

MSc Thesis Report

Unraveling the Self-Made City

The Spatial Impact of Informal Real Estate Markets in Slums

By Josje Bouwmeester



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The Spatial Impact of Informal Real Estate Markets in Slums

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Abstract

Informal real estate markets have developed as a result of deficiencies in formal real estate markets and play a crucial role in providing housing for the urban poor. As a result, there has been a renewed interest in the workings and the potential of informal real estate markets. Simultaneously, within the domain of spatial planning, the importance of understanding cities through an institutional lens is becoming clearer.

This study aims to bring together the two fields by combining an adaptation of Ostrom's rules with property rights theory. Through this framework, the rules that have developed in the informal real estate, and their impact on urban development in informal settlements will be explored. Furthermore, it analyzes how the rules of formal and informal real estate markets are interacting to shape urban development in informal settlements

The research performs an explorative research in the single-case study of Lunga, Nairobi, Kenya. Data is collected through a document analysis, (expert) interviews and spatial observations on informal and formal real estate. It is found that land regimes in the formal and informal market are highly similar in nature but are based in different forms of legitimacy, namely input and output legitimacy. Because of this, the coexistence of the two markets leads to conflicts in urban development. The research opts for further research in the discipline of spatial planning in order to gain a better understanding of how to deal with these different types of legitimacy on a theoretical level.

Key words: informality | property rights | rules | urban development | legitimacy

Summary

This research begins by exploring the self-made city. Informal settlements are considered to be one of the biggest challenges of the 21st century. Although housing quality in informal settlements is sub-par most planning standards, informal real estate plays a crucial role by providing shelter at a low cost to the urban poor. This means that urban development is now not only being shaped by formal real estate markets, but also by informal markets. This informed the general research question:

“How does the coexistence of the informal and formal real estate market shape urban development in informal settlements?”

As the research aims to explore the relationship between the institutional interaction of informal and formal markets and the effect on urban development, the general questions consist of three main concepts: rules, urban development and the institutional interaction, which subsequently resulted in three sub-questions:

1. What are the rules for the formal and informal real estate markets in Nairobi?
2. How do the rules of the informal real estate market affect urban development of informal settlements?
3. How does the implementation of formal rules in informal real estate market affect urban development of informal settlements?

The theoretical framework discusses the dichotomy between formal and informal, property rights regimes and Ostrom rules. Based on these theories a framework is developed, in which several of Ostrom’s rules are equated to property rights and land regulation processes.

The research has been conducted using three steps. First, three explorative phone interviews were done to inform the spatial observation frame. Second, data was collected to answer RQ 1 and 2, through ten expert interviews, document analysis and observations. Third, RQ 3 was answered through a discussion of the results of RQ 1 and 2, and the theoretical framework.

In the subsequent chapters, the results are discussed. It is found that both markets have similar rules guiding property rights regimes and land regulations. Furthermore, it is found that urban

development is shaped through two main channels: 1) The property rights regime – existing out of position, boundary and choice rules which determine the way the property rights market works, and thus indirectly influence urban development, and 2) planning through real estate processes – existing out of scope rules which directly shape the outcome of urban development by placing restrictions on the bundle of rights of structure owners.

In the discussion, it is argued that although property rights regimes and land regulations are quite similar in both the formal and the informal market, conflicts arise when the two concur as both markets are based on different forms of legitimacy: namely input and output legitimacy. Whereas the formal market derives its legitimacy from the fact that they operate in the name of the state, which was elected by the people of Kenya, the informal market deems itself legitimate as they provide affordable housing to the urban poor (in contrast with the formal market). As a result, each market sees the other as illegitimate. This statement is positioned against Lefebvre's "right to the city" and "right to property": the formal market sees the informal market as illegitimate because it infringes on the property rights of those who formally own the land, whereas the informal sees the formal market as illegitimate as they disregard the investments they have made into their property and through this, their right to the city.

In the conclusion, it is argued that the coexistence of formal and informal institutions should be studied further in several contexts in order to gain a better theoretical understanding of the importance of legitimacy in shaping outcomes of urban development. Furthermore, it is recommended that future research also considers the justice component.

Preface

Dear reader,

Three years ago, I first visited Lunga as part of an extracurricular project at University College Utrecht. In 2018, I visited Lunga again, as part of the LUP internship. Seeing the differences between Lunga in 2016 and 2018, and the seemingly organized fashion in which the neighborhood had developed fascinated me, and I wanted to learn more about the processes guiding these developments.

Back to 2019 and I am about to finalize my MSc thesis. There are so many people I should thank for helping me write this thesis, but most of all I need to thank three people: my supervisor Thomas Hartmann and my friends Benedetta Mwangeli and Jane Atieno.

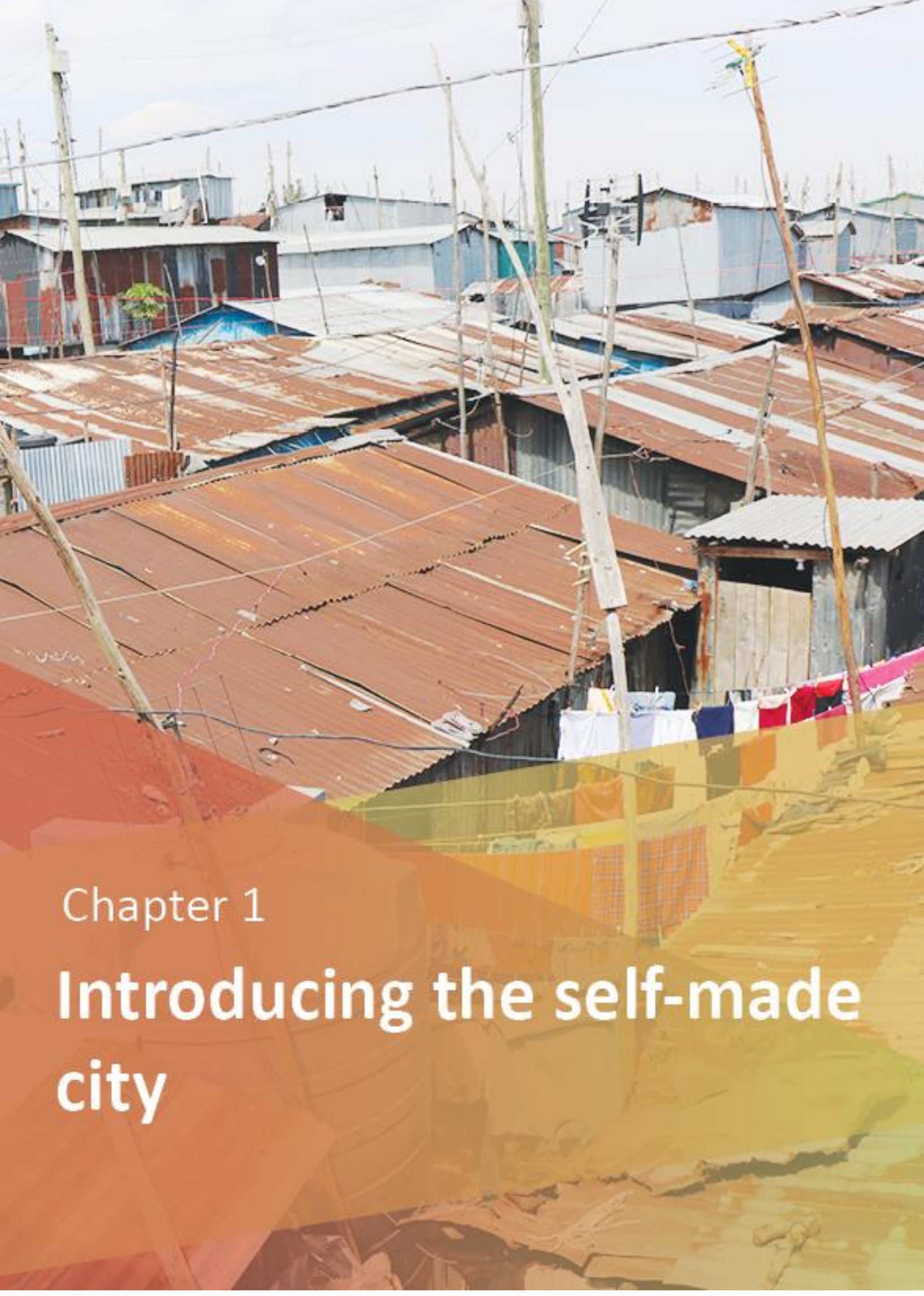
To my supervisor Thomas Hartmann, thank you for all your support, your critical questions and your excitement in bringing this thesis into reality. Your clear guidance has helped me write this thesis, but also to further develop myself as a researcher.

To Benedetta and Jane, *asante sana* for guiding me during the fieldwork. I can safely say that without you welcoming me into your houses, introducing me to your family, neighbors and friends in Lunga, I would have never been able to collect the data needed to write this thesis.

Lastly, I want to invite anyone reading this thesis digitally to visit Lunga themselves through [this google maps link](#).

Josje Bouwmeester

October 2019
Wageningen



Chapter 1

Introducing the self-made city

CHAPTER 1

Introducing the self-made city

This chapter introduces informal land markets. It starts by explaining the social and academic relevance of studying informal real estate markets and places this relevance in the context of spatial planning research. This first section informs the objective and research questions, which are introduced in section 1.2. The following section discusses some of the key assertions made in formulating these research questions. The chapter concludes with a short overview of the research approach and structure.

1.1 About informal land markets

Informal settlements are considered to be one of the biggest challenges of the 21st century, because they are characterized by rapid population growth, environmental degradation, high levels of urban poverty, inadequate access to basic services, and a limited capacity or interest of government to improve living conditions (Gulyani and Bassett, 2007; Asian Development Bank, 2019). However, approximately since the turn of the century, academic literature has started to acknowledge informal settlements as an affordable housing option for the urban poor (Nkurunziza, 2007; Gulyani and Talukdar, 2008; Birch, Chatteraj and Wachter, 2016). These authors argue that although informal housing quality is sub-par most planning standards, informal real estate plays a crucial role in providing shelter at a low cost to the urban poor.

The development of informal real estate markets is often seen as a result of deficiencies in formal real estate markets (Kombe, 1994; Berner, 2001; Nkurunziza, 2007; Gulyani and Talukdar, 2008; Birch, Chatteraj and Wachter, 2016; Pellissery, Davy and Jacobs, 2017). Some of the deficiencies mentioned by Pellissery, Davy and Jacobs (2017) include the difficulty for low-income households to get formal credit, a lack of trust in real estate dealing, high transaction costs with regard to real estate development, corruption and an accumulation of regulations (Pellissery, Davy

and Jacobs, 2017). As a result, informal processes, which regulate and underpin informal settlements, have evolved to “*undermine, accommodate, complement and reinforce*” formal real estate markets (Nkurunziza, 2007).

There is a growing consensus amongst scholars that informal settlements are not as chaotic or unorganized as often portrayed (Roy, 2009; Cadstedt, 2010; Andersen, Jenkins and Nielsen, 2015; Koster and Nuijten, 2016; Nunbogu *et al.*, 2018). Within slum communities, institutions underpinning the informal real estate markets have developed. These institutions are strongly based on social legitimacy and are heavily intertwined with formal processes (Nkurunziza, 2007).

This new interest in the potential of informal housing comes in a time which has witnessed a more general shift in both planning theory and practice (Albrechts, 2006; Nunbogu *et al.*, 2018). More scholars are now arguing for the importance of understanding cities through an institutional lens (Albrechts, 2006; Moroni, 2010; van Karnenbeek and Janssen-Jansen, 2018). As argued by Kim (2011): “*Institutions are central to urban planning endeavors because planning is more than just a scholarly enterprise; it is oriented on the premise of action, intervening in the world for the greater good. An institutionalist perspective recognizes that planning is not so much about action as it is about interaction.*” The shift to institutionalism has allowed for more adaptive and incremental approaches within urban planning (van Karnenbeek and Janssen-Jansen, 2018).

However, there is a lack of literature regarding the rules and norms that actors use in governing incremental urban developments (van Karnenbeek and Janssen-Jansen, 2018). Rules are defined as “*institutions that guide collective action based on laws, regulations, norms and habits*”. Rules are repeatedly produced, adapted and are always evolving, resulting in adaptive and incremental planning practices (van Karnenbeek and Janssen-Jansen, 2018). A focus on rules is relevant because planning processes and outcomes are severely impacted and constrained by both formal and informal rules (North, 1991; Moroni, 2010; Cozzolino *et al.*, 2017; Salet, 2018; van Karnenbeek and Janssen-Jansen, 2018). As argued by Van Karnenbeek and Janssen-Jansen (2018), an understanding of the rules can improve the ways in which governments can deal with spatial or collective action problems. It would allow a deeper understanding of how and why actors interact and how urban development works (van Karnenbeek and Janssen-Jansen, 2018).

In the context of slum real estate, the rules that guide actors in incremental developments have rarely been studied, but could shed light on appropriate solutions to ensure a higher quality of life for the world's one billion slum dwellers (UN HABITAT, 2016). There are two main gaps in the literature that this thesis aims to start addressing.

First of all, there is a disconnect between planning and anthropological works discussing informal mechanisms through which slum-dwellers aim to improve their lives. Within planning, some work has been done on the nature of informal institutions and self-organization mechanisms in informal settlements (Burra, 2004; Gulyani and Talukdar, 2008; Nunbogu, 2014; Nakamura, 2016; Nunbogu *et al.*, 2018). There are anthropological accounts of slum real estate (Gulyani and Talukdar, 2008; Balakrishnan, 2016; Chatteraj, 2016). Questions that arise at the interface of these two bodies of literature, namely how informal real estate is shaping the urban environment, have only been lightly touched upon in some works (Burra, 2004; Nunbogu, 2014).

Secondly, although the need to overcome the false dichotomy between formal and informal has widely been recognized (Roy, 2003, 2009; Watson, 2009; Bunnell and Harris, 2012), no attempts have been made to understand what happens when informal and formal real estate markets occur simultaneously in the same space. There is a need to create a deeper understanding of how the formal and informal interact to shape urban development in informal settlements.

This thesis aims to explore how the coexistence of the informal and the formal real estate markets is shaping the urban environment in informal settlements, using a rules-based approach. By doing so, it aims to start addressing these gaps in academic literature.

1.2 Research questions

More specifically, this thesis focuses on the rules that have developed in the context of the informal settlements in order to overcome the deficits of formal urban housing provision, and its impact on urban development in informal settlements. It explores the rules steering processes of informal real estate using an adaptation of Ostrom's taxonomy of seven sets of rules. Combining these rules with property rights theory, it analyzes how the rules of formal and informal real estate markets relate to shape urban developments in informal settlements to answer the following research question:

"How does the coexistence of the informal and formal real estate market shape urban development in informal settlements?"

The research aims to explore the relationship between the institutional interaction of informal and formal markets and the effect on urban development. The general questions consist of three main concepts: rules, urban development and the institutional interaction.

Three sub-questions were formulated to answer the general research question. The nature of these questions is based on Spit and Zoete (2006)'s spatial planning triangle. Spit and Zoete (2006) argue that planning questions are characterized by three different component that together form the stage of spatial planning, namely object, process and context. The *object* represents the content of the issue and are often answered through "what questions". The *process* represents the actors, interests and means, and can be recognized by "how-questions". *Contextual* variables are related to the institutional setting, social and cultural, economic trends (Spit and Zoete, 2006).

These three points of the triangle can be connected to the three main concepts identified earlier. To understand how rules are influencing urban development, there is a need to first explore what rules exist for both formal and informal real estate markets in Nairobi. The related sub-question thus looks at the *object* of urban planning. Secondly, to understand how informal real estate markets are shaping urban development, the second angle of the triangle needs to be analyzed, namely the *process*. The examination of this question provides an insightful representation on how urban development is influenced by the existing rules. Lastly, we need to look at the *context* of the problem and analyze what happens when these two institutions interact. Therefore, the three sub-questions are as follows:

1. What are the rules for the formal and informal real estate markets in Nairobi?
2. How do the rules of the informal real estate market affect urban development of informal settlements?
3. How does the implementation of formal rules in informal real estate market affect urban development of informal settlements?

1.3 Key assertions

The sub-questions mention informal and formal real estate markets. In this case, the informal real estate market is defined as the market that is regulating land and property in the informal

settlements, whereas the formal real estate market is defined as the market regulation land and property in the planned parts of the city.

Simultaneously, real estate markets are characterized by *formal and informal* rules. In this case, formal rules are often prescribed in laws and regulations as policies and plans, whereas informal rules refer to rules shaped by norms and habits (Van Karnenbeek and Janssen-Jansen, 2018). Although it is recognized that formal real estate markets can also be characterized by informal rules, this research assumes that formal rules steer the formal real estate market and that informal rules steer the informal real estate.

In the research questions, the term urban development is used. Urban development is a broad term, which refers to different dimensions: physical, geographical, economic and societal. Urban development usually refers to the term urbanization, which is a process that takes a territory to an urban state in these different dimensions. In the case of this research, only one of these dimensions of urban development is studied: the physical. In other words: this research addresses the urban morphology or form of informal settlements.

1.3.1 A note on planning versus real estate

Real estate markets are formed by the interactions of buyers and sellers in exchanging property rights for other assets (e.g. money). Planning, on the other hand, is often identified as a concern of the government, as it is involved with political choice rather than market transactions (Ratcliffe and Stubbs, 1996).

Sharp distinctions can be drawn between the activities of planning and on the other hand real estate development. The former has a more formal, deliberate and publicly accountable character, whereas the later demonstrates more individualistic, entrepreneurial, opportunistic and profit motivated characteristics. However, collectively, processes of urban planning and real estate development combine to shape urban development (Needham, Buitelaar and Hartmann, 2019).

This thesis looks specifically at the spatial impacts of institutions within slums. It was decided to bundle these institutions under the name *informal real estate markets*, rather than urban planning for several reasons. First of all, because the main actors involved in these institutions are non-state actors, opposed to state actors. Second of all, because of the high degree of informality in these institutions. These characteristics point more to a market as a mode of governance,

opposed to formal, state regulated urban planning. It could well be the case that throughout the research it is discovered that there are rules at play which have more of a planning nature. These processes are then referred to as *planning through real estate markets*.

Furthermore, the questions also refer to the formal real estate market. It should be noted that in this study the notion of the formal real estate market includes urban planning processes as a concern of the Kenyan government. In case of the formal system, it was decided to bundle the processes of urban planning and real estate development under the name *formal real estate market* purely for pragmatic reasons, as a short way to refer to the collective system of urban planning and property rights markets.

1.4 Approach

As research on the topic of rules in informal real estate markets is limited, this research uses a case study approach to answer the research questions. Case study research is appropriate as the topic is still in the exploratory phase of research (Yin, 2009). To explain the urban development, quantitative methods are used. To understand the rules of real estate markets, a qualitative approach is taken. This research thus uses an exploratory mixed method design.

This report is structured as follows: chapter 2 outlines the theoretical framework used in this research, followed by a chapter on the methods used for data collection and analysis. Result of the data collection are discussed in chapter 4 and 5. In section 6, the sub-research questions are discussed, which form the basis for the conclusion and recommendations in chapter 7.

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Chapter 2

Rules, property and the (in)formal city

CHAPTER 2

Rules, property and the (in)formal city

The aim of this theoretical framework is to position the research within the most relevant academic debates. Three topics are relevant to this research. First of all, the formal-informal dichotomy is discussed. As this dichotomy seems to be largely linked to ownership of land, the second sub-chapter discusses property rights theory. In order to create a more nuanced understanding of the socio-economic dynamics surrounding informal and formal real estate, the theoretical framework then draws from new institutionalism. In the fourth and last sub-chapter, these topics are combined and operationalized.

2.1 The formal and the informal city

The formal–informal dichotomy is a resource for naming, managing, governing, producing, and even critiquing contemporary cities. The distinction is used to refer to urban territory (slum and non-slum), groups (labor), and governmentality (monitoring, naming and intervening). As argued by McFarlane (2012) *“the informal–formal relation is both a seemingly modest descriptor and a powerful distinction that has an active effect on urban imagination and practice, and that even plays a fundamental role in constituting the urban- especially in the “global south”* (McFarlane, 2012). Yet, there is a need to create a further understanding how formal and informal regimes are shaping and impacting urban life.

As argued by Roy (2011), informality shows us the importance of not only asking where things belong, but also whom they belong to. Whereas the right to property is based on the premise of exclusion, it can be challenged by those who claim the right not to be excluded (Blomley, 2014).

These claims can be related to the works of Henri Lefebvre (1974), a phenomenon that he termed “the right to the city” and contrasted with “the right to property”.

Although the research question as posed at the end of chapter 1 refers explicitly to the coexistence of informal and formal real estate markets as the object of analysis, part of the conceptual objective of this thesis is actually to deconstruct the concept of informal regimes as a category that can be opposed to formal regimes. It aims to do so by analyzing how informal and formal real estate markets are interacting to shape urban development in informal settlements.

However, before this question can be answered, there is a need to understand theories of property rights and land regimes.

2.2 The right to property

How a particular city develops depends on the laws that are applicable. This local regime of lands includes all the rights, the distribution of them and the enforcement of these rights (Geuting and Needham, 2012).

Property rights provide clarity, stability and certainty. The assignment of property rights over a good excludes the use of others and means protection by the state. If property rights are not protected, the income of the owner is also not secured, leading to a lower valuation of the good (Buitelaar and Segeren, 2011).

One of the corner stones of property rights theories is Coase’s Theorem: *“The ultimate result (which maximizes the value of production) is independent of the legal system if the price system is assumed to work without costs”* (Coase, 1960, p. 8). From this statement, a more relevant, but corollary proposition can be deduced. In the real world, transaction costs are never zero, and therefore it does matter how property rights have been assigned. From here, it can be argued that property rights affect economic processes, and thus also affect the outcome of land development processes (Buitelaar and Segeren, 2011).

Property right theory does not discuss landownership, but rather the ownership of rights over the land. It is not the land that is owned, but the right to use that land and to derive an income from it. These rights can be split off and subdivided into partial rights (Cooter and Ulen, 2012). There are two types of partial rights. The first is the right to use a piece of property in a particular way, for example, a fishing right. The second is the right to use part of a piece of land, for example, one can

own a house, but the ground below is a collective good used for sewage systems. These partial rights are also referred to as a bundle of rights (Needham, Buitelaar and Hartmann, 2019).

A distinction can be made between the assignment and the delineation of property rights. The assignment of property rights often refers to the entire bundle of rights, or at least a large part of it. This bundle of rights can then be re-assigned to others. Delineation, on the other hand, refers to the conditions under which a right can be exercised. Land use planning is an important tool for delineation (Buitelaar and Segeren, 2011).

2.2.1 Property rights, enforcement and land use

In general, there are two main channels through which laws can influence how land is used. In many countries of the world, state agencies can influence the way land is used through regulatory land use planning. However, the way in which rights are created, structured and trafficked, in short, the way in which the market in rights is set up, also heavily influences land use (Geuting, 2007; Geuting and Needham, 2012; Needham, Buitelaar and Hartmann, 2019). These two channels are also called public law and private law respectively (Cooter and Ulen, 2012).

The core definition of private law is that the state makes rules about interactions between actors, but only enforces them if one of the parties requests this. If the interests of someone are damaged, but this person does not act, the state will not intervene. However, when this person does act, it is the state's obligation to find out if rights were indeed violated. In public law, on the other hand, the state can enforce rules without being requested to do so. If the state decides that certain interests should be protected by for instance, banning certain types of land use, the state may take action against a transgressor directly (Needham, Buitelaar and Hartmann, 2019).

These instruments of enforcement of rules is a key concept in the functioning of property rights regimes, or any institution out there. "Institutions are devices for achieving *purposes*, not just achieving *agreement*. We want government to *do* things, not just *decide* things" (Putnam, 1993, as cited in Needham, Buitelaar and Hartmann, 2019, p. 85). Without the proper instruments to enforce rules, they are just decisions. Only when enforced they give local authorities the power to achieve desired effects of spatial planning.

Land right regimes thus influence urban development. What can be realized in a certain location, is dependent on restrictions, such as zoning plan requirements (Buitelaar and Segeren,

2011). Similarly, changes in property rights regimes lead to a change in the process of property development, which has an impact on the spatial characteristics of real estate (Geuting, 2007). Although research to the relationship between the real estate market and urban development is still in an exploratory phase, research suggests that property right and markets among others influence site boundaries of redevelopment projects, the type of houses constructed, land use functions, the size of plots, the degree of fragmentation (Geuting, 2007; Buitelaar, Segeren and Kronberger, 2008; Buitelaar and Segeren, 2011; Tian, Guo and Yin, 2017)

2.2.2 Property rights and informal institutions

In the case of informal property markets, there are often no legally binding agreements protecting the owner. However, this does not mean that informal activities are not regulated by informal agreements or rules. These sets of rules are what Ostrom (1992) refers to as institutions: “... *an institution is simply the set of rules actually used (the working rules or rules-in-use) by a set of individuals to organize repetitive activities that produce outcomes affecting those individuals and potentially affecting others*” (Ostrom 1992, p.19). Institutions thus define and limit the set of choices individuals have in their actions.

All property rights regimes are institutions, and imply “*a system of relations between individuals... it involves rights, duties, powers, privileges, forbearance, etc.*” (Hallowell, 1943 as cited in Feeny and Feder, 1991, p. 136). These institutional arrangements include mechanisms for defining and enforcing property rights. They include the formal procedures, such as described in for instance property law, but also the social customs and attitudes concerning the legitimacy and recognition of those rights (Taylor, 1988).

As the institutionalist approach recognizes both these formal and informal aspects of institutions, it is very useful to use in the case of analyzing and understanding informal real estate markets and property rights regimes. Informal real estate markets are not backed by the law, or enforced by the state, but are governed through rules upheld by mutual agreement, or by relations of power or authority (Leach and Mearns, 1996). In the next section, the concept of rules is further explained.

2.3 Further unpacking institutions

Central to institutions are rules. Rules have been defined by different scholars, but the most widely used definition is given Max Black (1962), as mentioned in Ostrom (2005). Black recognized four definitions of rules: they can refer to laws, regulations, instructions and norms. In other words, they are prescriptions concerning actions, interactions and outcomes (Ostrom, 2005).

Every action situation is thus influenced by sets of rules. These rules are used to guide behavior, determine who is eligible to make decisions, what actions are allowed, what procedures must be followed and what information must be provide, and divide the costs and payoffs. Changing the rules would change the outcome of an activity.

2.3.1 Classification of rules

Rules have been classified into seven different types. The following section describes the types of rules based on the work by Ostrom (2005).

1. *Boundary rules* specify who can play a role, how the decision of who is eligible is made and how an individual can leave a role. Boundary rules thus define who has the right to enter and use a resource.
2. *Position rules* describe the different positions held by participants and the different kinds of authorities that come with positions. It is important to note that in the case of multiple positions, a mix of position and boundary rules define relationships between those positions. For instance, some rules create multiple positions (position rule), but forbid an actor of holding more than one position (boundary rule). Or the conditions (boundary rule) may differ per position created (position rule).
3. *Choice rules* define which actors may or may not act and how.
4. *Payoff rules* specify rewards or sanctions to actions that have been taken. This is a way to introduce penalties for prohibited actions. Three payoff rules are extensively used: 1) imposition of a fine, 2) the loss of appropriation rights, and 3) incarceration.
5. *Information rules* specify what information participants in particular roles must, must not or may communicate to other participants, and the language and form in which this communication is to take place.

6. *Scope rules* define the set of outcome variables that must or must not be affected as a result of actions taken in the action arena.
7. *Aggregation rules* specify who has responsibility for an action at each point in the decision process.

According to Ostrom, Gardner and Walker (1994, p. 38), “all rules are the results of [...] efforts to achieve order and predictability among humans”. The object of Ostrom’s rules always refer to social behavior. Rules that see individual agent behavior as the subject are not included in her approach.

Changes in rules are complicated processes and cannot solely be explained as a strategy to maximize some single observable variable. Rather, it is argued that rule configurations are complex systems with feedback mechanisms. The change in one rule, likely influences the working of others (Ostrom, Gardner and Walker, 1994). Rules may change as an intended result or they may change over time, or consciously or unconsciously.

2.3.2 Critiques of Ostrom

Despite its ability to explain institutional setup, Ostrom’s framework has been criticized on a number of aspects. One of the biggest critiques is that the framework does not pay adequate attention to the effect of the larger context on shaping outcomes. As argued by Clement (2010), the implementation of rules at the local level is also severely impacted by higher governance levels, or for instance the structure of the economy.

Further contextualizing the framework would not only include enlarging to higher governance levels, but also situating the present in a historical context. According to Clement (2010), it is necessary to understand why power has been shaped in a certain way, and whose power and institutions are seen as legitimate. “*A historical approach is all the more crucial in the field of natural resource governance because a dynamic and long-term perspective is generally needed to evaluate and explain environmental change*” (Clement, 2010, p. 137). The need to implicate a macroeconomic and historical context in collective action research has been recognized by many other scholars, including Agrawal, 2001 and Ostrom, 2005. Ostrom even argued that “*a theory of self-organization and self-governance of smaller units within larger political systems must overtly take the activities of surrounding political systems into account in explaining behavior and*

outcomes". However, as this context is not directly included in the framework, in practice it has not been applied in environmental policy research (Clement, 2010; Suhardiman, Clement and Bharati, 2015).

However, perhaps the biggest shortcoming of the model lies in its loyalty to a single behavioral dogma of orthodox economics: self-interest (Blind, 2015). Only in her reasoning about rules choice and innovation does Ostrom depart from game theory. Ostrom's preoccupation with game-theoretic argument means that the theoretical framework only provides insights in the rules for governing social behavior of agents, whereas it is much less instructive in rules guiding individual behavior or explaining the evolution of rules.

In spite of these limitations, Ostrom's work still provides a groundbreaking step towards a theory of rules-based socio-economic theories. Because her framework has been inductively derived, it has been proven to be useful in analyzing natural resource governance. Furthermore, although not every aspect, such as power, has been included, the framework leaves enough space for other authors to include such factors in their analysis.

2.4 Bringing rules, and law & economics together

There exists both a formal and an informal real estate market. Each of these markets is characterized by different rules. The rules of formal real estate markets are clearly described in the laws of a country. However, as this research aims to analyze the rules of informal real estate markets, where the clarity of such laws is absent, there is the necessity to develop a different framework. Based on the rules developed by Ostrom (1999), which recognize the importance of both formal and informal rules, and property rights theory discussed in the previous sections, a new framework is developed through which informal property rights can be analyzed.

As argued in section 2.2, there are two "packets of rules", which can influence land use. Rights can be exercised through private and public law, and a planning authority may decide to apply these laws in the form of national or local planning measures, for instance through building bylaws and land use plans (Needham, Buitelaar and Hartmann, 2019).

Private law describes rules about how persons and who can own, use and transfer their rights (Cooter and Ulen, 2012). It describes the relationship among people with respect to land, also referred to a land tenure. This definition of private law brings us back to Ostrom (2005), who

identified three types of rule in her IAD framework that are relevant to this definition of private law. The first one is boundary rules. Boundary rules are relevant in this context as they “*specify who can play a role, how the decision of who is eligible is made and how an individual can leave a role. Boundary rules thus define who has the right to enter and use a resource.*” They thus specify the conditions that must be met to gain access to a resource- or who can own. As explained in 2.3.1, in the case of multiple types of actors, the boundary rules differ per position. Therefore, boundary rules cannot be explained separately from position rules, and should also be considered when exploring informal property rights. The last set of rules of relevance to private law are choice rules. Choice rules “*define which actor may or may not act and how.*” They thus specify how resources can be used and transferred by different actors. Position, boundary and choice rules together form an elementary system of property rights.

Public law, on the other hand, includes which property rights a person may not hold, or in which way an (state) agent may restrict the exercise of property rights. In other words, they define the kind of spatial order that is desired (Needham, Buitelaar and Hartmann, 2019). As defined earlier in section 2.3, *scope rules* define the set of outcome variables that must or must not be affected as a result of actions taken in the action arena. If position, boundary and choice rules, or private law, provide people with rights to a property, public law, or scope rules have a restricting effect on the exercise of these rights. Whereas choice rules condition different actors, scope rules limit outcomes, and are therefore unrelated to actors. Scope rules specifically delimit urban development outcomes, and thus form a system of land regulation.

In a formal setting, these two packets of rules can be enforced through legal instruments, also known as laws, through a court of law. As argued in section 2.2.1, how rules are enforced influences their impact on land development. If one’s only tool for enforcing rules is by giving a stern warning, then they can just be disregarded by anyone. However, if the fine for a transgressor is \$200,000, one will likely think twice about breaking the rules. This is why when looking at the informal real estate market, it is also important to look at what Ostrom calls *payoff rules*: the rewards or sanctions to actions taken.

As discussed in 2.2.1, property rights regimes influence spatial characteristics. It can thus be concluded that the five rules identified above influence urban development. The framework described before will be used to answer the research questions of this study.



Chapter 3

Research methodology and methods

CHAPTER 3

Research methodology and methods

This chapter discusses the research design that is used to answer the research questions. It then continues with two subchapters on the methods for data collection and analysis. The chapter finalizes with a section on how trustworthiness and validity of the results are ensured.

3.1 Research design

This research took a pragmatic philosophical approach. With regards to the social world, it was assumed that there is no such things as a single, absolute reality, but rather a multiplicity of realities that come about inside and between the minds of people (Van der Stoep, 2014). However, it is important to emphasize that a distinction is made between the second order reality, which is the world we perceive, and the first order of reality, the physical world as it is. This assumption finds its roots in Bhaskar's theory of critical realism (Fletcher, 2017).

An exploratory mixed method design was used. As the research aims to answer questions about urban form and development, a mix of qualitative and quantitative methods were used. Mixed method designs are best used to answer qualitative and quantitative questions simultaneously (Opoku, Ahmed and Akotia, 2016). To explain the urban form, quantitative methods were used. To understand the rules of real estate markets, a qualitative approach was taken as this approach is more suitable to develop an understanding of social constructs, such as institutions (Opoku, Ahmed and Akotia, 2016).

This research used a case study to illustrate how rules guiding informal real estate influence urban development in informal settlements. There are several reasons why a case study was the appropriate research method for this research. First of all, as mentioned in the introduction, limited

information is available about real estate in informal settlements, and no research has been done on the rules guiding these processes. Case studies are very appropriate for the exploratory phase of research (Yin, 2009).

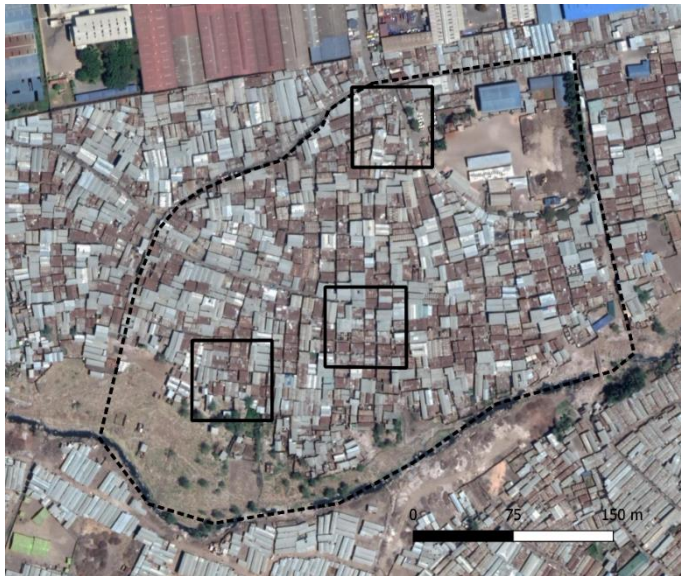
Secondly, case studies are an excellent method to study contemporary events within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly indicated (Yin, 2009). In the case of institutions, it is virtually impossible to separate them from their context, as they are heavily embedded in it and are constantly reshaped through their interaction with individuals (Ostrom, 2005).

The single-case study was located in the Mukuru slum in Nairobi, specifically in the Lunga neighborhood, which covers about one km². Figure 1 shows the study area. This case study was selected based on a number of characteristics which can be found in Table 1.

Table 1 Characteristics criteria for case study selection

Characteristic	Relevance
High socio-economic mobility	A large in- and outflow of migrants ensures the existence of a real estate market;
A documented ownership transfer system	A known ownership transfer system ensures the existence of a real estate market; and
Availability of plot profiles	This data is required to answer sub-question 2.

Figure 1 Map of the study area



In Table 2, the data collection and analysis methods per sub-question are described. In the following two subsections, these methods are to be further explained.

Table 2 Data collection and analysis overview

Sub-question	Data collection	Data analysis
1	Interviews Document	Coding Documents analysis
2	Observations Interviews	Visual data analysis Coding
3	None	Discussion

3.2 Methods for data collection

The data used for this study consisted out of qualitative and quantitative methods of primary data collection. The research was conducted in an iterative model, which is demonstrated in Figure 2. In the following sections, this model is further explained.

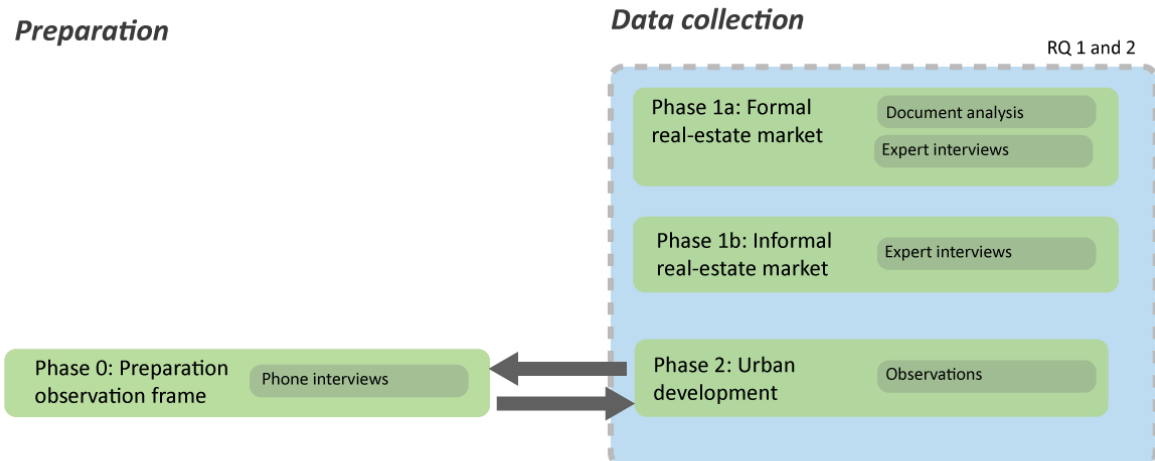


Figure 2 Visual representation of data collection

3.2.1 Phase 0: Preparation of the observation frame

The research began with three exploratory interviews with structure owners in Lunga. The results of these interviews were used as input for the observation frame for urban development. The interviews were held over the phone. The first interviewee was selected through purposeful sampling, the other two interviewees were selected through snowball sampling.

3.2.2 Phase 1a: The formal real estate market

In phase 1a, several methods are used to create an understanding of the formal real estate market:

Document analysis

Phase 1a began with a study of public and private laws in Kenya with relation to land governance. The main laws that were analyzed are:

- The Constitution of Kenya, 2010 which under Chapter Five – This chapter provides a legal framework for transactions in land;
- Statutes:
 - Land Registration Act, 2012 (LRA): Governs the registration of dispositions in land;

- Land Act, 2012: Consolidates all the different land laws in Kenya;
- Physical Planning Act (Cap. 286) (PPA): Provides the procedures for the preparation and implementation of physical development plans.
- Building code (1968): In addition to the PPA, the Building Code is used for the development permissions of building construction.

These documents were chosen because they describe the most important laws governing land and property in Kenya (Onyango, 2014). From these documents, a clear overview of the rules governing formal real estate was obtained.

Expert interviews

Besides a document analysis, primary data was collected through expert interviews. Exploratory semi-structured expert interviews were conducted to gain as much knowledge about formal and informal real estate market interactions. Interviews were chosen as a method as they allow for an in-depth analysis of data on a wide range of aspects of the issue at hand in practice (Opoku, Ahmad and Akotia, 2016). Besides, semi-structured interviews allow for a level of flexibility, which makes them suitable for an exploratory case study research (Yin, 2009).

Three experts were interviewed, namely a construction consultant, a conveyance lawyer and an urban planner from Nairobi City government. These interviewees were selected through purposeful sampling. This method selects respondents based on their knowledge about the case, and thus based on their ability to contribute to the research objective (Devers and Frankel, 2000). The interviews took approximately 40 minutes and were audio-recorded after permission is asked. Topics of these interviews can be found in

Table 3 Interview topics

Rules	Topics	Relevance
Position rules describe the different positions held by participants and the different kinds of authorities that come with positions.	Actors involved in the informal real estate market.	To identify the main actors relevant to the informal real estate market and how actors are chosen for certain positions.
Boundary rules specify who can play a role, how the decision of who is		

eligible is made and how an individual can leave a role.		
Choice rules define which actors may or may not act and how.	Process of land acquisition	Transactions in rights of land influence the spatial characteristics of real estate (Geuting, 2007)
	Types and documentation of ownership	Ownership types influence the development process (Geuting, 2007)
	Transaction dynamics	Transactions in rights of land influence the spatial characteristics of real estate (Geuting, 2007)
Scope rules define the set of outcome variables that must or must not be affected as a result of actions.	Rules concerning construction (how, position on a plot of land)	The types of regulations in place has implications for the spatial order (Needham, Buitelaar and Hartmann, 2019)
	Rules concerning the size and function of plots	Ditto
	Rules concerning the location of plots	Ditto.
	Other rules	Ditto
Payoff rules specify rewards or sanctions to actions that have been taken.	Enforcement of rules	Only the enforcement of rules will turn decisions into actions (Putnam, 1993).

3.2.3 Phase 1b: The informal real estate market

Phase 1b of this research consisted out of an analysis of the informal rules regulating informal real estate in a single-case study design in the case of Mukuru Slum, Nairobi. The single-case study looked at the Lunga neighborhood and aims to provide a partial answer to sub-question 1.

Several interviews were done in order to create an understanding of the rules and norms guiding informal real estate. Semi-structured expert interviews were chosen as the aim was to gain as much in-depth, knowledge about the informal real estate market. As semi-structured interviews allow for a level of flexibility, it is the appropriate tool for exploratory case study research (Yin,

2009). Interviewees were selected using a combination of purposeful and snowball sampling. Interviews were audio-recorded after permission was given by the interviewees.

Eight actors were identified for an interview, namely the chief, two village elder, and five structure owners. Unfortunately, the chief refused to give an interview, leaving seven interviewees, after which data saturation was reached.

Based on the conceptual framework, both the formal and the informal interviews addressed the following topics:

Table 3 Interview topics

Rules	Topics	Relevance
<p>Position rules describe the different positions held by participants and the different kinds of authorities that come with positions.</p> <p>Boundary rules specify who can play a role, how the decision of who is eligible is made and how an individual can leave a role.</p>	Actors involved in the informal real estate market.	To identify the main actors relevant to the informal real estate market and how actors are chosen for certain positions.
<p>Choice rules define which actors may or may not act and how.</p>	Process of land acquisition	Transactions in rights of land influence the spatial characteristics of real estate (Geuting, 2007)
	Types and documentation of ownership	Ownership types influence the development process (Geuting, 2007)
	Transaction dynamics	Transactions in rights of land influence the spatial characteristics of real estate (Geuting, 2007)
<p>Scope rules define the set of outcome variables that must or must not be affected as a result of actions.</p>	Rules concerning construction (how, position on a plot of land)	The types of regulations in place has implications for the spatial order (Needham, Buitelaar and Hartmann, 2019)
	Rules concerning the size and function of plots	Ditto

	Rules concerning the location of plots	Ditto.
	Other rules	Ditto
Payoff rules specify rewards or sanctions to actions that have been taken.	Enforcement of rules	Only the enforcement of rules will turn decisions into actions (Putnam, 1993).

The interview guide can be found in the appendix.

3.2.4 Phase 2: Urban development

Throughout the research, a non-participatory semi-structured observation method was used to collect data about the basic spatial characteristics within the selected neighborhood. The aim of this was to be able to identify a relationship between informal real estate and urban development. Due to the lack of a powerful methodology to quantify urban form accurately (Xiao, 2017), studies of urban form in informal settlements have been limited. However, in the case of this study this was not prohibiting, since it is not the main aim of our study to understand the morphology of informal settlements. Rather, it aimed to create an understanding of why slums look the way they do, based on the identified rules.

The neighborhood was divided into three micro-sites: one at a busy shopping street, one residential area in the center of the neighborhood, and one residential area at the edge of the neighborhood. These three micro-sites are purposely identified in order to ensure data collection of three distinct types of sites that can be found within the neighborhood.

To operationalize urban development, three concepts were selected, which can be found in Table 4. The final observation frame was realized through the interviews done in phase 0.

Table 4 Urban development indicators

Concept	Parameters	Calculation	Data collection
Compactness	Ground Space Index (GSI)	$\frac{TA}{BA} * 100$ <p>In which TA = total surface area BA = total build area</p>	Secondary data from OpenStreetMap.
Land use	Entropy index	$-\left(\sum_{j=5}^n p_j * \ln(p_j) / \ln(n)\right)$ <p>In which j = type of land use p = coverage of land use as a percentage of total land area</p>	On-the ground data collection, indicating space used for: <ul style="list-style-type: none"> • Residential; • Commercial; • Mix residential/commercial • Infrastructural; • Leisure. Secondary data from OpenStreetMap.
Zoning	Plot size	Direct calculation in QGIS	Secondary data from OpenStreetMap.

3.3 Methods for data analysis

3.3.1 Sub-question 1: The rules of Nairobi and slum real estate

To answer sub-question 1, documents collected were analyzed. Interviews were processed after each interview took place. Recorded interviews were transcribed in a question-answer format. To assess the formal and informal rules in real estate, the following codes (Table 5) were identified through an iterative process in three subsequent rounds of coding using ATLAS.ti. All codes were based on the theoretical framework as discussed in section 2.4, and were used to analyze both the interviews and the documents.

Table 5 Coding of interviews

Code categories	Operators	Explanation of criteria
Position and boundary rules	<ul style="list-style-type: none"> • Chairman • Chief • Government • Owner 	In the case of multiple positions, boundary rules are different per position. These categories include the relevant actors in the formal and informal real estate markets, as identified in the interviews.
Choice rules	<ul style="list-style-type: none"> • Own • Conditions of ownership • Meaning of ownership • Proof of ownership • Transfer • Purchasing process • Transfers through inheritance • Allocation of land • Use 	As discussed in section 2.4, private law or boundary and choice rules describe rules about how persons and who can own, use and transfer their rights (Cooter and Ulen, 2012). Based on the findings in the field work, these categories were divided into more precise sub-categories.
Scope rules	<ul style="list-style-type: none"> • Size • Standard size of plots • Processes of amalgamation and subdivision • Location • Function • Construction 	Public law, or scope rules, place restrictions on how people can use their rights (see section 2.4). As the aim of this research is to identify spatial consequences, specifically land use, zoning and compactness, the analysis looks at rules regarding size, location and function of plots.
Objects	<ul style="list-style-type: none"> • Land • Private road • Public road • Structure 	Scope rules put restrictions on urban development outcomes. Based on the interviews, four specific objects which were influenced by the scope rules were identified.
Payoff rules	<ul style="list-style-type: none"> • Fine • Loss of property • Jail • Social pressure • Structure demolishing • None 	As argued by Ostrom (2005), three payoff rules are extensively used: 1) imposition of a fine, 2) the loss of appropriation rights, and 3) incarceration. The initial operators were based on this classification. Based on findings during data analysis, three more categories were added.

3.3.2 Sub-question 2: How rules are affecting urban development

To answer sub-question 2, a visual data analysis was performed in QGIS. This analysis was based on the outcomes of the observations done in phase 2. Using an existing building extraction from OSM, QGIS was used to draw the microplots, identify the different land uses, and to collect the necessary variables on the sizes of plots per different land use. Data collected from QGIS was then transferred to an excel document, in which the calculations for the GSI, entropy index and the average plot size were done. Based on the indexes calculated, conclusions were made about urban development in informal settlements. These findings were then compared to the findings in the interviews to draw conclusions about the effects of the rules of informal real estate on urban development.

3.3.3 Sub-question 3: The interaction of formal and informal real estate

Sub-question 3 was answered in the discussion using the outcomes of sub question 1 and 2 and the theoretical framework.

3.4 Credibility and trustworthiness

Yin (2009) identified four strategies to ensure trustworthiness, credibility, confirmability and data dependability in case study research. These strategies are:

1. Construct validity: identifying appropriate operational measures for the concept studied.
2. Internal validity: seeking to establish a causal relationship.
3. External validity: defining the domain to which findings can be generalized.
4. Reliability: demonstrating that the operations of a study generate the same results when repeated.

In Table 6 the tactics employed in this study can be found.

Table 6 Case study tactics to ensure validity and reliability

Test	Phase of research	Tactic	Explanation
Construct validity	Data collection	Multiple sources of evidence Data triangulation	The study used interviews, observations and document analysis. SQ1 and SQ2 both use multiple sources of evidence to arrive at a conclusion, indicating data triangulation (Yin, 2009).

Internal validity	Data analysis	Pattern matching	To ensure that the results of urban development are indeed caused by the rules of the informal real estate market, a predicted theoretical pattern, as discussed in the theoretical framework, were compared with the observed empirical pattern (Yin, 2009).
External validity	Research design	Use of theory	Findings of one case-study cannot just be generalized to all informal settlements. Therefore, the research made use of existing theories, as discussed in the theoretical framework.
Reliability	Data collection	Use of thick description	The research provides thick descriptions of the observations and interviews. Thick description provides the reader with a sense of the depth of the process and provides an extra explanation to how the conclusions came about (Boeije, 2005).
		Case study database	A case study database containing the notes on interviews, observations and document analysis was compiled at the end of the study, which can be consulted by anyone interested (Yin, 2009)

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Chapter 4

The formal and informal real estate markets of Nairobi

CHAPTER 4

The formal and informal real estate markets of Nairobi

In this chapter, the rules characterizing the formal and informal real estate markets of Nairobi are discussed. In the theoretical framework, three categories of importance to the research were already identified: position, boundary and choice rules, which describe land tenure, scope rules, which describe land regulation, and payoff rules, which describe the enforcement of these rules. In section 4.1 the formal real estate market is discussed according to these three categories. In section 4.2, the same structure is followed, but in the context of the informal real estate market. The chapter concludes with a Table which provides a comprehensive overview of the two sets of rules.

4.1 Rules of the formal real estate market

The legal system in Kenya is based on English common law. The most important documents concerning land and land registration in Kenya are the Constitution and the Land Registration Act (LRA). Land use is regulated through the Land Act (LA) of 2012, the Physical Planning Act (PPA) of 1996 and the Building Code of 1974. In this section, the results of an analysis of these documents, plus three expert interviews with a construction consultant, a conveyance lawyer and an urban planner are discussed.

4.1.1 Actors of the formal real estate market (or position and boundary rules)

Although the reality is that there are many actors in the formal real estate market, a selection was made for the purpose of this analysis. The most important actors in the formal real estate market are:

- **Government:** The government consists out of employees working for the government institutes relevant to land policy in Kenya; and
- **Owners:** Owners are the individuals who own a plot of land.

In Table 7, an overview of these actors with the requirements to their position can be found.

Table 7 Actors of the formal real estate market

Actor	Role	Boundary rules
Government	Allocation of land; Officiate land transactions; Stipulate bylaws regarding construction of structures and the development of land.	Be a Kenyan citizen; Possess an ID or passport; Be over 18 years old.
Owners	Owns a plot of land.	No restrictions on race, gender, education level or ethnicity; Be over 18 years old; Possess an ID or passport; In case of freehold: be a Kenyan citizen.

4.1.2 Formal land tenure systems in Kenya (or choice rules)

Section 61 of the Constitution of Kenya holds that “*all lands in Kenya belongs to the people of Kenya collectively as a nation, as communities and as individuals*”. In Kenya land is classified as either public, communal or private land. Public land is land that as of date is unalienated government land, community land is defined as land registered in the name of a group, and private land is defined as any land hold by any person under freehold and leasehold tenure.

With regards to private land, a distinction can be made between freehold and leasehold tenure. Freehold tenure means that the owner has an absolute ownership of the interest in land and is only subject to the laws related to land use. Leasehold tenure, on the other hand, refers to an interest in land for a period of maximum 99 years, which is subject to a payment of a fee to the grantor (the government in this case). The main difference between the two is the time period over which an owner holds their rights.

Once someone owns a parcel of land, they have the right to use, control and transfer this land. An owner has e.g. the right to construct, to change the use of the land, to subdivide the land, and to generate an income from it.

Demarcation of boundaries

In order to receive a new title deed for a plot, land needs to be surveyed to determine the plot boundaries. Unsurveyed land needs to be registered with the government, more specially the Survey of Kenya. Once an individual has received a parcel number after performing a title search, a certified land surveyor then begins the mapping process, indicating the reference points of the parcel. Once these points are marked, beacons are planted to mark the boundaries. These points are then taken up in the deed plan, which is then verified by the Land Control Board. Boundaries of the plot are kept at the Ministry of Lands.

Proof of ownership

According to the Land Registration Act, the certificate of title or a title deed that is issued upon registration of plot, or to a purchaser of land upon transfer or transmission by the owner is seen as *prima facie* evidence that the person named as proprietor is the absolute owner. This title cannot be challenged except for on the grounds of fraud or the illegal acquisition of the title.

Titles are kept at the Ministry of Lands and can be looked up by anyone using the Land Reference number of a plot.

Accessing land ownership

There are various ways to acquire title to land in Kenya as described in the Land Act of 2012. These include: “allocation, land adjudication process, compulsory acquisition, prescription, settlement programs, transmissions, transfers, long-term leases exceeding 21 years created out of private land, or any other manner prescribed in an Act of Parliament.”

However, private land can be acquired through three main channels: 1) allocation, 2) purchase and 3) transmission after death of owner. Allocation is when public land is transferred by the government to individual, usually on a lease hold. Allocation can be carried out through several ways:

- Public auction: the highest bidder is allocated the land;
- Public tender: winner of the tender is allocated the land;
- Drawing of lots: winner of the ballot is allocated the land;
- Exchange of land of equal value.

One can also acquire private land through purchasing a plot. When a potential buyer has identified a plot of land of their interest the first step is to do a title search to confirm land ownership by using the land registration number. Once land ownership is confirmed, a contract of sales is written up and signed. It is advised for both parties to have a witness present, depending on the level of trust between the buyer and seller.

Lastly, transmissions are arranged according to the law of succession: the next of kin as indicated in the written or oral will of the deceased owner will receive the plot of land.

4.1.3 Delineating the rights of owners: land use regulations (or scope rules)

Although the ownership of a plot of land comes with certain rights, these rights are restricted by local development authorities. According to the Physical Planning Act, each local authority has the power to prohibit or control the use and development of land and buildings according to the physical development plans. The PPA also provides local authorities with the power to control subdivisions of land, to formulate by-laws to regulate zoning, and control the density of development.

Before the owner of a plot can carry out any development, permission must be granted by the local authority. Development controls that are discussed in this section are controls regarding the construction of a structure, 2) controls regarding the use and size of plots, and 3) controls regarding the ground coverage and plot ratio.

Development of a structure

The Building Code stipulates that “a person who intends to erect a building shall submit a written application to do so in such form as the council may require, completing all details required therein in so far as they apply to the proposals.” Any person who intends to erect a building must thus apply for permission with the local authority.

Whether permission is granted depends on the plans. Building plans need to comply with the provisions of the Building Code. These provisions describe the use of materials, the strength of the foundation, walls, fire resistance, etc.

If an owner wishes to construct a building, he must employ a registered architect and a structural designer to supervise the erection of the building. Furthermore, during construction a resident engineer must be employed who is capable of reading the drawings and ensuring that the work is carried out in accordance with these drawings.

Zoning, size of plots and function

Although it is the right of an owner to change the use of their plot, there are zoning regulations in place to limit this right. Plots of land are purposed for certain activities, such as commercial, residential or industrial. As an owner, you have the right to apply to a change of use. After applying for a change of use, a notice board will be placed, and neighbors are given the opportunity to submit any issues. Furthermore, the plan needs to be approved by the county government according to their zoning regulations. As stated by one expert interviewed, plans need to be in line with the nature and the general trend in the neighborhood as stipulated in the development plans.

Besides regulations regarding the use of a plot, there are also regulations with regards to the size of plots. Interviews with three experts showed that the minimum size is 50 by 100 feet or 0.05 ha. This minimum size is also dependent on the zoning and development plans as decided upon by the local planning authority. In some areas, such as industrial areas, it may be decided that it is undesirable to have smaller plots. The local authority may then restrict the subdivision of plots of land.

Siting

As indicated in the building code, a residential building must leave an open space in front of the building along the whole width of the front of the building. There must be at least one side with an open space of 8 feet or more. Furthermore, space must be left for the purpose of servicing any building. It is forbidden to construct dwellings that only have one external wall containing a door or windows, or where at least two parallel external walls do not contain a door or window opening. This is referred to as a back-to-back dwelling.

Besides these siting rules, there are also rules with regards to the ground coverage and plot ratio. Ground coverage (GC) refers to the percentage of a plot that is covered by a permanent structure. Plot ratio (PR) is a measure that compares the total built floor space with the size of the plot. The GC and PR are determined by the local authorities.

4.1.4 Enforcement of property rights and regulatory laws (or payoff rules)

As the choice rules and scope rules as identified in the previous sections are part of the formal system, their enforcement happens through Kenya's legal and law enforcement systems. Within the Constitution, the Land Registration Act, the Land Act, the Physical Planning Act and the Building Code the punishment of offences are described. An example of such a punishment can be found in the Physical planning act:

“(1) No person shall carry out development within the area of a local authority without a development permission granted by the local authority under section 33.

(2) Any person who contravenes subsection (1) shall be guilty of an offence and shall be liable to a fine not exceeding one hundred thousand shillings or to an imprisonment not exceeding five years or to both.”

This quote demonstrates the two main channels through which the Kenyan government enforces property rights and regulatory measures: either through a fine or through imprisonment.

As became clear through the expert interviews, within the formal real estate market, enforcement of the rules does not always occur. Some of the main issues identified by the experts were the limited capacity of government authorities, a disconnect between the different agencies involved as a result of unclarity of the rules and procedures, and corruption. As stated by one of the experts:

“If you want to open your shop, you go to the city hall, you get your license. City hall does not even know where the shop is. So, when the inspector comes, they find you have a license. Even though it is not approved according to zoning regulations. The left and the right arm are not coordinating. Our local county governments cannot keep up.” As a result, the formal real estate market is also entrenched with informalities.

4.2 The informal real estate market

Whereas the rules of the formal real estate market are clearly defined within the legal framework, the rules of the informal real estate market are not written down. This section discusses the rules of the informal real estate market based on semi-structures interviews in the case study Lunga. A similar structure as in section 4.1 is followed- starting with the position and boundary rules, the choice rules, the scope rules and finishing with the payoff rules.

4.2.1 Actors in the informal real estate market (or position and boundary rules)

In the interviews, it was found that there are several actors relevant in the informal real estate market. These actors are:

- **Chief:** The chief is a representative of the Office of the President, at the local level. Formally, chiefs are sent to informal settlements to facilitate and mobilize local citizens' participation in the development of projects, and to monitor and report on the status of local infrastructure and public facilities. Their involvement in the real estate market is outside of their formal tasks.
- **Village elders or chairmen:** Slums such as Mukuru are divided into smaller village. Each village has its own village elder. These elders are members of the community and represent the Chief when he is not present.
- **Structure owners:** Structure owners are the individuals who own a structure and a plot of land.

In Table 8 below a more elaborate description of these actors' roles and the requirements to their position can be found.

Table 8 Actors of the informal real estate market

Actor	Role	Boundary rules
Chief (one per ward)	Allocation of land; Officiate land transactions; and Provide bylaws regarding construction of structures and the development of land.	Be a Kenyan citizen; Minimum of post-secondary education; Be over 18 years old.

Chairmen (one per village)	Intermediate between structure owners and chief's office; Keep record of property owners; Witness to land transactions; Approve building construction and repairs; and Approve subdivisions.	Be a member of the local community; Chosen by community – usually the richest man in the Village.
Structure owners (one per structure)	Owns a structure/piece of land;	No restrictions on race, gender, education level or ethnicity; Must possess an ID or passport; and Must have proof of ownership, through purchasing contract or communal knowledge.

4.2.2 Informal land tenure in Lunga (or choice rules)

During the interviews, three types of land holdings were identified. First of all, structures are built on private land. This land is owned by the structure owners. It is generally known by structure owners that legally they do not own the land, as they do not have a title deed. However, through the interviews it was also mentioned several times that within the informal system, people own both the land and the structure: *“You cannot build a structure on someone else’s land. Normally it is said that it is government land, but I bought everything. So, the land is mine and the structure is mine.”*

Once a structure owner buys a parcel of land, they are granted the right to use, control and transfer that land indefinitely. A structure owner has the right to use their land and generate an income from it, the right to decide how the land should be used, and the right to sell (part of) the parcel, donate it to someone else, and to transmit the land to their heirs through inheritance. Furthermore, the owner has the right to transfer both the use and control rights to someone else.

An example of this last right is the story of one structure owner, who has transferred the control rights of part of her parcel of land to the church. She still owns the entire property but is only able to make decisions on how to use half of the plot. For the other half, the church decides how the land is used. Even if she would sell her structure, the church would still have the right to determine the use: *“Church has to be here. I can go to another place, but you cannot change it to*

any other thing. [...] For these other two rooms I can do anything I want, I can renovate, and rent it out. But the church not." This is an example of a partial transfer of rights.

Rights are held indefinitely, but if structure owners leave their parcel of land idle or underutilized, they may lose these rights. When a building is abandoned and collapses, ownership is lost, and the now free parcel of land can be sold by the chief again.

Besides private land, there is also public land in Lunga, which is owned by the government and can be allocated by the local administration. Examples of public land in Lunga include the school, the land along the river bank, land on the sewage line, and land under electricity lines. Public land can be transferred into private land through allocation to an owner in exchange for a premium. This premium is to be paid to the Chief's Office.

A third type of land holding was also identified, this concerned the public access roads. From now on, these will be referred to as communal land. Although it was mentioned that these roads were owned by the local administration, who has the right to alienate parts of this land, decisions regarding the roads are made by community members affected by these decisions. This became clear in these quotes from a chairman: *"The plan dictates the roads to be there. Because it belongs to the government. They have to be there so people can pass."* And a structure owner: *"It is the society [who owns the public road]. It is our road. And we need to protect it. Those who know the meaning of the road. We do protect it."* In other words, in the case of communal land, transfer rights are held by the Office, whereas use and control rights are held by the community.

Meaning of ownership

Land has several meanings to the inhabitants of Lunga that coexist. First of all, the fact that people can exchange their control of rights to land through simple transactions stipulates that land is seen as a commodity. However, as found during the interviews, the inhabitants of Lunga strive for home ownership for several reasons. First of all, because it saves on rent, providing more security to people who are often dependent on temporarily and unstable jobs. Second of all, because it provides a source of income. Owning a structure or parcel of land allows inhabitants to rent out some of the rooms or start a home-based enterprise. As argued by a structure owner: *"I wanted to buy a structure instead of renting one because I also wanted to have something that is bringing me money, income."* From the moment people arrive in Lunga, often as a tenant, it becomes a key

objective to them to become a structure owner to increase their security and their income. It should thus be noted that besides seeing land as a commodity, it is also seen as an asset, a productive of wealth.

Accessing land ownership

In Lunga land ownership can be accessed through three main channels, namely allocation, purchase and inheritance. The Office of the Chief is the only authority with the power to allocate land to structure owners. Although most land in Lunga has been allocated already, there are still some small plots that have not been alienated. This land is public land situated near the river, on top of the sewage lines and below electricity cables, and communal access roads. Land can be allocated to an individual through a payment which the local community also calls “an appreciation”. The height of this appreciation is dependent on personal relations to the chief, the individual’s importance within the community and the purchasing power of the individual.

Secondly, people can acquire a parcel of land through buying a piece of land with a structure from someone else. Although the land market in Lunga is an informal one, the process of acquiring a plot of land in Lunga is one characterized by official steps that have to be taken in order of “formalize” the transaction. First of all, an agreement is made between the buyer and the seller. Once this agreement is made, the buyer and the seller approach the village elder, who will be able to confirm that the seller is the actual owner of the property. At least two witnesses for each actor need to be present for this step, with their national ID card. When the contract is signed, the village elder takes it to the chief, who then stamps it to officialize the sales contract. The sales contract is then given back to the buyer of the property. It is not necessary for a copy to be kept by the seller, the chief or the village elder.

Thirdly, a plot can be acquired through inheritance. When a structure owner passes away, their plot will go to the next of kin, which is usually the partner, or a child. In the case that there are several children, rooms can either be divided, or one child can pay off their siblings. The village elder will be present through this process to avoid conflict.

Demarcation of boundaries

The boundaries of the plot are determined by taking the original space between two structures and dividing it by half: *“The boundary can be determined according to how the structure is built. So, what we do is we measure from one structure to another and divide by two.”*

However, this process becomes more complicated as people extend their structures up until their boundaries. Boundaries are not indicated in a sales contract or any other formalized manner, rather they are remembered through communal knowledge: *“I know the demarcation, and I cannot go to the other side and my neighbor cannot go to the other side. Because everyone knows where the boundary is.”*

Often plot boundaries can be recognized through the foundations of structures, or it is just known by two neighbors where one plot ends and the other one begins. However, when conflicts regarding boundaries do arise, it is the task of the village elder to determine where ones' boundary is.

Proof of ownership

As rights to land do not exist in a physical form, information on land, owners and their rights needs to be held to ensure effective land administration. Within Lunga, there are a couple of ways through which ownership can be proved. First of all, when a structure is being sold, a transfer document is always prepared: *“How it goes when you are doing that transaction, maybe in the future someone will start bringing issues. So, what happens, if I am the buyer, and you are the seller, we make an agreement on paper.”* Transfer documents are an important proof of ownership.

However, this paper is not seen as enough proof of ownership, because 1) those pioneers who were allocated a piece of land do not have such an agreement, and 2) such agreements can easily be falsified. More importantly to proving ownership is the knowledge of the village elder. Within their village it is crucial that each village elder know exactly who owns what structure: *“The agreement, I have to sign, to know where the structure is, because of anything, there is no title deeds presently, so I am the one in charge. In case of anything. If a case erupts, I am the one to stand for you.”* The knowledge of the village elder is another important aspect of proofing ownership.

The presence of the elder and two witnesses during the transaction process enhances the legitimacy of ownership. From the interviews it also became clear that it is extremely important

that the community sees you as the rightful owner: *“Most of the landlords are not staying here. But they frequent here. So that the community knows that they are the owner.”* In Lunga, the information who owns what is thus partially held through documentation, but mostly held unwritten within the community through collective memory and the use of witnesses.

4.2.3 Delineating the rights of owners: informal land use regulations (or scope rules)

As discussed in the previous sections, being a structure owner comes with a bundle of rights, ranging from the right to decide the function of plots, to transfer a (part of) your structure, to transfer control rights to another, etc. These rights are however not without limit. The Office of the Chief and the village elders have developed their own sets of rules for community members to adhere to, in order to create some structure in the chaos. In this section, these rules, related to zoning, the size of structures, the location of a structure on a plot are discussed.

Construction of a structure

When a structure owner buys a property, it does not buy the rights to construct automatically, rather, these rights need to be bought from the chief, in exchange for a small appreciation. The height of this appreciation can range anywhere between 200 KSH (1.75 EUR) for small repairs to 5,000 KSH (45 EUR) for the construction of a completely new structure.

When permission to construct a new structure or to execute the repairs is given by the chief, a village elder will come to the location to ensure no rules are broken during the construction. As stated by a village elder during one of the interviews: *“To rebuild, structure owners have to tell me. Because some of them enlarge the structure. And then they block the only access road. That is why we have to be there, to make sure the footpaths are safe for the others to access.”* The village elder will look specifically at the materials used and whether the original size of the structure is being kept.

Zoning

As discussed before, it is possible for the Official Administration to allocate public land to private owners. However, there are a few areas where village elders do not allow this to occur. These areas are mostly areas where it is too dangerous to live, for instance near the river, which is flood prone (see Figure 3), or underneath electricity lines. The big schoolyard next to the formal school and Chief's Office in Lunga are also restricted. The village elders are the ones who formulate these rules, as becomes clear from the following interview excerpts: *"Near the river it is very dangerous, because sometimes it floods, and I also do not want anyone to build on the sewer line and the drainage. Those are the three prohibited places. And on the road."*

The road, as mentioned in this last quote is also prohibited to construct on. Public roads are important to ensure accessibility of the slum and are thus guarded very well. The rule that no public roads may be closed are seen as a bylaw from the chief's office.

Although this bylaw is an informal rule, it is seen as one of the most important rules within Lunga. However, when digging a bit deeper it became clear that the Office is still allocating public land from the road to inhabitants. Allowing them to extend their structure until the footpath-although completely blocking the footpath is not allowed.

There are rules, albeit flexible, regarding the minimum width of these main roads. Initially, the standard width of roads was ten feet (3 meters). But with time, the slum started to become more crowded and the minimum width was changed to 5 feet (1.5 meters).



Figure 3 Area restricted for construction near the river

The zones where it is not allowed to construct any structures are some of the only open spaces within Lunga. According to one of the village elders, these places are then used for leisure purposes, for instance by children to play.

With regards to use of land the rules are very straight forward: as a structure owner you have full control over the use of your property. This is not restricted by any scope rules. A structure owner can decide to use their structure in its entirety for commercial activities, by starting a school for instance, rent out some rooms to tenants, or use just one room to start a business. *“You can just start a shop. There are no restrictions. There is no differentiation between residential and commercial.”* Mixing of land uses within the same structure are common. An example of such a mixed-use structure can be seen in Figure 4 which displays a structure in which the room facing the public street is used as a vegetable shop.

Size of structures and plots

Most structures have the same dimensions of 20 by 30 feet. This is referred to as a six-room structure by the local community. Rooms have a standard dimension of 10 by 10 feet. This is because in the early years of the slum, the village elders were giving out the same size plots. As stated by a structure owner: *“They had a standard size for everyone to avoid conflicts. They were giving out six rooms, each ten by ten feet.”* An example of such a structure can be found in Figure 5.



Figure 4 Combined residential and commercial land use in Lunga

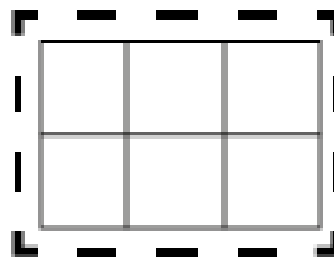


Figure 5 Standard shape of structure

However, there are many exceptions to this standard size, for several reasons. First of all, in some cases, plots are smaller due to their location within the slum. These plots are for instance located next to the sewer, where it is prohibited to construct. Also plots that were allocated recently are usually smaller. This is because of the lack of public land still available.

Besides the location of the structure of slum, sizes in plots can also be different due to processes of amalgamation and subdivision. As argued in section 4.2.2, structure owners have the right to sell part of their property or to combine to properties. However, it is a rule dictated by the village elders that an owner's structure is always separated from the structure of their neighbor. In other words: when a structure owner decides to sell only part of their plot, there needs to be a small space between the rooms of one owner, and the rooms of another owner. As stated by the village elder: *"It should be separated immediately if you sell only part, you have to separate. That is the way. That is a rule also. You have to separate to remove the conflicts between the two."* An example of this process is shown in Figure 6.

For the process of amalgamation, there are no such rules. A structure owner can decide to either leave two separate structures, or to combine their structures.

Location on the plot

With regards to the boundaries of the plot and the position of the structure within the plot, there are several rules. As discussed in section 4.2.2, the boundary of a plot is dependent on the original space between two structures, divided by two.

The space between two structures is often shared between two neighbors. These spaces are used for cooking, drying laundry. Structure owners may decide to close off these roads with gates for security reasons. However, very often they are also connecting structures that are not

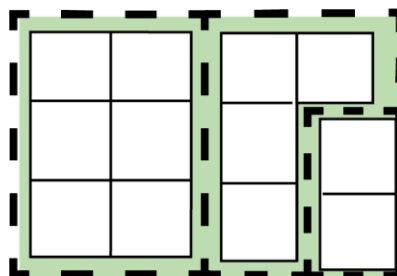


Figure 4 Process of subdivision

connected to a public path. A structure owner may decide to move their structure up until their boundary under some conditions: *“I am allowed to go up to my boundary. If I want to have the door on the other side, I can do that, and if [my neighbor] wants to do the same, she can do that. But now, since we have to access from the other side, we have to give a piece on the other side to make way for another corridor.”* In this case, a structure owner can extent their house up to the boundary of their plot, under the condition that a new access corridor is now created in between the owner’s structure, as can be seen in Figure 7. Structure owners are thus not obliged to keep a certain distance from their boundaries, but they are obliged to ensure a private access road to all the rooms of their structure, and to the structures of their neighbors.

The obligation to leave space for an access road does not apply to any second-floor construction. On the second-floor structures can extend to the boundary of their plot (see Figure 8):

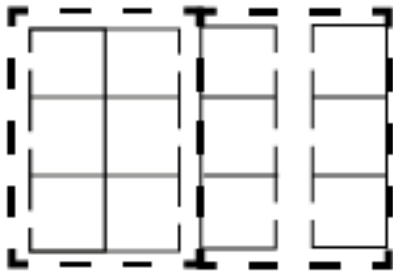


Figure 5 Location of structure on the plot

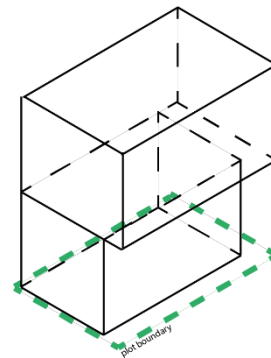


Figure 6 A two-floor construction

“On the ground level, your house can be very small. If you build another story on top of it, it may be bigger. The elder should be there to guide you to not occupy the whole space for your neighbor. Because there will come a time even your neighbor needs to build such a thing. On the top you can take half, and the neighbor can take the other half. [...] Only public paths you cannot take. Nobody is allowed to close that.”

4.2.4 Mechanisms of enforcement (or payoff rules)

In the theoretical framework it became clear that rules need to be enforced for them to have any effect. In this section, the channels through which the previously identified rules are enforced are discussed. First, the enforcement of choice rules is reviewed. Then, the enforcement of scope rules is discussed. This section thus provides insights on how tenure security is ensured.

Choice rules

Although transactions of property are somewhat similar those of the formal system, they are not enforced through a legal system. However, some measures have been developed within the informal system to ensure that choice rules are adhered to. Within Lunga, a system with regards to property rights enforcement has been developed. Rules are enforced through informal political and communal systems.

The village elders play an important role in gathering and sharing information of who owns what and to settle disputes with regards to property. Besides this, chiefs play an important role in making ownership legitimate, although not legally enforceable. As stated by a structure owner: *“It is impossible for someone else to claim my structure, but just in case, the village elder is here, the Chief is here, and all those parties are aware.”* Both the chief and the village elder receive payment in the form of a small appreciation for guarding these property rights, giving them an important incentive to guard property rights.

Besides this political system, there is also a strong system in place based on communal pressure. Because most people know who owns what, falsely claiming ownership to a property can lead to rejection from the community.

However, conflicts regarding ownership may still arise. If this is the case, the two parties approach the chairman and the chief, who will then decide on the rightful owner based on their

own information, the accounts of the witnesses, and the documents of the owners. Based on this decision they will give a warning to the other party. In case the other party still decides to grab someone else's structure, there is a punishment in place: *"If people decide to try to grab someone else's structure or land, you are automatically removed from the record of the chief. And if in my records, I take you out, so you remain without a structure,"* as stated by a village elder.

Thus, falsely claiming ownership is severely limited through communal systems and through more formal punishments. When somebody does not respect somebody's property rights, the most common enforcement mechanism is through a warning from the chief or the village elder. However, in case this is not enough, the chief and the village elder have the power to take away someone's property.

Scope rules

Scope rules are enforced through a combination of enforcement measures coming from the chief and village elders, and through social pressure. The real estate market in Lunga seems to rely more on social norms than on formal sanctions, however, there are cases in which formal sanctions are imposed. Whenever repairs or new construction takes place, permission of the village elder or chief is required. The chief and the village elder receive a fee for this. In case permission is not given, the chief and village elder have the power to stop the construction or even demolish the structure.

These rules are followed by all community members interviewed, because of the fear that their structure will be demolished. However, in response to persisting questions regarding the rules of Lunga real estate, one of the structure owners answered: *"Nothing is impossible in Lunga."* By which she meant that for most rules, exceptions can be made. *"But everything has a price"*. This also became clear in some of the other conversations with structure owners: *"If you want to build in the restricted area, [the chief and village elder] sometimes do not care, if you give them something."*

The fact that rules are created and enforced by the same actors makes them prone to these types of exceptions. While there are many rules that are restricting the exercise of informal property rights, it is possible to obtain certain rights anyway through paying an appreciation to the chief or village elder.

Scope rules are, however, not only enforced through informal political systems. Systems of social pressure also play an important role in this. The exercise of property rules is heavily

influenced by neighborly control: *“Technically, you can start a loud club in your house. But it very much depends on how you relate to your neighbors. If you think your relation is well, it would be very unfair to do something like that. But if a structure owner wanted to do that, they can do it.”*

But also, communal pressures towards the chief and the village elders to have people adhere to the rules is an important enforcement method: *“The administration used to allow some of the greedy owners of the structures to extend their structures onto the access roads. So, the access road which you are seeing here, we protected it. We resisted the administration. And then they could not extend anymore. We worked together with the neighbors to resist it.”*

These two systems of social pressure and more formalized enforcement mechanisms support and strengthen each other.

4.3 An overview of the rules of (in)formal real estate

Chapter 4 of this thesis took the results of (expert) interviews and a document analysis as a way to answer the first research question: **What are the rules for the formal and informal real estate markets in Nairobi?**

In the Table below the rules of the formal and informal real estate markets are summarized and positioned besides each other.

Table 9 Comparison of rules of the formal and informal real estate market

Types of rules	Rules of the formal real estate market	Rules of the informal real estate market
Position	There exist two positions: 1) the government, and 2) the owners.	There exist three positions: 1) the chief, 2) the village elder and 3) the structure owners.
Boundary	<ol style="list-style-type: none"> 1) Any person employed by the government must be a Kenyan citizen over 18 years old. 2) All those over 18 with a passport or ID wanting to become a land owner may become one by acquiring a plot from another owner, transmission or allocation. <ol style="list-style-type: none"> a. In case of freehold, the owner must be a Kenyan citizen. 	<ol style="list-style-type: none"> 1) The chief is employed by the government and must be a Kenyan citizen over 18 years old. 2) The village elder is selected by the members of the community based on his status (wealth and age). 3) All those with a passport or ID and over 18 years old wanting to become a structure owner may become one through purchasing, transmission or allocation.
Choice	<ol style="list-style-type: none"> 1) The government may allocate public land for a premium to anyone wanting to acquire a plot of land; 2) An owner must register for a title deed with the government in order to be recognized as the absolute owner of the plot; 3) The government may tax any idle land; 4) An owner has the right to use, control and transfer their piece of land indefinitely (in the case of freehold) or for 99 years (in the case of leasehold) and may decide to sell one of these rights to another party; <ol style="list-style-type: none"> a. An owner with leasehold rights to a piece of land may extend their leasehold for another period of 99 once the original leasehold expires. 5) An owner may sell part of its plot to someone else through subdivision; 6) An owner has the right to apply for a change of use of their plot. 	<ol style="list-style-type: none"> 1) The chief may allocate public or communal land for a premium to anyone wanting to acquire a plot of land; 2) The chief must stamp any purchasing contract in order to make it legitimate; 3) Idle land may be re-acquired by the chief and village elders; 4) A structure owner has the right to use, control and transfer their piece of land indefinitely and may decide to sell one of these rights to another party; 5) A structure owner may sell part of its plot to someone else through subdivision; 6) A structure owner has the right to use their plot for any type of land use
Scope	<ol style="list-style-type: none"> 1) The government must approve any alterations with regards to the structure, the land use and the size of a parcel of land; 2) If an owner wishes to construct a building, he must employ a registered architect, structural designer, and resident engineer, and must get permission from the local authority; 3) No person shall erect a back-to-back dwelling; 	<ol style="list-style-type: none"> 1) The village elder must approve any alterations made to a structure or the size of a plot. 2) No land may be sold near the river, underneath the power line and on top of the sewer; 3) It is not allowed to extend structures in such a way that public roads become smaller than 1.5 meters

	<ul style="list-style-type: none"> 4) A structure must have at least 8ft of open space on one side; 5) Enough space must be left on the plot of land for the purpose of servicing the building; 6) Parcels of land may not be smaller than 50 by 100 feet (0.05 ha); 7) Ground Coverage and Plot ratio must be in line with the standards set by the local authority; 8) Change-of-use requests must be in line with the nature and the trend of the neighborhood for them to be approved. 	<ul style="list-style-type: none"> 4) The standard size of a room is 3x3 meters. Structure typically have 6 rooms (6x9 meters). Depending on the space available this might vary between 3-6 rooms; 5) Extension of a structure to the boundary must always be compensated by making space for accessibility elsewhere on the plot; 6) Structures from different owners must always have separated walls.
Payoff	<ul style="list-style-type: none"> 1) The local authority receives payments for applying scope rules through fees for e.g. purchasing of surveying maps, getting a building permit, etc.; 2) In case choice or scope rules are broken, the violator may receive a fine or be imprisoned. 	<ul style="list-style-type: none"> 1) The chief and village elder receive “appreciations” for applying the choice and scope rules; 2) In case choice rules are broken, the violator may be removed from the village elders’ and chief’s records and lose their structure; 3) In case scope rules are broken, the violator risks demolition of their structure; 4) In both the case of choice and scope rules, violating rules can lead to community shunning.



Chapter 5

Urban development in Lunga

CHAPTER 5

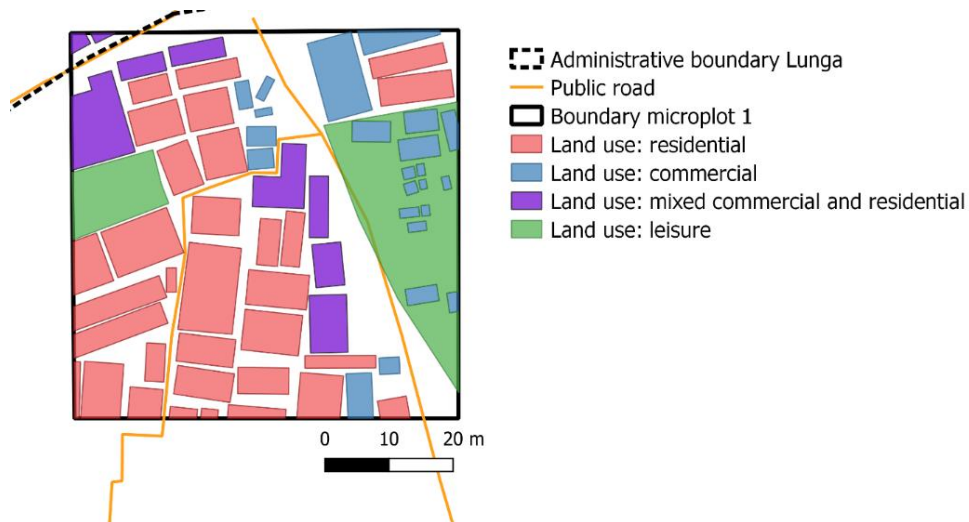
Urban development in Lunga

In this chapter, primary data on land use collected through observations in the field and secondary data on the plot sizes and density of construction are analyzed in the first three sections of this chapter. In the last section, these results are linked to the findings of chapter 4, to see how rules of the informal market may influence urban development.

5.1 Land use

Although initially, the four potential land use categories identified were: 1) residential, 2) commercial, 3) leisure, and 4) infrastructural, during the fieldwork it became clear that these categories land were inadequate to describe reality on the ground. It became clear that a fifth category was important, namely the commercial and residential mix. This mix is either a horizontal combination of a small shop in the front of the structure and attached residential rooms, or a vertical combination of a shop on the ground floor and a residential unit on the upper floor. This fifth category, called mixed commercial/residential, was added to analyze the land use in Lunga.

Microplot 1 is located along a busy shopping street at the main entrance of the slum. As can be seen in Figure 9, many shops are concentrated along the public roads going through here, ranging from restaurants, to bars, to small market stands selling fruits and vegetables. Structures which are not located along a public road, but solely through private roads (not indicated on this map specifically, but recognizable as the open space between buildings) are used for residential purposes.



Besides residential and commercial land use, this microplot also has relatively large amount of space kept free for leisure. These spaces are used by children playing. Specifically, the leisure space on the right of the map is used by the Viwandani soccer team during their practices, and as a school yard for the formal school which is located just outside of the microplot.

In order to quantify land use, the entropy index was calculated. The entropy index of microplot 1 was 0.92, which indicated a very high mix of land uses.

Table 10 Land use in microplot 1

	Area (m ²)	Percentage land use (Pj) (%)
Total area	3609	100%
Of which:		
Residential	1414	39%
Commercial	360	10%
Residential/commercial mix	479	13%
Leisure	546	15%
Infrastructure	810	22%

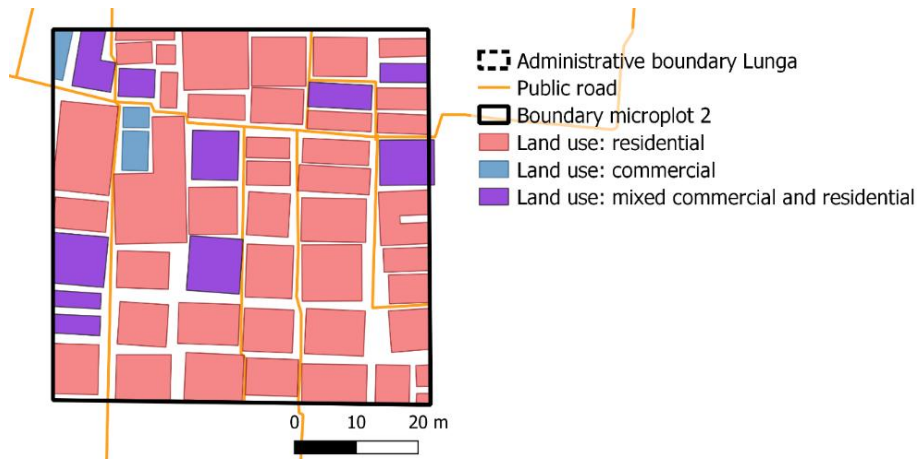


Figure 8 Land use in microplot 2

Microplot 2 is located in an older, central neighborhood of Lunga. Although most structures here are purely residential, some commercial or mixed residential/commercial plots are located along the public roads, as can be seen in Figure 10. In Table 11 the land uses in microplot 2 are summarized. The entropy index in microplot 2 is much lower than in plot 1, namely 0.62.

Table 11 Land use in microplot 2

	Area (m ²)	Percentage land use (P _j) (%)
Total area	3647	100%
Of which:		
Residential	2127	58%
Commercial	60	2%
Residential/commercial mix	449	12%
Leisure	0	0%
Infrastructure	1010	28%

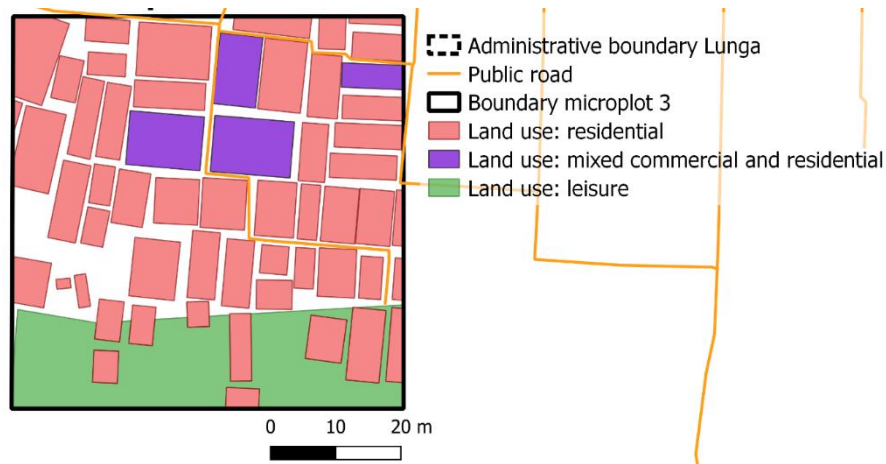


Figure 9 Land use in microplot 3

Microplot 3 is located on the edge of the neighborhood, near the river. The area is characterized by plenty of open space, with the primary use of flood management. However, as open space is rare in Lunga, this space is used as a place of leisure by children. As the area is located on the edge of the neighborhood, there is little commercial activity, besides a few residential/commercial mixed structures. The entropy index in microplot 3 is the same as in plot 2: 0.62

Table 12 Land use in microplot 3

	Area (m ²)	Percentage land use (Pj) (%)
Total area	3588	100%
Of which:		
Residential	2129	59%
Commercial	0	0%
Residential/commercial mix	308	9%
Leisure	632	14%
Infrastructure	519	18%

The entropy index of these three microplots combined is 0.80, indicating a high diversity of land use.

5.2 Compactness of urban development

Using QGIS, the total area and the built-up areas (residential + commercial + residential/commercial mix) were calculated for each microplot.

Table 13 GSI per microplot

	Microplot 1	Microplot 2	Microplot 3	Total
Total area	3609	3647	3588	10844
Build area	2253	2636	2437	7326
GSI	62%	72%	68%	68%

As is shown in Table 13, the Ground Space Index averages at 68% in the three microplots combined. However, as microplot 1 and microplot 3 are both located at the edge of urban development, it is most useful to take microplot 2 as a guideline for compactness of urban development in Lunga.

5.3 Average plot size

Because plot sizes were hard to determine through satellite, structure sizes were taken as a representative of the plot size. As it became clear that structures of different owners need to have a separate wall, this is a good measure. Structure sizes within the boundaries of the microplot were calculated using QGIS. A distribution of these plot sizes can be found in Figure 12. The smallest plots found in Lunga are 6 m² and the largest plot is 195 m². The most frequently occurring structure size in Lunga is 42 m², which is contradicting with the claims made in the interview that the standard size of a structure is 6 x 9 m, or 54 m².

The average size of the structures was calculated and was 50 m². Thus, although it is not so clear that the standard size of a structure is indeed 54 m², it can be validated that the central tendency of structure size is close to this. When looking at Figure 12 it becomes clear that plot sizes are varying in size a lot. Furthermore, plots are relatively small.

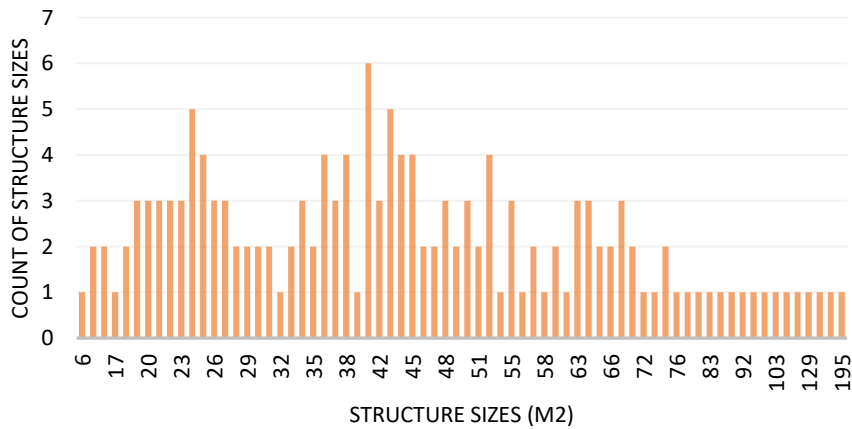


Figure 10 Count of structure sizes

5.4 Linking rules to spatial characteristics

In chapter 5, spatial data collected through fieldwork observations and satellite data from OpenStreetMap was analyzed in order to answer research question 2: **How do the rules of the informal real estate market affect urban development of informal settlements?**

The data showed that urban development in Lunga is characterized by a high diversity of land use, high level of compactness of buildings, and relatively small yet varying sizes of plots. These findings are summarized in Table 14.

Table 14 Characteristics of urban development in Lunga

Concept	Index	Result	Interpretation
Land use	Entropy index	0.80	High diversity of land use
Compactness	Ground space index	68%	High level of compactness of buildings
Zoning	Average plot size	42 m ²	Relatively small structures/plots
	Range of plot sizes	6 m ² – 195 m ²	Large range of plot sizes

These development characteristics are influenced through several of the rules as identified in chapter 4. These rules are discussed in the following sections, and summarized in Table 15.

5.4.1 Land use

The high diversity of land use is a result of several rules. First of all, structure owners have the right to use their piece of land as they wish. They may decide to use it for commercial, residential and leisure purposes, or a combination of any of these. As owning a structure is seen as a way to earn an income, the result of this rule is that a mix of residential and commercial purposes has emerged in Lunga.

Second of all, there are the rules about the need to leave open space. These spaces include the areas next to the river bank, for flood management purposes, and the areas on top of the sewer and underneath electricity lines. Whereas the intent of this rule is to create safer living conditions, one of the (perhaps unintended) outcomes of this rule is the creation of open spaces used for leisure purposes.

Lastly, space for infrastructure is ensured through rules regarding the need for keeping public roads open, and regarding the need to have private access roads on one's plot. These rules combined make for a high entropy index within all three microplots.

5.4.2 Compactness

The relatively high compactness is caused by several rules. First, the rule that structure owners are allowed to build a structure on the boundaries of their plot. Second, the chief has the power to allocate any public or communal land to anyone and receives a premium for this in return.

Besides these two rules leading to a higher compactness, there are also some rules in place that ensure that the GCI is not 100%. First of all, structure owners need to leave a small space on their plot for an access path and are not allowed to extend their plot until the public roads. Secondly, because it is forbidden to construct a structure near the river, underneath the power line and on top of the sewer pipe. Furthermore, a structure owner is obliged to provide space for accessibility on their plot, even if they extend their house to the boundary. These rules limit compactness.

5.4.3 Size of plots

During the interviews it was highlighted that the standard size of a structure was 54 m², although this was not validated by the data analysis done in this chapter. From this data, it became clear that there is a wide range of plot sizes, but that in general plot sizes are smaller than 54 m².

This can be explained by the fact that owners have the right to subdivide or amalgamate their plot and that the chief is allowed to allocate land to a potential structure owner. As a result of the little space available, small plots have been allocated.

In the interviews also became clear that most rooms are a standard size of 3x3 meters. This means that people have on average 4-5 rooms on their plot. From the interviews, it became clear that this is because many structure owners rent out parts of their structure to others in order to make an income.

Table 15 Spatial characteristics and related rules

Rules of the informal real estate market	Spatial consequences	Explanation of consequences
The chief may allocate public or communal land for a premium to anyone wanting to acquire a plot of land;	High compactness; Varying sizes of plots; Small plots.	The chief earns money for each plot he allocates, thus providing an incentive to allocate the open spaces still left, leading to small and varying plots and high compactness.
A structure owner has the right to use, control and transfer their piece of land indefinitely and may decide to sell one of these rights to another party;	High diversity of land use; Varying sizes of plots.	An owner has the right to use their land for any purpose, leading to a high diversity of land use within Lunga. Furthermore, an owner has the right to sell part of his structure to someone else, leading to a variety of plot sizes.
A structure owner may sell part of their plot to someone else;	Varying sizes of plots; Small plots.	As an owner has the right to sell part of his structure to someone else, plots do not have a standard size and are often very small.
A structure owner may extend their structure up until their boundary.	High compactness.	As structure owners may extend their structure up to their boundary, plots have little open space, leading to a high compactness.
No land may be sold near the river, underneath the power line and on top of the sewer;	Lower compactness; High diversity of land use.	As some areas are off-limit for sale, these areas are kept open, leading to a lower compactness, and are used for leisure purposes, leading to a higher diversity of land use.

It is not allowed to extend structures in such a way that public roads become smaller than 1.5 meters	Lower compactness; High diversity of land use.	As roads have to be kept free from the construction of houses, there is more open space and thus a lower compactness. Furthermore, as space is kept free for infrastructural purposes, there is a higher diversity in land use.
Extension of a structure to the boundary must always be compensated by making space for accessibility elsewhere on the plot;	Lower compactness; High diversity of land use.	As access roads have to be kept open, there is more open space and thus a lower compactness. Furthermore, as space is kept free for infrastructural purposes, there is a higher diversity in land use.



Chapter 6

The coexistence of formal and informal markets

CHAPTER 6

The coexistence of formal and informal markets

The discussion chapter consists of three parts. The first two sections start by answering research question 1 and 2. In this section, these results are discussed in relation to the theoretical framework. In the following section, question 3 is answered using the conclusions of question 1 and 2, and by referring to the theoretical framework. The section 6.4 of this chapter reflects on methodological issues of this research.

6.1 What are the rules for the formal and informal real estate markets in Nairobi?

The results showed that both the informal and the formal market have developed their own sets of rules.

The rules of the formal real estate market are well-defined in the Constitution of Kenya, the Land Registration Act, the Land Act, the Building Code and the Physical Planning Act. For instance, these laws provide local authority with the power to approve any alterations made by owners with regards to zoning, construction, subdivision, etc. These rules are enforceable in a formal court of law. It was identified in the interviews that this enforcement is a challenge to the government authorities, and that in many cases, players in the formal real estate market take “informal” shortcuts.

Property rights in Lungu mimic those of the formal system. Just as in the formal real estate market, rights can be assigned and reassigned. However, ownership is not enforced through the legal system. Rather, ownership is enforced through informal political and communal systems.

These systems allow for information to be shared, disputes to be settled, and access to land to be negotiated.

Although in this thesis the real estate market in Lunga is referred to as *informal*, many of the rules that have been put into place are actually quite *formal* and secure in their context. People take the decision to invest in property without a clear formal title, and this decision is made based on confidence in the system. This confidence in the informal system is grounded in a belief that property rights will be enforced.

Whereas the assignment of property rules is an established process, processes of land regulation are less clear. In the theoretical framework, the delineation of property rights was equated to scope rules. Scope rules in Lunga form an elementary planning system as there are rules in place regarding the construction, location and size of plots. However, these rules are characterized by some ambiguities that open them up to exploitation.

This exploitation is amplified due to the difficulty in enforcing the rules. Rules are enforced through community pressure and some punishments such as demolition of the structure. As rules are not enforceable through a formal court of law, their enforcement is for a large extent dependent on some of the actors, namely the chief and the village elders. Their choice to enforce rules (or not) is based on two opposing forces. For instance, the pressure by the community to keep public roads free is juxtaposed by the fact that chief and village elder can earn more money by allocating more land to structure owners. As a result of this conflict in interests, rules are not always enforced.

In conclusion, the nature of rules of the informal and the formal real estate market is quite similar. Both markets are characterized by a similar property rights regime which assigns owners with a certain bundle of rights. These rights are delineated by regulations which aim to control urban development, although these regulations are quite elementary in case of the informal market.

6.2 How do the rules of the informal real estate market affect urban development of informal settlements?

In the theoretical framework, it was discussed how urban development can be influenced through both land regulations and property rights regimes (Needham, Buitelaar and Hartmann, 2006). As informal settlements like Lunga operate outside these formal laws, it was argued that instead of looking at laws, this thesis should look at Ostrom's rules, to determine their effect on urban development.

The findings show that there are two main channels through which rules of the informal real estate market affect urban development of informal settlements. First of all, there are rules with direct spatial consequences. These are rules with an obvious spatial character, such as rules regarding the size, the location and the construction of plots. For instance, the rule that a structure owner is allowed to extend their structure to the boundary of the plot but needs to compensate by making space for a private road elsewhere on his plot. This rule directly leads to a higher diversity of land use (as plots are not solely used for residential purposes but also for infrastructure purposes) and to lower level of compactness (as a structure owner must leave some open space on their plot). These direct influences on spatial development take the form of scope rules and are comparable to land use regulations.

However, in the results, it becomes clear that rules may influence urban development indirectly. These are rules with a less obvious spatial character, but with an effect on the way that property rights are exercised, and therefore also influence the built environment. An example of this is the rule that owners have the right to use, control and transfer part of their plot. This allows structure owners to use their plot of land for any purpose, leading to a high diversity in land use.

Urban development in informal settlements is thus shaped through two channels:

1. The property rights regime – existing mainly out of position, boundary and choice rules which determine the way the property rights market works, and thus indirectly influence urban development; and
2. Planning through real estate processes – existing out of scope rules which shape the outcome of urban development by placing restrictions on the bundle of rights of structure owners.

These two channels are in line with the findings of other authors who have studied the effect of formal property rights regimes such as Geuting (2007), Geuting and Needham (2012) and Needham, Buitelaar and Hartmann (2019). In other words: the informal and the formal real estate market are so similar in nature that they influence urban development through similar channels.

In chapter 1, the rules shaping urban development were bundled under the name *informal real estate markets*, rather than urban planning. However, during the research, several scope rules were identified which have more of a planning nature, given their impact on the outcomes of urban development. These rules showed a more publicly accountable character and were involved with political choice rather than market transactions. As argued by Ratcliffe and Stubbs (1996), this is a clear of planning opposed to a real estate market. However, as these rules are established and enforced outside of the public sector (the Kenyan government), it is more appropriate to refer to them as planning through real estate markets.

6.3 The coexistence formal and the informal market: a story of legitimacy

The third sub-question as stated in the introduction is: *How does the implementation of formal rules in informal real estate market affect urban development of informal settlements?*

This section is a reflection on the potential consequences of implementing formal rules in the informal real estate market on urban development in Lunga. As discussed by several authors, property right regimes influence urban development (Geuting, 2007; Geuting and Needham, 2012; Needham, Buitelaar and Hartmann, 2019). Changes in property rights change the structure of the market in property development, therefore influencing urban development.

As was already concluded in section 6.2, both the formal market and the informal market have two main channels through which urban development is determined: through the property rights regime and land use regulations (either in the form of planning or planning through real estate). When directly comparing the rules of the informal and the formal real estate market, it becomes clear that many of the rules of the informal market are similar to the rules of the formal market.

Both markets have two types of actors: the assignor and the assignee of property rights. In case of the formal market, the assignor is the Kenyan government and the assignee the owner. In the informal market the assignor is the chief and the village elders, and the assignee is the structure

owner. Boundary and position rules for these actors are the same in the formal and the informal market.

Not only the position and boundary rules are comparable, but also the choice rules. There are a lot of similarities in the rights that owners of a plot of land and structure hold. In both the formal and the informal market, the assignor may allocate a plot of land to a potential owner in exchange for a premium. Title deeds must be officialized by the assignee in order for the structure owner to be recognized as an absolute owner. Owners have the right to use, own and control their plot of land. As position, boundary and choice rules are similar, the property rights regime of the formal and the informal market are thus highly similar in nature.

Land regulation processes have similarities, which can be seen when comparing scope rules. In both markets, government (formal) or the village elder (informal) need to give permission before any alterations are made to the structure and the size of the plot of land (e.g. for construction or a subdivision). Rules are present with regards to the size and location of plots. Although land regulation in the informal settlement is very basic, it has some characteristics of an elementary planning system.

The two markets also have mechanisms of enforcing these rights and regulations. Within the two markets respectively, the government (formal), chief and village elders (informal) are stimulated to enforce rules because they receive payments or appreciations for this. Although the forms of punishment are different, mechanisms of enforcement are in place in both markets.

Despite the similarities between the formal and informal market, there are many differences between them. Ownership in the slum can be recognized through officially stamped documents by the chief, but for ownership to be completely recognized, communal recognition is very important. Communal systems are also important in the enforcement of rules: community shunning is an important factor to keep people from breaking in the rules. In the formal market, ownership or the enforcement of rules is not dependent on communal systems.

Especially scope rules are different. For instance, in the informal market, plots are much smaller, and there is much less space required to be open. There are also no requirements on ground coverage and plot ratio. Although the nature of scope rules is similar, the rules in the informal market have been adjusted to fit the context of informal settlements: the requirements to

plot sizes, construction, and the location and function of plots are vastly different in Lunga than in the formal real estate market.

There are thus many differences between the two markets which can lead to conflicts when the two markets interact. These differences can be boiled down to two main issues. First, the property rights regime in the informal market rests mostly on informal political and communal structures. As a result, structure owners' rights are highly secure within the community itself but are not recognized by actors in the formal real estate market. The implementation of the formal choice rules in places where the informal market is dominating is likely to lead to dispossession. As structure owners are not recognized by the government as the legitimate owner, they no longer have rights to their plot. In reality, this often leads to mass evictions of slum dwellers.

A second source of conflict is related to the differences in scope rules. Land regulations in the formal market have been defined to serve public interest. They ensure e.g. safety, accessibility, and access to services. Scope rules in the informal market have the same nature as formal land regulations but are adapted to the needs and resources of slum dwellers. An implementation of formal scope rules in the informal market would lead to conflict as it might serve public interest from the perspective of the Kenyan government but would also make slum housing too expensive to the majority of the urban poor.

These two sources of conflict lead us to the core issue of the coexistence of formal and informal markets: the different types of legitimacy of both markets. Needham, Buitelaar and Hartmann (2019) argue that there are three forms of legitimacy, namely input, throughput and output legitimacy. Input legitimacy is derived from the agency that takes the action, and thus refers to the quality of the representation of public interests in the agent taking the action. Throughput legitimacy is derived from the process used to take an action, and thus refers to the quality of the decision-making process. Lastly, output legitimacy is derived from the results that are achieved, so when most people support the results of a certain action. As formal and informal do not recognize the legitimacy of the other market, conflict arises.

The formal real estate market and land regulations as imposed by the Kenyan government are mostly characterized by input legitimacy. An example of input legitimacy is when an inspector from the Nairobi planning office orders the demolition of building that does not have the required

permits. When doing so, they do not need to consult the public first, or assess the action against the result of the action. Rather, the inspector may do so because they were delegated this power from the government. With input legitimacy, actions are considered legitimate because they are executed by an elected government, which represents and is accountable to the people of Kenya.

On the other hand, the informal market is characterized by output legitimacy. The rules in place are there because they are pragmatic. This is also illustrated by the fact that community pressure is an important tool of enforcement of the rules identified in chapter 4. Without these rules informal settlements would become chaotic and unlivable places. For example, people may not fully cover their plot with a structure, as houses would become inaccessible. Actions are thus considered legitimate when they are clearly in the public interest.

Conflicts between the two markets arise as neither of them regards the other as fully legitimate. Although the markets are highly similar in nature, the informal one is not recognized by the formal market. According to the formal system, the informal market is illegitimate because they were not delegated power via the elected government. On the other hand, actors within informal real estate see the formal system as illegitimate as it does not provide them with affordable housing, whereas the informal market does.

This issue of legitimacy relates to Henri Lefebvre's "right to the city" versus "the right to property", as described in section 2.1. Inhabitants of informal settlements claim their right to the city through the informal real estate market. On the other hand, informal property rights are seen as illegitimate by formal actors because of their illegality, defying the right to property of those who formally own the land informal settlements are located on.

6.4 Limitations of the research

In this section, a reflection regarding the methodological choices in the research is done. Three key issues are addressed in this section: the case study, the quality of primary data and the quality of secondary data.

6.4.1 Quality of the case study

It is important to critically reflect on the issues of trustworthiness, credibility, confirmability and data dependability. These are indicators of the quality of case study research, as described in section 3.4. Several strategies were employed to ensure these criteria were met.

- **Credibility:** The credibility of the research might be affected due to the researcher's own biases. In an effort to reduce biases, the translator was asked to check the transcripts for any mistakes. negatively influencing credibility.
- **Data dependability:** The use of semi-structured interviews allowed for digression and variation between different interviews, which may have negatively impacted data dependability. However, this is in line with the explorative character of the research, and more rigid structured interviews would have limited the depth of the interviews.
- **Transferability:** This research used a case study, which is in itself context specific. During the research it became clear that there are slums which are in a different stage of development with different structures to govern real estate. For instance, the government has not yet allocated a chief to the slum opposite of the river. This might negatively affect the transferability of the findings of this case study. However, as a result of the use of theory, conclusions of the case study can be generalized to some extent.
- **Confirmability:** All the notes, transcripts and original documents have been stored for future reproduction. Furthermore, the thick description of the outcomes of the interviews is used to ensure confirmability.

Although these strategies have improved the quality of this study drastically, results of this research are still limited as only one case study was used.

6.4.2 Quality of primary data collection

The research model is a mixed-methods design that includes explorative case study research. The explorative approach was chosen as a result of the limited amount of research done before. The case study research allowed for a detailed and in-depth research into the topic.

For this research, some spatial characteristics of the slum were described quantitatively. One limitation of the study was the limited collection of quantitative data with regards to urban development, as a result of limitations in time. If more data had been collected with regards to

urban development, more in-depth conclusions could have been drawn with regards to the interaction of different sets of rules and their influence on urban development.

Furthermore, the research resembled a variety in the richness of the conducted interviews. Some interviews were very rich and provided many statements whereas other interviews were of less use. Therefore, some interviews gained more weight in the results than others. In order to overcome this issue, during the analysis it was checked whether the statements were shared throughout the interviews.

Another methodological issue in this study was the language barrier between the interviewer and some of the interviewees. To bridge this barrier a translator was used. One of the issues of using a translator is the fact that a translator might negatively impact the objectivity of the data. Given that this research is not a discourse analysis and the use of specific language was not important in this research, translator bias should be minimal. However, to be sure, this issue was still minimized through several steps. First of all, a translator was selected with previous experience in doing translations for researchers. Secondly, before starting the research, the translator was introduced to the subject and clear agreements were made about how translations were supposed to be done. Thirdly, the same translator helped to complete the final transcriptions.

6.4.3 Quality of secondary data collection

The outcomes of the spatial analysis are highly dependent on the quality of the secondary data used. During this research, data from OSM was used. This data specifically was collected by the organization SpatialCollective using aerial imagery. The researcher was not able to check and improve the quality of the data as this is the only data available on structures in Lunga.

There are some limitations to the data. First of all, building extraction based on aerial imagery is highly complex as a result of the hundreds of buildings with diverse appearances, noises from other manmade structures, and the difficulty in distinguishing a building from their roofs and substructures. As a result, the sizes of structures and their exact location may be distorted.

The second limitation has not to do with the quality of the data, but with the processing. Structure size was calculated using QGIS for all separate structure. However, structure owners may have constructed a corridor through the middle of their plot, therefore giving wrong results regarding the average size of structures.



Chapter 7

Concluding remarks

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CHAPTER 7

Concluding remarks

This research aimed to explore the ways in which rules of formal and informal real estate markets are interacting to shape urban developments in informal settlements. This conclusion starts by answering the main research question as identified in the introduction. After answering this question, the findings are then translated into the academic and social implications of the research. The chapter concludes with suggestions for future research.

7.1 Answering the general research question

In this section, the general research question is answered: *“How does the coexistence of the informal and formal real estate market shape urban development in informal settlements?”*

This research took the rules of real estate markets as a core element shaping urban development. It was found that both the formal and the informal real estate markets have developed their own set of rules. Many of the rules in use in the informal real estate market are similar to those used in the formal market.

The land tenure system of the formal and the informal market are based on similar principles. In both cases, there is a certain assignee that can allocate plots of land to individuals. Owners have the right to use, transfer and control their plot of land. In both the informal and the formal market, there is a system of land use regulation, which delineates the rights that owners have over their plot of land.

In informal settlements, urban development is shaped through two main channels: 1) the property rights regime, which determine the way the property rights market works, and thus indirectly influence urban development, and 2) through planning through real estate processes which shape the outcome of urban development by placing restrictions on the bundle of rights of structure owners.

As these channels are similar to the way through which the formal market shapes urban development, one might assume that the concurrence of the formal and informal market should not lead to any issues in urban development. However, although the nature of the real estate markets is comparable, there are also vast differences between the two.

In this research, it became clear that especially scope rules or land use regulations have very different criteria for the two markets. Scope rules in the informal real estate market are much more liberal with regards to construction, open space required on the plot, and in general adjusted to the little space available in settlements and the low economic power of many of the residents. As a result of these differences, the implementation of formal and informal real estate markets in informal settlements could potentially lead to conflicts, displacing the urban poor.

In the discussion section, it was argued that these differences in rules are mostly the result because the different types of legitimacy of both the formal and informal market. Whereas the formal market is mostly based on input legitimacy, the informal market is derived from output legitimacy. This conflict between different types of legitimacy was linked to Lefebvre's "right to the city" and "right to property". Informal actors claim legitimacy of informal real estate market as they have a right to the city, whereas formal actors claim the right to property of those who formally own the plots of land where informal settlements are located.

The informal and formal real estate market in Nairobi form a complex system. Each market is heavily interwoven with the other, adapting and evolving themselves by borrowing rules from each other. Much of the time, it could be said that the two live in a symbiosis. However, due to these two types of legitimacy, the coexistence of the formal and the informal market leads to conflict in the urban development of informal settlements.

7.2 Relevance of the study

As mentioned in the introduction and confirmed in this research, informal real estate markets play an important role in providing housing to the urban poor. Furthermore, this research has shown the importance of both the formal and the informal real estate market in shaping urban development, and the role of different types of legitimacy in the coexistence of these two markets.

30% of the global urban population lives in slums. This number is expected to rise to 50% by 2050 (UN HABITAT, 2016). The sheer size of informality indicates the need for new ways to own and manage resources, specifically land.

The outcomes of this study find their relevance in this need for a new approach to property rights. It was illustrated that a huge challenge to the coexistence of formal and informal markets is the issue of legitimacy. As such, this research opens door to further research, which should focus their efforts on creating a better understanding on how to deal with conflicts of different forms of legitimacy on a theoretical level.

7.3 Future research

It is unquestionable that the world is experiencing rapid urban change. This change is challenging the way in which resources are owned and managed. New fundamental questions should be raised in the academic debate: If property rights need to be adapted to address current urban issues, what would need to change? What would the effect of this change be on urban development? Could multiple property regimes function in coexistence without any conflicts? And how, if at all, will urban planning practices navigate a potential new property regime? To start answering these questions, two new directions of research can be recommended.

First, further research is required to understand how to deal with this conflict between two types of legitimacy on a theoretical level. This research used a case study approach to answer the research questions. The selection of a case study approach was appropriate for this thesis due to the exploratory phase of research, and it was demonstrated that there are many similarities and conflict between informal and formal real estate markets in Nairobi. However, this phenomenon is not limited to one informal settlement in Nairobi. Further studies should focus on the coexistence of formal and informal institutions in different contexts where markets are for instance more formalized, in a different stage of development or manage entirely different resources.

Research could for instance cover other informal systems, e.g. flood, infrastructure and green space management. It could also focus on informality in other contexts, in for instance refugee camps or in depopulating areas in Europe and North America, where informal (planning) practices also play a role in shaping development (Fawaz, 2017; Syssner and Meijer, 2017). Researching the

coexistence of formal and informal institutions in different context will allow for the development of a more solid theoretical basis on the relationships between informality, formality and legitimacy.

Besides developing a better understanding of how to deal with a plurality in forms of legitimacy, the conflict of forms of legitimacy in informal and formal systems should be studied in the context of the three concepts of justice as defined by Sandel (2010), namely utilitarian, libertarian and social justice. Legitimacy and justice are tightly related, as the choice for a certain concept of justice implies the rejection of others. Hence, people will always question the legitimacy of an action grounded in a concept of justice which is different from their own (Needham, Buitelaar and Hartmann, 2019). Future research should study the concepts of justice according to which land is allocated in the formal and the informal real estate market, how different ideas of justice influence the legitimacy of formal and informal institutions, and the spatial impacts of different concepts of justice on urban development.

Further research incorporating these two angles will allow for a better understanding of the coexistence of multiple property rights regimes and would help to begin to answer the fundamental questions posed in this section.

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Pictures

Chapter cover pages: Bouwmeester, J. (2018). Lunga Lunga [photograph]

Cover photo: Miller, J. (2018). Nairobi, Kenya [photograph]. (Unequal scenes)

Appendix

Formal real estate interview guide

Good morning/afternoon,

Thank you for creating some time to talk with us. My name is Josje Bouwmeester, and I am a master student from Wageningen University in the Netherlands. Currently, I am doing research into the slum real estate market. I have contacted you for an interview since [*reason*].

My research focusses on the rules and regulations of the real estate market. The outcomes and anything you say during this interview will be completely anonymous.

I expect the interview to take around [*time*] minutes. During this interview, I will take notes. To prevent that I miss out on important information, I would like to record this interview. Is this okay with you?

Formal real estate rules

Land acquisition processes

- How do you go about buying a piece of land?
- Which actors are involved in this?
- Who can buy a piece of land?
- What do you need to buy a piece of land?

Ownership and documentation

- What does it mean to own land in Nairobi?
- Where and how is land-ownership registered?

Transaction dynamics

- How do you go about selling your piece of land/structure?
- Is there a lot of land available for sale in Nairobi?

- Does subdivision often happen when land is sold?

Regulations

- Who determines what piece of land you can buy?
- Are there any restrictions on where you can buy land?
- How large can your plot be?
- Can you use your plot of land for any purpose?

Enforcement

- How strictly are these rules enforced? (leading into formal-informal interactions)

Formal-informal interaction

- What are the biggest difficulties of the government in enforcing these regulations?
- Are zoning rules always followed? When/where/why not?
- Do people use their land for different purposes than indicated in the zoning plan?
- Is land often subdivided without permission?
- Are government officials involved in informal practices?

Informal real estate interview guide

Good morning/afternoon,

Thank you for creating some time to talk with us. My name is Josje Bouwmeester, and I am a master student from Wageningen University in the Netherlands. Currently, I am doing research into the slum real estate market. I have contacted you for an interview since [*reason*].

My research focusses on the rules and regulations of the informal real estate market, and how this affects what the slum looks like. The outcomes and anything you say in this interview will be completely anonymous. I expect the interview to take around [*time*] minutes. During this interview, I will take notes. To prevent that I miss out on important information, I would like to record this interview. Is this okay with you?

Land acquisition processes

- How do you go about buying a piece of land?
- Which actors are involved in this?
- Who can buy a piece of land?
- What do you need to buy a piece of land?

Ownership and documentation

- What does it mean to own land?
- How do people know this plot of land is yours?
- Do you have any papers proving your ownership?

Transaction dynamics

- How do you go about selling your piece of land/structure?
- Can you sell part of your plot?

Regulations

- Who determines what piece of land you can buy?
- Are there any restrictions on where you can buy land?
- How large can your plot be?
- Can you use your plot of land for any purpose?
- What can you build on your plot?

Enforcement of rules

- What happens when you do not adhere to these rules?

