverse neighborhood where we meet people from different backgrounds. As can be imagined this leads to marked differences in terms of the conditions of the constructions and their typology. The image bellow shows in different colours the three zones found in Cassenda.

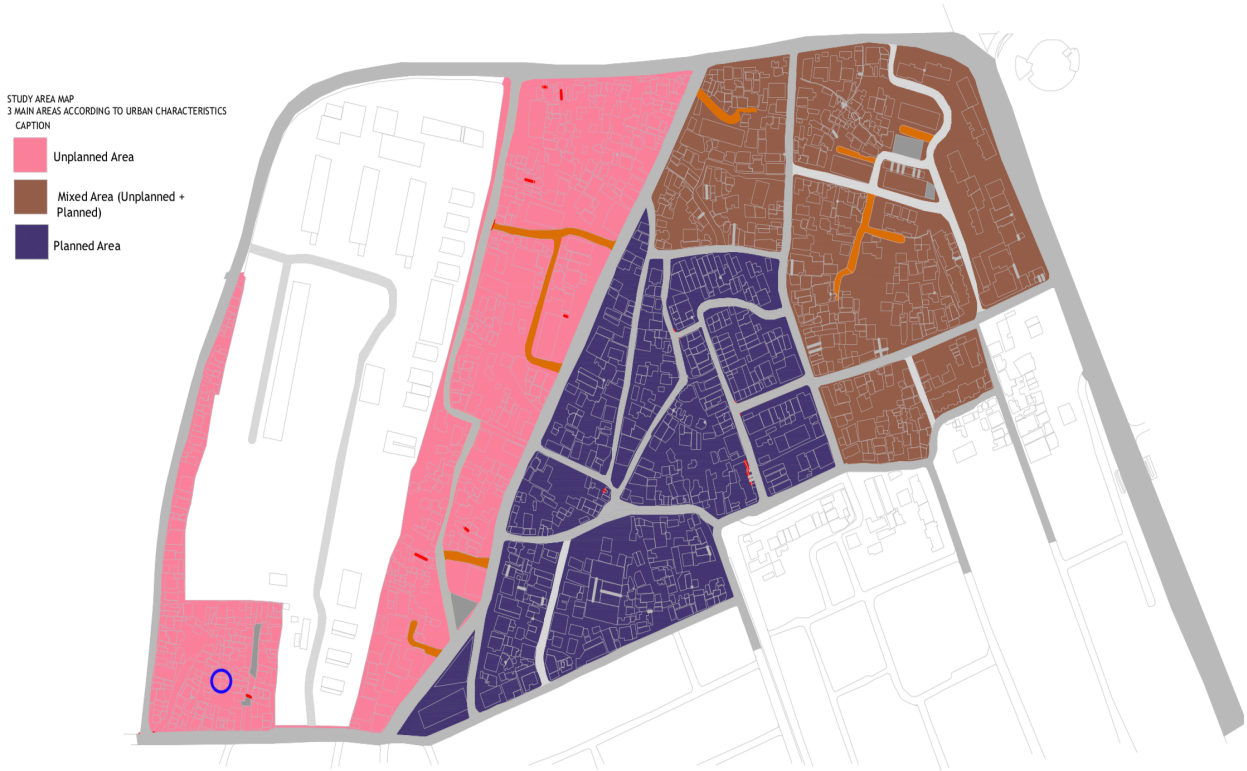


Figure 5.5 – Planned, Mixed and Unplanned zones of Cassenda. Source: author

As seen in figure 5.6, there varieties of housing typologies based on the different residential zones. Figure 5.6a illustrate houses built by contractors over 40 years ago but have been refurbished to preserve and modernise. On the other hand, 5.6b depicts self-built housing. Mass housing constructions are shown in Figure 5.7.

a)

b)

Figure 5.6- Sample houses a Houses in the Planned Area. b) house in the unplanned area Source: author

a. b.

Figure 5.7 Public and Private Housing blocks: a Housing blocks by government (1990s) b. housing blocks by private companies (1970s)

5.3.1 Construction Period

According to the field survey, about 70% of construction was done in the 1980s and early 1990s when the wave of migration to Luanda was much more pronounced. The map below (Fig.5.8) gives us a more detailed view of the age of each building in Cassenda. First residents were colonial middle-class people. Vacant land reserved for future constructions were rapidly freely occupied by low-income residents with the advent of Angolan Independency and temporary inexistence building inspection.

Figure 5.8- Age of houses in Cassenda: The Planned area is older than the Unplanned and Mixed Area. Source: author

Figure 5.9 Age of houses in the planned, mixed and unplanned neighborhoods: The Planned area is older than the Unplanned and Mixed Area. Source: author

5.3.2 Physical morphology: block structure

By

analysing the three different areas in detail, we noticed that the blocks and accesses have very irregular shapes and do not necessarily follow a strict drawing pattern. With this, we verified more or less permeability in the three different zones

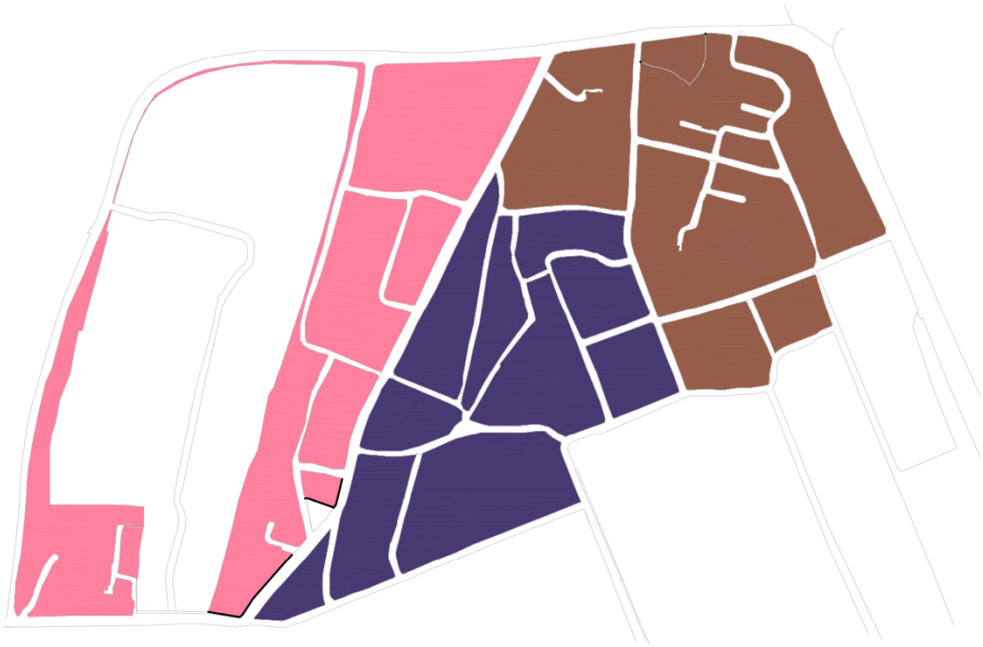


Figure 5.10 The blocks and accesses of the three areas or zones have a very organic pattern

Starting at the Unplanned area (Figure 5.10) we noticed a peculiarity in the design of the blocks of this zone: blocks of irregular shapes, average sizes and a super block with a lot occupied by the National Engineering Laboratory. Being a government institution and having a specific use— it is basically a court with access only to authorized personnel which makes the zone little permeable both visually and physically. Something that can also be observed during the on-site visit and on the aerial maps are the lots that also have an organic pattern because many of the constructions According to local authorities they arose by spontaneous occupation of the land in an era in which the inspection was little felt.

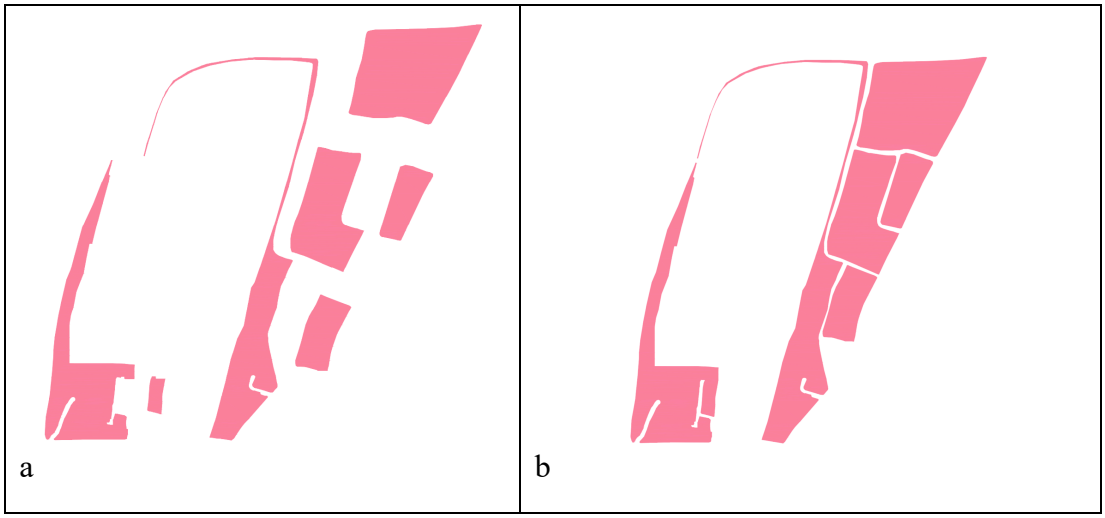


Figure 5.10 Permeability within blocks a. Smaller blocks with one super-block. b. Medium permeability within the blocks.

Figure 5.10c - Land plot with a very organic pattern.

In the mixed area or zone, there are small and large block sizes but not necessarily following an orthogonality in its design. According to the older residents of the neighborhood, many of the blocks were developed spontaneously as they were being filled depending on vacancies.

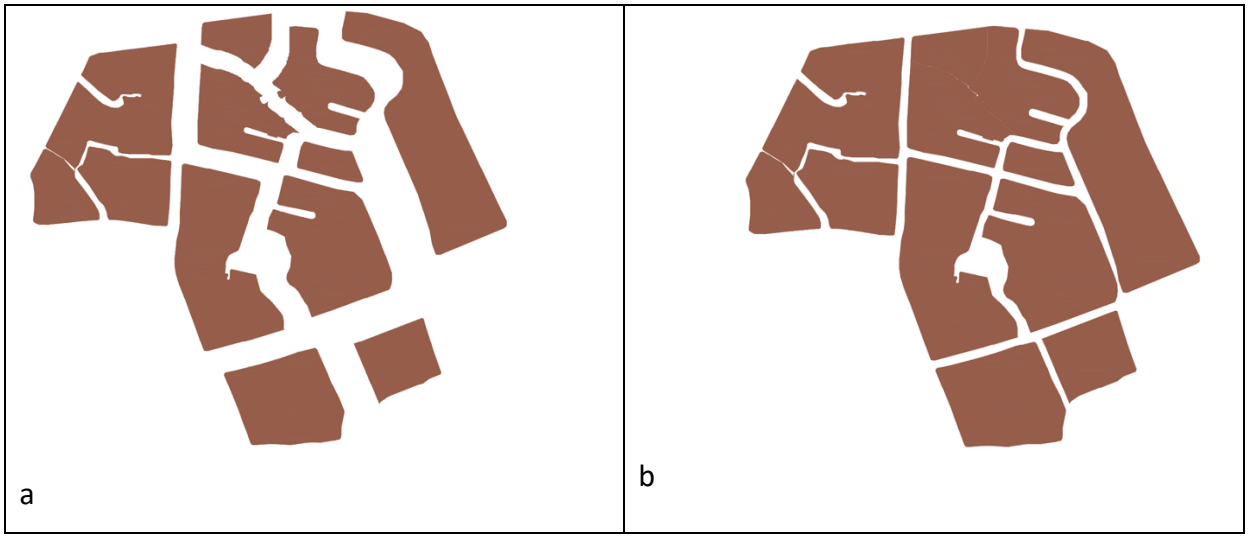


Figure 5.11 Block morphology a. Big and small blocks of mostly organic forms b. - Medium permeability within the blocks.

Figure 5.11c – Organic land plots in most of the blocks (drainage along the streets).

Overall, the mixed area is characterized by having sanitation system in its main streets and paved. Within its blocks is visible the lack of asphalt in alleys. It was noted that lots across the main streets follow a more elaborate design because they were planned with housing

complexes with infrastructure ranging from services to commercial. The rest of the blocks and their respective buildings are more organic in their design.

The planned area, was predominantly organic-shape blocks (5.12) except for two quadrangular shaped blocks. Because it was designed and built by a civil construction company in the period before independence, there are numerous buildings with characteristics of colonial architecture. Of the three areas is the most permeable as we can see in the images below.

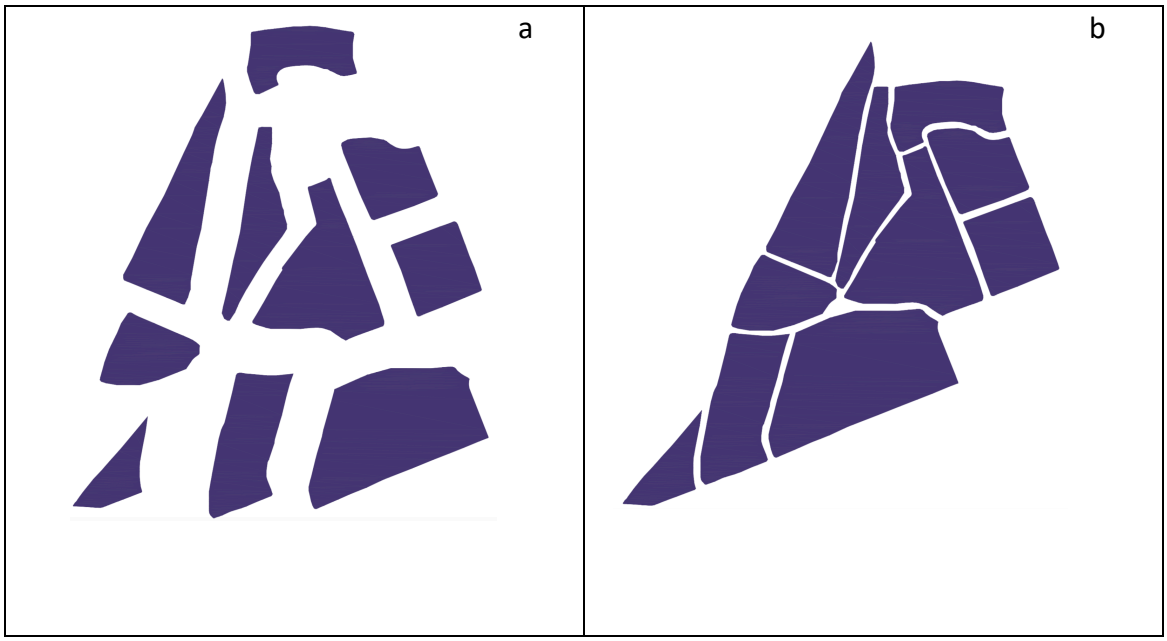


Figure 5.12 Permeability and physical access a - Smaller blocks b. High permeability and easy access within the blocks

On a whole, the physical pattern (Figure 5.12c) depicts is an orderly subdivision although many modifications have already been made over the years. Some of the modifications are the addition of distinct uses of the residential in the backyards of several dwellings such as the commerce for example, which often includes adding attachments for this purpose (explored further in the section on housing modifications). There are drains constructed along all the streets.

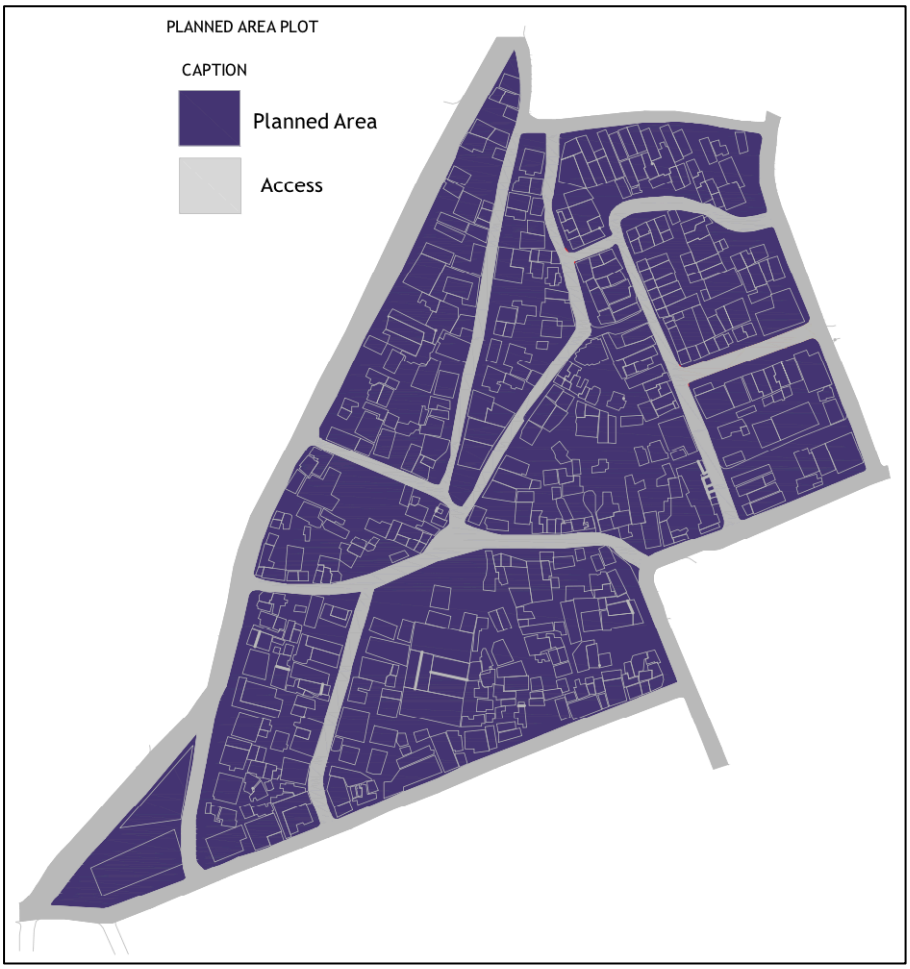


Figure 5.12 Physical definition of land plots c. Land plot follows a defined pattern, paved streets

5.4 Land use characteristics

The field observation indicated that the study area is mostly residential with some services such as small shops, private schools, boutiques, beauty salons, mechanic's workshop, nurseries, churches and offices. However, residents reported that there was severe inadequacy in educational and recreational facilities. For example, most of the elementary schools are private and hence children had to walk long distances outside of the neighbourhood to find affordable public school. Parks and playgrounds were also deficient.

Figure 5.13 shows that in the three areas there is a high number of residences. Most offices are in the Planned Area, most apartment blocks are in the Mixed Area followed by the

Unplanned Area. 50% of the Unplanned Area is occupied by the Engineering National Laboratory of Angola.

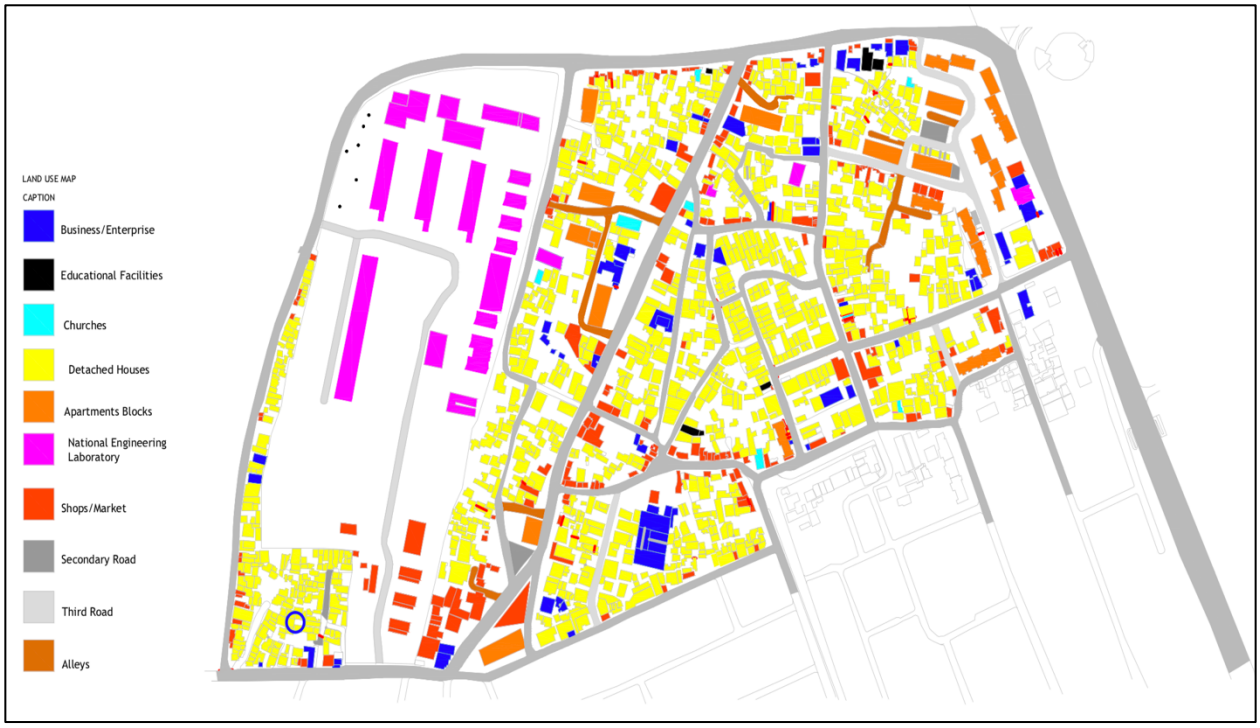


Figure 5.13 Land use map of Cassenda

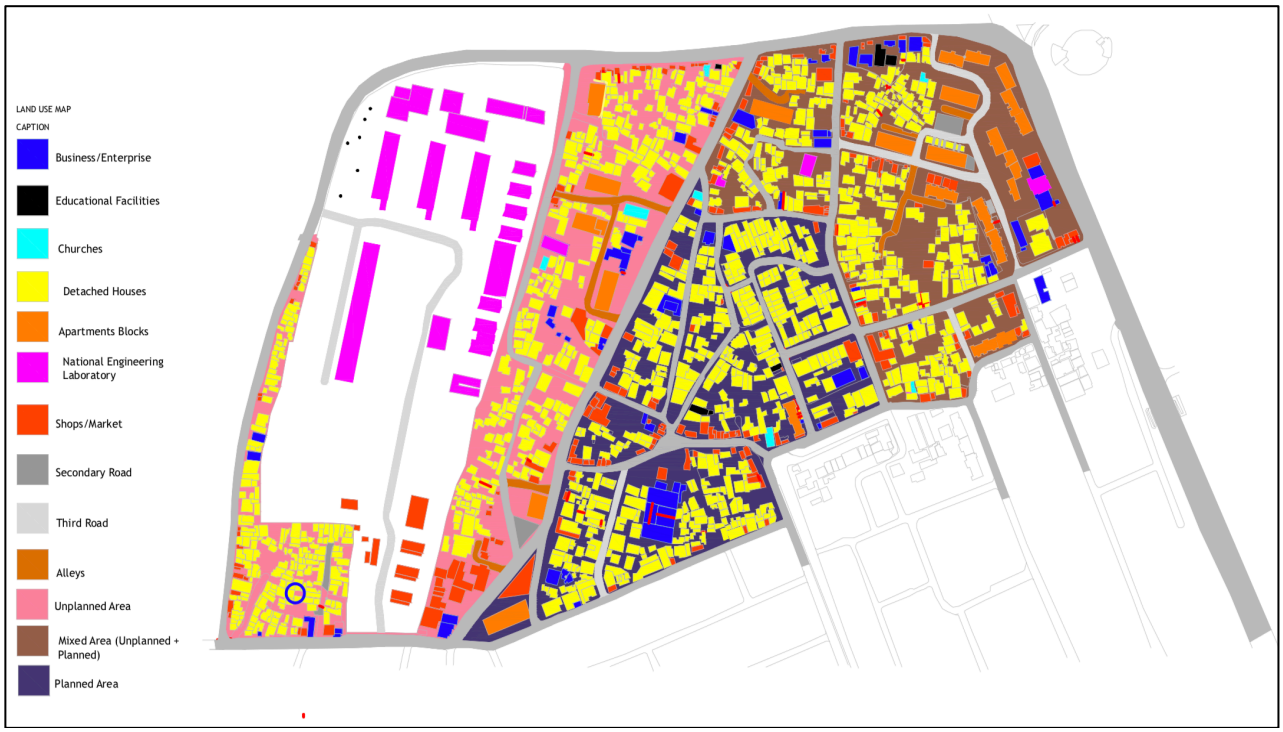


Figure 5.14 Land use map of Cassenda across planned, mixed and unplanned areas

5.5 Housing typology and incremental modifications

As already mentioned, houses in the study area ere of three main types: planned, unplanned and mixed (Figure 5.15). Planned buildings refers to those houses which were officially constructed in line to building regulations and planning laws. Unplanned houses are informal self-constructions by their owners while mixed houses are planned houses which have been self-modified over time without formal planning regulation or permissions. Figure 5.13 shows this distinction of housing types. We notice how there are informal constructions in the Planned Area, formal constructions in the Unplanned Area and constructions with both characteristics in the Mixed Area. This is due to the fact that residents who, despite having built at an area previously reserved for residences, did not follow the constructive standards of the model houses that were foreseen for the neighbourhood. Some have constructed annex buildings which contradict the building regulations because of poor inspection by the authorities.

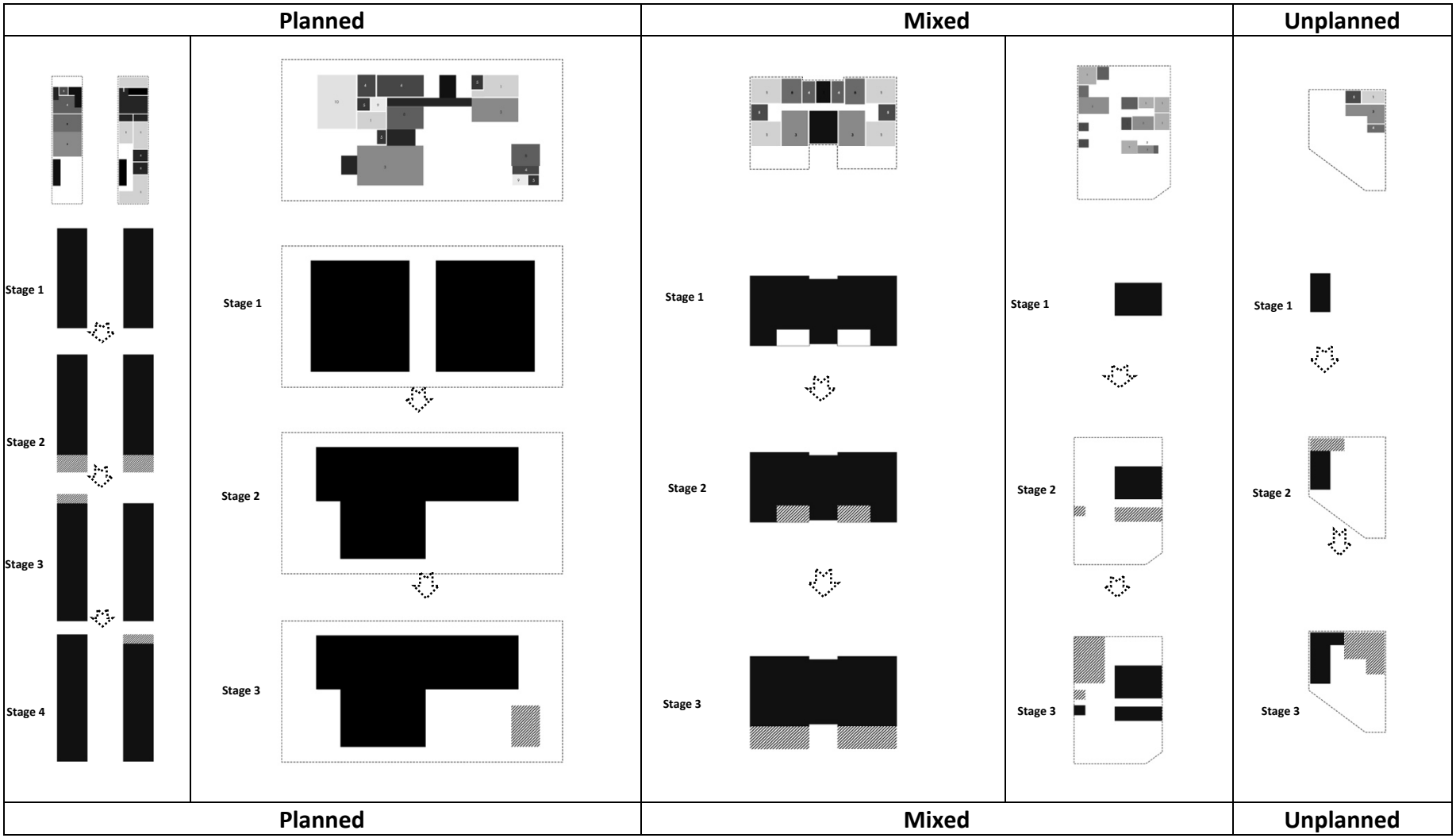
Figure 5.15 Distribution of planned, unplanned and mixed housing in the study area

Figure 5.16 Views of unplanned, mixed and planned areas of Cassenda (Author's own)

5.6 Chapter Conclusion

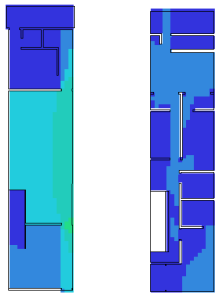
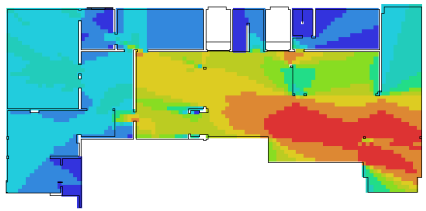
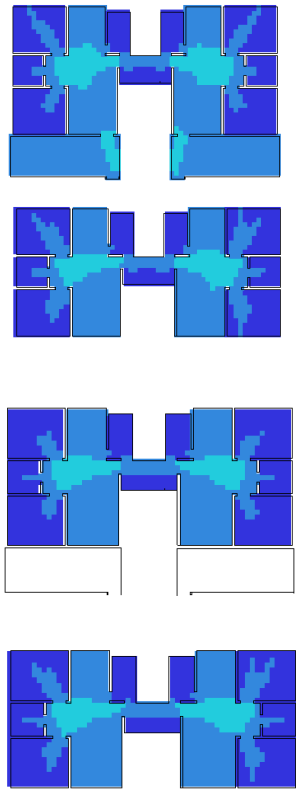
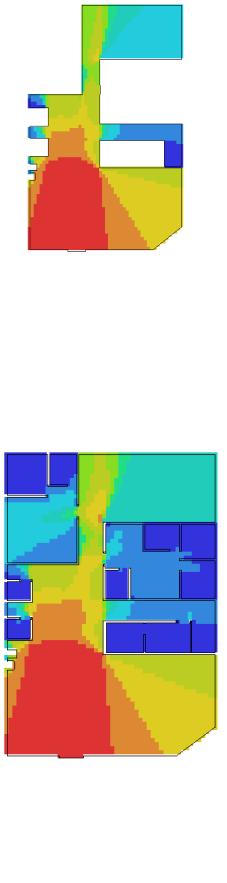
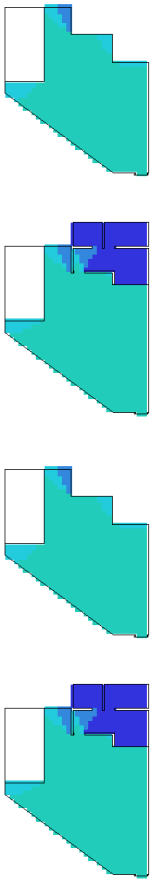
This chapter has presented results concerning the physical characteristics of houses in the planned, mixed and unplanned zones of Cassenda neighbourhood in the inner core of Luanda. The chapter speaks to the variations in the morphology at the house and neighbourhood level to the effect that unplanned and mixed areas are relatively more permeable in terms of block structure and layout. Nonetheless, land use patterns and distribution of facilities expectedly manifest deficiencies in unplanned areas. However, incremental informal modification of houses persists in all neighbourhoods, surprisingly dominant in the planned areas. This is better expressed in the space syntax analyses, which illustrates how such informal modifications affect visual, angular and connectivity features in the physical character of surveyed houses. The next chapter shifts focus from the housing and indoor environment to the outdoor environment within a peripheral neighbourhood from the aspect of informal green spaces.

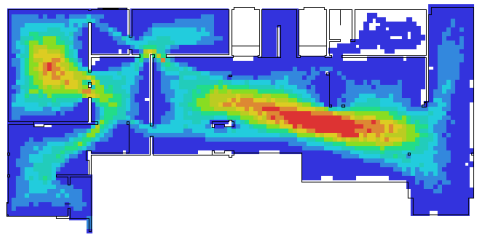
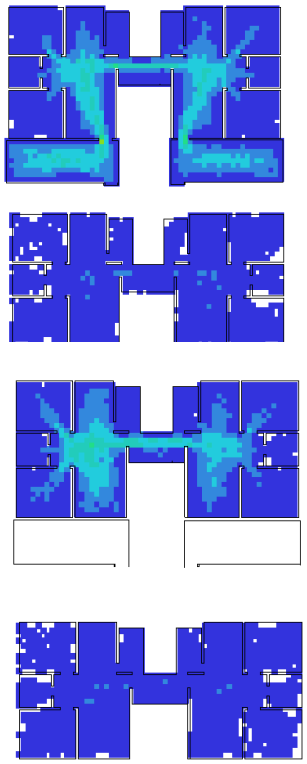
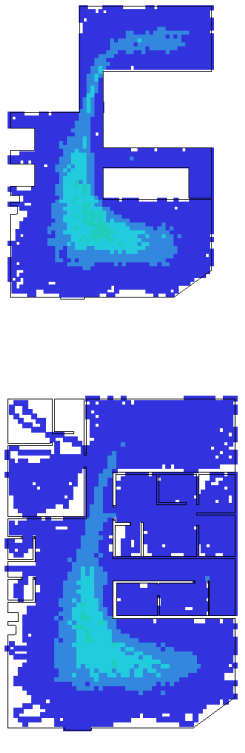
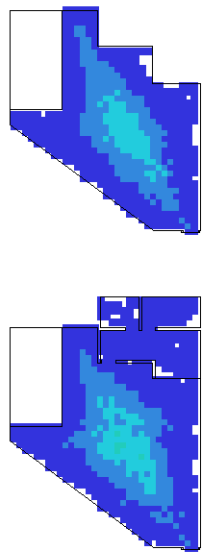
Figure 5.17: Typical layout of selected houses in the three areas of Cassenda


Planned
Mixed
Unplanned
Stage 1
Stage 2
Stage 3
Stage 4
Stage 1
Stage 2
Stage 3
Stage 1
Stage 2
Stage 3
Stage 1
Stage 2
Stage 3
Stage 1
Stage 2
Stage 3
Planned
Mixed
Unplanned

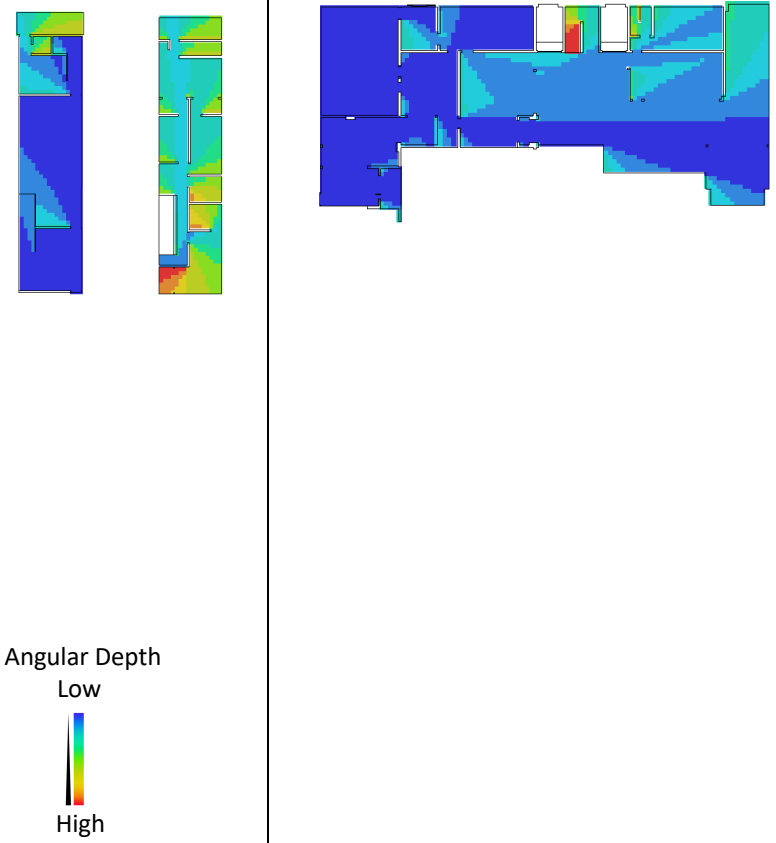
The unplanned houses observed in the study area are fluid: constant modification of their original architectural characteristics. These include vertical extensions by adding rooms. Sometimes houses are demolished to be completely removed over time depending on the owner's income (left). Motivation for addition of houses is to generate additional income through commercial building functions such as small shops, bakeries, cafeteria for rental purposes. Right: two lots were unified to build a bigger house and accommodate extra leisure space outdoors.	In the mixed study modifications were made in both the planned and unplanned houses. Left: The 4-storeyed building had the ground floor expanded by the adding of annexes for private use as for commercial use. All the other floors had the verandas eliminated in order to expand the living room and the laundry space transformed in an extension of the kitchen.	Unplanned houses typically expand as the financial conditions of the owner improves with the addition of annexes for rental or to create space for members of the family who enter adulthood.

Figure 5.18 Incremental process of house modification or adjustments

Space Syntax: Connectivity				
Planned		**Mixed**		**Unplanned**
				
Results of Space Syntax analysis indoors. Blue to red represents lower to higher connectivity between spaces being the entrances (smaller/bigger entrances/gates) where the higher level of connectivity is. It also showed that in the planned and unplanned houses a higher connectivity.				

Space Syntax: Gate counts			
Planned		**Mixed**	**Unplanned**
				

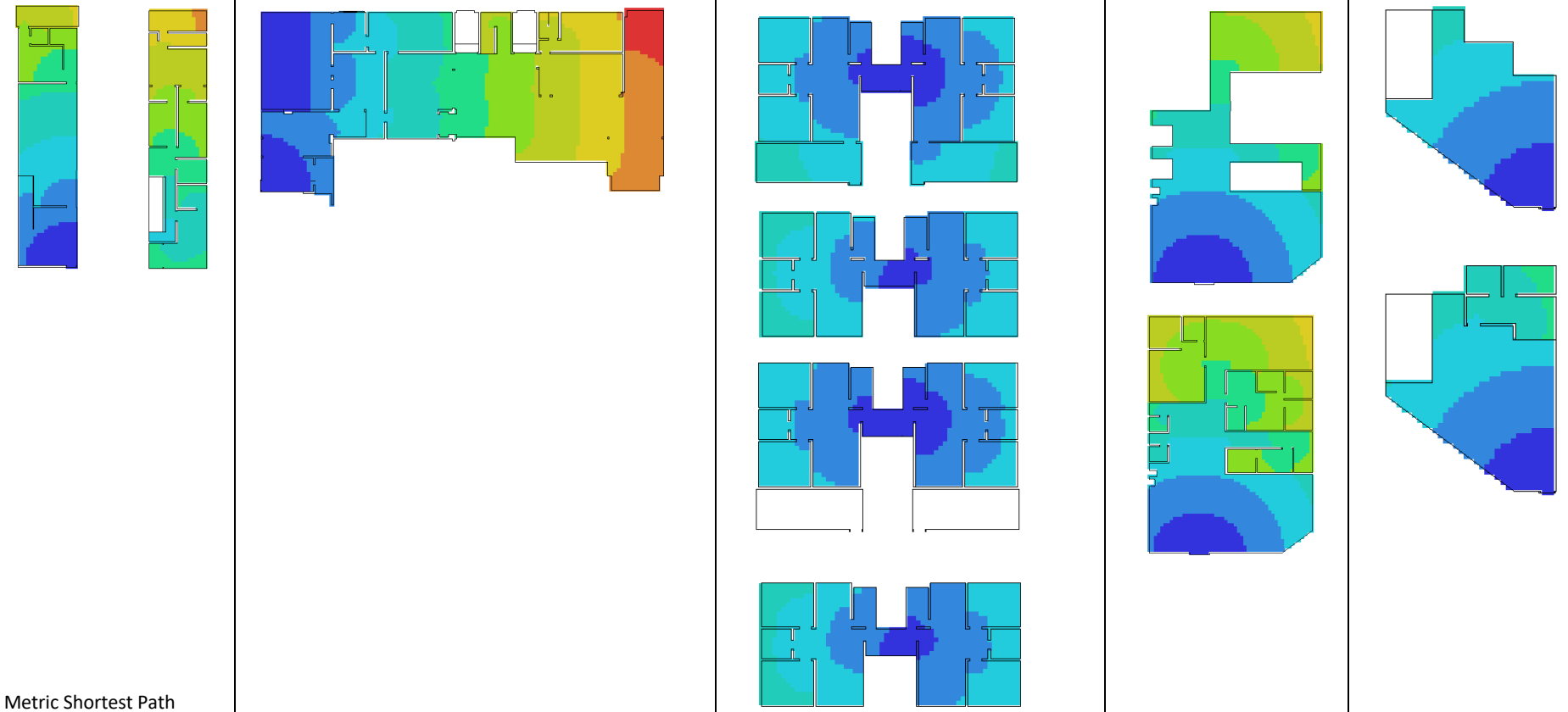
Results of Space Syntax analysis indoors - Blue to red represents lower to higher, dark blue indicate the shortest distance while red indicate the longest distance from the entrance gates. The one planned house has higher longest distance not surprisingly due to its unique dimensions and design different from the other measured and observed houses

Space Syntax: Angular Depth		
Planned	**Mixed**	**Unplanned**
		

Results of Space Syntax analysis indoors. Blue to red represents lower to higher connectivity between spaces. In the three areas were found typologies with a higher angular depth. At least in one room of the house being more noticeable in the two floors house located in the Planned area.

Space Syntax: Metric Shortest Path Length

Planned	Mixed	Unplanned



Metric shortest path length was noticeably higher in the unplanned and planned houses, presenting the shortest path length between spaces.
Results of Space Syntax analysis indoors. As referred before, blue to red represents lower to higher shortest path length between spaces.
The images above represent the global analysis showing the shortest paths from each area of the dwelling, through the visibility graph, to all other areas. In the majority of the analysed houses, namely Mixed and Unplanned housing, visual integration presents a radial pattern with the center in the entrance hall or alongside the distribution corridors which corresponds to the high values of visual integration. In the case of the Planned housing, which corresponds to a lower value of visual integration where the core is located in the center of the dwelling. In this case, which break the radial pattern, the integration pattern presents a higher asymmetry between the rear wing of the dwelling and the front wing in one case and right wing compared to left wing in the other case. Despite the difference in the pattern of integration of the different types of dwelling, the service zones are commonly the most segregated spaces of the system.

Figure 5.19: Visual, Angular and connectivity analysis

Figure 5.20 Observed use of Open Spaces in the study area

PART III
URBAN PERIPHERAL INFORMAL GREEN SPACE: ADULTS AND CHILDRENS PERCEPTION OF BENEFITS AND CHALLENGES

CHAPTER 6
INFORMAL GREEN SPACE IN PERIPHERAL LUANDA

6.1 Introduction

This chapter presents the results of the analysis of children and adults use, benefits and challenges in accessing informal green spaces in peripheral areas of Luanda. This chapter also physically maps the location and the varieties of informal green spaces in the Funda commune of Cacuaco municipality on the fringes of the Luanda provincial urban region. Additionally, this chapter discussions implications of the results and proffers some hints for integration informal green spaces through a wider and coordinated mechanism of urban and regional planning in the metropolitan area.

6.2 Brief Overview of Funda

Funda, a peri-urban settlement in the province of Luanda. The core area of Luanda has lost most of green spaces and Funda is considered the major remaining green belt—although the green areas are mostly informal green spaces (Luanda Urban Planning and Management Institute, 2015). Although the current Luanda Master plan underscores the importance of the Funda area, there is no information about potential and significance of informal green spaces to improving access to green spaces in low-income areas.

Funda is about 18 km North of Luanda city center. There are industrial, agricultural and piscatory activities in this part of the province. Many people from provinces such as Huambo, Benguela, Kwanza-Norte settled at Funda due to its favorable and large area for agriculture. During the years of the Angola civil war beginning in 1975, the population increased significantly and it became one of the largest settlements in the municipality of Cacuaco. Available statistics show that Funda has 209,387 inhabitants (National Statistical Institute of Angola, 2014). This settlement receives limited municipal services. The Luanda province provides water through communal standpipes only in some few areas. There are no sewer and drainage systems. Due to its undulating terrain, when it rains, the majority of the water and detritus flow into the Bengo River located in the lower part of the settlement.

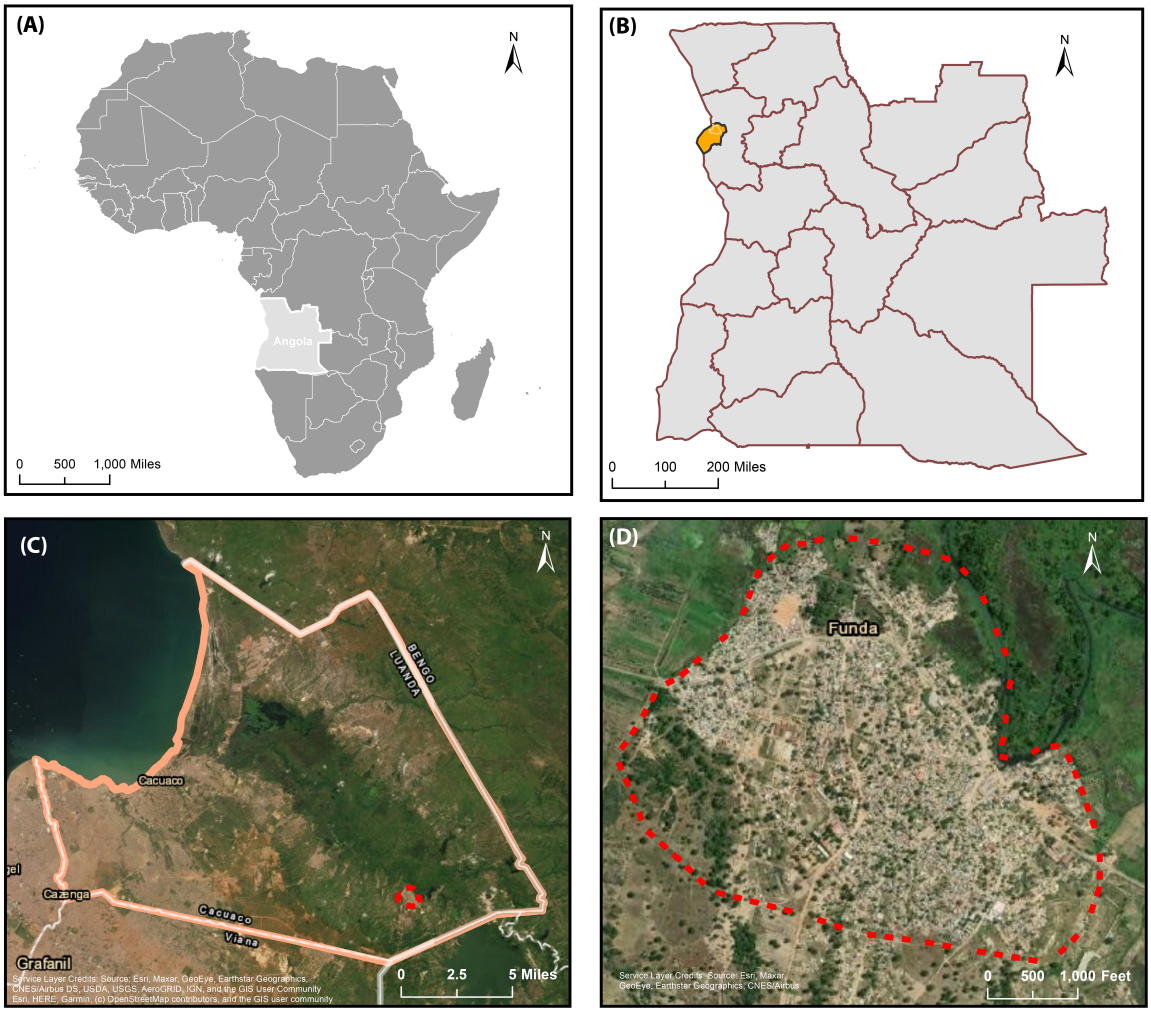


Figure 6.1 Study area in national and regional geographical context a) Africa showing Angola b) Angola map showing Luanda c) Cacuaco municipality in Luanda and d) Funda Commune (study area)

6.3 Types and distribution of IGS in Funda

The results show that there are diverse IGS in Funda. The main types of IGS in the community include street verges, waterside, open camps, brownfields, semi-community gardens, lots and gaps (Table 2). These IGS are dispersed and spatially distributed across the landscape of Funda. In all, nine different types of IGS were identified in Funda. Open camps are spatially distributed across the communities while the waterside—the largest IGS—is located at the north-eastern section of Funda (Figure 6.2).

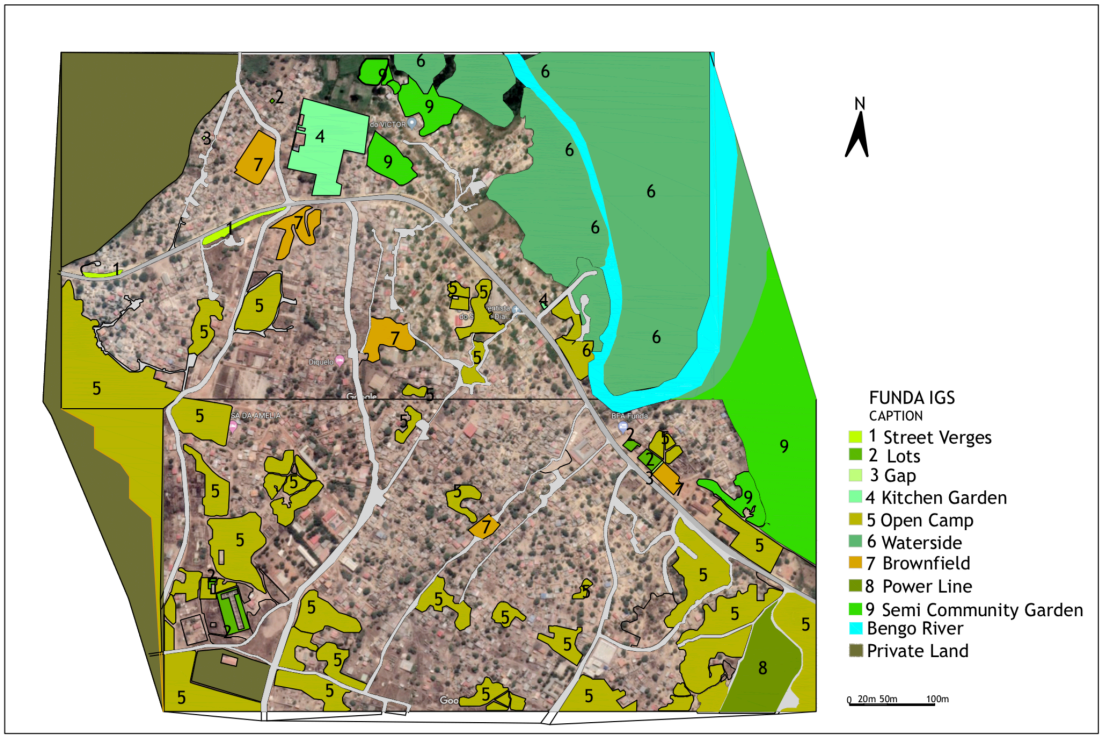


Figure 6.2a Distribution of IGS in the Funda

6.4 Adult residents' perceptions and use of informal green spaces

6.4.1 Adults Use of and benefit from informal green spaces

The use of IGS forms an intricate part of the daily lives of the residents of Funda. Given that the community is a low-income peri-urban area, located around the so-called Luanda 'green belt' where agricultural cultivation is a mainstay, there is a strong connection between community residents and IGS. The waterside, for example, is used frequently by residents as a source of water, a place to socialize with other community members, subsistence fishing, and other leisure activities (Figure 6.3). Children were also observed playing in brownfield sites or lots where sufficient space afforded collective games such as football. However, tree rings and street verges provided shaded spaces where adults usually undertook street vending, relaxation and socialization. Respondents recounted:

> 'I go to the waterside on a daily basis. It is my favorite place to relax, meet other people. I also go there to access water and do laundry'. It's a nice place because there is green, cool winds and shade' (*Community respondent 4, female*)
>
> 'My kids also play around the lots and open camps. There are grass and trees which the children enjoy playing with. We do not have children parks and

playing grounds, so this is useful for our kids to have outdoor activities' (*Community respondent 8, mother*)

Figure 6.2a Types and distribution of informal green spaces

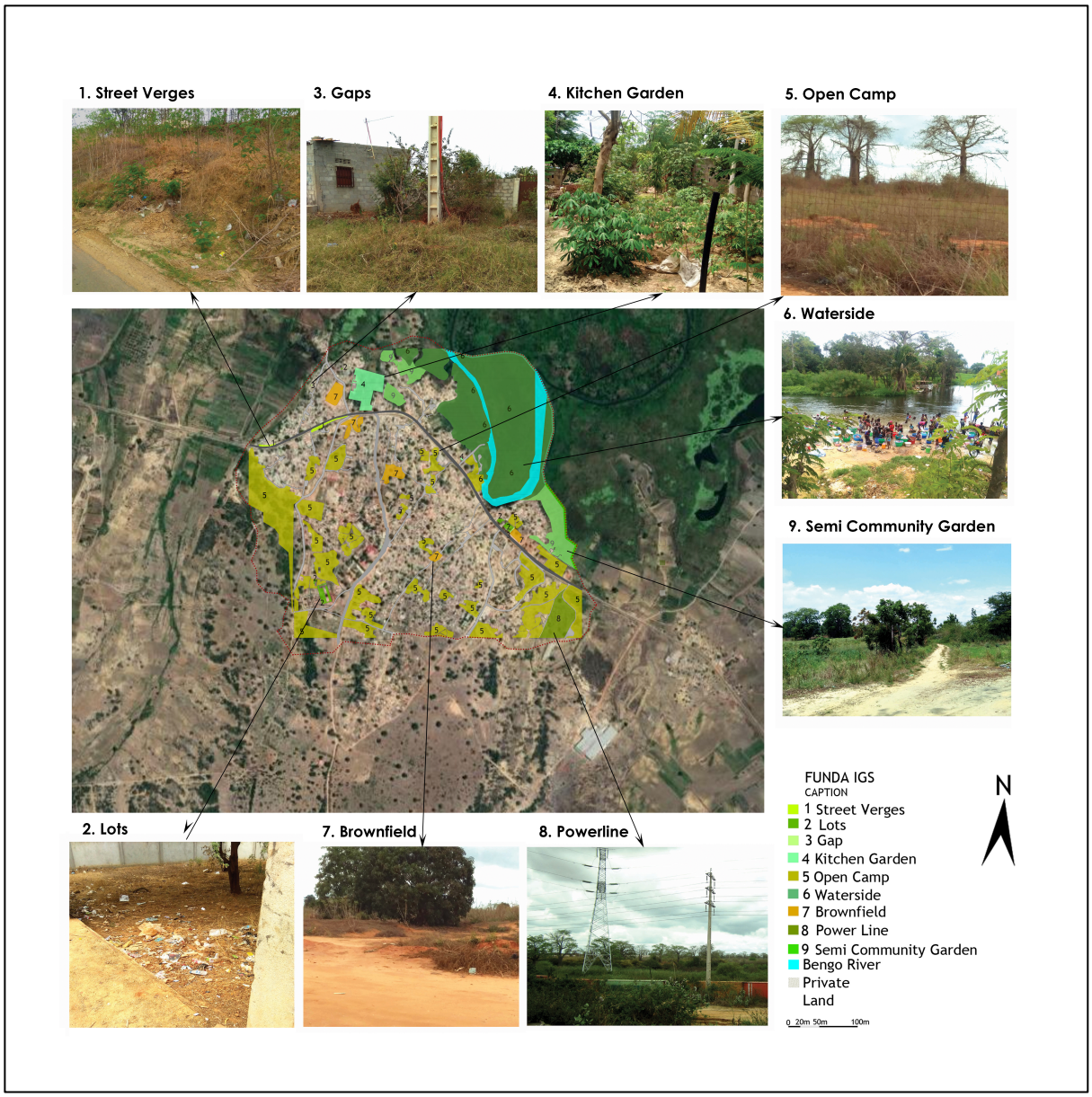


Figure 6.2b Images of Informal green spaces in Funda

The study reveals two main reasons for residents' dominant use of IGS in Funda: (i) the lack of properly planned UGS for residents (including children) and (ii) the neglect of IGS as a potential green resource in the planning and development of Funda community. In spite of this, the use of IGS has generated several benefits for residents in the community (Table 6.1).

Figure 6.3: Children's use of informal green spaces (a) Children playing in an Open Camp (b) Residents doing laundry, fetching water, and enjoying the Waterside

Type of IGS	Residents use of IGS	Service/Benefits
1. Street Verges	Used as a form of shading or canopy for informal economic activities such as food vending	Regulatory (temperature control for climate comfort during hot days)
2. Lots	Children use lots as a playground (e.g., soccer)	Socio-cultural (leisure and relaxation)
3. Gap	Gaps are used as playground (depending on width) by children and also as passage to surrounding areas and buildings by most residents	Socio-cultural (accessibility and recreation)
4. Kitchen Garden	Mostly used as an orchard or for planting herbs and vegetables as a source of food, medicinal plants or as an orchard. Some farmers used them for teaching children about farming	Provisioning (source of food and medicine)
5. Open Camp	Used as multi-purpose space: 'rent-free' spaces for commerce; playground for children; grounds for community meetings and cultural activities (e.g., funeral, weddings, etc); food vending; leisure; and study area; to prevent water run-off	Socio-cultural (religious activities/cultural rites), provisioning, supporting (water retention)
6. Waterside	Used as source of water, laundry, picnic, fishing, shaded space relaxation, and blind spots for drug peddling at night	Provisioning, socio-cultural and regulatory (tree canopies for micro-climate comfort)

7.	Brownfield	Used as a soccer playground for children; commercial space for informal economic activities, grounds for physical exercise, place for hangouts and leisure.	Provisioning and socio-cultural (recreation)
8.	Semi-community garden	Used for planting fruits, vegetables, and medicinal plants; an area for drying clothes in the sun, hang out to enjoy the pleasant views of the nearby natural environment	Provisioning, socio-cultural, and regulatory

Table 6.1: Use and benefit of informal green space (Source: Field Survey)

Residents indicated that IGS was an important source of fruits and vegetables. Children obtained mangoes from mango trees along the street verges or the semi-community gardens. The semi-community gardens in particular, provided ready access to vegetables to community residents—and sometimes jobs to residents since '*IGS support entire families through subsistence farming and sale of vegetables to community residents...*(*Community respondent 7, local farmer, female*)' and '*are literally…[the] workplace…*' for some residents *(Community respondent 17, female)*. Additionally, residents pointed to medicinal value of leaves that were found in kitchen gardens, community gardens and street verges. Twenty residents out of the 23 interviewed alluded to regulating services from trees, grass and street verges. For them, shading was a major microclimate benefit, controlling high temperatures during the day while grass and tree rings helped to reduce flood damage and drainage problems during the rainy season. These assertions were corroborated by local opinion leaders and institutional respondents at the municipality office.

> At specific seasons, the children pluck mangoes from the mango trees and eat together while they play. We adults also get vegetables like spinach and tomatoes from the gardens scattered around here. It is a major source of food. Of course, I should mention that most of the residents here boil the leaves of the trees as medicinal drinks to treat fevers and the like (*Interview with opinion leader in Funda*).

> Well, I know that peri-urban communities like Funda depend a lot on the spontaneous vegetation located where they live. They rely on them as a source of food and medicine. Often, these lots also are social spaces for gathering or other cultural events (*Interview with Municipality Official*)

6.4.2 Adult Residents' management of informal green spaces

Interviews with residents, community leaders, and staff of public agencies showed that there is no community-wide system for the stewardship and management of IGS. Rather, local churches were the main actors in the management of IGS. The Funda Seventh-Day Adventist church, in particular, were noted to organise clean up exercises on Sundays where their members cleared vegetation, tendered plants, and removed garbage from lots. Community-wide maintenance and stewardship was sporadic, occurring when the local administration entreats resident association to organise management activities. At times, individuals take lead roles in the maintenance and management of IGS in Funda. Typically, some young residents were devoted to creating awareness of the need for maintenance, planned activities and supported neighbors in managing IGS. During the interviews, a young undergraduate student, who considers himself an environmental activist, recounted:

> 'On Saturdays I help neighbors with their kitchen gardens or clean up the lots or open camps. I do this because my father taught me how important it is to have a green environment; honestly, I love it, but I cannot do it alone. It is very difficult when people have no environmental awareness of IGS, even though they are benefitting from it. Convincing them that it is worth taking care of the IGS is a headache.' (*Community respondent 10, male*)

Clearly, community level management is spontaneous, amidst a seeming lack of residents' awareness of the need to effectively manage IGS in Funda. In this vein, two divergent perspectives were brought to the fore: (i) residents perceived those authorities at Funda municipality should take responsibility for management of IGS, and (ii) staff at Funda municipality considered IGS as spontaneous and informal, and thus its maintenance lie in the hands of community members who were benefiting from its use.

Residents expressed willingness to support IGS management (21 out 23). However, few (4 out 23) were willing to contribute financially to support maintenance of IGS. The apparent lack of financial commitment was due to residents' socio-economic conditions such as lack of employment and low-paying jobs. Regardless of how one looks at it, residents' deposition demonstrates that their awareness and socio-

economic disadvantages constrain effective IGS management despite their benefits. This sentiment is evident from one community leader:

> 'I know that IGS is very critical to our survival in this community and we need to take care of it to enjoy its long-term benefit. I think most community members think so as well. But there is no management system in place. Each one must do it [maintenance] around their residence. We only do it [maintenance] when some churches or the municipality requests it. Maybe it is awareness. But remember most people here are low-income. They are most concerned about daily necessities and survival' (interview with community leader)

6.4.3 Adult reports of factors constraining IGS in Funda

The study found that in spite of residents' dependence on the benefits of IGS in Funda, some factors constrain or limit the actualization of their full potential (Figure 6.4). The absence of community level management of IGS such as the waterside, open camps, and semi-community gardens has made some of these spaces become abodes for dangerous and/or wild animals (e.g., snakes, crocodiles, etc.) that pose significant human threat and restricted use. This exposes users to sudden snake bite, especially to children. In addition, '*there are some poisonous plants in IGS as well, that can be dangerous if the user comes into contact with them or confuses them with edible plants/fruits' (Community respondent 7, female).* Relatedly, some IGS were hang outs for criminals such as illegal drug dealers, gangs, and robbers. Criminal squatting in certain IGS at specific periods meant that there was a restriction in access to these spaces. These challenges are aggravated by the lack of proper lighting at night and the poor maintenance of IGS. These issues are confirmed by two responses who note that:

> 'IGS is for everyone but nobody takes responsibility for it. The administration does not recognize it and the community does not maintain it together. The riverside is very dangerous because of the crocodiles. There is no effort to manage it well to prevent harm. The open camps and semi-vegetable gardens are common with snake bites. Very dangerous for children. Sometimes I wonder, would our IGS be managed very well if they were considered the same as the parks and gardens in the city center?' (*Student environmental activist, Male*).

> 'Look, there's no streetlight here. How can we enjoy this camp at night? These young drug dealers seize the spaces and terrify [harass] people whenever they are there. Everybody is scared when they come around these spaces and so we all back off. No security (*Community respondent 22, local farmer, male*).

Another limitation concerns the intersections of sanitation infrastructure and resident's behavior. Interviews with staff at the municipal office revealed that indiscriminate refuse dumping or littering was a major setback in Funda. Residents had a penchant for dumping household waste in lots, open camps and street verges (Figure 6.4). This was echoed by opinion leaders who reported that poor stewardship, such as garbage dumping, impairs the environmental quality of IGS and reduces their appeal to residents.

> 'Some of these spaces (IGS) are being used as garbage sites. Unfortunately, germs and all sort of microbes can come from there, and they become a risk for public health around the areas they are located (*Municipality staff, male*)'

> 'When there are no proper sanitation facilities and people have no attitude for environmental sanitation, these behaviours are common. If someone cares about the things which provide us so much benefit, these problems (indiscriminate garbage disposal) won't happen because people will invest in maintenance and it won't become a dump site for sure' (*Opinion leader, retired civil servant, male*)

Taken together, the challenges narrated above inadvertently created limited accessibility to IGS, especially for residents with special needs such as the elderly and the physically handicapped. For example, all respondents aged over 60 years reported that even though the riverside was a scenic place with aesthetic views for relaxation and socializing, they rarely used them because of poor mobility to these spaces, thefts, harassment and other criminal activities, and frequent attacks by wild animals.

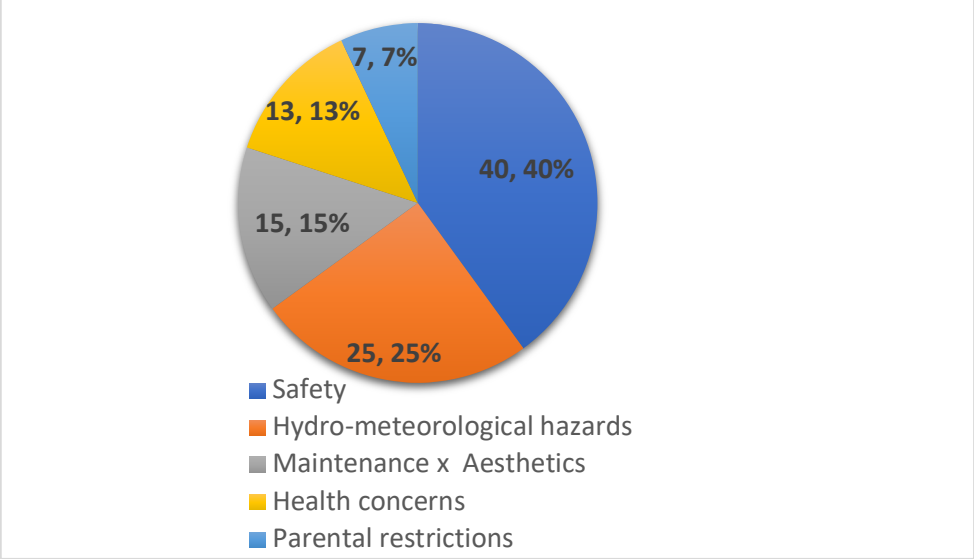


Figure 6.4a Adults reported barriers in accessing IGS

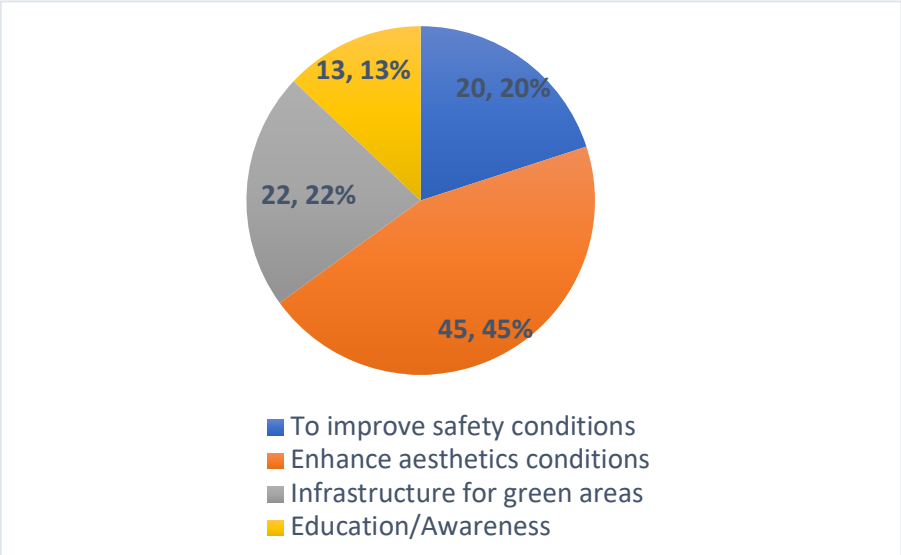


Figure 6.4b: Adults suggestions for improving IGS

Figure 6.5 Open spaces used as garbage dump sites

6.4.4 Reflections and discussion on adults experiences with informal green spaces

Funda has a rich diversity of IGS. The various types identified are defined by characteristics such as location, spontaneity, recognition, use and to some extent vegetation. Their spatial distribution seemingly suggests a high degree of informality

as most of the IGS identified are better described as spontaneous growth that often lacks recognition. This aligns with the classification and description found in earlier works on IGS (Rupprecht & Bryne, 2014a, 2014b). Residents of Funda do not conceive IGS simply as empty urban space, and akin to Corbin (2003) findings, residents view IGS as vital functional spaces that provide benefits to them. Such thinking resonates with global south theories that draws attention to the role of informal spaces in urban areas (Roy, 2005; Bolay, 2020). Indeed, Rupprecht et al. (2015) draw attention to the nexus between IGS and informality and how it is important that urban planning takes cognizance of these spaces in the planning and management of urban landscapes.

Informal green spaces provide different ecosystem services ranging from provisioning, regulatory, socio-cultural and supporting ecosystem services (Adegun, 2017). In Funda, IGS provide essential needs such as regulating micro-climate (e.g., temperature) through shading and drainage problems through water retention as well as socio-cultural benefits such as recreation and socializing spaces (Table 4). Compared with studies that suggest IGS as anomalies in urban spaces (Jorgensen & Tylecote, 2007), IGS was rather the norm in Funda as formal UGS such as community parks were non-existing. Its uses were similar to those reported in the literature (Campo, 2013, Unt, Travlou, & Bell, 2013), especially in providing children with spaces to play and interact with nature (Platt, 2012). Undeniably, there is growing awareness of the importance of exposing children and youth to nature (Cheng & Monroe 2012), as this is important for building their environmental experiences and consciousness as well as developing capacities for social interactions (Lekies & Beery, 2013).

In Funda, IGS provide conservation services and support food production akin to studies elsewhere (Dunn et al., 2006; McLain, Hurley, Emery, & Poe, 2014). Also, IGS not only provide residents with fresh fruits and vegetables but are the workplaces for those who engage in their production. Indeed, in low-income peri-urban and informal communities, IGS provides immense benefits to support residents everyday life in the absence of formal UGS and serve as important natural capital for addressing resident's needs (Kaoma & Shackleton 2014; Adegun 2019).

In Funda, both residents and municipal planners recognize the benefits of IGS unlike other places (Pincetl & Gearin, 2005, Platt, 2012). Despite all these benefits, there is little effort towards the active management of these spaces as IGS in Funda lacks proper planning attention from municipal authorities. Indeed, authorities from the urban management authority acknowledged resident's dependence on IGS but emphasized attention to other priorities in the current master plan on urban redevelopment projects as part of 'planned future expansion' for real estate investment. This is not different from urban planning in other Africa cities, which pay little attention to IGS in peri-urban areas in spite of the vast expanse of their distribution, diversity, and relevance (Adegun, 2017; Shackleton et al., 2018). Evidently, the inherent manifestation of IGS as uncontrolled and unsafe spaces (Madge, 1997) and the negative view by planners as vacant urban spaces (Corbin, 2003) needing redevelopment require a critical rethinking.

Additionally, the management of IGS in Funda is undertaken by local churches and individual environmental activists. There is at present no community-wide management system or a collective system of maintenance. This is underpinned by lack of formal recognition and behavioral attitudes by urban planners and residents, respectively. According to Rupprecht et al (2015), this signals a lack of care by its users and beneficiaries, and in this study, a lack of capacity by residents due to their socio-economic circumstances.

The challenges which constrain the use of IGS could be thematically organized around three main issues: ecosystem disservices, management, accessibility, and criminality. Indeed, the IGS literature points to poor management, history of fear due to criminality, and deficits in green supporting infrastructure as impediments to residents' access to the full benefits of IGS, especially in low-income communities (Adegun, 2017; Kim, Rupprecht & Furuya, 2018). Thus, while residents appreciate the benefits of IGS, their preference and use are influenced by its safety and services. Rupprecht & Byrne (2014a; 2014b) make a similar observation and draw attention to how risks affect the quality of IGS.

Subsequently, parents would be cautious about allowing their children to play in and near IGS because of the risk and safety issues associated with them. These perceived risks can become the basis for parents limiting their children's engagement with IGS, which can deprive them of the mental, recreational, and social interaction services that these spaces provide (Ward Thompson 2012). In order to enhance access to the full benefits of IGS and thus promote sustainable development in peri-urban areas of Luanda, planning need to be cognizant of the unique dynamics of IGS in places like Funda to reflect how residents' use IGS to provide ecological services that urban planners have failed to provide. Wolch et al. (2014) therefore call for a re-evaluation of the mechanisms and goals for providing ecosystem services beyond parks as well as transcending existing planning tools— such as supplanting IGS with formal UGS (Campo, 2013) and its associated risks of eco-gentrification (Wolch, Byrne, & Newell, 2014). This is because such planning tools may not be effective in harnessing the potentials of IGS in providing UGS benefits to residents of low-income communities (Qviström, 2012). There is therefore a need for an inclusive approach to UGS planning that mainstreams the needs and preferences of residents, barriers to using these spaces as well as the integration of residents' collective action potentials into the planning of IGS as UGS for low-income communities (Rupprecht et al., 2015; Cilliers & Timmermans, 2015; Adjei Mensah et al., 2017). For this reason, there is a need to look beyond the natural value of these spaces (Mathey et al., 2018) to make the benefits of IGS tangible and real to those who use them.

6.5 Children's' experiences with and use of informal green spaces

This section of this chapter focuses on children's everyday experiences with IGS in Funda commune of Luanda. Like the above results about adult residents, the analysis of children's experiences employed urban ethnographic methods such as participation observation, focused group discussions and a community workshop organized with school children. Table 6.2 below depicts the background of children engaged in the field exercise.

Interviewees' demographic information				
Code	**Gender**	**Age**	**Province of origin**	**Year of school**
Child1	M	9 years old	Luanda	4
Child2	F	10 years old	Luanda	4
Child3	F	9 years old	Luanda	3
Child4	F	9 years old	Moxico	4
Child 5	F	6 years old	Luanda	1
Child 6	M	8 years old	Luanda	NA
Child7	M	7 years old	Luanda	2
Child8	M	10 years old	Huambo	5
Child9	M	6 years old	Luanda	1
Child10	F	10 years old	Luanda	5
Child11	M	6 years old	Luanda	1
Child12	M	11 years old	Luanda	6
Child13	F	10 years old	Luanda	5
Child14	M	7 years old	Benguela	2
Child5	M	7 years old	Luanda	2
Child16	F	6 years old	Luanda	1
Child17	M	10 years old	Benguela	5
Child18	M	10 years old	Luanda	5
Child19	M	12 years old	Luanda	6
Child20	M	11 years old	Luanda	6
Child21	F	7 years old	Luanda	2
Child22	F	11 years old	Luanda	5
Child23	F	6 years old	Luanda	1

Table 6.2 Profile of children interviewees (NA: Child was not formally enrolled in school)

6.5.1 Children's' views on perceived benefits of informal green spaces

In order to understand children's use and perceived benefits from IGS, children in Funda commune were initially asked to identify the location and type of IGS that they utilized. As shown in Figure 2, children use various kinds of IGS, which are widely distributed across the commune—including street verges, riverside, kitchen gardens, lots, open camps, and spontaneous vegetations. Children identified IGS as an important source of fruits such as mangoes which were derived from kitchen gardens or semi-spontaneous vegetation and served as sources of fresh air and water for domestic purposes (from the river). As one child puts it: *There are many uses of IGS here, for example, fruits such as mango, the vegetables we can get from the kitchen garden and pure air* (Child 4, Female, 9 years old).

IGS types such as open camps (or open space) and the brownfields served as playgrounds for children. For example, one child noted that *I use the wide-open space for playing football, me and my friends. We also have adventures under the Baobab trees* (Child 8, male, 10 years old). Such spaces provide children the opportunities to meet and interact with each other beyond the natural benefits that IGS offers. Indeed, *even though IGS are not so tidy*, *they still can be used as recreational spaces* as it offers the opportunity and spaces for children to *meet and play* (Child 9, female, 7 years old). Children's use of IGS in the commune is particularly influenced by the lack of 'formal' parks—17 out of 23 children confirmed this. The main publicly planned park in the community had been closed due to long years of neglect by the municipality. As a result, it was in a deplorable state and colonized by wild vegetation. Overall, responses from the Children in Funda point to a number of benefits to residents.

Some children also indicated that IGS provided practical opportunities to better relate to lessons taught at school. According to one child, *anytime I visit these areas I see plants, birds and animals that I am taught in class. It makes the lessons real to me* (Child 20, male, 11 years old). Activities such as bird watching, observing trees and flowers blossom, and the general behavior of plants and animals provided educational benefits to children as well as drew their attention to their health benefits often affirming the lesson that *healthy and green environment help us live long* (Child 13, female, 10 years old). Children in Funda commune also indicated that IGS such as the river side and spontaneous vegetation provided a serene atmosphere and shading during hot days. Others claimed that some of the plants provided health benefits through their medicinal value—often learning this either from parents or teachers at school. One child noted:

> *I see that these areas* [IGS] *have plants that can cure diseases. My parents and teacher at school mentioned this. One time they* [parents] *boiled the leaves of plant* [from the lot] *to make a drink* [tea] *for one relative who had fever and he got better in a day or so. So, I think the herbs are good for medicine* (Child 19, male, 12 years old).

6.5.2 Barriers in Children's' access to informal green spaces

Despite the use and perceived benefits of IGS in the commune, children encountered barriers that inhibited their access, often due to the safety concerns associated with IGS (Figure 6.6). Specifically, children interviewed alluded to attacks by wild animals, such as crocodiles at the riverside. They also reported crimes like robbery at lots, open camps and spontaneous vegetation as well as recounted incidences where s*ome children also disappeared or were taken by bad people* (Child 7, male, 7 years old). The safety and security concerns were attributed to lack of streetlights at night and poor maintenance and management of IGS where overgrown bushes and abandoned green spaces tend to become hide outs for criminal and violent activities. Other hazardous conditions in IGS such as stones, thorns, pits, and occasional falling trees and branches posed threats to Children's use of IGS. One child remarked:

> *Using these areas* [IGS] *I think of exposure to wild animals. Also, the darkness after sunset, there are no streetlights, so it is dangerous even for adults to visit these places. How can I defend myself if I cannot see?* (Child 2, female, 10 years old).

In addition, flooding and parental restrictions were also cited by children as challenges that inhibited access to the potential benefits of IGS. For example, a nine-year child explained that his *dad says some bad people at the riverside may hurt me if I go there alone so I do not ever go there* (Child 1, male, 9 years old). Similarly, another child lamented the effects of parental restrictions saying *if there is no adult relative around, it means I just stay home* (Child 5, female, 9 years old). During the focus group sessions, participants highlighted how the lack of proper drainage systems leads to heavy inundation of the open camps and lots during the wet season. Here, flooding causes the children to *lose all access to the playgrounds and lots, this is the main problem* (Child 7, male 7 years old). Similarly, participants gave vivid accounts of how the IGS have been degraded by adults as *they* [adults] *throw anything around the open spaces. It looks like a landfill. Garbage everywhere, bad smell, we cannot even play there anymore* (Child 22, female, 11 years old). Open spaces and lots, for example, were observed during the field study to host garbage in ways that made IGS inappropriate spaces for children's outdoor activity. These have limited the benefits and use of these spaces by children despite strong desire to interact with these spaces. Table 6.5

summarizes the key barriers captured from responses that children gave during interviews.

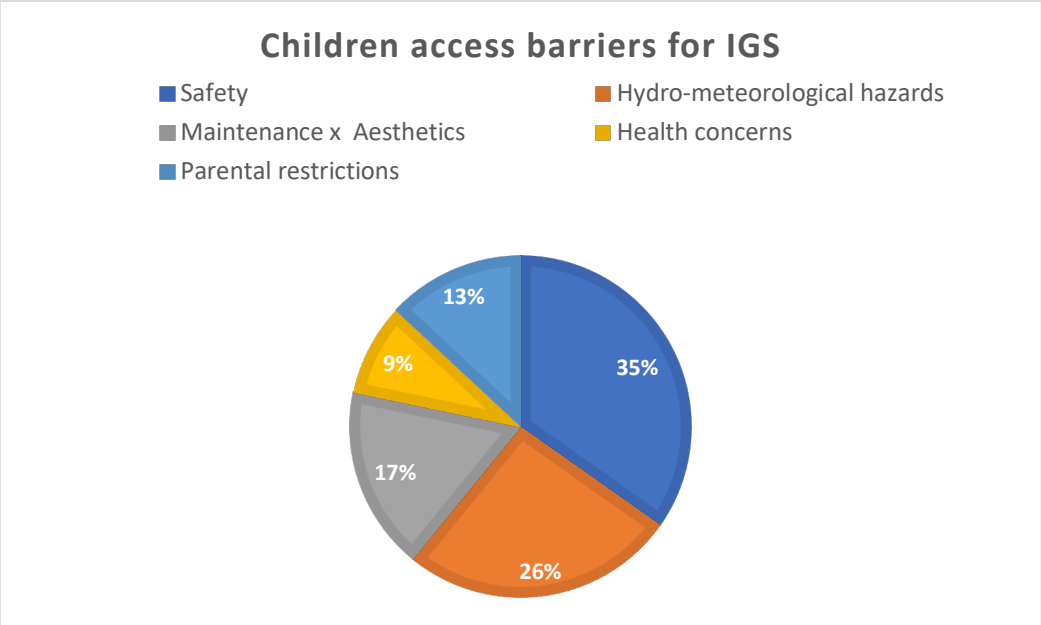


Figure 6.6 Children's reported barriers in accessing IGS

6.5.3 Children's' willingness to participate in informal green space maintenance

Given children's awareness of the environment within which they reside, the study inquired about their willingness to participate in activities to maintain or improve the existing conditions of IGS. Generally, the children interviewed showed a strong desire to be part of efforts or initiatives to take care of IGS. In fact, 18 of the 23 children responded in the affirmative that they would be willing to participate in caring for IGS. The reported high interest in IGS stewardship was informed by two reasons. First, children have learned of green stewardship from school lessons and hence consider themselves as stewards of the environment. As one child noted: *Yes, I would! Teacher says we need to be responsible for what we do to nature, and we must not harm the environment* (Child 2, female, 10 years old).

Second, children interviewed considered it fun to be part of efforts to take care of the environment. Nonetheless, their willingness to participate in caring for IGS was dependent on whether *parents would let me join* (Child 22, female, 11 years old) or whether their *parents, siblings or friends will also join in the efforts to maintain the space* [IGS] (Child 20, male, 11 years old).

6.5.4 Children's Suggestions for Improving IGS

This section captures children's suggestions for improving the existing condition of IGS in Funda commune. Gathered during the FGDs, several but interrelated views were shared which can be grouped under four main themes, namely improving safety conditions, enhancing aesthetics, providing supportive infrastructure, and increasing education and awareness on IGS (Table 6.6). As the following accounts and drawings illustrate (Figure 6.7; 6.8), children awareness and understanding of how to improve IGS have strong connections with planning and design.

> *Lights for the streets in general and in all the places we play specially to make it safe. Change the park* [abandoned park] *we have down there, that has nothing to play with or enjoy anymore. I think adults can take care of animal attacks at the riverside; my mother does not let me even approach the riverside, but I know it is a beautiful venue because I see it when we pass by* (Child 3, female, 9 years old).

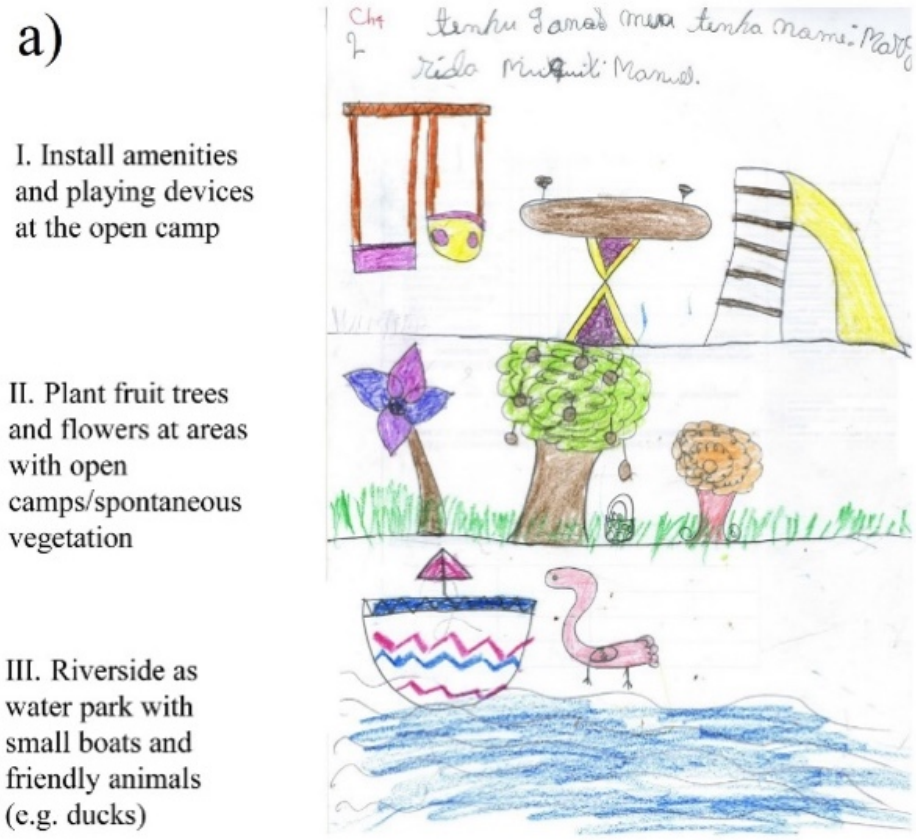


Figure 6.7a Children's drawing depicting their suggestions for improving IGS

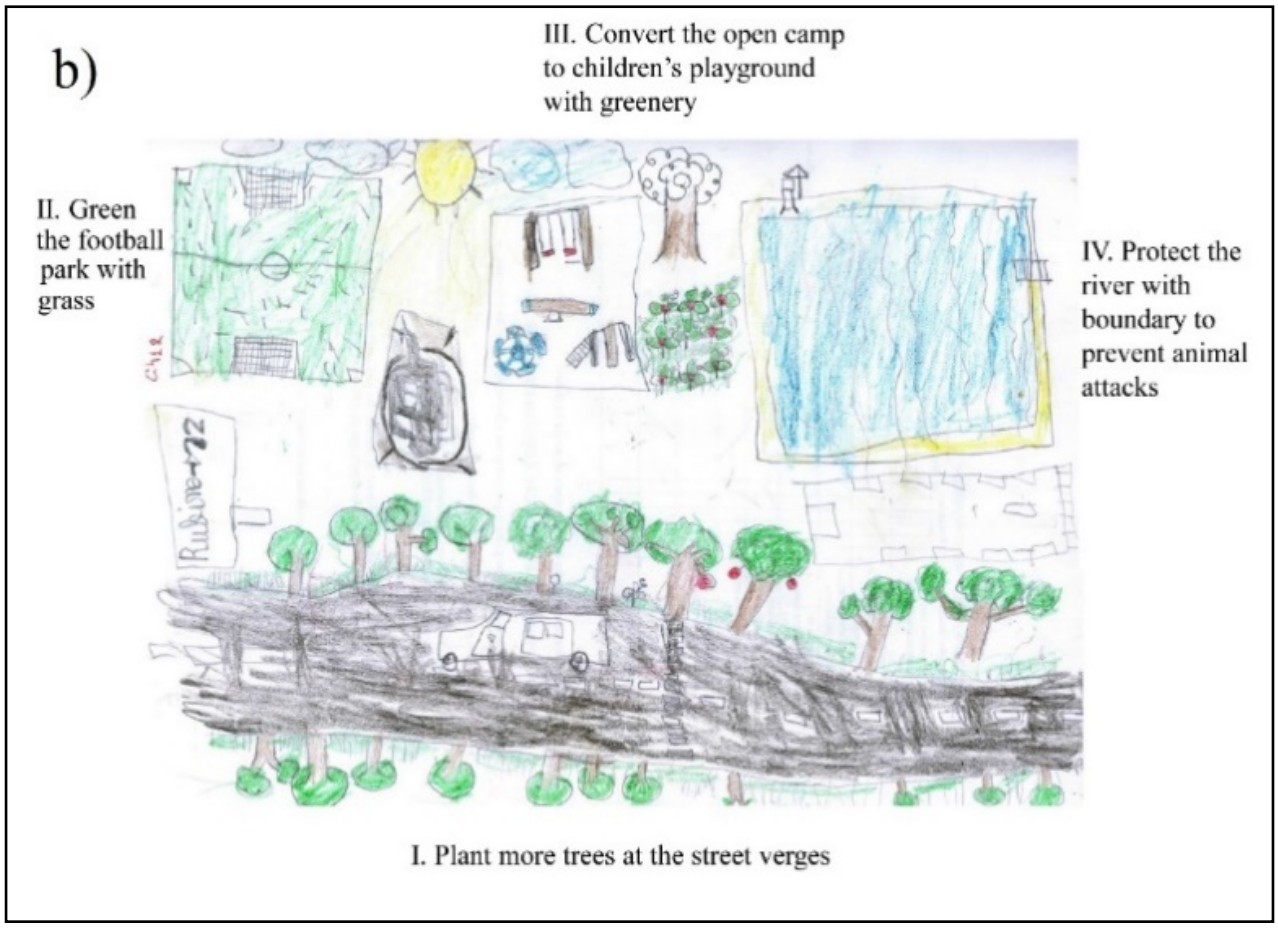


Figure 6.7b Children's drawing depicting their suggestions for improving IGS

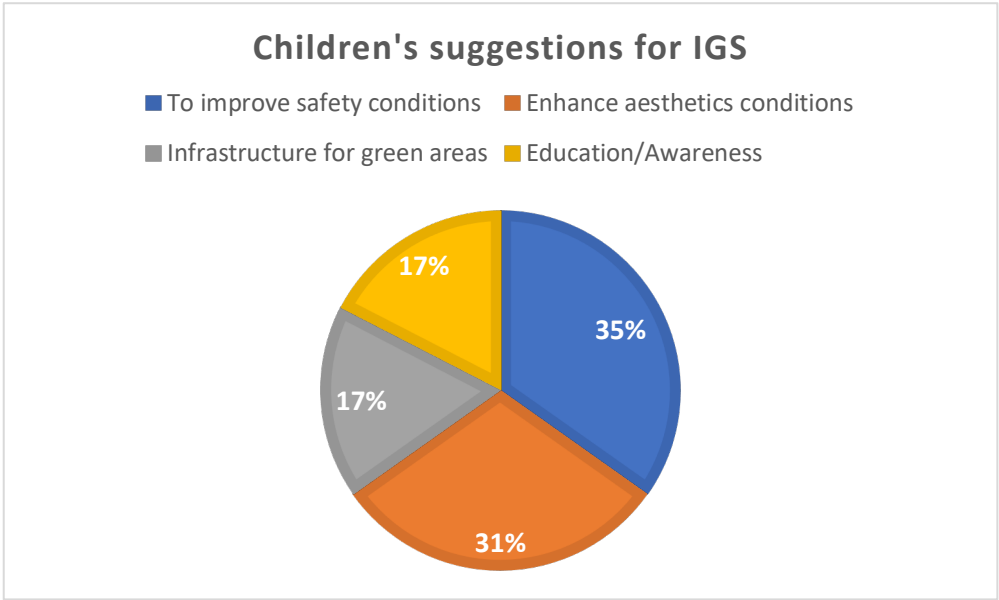


Figure 6.8 Children's suggestions for improving IGS

6.5.5 Reflections and discussion of children's experiences with IGS

The results of this section provide evidence of the perceived benefits and barriers of IGS use among children as well as how children interact with these spaces. It also provides insights into the potential contributions of children in planning and maintaining IGS in African cities, particularly in Funda Commune of metropolitan Luanda. Given that Africa's children population is the highest globally, the findings offer implications for engaging children in the local management and, specifically, improvement in the conditions of IGS in peri-urban areas of Angola and Africa generally.

First, the study found that Informal green spaces offered an alternative to FGS such as urban parks and served as places for sourcing fruits, recreation, and leisure activities (Tillman et al, 2018; Chawla 2015). Indeed, children's experiences with and use of IGS enhanced their knowledge of the role of the natural environment to their community and residents. For instance, children in the Funda commune were aware of the ecosystem services provided by IGS including their medicinal and dietary benefits, noting that IGS in their community provided fruits, vegetables and even 'pure air'. Similarly, results have been reported in IGS studies in urban settings of African (see Adegun, 2018; Lindermann-Matthies & Marty, 2013; Długoński & Dushkova, 2021; Kim, Rupprecht, Furuya 2018), European (Farahani & Maller, 2019; Rupprecht & Byrne, 2014), Asian (see Rupprecht, 2017; Del Tredici, 2010; Zylstra et al 2014; Sarkissian & Wenman, 2010), and Oceanian cities (see Brighenti & Mattiucci, 2012; Rigolon et al ,2018; Santhia, Shacleton, Pereira 2018; Kita et al, 2020) where children were aware of IGS benefits. Again, children reported use of IGS as a place for observing, and enjoying nature as well as holding social events and picnics (Table 4) reveal children's attachment and desire to play in such spaces in the community. Such experiences and awareness of IGS often reflect children's agency and ability to develop competence and skills (Chong et al, 2013) necessary to support planning and management of green spaces in peri-urban areas of African cities. In view of the alarming rate of UGS decline and other planning and management challenges surrounding formal green spaces in African cities (Długoński & Dushkova, 2021).

IGS which are pervasive in Africa's urban landscape can potentially enhance the educational experiences of children, especially on nature and environment (Tillman et al, 2018).

Another aspect of IGS is its ability to engender play and physical activities among children. In Funda commune, children actively engaged their colleagues in these spaces for playful activities such as football. Informal green spaces thus serve as critical spaces for sociation. In the absence of formal green spaces, IGS fills the gap in increasing children's access to the potential benefits of green spaces (Li et al, 2015; Christensen et al, 2017). This shows that, in peri-urban Luanda, IGS can function as green spaces that children can interact with and allow them to have contact with nature (Okyere et al, 2017) as IGS are more natural than the tamed and manicured landscapes of formal green spaces (Rigolon et al, 2018).

However, children's reported use and perceived benefits of IGS in Funda has its limitations. Ecosystem disservices such as the wild animal attacks, thorns, and potential exposure to poisonous elements in the environment limits children's use of IGS. At the river side in particular, children alluded to the threat of attacks by crocodiles as one reason to avoid such areas. In addition, parental controls as a result of the negative perceptions—albeit often true—such as the risk of crime, garbage disposal in open camps, and degraded environments due to the use of such spaces as dumpsites causes parents to exert control and restrictions on their children's use of IGS. This finding corresponds to observations of the 'downsides' of IGS (Adegun, 2018) in African cities that create barriers, generate negative perceptions, and lead to withdrawal from such spaces (Elsley, 2004) However, such incidences of parental controls are not confined to African cities, findings from cities such as Brisbane and Sapporo show the role of parents constitute a barrier to children's access to places considered dangerous (Brighenti & Mattiucci, 2012). Hence, it is imperative that some form of maintenance should be put in place to limit the ecosystem disservices of IGS while enhancing the ecosystem services they offer to children. For instance, while many national parks and hiking systems in the urban north are often wild in nature, they are planned and designed to ensure optimum benefits to users. Similar but

adapted principles can be applied to IGS to allow children and adults to make the best use of and benefits from IGS.

This study also reveals the roles that children can play in the creation of child friendly urban communities. The study found that children were interested and willing to engage in activities that aim to maintain, preserve, and sustain IGS in Funda. Through their illustrative suggestions for improving IGS (Figure 3), children pointed to key interventions such as protection from animal attacks, provision of amenities (e.g., benches, rest stops, etc.) and regular clean up exercises. This demonstrates the need to recognize and engage perceptions and 'fresh ideas of children' (Silver 2014) as an opportunity for child-centered local management of IGS in peri-urban areas. For Africa, children engagement in planning processes is not entrenched in urban planning and management processes. Consequently, as many urban planning and policy frameworks have recognized the need for collaborative and co-productive processes in solving urban problems (Piaget, 1990) this finding reminds planners, decisionmakers, and researchers that children are an important cohort that are crucial in creating sustainable and inclusive ecological spaces in peri-urban areas.

Overall, although IGS in Funda generally shares some traits with those found in the global north and south (See Table 1)—such as being spontaneous and poorly managed—they are far from being marginal in the everyday life of children. In the context of structural deficits in the urban built environment, IGS complements the expected benefits and services from formally planned green spaces. Within the purview of children's deep attachment to such spaces, urban planning and management must reflect the realities of how IGS intersect with peri-urban living in a way that supports their integration, planning, and management for improving access to green spaces (Adegun, 2019; Rigolon et al, 2018).

6.5 Characterizing the differences between adult and children experiences

Figure 6.9 compares adult and children experiences with IGS across attributes such as use, management, access, willingness to maintain and satisfaction. Across these attributes, kitchen gardens were relatively consistence in terms of both adults and

children reported access, willingness to maintain and higher levels of satisfaction. For one, the waterside (riverside) had a higher use and access for adults compared to children due to earlier results that pointed to safety concerns such as attack by wild animals and consequent impact on parental restrictions to the site. More so, although open camps, kitchen gardens, semi-community gardens were widely used by both children and adults with reportedly better levels of access and satisfaction. Further, although both adults and children used non-vegetated spaces, they reported dissatisfaction—pointed to the importance of greenery to overall local experiences with informal spaces.

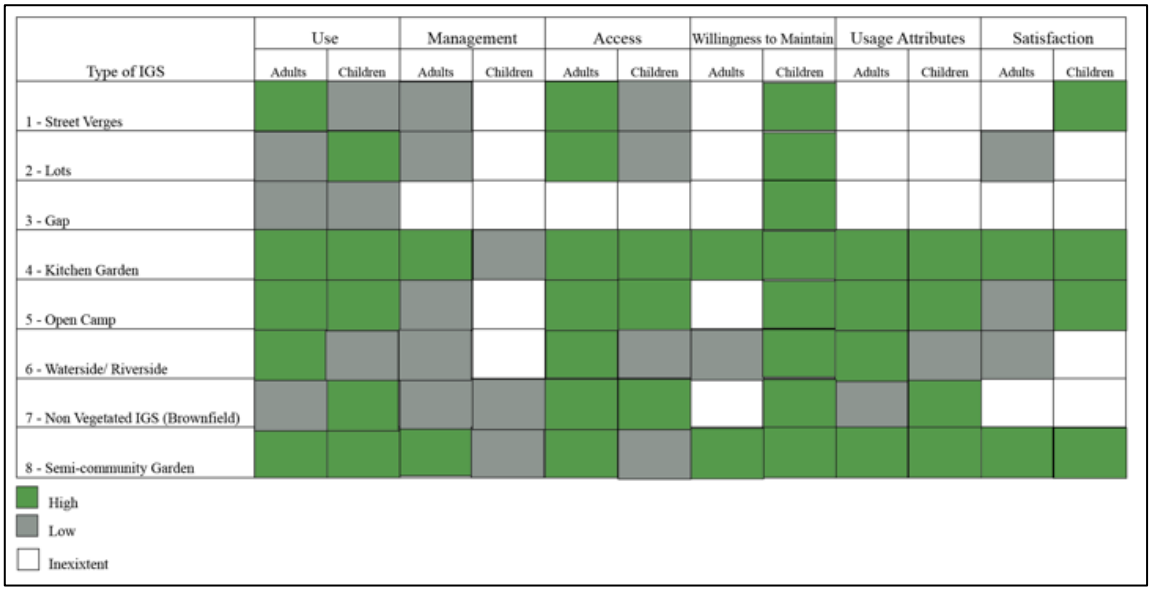


Figure 6.9 Differential attributes of Adult's and children experience with IGS

6.6 Chapter conclusion

This chapter has shown that IGS play a crucial role in the lives of adult residents and children in the low-income peri-urban community of Funda. In summary, the residents of Funda use and benefit from IGS in diverse ways such as source of food, shading, leisure and socialization. In the absence of community-wide IGS management activities, church groups and individual environmental activists play key roles in the maintenance of IGS such as mobilizing neighbors for cleaning and promoting social activities in IGS. Indeed, these benefits are important for ensuring urban sustainability for Funda, but challenges such as poor management, sanitation infrastructure deficits, ecosystem disservices, and criminality in IGS constrained long term potentials and prospects.

PART IV:

SUMMARY OF FINDINGS, URBAN PLANNING AND POLICY IMPLICATIONS

CHAPTER SEVEN:
FINDINGS AND POLICY IMPLICATIONS

7.1 Introduction

This chapter concludes this dissertation by presenting key findings or conclusions as well the policy takeaways and future research directions. Put simply, this section of the report provides a summative account of the overall research and its ramifications for researchers and urban planning and development practitioners in addition to inherent gaps that warrant future research within the theme of improving the quality of housing and the urban living environment in rapidly urbanising but majority poor cities such as Luanda.

7.2 Findings

For the purposes of coherence and precision, the conclusions are organised according to the thematic aspects of the research. Therefore, four main aspects are considered, including housing use and appropriation, spatial appropriation and adult and children experiences of informal green spaces.

7.2.1 Housing use and Modification

- Majority (85 percent) of residential housing in the planned area were constructed more than 40 years ago compared to mixed and unplanned neighbourhoods which have emerged mainly in the last 20 and 30 years. This suggests that unplanned, informal or self-built housing occurred during the latter part towards the end of the civil war and immediately after the civil war. This was partly due to push factors such the impact of the war in rural areas and the consequent rural-urban migration into Luanda of massive populations in need of urgent housing and shelter needs.
- In terms of household's profiles, although low-, middle- and upper-income households were present in all three neighbourhoods, the mixed neighbourhood was expectedly diverse, largely due to the variegated housing typologies and units. Thus, the finding that low-income households were also present in planned neighbourhoods contradicts with recent research in other

African cities which report that planned areas are basically composed of upper- and middle-income groups (See Frimpong et al, 2021, Kita et al, 2020).

- In terms of block layout, both unplanned and mixed neighbourhoods were organically shaped with little permeability, apparently due to the intensity of auto-construction or self-built housing without planning guidelines, compared to the planned neighbourhood. This conclusion is consistent with recent research in similar southern African cities that are also emerging from civil war and rapidly urbanising such as Maputo (See Motelsson, 2021)
- The most common facilities in the study areas were schools, small-scale commercial shops, business enterprises and churches. However, the limited educational facilities available were concentrated in the mixed and planned areas.
- Semi-detached and apartment housing typologies were mainly found in the planned neighbourhood while a combination of detached and camp housing units was common in mixed and unplanned areas. For the most part, semi-detached and apartment blocks were constructed as part of mass housing scheme for civil servants during the 1980s.
- Housing appropriations and incremental modifications to the housing structure were found in all three neighbourhoods. Surprinsingly, households in the planned area modified balconies into to extend room sizes without official planning permission or approval. This kind of informal modifications were also recorded in unplanned and mixed neighbourhoods. The fact that informal adjustments were not confined to unplanned areas reinforces current debates in urban informality in the global south that even in formal urban neighbourhoods, informal practices persist and therefore informality cannot be singularly associated with the urban poor (See for instance, the arguments by Okyere and Kita, 2015; Roy, 2005, Kita et al, 2020; Okyere et al, 2022).

7.2.2 Space Syntax Analysis of Housing Indoor Environment

- All indoor spaces in all three housing types (planned, mixed and unplanned) are highly connected from the perspective of spatial connectivity

- Mixed and Unplanned housing have high visual integration in the form of a radial pattern with the centre in the entrance hall or alongside the distribution corridors compared to Planned housing, which break the radial pattern with a higher asymmetry between the rear wing of the dwelling and the front wing in one case and right wing compared to left wing in the other case.
- Outdoor of the mixed and unplanned houses have high visual depth compared to planned houses, which provides a better visibility of the surroundings and sensual control.

7.2.3 Adult and Children Experiences with informal green spaces (IGS)

- In peripheral commune of Funda in Luanda, the findings revealed a diversity of informal green space that consisting of mainly of street verges, open camps, kitchen gardens, semi-community garden, waterside and brownfield.
- Informal green spaces are defined by local residents as not recognized by municipal authority or the formal planning system, spontaneous, and poorly managed. This confirms recent research in other African cities which have shown that the urban planning regime continues to disregard the opportunities that informal green spaces provide in complementing the decline in formal urban green spaces (e.g. Adegun, 2017).
- Despite the lack of support for informal green spaces, it is the most important source of ecosystem services including provisioning, socio-cultural and regulatory benefits to both adults and children.
- For adults, informal green spaces served as sources of food, herbal medicine, and as spaces for leisure and relaxation.
- For children, informal green spaces serve educational purposes for learning about nature, as playgrounds and also source of foods.
- There was evidence of ecosystem disservices. Children reported that they could not enjoy the riverside (e.g. swimming and sand play) because of lack of protection against dangerous animals in the river (e.g. crocodiles).
- There was no management system in place for informal green spaces. Both adults and children reported that poor management has resulted in some

informal green spaces such as open camps becoming refuse damp sites. Also, the absence of supporting infrastructure such as lighting and paved roads has turned informal green spaces into criminal sites for night time attacks and violent human behaviours. Research in other contexts reveal that the association of risk with informal green spaces can reduce their use and therefore generate site vacancy and decay (Ruppretcht and Byrne, 2014a, 2014b).

- For the most part, the only management activity in place is related to periodic maintenance by local churches in the commune. This is not surprisingly, as the municipal government has not prioritized informal green space and also aim to plan the area for future urban expansion rather than maintain the green spaces.
- Children expressed strong interest in management of informal green spaces if community-wide management system was introduced.

7.3 Implications for Theory and Practice

By drawing on the housing typologies and space appropriation and both adults and children's lived experiences with informal green spaces, this thesis has sought to shed insights on the everyday realities of residents in the urban built environment in the post-civil war city of Luanda, Angola. In doing so, this thesis has attempted to situate recent discussions of African urbanisation and urbanism within the particulate matters of the indoor and outdoor aspects of the urban environment. In the following sections, the theoretical and urban planning and policy implications are unearthed. Theoretical implications are stipulated to position this thesis within the extant literature and discourses on Africa's urbanism and urban development. Urban Planning and policy implications, on the other hand are identified to advance improvements in housing, the neighbourhood environment and the management of informal green spaces to ensure a socially equitable environment for urban residents of diverse income or social groups, especially the majority who are urban poor.

7.3.1 Theoretical Implications

Chapters two and four of this thesis has positioned this paper within unplanned urbanisation and urban informality discourse in Africa's urbanism and urban development. Rapidly urbanising African cities in the post-colonial era have been conceptualised has epitomising urban informality and socio-spatial inequalities including informal housing, inadequate access to essential facilities at the neighbourhood or district level and poor access to critical ecological resources as such as green spaces. Through such descriptors of African cities and the urban situation, African cities are caught in the scholarly narratives of illegality, informality and deficiency. While such typical narratives of global north prescriptions of Africa's urbanity is rooted in historical biases, this thesis has drawn on the experiences of unplanned urbanisation and informality (Motelsson, 2019, Nguluma, 2003, Okyere, 2018) as a starting point to unravel the everyday nuances of urban living in the post-civil war context of Luanda. By comparing the housing typologies and residents' modifications across planned, unplanned and mixed neighbourhoods, this thesis has revealed that the disregard for planning regulations and building guidelines is not confined to unplanned areas. Indeed, residents in planned and mixed neighbourhoods also incrementally modified their houses to meet different needs over time. This particular finding confirms the established literature in the global south context that informal housing practices occur not only among the urban poor but also in so-called formal neighbourhoods or districts as shown in the case of Luanda. In others words, in Africa and many cities of the global south, informal practices in housing and space appropriation manifest as a 'mode of urbanisation' (See Roy, 2005; Okyere and Kita, 2015) not an exception of urban living. Theoretically, this calls for the need for researchers to move beyond conceptual narratives of informality as a symptom of urban poverty and deprivation to understand the structural conditions that generate informal practices. A key point here is the theorization of urban informality from a very western and negative perspective that disregards local sources and experiences of urban living. Most residents across neighbourhoods in Luanda are less concerned with aestheticization but more interested in planning systems, regulations and practices that integrate adaptability and flexibility in guidelines/policies to ensure that

housing provision and regulations are tailored to the different circumstances of local people.

Furthermore, another important theoretical ramification of this thesis concerns the subject of *informal* green spaces. It is well established that Africa's urbanisation is spatially expansive rather than compact (Dodman et al, 2017). This has meant that expansive urban development has led to the significant decline in urban green spaces. In Luanda, the few green spaces that were developed during the Portuguese colonial period has gradually deteriorated and massive housing developments have taken over formerly lush publicly accessible green areas. The peripheral area of Luanda metropolitan (Cacuaco municipaliry) is considered to be the last frontier of green space in the larger city (Pedrosa et al, 2021). While emerging research has recognized this troubling decline in formal urban green spaces, the potential of informal green spaces has not received the attention of scholars or researchers working on the theme of Africa's urbanism and urban development. It is in this context that this dissertation offers an important theoretical contribution. In fact, Ruppretcht and Byrne (2014a) in their global review of informal green spaces, asserted that little is known about the situation of informal green spaces in the African context. Therefore, by exploring the availability of different typologies of informal green spaces, their use and perceived benefits by adults and children and management challenges, this study extends the existing discourse about urban green spaces to include *informal* green spaces. That is, given that there are many spontaneous, ambivalent and unplanned green spaces in Luanda, this dissertation can provide a useful starting point for future work and conceptualisation of informal green spaces not only in Luanda but also the African urban context. Put differently, residents' dependence on informal green space, even in their bad conditions, suggest the necessity for a more focused scholarly discussion and conceptualisation about the concept of informal green spaces in Angola and Sub-Saharan Africa's urbanity and ecology within the urban planning sphere.

7.3.2 Urban Planning and Policy Implications

Improving the quality of urban living for residents in Luanda requires that basic necessities of life such as access to decent and quality housing, public space and

improved green spaces to be highly prioritized and integrated into urban planning and development interventions at all levels of human society.

For starters, planning responses to the housing problem in Luanda has focused on large social housing projects supported by Chinese funds in so-called satellite or new centrality developments. This approach has in turn shifted the lower-middle-income population away from the inner core to periphery, although in reality housing provision benefited the middle class rather than the urban poor. There is therefore the need for rethinking state approaches to addressing housing challenges in the urban environment. Here, we suggest a more context-specific program on on-situ upgrading on housing and the neighbourhood environment. The State government in conjunction with the Urban Planning and Management Institute, should develop a scheme for supporting the urban poor with building materials and technical guidance to improve housing and neighbourhood facilities. Such upgrading activities must be holistic: connecting housing improvements with neighbourhood level improvements such as alleys, open spaces, and the provision and management of common infrastructure facilities.

The above consideration requires a revision of the Luanda Metropolitan Master Plan (2015-2030). The plan acknowledges the problem of lack of adequate, affordable and quality housing and neighbourhood infrastructure for majority of urban residents but the actual interventions does not integrate the lifestyle and socio-cultural characteristics of the majority urban poor. More so, too much emphasis on redevelopment and dependence on private-sector led development suggests that profit and return on investment is prioritized compared to low-income residents' wellbeing and quality of life. Cooperative housing that tends to take into consideration the needs and characteristics of the low-income has been less successful in the strategic urban development plan. It is therefore necessary to reconsider how strategic urban development planning responds to the housing needs of the urban residents in both planned and unplanned neighbourhoods. First, we suggest the need for intensive and active participation of residents in the formulation, design, implementation, and evaluation of urban and housing interventions in Luanda.

Angola's planning system is heavily centralised and the central government, until recently, wields strong power in the urban planning and development decision-making processes. Even after attempts at decentralisation of some planning powers to provinces and municipalities, local governments are still weak. This situation affects participation of local citizens in urban planning and create a situation where a lot of proposed projects and strategic actions do not conform to the everyday reality of urban living.

In lieu of the above, decentralised and contextual planning (Figure 7.1) should be accompanied by fiscal decentralisation, institutional capacity and a strong commitment to effective citizen participation. This also requires strong local level organization such as residents' association, community groups and also better connection between civil society and municipal authorities. In fact, experiences from Community Organisations in Nairobi, Kenya and Accra, Ghana (Danso-Wiredo and Midheme, 2017) show that strong community organization and a capable civil society sector can generate bottom-up urbanisms that promote better urban development interventions in affordable housing and improved access to common facilities at the neighbourhood level such as parks.

We suggest the need for experimentation of co-design principles in urban housing. Co-design provides opportunities for bringing together the residents and their local knowledge or resources (social and cultural) with professionals (architects, planners, municipality staff) to collaboratively deliberate, design and implement housing improvement activities. Many examples across African cities have shown that such initiatives have been successful in improving conditions at the grassroot levels (Motelsson, 2021). Through such approach, experts can provide technical support to residents while understanding residents needs and aspirations. Also, this will allow residents to bring to fore their local resources. In Uganda for example, residents provided the labour for construction, making use of local building materials while being supervised by experts and professionals. This ensured that housing improvement was affordable but structural quality of housing was assured.

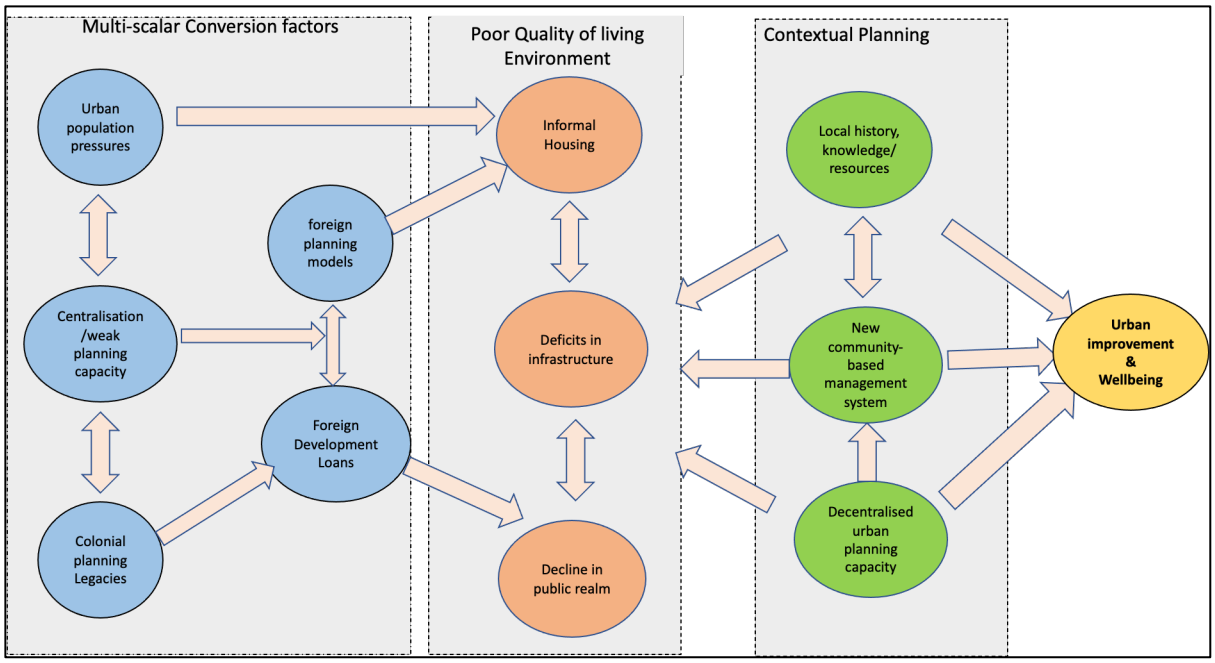


Figure 7.1: Contextual framework for interrupting systemic urban quality challenges

However, there is a limit to what communities, local groups and broader civil society can do. Institutional level changes are needed. Building regulations and planning permits or guidelines in Luanda, as in many African countries, are still based on colonial planning systems that make it very hard for general population to follow. Consequently, most residents ignore the regulations and guidelines, and thus, modify houses incrementally but often in contradiction to formal planning regulations. Building regulations needs to be contextualised to the local situation, including the reality of housing finance. Typically,, housing production among the majority of the urban low-income population, is through self-organised means based on incrementalism. People gradually build their own houses over time and incrementally adjust to meet their changing social and economic circumstances. However, the planning and building law does not take cognizant of this, labelling it as illegal and informal. Experience from Latin American countries (See Gouvernuer, 2015) has shown that when planning laws permit flexibility and adaptability with access to local building materials and technical guidance, housing quality improves. Therefore, it is imperative that institutional level changes in planning at both the city and regional level is necessary to spatial improvement.

Unfortunately, most new satellite town developments or housing projects have not adequately addressed the issue of availability and access to green spaces. In fact, satellite town or the so-called new centralities in Metro Luanda have been responsible for the destruction of green spaces. At the city core, with few exceptions, quality green spaces are in gated and exclusive residential areas that are not freely accessible to the public. The new Luanda master plan mentions some interventions for improving the current situation of green spaces but this has not been materialised. Sadly, the plan makes no mention of informal green spaces as a potential for filling the gap in the decline of urban green spaces. Based on this premise, the study strongly recommends that it is a matter of first principle for recognizing and integrating informal green spaces for the urban planning and development process, actions plans and strategies for Luanda. This implies that upcoming revisions in the strategic urban planning process must spatially identify and map all informal green spaces in the city in addition to a critical evaluation of their condition, use, potentials and challenges. Further, an institutional rethinking is needed: the planning authorities must embrace the significance of informal green spaces for local people and to develop collaborative planning tools for their improvement and management. Given the results in chapter 6 that informal green spaces provide several socio-ecological benefits to both children and adults, we submit that this recommendation is critical to improving residents' quality of life and wellbeing.

Based on the model developed in the figure 7.2 below, we suggest a hierarchical community-based management model for maintaining informal green spaces. The existing work of churches and student environmental activists provides an avenue to galvanise support for community-based management of IGS. By bringing together community leaders, local government, students and churches, environment days could be introduced periodically (e.g. monthly) to organise residents for maintenance activities. Small local IGS maintenance units can be formed for residents to manage demarcated areas of IGS within or close to where they reside. To sustain local enthusiasm, this could be scheduled to coincide with national holidays such as independence days as well as building support through sensitisation initiatives. More so, it is necessary for the municipal government to provide enabling infrastructure

that can make IGS safe to use such as street lights. The municipal government can also provide lighting infrastructure to make IGS safe at night. By providing garbage collection containers or units, this will reduce the tendency of residents to use IGS as dumpsites and contribute to making IGS attractive sites. At the same, the municipal governments can erect barriers to restrict and control the movement of harmful animals in IGS. These could enhance safety, usability and the comfortability in the use of IGS.

Chapter 6 revealed that children in Luanda depend extensively on IGS and are interested in contributing to their improvement. This invites urban planners and other policymakers to utilize opportunities such as children's' willingness to participate in IGS maintenance and their experiential knowledge to address challenges such as attack by wild animals, potential threats of robbery, and the poor maintenance of IGS. Clearly, collaborative and co-production methodologies that consider children participation as inevitable actors in problematizing, planning, design and implementation, and monitoring of IGS are essential.

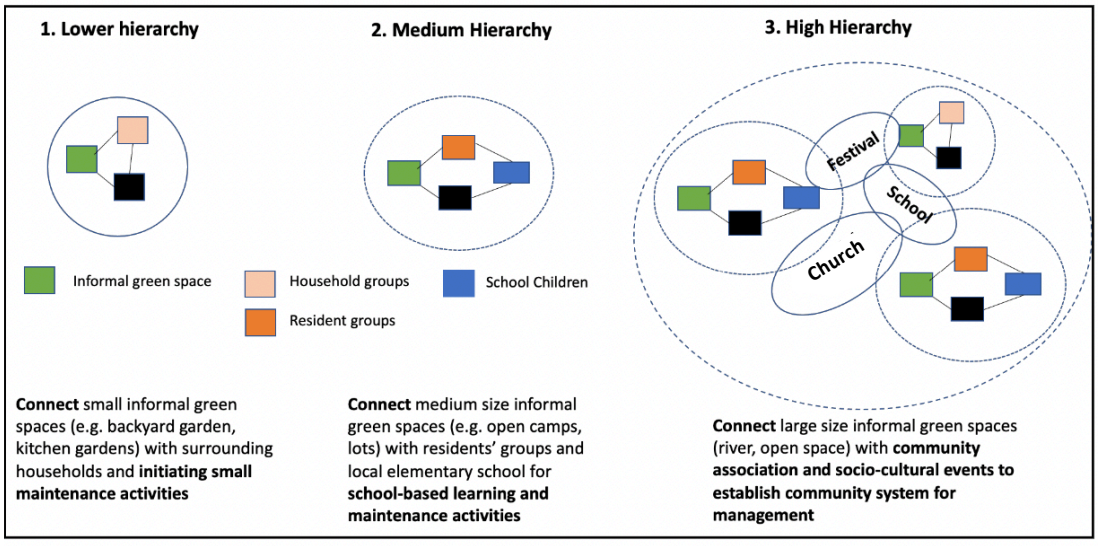


Figure 7.2: Hierarchical model for informal green space Management

7.4 Conclusion and future directions

Angola, like many African countries, is faced with structural challenges around addressing institutional capacity limitations, a weak economy and entrenched socio-spatial inequalities across all levels of human society. The post-civil war era, implies

that the country's peace time (since 2002) is relatively young (compared to other African countries) but challenged across all aspects of sustainable urban development. Luanda province, the most populated and socio-spatially impacted by the war, needs to quickly reform its institutions to build a solid framework for the urban planning and development of the city and adjoining municipalities.

Overall, this dissertation has attempted to offer grounded evidence of the lived realities of local people from the aspect of housing typologies and appropriation in multiple neighborhoods as well as the children and adults' relationship with informal green spaces. Together, the study has pointed to severe challenge of urban housing and better neighborhood facilities for the low-income, leading to survivalist attempts at incremental improvements and adjustments. Informal green spaces, possess a potential for improving access to the benefits of urban green although not recognized or integrated into formal planning programs. Indeed, the research hints that Planning for sustainable and inclusive urban spaces in Luanda and African cities cannot ignore the housing and the informal green space challenges. Given that these objects of this study—housing and *informal* green spaces— are captured as important targets within the Sustainable Development Goals (SDG 11), we submit that this dissertation can provide an entry point into urban planning and development considerations towards building a sustainable, resilient and inclusive Luanda.

Going forward, future research may consider a critical comparative analysis of housing transformation among diverse socio-economic groups in both inner core and peripheral areas. Future research could also consider evaluation of new housing developments in peripheral areas by the state and private sector to identify the extent to what they integrate the principles of sustainable housing. In relation to informal green spaces, a future analysis should employ geographic information systems to analyze the historical trends and better document the impact of developmentalist oriented urban planning on accessibility. Finally, a participatory and action research that recognizes children's agency should also be considered through experimentation of projects. Such future studies, coupled with findings from this thesis, can inform

methodological and policy initiatives that improve urban living conditions in Luanda— and other African cities— in a way that truly leaves no one behind.

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Appendix: Data collection Instruments (Questionnaire and interview guide)

STUDY I: HOUSING TYPOLOGY, CHARACTERISTICS AND MODIFICATIONS IN LUANDA

HOUSEHOLD QUESTIONNAIRE

I. Socio-Economic Background of Household Head

Q1. Name of Respondent
Q2. Sex of respondent a) Male b) Female
Q3. Age of Respondent
Q4. Highest level of educational attainment
a) No Formal Education b) Primary/JHS c) Secondary/SHS/ Vocational) d) Tertiary
Q5. Marital status a) Single b) Married C) Divorced
Q6. What is the size of this household?
Q7. What is the number of dependents in this household?
Q8. What is your place of birth? a) Within Community b) Within the city c) Within the region d) outside the region e) outside of the country
Q9. If you do not come from the city, where do you come from?
Q10. Why did you move into this community?
……
……
Q10. How long have you lived in this community? a) 1-5years b) 6-10years c) 11-15years d) above 15years
Q11. Do you plan to move out of this community in the future? a) Yes b) No
Q12. Can you give reasons for your answer in q.11?
……
……
Q13. What is the religion of the head of this household?
a) Christianity b) Islam d) Traditional e) others please specify…….
Q14. What ethnic group do you belong to? A) Ambundu b) Ovimbundu c) Chokwé d) Herero d) Khoisan e) N'ganguela g) Others, please specify…….

Q15. Which is your occupational status? A) Self-employed b) Housewife c) Student d) Retired e) Public/Civil Servant f) Private employee
g) Others, please specify…….
Q16. What is your income per month a) below 20.000 Kz b)21.000 - 80.000Kz c) 81.000-150.000Kz d) 151.000-200.000Kz e) above 201.000 Kz
Q17. What percentage of your income do you spend on housing every month?

I. Housing Characteristics

Ownership

Q21. What is your occupancy status? a) Owner b) renter c) caretaker If ***tenant, please skip to Q21.3.***

Q21.1 If owner, how did you acquire the house?

Q21.2 If owner, do you have a land title deed or registration of ownership?

Q21.3 If tenant, what is the relationship between you and the landlord? Please explain……

Q22. Who built this house you are living in?

Q23. When was this house built? ……

Housing transformations

Q24. How long have you been living in this house? a. 0-4years b. 5-9years c. above 10years

Q25. Have you made changes to any part of the house? (e.g. walls, windows, doors, ceilings, roofing or number of rooms) A) Yes b) No

If not, skip to Q29. Housing Vulnerability and Household Actions

Q25.1 If yes, which parts of the housing did you change?.....
.....

Q25.2What prompted you to make these changes?.....
.....

Q25.3 Did you modify the use of space for kitchen or sleeping rooms?

NB for analysis: If modifications were done by additions or subtracting existing spaces to make room for others.

Q25.4 How was the transformation done?

a) Local artisans b) professional (architects, engineers) c) self

Q26 How did you finance the transformation? a) Personal savings b) loans c) family support d) NGOs or external support d) government

Q26.1. What was the payment arrangements for the transformation?

Q27. Are you aware of building regulations and rules guiding housing transformation? a) Yes b) No

Q27.1 Do you think they are necessary, especially in your community?

Q28. Do you know of any local community rules (aside public regulations) to guide development in this settlement? A) Yes b) No

Q28.1 If yes, please specify……

II. Land Tenure System

Q.31. When did you receive the Ownership Certification?.....

Q.31.1. How did you achieve? ……

Q.32.Which type of Ownership do you have? E.g. Freehold, Leasehold, cross lease, Usurfactory, Other? Please, explain……

QUESTIONNAIRE FOR COMMUNITY LEADER

Overview of settlement

Q1. Can you provide a brief history of this settlement?

Q3. What is the general perception about the settlement?

People……
……
Conditions……
……
Activities……
……

Urban Governance

Q6. Has the city government been undertaking activities to improve conditions in this settlement? A) Yes b) No

If yes, can you explain this?

……
……..

Q7. What are some of the facilities (Infrastructure) in this community that has been provided by the city government?

Q8. Do you know of a city development plan for this settlement? A) Yes b) No

If yes, please specify…….

If yes, is the community involved in this plan? A) Yes b) No

If yes, how was participation achieved?

Q9. What is the perception of city government towards your community or settlement

Questionnaire for Luanda Urban Planning and Management Institute (LUPMI/IPGUL)

Informal Settlements Growth

Q1. What factors are contributing to the growth of informal settlements in Luanda?

Q2. Is there a relationship between the current city planning approach and the growth of informal settlements in the metropolis or municipality?

Q4. What is the role of planners and built environment professionals in addressing the challenge of informal settlements and also promoting inclusive planning?

Q4. Has the LUPMI (IPGUL) undertaken any activity in the area of informal settlements in recent years in the city of Luanda? If yes, please explain the nature and purpose of such an activity

Activity	Purpose	Location

Q5. Does your outfit collaborate with other institutions in the area of informal settlements and/or pro-poor/inclusive planning? If yes, please explain

Institution	Type of collaboration	Purpose

Q6. How would you summarize the situation of informal settlements in Luanda?
Q7. Does the socio-spatial organization in informal settlements offer any lessons for planning in the city of Luanda? If yes, please explain

OBSERVATION TOOL KIT

The purpose of this research is to collect field data and generate information on the topic *'A Study on the housing characteristics, land tenure and management of open spaces in Cassenda informal quarter, Luanda, Angola*, toward the fulfillment of the requirements for PhD (Urban Planning). Please, be assured of the confidentiality of your response and all information provided are for **academic purposes only**

OBSERVATION TOOL KIT 1: HOUSE TYPE CHARACTERISTICS

No.	House type					Building materials				Remarks
	Compound House (multiple occupation)	Single Storey	Multiple Storey	Residential/ Commercial	Single detached	Walls	Windows	Doors	Roof	

Building materials C=concrete CE=Cement screed I=Corrugated Iron Sheets W=Wood T=Tiles O=Others (please specify) B=Bricks

OBSERVATION TOOL KIT 2: USE OF SPACE

Activities	**Settings**								
	Backyard	Veranda	Room 1	Room 2	Room 3	Open Space	Others	Remarks	
Sleeping									
Eating									
Cooking									
Bathing									
Washing Clothes									
Receiving Visitors									
Income generating activities									
Resting									
Gathering									

STUDY II: PERIPHERICAL CASE: INFORMAL GREENSPACE (iNTERVIEW GUIDE)

Informal urban greenspace refer to spontaneous growth of plants, vegetated (or partly) spaces after humans have used it. This kind of space always has vegetation, but is very diverse: vacant or abandoned lots, street verges and roundabouts with herbs or weeds growing between mowing's, overgrown walls and fences, railway tracks, abandoned factory grounds, power line right-of-ways and river banks are some examples (Rupprecht and Byrne, 2015). In Africa, Informal greenspace is not typically recognized by the planning regime or integrated into ecological and landscape planning.

To help you understand what informal greenspace can look like and what forms it can take, please have a look at the overview of informal greenspace types included in this package. It contains a typology and photographs with examples of some informal greenspace types.

1. What kind of informal greenspace do you know of in your neighborhood? Please check only those places that have vegetation but are not parks, gardens or remnant bushland etc.

QUESTIONS ABOUT INFORMAL URBAN GREENSPACE USE

2. Is it common for you to use informal greenspaces for recreational activities? (

Every day ❑ c. Every month ❑

a. Every week ❑ d. A few times per year ❑

3.. What kind of activities do you use informal greenspace for?

4. Why do you use informal greenspace and not a park or garden?

5. Do you experience any problems when using informal greenspace?

6. Why did you use informal greenspace and not a park or garden?

7. What kind of benefits do you think informal greenspace can have?

8. What kind of problems do you think informal greenspace can have?

9. Do you know the meaning of the word "biodiversity"

10. Do you (residents) have any care for the green spaces in your neighborhood?

11. How do you (residents) manage those informal green spaces?

About you

12. What is your age? Please write: _____

13.What is your sex? a. Female ❑ b. Male ❑

14.What type of dwelling are you living in?

15. What is the highest level of education you have completed? (

16. Does administration ever help with those IUGS management?

Thank you for your help and participation in this project.