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Public Urban Lands Administration in Burundi: The Case of Bujumbura City

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Prosper TURIMUBUMWE

A thesis submitted to

The Institute of Land Administration, Bahir Dar University, in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Land Policy and Governance

Supervisors:

Principal Supervisor: Prof. Achamyeleh Gashu Adam

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July, 2024

Bahir Dar

Declaration

This is to certify that the thesis entitled "Public Urban Lands Administration in Burundi: The Case of Bujumbura City", submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Land Policy and Governance at the Institute of Land Administration, Department of Land Administration and Surveying, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during this investigation have been duly acknowledged.

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Approval of thesis for defence

I hereby certify that I have supervised, read, and evaluated this thesis titled "Public Urban Lands Administration in Burundi: The Case of Bujumbura City" by **Prosper TURIMUBUMWE** prepared under my guidance. I approve the thesis to be submitted for oral defence.

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Approval of thesis for defence results

As members of the board of examiners, we examined this thesis entitled "Public Urban Lands Administration in Burundi: The Case of Bujumbura City" by Prosper TURIMUBUMWE. We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the "Degree of Doctor of Philosophy in Land Policy and Governance".

Board of Examiner

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Dedication

To my mother and late father

To my wife; daughters and sons;

To my sisters and brothers;

I dedicate this work.

Acknowledgments

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Abstract

Governments in developing countries have established land administration systems to manage land in urban and rural areas. For a land administration system to be efficient, properly designed, and implemented land policies and institutions are prerequisites. Thus, there is a growing need among academia and policymakers to evaluate country-specific land policies and institutions to examine the extent to which land administration can contribute to managing public urban lands for sustainable urban development in Burundi. The study examined land-related policies and the land administration system to find out how they are effective in managing public urban lands in Burundi. It has also gone far to identify the pitfalls of existing land administration systems that hamper the effectiveness of managing public urban lands for sustainable development.

The study applied a mixed research approach to collect and analyse data. Qualitative and quantitative data were collected using various data collection tools such as desk review, interviews, key informant interviews, questionnaires, and observation. Data analysis involved content analysis for qualitative data and descriptive analysis for quantitative data.

The results showed that existing policies and institutions are fragmented and have limited focus on managing public urban lands. This has resulted in the land administration system being not responsive to addressing the issues. Moreover, these institutions are lagging behind in applying new approaches and emerging new technologies in land administration. This has been among the pitfalls that hamper the land administration system contributing to achieving sustainable urban development. To enhance the effectiveness of the land administration system in managing public urban lands, it is essential to revisit and revise land-related policies. Additionally, fostering collaboration between governments and stakeholders in land management is crucial for achieving sustainable urban development. Having policies that are contextualised will support land managers and urban planners to successfully manage public urban lands and lands in general and achieve sustainable urban development.

Keywords: Burundi; land administration system; land policies; public urban lands

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List of acronyms

GLTN: Global Land Tenure Network

LIS: Land Information System

OBUHA : Office Burundais de l'Urbanisme, de l'Habitat et de la Construction : Burundi Office of Urbanism, Habitat and construction.

NLTCO: National Land Title and Cadastre Office

SDC: Swiss Agency for Development and Cooperation (SDC) Controlling Unit

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background of the study

Since the 1990s, the role of the land administration system in achieving sustainable development has been echoed in different debates among economists, land experts, urban planners, and environmentalists. Land has been identified as a natural resource that will largely contribute to achieving sustainable development goals (Williamson, et al., 2010). Therefore, land administration has emphasised guidelines designed by professionals and practitioners in land deals to assist land managers and other decision-makers (UNECE, 1996; Williamson, 2001). Furthermore, UNECE (1996) defines land administration as the process of recording and disseminating information about land ownership, value, and use when implementing land management policies. Most importantly, Williamson et al. (2010a) specified what a land administration system should mean by dealing with land tenure, land use, land value, and land development processes. Recently, Lengoiboni et al. (2021) contributed more in explaining the relationship between cadastre, registry, and land information system (LIS). It is noted that Enemark, et al. (2014) had already underlined the importance of cadastre as a key element of the land administration system. It serves the government to collect tax by easing the public register of the quantity, ownership, value, and use. Together, the three are useful in ensuring land rights security to landholders, controlling land use, linking people's understanding of land uses, and giving credits to cadastre as a major component of the land administration system (Bennett et al., 2023).

Governments in developing countries have been advised to establish land administration systems in their countries to effectively address land issues that were about the achievement of sustainable development for their respective countries (Bogaerts et al., 2001; Enemark, et al., 2014; Sevatdal, 2002). The United Nations for Economic Commission for Europe (UNECE) (1996) showed the importance of establishing such systems for developing countries by identifying various expected results for their citizens such as access to food and decent shelter, security of tenure and housing policy, sustainable development, and others.

The observed sustainable development in developed countries was attributed to effective land administration systems (UNECE, 2000). It is acknowledged that each land was surveyed and registered, and information about the land was well-kept. This success of European countries in land administration was also advised to developing countries, especially in addressing current challenges in urban and rural settings that impede sustainable development (Hesse et al., 2004; Qian, 2014; UNECE, 2005). The most identified challenges include encroachment of public land (Isunju & Kemp, 2016; Krishnaveni & Anilkumar, 2018), informal settlements (Kironde, 2016; Udessa et al., 2023), land conflicts (Musinguzi & Enemark, 2019), and urban land use incompatibility (Guneralp et al., 2017; and Wicki & Kaufmann, 2022).

In developing countries, the land administration system is among the major problems in successfully implementing land policies and other land-related projects (UN-Habitat, 2021). The existing land administration system fails to address current and upcoming land-related policy issues in developing countries. Nnkya (2008) revealed how urban planners have failed to implement many urban plans[1] designed in urban areas due to land-related conflicts whereas Guneralp et al. (2017) and Slaev and Nedovic-Budic (2017) showed how planned urban areas have degraded and become dysfunctional due to ineffective land administration system. In unplanned areas, the situation becomes worse, especially for public urban lands like wetlands, riverbanks, and road reserves which become the prey to land grabbers and encroachers.

Etymologically, urban public lands are urban public spaces with specific functions and ownership for which their protection is legally known (Satir and Korkmaz (2005). Woolley et al. (2003) comprehensively conceptualise public urban lands as urban public spaces that are areas of use which, when defined from the periphery to the centre, can be grouped as surrounding spaces, semi-urban spaces, urban space, and mostly for leisure purposes but also can be for urban areas to breathe. Shi and Woolley (2014) identified some of these public lands to include urban parks, protected land, agricultural land, gardens, road reserves, marshlands, and water banks. The types and significance of public urban lands highlighted by these authors depict the same meaning as defined by different legal documents of Burundi such as the Land Policy of 2008, Urban

[1] These plans may include general plans like Master Plans or detailed plans such as Neighbourhood plans

Planning and Housing Code of 2016, and Land Code of 2011. In Burundi, public urban lands are known as lands that are open and accessible to people without any conditions.

Public urban land is among land units that contribute to urban morphology as well as in urban economies. On one hand, the negligence in managing public urban lands have been affected the urban environment (Akhmedova and Leonova, 2020); causing informal settlements (Fekade, 2000a; Kombe, 1994), and inducing food insecurity in urban areas (Kaushalya et al., 2020; Oyeleye, 2013) and loss of biodiversity in urban areas (Krishnaveni & Anilkumar, 2018; Panuccio et al., 2017). On another hand, managing public urban lands has offered a multitude of benefits that include urban densification (Haaland & van den Bosch, 2015; Wicki & Kaufmann, 2022), an increase in urban agriculture produce (Deacon et al., 2021; Nguyen et al., 2017), and planned urban expansion (Krishnaveni & Anilkumar, 2018; Schlimmer, 2022).

Authors like Dawidowicz and Źróbek (2017), and Azizi et al. (2022) modeled how managing public urban lands may be useful and lead to sustainable urban development. Besides, theories related to land have been formed and applied to explain their linkage to other sectors. These theories include the *Common Pool Theory* which recognises lands as among common pool resources whose management has to be by the public or community and for public interest rather than individuals (Hardin, 1968; Schlager, 2004). Likewise, the *Bid Rent Theory* that relates locational choice of household, equilibrium land use, and optimal land use as well as other spatial economic concerns is used to explain how lands are used. Recently, there is a *land administration theory* that emerged and advocates how legal and institutional frameworks work together in addressing land issues.

All the above-mentioned theories apply to the administration of public urban lands as one of the land units. Most importantly, these theories relate land administration to economic growth, social inclusion, political arrangements, and environment management which are crucial to achieving sustainable development in general and sustainable urban development in particular. The Common Pool Theory and Bid Rent theories are important theories to support the articulation in this research. The common pool theory explains how a common resource like the land if considered as a public resource, its consumption may be competitive and consequently cause a tragedy such as overexploitation and depletion. Likewise, the Bid Rent theory is important for this

research given that the theory shows how the closer to the CBD the land is, the more land/property/rental unit costs increase. The public urban lands that are near CBD attract powerful people to access it by all means and ways regardless of their hazardousness or prohibition. These theories are useful in analysing the trade-off between public interest and private benefits when it comes to managing public urban lands. The role of the land administration system in managing those lands within the existence of these theories is important to understand.

Establishing land administration systems that can integrate public urban lands with focused policies and responsible institutions is advised by many authors as a shortcut to achieving sustainable urban development (Cheng et al., 2006; Udessa et al., 2023; World Bank, 2017). However, establishing land administration systems, adopting land policies, and avail institutions have not been a solution in some countries. Dupré et al. (2021) and Lipej (2015) have shown in their cases that the existence of land policies, institutions, and land administration systems have not been a remedy in some developing countries. The authors concluded that there should be an evaluation of those policies and systems to detect their performance and identify their drawbacks.

Subsequently, Qian (2014) acknowledges that the existence of land administration systems does not mean that land issues are addressed adequately. Authors like Bogaerts et al. (2001), Dupré et al. (2021), and Williamson et al. (2010a) argued that the land administration system depends on the existing land-related policies and their implementation. The authors agree that the evaluation is needed and the results portray their capacity in addressing land issues. To evaluate policies, frameworks, approaches, and areas for evaluation have to be determined by evaluators (Mayer et al., 2004). However, Steudler et al. (2004) revealed that there is no internationally accepted framework for evaluating the land administration system. However, Steudler (2004) contributed to designing a framework applied to evaluate systems including land administration systems. Its reputation is built on three-level block evaluation, which includes policy-level management control, and operational control levels that are key to evaluation. The evaluation can detect if the existing policies, institutions, and administration system have successfully addressed land issues.

Meanwhile, Kalogianni et al. (2020) and Williamson et al.(1999) argue that the land administration system has been dynamic in different ways by shifting from a traditional

land administration system to a modern; and analogue land administration approach to a digital approach. Similarly, land administration components (cadastre, registry, and LIS) have been manifesting the need for new approaches that can improve the long-standing ways of cadastre, registry, and land information operationalisation (Ruben et al., 1998; Sagashya & English, 2010; Sanford & Rose, 2007). To mention some approaches such as pro-poor land recordation (OECD, 2017; UN-Habitat, 2004; Zevenbergen et al., 2013), participatory land management approach (Roić, 2016 and Hurni, 1997), and fit-for-purpose land administration (Enemark, et al., 2014; Barry, 2018; Stöcker et al., 2022; Sudarman et al., 2019; Bennett & Alemie, 2016; and Mclaren, 2017). All these approaches have been accompanied by dynamism in technology and applications. For example, the use of UAVs (Bennett et al., 2021; Stöcker et al., 2022), and other high-tech data acquisition (Chukwuma, 2021) revolutionised the land administration system in developed countries.

In developing countries, poor land administration system has engendered challenges related to lack of tenure security, lack of property rights, the existence of land-related conflicts, challenges in the land market and land value (Dickinson & Shahab, 2021; Sagashya & English, 2010; Williamson et al., 2010b). Likewise, the lack of specialisation and integration of all land units in the existing land administration system has led to the lack of focus, contextualisation, and sustainable solution provision. Some lands like wetlands and other public urban lands have been mismanaged and subsequent side effects manifested.

Moreover, in developing countries public urban lands such as wetlands, riverbanks, and open spaces are considered wasteland or land without owner since their administration is not known to the public (Kaushalya et al., 2020; Krishnaveni & Anilkumar, 2018; Panuccio et al., 2017; Sinxadi & Campbell, 2020). Consequently, these lands experience different mismanagement practices that are hostile to sustainable urban development. Many researches have shown that the eruption and escalation of informal settlement observed in cities of developing countries are the results of ineffective land administration systems (Kironde, 2016; Kombe, 1994; Steel et al., 2020; Takele et al., 2014), and poor performance of infrastructure and socio-economic projects in urban areas are associated with poor public urban land administration (Isunju et al., 2016; Nebere et al., 2021; Subedi, 2016). Furthermore, the loss of biodiversity and

degradation of the built environment in urban settings are attributed to negligence in properly administering public urban lands (Kabiri et al., 2022; Krishnaveni & Anilkumar, 2018; Ralitsoele, 2021). All these factors negatively affect urban sustainability given that the smartness, resilience, and functionality of infrastructure (social and physical) are no longer achievable.

Globally, governments are trying to achieve sustainable urban development through elaborating policies and land administration systems to implement goal 11.7 which relates to public spaces. It is estimated that cities are now sheltering half of humankind (57%) and that in 2050, cities will accommodate two-thirds (66%) of the global population (UNCTAD, 2023). It is also underlined by UN-Habitat (2006) that cities are the hub of civilization, economic development, and social, cultural, spiritual as well as umbilical cord of scientific advancement. In Burundi, cities and urban centres are rapidly growing at a rate of 5.7% and projections show that the urban population will increase sharply (CAHF, 2022). Furthermore, it is revealed by many authors that in many developing countries this urbanisation is taking place in unplanned and hazardous areas, then forming informal settlements and haphazard expansion as it is in other developing countries (Krishnaveni & Anilkumar, 2018; Tadashi & Jonathan, 2015; Takele et al., 2014; Thuo, 2013). Burundi is not spared from this phenomenon and many new towns, and recent urban expansion are taking place in unplanned areas and public urban lands like wetlands, open spaces, and riverbanks. Therefore, it suffices to argue that administering public urban lands effectively should be among the priorities for the government of Burundi to make sure future generations can inherit safe, smart, and resilient urban areas. The existing land administration system of Burundi has to consider public urban lands as a piece of land that requires proper management.

Likewise, the policies, strategies, and systems for protecting public urban lands against land grabbers and encroachers are supposed to be in place. The existing urban morphology dominated by informal settlements and encroachment in different public urban lands is alarming. Then, researches are needed to examine the causes and consequences of such phenomenon in the city of Bujumbura. To comply with international agendas on urban sustainability, the Government of Burundi is required to know what is happening outside and what is happening inside the country. A well-established administration has been a key for successful countries to achieve sustainable

urban development. The Government of Burundi needs to know how the existing land administration system is responding to managing public urban lands and leading to achieving urban sustainability. Furthermore, the roles of policies, institutions, strategies, and technologies in availing effective land administration for managing public urban lands in Burundi need to be disclosed. Knowing all these will serve as a benchmarking for properly managing public urban lands.

1.2 Statement of the Problem

Researches on land and urban topics are inadequately undertaken in Burundi due to the lack of experts and academicians in these sectors. The existing studies in land and urban sectors have been undertaken by international authors and national associations to contribute to the socio-economic and political interventions in post-conflict countries. These studies were interested in rural land issues (mostly land conflicts) and privately owned urban lands, especially in promoting equal access to land among ethnic groups (Amani, 2009) and securing tenure security and ownership useful in property transfer; Beaupré et al., 2015).

Similarly, government-led studies have been undertaken to provide information on the identification and protection of state land (parks and natural reserves) (Government of Burundi [GoB], 2011; and APDH, 2014). However, these studies did not include urban settings and provide information on how public urban lands like marshlands/wetlands, open spaces, road reserves, and riverbanks/lakeshores in urban settings contributed to the informal settlements. Rather, the studies targeted rural lands and urban peripheries where there is no vivid competition in land access due to its abundance and cheap price. Additionally, these studies did not cover how public urban lands are encroached and their uses illegally changed by elites. A study by Barras (1982) shows that these lands were in the hands of elites for a long, who had power over them. Having stated these and similar other problems, the future of public urban land specifically in Burundi remains an issue that requires further intervention by decision-makers and policymakers.

Moreover, the existing literature shows research in Burundi has been carried out on issues of land administration such as land rights and tenure security in rural and peri-urban areas (Beaupré, 2015); others on gender and feminism in land access in rural and

peri-urban areas (Umm-e-kalsoom, 2019); followed by rural land certification (Munezero,2017; International Development Law Organization [IDLO], 2017) for some rural and peri-urban lands. Furthermore, Sindayihebura (2017) conducted a study on upgrading land information for rural land use whereas research byNsengiyumva (2010) showed how public urban spaces are used as areas of survival for the jobless. Others like Tchatchoua-Djomo and van Dijk (2022) recently published work on land conflicts in Burundi where land was taken in a general sense and not linked to urban sustainability. Finally, a recent work by the World Bank (2022) shows how first-level land certification in Burundi will improve the landscape and situation of women's land rights protection and does not show how urban development will benefit from the process. It is argued that there exists limited scientific study that explains how public urban lands are managed and administered in Burundi.

On one hand, the public urban lands in Bujumbura city are of different types and locations. On the other hand, public urban lands in Burundi are recognised in different legal texts such as the land policy of 2008; the land Code of 2011, the urban land and housing code of 2016, the water policy of 2008, and the forest policy of 2009. All these legal texts identify these public urban lands as public property and emphasize their proper management. Having stated these, the future of public urban land specifically in Burundi remains an issue that requires further intervention by decision-makers and policy-makers. Furthermore, there is a lack of literature on how policy and legal frameworks are responsive to tackle the stated problems.

Despite existing legal texts, institutions, and technologies, the administration of these lands remains doubtful. These lands have been accommodating informal settlements and informal activities despite the existing land administration system. Existing research did not show how institutions and technologies have been applied to manage public urban lands for sustainable urban development. Furthermore, no study assessed the effectiveness of the land administration system to find out how the mismanagement of public urban lands is linked to unstained urban development. This study aims to fill the gaps identified in existing research on Burundi. A thorough understanding of the performance of existing policies, institutions, and land administration systems vis à vis public urban land administration; identifying shortfalls of existing land administration systems in managing public urban; and knowing the impacts of mismanaging public

urban land on urban sustainability are required. The study is determined to explore the following areas:

1. The role of legal texts in protecting public urban lands against individual exploitation;
2. The responsibilities of institutions in administering public urban lands;
3. As a country, there is a land administration system with all components (cadastre, registry, and LIS) that is supposed to integrate public urban lands for their protection;
4. There are local authorities and local people who are key stakeholders (causers, affected, and solution providers to the problem) whose responsibilities are to be fulfilled when it comes to managing public urban lands;
5. Some consequences emanating from the negligence of public urban lands on urban sustainability due to the existing legal and institutional frameworks, as well as the land administration system.

With the above-mentioned areas of exploration, the study is built on the assumption that by administering public urban lands, cities may achieve sustainable urban development. The informal settlements emanating from encroachment and illegal change of use may no longer be observed in Burundi. Furthermore, the incompatible uses and loss of biodiversity may not be observed in urban areas of Burundi.

1.3 Research Objectives and Questions

The main objective of this research is to explore how administering public urban lands contributes to achieving sustainable urban development in Burundi. Bujumbura City is taken as a case study area. Specifically, the study addressed four objectives by responding to the corresponding research questions set:

1. To review the land acquisition strategies in public urban lands of Burundi
    - How land was acquired in public urban lands?
    - How secure is the tenure status in public urban lands?"

2. To examine the existing land administration system to manage public urban lands in Bujumbura City.

    - How are Burundi's public urban lands administrated?
    - How land administration system in Burundi is responsive in managing public urban lands?

3. To identify the shortcomings that impede the effective management of public urban lands for sustainable urban development in Bujumbura City.

    - What are the trends in land management in Burundi, and which legal texts, from the Arusha Peace Agreement of 2000 to the present, govern this management?
    - How are institutions involved in public urban lands management?
    - How and what approaches and technologies are applied in managing public urban lands?

4. To evaluate land-related policy to identify gaps in administering public urban lands;
    - How do Burundi land policies related to public urban lands differ from policies in other countries?
    - How institutional structure affects the implementation of land related policies while administering public urban lands in Burundi?
5. To develop a framework for effective public urban land management.
    - What policy tools needed to be introduced to properly administer public urban lands in Burundi?
    - What implementation strategies need to be adopted in Burundi?

1.4 Scope of the Study

This study aims to explore how administering public urban lands contributes to achieving sustainable urban development in Burundi. The specific objectives are pinned on evaluating land-related policies used to managing public urban lands; and on assessing the effectiveness of land administration systems towards managing public urban lands for sustainable urban development. However, evaluating policies and land administration systems is not an easy task (Groenendijk et al., 2012; Hurni, 2000). Nevertheless, Chekole et al. (2020) and Schuijt (2002) acknowledge that knowing the performance of policies and systems in place helps to identify what interventions need to be engaged to manage projects or programmes. Evaluating the land policies and the

land administration system of Burundi that is involved in managing public urban lands will help to understand how these policies and land administration systems can contribute to urban development. Therefore, this study aims to contribute to finding out how the existing land-related policies and existing land administration system perform in managing public urban lands toward sustainable urban development. Policymakers and other stakeholders in Burundi, and other developing countries that share similar features, will be informed on how policies and land administration may exist but not necessarily contribute to sustainable urban development.

1.5 The Significance of the Study

This study falls well in the land administration and governance field provided that it identifies, and reviews some theories and concepts as well as examines legal frameworks related to managing public urban land. Through documenting and evaluating the applied land administration system in the urban areas, the study sorted out the challenges that legal frameworks and land administration systems encountered while managing public urban lands such as wetlands, open spaces, river banks, and road reserves in Bujumbura city.

Of more significance in this study is the fact that a body of knowledge relating to the factors for managing protected and public urban land contributes to sustainable urban development. This study contributes to evaluating policy and land administration systems to identify practices in land administration useful in urban areas that are in line with sustainable urban development. Furthermore, the study brings to light the discussion on the need for formulating policies and designing land administration systems that are integrative in managing public urban lands. It tries to propose a framework for managing effectively public urban lands in Burundi and other countries with a similar context. Finally, this study will assist academicians, policymakers, urban planners, land managers, and local leaders in evaluating policies and land administration systems to detect challenges that pertain to the land sector in their areas of responsibility.

1.6 Thesis Outline

This dissertation consists of six chapters that are linked one after another. Each chapter has a different subsection that gives details of the issues addressed.

Chapter one contains the introduction of the research and brief literature to set the scene of the research. The major sections are the background of the study; problem statement and knowledge; research objectives and research questions; scope of the study, and significance of the study.

Chapter two focuses on concepts and theories related to public urban land administration. The chapter provides a conceptual framework that is depicted from the discussion underlying the management of public urban lands.

Chapter three gives details of methods and materials, tools, and instruments used to collect and analyse data. It shows procedures followed to select the case study area and the location of it. It is this chapter you find why we used this method or tools for data collection; and why we used this approach for data analysis. Also, the data reliability and validity are provided in this chapter.

Chapter four responds to different research questions. Different sections that are related to research questions are the major content of this chapter. To mention a few, you find land acquisition strategies used by landholders in public urban lands to access land shortfalls in managing public urban lands. The chapter identifies the challenges of managing public urban lands in Burundi and shows policy and institutional gaps in administering public urban lands.

Chapter five of this research proposes a framework that is useful in managing public urban lands. It gives details on the features that make it. Also, it gives a kind of testimony on its application.

Chapter six gives conclusions based on the findings. Also, the chapter provides the result implications to different areas and ends with citing areas of further research that were not covered by this study due to time and cost constraints. Other sections like references and annexes/appendices are provided as supporting documents for this research.

CHAPTER TWO

CONCEPTUAL AND THEORETICAL PERSPECTIVE OF PUBLIC URBAN LANDS

2.1 Introduction

The importance of land in social, economic, and environmental development has been for long a pulling factor for economists, environmentalists, urbanists and other practitioners to be concerned with its management. Rapid urbanisation coupled with overpopulation in some cities of developing countries has contributed to the mismanagement of land. In urban settings, a gap is observed in managing public urban lands. The existing policies and institutional frameworks and, land administration system, application of approaches, and new technologies are hoped to support the proper management of public urban lands. This is in line with the achievement of sustainable urban development.

Then, this chapter provides a review of how administering public urban lands may lead to sustainable urban development. Seven sections have been provided to give an overview of the issues treated in this chapter. The first two sections give concepts and definitions of public urban lands and land administration as core subjects of this research. The understating of these terminologies paves the way for further reading. The second section is about land administration and urban sustainability. The section shows how land administration plays a key role in managing land units including public urban lands to achieve sustainable urban development. The third and fourth sections narrate approaches in land administration for sustainable urban development and theories related to managing public urban lands. The last two sections talk about sustainable urban development in general overview and policies related to managing public urban lands. The chapter ends with a conceptual framework (Figure 7) that gives a picture of discussions.

2.2 Conceptual and Theoretical Framework Reviews

2.2.1 Concepts and Definitions of Public Urban Lands

Public urban lands are defined as lands open and accessible to people without any conditions. Other authors consider public urban lands as urban public spaces referring

to their function and ownership. Şatir and Korkmaz (2005) and Woolley et al. (2003) define public urban lands as urban public spaces that are areas of use which, when defined from the periphery to centre, can be grouped as surrounding spaces, semi-urban spaces and, urban spaces. These lands are mostly for leisure purposes but also can be 'lungs' for enclosed urban areas(Akhmedova & Leonova, 2020). Public urban lands include urban parks, gardens, and other open spaces (Garau, 2016), unowned vacant land, road reserves, wetlands, and water banks (Holland, et al., 2007). These are the appellations and meanings of public urban lands as perceived by different researchers in land planning (Figure 3). We add that urban areas are identified by the spaces occupied by different land uses planned to perform different and various functions to serve people and accommodate different activities.

Through zoning, urban planners and other decision-makers plan to assign land according to the planned land use, and public urban lands are included in land units (Hurni, 1997; Ziadat et al., 2017). The land units can be privately assigned and or publicly held (Akhmedova and Leonova, 2020; Sizo et al., 2015). During zoning again, land can be termed as protected land from any kind of development due to its marginality, specialty, or non-buildability as specified by the land use plan. Land units can be considered as wetlands, steep slopes, and riverbanks. However, those who are landless or land speculators see public urban spaces as vacant lands, underutilised lands, wastelands, abandoned lands (Xiaoqing, et al., 2019; Mori, 2004; and Soares, et al., 2018) which have to be used for different satisfaction. In urban areas, land acquirers view public urban lands are wasted lands whereas for them these lands may be used for residential, commercial, and other uses rather than being protected.

2.2.2 Role of Public Urban Lands in Urban Setting

From ecological to aesthetic roles in urban areas, public urban lands have potential functions in urban settings (Soares, et al., 2018). In many countries, these public urban lands are planned and protected to improve the living conditions of urban dwellers. They are protected as a way of promoting and safeguarding the flora and fauna that are friendly to human beings(Kabanyegeye et al., 2020). The importance of public urban lands extends to economic value (DoE & Town Centre Management, 1997; Peiser & Schwann, 1993; and Luther & Gruehn, 2001); important to physical and mental health (Pretty, et al., 2003; Woolley, 2003; and Halpern, 1995); offering benefits for children,

young, and old people as playgrounds and shelter (Taylor, et al., 1998; and Fjortoft, 2001); helping to reduce crime and the fear of crime in urban areas (Walker, et al., 2000; Kuo, et al., 1998); and then providing value for biodiversity (Lowry, 1967; and Upmanis, 2000) and having social dimensions (Quayle, 1997; and Kaplan, 1985). As previously discussed, public urban lands in their variety can provide one or more functions to urban dwellers at the same time. Therefore, it is apparent that administering these lands is required to make sure there is sustainable urban development.

2.2.3 Land Administration: Conceptual Review

The concept of land administration is pinned to the "processes of recording and disseminating information about the ownership, value, and use of land and its associated resources" (United Nations/Economic Commission for Europe [UNECE], 1996, p.14). Later on, Dale and McLaughlin (1999) elaborated a definition that shows land administration is the process of regulating land and property development, guiding the use and conservation of the land, contributing to collecting revenues from land sales, leases, and tax, and assisting in resolving conflicts on ownership and use of land. This definition was sufficient for explaining land administration in the contemporary era. However, Williamson, et al. (2010) viewed land administration as a management of a system of land rights coupled with procedures where rights are linked to land allocation. Before, Williamson, et al (2010) and Zevenbergen (2004) had already shown that land administration is all about processes where judicial, administrative, and technical procedures in documenting properties, their uses, and transaction of land rights and information on land are linked. For land administration, five functions are normally manifested and intertwined. These are legal, cadastral, dispute resolution, regulatory, and fiscal (tax)(UN-Habitat, 2013; Mitchell et al., 2019).

Moreover, land administration has been associated with systems that can perform adequately its work. Enemark (2004) and Enemark et al. (2005) disclosed that land administration encompasses a range of systems as well as processes useful in administering land tenure, land value, land use, and land development. For public urban lands, the existence of land administration is a prerequisite to properly managing them through a well-established land administration system. It is believed that having a strong land administration system facilitates the successful implementation of land-related policies.

Generally, land administration functions as a process of availing information on the land about the subject to the object ('Who' owns 'what') (Bandeira, et al., 2008). Through all the above descriptions, the concept and meaning of land administration are viewed in different ways but all converge on having land well-managed. Also, the importance of a land administration system is pinned on implementing land policies and availing land information to landowners and land managers. This is beneficial in one way or another to land units like public urban lands.

2.2.4 Administering Pubic Urban Lands

Depending on space and time, public urban lands can require much attention in their governance and management to gain perceived benefits. If not, consequences emanating from the mismanagement of these lands are enumerated from informal and squatter settlements, ecological imbalances, and biodiversity extinction, to historical, economic, and other valuable losses (Nefs, 2006). That is where land administration of public urban lands intervenes as a package of land governance to make sure that the presence of these lands becomes an opportunity rather than a threat to an urban setting. It is believed that administering public urban lands has proven its success in determining land cover, land use, and land ownership.

The determination of the latter contributes to sustainable urban development by strategically managing the spaces. It is underlined by Garau (2016, p.1) that to implement Goal11, target 11.7: “by 2030, provide universal access to safe, inclusive and accessible green and public space, in particular for women and children, older persons and persons with disabilities”; the most focus should be to plan for open spaces and administering other public spaces such as wetland/marshlands, road reserves. These spaces affect the daily lives of urban dwellers and at the same time threaten urban sustainability if are not well-managed. Public urban lands are found even in city centres as well as on the periphery of the city. However, their roles and impacts on the urban built environment and livelihoods of the city dwellers are not underlined and it is very threatening the future of the city.

2.2.5 Land Administration as Managing Land Rights, Restrictions, and Responsibilities

Larson and Janelle (2009) and Vanderpuye et al. (2020) showed how clarification of land ownership has implications for decisions on urban lands for different purposes like economic, social, and environmental development. The role of land administration in clarifying the rights, restrictions, and responsibilities (RRRs) on land, be it in rural or urban areas is important (Lengoiboni et al., 2021; Sevatdal, 2002). Public urban lands need a land administration system that can determine their uses and or protection through a cadastre system that can guarantee these lands are surveyed and registered. Williamson (2000) precises that all countries have to establish land administration systems by considering first of all the relationship of humankind to land to make sure all lands are covered by the system. In urban areas, public urban lands are among the categories of lands that necessitate a land administration system to avoid mismanagement that may lead to dilapidation and dysfunction of urban systems.

The existing theoretical and empirical information shows that the land administration system has objective support for the rights, restrictions, and responsibilities (RRRs) related to owners, policies, and parcels that have to be put in place to make sure all pieces of land are well managed (Bandeira, et al., 2008). In urban areas, a land administration system is necessary to protect marginal lands and public urban lands against mismanagement. In developing countries, encroachment of public urban lands is done intentionally (York & Munroe, 2010; Mohamed & Yacout, 2019).

One of the motivations behind this is that most residents consider these lands as wasteland or *terra nullius* (Kaushalya et al., 2020). Consequently, this situation has pushed people dominated by powerful elites to illegally and informally acquire these lands for personal profits rather than for public interests (Ralitsoele, 2021; Sinxadi et al., 2021). However, in some countries, this may happen whereas there is a land administration system that is supposed to protect these lands against malicious people. It is evidenced by different researchers such as Dawidowicz and Źróbek (2017), and Manandhar and Manandhar (2017) that applying the RRRs approach helps to manage all lands in the country including even marginal lands. However, we argue that if the existing land administration system is not effective in its all components (cadastre,

registry, and land information system (LIS), it is difficult to achieve the proper public urban lands management.

2.2.6 Cadastres, Land Register, Land Information, and Four Components in the Land Administration System

i. The cadastre system

It is concerned with a comprehensive register of the real property and or an area (Bennett et al., 2021). The Cadastre system performs a cadastre survey to depict details on tenure, location, dimension of parcels, determination of areas, and other particulars on parcels (UNECE, 2005, Bennett et al., 2023;). As a parcel based on land information, a cadastre contains specifications on a piece of land like rights, restrictions, and responsibilities (Yomralioglu & McLaughlin, 2017). Another element that makes the cadastre important when it comes to administering public urban lands is the attributes that the cadastre provides visual maps and descriptions of entities (Lemmen et al., 2017; Liang et al., 2019). The latter allows us to respond to pertinent questions in land administration to different key stakeholders on who (owner), what (typology), where (location), and how (ownership arrangement). This is very important when it comes to managing public urban lands. The ownership has to be identified as well as communicated to the community, especially to those who are living around these lands or working in these areas.

Recently, the importance of establishing a cadastre system that supports property ownership has been advised to many countries that envisage to implement various development agendas (Balas et al., 2021; Steudler & Williamson, 2004; UNECE, 2005). However, other countries did not embrace the initiatives either deliberately or by ignorance. Although, the empirical findings show that countries like Rwanda (Biraro et al., 2021; Sagashya & English, 2010), Ethiopia (Adam, 2023; Adane, 2022), Ghana (Chigbu et al., 2021), and Bangladesh (Subedi, 2016) showed in different time how land sector improved through establishing a fit for purpose cadastre system that responded to existing challenges in land sector such as disputes on ownership, public lands encroachment, illegal change of uses, land swapping and grabbing. Nevertheless, these findings do not state that the challenges were solved. But an improvement is

observed which allowed other sectors to flourish and work properly such as urban planning, justice[2], agriculture and livestock, water and sanitation, and others.

ii. The land registration system

is defined as the process of maintaining a register of real rights in land and includes registers of title and registers of deeds (UNECE, 2000). Then, Zevenbergen, (2002, 2004) enriched the definition as a process of recording key facts relating to the property with a main objective to respond to questions of who owns and what owns. There exist two types of land registration according to the country's system, the deed and the title. The deed or document lays behind this register and remains the authoritative record of the legal facts and rights, whereas the registration of title involves the person or body seeking a change to the land register-making the application (UNECE, 2000; Zevenbergen, 2004). The land registration component determines the type of cadastre that a country goes through from the deed system where only transactions in the land are recorded. In the title system, only ordinary transfer of ownership and secure title for tenure security are recorded (Enemark, 2009). It is observed that in French-speaking countries, Burundi included, the deed system dominates. The current challenges faced by French-speaking countries related to land tenure insecurity for communal lands, conflicts related to double allocation, land grabbing, encroachment of public lands, and change of use of public land).

iii. Land information system (LIS)

It is known as a system made of land records; and human and technical resources. It includes appropriate procedures as well as techniques for data collection, analysis, maintenance, dissemination, and use of this information (Larsson, 1991; Dale & McLaughlin, 1999). 'Information is power' is an adage in information and technology (Park, 2017) that applies to land information systems. The land information system supports the cadastre system and helps to acquire, manage, retrieve, analyse, and display land records (Ventura, 2000). Reliable land information is necessary for many public programs, such as land use planning, infrastructure development, and

[2] Cases in the courts are not dominated by land disputes

maintenance, environmental protection, resource management, and social service programmes.

Besides, land information systems have also been shown to contribute to facilitating timely access to the updated record on land ownership, land values, and land use restrictions (Kumar et al., 2006; Ansah, 2022). This observation makes the LIS to be among useful in administering public urban lands. One of the challenges that make public urban lands being mismanaged, is the lack of information on these lands. If a cadastre system lacks this element to complement land registration, the whole land administration system is negatively affected (Ansah, 2022). A well-established land administration system has to contain the trio to make sure land units in urban or rural settings are well-administered and linked with the four components of land administration (Figure 1).

For public urban lands, the determination of land ownership requires good records of interest in land that help to ensure the security of tenure. Knowing land value is key to supporting municipalities in ensuring land and property taxation are dealt with fairly in public urban lands if required and practicable. Also, payment of fair and adequate compensation during compulsory land acquisition for the public interest is made with equity and with the application of existing legal texts. The equity talked about here includes the eviction without compensation if it is clear that the owners are encroachers. Therefore, we underline that there is a linkage between cadastre, land register, and land information with the four components of the land administration to realise a system in land administration as shown (Figure 1). Furthermore, a good record contributes to ensuring the efficient use of land as a natural resource (UNECE, 1996). It has to be understood that there are similarities between cadastres and land registers given that both are built on a set of records on land. However, the difference exists where the land register is concerned with land ownership rather than land use (Bogaerts et al., 2001). Land information is also part of aspects of both cadastres and land registers, and the three make up the land administration system.

Theoretical evidence reveals that an effective land administration system has to support its cadastre system, land registry, and LIS to work effectively (Bandeira, et al., 2008; Biraro, et al., 2021; Chekole, et al., 2021). These will help to determine the ownership, the use, the value, and other information on land (Steudler et al., 2004). However, it is

not easy to afford this trio at the same time, but at least the initiatives should be observed. According to Steudler and Williamson (2015), land administration has four major components that facilitate the understanding of land in general terms. These are information on ownership, information on land value, information on land use, and spatial information on land. Besides, UNECE (1996) highlighted the determination, recordation, and dissemination of information on land as the process of clarifying the tenure, use, and value that are attached to land. To successfully achieve this process, there must be a well-functioning cadastre, land registration system, and land information system.

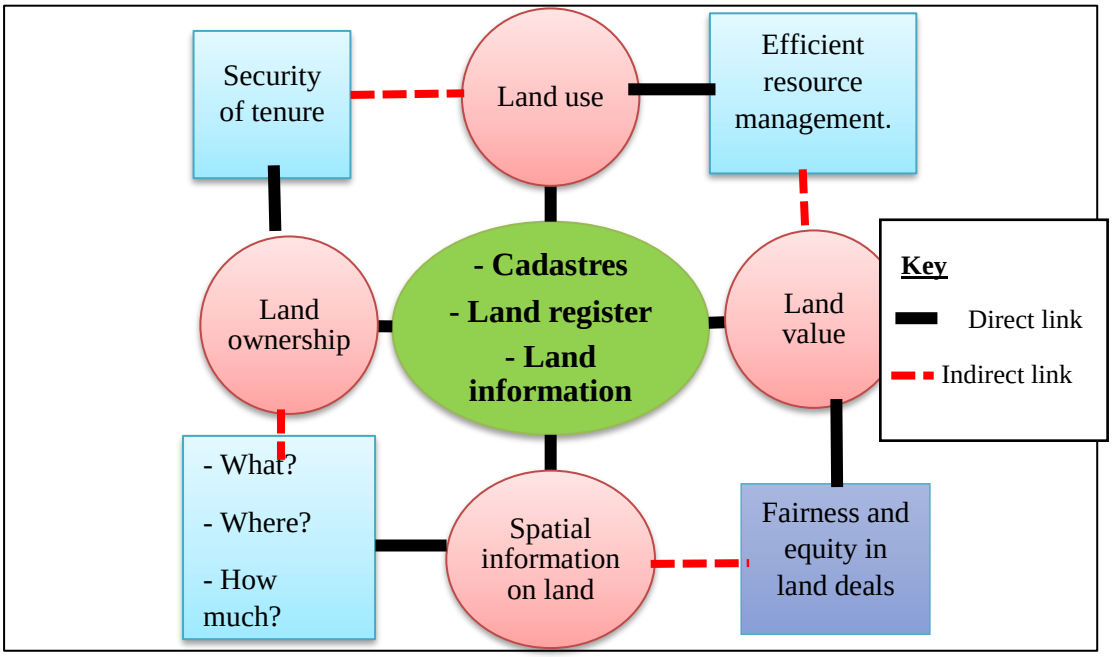


Figure 1: Linkage of four components to cadastres, land registration, and land information in the land administration system
(Source: Own Construct Based on UNECE (1996), Steudler and Williamson (2015))

2.2.7 Land administration and sustainable urban development

As discussed in previous sections, the land administration systems serve as a tool for implementing land policies and land strategies and create a conducive environment for implementing systems related to land development including urban development (Williamson, et al., 2010). These authors recommend organisations and institutions think beyond mapping, cadastral surveying, and land registration to use land administration as a means of achieving sustainable development. For long, land

administration has been attributed to an amalgam of benefits and linked to sustainable development. Likewise, modern land administration is attributed to revolutionising the existing traditional land administration system in their components (cadastre system, land registration system, and land information system) to create novelty in solution provision (Williamson, 2000; Lipej, 2015).

The modern land administration system is designed to answer questions that directly are linked to land such as:

1. What is land administration? Defining land administration by integrating concepts vertically and horizontally, in space and in time so that it can capture the necessary meaning and understanding.

2. When can land administration system tools be successfully transported? Explain why we need it in our lives and its effectiveness in addressing land market issues. This is necessary to know which tools and why; which systems for land titling, cadastres, and property-based land rights are needed for the country's land issues (Williamson, 2000; Groenendijk et al., 2012).

3. How can the land administration system help solve poverty? The global challenge is related to poverty rate escalation despite the initiatives by both MDGs and SDGs to put this issue abreast (Enemark & McLaren, 2017; Williamson et al., 1999; Williamson, et al., 2010a).

Therefore, a land administration system should contribute to this global agenda related to eradicating poverty. Its contribution should be achieved if it can provide security of tenure, help to ensure food security, and support sustainable livelihoods, especially where land market approaches are not working properly (Subedi, 2016). According to Williamson, et al. (2010b) give a list of benefits that are extended to supporting infrastructure development and improving governance and the rule of law (Figure 2). These are indirectly linked to land issues but are included in the benefits of the land administration system. This is very important and recommendable to countries or regions that do not have a land administration system. These benefits are also motivational to have in countries where poverty, land dispute, tenure insecurity, and other land-related challenges are prevalent like Burundi.

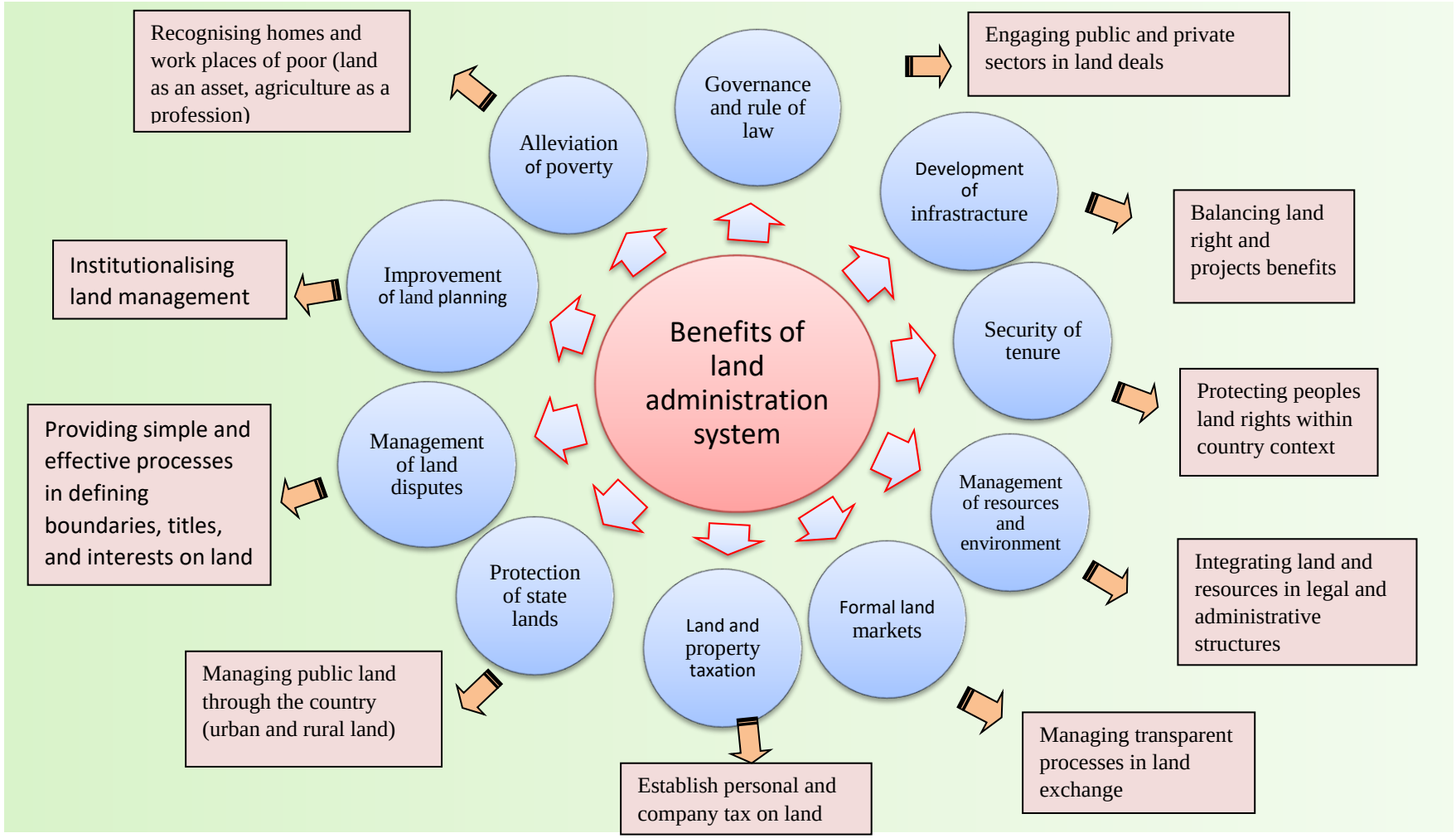


Figure 2: Benefits of the Land Administration System

(Source: Adapted from Williamson, et al. (2010b))

2.3 Approaches in Land Administration for Sustainable Urban Development

Globally, it is acknowledged that having a well-functioning land administration system is among the responses to challenges about sustainable development (Enemark et al., 2005). However, acquiring this system requires countries to invest in human and technical resources considerably to achieve the intended results. Therefore, academicians, professionals, and practitioners have engaged significantly in modeling and crafting new approaches and technologies to re-dynamize and vivify the land administration systems (Williamson et al, 2010; Subedi, 2016)). Furthermore, the aforementioned authors disclose that the land administration system has to be coupled with a land information system (LIS) that can respond to the needs of communities. In this optic, new approaches (conventional or unconventional) are published and tested so that the best ones can be applied.

2.3.1 Pro-Poor Land Management

The earlier initiatives taken in land management to make sure poor people can access land and their land rights are protected (Zevenbergen et al., 2013). The intention of developing pro-poor land management was to address challenges observed in urban and rural areas related to implementing some strategies and programmes on poverty eradication. The pro-poor approach was appreciated as a tool that is a locally practicable, integrative, implementable, and scalable alternative approach to participatory in promoting land rights and improving access to land (Hendriks, et al., 2019). With its definition by UN-Habitat (2007) to be an approach that considers widely the poor people's needs, in urban areas, the approach was recommended as a tool that will help to tackle the informal settlement by providing safer lands and avoiding eviction as well as shanty resettlement (UN-Habitat, 2004).

The approach is built on involving local leaders and landowners in the process of land management and is coordinated to solve recurrent problems by involving the majority of the society. However, the results were not as envisaged. In urban areas, accessing land legally by integrating poor people into the planning process is important, but not easy to afford. The approach works easily with conventional land administration systems, allowing experiences and best practices to be integrated into the approach (Hendriks et al., 2013). The authors noticed that the approach involves civil societies and researchers as well as working in customary, informal, and post-crisis settings.

However, it is not easy to apply in all countries especially where the existing land administration system is still weak and poor in managing land, especially public urban lands that everyone needs to access. UN-Habitat (2007) disclosed that political and technical issues negatively result in a pro-poor approach and need a thorough analysis in some contexts. Still, we suggest that the approach cannot be taken as a blueprint approach in land management considering the aforementioned critics. Yet, we can maintain the important part of it and be associated with other approaches.

2.3.2 Fit for Purpose (FFP) Land Administration

Being among approaches that are recommended to developing countries due to their effectiveness in the situation of financial and technical challenges (Enemark, et al., 2014; Zevenbergen, et al., 2013), the FFP focuses on the purpose by responding to "what" to achieve and "how" to reach this achievement. The approach uses systematic land registration can cover vast areas; and is faster as well as cheaper in terms of financial resources (Enemark, Bell, Lemmen, & McLaren, 2015). Enemark (2015) highlights the need to have FFP as a concept that covers large-scale land parcel mapping as a spatial framework by using aerial imageries that are cheap and affordable rather than using field surveys that are time and cost-consuming. The authors of FFP acclaim the approach to be flexible (Figure 3) in terms of accuracy and fit within existing legal and institutional frameworks that are in the area of application. Another attribute is that the FFP allows incremental improvement along the implementation by considering the actual societal needs and available resources.

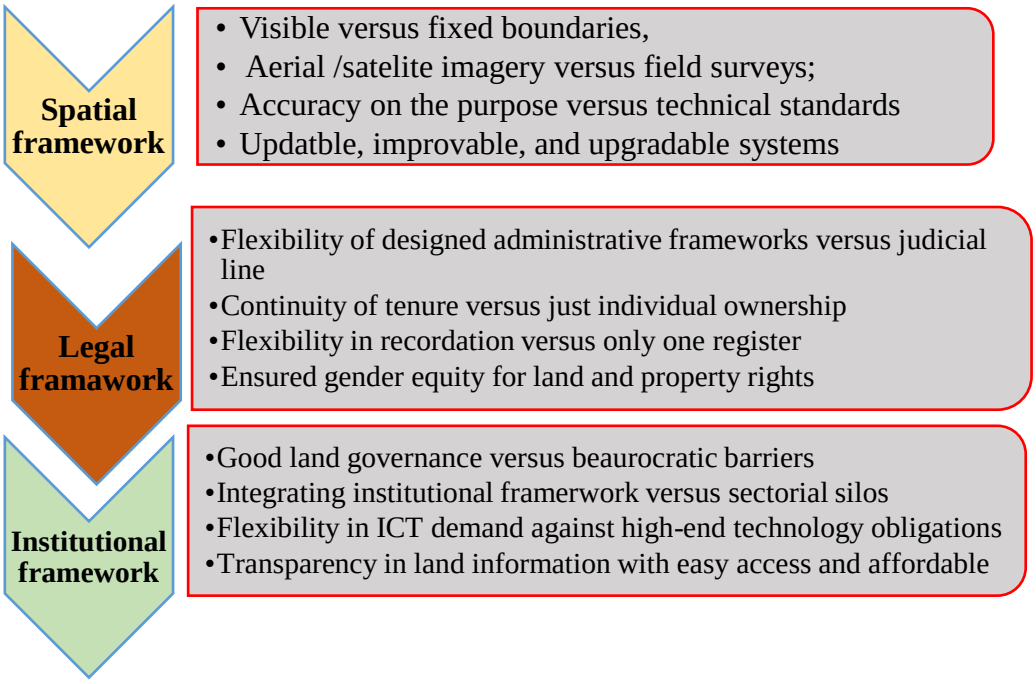


Figure 3: Key Principles for Fit for Purpose
(Source: Adapted from Enemark et al. (2016))

According to Williamson, et al. (2010) and Williamson (1983), this approach is subscribed to unconventional land registration that has been useful for a long time in addressing land tenure security in Thailand, Kenya, and Sudan; whereas Byamugisha (2013) and Enemark, et al. (2015) notify that this approach has recently recorded success in Ethiopia, Namibia, and Rwanda. Being inclusive, and allowing the participation of key stakeholders is also known as affordable and reliable, allowing land officers to upgrade information easily (Enemark, et al., 2015). The FFP allows the government to use the existing legal and institutional frameworks and or incrementally design their own. The target is to record all land parcels to provide tenure security to landholders. Most importantly, Enemark and McLaren (2017, p.2) advise that the application of the FFP should be operationalised after following the steps:

1) Analysis of country context;

2) Analysis of existing spatial/legal/institutional frameworks;

3) Developing a country-specific FFP strategy for land administration;

4) Designing the country-specific FFP spatial/legal/institutional frameworks;

5) Capacity development;

6) Country-specific instruction manuals; and

7) Economic benefits analysis.

These steps are very important to avoid the copy-and-paste of approaches that in some contexts have failed to render what was targeted too.

According to Barry (2018) and Enemark and McLaren (2017), countries are advised to craft their strategies and approaches that can meet their local context, traditional norms, financial capacities, and institutional and legal frameworks when it comes to building a land administration system. Therefore, the FFP is selected as one of the strategies that tackle land issues specifically in developing countries under the belief that it provides tenure security to landholders and targets poverty alleviation for rural and urban dwellers (Bennett & Alemie, 2016); affording social inclusion and stability; allowing investment and economic development; ensuring environmental protection and natural resource management as subscribed in SDGs (Enemark, Bell, Lemmen, & McLaren, 2015). This is convincing that once FFP is applied in the country, public urban lands are integrated and can be a response to achieve sustainable urban development. Enemark and McLaren (2017) have shown how achieving sustainable development goals will require the master of land governance. This supports the argument that achieving sustainable urban development will need the proper management of urban lands. In administering public urban lands like wetlands, open spaces, and others; FFT provides information on ownership, location, size, and existing use through systematic land recordation to land managers, urban planners, and other decision-makers.

2.4 Theoretical Review

2.4.1 Theories and Public Urban Lands Administration

Any scientific work has to be guided and supported by existing scientific theories and concepts. It is defined that scientific theories are abstractions representing certain aspects of the empirical world. They are concerned with the ‘how’ and ‘why’ of the empirical phenomena should be, not with ‘what’ (Chalmers, 1999). Some theorists have accounted for theories to predict phenomena and to provide an understanding of how a phenomenon is built up. Nachmias and Nachmias (1997) and Chalmers (1999) have pointed out that theories and concepts are tools for human thinking, in the same way as instruments for human action. Furthermore, Chalmers (1999) explains that researchers

apply theories in their work to facilitate the interpretation of findings. In this study, theories related to land administration, and urban sustainability are reviewed and the main ideas related to land administration and urban sustainability are underlined.

2.4.2 Land Administration andUrban Economic Theory

For a long time, land has been conceptualized as a capital asset and an essential source of wealth that facilitates and motivates the flow of the economy (de Soto, 2000). Land assists groups and organisations systems in generating income and has been used as a factor of production by an economist (Che et al., 2021). Also, land is viewed as a *commodity* that participates in all forms of market systems in an urban and rural setting (Fobih, 2004; Subedi, 2016; Yang et al., 2021). Additionally, Platt (2014) goes beyond the economic meaning of land, and links land to a psychic or emotional dimension. Therefore, we argue that the theorisation of land is deemed to be necessary for a better understanding of land issues.

Land administration theory advocates that legal and institutional frameworks work together to address land issues. Policy-making and policy implementation should be concurrently undertaken. Land managers should think of addressing challenges that pertain land sector including land conflicts and tensions (Achamyeleh, et al., 2020); rapid urbanisation coupled with the informal settlement, and public urban lands encroachment (Magina, et al., 2020; Kironde, 2016; Kombe, 1994)); low property tax collection (Sepulveda & Martinez-Vazquez, 2012; Franzsen & McCluskey, 2017); and lack of land tenure security (Awuah & Abdulai, 2022; International Fund for Agriculture Development (IFAD), 2015). However, the urban economic theory that assumes that households, firms, and government agencies choose one and only one location to develop, that maximises their marginal profits explains how each portion of land is geographically located, and anyone who wants to settle in a city, considers particular challenges and opportunities attached to the plot. The two theories explain how land uses are linked to theories, especially in the choice of land to develop. Furthermore, theories are required to scrupulously understand public urban land issues and their management.

2.4.3 Bid Rent Theory and Theory of Modern Urban Systems

Likewise, the Bid Rent Theory relates locational choice of household, equilibrium land use, and optimal land use as well as other spatial economic concerns. This theory can

be used to explain how public urban lands are exploited despite their marginality and vulnerability. The theory elucidates why developers in developing countries exploit public urban lands. The instances that these lands are often found in the city centres or the vicinity of the city. Then, people choose to acquire their shelters and run businesses in the marginal land by considering the rent to be yielded from them. Additionally, Magina, et al. (2020) point out that in the global south environmental amenities are less considered given that people can choose to live in marshland, road reserves, and open spaces despite the environmental risks. According to Ricardo (1821), there are differences in fertility (opportunities); and Thünen highlighted the location differences from prime land to marginal land due to location. Thünen said that people put their concern on transportation costs and ignore environmental quality.

Yet, Papageorgiou and Pines (1999) supported the theory Bid Rent Theory and formulated a comprehensive theory of modern urban systems. For the theory, the use of land goes to the agent who is prepared to offer the highest amount per unit of land. Marshal in 1890 shaped the theory (Bed Rent Theory), and terms such as ' site value' represented 'urban land rent', and 'situation value' stands for 'advantages of urban location'. It was concluded that for central locations, where transportation costs are low, land rent is high, while for peripheral locations, where transportation costs are high, land rent is low. The existence of public urban lands in prime land according to Thünen and Marshal has meaning and implications for the change of use to meet the theories' assumptions.

2.4.4 Common Pool Theory

For managerial complications on public urban lands, the common pool theory recognises public urban lands as among common pool resources like water, air, forest, and others that fall into commonly owned resources. The management of common resources requires an institutional arrangement to avoid the tragedy of commons (Schlager & Lopez-Gunn, 2006; Hardin, 1968). The theory stresses local knowledge and local people in managing the common resource (Schlager, 2004). This theory places in the forefront the local governance which should be more inclusive and democratic by putting in place institutions and legal frameworks that are locally formulated (Hardin, 1968). It is believed by having legal and institutional frameworks that are locally established, enforcement and implementation will be possible.

By complementing the land administration theory that recommends the adoption of implementable policies, the common pool theory gives hope that implementable rules and policies are enhanced if communities participate in the process. Hardin (1968), Schlager (2004), and Dietz, et al. (2002) are in view that not all users of the common resource will likely invest their cost and time in safeguarding this resource for sustainable exploitation, but some will be laissez-faire or free-riders in its protection. This situation may be accompanied by other malicious practices such as grabbing or encroachment if the common resource is a land or land-related resource. This should not lead to sustainable exploitation of resources and it should not assist communities to achieve sustainable development.

All theories discussed are valid for managing public urban lands. However, the Common Pool Theory is primarily important for this research because of its direct link to resource management. The importance of the theory is pinned to the involvement of local institutional arrangements to manage public resources to avoid the tragedy of commons; prioritising local knowledge, local people, and local technologies in managing the common resource (Schlager, 2004); urging local governance to be inclusive and democratic; and sticking on locally formulated institutions and legal frameworks that are fit to context.

2.5 Sustainable Urban Development Encapsulated in Sustainable Development

The concept of sustainable development emanated from different debates on how to guide economic development at the same time ensuring environmental considerations and social justice (United Nations, 1992). Sustainable development was defined as a development that satisfies the present needs of people without compromising the future generations to meet their needs. From the MDGs to SDGs, land components have appeared in different Goals and targets. For example, the work by Enemark and McLaren (2017 and UN-Habitat (2016) mention that among 16 goals, there are almost six goals (Goals 1, 2, 5, 11, 15, and 16) that relate to land management at least one target by a mentioned goal. Achieving social, economic, and environmental sustainability is the objective of SDGs. However, there should be good land governance and a well-function land administration system to achieve all the above-mentioned objectives. Achieving urban sustainability was also another agenda in the subsequent years (Guneralp et al., 2017; Shulla et al., 2020).

2.5.1 Sustainable Urban Development in Global Discussions

The world realised that the rapid urbanisation and population growth in urban areas were an indicator that cities would be the place for changes that need to be managed (Bhargava et al., 2020; Thuo, 2013). Then, urban sustainability started to be echoed in different international summits. It was defined as urban development that prioritises ecological values with 'principles of providing today's needs with methods that will not prevent future generations from meeting their own needs' (Cüneyt & Barış, 2022, p.555). Besides, Shoja and Heidari (2015) show that urban sustainability should focus on socio-economic and ecological aspects and should promote the quality of a sustainable environment as the major sustainable approach to urban development. In the same vein, the European Commission (2002) identifies major characteristics of such development that should be mirrored in enhanced social, economic, cultural, and environmental development. This shows that urban sustainability is a multidimensional and multifaceted issue that necessitates joint efforts to achieve it.

It was in that perspective that the issues of urban sustainability were discussed at different times and places. These discussions include the ones by the United Nations Framework Convention on Climate Change (UNFCCC, 2011), the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in Quito Ecuador, the Sustainable Development Goals (SDGs) in 2015, the Global Platform for Sustainable Cities (GPSC, 2016, and the New Urban Agenda (UN, 2017). All these summits and high roundtable discussions were looking at how urban cities can develop sustainably. The search for urban sustainability emanates from observed challenges that urban areas are experiencing. These include urban poverty where a large number of urban dwellers are among low-income earners. It is estimated that in 2025 urban poor will be counted at 1.5 billion people (European Commission [E.C], 2002). Another challenge is the degradation of the urban environment which involves the destruction of ecosystems, wildlife, and natural resource depletion (Bentley, 2022).

Subsequently, poor resource management in the process of production (agriculture, urbanisation, industrialisation, …) is viewed as a challenge related to urbanisation (Khan et al., 2022; Rajshekhar, 2021). Furthermore, the growing demand for urban infrastructure and services due to urban population growth coupled with rapid and unplanned urbanisation is a problem (Bodo, 2019; E.C, 2002). The weak municipal

finance caused by informal settlements and building as well as informal trade was listed among other challenges by Parsa et al. (2011) and de Soto (2000). Lastly, the ineffective institutions manifested in wrong decision-making systems, poor management, and weak human resource skills are a challenge to the economic development of urban areas (Turimubumwe, 2020; UN-Habitat, 2017). To address all of these, the proposed approach includes policy formulation followed by programme formulation (Figure 2).

2.5.2 Sustainable Urban Development and Development Themes

Urban sustainability is related to tackling different themes that are considered to address urban challenges (Figure 4). These include poverty reduction, environmental protection, gender considerations, awareness-raising, capacity-building, and participatory approaches (EC, 2002; Roić, 2016). Besides, there are sectoral issues that pertain the urban sustainability which need improvement. These include transport, water supply, and drainage, solid-waste management, natural resource management, business and employment, housing, and land (Mohamed & Yacout, 2019; Polidoro et al., 2012; UN-Habitat, 2016). To successfully link these themes and sectoral issues and achieve urban sustainability, the World Bank (2018) proposes an urban sustainability framework (USF) that recommends to following four stages:

1. Diagnosis: Understand the existing city's sustainability status
2. Define a vision and set priorities: plan how you want the city to be
3. Finance the plan: mobilize financial, human, and equipment necessary to achieve the vision
4. Monitor and evaluate: trace and track the changes during and after implementation phases according to the projected vision.

USF intends to assist cities in developing a common understanding and vision, building commitment across a diverse range of stakeholders, putting together initiatives and efforts, and monitoring and evaluating the impact of activities undertaken in improving cities toward expected outcomes. During the GPSC, urban sustainability issues were discussed and a consensus was reached (World Bank, 2018, p.2). Then, the outcomes of discussions are summarised as:

1. Help to build a common understanding of sustainability within an urban context;

2. Provide practical guidance to cities on how to pursue urban sustainability through integrated approaches;

3. Serve as a policy tool to support cities in collecting and integrating data, and using those data sets to define a vision, set targets, monitor progress, and forecast trends—all while being able to compare themselves with peer cities;

4. Establish a common framework to measure urban sustainability so that cities can diagnose and benchmark their current performance, monitor the impacts of their policy and planning interventions, and share data and knowledge with other cities in the GPSC network and beyond.

These outputs were recommended to countries that are rapidly urbanising to make sure that issues related to urban development such as unguided urban expansion, unplanned densification, informal settlement, loss of revenue, and others can be addressed. This is helpful in countries like Burundi where the urbanisation rate is at 5.8 % (CAHF, 2022). However, the implementation of this framework is still a challenge for developing countries. The framework requires a strategic plan structured on seven principles as highlighted by the European Commission (2002) such as:

1. Good governance: Known as the process of transferring the power and authority to the society in deciding for their future. Good governance allows formal institutions and civil societies/CBOs to work together in decision-making. Good governance in urban management is a prerequisite to making sure participation, transparency, responsibility, accountability, and gender equity/equality are integrated into the process of urban planning and management.

2. Good urban management: Urban sustainability requires good urban management. Transparent and participative decisions by key stakeholders are recommended as well as effective implementation of operation and development decisions.

Good governance and good urban management sound the same and require the same approaches to achieve them. Meanwhile, Dlamini (2021) and Islam (2011) elaborate

more that sustainable urban development has to support social, economic, and environmental development. Strategic approaches to achieve it should include:

1. Supportive approach: designed urban development projects have to be those prioritised by local people to solve local problems by using local resources/ knowledge which respond to local priorities (Peng et al., 2023; Seijdel et al., 2006).

2. Sensitive approach: Urban planning projects should be flexible to local conditions in addressing local problems related to urbanisation. For example, land use plans have to consider economic, social, and political dynamics rather than be rigid to planning standards) (Delmas et al., 2018; Jayagoda, 2009).

3. Significant approach: Urban projects have to maximise the impact on development. This means addressing current and future problems that are directly or directly averse to urban settlers in enhancing the social, economic, and environmental development of the city (Islam, 2011; Mehaffy, 2008).

4. Sensible approach: The strategies designed for implementing urban projects should be understandable and easily implementable by the local communities. This necessitates not overcomplicating the approaches and considering the realities of local capacities (Garcia-Garcia et al., 2020).

5. Synergetic approach: Urban planning should link with other sectors and allow collaboration as well as cooperation of different partners. Local and central governments have to work together with private sectors (CBOs/CSOs) (Ravetz, 2017; UN-Habitat, 2022).

Moreover, the European Commission (2002) and Shoja and Heidari (2015) disclose that urban sustainability addresses cross-cutting issues and sectoral issues with existing strategies. Sustainable urban development is a mere adoption of strategies that consider social, economic, and environmental sustainability and integrate good governance and good urban management.

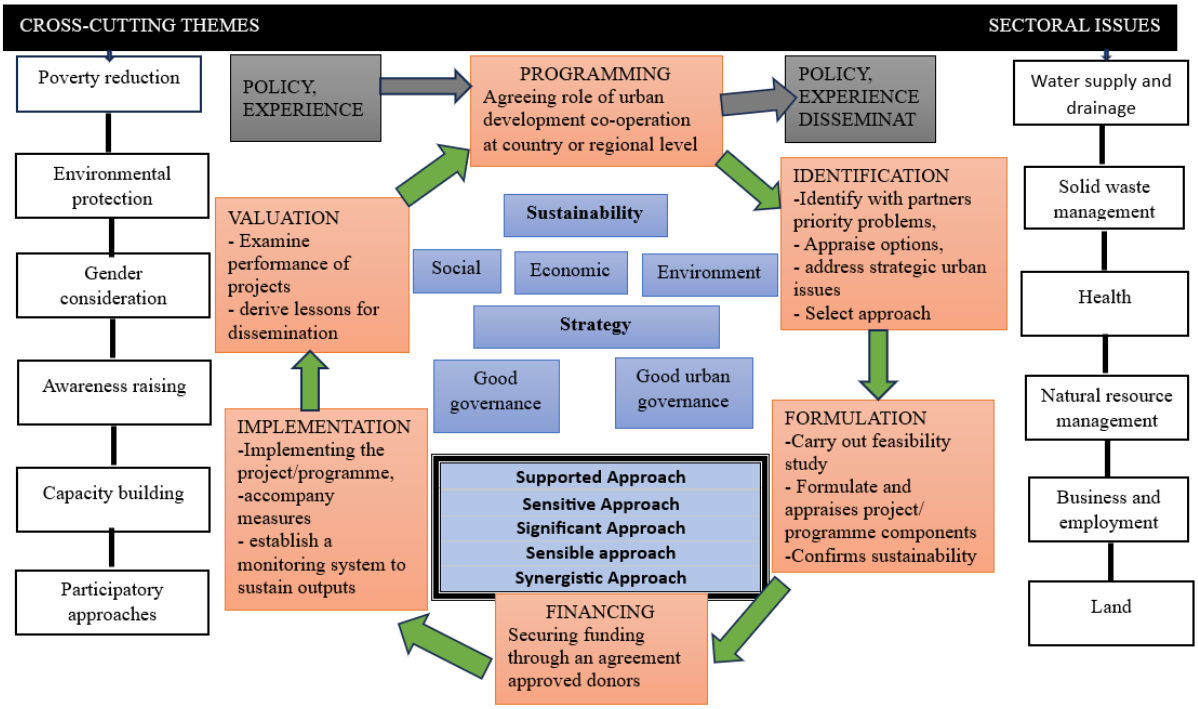


Figure 4: Conceptual Framework for Sustainable Urban Development
(Source: Adapted from E. C (2002))

2.6 Policies and Legal Frameworks in Managing Public Urban Lands

African Union [AU] (2009) defines land policy as 'the set of agreed principles to govern ownership (or access to), use and management of land resources to enhance their productivity and contribution to social, economic, political and environmental development and poverty alleviation. Before, the European Union defined land policy as 'the principles and rules governing property rights over land and the natural resources, it bears as well as the legal methods of access and use, and validation and transfer of these rights (Commission of the European Communities, 2004). From these two definitions, management, tenure and rights, access, and use are keywords to keep in mind when formulating policies.

In the African context, public urban lands are also known by legal frameworks and some countries have given them special consideration, while others take them in general view by their legal frameworks. For example, in Rwanda, the National Land Policy of 2004 defines distinctively wetlands from other public urban lands (Government of Rwanda, 2004). Tanzania National Land Policy of 1997 (Government of Tanzania, 1997) and Ghana National Land Policy of 1999 (Government of Ghana, 1999) define public urban lands but without specifying the typology as it is in Rwanda. We cannot

forget other countries like South Africa and Congo-Brazzaville that do not say any word on public urban lands but stick to other pertinent issues that pertain to land management (Government of South Africa, 1997; Government of Congo-Brazzaville, 2000). Burundi joins other countries whose legal frameworks do not give special consideration to managing public urban lands. These countries consider public urban lands in general. It is lightly observed that different laws and codes such as the Land Policy of 2008, Land Code of 2011, Urban Planning and Housing Development Code of 2016, Forest Policy of 2012, and Water Policy of 2009 recognize public urban lands without distinguishing them from other land units. However, it is not known that this may be among the policy gaps or opportunities in managing public urban lands in these countries.

Generally, land policies are formulated by governments of each specific country to deal with different land-related problems that include access to, complexity in controlling and using land, providing tenure and land rights, and solving socio-economic and environmental challenges related to the use of land. Also, preventing these problems from happening in the future is another objective (Schouwatra & Ellman, 2006; and A.U, 2010). However, in most developing countries, the existing land policies have failed to address land-related problems (A.U, 2009). This can be attributed to the fact that there is a weak implementation of the existing land policies or a lack of focus on the content of the policies to address the core issues of economic growth, gender equality, land degradation, land speculation, illegal change of uses, and encroachment (A.U, 2010; Quizon, 2013; and Azadi & Vanhaute, 2019). Other policy analyses conducted by Young (2005) and Ruzzene (2015) reveal that policymakers in developing countries formulate policies that in the end are used as their political instruments.

To scrutinize the effectiveness of policies in achieving the desired goals, different scholars such as Allan, et al. (2018) suggest setting up an evaluation framework and critically evaluating the outcomes of policy implementation. This is further justified by Bonin, *et al.* (2012) that the outcomes of a land-use policy evaluation should support wise resource management and conservation. Furthermore, the guideline on land policy proposed by the African Union as a framework stresses land rights, productivity, and livelihoods as key orientations (A.U, 2010). All these ideas give a benchmark to

conclude that policy evaluation in the land sector could be guided by clear objectives useful in addressing key problems observed in the land sector.

Moreover, the socio-political and economic pressures observed in the land sector after the colonial era pushed developing countries like Nigeria and Zambia to think of overcoming land-related challenges such as the tenure system from customary to leasehold (Mowoe, 2019). In Uganda, the 2013 policy emphasis is ensuring efficiency and equality, optimal use, and management of land resources. It was effective in poverty reduction and creating wealth as well as achieving socio-economic development (Government of Uganda, 2013). In Rwanda, the objective was also about guaranteeing tenure security that would allow different land reforms necessary to support land management to be initiated by governments (Government of Rwanda, 2004). From this literature, we conclude that African countries do have different objectives in their land policies and each country tries to address land issues in its own way.

In some countries, the literature shows policies are not specific to particular land use units but holistically consider land management without specificities. For example, public urban lands such as wetlands, lakeshores, and open spaces are not considered in detail but are lightly touched. This affected these land units and some other land use units like them to be neglected, managed under by-laws, or even without laws that protect them. According to Des (2006), the evaluation of policies in place can provide information on whether policies are implemented or not, which can assist policy and decision-makers in taking managerial or governance actions accordingly.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This study aims to investigate the trend of public urban lands administration and its contribution to achieving sustainable urban development in Burundi. Bujumbura City has been taken as a case study area. To achieve this goal, a mixed research approach was employed. Primary data and secondary have been acquired from different sources as discussed in various sections. A wide range of sectors has been involved in providing primary information such as urban dwellers (households), local authorities, land administration experts, Urban planners, and other land-related professionals. For secondary information, a thorough and perusal review of existing literature from public and private organization reports has been compiled.

The study applied a mixed research approach in both data collection and data analysis. The motivation behind the application of the mixed research approach is properly explained in section three and section five. This chapter is composed of nine major sections that include the research itinerary that shows how the study has been undertaken, the research design which describes the approaches applied to conduct this study, the selection of the case study area that is important in showing how the case study area has been chosen among others, a unit of analysis that identified the entities to be concerned by this study, the research methods that applied to operationalise this study including the qualitative and quantitative methods. In this chapter, you find also how the sample size has been determined by using the Cochran formula useful in areas where population size is not known. Furthermore, there are sections like data collection tools, data analysis techniques, and data validity and reliability.

3.2 Research Itinerary

The execution of this research is tailored to three major phases undertaken at different times throughout the research period (Figure 5). At first glance, the pre-desk review is undertaken to situate the research in global, continental, regional, and national understanding; clear the knowledge gap, and state the motivation and purpose of carrying out the research. The existing knowledge on land administration and urbanisation is lightly highlighted in this step. In the same phase, a pre-field visit

associated with direct observation and contact with local leaders in the case study is performed. Then, preliminary information on the research topic is obtained.

In phase two, an intensive literature review and fieldwork activities (data collection) were done. Different policy and legal documents, academic works, and professional reports were consulted and various tools and methods were applied. Generally, the second phase is dedicated to data collection and other field activities. In this phase, the collected data were analysed by using analytical tools and other methods as highlighted in section three and subsequent subsections. Furthermore, the third phase is dedicated to post-field activities implemented to complete the gaps and omissions that were observed during data analysis. This phase pushed the researcher to go back to the field and collect data that were missing after data analysis. The third phase includes also report writing and consultations with supervisors for the final report of the thesis (Figure 5.)

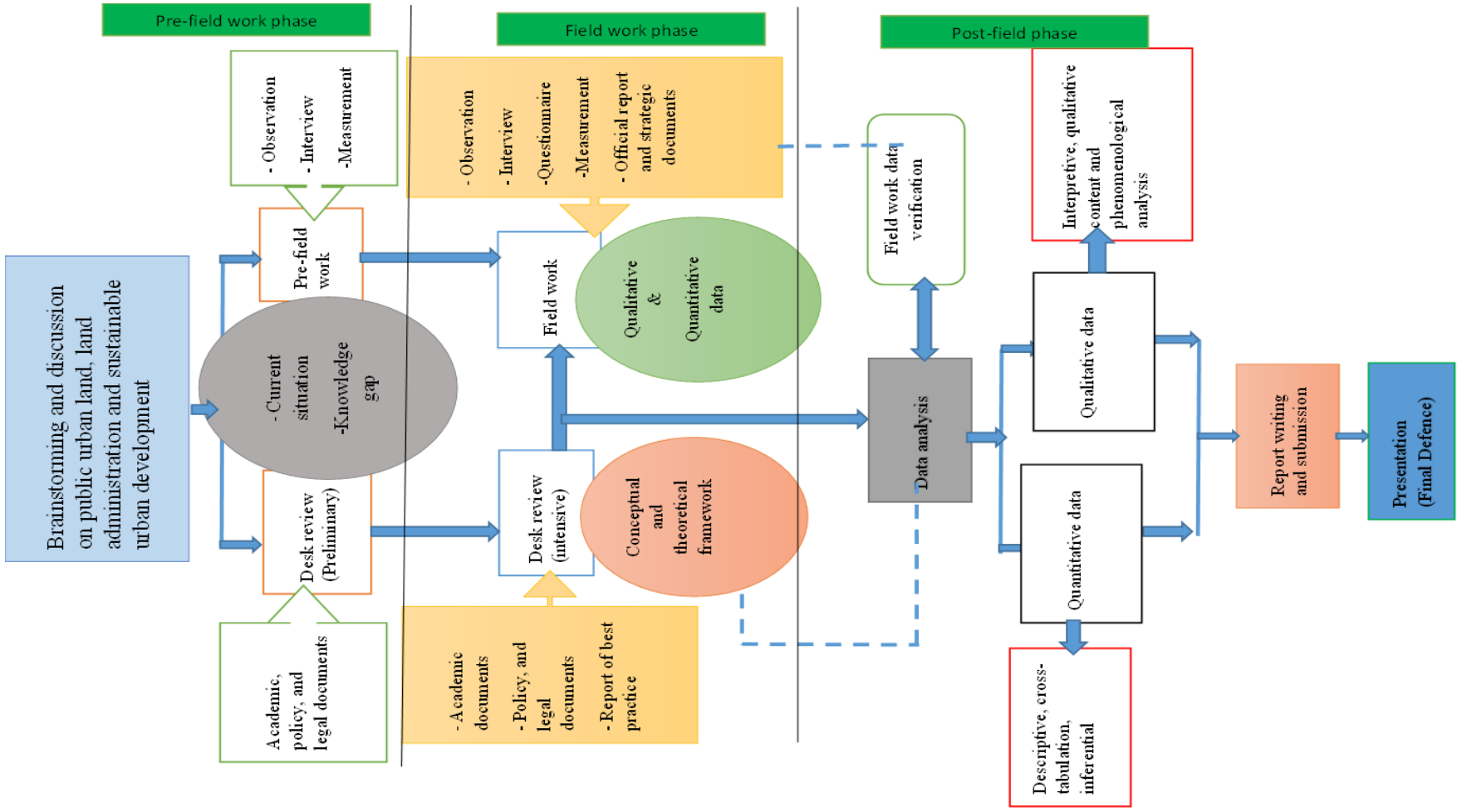


Figure 5: Research process and major phases

(Source: Author's construct,2022)

3.3 Research Design

Identifying the research design makes the work to be implemented scientifically(Lu et al., 2021). According to Yin (1994, p.15) "…there is much research that includes case study…"; however, Patton (1980), Crowe et al (2011), and Yin (2009) stipulate that the choice of a research strategy is not accidental but guided by three conditions: (i) which types of research; (ii) questions suggested; and (iii) the extent of control investigator has over the behaviour events and degree of focus on contemporary as opposed to historical events. Then, Suter (2009) advises the use of a case study strategy that copes with managing typically distinctive situations comprising many variables; uses multiple sources of evidence that call for triangulation, and builds on prior theoretical propositions. The author explains that a case study answers "the how, the what" or "why" question inquiries in the research. Therefore, the meaning, causes, feelings, and perceptions of situations as they are present in the case study are gathered. This is very important for this study given that many questions are related to what and how. The case study helped to explore more how a land administration system would be useful to address land issues in public urban lands. Also, the case study answered the questions on the causes and consequences of neglecting the management of public urban lands in Bujumbura City.

Moreover, Crowe et al (201) and Coombs (2022) show that the motivation behind applying a case study is that it allows the researcher to apply various data collection techniques and tools in collecting primary data in well-defined and demarcated geographical locations. Likewise, Yin (2003) and Descombe (2007) satisfactorily expressed how using case studies in research allows for a combination of techniques of data collection as well as sources of data to generate the information required by the research objective. The type of case study among the three types[3] commands the techniques to apply in data collection (Coombs, 2022). The case study undertaken is geographically delimited and not the whole area may be studied. Then, the case study area selection process proceeds.

[3] There exist three types of case studies that are instrumental case study (single), collective (multiple) case study, and intrinsic case study (Coombs, 2022, p.1).

3.4 Selection of Case Study Area

The choice of the case study area is mostly guided by the generalisability or representativity of the information (Yin, 2003b). For this case, the generalization of information is required for this research given that Bujumbura City provides the model of urban development for other cities, municipalities (Gitega and Rumonge), and towns in Burundi (Ngozi, Muyinga, and Kayanza). Furthermore, Yin (1994) and Whitely and Kite (2013) identify two options for selecting a case study area. First, the researcher can use a single case and the second is multiple cases. In the single case study, Coombs (2022) and Cresswell (2013) suggest that the researchers need to concentrate on one issue among others and select one bound case study area among many others.

This study uses a single case study area where one of the above-mentioned is selected as a case study area by following a scientific approach. This is because single cases according to Yin (1993) are useful if the case seems to represent a critical test to existing theory, contemporary, rare, or unique events. The author reveals that multiple cases are preferred if a replication logic is supposed to support theoretical results and/or contrasting results for predictable reasons. Given that the research is concerned with exploring how land administration can contribute to managing public urban land for sustainable urban development in Burundi, one case study area, the best-case study was selected by following the criteria will be useful for this study (Table 1).

3.4.1 Criteria for Selecting the Case Study Area

Regarding selecting a case study, Ghauri and Grønhaug (2002) and Stake (1994) specified that selecting a case study area needs a justifiable approach since the case has to provide a deeper understanding of the study phenomenon as well as optimising the understanding of a specific situation or problem. Besides, Karimi (2019) and Ghauri and Fang (2001) summarise the criteria for selecting a case study area: availability and accessibility of people and data that respond to the research questions. These authors add that representativity, contemporariness, and uniqueness have to be added to the list. Similarly, this research used these criteria to select the case study area among available cities and towns in Burundi (Table 1).

Table 1: Case study area selection process

	Criteria for selecting the case study				
Case study areas	**Availability of data**	**Accessibility of data**	**Uniqueness of the case**	**Contemporary case**	**Representative& generalisable case**
Bujumbura city	✓	✓	✓	✓	✓
Gitega	✓	–	–	✓	✓
Ngozi	–	–	✓	✓	–
Rumonge	✓	–	–	✓	–
Muyinga	–	–	✓	–	–
Kayanza	–	–	✓	–	–

*** √ *The selected case study area*

With the results above, Bujumbura City meets all the criteria that are required to select Bujumbura as the case study given that it can respond to the research questions. Therefore, Bujumbura City was selected as a case study area for this research among others. The results show that no alternative case study area that could challenge Bujumbura City. Furthermore, Bujumbura City is an economic city of Burundi and the only urban area that has the title of a "city". Gitega as a political and administrative capital is still a municipality. Most of the headquarters of international organisations and the United Nations, ministries offices, and other remarkable infrastructure is located in Bujumbura.

3.4.2 Description of the Selected Case Study Area (Bujumbura City)

With 913.41 km^2 (according to the new delimitation in 2022), an average altitude of 820 meters, and 1 092 859 inhabitants (estimate of 2019) Bujumbura is located at the northeastern corner of Lake Tanganyika. Being the largest city of Burundi, Bujumbura is an economic and communications centre of the country. The city recognises a tropical climate that offers dominant sunshine all year round and an average temperature of 23 ° C, with peaks at 28 - 35°C during the hottest periods.

The city is developed along Lake Tanganyika and in Imbo Valley which makes it have marshlands in different areas of the city. Also, some rivers that pass through the city and pour their waters into the lake inviting urban development to pay attention to those

areas (Figure 6). Additionally, the open spaces and road reserves that were provided in the master plan that expired in the land administration system for two decades (1982-2002) give a signal to academicians and practitioners to examine their actual condition. Also, the level of spatial development, population, the attraction of investors in land and other related investments, and international role due to infrastructure like airports, ports, and National Roads have motivated the researchers to undertake this research in Bujumbura. The dynamism in development that is observed in all corners of the city makes every researcher interested in the future sustainability of this urban area. Finally, this case study area meets different considerations that the researcher has put forward as an "information-rich case" for the research topic as Yin (2009) and Peersman (2014) expressed.

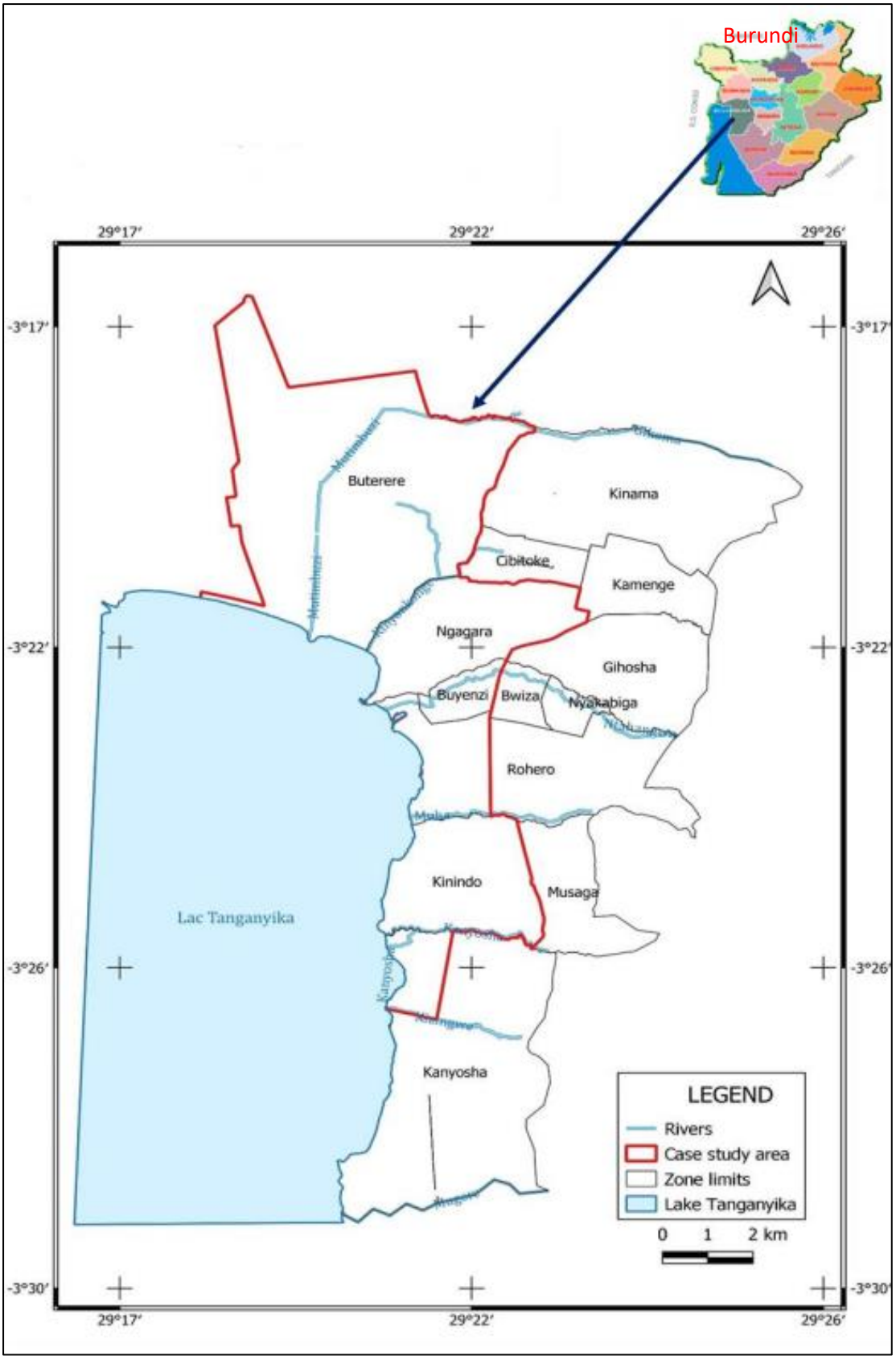


Figure 6: Location Map of the Case Study Area

Source: Author's construct, 2023

3.5 Unit of analysis

In this research, the unit of analysis is the neighbourhoods with public urban lands within a spatially and administratively defined in Bujumbura City. Specifically, this research deeply analyses the wetlands/marshlands, open spaces, road reserves, and river banks. All these places are defined as public urban lands according to the existing rules and regulations guiding land in Burundi. As defined by William (2006), a unit of analysis concerns the study that determines what the unit is. Merton (1975) argues that the unit of analysis is only the "what" or "whom" that is being studied. Accordingly, units of analysis could be individuals, people, clients, students, programmes, neighbourhoods, communities, cities, states, cultures, and so forth (Kumar, 2018). The author adds that different types of units of analysis require different kinds of data collection methods, a different focus for the analysis of data, and also a different level at which statements about findings and conclusions can be drawn (Kumar, 2018).

3.6 Research Method

This study applied a mixed research approach to integrate qualitative and quantitative inquiries. The work by Cresswell underlines that to handle an inquiry that involves an exploration, a mixed-method research approach is required to integrate different and various methods as well as techniques for data collection and analysis. To avoid the research relying on a single method that hinders the reliability and validity of results, Dawadi et al.(2021) propose a mixture of qualitative and quantitative data acquired with different tools and techniques. Besides, Poth and Munce (2020) have disclosed that by mixing methods and approaches, rich insights into the research phenomena are expected by researchers. The authors add that the integration and synergisation of multiple data sources which is important in studying complex problems are enhanced. Therefore, the mixture of approaches in this study is observed in data collection where data were gathered from different sources (primary and secondary sources). Also, the methods used to collect data from both sources were diversified by including desk review, questionnaire, Interview and key informant interview, Focus Group discussion (FGD), and observation.

Desk review was a cross-cutting method that applied to all research objectives and assisted in providing conceptual definitions of terms used to situate the study. This method was also useful in providing secondary data obtained in different public and

private institutions/organisations on public urban lands management. Questionnaires and interviews were important in generating information from a wide range of urban dwellers and local leaders. Recent research by Lu et al. (2021) acclaimed that questionnaires provide information directly and quickly on the attitudes, behaviours, characteristics, and opinions of participants that researchers are targeting.

Kothari (2004) gives the merits of questionnaires as low cost, but spread geographically, and use large samples which help to collect information that is not biased. However, Kothari had in the same work cautioned that some of the demerits that questionnaires may present include a low rate of feedback if questionnaires are mailed rather than attended. The author adds that there is the possibility of incomplete and unclear replies even omissions if not attended. All these were taken into consideration during the questionnaire administration. Then, questionnaires were attended by trained numerators supervised by the researcher to ensure the quality and quantity. The questionnaire administration was operationalised from March 2021-December 2021 with alternate due to neighbourhoods' location. Data in wetlands were collected explicitly in August-October 2021 which is a dry season period.

Besides, interviews (Direct and KII) were important in this study, especially in generating information from different participants according to their popularity and influence in the case study area. For decades, Kvale (1983) has expressed how interviews are important in gathering descriptions of the real world from the participants to interpret the meaning of the described phenomena. Opdenakker (2006) shows four commonly known interview types such as face to face, telephone interviews, MSN interviews, and E-mail interviews. The author advises that before choosing one of these interview types, they must be well-examined since they have an impact on results. The author is specific that the technique applied in the interview commands the performance as well as the results. The choice of technique should be guided by the objective of the researcher based on the balance between synchronous and asynchronous communication.

Correspondingly, the time and place may be a guiding choice of interview technique which also links to other data collection methods like observation(Hollweck, 2018; Kothari, 2004; Yin, 2009). However, we add that the advances in telecommunication have changed the techniques of interviewing as well as in conducting focus group

discussions. Applications such as WhatsApp, Microsoft Teams, and Zoom have conquered the E-mails and MSN interview techniques. This study used three interview techniques by considering the synchronous and choice of place. Therefore, face-to-face interviews, WhatsApp platform interviews, and telephone interviews were applied at different times and to different participants.

Moreover, the study used a focus group discussion (FGD) to collect data that were not collected in the questionnaire and the interview techniques. These are data related to opinions and perceptions that require participants to discuss a specific topic of interest. Recent studies by Mishra (2016, p.1) show that a focus group discussion is "a type of in-depth interview accomplished in a group, whose meetings present characteristics defined concerning the proposal, size, composition, and interview procedures".This is very important for this study. The researcher intends to collect information from urban dwellers in different neighbourhoods from participants of various characteristics, occupations, and interests in their settlements.

Nyumba (2018) highlights that FGD is useful in collecting qualitative data where insights on socio-economic issues are gathered. Also, the FGD gives the whole picture of how people perceive the issues in their everyday lives. The authors notified that at least three to 21 can compose one FGD, with a median of ten participants. However, other studies by Mishra (2016) and Sushil et al. (2016) recommend having a group of 7-12 participants to avoid the chaotic situation during discussions. The procedures and steps to conduct the FGD are also provided by Nyumba (2018), Sushil et al. (2016), and Gundumogula (2020) that the planning, resource mobilisation, implementation, and data analysis are the major parts of FGD (Figure 7).

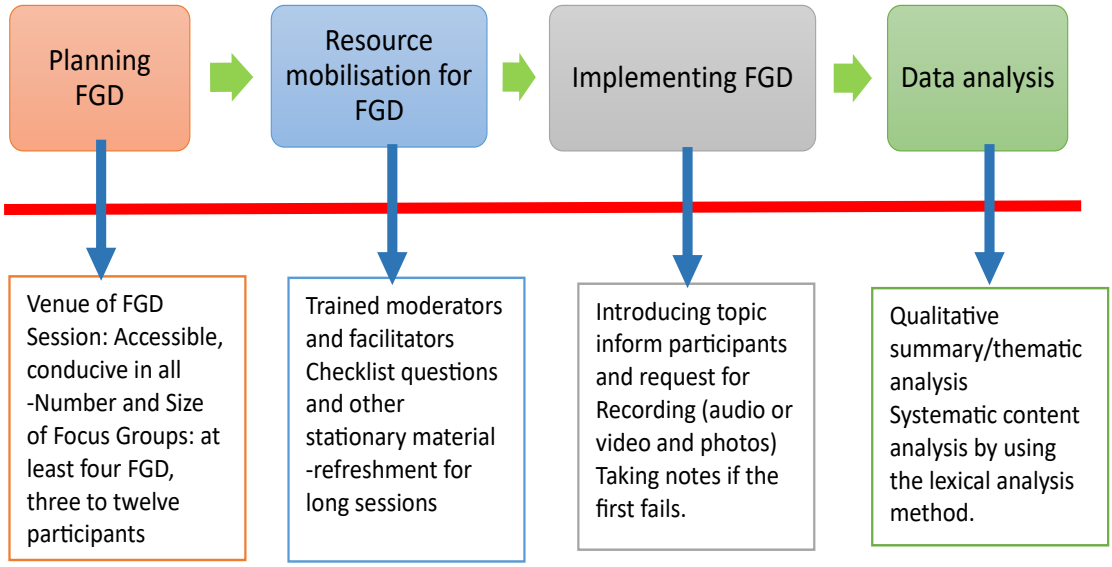


Figure 7: Major Steps Underlying Focus Group Discussions
(Source: Author's Construct Based on Gundumogula (2020) and Sushil et al. (2016))

Mishra (2016)discloses that there is no best way to form groups except that the researchers have to make sure group formation and group mix respond to a mix of ages, genders, and occupations in the study area. This was very important to the expected results of this study since experiences and perceptions of living in the public urban areas and other informal settlements were to be obtained from aged people whereas challenges and opportunities for conducting economic activities in those settlements were to be gathered from the young people.

Sushil et al. (2016) point out that FGD allows researchers to be in contact with participants purposefully selected to share with them the daily life experience of their settlement. The authors underline that the freedom of expression, openness, dynamism in questions asked, and exchange of ideas observed in FGD lead to generating information that should not be obtained from other data collection techniques. This was even observed in this study given that much information on how people acquired land informally through buying from local leaders, encroachment of wetlands, and other public urban lands was gathered during FGD. Also, the perceptions on how the land administration system is responding to encroachment and informal settlement were gathered during this data collection technique.

Most importantly, the reputation of FGD is how it links directly with direct observation as another technique of data collection that was applied in this study (Gundumogula,

2020). It is underlined that observation in qualitative research is a data collection technique that allows the researcher to obtain information about the world around him (Reischauer, 2015). It is also important to gather information on the real life of participants in their settlements. As a means of avoiding story-tells, participant observation provides the actual information to the researcher through watching the phenomenon as it happens or witnessing the consequences.

Moreover, Ciesielska et al. (2018) disclose that observation allows the researcher to immerse in the case study area and apply all human senses in observing the targeted phenomena. The author adds that at the end, the researcher comes out with conclusions and makes comments on observed interactions as well as relations. Five steps of observation to be followed are provided by the authors (Figure 8). This research used participant observation to witness and visualise what is happening in public urban lands such as wetlands, open spaces, and other public lands. Garbutt et al. (2013) recommend that transact walk should be applied to implement the observation. Photos of critical observations have to be taken and notes on the newly observed facts that were not collected by other data collection techniques.

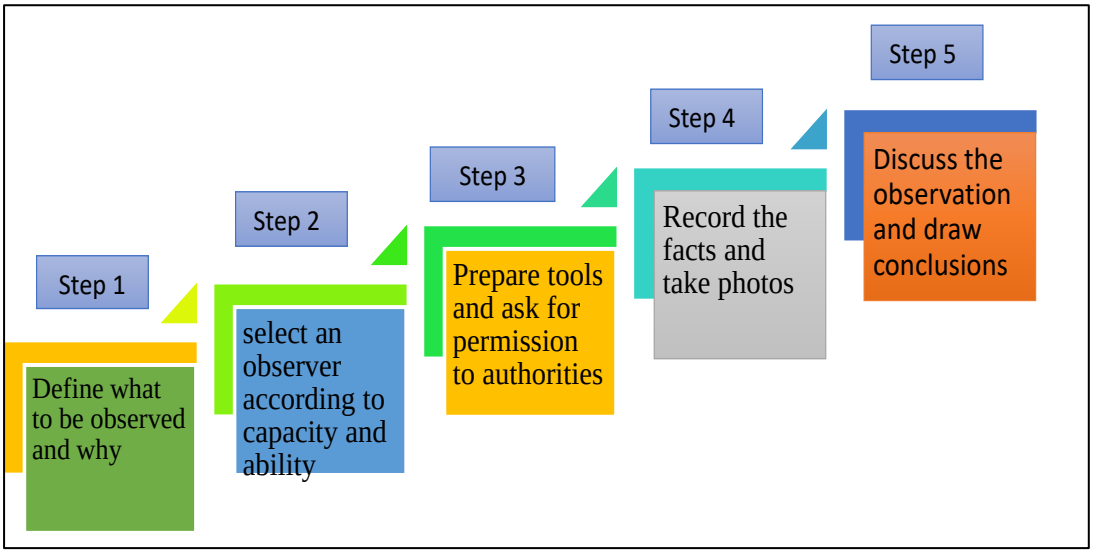


Figure 8: Steps Involved in Observation

(Source: Own construct based on the concept of Ciesielska et al. (2018) and Garbutt et al.(2013))

3.6.1 Qualitative and Quantitative Research Strategies

This study has required to application of both qualitative and quantitative research strategies to respond adequately to different research questions. Qualitative strategy is useful in collecting qualitative data dominated by perceptions, opinions, and views (Hancock et al., 2007). The appreciation of this strategy is built on providing valuable insights into local perspectives of the studied phenomena. Ugwu and Eze Val (2017) are in the viewpoint that qualitative strategies collect feelings, ideas, or experiences of people in a case study on a specific phenomenon. The authors acknowledge finding insights that lead to testable hypotheses is the overall objective especially when the study is related to exploration.

This is very important for this research given that it aims at exploring the importance of land administration systems in managing public urban lands. Perceptions, feelings, and views on how the land administration system is managing public urban lands are needed in this exploration. Furthermore, opinions and suggestions on how challenges related to the mismanagement of public urban lands can be addressed are required as a basis for conclusions. Qualitative strategies collect non-numeric data by mostly using interview methods, KII, FGD, and observation (qualitative data), and the most useful sampling is dominated by purposive, snowball, criterion, and other methods that are judgemental(Choy, 2014). This is one of the strengths of the qualitative strategy whereas the weakness is the freedom accorded to the researcher which makes maintaining the rigor in research to be more difficult (Figure 9).

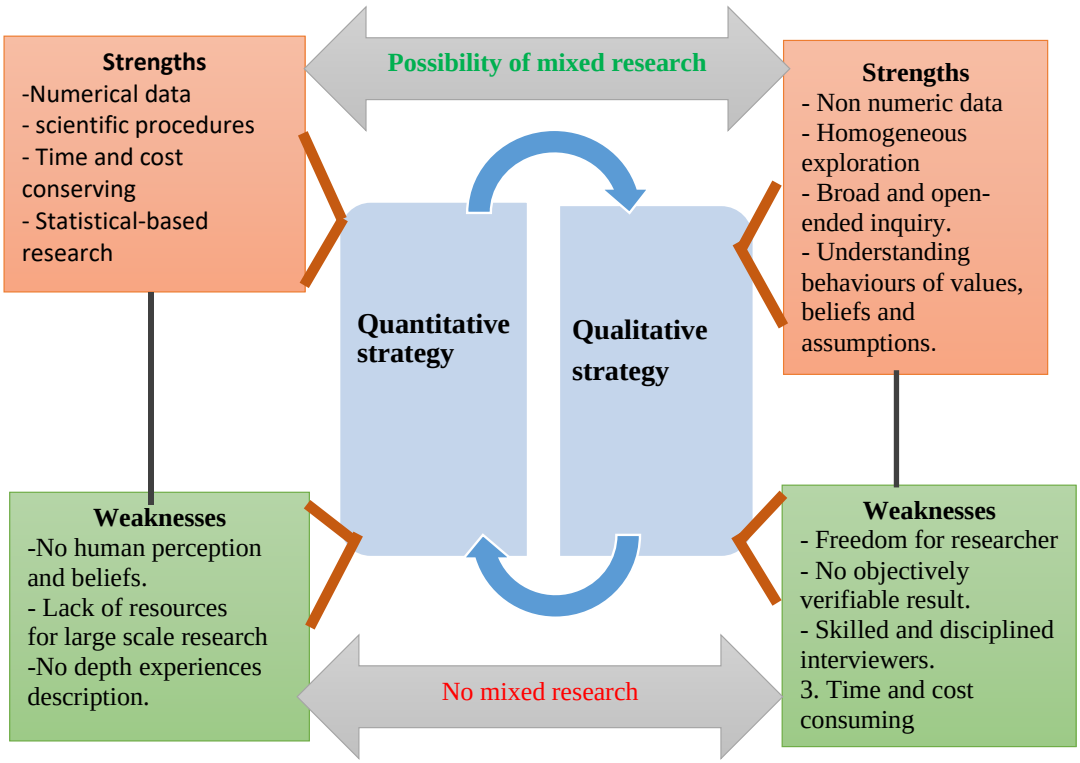


Figure 9: Strengths and Weaknesses of Qualitative and Quantitative Research Strategy

(Source: Adapted from Choy (2014) and Dawadi et al. (2021))

Considering the strengths and weaknesses presented in the qualitative approach for a study (Figure 10), research questions that are not addressed by qualitative data require the engagement of quantitative data. Therefore, the quantitative strategy was applied to complete the gap left by the qualitative strategy by collecting quantitative data through surveys (questionnaires) that were not collected by the qualitative strategy. In this research, quantitative data helped to gather numerical data used to describe landowners and ownership, activities and their impacts on public urban lands, attitudes, or opinions of people living in or around public urban lands. The use of questionnaires and interviews in this research had the intention to come up with a generalisation deducted from samples drawn from a large population.

According to Mohajan (2020), the quantitative strategy targets the quantification of attitudes, opinions, and behaviours as well as other variables (Figure 10). Then comes up with a generalization of results from a sample population by generating numerical data. In this research, quantitative strategy has assisted in understanding the relationships between land acquisition, land tenure, land ownership, land use, and

sustainable urban development. It is highlighted by Apuke (2017) and Heale and Twycross (2015) that the quantitative approach assists researchers in using specific statistical techniques in responding to questions of who, how much, what, where, when, how many, and how that is left unanswered by qualitative approach. However, Ozkan et al.(2022) and Salkind (2013) criticise the quantitative strategy for being carried out scientifically and hindering the researcher's assumptions or decisions (Table 2).

Table 2: Comparing Quantitative and Qualitative Strategies in Research

Main consideration	**Qualitative Research**	**Quantitative Research**
Purpose	To understand & interpret social	To test hypotheses, look at cause, effect, and interaction predictions.
Group Studied.	Smaller, not randomly selected	Larger & randomly selected.
Variables	Study of the whole, not variables.	Specific variables studied
Type of Data.	Collected Words, images, objects	Numbers and statistics
Form of Data Collected	Qualitative data such as open-ended responses, interviews, participant observations, field notes, & reflections.	Quantitative data based on precise measurements using structured &validated data-collection instruments.
Type of Data Analysis	Identify patterns, features, and themes.	Identify statistical relationships.
Objectivity and Subjectivity	Subjectivity is expected.	Objectivity is critical
Role of Researcher	Researcher & their biases may be known to participants in the study, & participant characteristics may be known to the researcher	The researcher& their biases are not known to the participants in the study, & participant characteristics are deliberately hidden from the researcher (double-blind studies).
Results	Particular or specialized findings that are less generalizable	Generalizable findings and applicable to other populations.
Scientific Method	Exploratory or bottom-up: the researcher generates a new hypothesis and theory from the data collected.	Confirmatory or top-down: the researcher tests the hypothesis and theory with the data
Most Common Research. Objectives	Explore, discover, & construct	Describe, explain, & predict.

source: Adapted from Choy (2014) and Dawadi et al. (2021)

It is underlined that the two strategies for data collection were useful in collecting qualitative and quantitive data. Qualitative strategy dominated the process and qualitative data collected are estimated to be 75%. This research describes a situation or phenomenon in which public urban lands are managed. Most of the data were collected through desk review, key informant, observation, and focus group discussion and were dominated by qualitative data. The quantitative data were mostly collected from questionnaires and some in desk review.

3.6.2 Data Types

Both qualitative and quantitative strategy requires the involvement of primary and secondary data that are collected from various sources. Primary data are freshly collected from the field by the researcher whereas secondary data are already collected by third parties (Heiss, 2017). The research in most cases requires the combination of both primary and secondary data.

- **Primary data**: In support of field assistants that were selected from fresh graduate batches of the University of the Burundi and Université Lumière de Bujumbura were selected and trained. Then, three neighbourhoods located in three districts of Bujumbura city namely Ntahangwa, Mukaza, and Muha were sources of primary data. The use of questionnaires, interview questions, checklist questions, FGD, cameras, and tape recorders helped to collect both qualitative and quantitative data in case study areas The tape recorder and checklist questions were useful in collecting the same types of data in local and central government offices.
- **Secondary data**: the source of secondary data is the document/desk review that involves the perusal or thorough consultation of existing documents (Yin, 2009). The literature shows that the documents may be reports (published and unpublished) from public and private institutions, academic textbooks, journal articles, conference proceedings, dissertations, and legal texts (policies, codes, constitutions, and proclamations/decrees). This research consulted all these types of documents to generate data (qualitative and quantitative data used to respond to different research questions that were not answered by primary data

3.6.3 Population, Samples, and Data Collection Instruments

In this study population is deliberately used to mean participants or respondents who in one way or another contributed to providing data. As aforementioned (section 3.5), the unit of analysis in this study is 'neighbourhoods' and the target population is urban dwellers. Participants are categorised into four major groups: (i) heads of families of households living or owning properties in public urban lands, (ii) heads of families of households living around public urban lands, (iii) local leaders and influential people living in or around public urban lands, (iv) officers/ experts in land and urban management. Participants in the first and second groups were selected by applying probability sampling methods with a simple random sampling technique. This sampling technique was useful in the case study area. The researcher assumes that participants have a contribution to the research (Adwork, 2015; Macdonald & Headlam, 2008).

The emphasis on using simple random sampling in research is advised by Lauren (2020) who shows that the researcher randomly selects a subset of participants from a population and each participant can be selected randomly from the population. With this method, Muhammad and Kabir (2018) clarify that you can generate unbiased information from the lower to the higher people, and from the theoretical to the study population of the case study area. This was very important in collecting views and perceptions from local people of the case study area on managing public urban lands. The population structure and occupations of public urban lands should not be known unless you simply randomise the participants. Simple random was also applied in selecting key informant interview participants. After identifying the sectors of participants, the selection did not target the occupation or the education of participants but targeted only the employer so that the occupation and education as well as the responsibility and capacity to be determined by the research findings.

3.6.4 Determination of Sample Size

Participants in this study were selected through probability sampling with simple random sampling known also as representative sampling. The sample size was determined from an unknown and large population given that no recent census and the population varies from one report to another. The respondents are those households that live or conduct their activities in public urban lands. Therefore, the thesis applied the

equation developed by Cochran which is useful to determine the sample size with an unknown and large population (Cochran, 1963). This equation is useful in our case study to determine the sample size (n) given that public urban lands are in different typologies and scattered in three communes of Bujumbura City. Furthermore, no census of these people has been undertaken in more than a decade[4] which makes it difficult to know their population size. Therefore, the Cochran formula to determine sample size in such a situation is:

$$(N_0 = \frac{z^2 pq}{e^2})$$

Where:

- N_0: is the sample size;
- Z: is the abscissa of the normal curve at a certain confidence level;
- e: the desired level of precision;
- p: the estimated proportion of an attribute presented in the population,
- q: equal to 1-p.

NB. Z is given in statistical tables of the area under the normal curve. The precision level can be at ±3%, ±5%, ±7%, or ±10%. More the precision level; more the confidence level. In our case, the Sample size (n)is calculated at the precision level of ±5% with 95% as the confidence level. Therefore, the sample size (n) was calculated as follows:

$$n_0 = \frac{Z^2 pq}{e^2}$$

With z=1.88; P=0.5; q=1-0.5 and e=0.05

$$= \frac{(1.88)^2(0.5)(0.5)}{(0.05)^2}$$

$$= \frac{0.8836}{0.0025}$$

$$= 353 \cdot 44$$

$$= 353\ Respondents$$

[4] Land administration system census in Burundi was carried out in 2008

According to the Cochran table, the population is between 7000 and 8000, and the formulae are valid in our application to determine the sample size n= 353 who are respondents contacted by this study to provide information by questionnaire. Respondents were identified through probability sampling with a simple random sample. The use of this sampling method gets support from Adwork (2015) who points out that this technique gives every member of the population an equal chance of being selected. It was easy with this technique to gather information about land access, the feelings, and perceptions of landowners on land administration systems, and urban development issues.

3.7 Data Collection Tools

The advantage of a case study in research allows the researcher to collect data from different and various sources and use different tools (Crowe et al., 2011; Yin, 2009). This research necessitated primary and secondary data collected from different sources and using various tools. The case study area served as fieldwork for primary data acquisition by applying different methods such as interviews, questionnaires, FGDs, observations, and case studies.

3.7.1 Questionnaire

The study applied also a household questionnaire that involved the heads of households who are living or working either in the public urban lands or surrounding these lands in generating the truths. Therefore, a sample size of 353 households from 8000 households estimated in 2020 living or working in public urban lands or around them was randomly selected with a non-probability approach to responding to questionnaires. However, criteria like the period of living or working in wetlands were considered. Also, propertyownership and livelihood reliance were taken into consideration (Table 3).

Table 3: Sample size distribution

Neighbourhoods	Types of public lands			No. of households consulted		Sample size in each N/hood
	Wetland	Open space	River/Lakeshore	Living in the Public urban lands	Working in PUL	
Buterere	X	—	X	70	15	85
Ngagara	X	X	—	40	10	50
Buyenzi	—	X	X	35	10	45
Rohero	—	X	—	15	8	23
Kinindo	—	X	X	45	10	55
Kanyosha	—	X	X	80	15	95
Total				**285**	**68**	**353**

Source: Author's construct, 2021

Besides, to make sure that all evidence and experiences on how public urban lands have been transferred and encroached upon, the study consulted a group of people who have been living or working in the area or around it for more than 20 years. According to pre-field information, this is a period where public urban lands such as wetlands have been massively encroached upon and changed into residential and commercial uses. It was acknowledged that wetlands have been developed remarkably since the 2000s when the country was in the process of the Arusha Peace Agreement between the government of Burundi and belligerents. For the questionnaire survey, household respondents were interviewed face-to-face at their homes, and enumerators were engaged in both asking questions and writing down the answers from the respondents. The questions were specifically related to land acquisition, land administration, public urban land status, protection, conservation, and their impact on urban sustainability.

3.7.2 Interviews

The strength of interviews in research is applauded by Joosten and Jong (2016) and Offiong, 2013) in acquiring qualitative data. Moser and Korstjens (2018) highlighted that interviews should be carried out through face-to-face in-depth interviews. This research has applied interviews 'two stages interview' to gather information in the case study area according to the research objectives. In the pre-field phase, the informal

interview was conducted in the form of casual conversations with landowners and local leaders we met in the settlements (Appendix 6). The aim was to confirm the research problem and gather preliminary information. This method was coupled with observation to have first-hand insight into the gravity of the problem.

During fieldwork, this research applied personal interviews using a questionnaire to collect data in neighbourhoods identified in Table 6. The heads of households were the participants of this research. The interview was a face-to-face interview with open-ended questions. In the form of key informant interviews (KII), 36 participants were purposively selected according to their positions and responsibilities related to land management in the Bujumbura City Council. Etikan et al. (2016) and Bernard (2000) have argued that the purposive selection of participants for key interviews is preferred because it does not rely on theories and a set of numbers of participants. However, the quality of data provided and availability of participants, and the rich information they have on the topic make it preferable.

For this study, key informants included the Mayor of Bujumbura City, the Commissar-General (CG) of OBUHA, the DG of National Cadastre and Land Registration, the Land Officer at the city level, two urban planners and two land officers in Mukaza and Ntahangwa communes, two GIS experts in all two communes and six local leaders, two officers in Environment Management Office, six influential people at neighbourhood level, and four managers of private companies that involve in surveying and land use planning (Table 4). The following information was required for this study such as clarification of public urban lands in Bujumbura, the responsible institutions, key stakeholders and their contributions to managing public urban lands, the perception of managing public urban land about urban sustainability, the contribution of the current land policy in managing the public lands. These types of information could not be collected from another source except from these key persons who directly work in the corresponding land sector.

Table 4: Structure of Key Informant Interview Participants

Working Sector of Participants	Title of participant	Number of participants	Topic discussed
Civil Administration	Mayor of Bujumbura City	1	Public urban land management
Land office	Land Officers	4	Land administration in Bujumbura
Urban planning office	Commissar General Urban planners	1	Policy and politics on Urban planning and urban sustainability
	Environmentalist at the city council	4	Protection and restoration of Public urban lands (Overview of urban environment)
Cadastre	Director-General (DG) of National Cadastre and Land	1	Land administration system (particularly on Public urban lands)
	GIS experts	4	Land information system
	Land Registrar officers	2	Registration system and recognition of Public urban lands
	archive officer	2	Registered property
Local authority	Commune Administrator	2	Land management and Public urban lands protection
	Local leaders	6	Land management
Influential people	Community-based organization related to environment management	5	Roles played in land management about environmental management in Public urban lands Land management and environment
	Civil society advocating human rights	4	Roles played related to land management in human rights protection

Source: Author's Construct, 2020

3.7.3 Desk Review

Whereas some information was not easy to access by using the interview, questionnaire, observation, and key informant, the desk review has been useful for accessing information that was kept in different annual reports of different institutions and governments and legal texts (Table 5). A desk review concerned the thorough review of the Master Plan of 1982 and other documents. The objective was to identify the areas that were planned as wetlands and know the details on the use of these land use units.

The information about policy concerns on managing public urban lands, the records on property registration; what has been done so far to protect public urban lands by different stakeholders, and trends on land administration was easily acquired through the desk review. A desk review concerned the thorough review of the Master Plan of 1982 and other documents. The objective was to identify the areas that were planned as public urban lands and know the details on the use of these land use units.

Table 5**:** Source of Documents Used in Desk Review

Types of documents consulted	**Sources of the documents**	**Data required in the documents**
Annual reports	OBUHA	Activities related to protecting wetlands in Bujumbura city.
Annual reports from the	Directory of cadastral office	Registration and titling of land and properties in public urban lands
Annual Reports	Urban planning office	Planning guidelines in practice
Annual reports	Office of Environmental Management	Activities related to managing wetlands and other hazardous lands
The policy complements for execution	Different offices that include land management office, urban planning office, environmental management office	Texts applied to implement different legal texts
Books	National Cadastre and Land Tittle office	Data about the numbers of registered plots and their information delivered land titles in the land administration system five years from 2015
Minutes and memo	National Cadastre and Land Tittle office	Different directions and recommendations on different cases of land plots that show ambiguities of different nature
Policy and other legal texts related to public urban lands	Government of Burundi websites	Land policy, land Act, environmental policy, forest policy, water policy, urban planning, and Master Plan of 1982.
Past projects in land management	NGOs and other development partners	The projects that were implemented or are to be implemented in protecting public urban lands

Source: Author's construct, 2020

3.7.4 Observation

In this research, direct observation was conducted during the pre-field and fieldwork phases. Durry (1992), Kothari (2004), and Yin (2009) acknowledge that observation is a way of discovering other information that could not be collected through other methods. The observation was a supporting tool to confirm the 'rich case' in deciding the case study area. Furthermore, observation was used during fieldwork where transect walks, informal interviews, and photo taking of interesting physical features like flooding areas, encroached wetlands, and other artefacts were realised. Likewise, this was a means of data triangulation and completeness to substantiate data collected from other techniques. The situation of public urban lands in terms of development, land cover, protection, economic, and social activities in and around were the concerns of this direct observation. Furthermore, the direct observation through a transect walk helped to confirm the types of land uses, level of development, and their current situation regarding urban development sustainability.

3.7.5 Focus Group Discussion (FGD)

Sherraden (2001) underlines that due to its structured group process to explore people's thoughts and feelings and obtain detailed information about a particular topic or issue, it is recommended that small groups of 6-10 participants be formed, and invited to participate in the discussion facilitated by the researcher and researcher's assistant(s). For this research, 40 participants both people aged 60+ years and young people living or working in or around the public urban lands for more than five years were consulted to provide information. This is because information about land access, land acquisition, policies implementation was possible to be collected from elders. Furthermore, information about socio-economic activities and their impacts on public urban lands is easily available to young people. Also, influential people at the neighbourhood level were among the participants in the focus group discussion who contributed information on their experience on how public urban areas have been managed. Therefore, four groups of 10 people for each category have been formed for discussion.

During discussions, the researcher was the moderator for the groups based on a pre-determined set of topics in the form of checklist questions that articulated access and acquisition strategies, public urban management, and policy implementation regarding public urban land safeguarding. This helped to cross-check information from the

questionnaire and observations as well as other tools. Also, it was an opportunity to hear the feelings and perceptions of local people on how public urban lands are administered. Also, their views and opinions on how urban development sustainability can be achieved were captured during FGD sessions.

3.8 Data Analysis

After data collection, data analysis proceeds. This research applied a mixed data analysis technique. For decades, Patton (1987) discloses that during this process, data are organised, and reduced by summarizing and categorizing them, giving themes; and linking them into patterns. Furthermore, Merriam (1998) and Bernard (2002) acknowledge that in the mixed data analysis method, qualitative and quantitative data are analysed differently with different techniques. For this research, qualitative data and quantitative data were analysed differently and with various data analysis techniques.

3.8.1 Qualitative Data Analysis

As aforementioned, the research collected various qualitative data from different sources and by using various data collection techniques. These are data collected in the desk review methods (some), key informant interviews, and direct observation. Qualitative Content Analysis (QCA) was applied. The motivation for applying the two-analysis approach for qualitative data emanates on one hand from Bryman (2012, p.289) who defined content analysis as ‘an approach to the analysis of documents and texts that seeks to quantify content in terms of pre-determined categories and a systematic as well as replicable manner. On another hand, Vaismoradi and Snelgrove (2019) recently advised applying QCA when analysing data collected from desk reviews and some interviews. The process involves data interpretation, comparison, and contrast to prove their validity and accuracy in responding to the research objective. The information is presented in text and table format to ensure readability and presentability.

Moreover, the documents consulted in this report that were not policy documents were analysed by applying the Exploratory Data Analysis Approach (EDA). The EDA approach “entails looking at data when there is a low level of knowledge about a particular indicator ... and could also include the relationship between indicators and/or what is the cause of a particular indicator” (Academy Educational Development [AED],

2006, p.12). Applying EDA in this study helped to analyse data from surveys and views of respondents in the case study area that was pertinent to describe what is going public urban lands (their uses). Furthermore, this approach helped to identify and interpret the challenges and opportunities that the existing management of public urban lands poses to the urban sustainability of Bujumbura City. The study revealed patterns in data collected to make sure a plausible 'story' of the data is shown. It has described what so far has been done in managing public urban lands located in the case study area.

Similarly, this study used the Common Analytical Framework (CAF) to analyse policy documents that were examined in this study (Table 6). The framework was established and applied by Bonin, et al. (2012) to evaluate land policies through an in-depth analysis of the orientation (focus) of the policies, governance (implementation), and relation of the policy to land. Literature such as Mayer et al. (2004), O'Riordanand Andrew (1999), and Ruben et al. (1998) affirm that CAF is the best framework to be applied when analysing land and other social well-being-related policies. For example, Edwards and Steins (1998), Vos et al. (2020), Coline and Brigitte (2022), as well as Raman and Coomes (2016), disclosed how this framework is useful in evaluating the policies related to managing common resources like water, land, and forest. The aforementioned reasons motivated the researcher to select the CAF among other analytical frameworks such as the New Exploratory Model (NEM) by Schouwstra and Ellman (2006) and the Logical Framework Approach (LFA) by NORAD (1999).

When comparing CAF with NEM and LFA, it is concluded that CAF is better than other frameworks in land-related policy analysis due to its flexibility and simplicity in various applications (Table 6). Furthermore, CAF extensively and exhaustively analyse the policy from its formulation, adoption, implementation, and impact assessment on, the community. As a result, CAF is recognized to be the best analytical tool for integrating both qualitative data collection and processing by policy analysis.

Table 6: Comparison of Analytical Frameworks and Selection of the Best

Frameworks	**Criteria**					
Analytical frameworks	Orientation of the policy	Governance of policy	Direct link of policy to land	Flexible in application	Require simple methods	Remarks
New Exploratory Model (NEM)	Yes	Yes	No	No	No	Require knowledge of project evaluation
Logical Framework Approach (LFA)	Yes	Yes	Yes	Yes	Yes	
Common Analytical Framework (CAF)	Yes	Yes	No	No	No	Not necessarily linked to land,

Source: Compiled from (Edwards & Steins, 1998; NORAD, 1999; Schouwstra & Ellman, 2006)

3.8.2 Quantitative Data Analysis

This research applied SPSS22.0 software to analyse quantitative data. The aim was to complement the Qualitative Content Analysis applied in analysing qualitative data. The analysis was done through a descriptive approach. The descriptive statistics that include the calculation of mean, mode, median, standard deviations, and percentages are important to socio-economic data whereas inferential statistics supported the examination of the relationship of variables for this research. To compare groups that live and work in public urban lands, the T-test was engaged. This technique was preferred because it applies basic tabular forms to draw inferences between different data sets in the research study. LeCompte and Schensul (1999) underline that such data analysis tries to make sense, interpret, and generate findings from data and facts that have been collected (Table 7).

Table 7: Data Collection and Analysis Matrix

S/N	Research objectives	Sources of Data	Techniques of data collection	Data collection Instruments	Techniques of data Analysis
1	To review the land acquisition strategies in public urban lands of Burundi	Legal documents Annual reports Officials	-Face-to-face interview -FGD -Desk review	-Interview guide -FGD guide -Archive consultation of library, internet	QCA EDA
2	To examine the existing land administration system to manage public urban wetlands in Bujumbura City.City	-Households -Local authority -Land managers -National Cadastre and title office	-Household questionnaire - Face-to-face interview -FGD -Desk review	Questionnaire -Interview guide - FGD guide -Archive consultation (Library and National Cadastre and Land Titles)	- Descriptive statistical analysis (SPSS) - QCA - EDA
3	To identify the shortfalls that impede the effectiveness of managing public urban lands for sustainable urban development of Bujumbura City.	-Households -Local authority -Land managers -National Cadastre and title office	-Household questionnaire - Face-to-face Interview -FGD -Desk review	-Interview guide -FGD guide -Archive consultation (University of Burundi Library and National Cadastre and Land Titles) -internet	- Descriptive statistical analysis (SPSS) - QCA - EDA
4	To identify policy and institutional gaps in administering public urban lands;	-	Face-to-face Interview -FGD -Desk review	--Interview guide -FGD guide -Archive consultation of library, internet	EDA and QCA
5	To develop a framework for effective public urban land management		-Desk review		

Source: Author's construct, 2020

3.9 Data Reliability and Validity

Validity and reliability of data in research are among the criteria for good measurements in research. This harnesses the strength of the researcher's conclusions, inferences, or recommendations. Also, reliability and validity are fundamental features to evaluate the instruments used in measuring the research. Taherdoost (2016) comes up with four conditions where research findings have to be valid. These include *conclusion (content) validity* which confirms if there is a relationship between the research topic and the observed outcome; *Internal Validity* which asks if there is a relationship between the research topic and the outcome we saw, is it a causal relationship; *Construct validity* which asks if there is a relationship between how the researcher operationalized the concepts in the study to the actual causal relationship studied; and *External validity* refers to the researcher ability to generalize the results of his study to other settings.

In this research, all these four conditions were met by engaging valid data collected through different methods and tools. Besides, data were systematically analysed by applying different approaches according to the research objective and or research question. Remarks, comments, descriptions, interpretations, conclusions, and recommendations are based on the findings from the case study area (primary data) and results from the review (secondary data). We conclude that this research finds its validity and reliability from the methods and tools (instruments) applied to collect and analyse data.

3.10 Ethical Consideration

In mixed methods research the researcher has to ensure the validity and accuracy of findings are met (Halcomb & Hickman, 2015). The author adds that a researcher has to discuss the ethical implications of the research and remain aware of moral integrity in their study. Most importantly, the study requires to be vigilant on the guiding principles; design, sampling procedures, and responsibilities of the participants. In this study, these ethical aspects were respected

- Guiding principles: the guidelines on how to conduct desk review and write down the outcomes were respected. The same to guiding principles for data collection, analysis, and reporting were thoroughly implemented.

- Design: the study was executed within an afore-designed framework that guided the whole process from the pre-field, fieldwork, and post-field work activities.
- Sampling procedures: These respected scientific rules and formulas to avoid biasedness that included the probabilities and the Cochran formula useful to determine sample size when the population is not known.
- Responsibilities of the participants were observed and fulfilled by identifying enumerators and training them in administering questionnaires, KII, and FGDs. Also, these enumerators were supervised by the researcher to ensure the quality and quantity of data. For participants, the study ensured that only land owners or those working in public urban lands were consulted.

Regarding participants, the study observed willingness to participate and contribute to this study, the consent, confidentiality, and availability of participants were the key guidance of data collection as narrated by Cresswell (2014) This was reached after allowing the careful evaluation of the risks and consideration of the importance of this study to them and the community in general. General information was given to all participants to allow them to be informed objective of the study and to feel free to participate. They were free to participate and to provide all necessary information including the record of interviews. The study also considered the locational aspects and the problem at hand (informality and encroachment) and did all possible to avoid harmful words to our participants. This study observed the dignity, integrity, justice, and fidelity of participants by all means and efforts.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter contains the findings and discussions of the study based on literature and methodologies designed to operationalise the study. The findings are drawn from the case study systematically selected according to the richness of data provision and feasibility among others. The discussion is based on the existing knowledge from the literature, the findings, and the researcher's understanding which all allowed a triangulation of ideas in this study. This chapter is made of five sections that describe different themes but with the preservation of the research topic and objectives. The first section gives detailed characteristics of respondents by describing their various information. It also contains the situation of public urban land in terms of location, size, occupation, and tenure security. Major sections are land acquisition strategies, land administration system for managing public urban lands, shortfalls in managing public urban lands, and challenges of managing public urban lands in Burundi.

4.1.1 Characteristics of Respondents

The respondents that participated in this research are located in three communes namely Ntahangwa, Mukaza, and Muha (Table 8). These communes are prescribed as local authorities compared to districts in other countries. These communes are government entities that are independent in decision-making for land management. As local authorities, they have the power to propose which project to take place or not and are competent at their level in suggesting the managerial structure in all sectors.

In this study, it is observed that Ntahangwa Commune has many participants given that it is vast and has many public urban lands (Figure. 9). The second commune is Muha where many open spaces are located, bordered by two rivers (Ntahangwa in North and Muha in the south) and Lac Tanganyika in Ouest. The third is Muha which does not have many public lands (Figure 11) This section describes the educational background to know if the public urban lands are settled by illiterates. This may have the meaning that they do not know the importance of public urban lands. Also, it may have a direct link with the lack of understanding of the consequences of living in the

marshlands/wetlands or along riverbanks. However, the findings show that 52 % have at least secondary education. This shows that there are other reasons why people live in public urban lands rather than thinking that it is ignorance. Their contribution to socio-economic development is among the reasons mentioned by (Krishnaveni & Anilkumar, 2018; Tung & Dap, 2020). People have been invading wetlands for different interests regardless of their education.

Moreover, the study has analysed the gender of participants which connotates that the area is lived by women and men. However, the study did not want to know their proportion given that women were many in this study. The reason is that during the day, men vacate at work in different places whereas women take care of housework. Similarly, the study investigates the major occupations of participants. It was found that about 47% are working in private and public services. This correlates to the education profiles of participants where the majority are educated.

Finally, the study findings show that 75.9% of participants are immigrants against 24.1% who are natives in the case study area (Table 8). This has a direct link to how people acquired and accessed land; how public urban lands were managed; and other related variables that affect land issues. The study discloses that there are two major periods where people resettled massively in the case study area. From 1993-2005 which is a period of civil war where people were leaving rural areas to escape the war; and 2006-2020 after civil war where people were catching up in reconstruction.

In general, the study findings are aligned with the findings by Parsa et al. (2011), Kironde (2016), and Steel et al. (2020)on how people access lands due to laisser-faire that occurs during a certain event. The authors show that the system that is in charge of managing public lands may deliberately disregard their responsibilities.

Table 8: Summary of Respondents'Characteristics

S/N	Variables	Frequency (f)	Participants (%)		S/N	Variables	Frequency (f)	Participants (%)
1	**Location by Commune**				**3**	**Origins of participants**		
	Ntahangwa	150	42.5			Native	85	24.1
						Immigrants	268	75.9
	Mukaza	127	36.0			**Total**	**353**	**100.0**
	Muha	73	20.7		**4**	**Occupation of participants**		
	Total	**353**	**100.0**			Commerce	39	11.0
						Public Service	97	27.5
						Private service (NGOs)	73	20.7
						Farming and livestock-keeping	38	10.8
						Garage and petty trading	44	12.5
						Transportation	23	6.5
							39	11.0
2	**Education profile**					**Total**	**353**	**100.0**
	Not attended from education	58	16.4		**5**	**Periods of resettlement**		
	Primary education	110	31.2			• 1976- 1987: Known as the Great Period of economic growth during J.B Bagaza	37	10.5
	Secondary Education Vocational Educational Training (VET)	70	19.8			• 1987-1993: During Buyoya's First term period	47	13.3
		62	17.6				134	38.0
	Tertiary Education	53	15.0			• 1993-2005: Civil war period	135	38.2
						• 2006-2020: After the Civil War		
	Total	**353**	**100**			**Total**	**353**	**100**

Source: Own Survey Data, 2022

4.2 Strategies for Land Acquisition in Public Urban Lands

4.2.1 Acquiring Plots in Public Urban Lands

Regarding land acquisition in the case study, the findings discovered that the purchasing of land dominates other strategies engaged to acquire land in the case study area (Table 9). Given that land is transferable through selling and buying in Burundi as it is in other many countries, it is revealed that purchasing has been used to acquire landby many land owners in different periods followed by allocation done by local authorities. The meaning is that public urban lands have been under the hands of individuals even though it was titled to be public property. This study underlines that local authorities and natives around these lands have been making the final decision on how wetlands and riverbanks are managed. Among other decisions are to sell plots that are in wetlands and along rivers; give them to their friends, and change to wetlands and other public urban lands for residential and commercial use. Barras (1982) had already acknowledged his worries about the future of these if the situation was to remain in the status quo. The author argued that the power that elites had on land could not leave these lands safely. This is what happened and is still happening. Similarly, Batterbury and Ndi, (2018), Rafiee and Stenberg, (2018), and Turimubumwe, (2020) recently showed the power of local leaders on land and how they have been contributing to land grabbing. This study also found the same in the case study where wetlands have been sold or allocated to individuals. This has implied urban sustainability. The city expansion and densification without improving infrastructure have caused problems in transportation, education, and healthcare such as overcrowding and dilapidation.

Table 9: Land Acquisition Strategies in Different Periods

Period of installation					Total
Strategies for land acquisition	1976- 1987: Great Period of economic growth during J.B Bagaza	1987-1993: During Buyoya's First term period	1993-2005: Civil War period	2006-2020: After the Civil War	
Purchase from individuals	10	13	29	33	85
Inherited from family	5	19	21	20	65
Gift from friend	6	4	15	24	49
Allocation by local	11	1	21	14	47
Allocation by municipality	0	6	17	18	41
Other strategies	5	3	31	26	65
Frequency	**37**	**47**	**134**	**135**	**353**

Source: Own Survey Data, 2021

4.2.2 Land Uses and Plot Sizes Found in Public Urban Lands

Most of the Public urban lands that were concerned with this study are those lands that were originally used as wetlands, bare land but with special consideration in biodiversity protection, refused land, and riverbanks (Table 9). It is acknowledged that most of these lands have been acquired informally by individuals or local leaders; subdivided into plots of different sizes; transferred to individuals or groups of people (Cooperatives), and then changed into different uses. It is noticed that the uses are quite different from the assigned ones by the 1979 Master Plan. Most of the Public urban lands in the case study were used as solid waste refusal and have been almost totally changed into other uses. This change of use is also observed in bare land termed to be open spaces. The findings disclose that most of the land has been changed into residential and commercial-residential as major new land uses (Table 10). These uses contributed to the disappearance of some existing land uses such as agricultural land use in some areas, solid waste refusal places, and riverbanks that are no longer observable along some rivers.

Table 10: Comparing Planned and Current Land Use of Public Urban Lands

Planned land use	**Number of participants**	**Percentage**
Agricultural use	146	41.3
Solid waste disposal	121	34.3
Bare land (open spaces)	86	24.4
Total	353	100.0
Current land use		
Residential use	106	30.0
Commercial use	41	11.6
commercial residential	87	24.6
Agriculture	79	22.4
Other use	40	11.3
Total	353	100.0

Source: Own survey data, 2021

The change of use has been evoked by Haaland and van den Bosch (2015) and Kabiri et al. (2022) as the practice used by landowners to acquire land in developing countries. The authors mention that changing agricultural land into residential use is common in Africa, especially in urban areas. Similarly, Azizi et al. (2022), Polidoro et al. (2012), and Slaev and Nedovic-Budic (2017) argued that most of the urban expansion, as well as urban sprawl, is caused by the change of use observed in the public urban lands and periphery of the cities. This study disclosed that the same practice is observed especially in public urban lands and private lands especially around Bujumbura city. The changes do not follow any guidelines. This phenomenon affects the urban morphology given that it is not easy to differentiate residential to commercial, and agricultural to other uses (plate 5&6). It is observed in the Master Plan of 1982 (Fig.11&12) that all areas that were allocated for agricultural use are now changed to residential, commercial, and other uses that are not linked to agriculture.

Plot sizes that currently exist in the case study are found in four major categories (Table 11). The dominant plot sizes are 1-2 acres (100-200 m^2) which are developed for residential and commercial residential. Another category is the 2-4 acres with the same use. It was revealed during observation that those plots that are beyond 4 acres are mostly reserved for agricultural activities. Most of these lands are where they grow vegetables of many kinds and rice.

Table 11: Category of plot sizes in the case study area

Plot size	Number of participants	Percentage
Below one acre	27	7.6
1 acre-2 acres	177	50.1
2acres-4 acres	82	23.2
4 acres and above	67	19.0
Total	353	100.0

Source: Own survey data, 2021

The small plots observed in the case study were also observed in other countries in informal settlements and have been taken as a challenge when it comes to undertaking the formalisation of properties and regularisation of settlement (Parsa et al., 2011; Wanjohi, 2007). The issues arise during infrastructure provision and open space allocation due to the smallness of land. As a consequence, the urban landscape and the

built environment are challenged. The transportation and communication is impracticable or hardly practicable. Authors like Adigeh and Dagnew (2020) andOyeleye (2013) showed how shanties and unguided densification become a challenge in the daily life of urban dwellers.

4.2.3 Feeling of Tenure Security in Public Urban Lands

In reference to the previous section, many people have acquired lands in Public urban lands and developed plots for different use (Table 10). The strategies used are quite different which means that even the documents proving the ownership are different. The questionnaire results show that landowners in public urban lands have documents classified into four major categories (Table 12). The office of the local authority at the zone level dominates given that it is the essential administration level that delivers a document necessary to secure the certificate of property ownership. What is noted from the findings is also the existence of property owners who do not have any documents. The Focus Group Discussion elucidated the cases that are those natives who have inherited land from their parents

Table 12: Different authorities delivering property ownership documents.

Property ownership authorities	**Number of participants**	**Percentage**
Office of registrar	46	13.0
Office of local authorities (Zone level)	112	31.7
Purchase contract signed by local leaders and witnesses	99	28.0
Notary	58	16.4
No document	37	10.5
Total	**353**	**100.0**

Source: Own survey data, 2021

However, the findings in the questionnaire showed that 70% of property owners are feeling insecure about their properties. They have a fear of eviction or loss of properties in areas where flooding is frequently happening. Furthermore, 60 % openly accepted that they have already been asked to leave the places they are living. These are people

who are living within 25 m of both sides of the rivers (Ntahangwa, Muha, and Kanyosha commune), those living in former solid waste dumpsites, and those living within 50m of Lake Tanganyika. Subsequently, 65 % of participants acknowledged that they had already been asked to show the legal documents that prove how they acquired land. Similarly; 20% disclosed that they had received notice of leaving the areas from different authorities with the promise of assistance.

Moreover, the feeling of tenure security is not the same among property owners in the case study. To understand how the four groups have significant differences in tenure security, a one-way ANOVA test was used and the *p-value* of 0.05 at a cut-off was selected (Table 13). The results showed that there is a statistically significant difference between the mean scores of the four groups. The confidence level is high for those with documents from the Office of Registrar with M= 1.96, SD =0.49, Office of local authorities (Zone level) with M=1.90 and SD=0.46, followed by those without documents with M=0.45, SD=1.88. It was revealed that those with documents "Purchase contract signed by local leaders and witnesses" and "Notary". According to Kironde (2016), this is a carrot-and-stick situation where land managers provide land legally to land acquirers and at the same time plan to evict them from their properties. These results are aligned with the author's findings in Dar es Salaam where the management of hazardous areas such as flooding areas/wetlands is politically oriented in their management.

Table 13: Different types of documents attesting the land /property ownership in Public urban lands

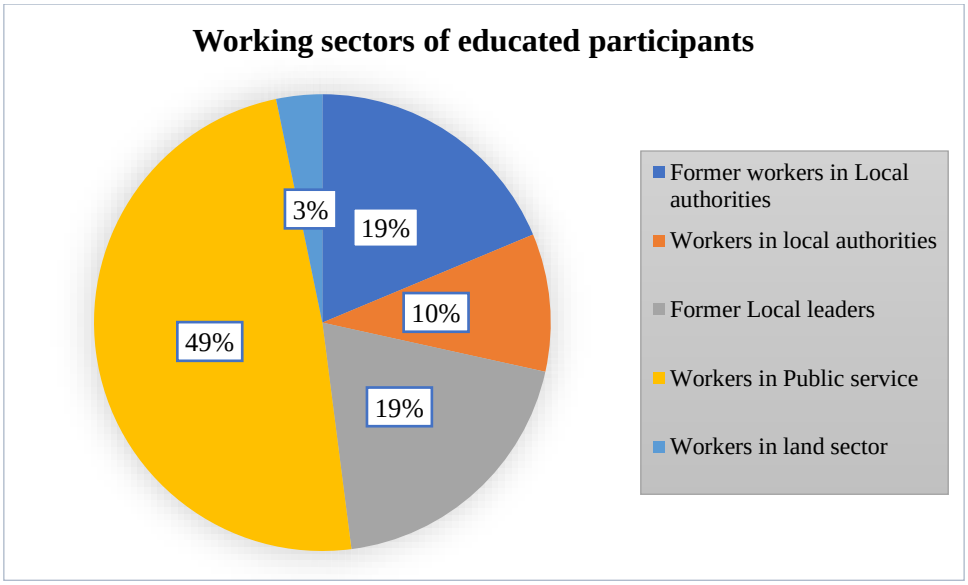
	Documents owned by landowners	**N**	**Mean**	**Std Deviation**	**Std Error Mean**
Feeling secure by property owners in Public urban lands according to their documents held	Office of registrar	46	1.96	.490	.039
	Office of local authorities (Zone level)	112	1.90	.46	.030
	Purchase contract signed by local leaders and witnesses	99	1.88	.45	.033
	Notary	58	1.80	.44	.042
	No document	37	1.76	.42	.045

Source: Own survey data, 2022

The feeling of tenure security is associated again with the location and history of the areas of the case study. Those who are located along major roads and the lakeshore are more feeling insecure given that the property owners have been identified to analyse their legal documents and social status. The identification concerns also knowing if the owners have been working in the municipality, or local authorities, or have relatives who facilitated them to get land in these areas (Chart 1). This research confirmed that property owners in those areas, with secondary education and above are working in land-related sectors or retired, worked in public/public services, and or have been among former local leaders who know how to acquire these lands. They are also among those who have legal documents from the registrar's office. This study proved that encroachment, illegal change of use of Public urban lands, and land grabbing are done by those who know what they are doing and how they can protect themselves when it comes to eviction and expropriation as it was also found by Isunju and Kemp (2016), Ndi (2017), and Rafiee and Stenberg (2018). In Uganda, these powerful people are landlords who own land and leave the properties to tenants. In Cameroon, the investors

are allocated wetlands for agro-industrial activities by the government. In general, land grabbing by elites and other powerful people has been frequent in Burundi.

Chart 1: Classification of participants working sectors



Source: Own survey data, 2021

The KII results from the municipality leaders, Urban Planning Office, and National Land Title Office (NLTCO) confirmed that most of the clients who apply for title deeds and other documents for securing their land are those who know the importance of these documents "*those with formal education and other who are informed about the tenure security*", mentioned the Director of NLTCO. These assertions show that the level of education plays a key role in securing properties in Burundi. This is shared by Dlamini (2021) and Vanderpuye et al. (2020) who recently showed how education contributed to property securisation and formalisation. The results of securisation and formalisation addressed different land-related challenges including boundary disputes, informal settlements, and public lands encroachment.

4.3 Practice of Land Administration in Burundi

4.3.1 Land Issues in Burundi

The total land area of Burundi is approximately 25700 km^2 of which 91% is used as agricultural land. The Burundi population is estimated at 12.6 million in 2022. Burundi is a densely populated country in Africa with a birth rate of 2.2% and a fertility rate of 5.2 children per woman. Burundians rely on agriculture for food and revenue. Similarly,

agriculture in Burundi accounts for 39.6% of the country's Gross Domestic Product (GDP), 84% of employment, and 95% of the food supply. It is acknowledged by the International Fund for Agricultural Development (IFAD), 2022) that the average size of agricultural holdings is 0.27 ha per household, well below the 0.90 ha considered as the minimum for economic viability. Land has a symbolic connotation as a source of political and social power in Burundi. The competition to own land has led to civil conflicts where massacres among ethnic groups have been observed for decades (1965-2005). In urban areas, accessing land has not been easy for many Burundians where allocation has involved corruption, favouritism, and nepotism among both ethnic groups and elitism.

The key interview results with local leaders and influential people disclosed that land allocation from 1972 until now is motivated by the political agenda of the ruling party or the junta on the power that facilitates the access to lands 'legally' or 'formally'. In some cases, the legalisation or formalisation may be initiated after acquiring and using land for years. These are lands that are acquired by politicians in urban or rural areas under the umbrella of 'investments' or testing the production of new seeds for agricultural development.

Moreover, the findings from KII show that after independence, land allocation arrangements have been under authority at different levels (Table 14). These showed how land has been under the hands of leaders for many years. With these arrangements, many public lands in urban and rural areas have been allocated to individuals. The power of the Commune Administrator to allocate 4 ha of land in rural areas led to public land in the periphery of Bujumbura from 1972-2005 to being in the hands of individuals which today is urban areas due to urban expansion. Wetlands and other public lands like river banks are among public lands that are private properties. The existing land management machineries have also failed to take back these lands from individuals given that most of land owners do have title deeds or certificates of property ownership (Table 12). The only way was to compensate the owners. According to the KII results and observation, these areas have been changed to settlements with buildings constructed with durable materials. The compensation may require a lot of money and some objections may arise.

Table 14: Land categories allowed to be transferred by the 1986 land code of Burundi

Land category	Size	Location	Competent authority
First category	4 ha	Rural area	Governor and Commune administrator
Second category	4≤50ha	Rural area	Ministry of Agriculture
Third Category	≤10 ha	Urban area	The Ministry of Urban Planning
The fourth and fifth category	>50 ha >10 ha	Rural area Urban area	The presidential decree

Source: Desk review in Land Code of 1986 and Barras (1982)

Batterbury and Ndi (2018), Ndi (2017), and Rafiee and Stenberg (2018) have shown in different studies how public lands in rural and urban areas have been subject to massive acquisition by elites on what they called land grabbing and swapping. It has been the same for Burundi in public urban lands. Additionally, this practice diverges from the Common Pool Theory where public urban lands are acquired to satisfy individual needs and ignore common interest on these lands. However, the practice is supported by Bid Rent Theory which asserts that households choose land due to its location that promises optimal land use. Public urban lands in Bujumbura especially wetlands are located in prime lands where investment in housing and businesses provide competitive profits.

Subsequently, the KII results revealed that among other changes that are observed in current land policy are how local leaders at the commune level should not allocate land to individuals or groups of people. The results from FGD and key informants revealed the same that marshlands and other public urban lands like riverbanks and open spaces were allocated by local authorities in different periods. The observation during the fieldwork shows that most of these lands were subdivided into plots and developed into residential and commercial or both (Table 10 and Plates 5&6).

4.3.2 Public Urban Lands in Bujumbura's Master Plan

The 1982 Master Plan which is still in use despite its expiration in the past two decades highlights that there were six wetland areas in Bujumbura City covering twelve hectares (Fig.10). These areas were demarcated as unbuildable areas. This Master Plan recognises three types of uses for wetlands including botanical gardens and tourism activities, urban agriculture activities, liquid waste refuse sites, and dump sites.

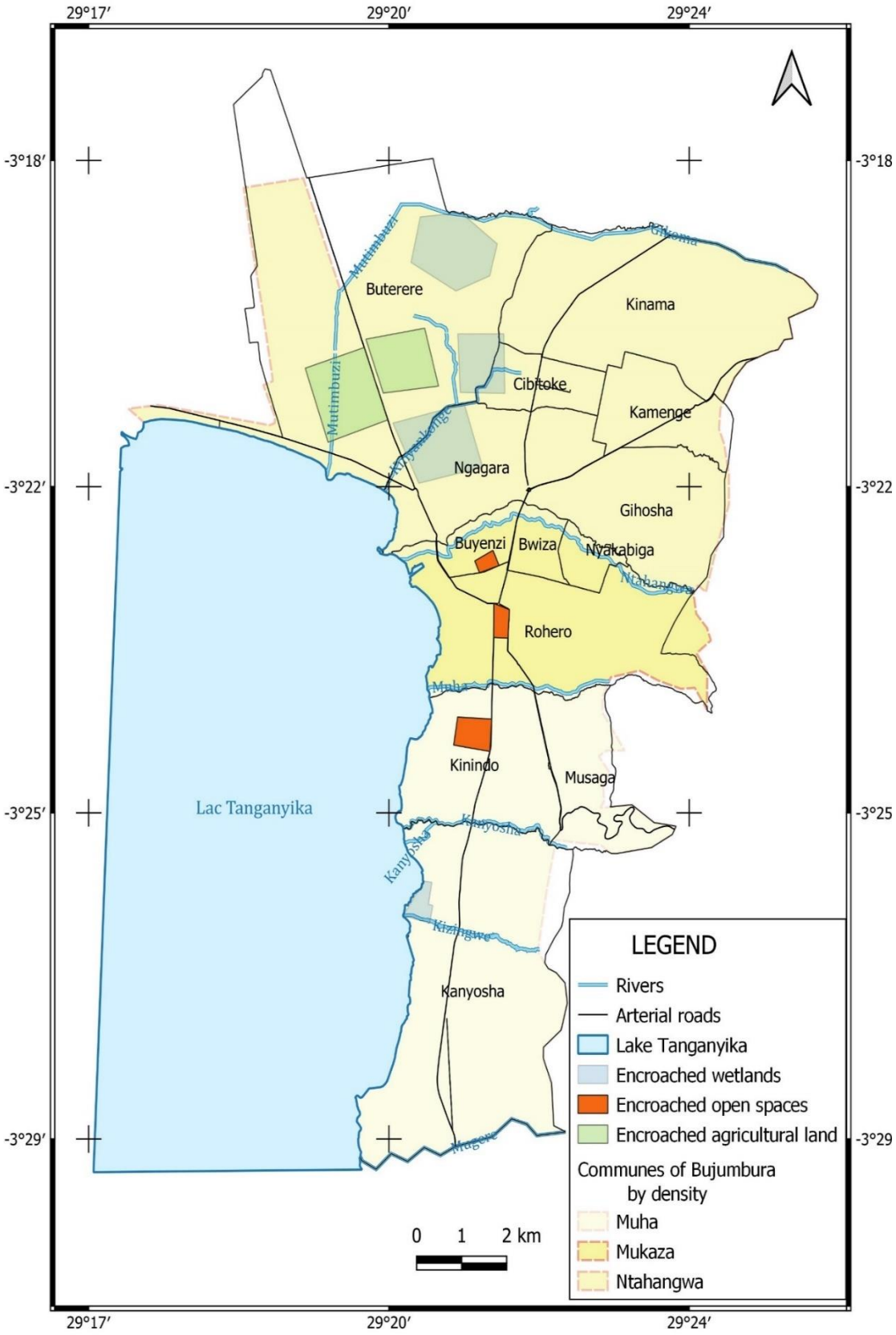


Figure 10: Encroached public lands in the case study area
(Source: Spatial data analysis from the case study area, 2023)

Furthermore, the Master Plan identifies the riverbanks to be protected against any construction at 25 m on both sides and the lakeshore to be protected by prohibiting any construction within 50m, except for special cases[5]. Despite these specifications, the current situation shows that the use of these wetlands has changed. The observation (Figure 12) and questionnaire revealed that some of these wetlands have been encroached on. These lands have been changed into different uses such as commercial-residential buildings and other types of unplanned constructions.

One of the major problems that pertain to the public urban lands in Bujumbura is the lack of an updated Master Plan for guiding urban planning. With the Master Plan that expired two decades ago, it becomes difficult to manage public urban lands. Furthermore, it is even difficult to prepare other planning tools such as detailed schemes and Neighbourhood plans are difficult to be prepared. The KII results disclosed that the new expansions that take place in the South part (Nyabugete, Ruziba), to Ouest (Kajaga and Maramvya), to the North, (Carama and Gasenyi) are not taking reference to any planning tools guidance, but following the theories and practices of urban planning (Figure 10&11). This phenomenon is observed in other cities of developing countries where even where Master plan exists. The same problem was underlined by the office of land management at the municipal level and by the DG of NLTCO that the existing property registration and titling do not follow the Master Plan, but the theories and experience of the individual officers.

[5]Exceptional cases are those that are related to tourism investment, maritime constructions (ports and water transport), other cases that are validated by the government.

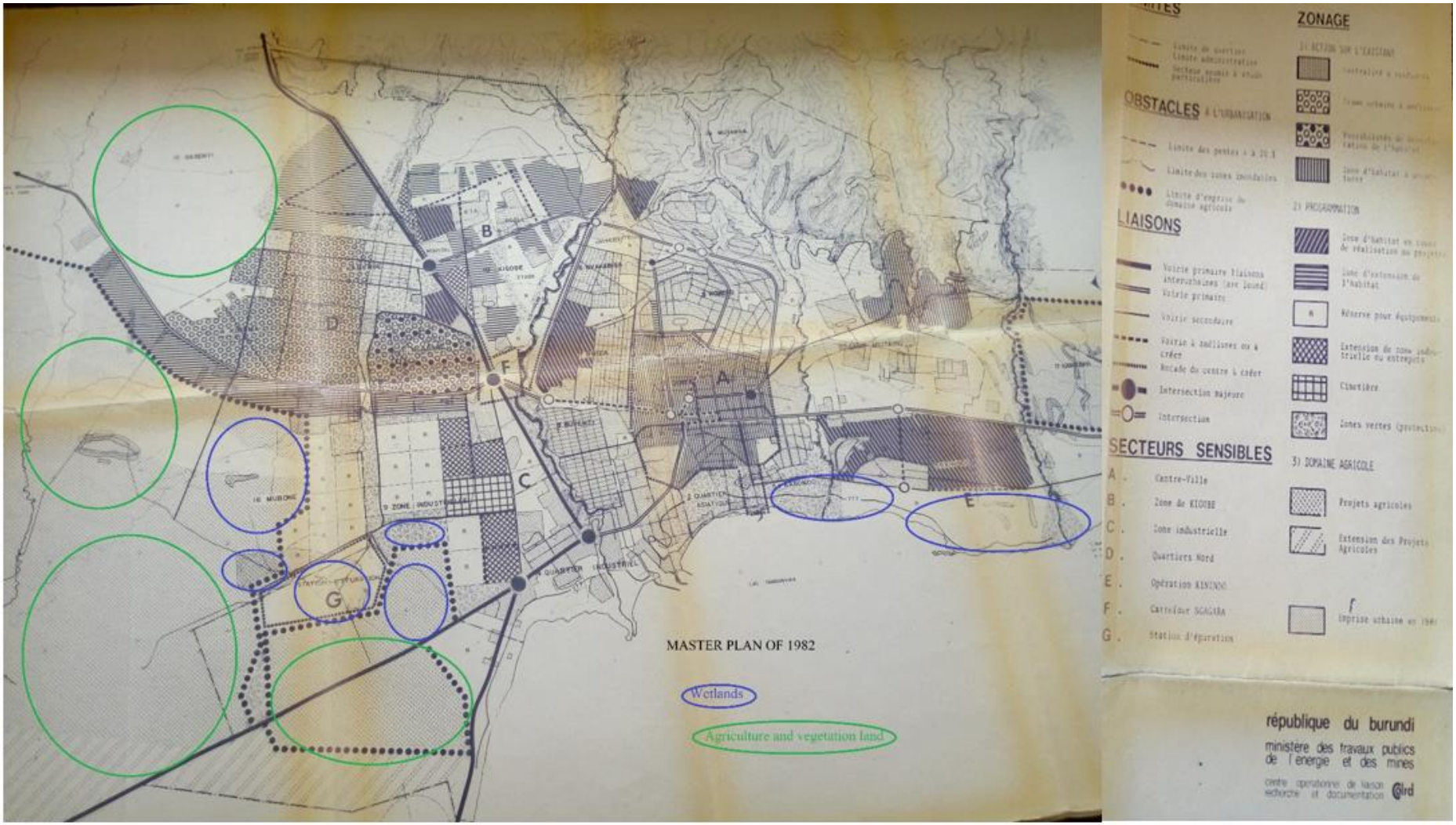


Figure 11**:** Wetlands and agriculture lands according to the Master Plan of Bujumbura, 1982

(Source: Master Plan of Bujumbura as proposed in 1982)

Many authors such as Azizi et al., (2022), Polidoro et al. (2012), Takele et al. (2014), and (Bodo, 2019) have discussed how African cities are expanding without following master plans and other planning tools due to rapid urbanisation and overpopulation in urban areas. The occurrence of informal settlements and haphazard expansion is attributed to planning officers and land managers who fail to implement the existing planning tools. In the same perspective, Nnkya (2008) expressed his concern about non-implemented planning tools as a marginalisation to urban planners who prepare many tools and plans but, without planning in their areas.

Figure 12: GoogleEarth image showing encroached wetlands and agricultural land

(Source: Google Earth Image of 2023)

4.4 Land Administration System and Public Urban Lands Management[6] in Burundi

The land administration system in Burundi is built on three components that are namely the land information system, land registration offices, and cadastre offices as it is in other countries. Makupa and Sanga (2021) identified these components in their recent research. The offices of land management are located in four regions for land titles and 119 communes for land certification. All these offices are experiencing challenges related to human, material, technical, and financial resources. The report of 2020 from the Ministry of Home Affairs, Public Security, and Community Development shows that no commune (District) has a qualified land officer; only 14 communes have offices equipped with necessary material[7]; and most of these communes do not receive a budget from the government, relying instead on taxes collected from clients. However, these challenges are shared by many developing countries as Musinguzi and Enemark (2019), Polidoro et al. (2012), and Siyum, 2022) mentioned in different studies.

4.4.1 Land Information System in Burundi and Public Urban Lands

One of the big problems that undermine the proper management of Public urban lands is the lack of information on Public urban lands in all offices that are supposed to manage these lands. It was acknowledged that the only document that you can consult to know the riverbanks, wetlands, open spaces, and lakeshore in Bujumbura is the Master Plan of 1982. This document is 40 years old. It has expired in 2002 according to the time horizon of 20 years. It was supposed to be revised and updated to include new proposals such as renewal and expansion of the city. Many constructions have been taking place within the city and to the periphery without any planning tool at the city level. Different Public urban lands in the form of plots have been transferred to individuals without following legal procedures and their uses have been changed. The findings in the questionnaire show that landowners know that they are living in Public urban lands after settling the area (Table 15).

During the FGD and interview, the respondents agreed that they came to know that they were living in wetlands or riverbanks after years when they were requested to leave the

[6] This section roots from the paper which is under review in the journal of International Planning Studies
[7] These communes are (were) supported by International Organisations such as GIZ, PAGEF; LANDac, and others.

place. The results from the interview with the LIS manager in the municipality and the Achieve Officer disclose that they do not know that they are plots that are located in wetlands and registered in their archives. This is the major problem that the land administration system in Burundi is encountering where land information is not updated. The same problem has been evoked by Biraro et al. (2021) who proposed systematic land information updating so land users and land managers know what is happening. For public urban lands, there is no information at all and these lands are known as unowned according to the existing LIS and archives.

Table 15: Types of public lands exist in your neighbourhood

Types of Public Urban Lands		Effective	Percentage
	Marshland/wetland	50	14.2
	Open space	98	27.8
	Road reserve	148	41.9
	Riverbank/lakeshore	57	16.1
	Total	353	100.0

Source: Own survey data, 2022

It was again found that the LIS that is in place only covers individual properties and living behind information about the Public urban lands of all kinds. One of the confirmations was from the Office of Urban Planning where they agreed that most of the open spaces have been illegally changed to commercial and residential use. The same sources point out that most of the small kiosks (shops) along the road, petrol stations, and pharmacies have been developed in either open space or road reserves by powerful people in the country. This shows the abuse of power by powerful people when it comes to managing Public urban lands in the case study. The remedy to addressing this issue is to have a LIS that shows the spatial data of each land and everyone will know that the land is recognised and can be traceable by planning authorities as Chau et al. (2013), Dawidowicz and Źróbek (2017b), and Janowski et al. (2021) underlined in their findings. This study also confirmed that the lack of information on public urban lands in the cadastre system has motivated politicians and other powerful people to grab these lands.

4.4.2 Land Registration System and Public Urban Lands

Regarding registration of properties, Burundi has not embarked on massive land registration as it has been in some other countries like Rwanda, Ethiopia, Ghana, and Tanzania. In this process, each land is registered to individuals for private properties and to entities for public or group-owned properties. For that, every piece of land is owned and no terra -nullius exists in the city or country (Biraro et al., 2021; Goodwin, 2022; Musinguzi & Enemark, 2019). According to the questionnaire and FGD results, the registration of properties has been undertaken by individuals who know the importance of title deeds. Most of the property owners have opted to stay with other documents given by different authorities but with less importance (Table 12).

Moreover, the analysis shows that there is a correlation between education profile, documents, plot surveying, and tenure security by the property owners in public urban lands (Table 16). The results indicate there is a perfect positive correlation between the three variables. The households headed by an educated person have acquired a title deed or other document of considerable importance for tenure security. Their plots are surveyed and the level of feeling secure in their properties increases even though they know they are living in Public urban lands. The P-value of significance at .01 levels (two-tailed). However, this is not guaranteed to any form of eviction and expropriation. This study has tried to trace the title deeds owned by participants in the archive of the Property Registration Office (PRO). Only 60 % had original documents traceable in the PRO whereas the other 40% had no original in the PRO. The officer acknowledged that there may be a kind of cheating or the registration was done many years ago and the originals have been misplaced or deteriorated.

In countries where first-level administration has been initiated and completed like Rwanda, Ethiopia, and Bangladesh issue of cheating through confectioning or falsifying documents is minimised (Ali et al., 2010; Bennett & Alemie, 2016; Subedi, 2016). Land conflicts among neighbouring properties are minimised because everyone knows the boundaries of the properties. This study wishes that the Government of Burundi may initiate the process which should be one of the remedies to the analogy observed in the cadastre and registry system

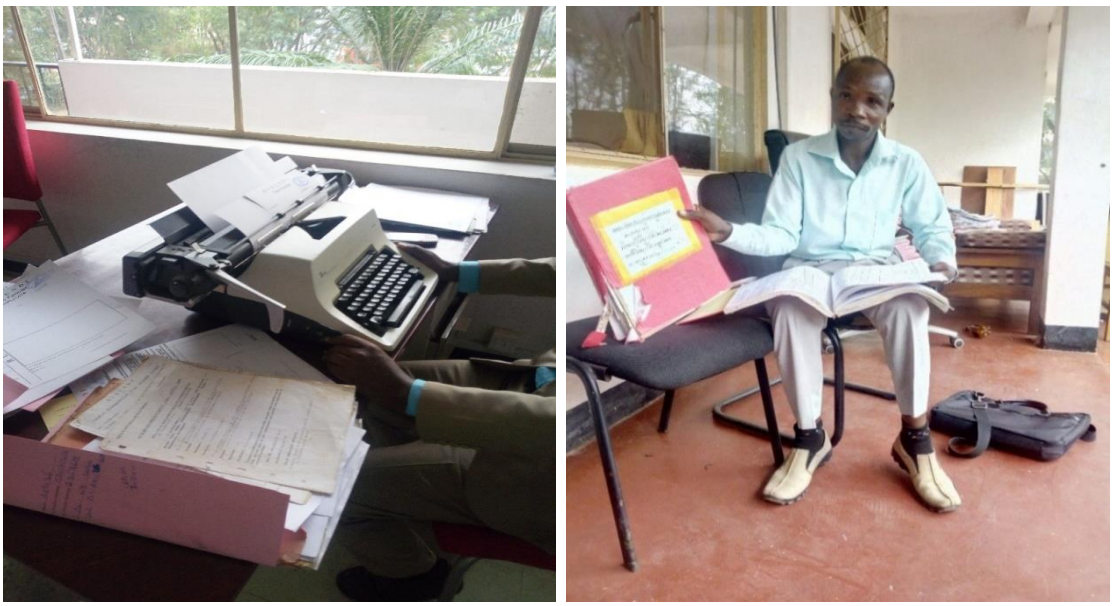
Table 16: Correlations of variables on the land registration and tenure security

Correlations						
Variable	Correlation and Significance (Two-tailed)	Education profile	Authority delivered document	surveyed plot	Do you have any legal document (s) for your plot	The feel of tenure security for property
Education profile		1.000	-.030	-.067*	-.021	.041*
		.	.570**	,207	.691**	.447**
Authority delivering document		-.030	1.000	.120**	.051*	.036*
		.570**	.	.024*	.337**	.498**
Surveyed plot		-.067	.120**	1.000	-.102	-.099
		.207*	.024*	.	.055*	.065*
Legal documents		-.021	.051*	-.102	1.000	.109**
		.691**	.337**	.055**	.	.040*
The feeling of tenure security for property		.041*	.036*	-.099	.109**	1.000
		.447**	.498**	.065*	.040*	
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Source: Own survey data, 2022

The observation and KII results discovered that the collection and treatment of land-related data in Burundi are manually handled. The technicians (surveyors) go to the field with a tape measure, clipboard and pencil/pen, GPS, and Bousel to acquire spatial data and manipulate them with calculators to determine coordinates (distance and areas) which at the end they are kept on paper and archived in analogue form. The registration is also manually undertaken (Plate 1&2) and information is archived on the shelves. The classicism and analogy observed in the infrastructure and techniques used by land officers to collect, process, and archive land-related information in Burundi make the system fail in managing public lands in Burundi. This has been hindering the proper management of public urban lands.

Plate 1&2: Land officer typing the land title; Registry books for recording processed land titles



Source: Author's photograph 2021

The key informant interview results with officials working in National Land Title and Cadastre and observation reveal that all processes are handled by hand except some activities. Most of the documents are paper-based and hand typing with archaic typing machines (Plate 1). The registry book that recorded the delivered titles from 2010-2020 is deteriorating with some sheets missing and information about the origin and location of the plots missing in the book (Table 16). Whereas other countries have embarked on the use of high technology in all processes of land administration from data collection to data treatment, digitalised cadastre, registration, and LIS (Sagashya & English, 2010;

Stöcker et al., 2022), Burundi is still lagging. Also, the analysis of 10 sample title deeds showed that what is written on the titles or certificates of ownership is quite different from reality, especially on the origin of the plot. Some documents show the land was inherited from the parents and transferred through selling; whereas the Master Plan shows the land was public urban land which is not supposed to be inherited. For most of the plots acquired between 1993 and 2005, it was difficult to find the files containing their information in the land office, whereas owners have kept the documents. Even files that exist are in critical situations and the information is not easy to read (Table 17).

Table 17**:** Summary of findings of files found in NLTCO

Location of these titles	Periods of title acquisition	Number of titles	Title in good physical condition	Title with the critical physical condition	Titles that were not found	Missing information
Buterere	1993-2000	1800	800	700	300	The seller or original owner The date of transfer The original use The expected use
Ngagara	1999-2002	2050	1200	600	250	
Carama	2005-2020	1800	1600	120	80	
Buyenzi	1990-2000	2025	1250	400	375	
Kanyosha	2000-2005	112	50	40	22	
Mutakura	1990-2002	1806	900	600	306	
Total		**9593**	**5800**	**2460**	**1333**	

Source: Own survey data, 2022

4.4.3 Cadastre System and Public Urban Lands

The office of cadastre is under the Ministry of Justice in the Directorate of National Land Titles and Cadastre. The organigramme shows the cadastre of Burundi has branch offices in the country without details (Figure 13). However, this study discovered that cadastre offices are located in four regions and each region serves four provincesThese are the north region (**Ngozi**[8]**,** Muyinga, Kirundo, and Kayanza), central region (**Gitega,** Cankuzo, Ruyigi, and Mwaro), south region (**Makamba,** Rutana, Burunri, and Rumonge), and west region (**Bujumbura**, Muramvya, Cibitoke, and Bubanza). After

[8] The bolded province headquarters are the main offices of land are located and at the same time the office of Registrar excluded Makamba.

regions, there are branches in provinces that work as focal points with minimal services. Also, the are three Registrar Offices that are located in Bujumbura, Ngozi, and Gitega that have the power to sign on land titles.

The cadastre offices in Burundi are facing challenges related to human and financial resources according to the KII informant results. It was disclosed that there is a need for 40% of additional workers of different calibres from technicians to officers. The Director General mentioned that "*there is an alarming need for GIS Experts, Surveyors, Urban planners, Land Officers, and subalterns at all levels. We need additional offices in Bujumbura, Gitega, and Ngozi to effectively and equipment which can assist in cadastre digitalisation".* The observation in the offices of cadastres visited in Bujumbura showed that many officers were congested in small rooms. Among eight desktop computers that were in four rooms, only two were working. It was also revealed that only 40 % of technicians and some officers had no background in their daily positions but, working by experience and short courses. The typical example was the land valuers who are economists, land officers who are lawyers, surveyors who originally graduated in civil engineering or urban planning, and so forth.

In a few words, it was found that the cadastre system is facing a multitude of challenges that in one way or another have affected the management of land in Burundi. As observed in other countries, the lack of human resources in land administration is a problem that was identified decades ago and addressed so that an effective land administration system can be established (Bennett et al., 2021; Lipej, 2015; Makupa & Sanga, 2021). Burundi did not embrace this initiative, and the system is failing to address recurrent issues in land management that include the encroachment and change of use of public urban lands.

Furthermore, the KII discovered that the National Land Title and Cadastre offices were separate institutions and offices for a long time. This created fragmentation and delinked their activities which affected the land administration system. One officer articulated '*We do not know that these titles were given to plots that were in wetland/public land because the officers of Cadastre in collaboration with urban planning and environment officers bring us already processed applications for land titles. We are not supposed to check whether it is in wetlands/ public land or not. We do not have the mandate to go to the field for confirmation.* This shows that the land

administration system was long ago fragmented and delinked internally. What was observed also was the lack of competent and equipped GIS Units which would be a big support to digitalise the cadastre system.

The KII revealed that the Bujumbura Office has only one ‘GIS expert ‘who has been academically a technician in Cartography for 25 years. The decentralisation of the land sector through deconcentration has been facing challenges related to fragmentation and lack of human resources (Dear et al., 2013; Sagashya & English, 2010; Steel et al., 2020). The authors mention the lack of information confirmation among officers in different institutions and offices. There is also an issue of equipment that are not distributed equally in different offices which engendered the poor performance of these offices in administering land. This situation is observed in Burundi and has affected primarily the public urban lands in the case study.

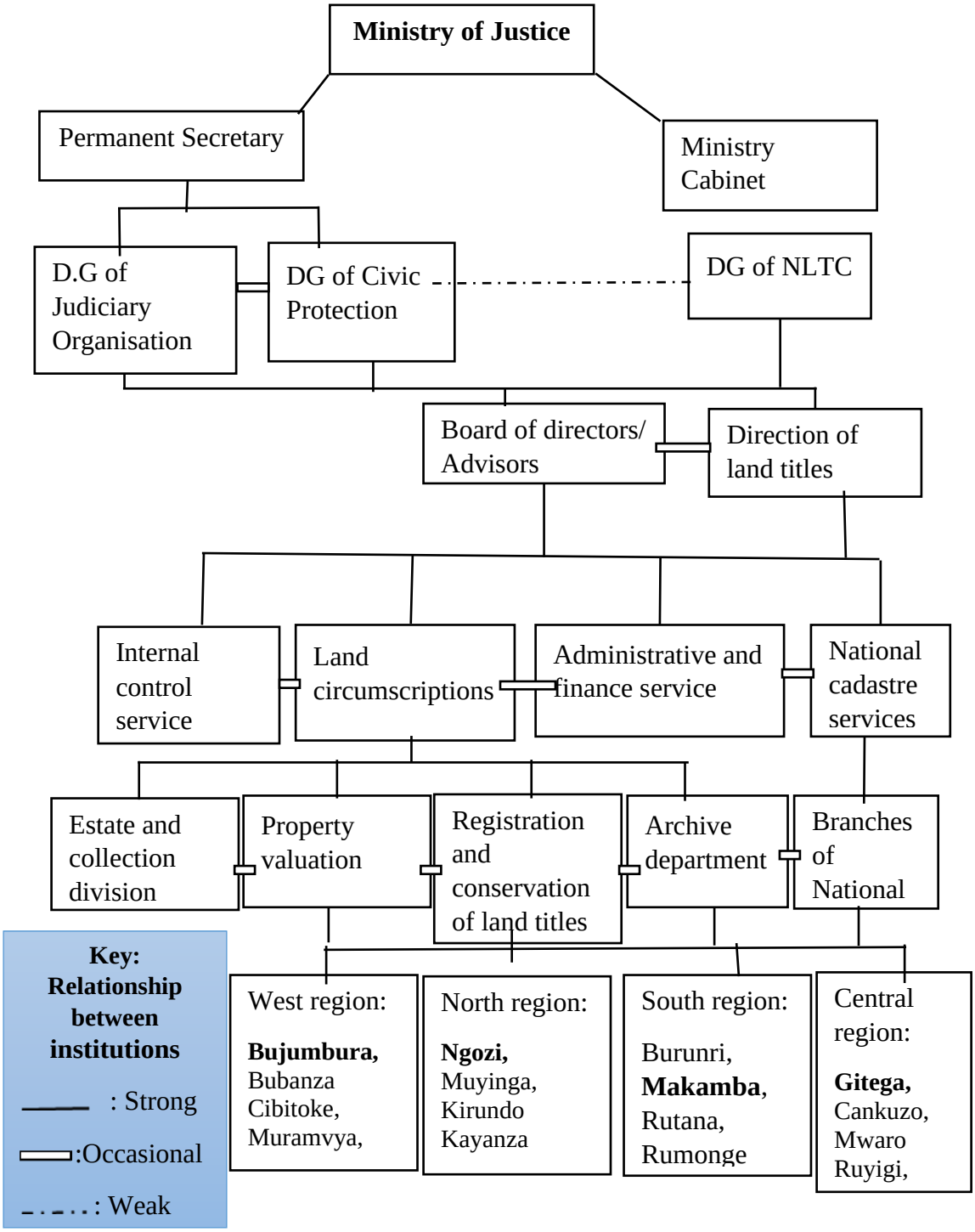


Figure 13: Organigramme of National Cadastre in Burundi

(Source: Author's construct based on the *Bulletin Officiel Du Burundi* (2003))

4.5 Land-related Policies and Management of Public Urban Lands[9]

4.5.1 Land-related Policies and Public Urban Lands Management

The main aim of this portion of the research was to conduct a policy-level analysis of public urban lands in Burundi. Different land-related policies that are used to manage public urban lands in Burundi were analysed through a CAF. We used policy analysis parameters that are the orientation (focus) of each policy, governance (implementation), and their linkage to land management in general and public urban land management in particular. The purpose was to highlight the gaps that exist between policies in place and practices to elucidate the performance of these policies in addressing land-related challenges in the highly urbanizing city of Bujumbura.

The entry point was a thorough literature review of published works that were written or practised on policy analysis and highlighted supporting theories that underpin the management of public urban lands. The concept of public urban lands at the global and regional level is given, two theories underpinning public urban lands (common pool theory and land administration theory) are identified, the best practice of policy analysis in the region is highlighted, and the context-fit framework for policy analysis 'CAF' recommended.

This study analysed three policies (Land Policy of 2010, Water Policy of 2009, and Forest Policy of 2012) given that they are directly linked to Public urban lands in Bujumbura. These policies recognise certain categories of land as public lands (Table 18) and their importance in urban areas. However, the existence of these policies does not portray the protection and conservation of Public urban lands. The observation shows an encroachment of open spaces, wetlands, lakeshore, and road reserves.

According to Ali *et al.* (2018), if it is that situation, these policies should be evaluated to know their effectiveness. Then, Bonin, *et al.* (2012) added that the outcomes of a land-use policy should detect the problems that hamper the policies to effectively manage land in quest. The authors underscore that policy orientations should be evaluated. In the same perspective, the guideline on land policy proposed by the African Union as a framework outlines three key orientations that land policies should contain. These are land rights, productivity, and livelihoods (African Union, 2010). Then, the

[9] This chapter roots from a published paper GeoJournal: Turimubumwe, P., Adam, A.G. & Alemie, B.K. Policy level analysis of public urban lands management in Burundi: insights for harmonization of policy frameworks. GeoJournal 88, 3223–3237 (2023). https://doi.org/10.1007/s10708-022-10801-6

findings of this study show that orientations dictated by authors were not respected in the contents of Burundi policies (Table 18). The way the policy was formulated from preparation to adoption did not follow the usual processes. This was detected after comparing other policies in Africa. The process, the content, the sustainability, and the institution structure are quite different from other countries in the region and Africa.

Table 18**:** Comparing orientations of Burundi's Land Policy and other countries' policies

Country policies Orientation	**The land policy of Burundi**	**The Land Policy of Rwanda**	**Land Policy of Ghana**	**Land Policy of Tanzania**
Process and approach	Prepared by the ministers and adopted by the ministers	Prepared by stakeholders in different workshops	Locally negotiated and approved through consultation	Extensive consultation and National Workshop
Content (volume)	Only 15 pages Lack of details provided	Very detailed and specific to land sectors	moderately long with 30 pages	Long enough with 49 pages
Sustainable use and sustainable development issues	Misses sustainable use and sustainable development	considers the present and the future requirements	Emphasizes Sustainable resource management	Contains wise use of land
separating rural and urban lands	Too general and challenges persist	Urban and rural lands are separately addressed	Very specific to wetland areas for their protection (p.11)	Very specific to public urban lands (p.37)
Institutions responsible for land governance	Four ministries Three commissions	two ministries Land commission	One ministry Land commission	One ministry Land commission

Source: Author's construct, 2022

For example, based on Arnstein (1969) who recommends the level of participation in land policy formulation to be one that citizens have control over, we assert that the lack of participation in its nature has directly affected the size and content of the document. It is found that the policy documents in Burundi are the smallest compared to other land policy documents with inadequacy in identifying land issues, lacking integrity and

sustainability, taking land as an isolated sector and land issues as unidimensional. It was also found that the managerial issue of public urban lands is not evoked anywhere in the policy, whereas policies of other countries, and management of Public urban lands such as wetlands and riverbanks are extensively given a net consideration.

Most countries in the region have revised their land-related policies to comply with the AU framework as advised. However, the findings in Burundi diverge from this reality. The desk review results showed that among EAC countries, the policies in Burundi have some weaknesses and gaps that affect the poor management of public urban lands. Among others are the negligence of emphasizing on proper management of public urban lands and showing the link with sustainable development, the lack of well-structured and equipped institutions responsible for managing public urban lands in urban areas, and ignoring the consequences of integrating public urban lands into the cadastre system.

Moreover, many institutions in Burundi are mentioned to be responsible for land management according to the policies. This was supposed to be an opportunity for land management, but the findings in the FGD and KII confirmed that the existence of many institutions dealing with land management in Burundi has created a chaotic situation and power overlapping during implementation and operationalisation. Specifically, the KII evoked the issue of fragmentation of land management and conflict of interest among land officers. Moreover, the findings reveal that the challenges have been in decision-making. A typical example given by land officers and local leaders consulted as key informants is the change of use of wetlands in the Buterere neighbourhood for commercial-residential use. This was legalised by the municipality they know that these areas are hazardous-prone sites (flood-prone). It was prohibited by the Commission of Environment and the Ministry of Lands to accommodate any type of development. Part of it was planned to accommodate liquid waste treatment and the other part of it was to be used as a dumpsite.

The policies do not also link the degradation of the urban environment such as loss of biodiversity and ecological imbalance to the poor management of public urban lands which created a wide loophole in these policies when it comes to achieving sustainable urban development. Kabanyegeye et al.(2020, 2023) showed how the negligence of managing green spaces in urban areas of Bujumbura created an ecological imbalance among types of trees (flora) and animals (fauna) through the disappearance and

depletion of some types. Also, covered areas have decreased in detriment to uncovered areas due to the creation of unplanned settlements. These are the informal settlements developed in wetlands and along riverbanks as well as to the periphery of the city.

4.5.2 Governance of Land-related Policies in Burundi

In Burundi, the formulation of policies in Burundi as it is in other countries is initiated at the ministerial level. Land-related policies as observed are scattered in different ministries such as the Ministry of Environment, Agriculture and Livestock, Ministry of Infrastructure, Equipment and Social Housing, Ministry of Hydraulics, Energy, and Mines, Ministry of Interior, Community Development, Public Security, and Ministry of Justice. The ministries have also institutions and commissions that deal with certain land issues. However, what is observed is that they act separately given that they do not have a chatroom for discussing crosscutting land issues such as the management of public urban lands. Strategies and visions to implement land-related policies are also adopted sometimes without involving all key stakeholders.

According to the Organisation for Economic Co-operation and Development (OECD) 2020 and OECD (2017), the roles of the government in governing land policies are mirrored in creating coherent instruments by defining relevant national strategies, action plans, and coordinating institutions. The findings show that the government of Burundi has tried to set strategies for policy governance (Table 19), but the outcome of managing public urban lands has not been observed. Bonin, *et al.* (2012) call the governance of policy the translation of results negotiated by stakeholders who participated in the policy formulation process. The authors highlight that the implementation encompasses the role of government, the importance of actors, and the instruments to be used so that these policies can be adequately implemented. This is not easy to achieve given that the process of formulating land policies was not involving a wide range of stakeholders. These stakeholders become in one way or other actors and or experts in the implementation process.

Similarly, UN-Habitat (2021) confirms that governance of policies requires actors who can set objectives, rules, and instruments that can facilitate the implementation of policies. These ideas were shared by Young (2005) and Ruzzene (2015) who underline that these actors should be invited from different sectors (public and private) who have experience in land matters to avoid political influence and personal interests in policy

formulation. All these were missing during the starting point of policy formulation in Burundi and undoubtedly, it has been the source of these policies to be ineffective in addressing challenges related to land management in general and Public urban lands in particular.

Table 19: Strategies adopted to implement land-related policies in Burundi

Government strategies	The major objective of the strategy	Land-related issues to be addressed
CSLPII (Strategic Plan for the fight against poverty in five years)	A national development plan of five years (2012-2017)	Suggest Space and Environment Management
Land Commission	A commission was created in 2015 to deal with land issues	Preparation, implementation, monitoring, and the evaluation of the land policy
2025 Vision of Burundi	Elaborated in 2011 to give a picture of how Burundi will be economically stable	Regional Planning and Urbanization - 40% of urbanization rate from 10% - Villagization for freeing land for intensifying agriculture
National Plan of Development 2018-2027	A plan to lead Burundi towards economically emerging countries by 2027.	Implementing programs related to the environment and land use planning

Source: Author construct, 202

There are many strategies and institutions designed to implement land-related policies in Burundi. However, the results from the analysis of these adopted strategies and established institutions show that much focus is given to land sectors such as forest, soil, water, and biodiversity protection; whereas the management of public urban lands is neglected. It is argued that some of these strategies were adopted and institutions established without considering the country's context in terms of affordability for implementation. A typical example is the failure of the 2025 Vision of Burundi which stated to uplift the level of urbanisation from 10% in 2009 to 40% by 2025. But, according to recent information from the Office of Statistics, 2022, urbanisation in Burundi is at 12% with 60% of informal settlements.

Policies implementation again requires instruments according to Ewalt and Jennings (2004) which are applied to implement government programmes effectively. Instruments in Burundi have been put in place to govern land-related policies through strategies that were elaborated at the national level (Table 20). However, the findings indicate that their existence was not showing success in the implementation of strategies and policies in Burundi.

Table 20: Instruments adopted to implement land-related policies in Burundi

Instruments adopted	**The main area of policy governance**	**objectives achieved**	**The main challenges to implementing the policies**
Law N^0.1/10 of May 30th, 2011 Creation and Management of Protected Areas in Burundi	Inventory of all wetlands, monumental places, and hazardous areas	Not achieved: only monumental places inventoried	lack of political commitment: Lack of funds and local human resource
Law N^0.1 / l13 of August 9th, 2011 Revising the Land Code of Burundi of 1986	revised to meet the recurrent land issues.	Scale down land grabbing in state lands and protect public lands	- No support from legal and institutional frameworks
Law N^0.1 / 02 of March 26, 2012, Water Code in Burundi	Proposal of fundamental rules and institutional framework water management	Recognition of water as an economic, social, and environmental resource	-No link between water code and land code -Lack of political will in implementation
Law N^0.1 / 16 of May 25, 2015, Modalities of transfer of competencies from the State to the municipalities	Decentralisation by devolution.	- Successful in managing social and political affairs; - fails in economic and environmental management.	Partially implemented
Law N^0.1 / 09 of August 12, 2016. Code of Town Planning, Housing, and Construction	Manage urban land and regulate construction in urban areas	State the management of public urban lands and the sustainable urban development	Neglect the expansion of the city and its effects on public urban lands

Source: Author's construct, 2022

According to the KII results, many instruments were formulated to cope with the EAC programmes, AU agendas, and other international development strategies rather than focussing on the country context financially, professionally, and technically. Their implementation necessitated further effort in financial, technical, and human support which the Government failed to mobilise. The KII also disclosed that due to frequent

political conflicts with the international community and donors, the promised financial and technical resources were banned or allocated to humanitarian aid. Additionally, these instruments lack focus on the specific land units among loopholes of these policies. It is apparent that the government elaborated instruments for implementing land-related policies but did not use them. It is found that instruments and strategies for policy implementation did not consider horizontal and vertical integration by involving a wide range of actors who are stakeholders (Figure 13). The trio of stakeholders that is made of those who cause the problem, those who are affected by the problem, and those who can contribute to solving the problem is recommended to be applied during policy implementation in Burundi. However, this is lacking in the existing practice.

These findings are supported by different authors such as Belachew and Aytenfisu (2010), Burns et al. (2010), García-Morán et al. (2021), and Lipej (2015 who, in different times have shown how establishing a sustainable land administration system is a challenge to most of developing countries. The authors cite among other problems financial and technical resources. In Burundi, it adds a lack of qualified human resources to run land offices. Furthermore, the lack of collaboration among stakeholders (Figure 14) makes the situation complex where the exchange of resources between public and private sectors involved in land management is difficult. Sagashya and English (2010) and Semeraro et al. (2020) have already advised the collaboration of actors in land management should assist governments in establishing a sustainable land administration system. This collaboration is also important even in land resource management, public urban lands included. The authors are in a viewpoint that the exchange of experience, human resources, technologies, and financial resources that one party could not afford. This is very important in Burundi to effectively manage public urban lands.

Nonetheless, the lack of collaboration among stakeholders in the land sector in Burundi has been the root cause of failure in establishing an effective land administration system that can adequately address different land-related challenges. In the case of public urban lands, it has been the origin of mismanagement given that neither local people nor local leaders/associations who are taking care of them for the public interest. There are opportunities to benefit from collaboration by local leaders/associations and local people in managing public urban lands given that these areas are surrounded by a range

of people of different status (Table 10). The encroachment and change of use observed in public urban lands which in most cases are incompatible with adjacent development (commercial residential) should be minimised, even avoided if there was a collaboration among stakeholders.

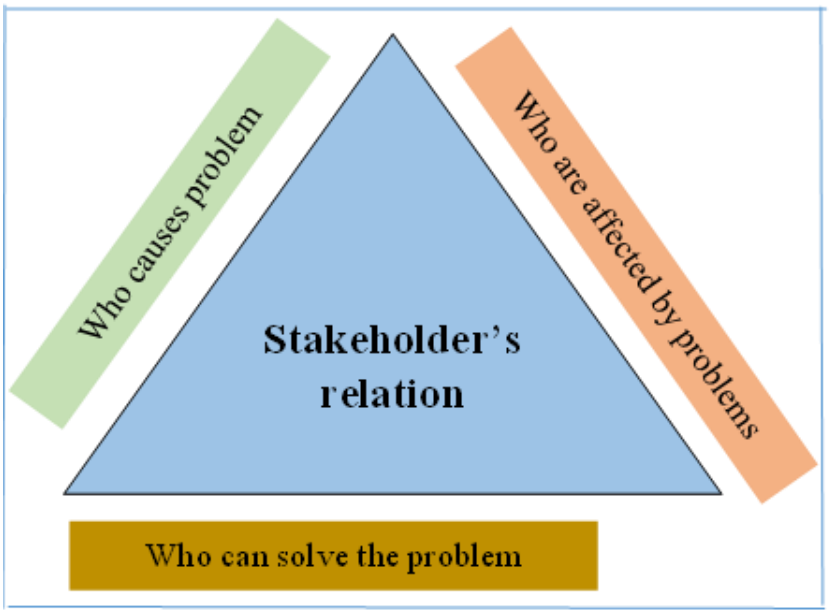


Figure 14: Typology and meaning of stakeholder's relationship

Source: Own construct,2023

The findings from KII and FGD reveal that there is a problem involving those who are causing the problem given that they are among decision-makers and other elites. Those who are affected are also afraid of those who are causing the problem and cannot participate together in a *tête à tête* confrontation. As shown in (Table 21), participation in policy formulation and implementation is one of the problems that make land policies to be ineffective. This has caused the public urban lands to suffer from encroachment, mismanagement due to changes of use, and overexploitation despite the existence of policies and institutions. Furthermore, the table discloses land matters in Burundi are scattered in more than one policy whereas in other countries land issues are concentrated in the Land Policy. Moreover, many institutions are responsible for land management. Here, it is believed that such a situation can create chaos and power overlapping during the implementation phase. Also, the offices that deal with land matters are scattered here and there which creates the fragmentation of land management in Burundi.

4.6 Challenges of Managing Public Urban Lands in Burundi[10]

4.6.1 The Trend of Land Management in Burundi

To properly understand land management in Burundi, you will need to go back to the historical background of the country. The pre-colonial, colonial, and post-independence periods shaped the land management arrangements from traditional to statutory legal and institutional frameworks. The existing literature acknowledges that in the pre-colonial period, traditional arrangements in land management existed and were effective during that period. The King and Notables[11] were the custodians of the land for the Burundian people. They determined who to give land to and for which conditions. Access and other land rights were reserved to individuals, whereas communal holding remained the major land tenure system (Amani, 2009). The colonial era is subdivided into two periods according to colonial occupations. Burundi was firstly colonised by Germans from 1890 to 1914 when it was defeated in World War I, and secondly by Belgium from 1919 to 1962. The land issues were handled differently (Figure 15).

- ***Burundi under German Occupation from 1890 -1919:*** During the occupation, Germans were not significantly involved in changing land tenure systems. However, the King and Notable's power on land was shifted to Germans with the possibility of negotiating with the King when it came to transferring some prime lands. The most land deals were those of transferring land to missionaries through selling, allocation, and land gratis. Until today, the religious institutions (Roman Catholic Church) owned vast land in different provinces.
- ***Burundi under Belgium occupation from 1919-1962:*** In 1919, Burundi was annexed to Congo-Belgium colonies to properly control and exploit the Congo's natural resources. Burundi and Rwanda had the potential for human resources needed for exploiting the eastern mining sites of Congo.

  During Belgium's occupation, many decrees and land laws were imposed on the Ruanda-Urundi land tenure system. Consequently, land grabbing and

[10]This section roots from a published paper in GeoJournal: Turimubumwe, P., Adam, A.G. & Alemie, B.K. Managing public urban lands for sustainable urban development in Bujumbura, Burundi: The role of land administration system. GeoJournal 89, 10 (2024). https://doi.org/10.1007/s10708-024-10998-8
[11]Notables were appointees of the King in different regions responsible for local administration.

swapping by colonial masters were observed. Again, religious institutions and Belgian companies benefitted from this system to the detriment of the natives. Despite the human resources that were targeted when Belgium requested Ruanda-Urundi to be annexed to its colony (Barras, 1982), land has been the second target in Burundi due to its fertility and location (along Tanganyika Lake). In a few words, the colonial period had nothing to boast about land management for Burundians except that land was taken from natives and attributed to missionaries. The actual situation shows that the Roman Catholic Church, Anglican, and Pentecost churches hold large and prime lands in urban and fertile land in rural areas than Government institutions.

- ***Post-colonial land management from 1962 to date:*** The post-independence period was characterised by many civil wars based on ethnic and regional supremacy. Many Burundians had fled the country at different times. Their land was nationalised, expropriated, or acquired in fraudulent arrangements by individuals, groups of people, or the government. Therefore, legal texts adopted during that period were to legalise these types of land acquisitions to discourage those who fled not to come back. If returned, they could not reclaim their properties. Properties were easily registered to other people.

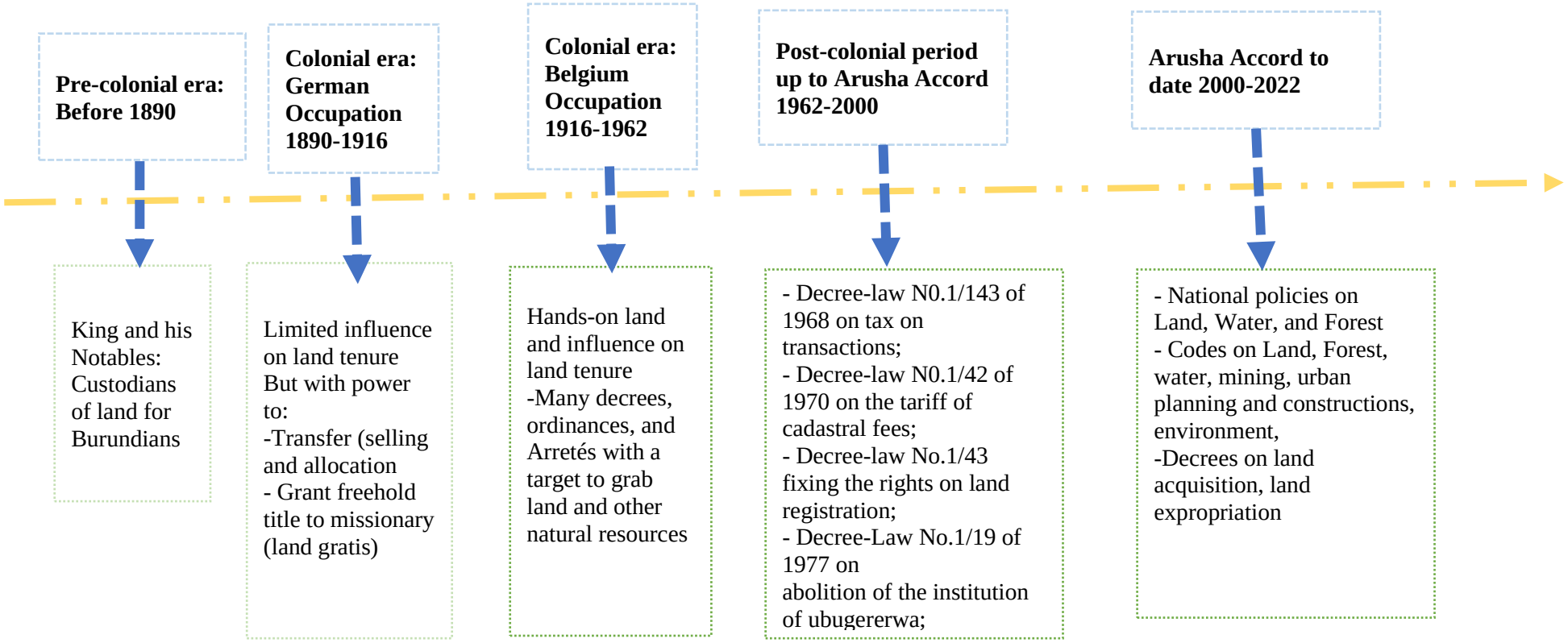


Figure 15**:** Summary of Burundi land-related legal texts from the Pre-colonial era to 2022

(Source: Author's construct, 2022)

4.6.2 Role of Legal Texts from the Arusha Peace Agreement of 2000 to date

In Burundi, the 2000s period marked the process of ending a decade of civil war through negotiations. The Arusha Accord[12] signed in 2000 is a starting point of other legal texts that were adopted to deal with political, social, and economic problems in Burundi. The formulated and amended land-related legal texts from the Constitution as mother law to other legal texts had references and orientations in the Arusha Accord (Government of the Republique of Burundi, 2000). These legal texts include the Constitution of Burundi of 2005 amended in 2018. Articles 36 and 69 are concerned with property ownership and property rights. The articles state that all Burundians are obliged to protect public properties (Government of Burundi, 2018). Other legal texts related to land management include the National Land Policy of Burundi of 2008, the Land Code of 2011, the National Forestry Policy of Burundi (2012), the Forest Code of Burundi of 2016, the Mining Burundi Code of 2013, the Burundi Water Code of 2012, Burundi Environment Code of 2000 (modified in 2021), Code of Urban Planning, Housing and Construction in Burundi of 2016, and law N0.1/10 of May 2011 on the creation and management of protected areas in Burundi are all related in one way or another on land management (Figure 13).

The formulation and amendment of land-related policy in certain specific periods especially after a civil war have been observed in different countries that experienced civil war like Rwanda (GOR, 2016; Ngoga, 2016; Rurangwa, 2002), Sierra Leone (Kaindaneh et al., 2015; Tagliarino, 2018) and South Africa (GoS.A, 1997; Ovens et al., 2014) to mention few. All of these countries formulated or amended land-related policies to harness the new ownership and transfer as well as smoothening the modes of accessing land by new government members or warriors as happened to Burundi. Also, these policies and Acts helped the countries to achieve their agrarian and land reforms politics. However, the case of Burundi has been quite different. The new policies and acts became among the shortfalls in the land sector instead of a remedy for reforming the land sector. The findings show that public lands have been swapped by multiple and invisible domestic land grabs, and processes of land expropriation and accumulation were ongoing in many provinces of the country, driven by domestic

[12] The Protocol IV on Reconstruction and Development, Chap. I, Art.8 deal with issues related to land and other properties.

capital and business/political/military elites. In South Africa and Rwanda, foreign investors were more significant than domestic investors according to their policies. In Burundi, elites are more favoured by policies and have access to public land under large-scale agriculture investments or housing development umbrella. However, these projects fail to provide the planned objective. Then, the land remains in the hands of elites whereas local people are landless and homeless. This becomes a 'pin-prick' to the livelihoods of local people surrounding these lands. However, this observation in Burundi contradicts current reports that show how welcoming foreign investment in the land sector will improve both agricultural produce and the housing sector (UN ECA/AfDB, 2022; UNECA, 2021).

Moreover, the FGDs results have shown how policies were adopted with a "hidden agenda" by policymakers. They give an example of The National Land Policy of 2009 which allows new land uses in public areas such as open spaces and wetlands. The Land Code of 1986 was amended in 2011 to legalise and formalise the acquired land in different public land zones. The Code of Urban Planning, Housing, and Construction in Burundi of 2016 gives the direction on developing urban lands and protecting the Lake Tanganyika shores as well as other public urban lands. However, it does not say anything about buildings that are developed within 150m along Lake Tanganyika. The findings are controversial to the application of legal texts in different countries of the region. Public urban lands are protected by these texts and measures are taken where necessary (Ahadzie & Proverbs, 2011; Rurangwa, 2002; The Road Acts, 2007).

The KII and FGDs converge on the causes that pertain to the enforcement of legal texts such as (i) laissez-faire by policymakers and other influential people to protect public urban lands; (ii) nepotism, favouritism, and corruption. There is also a politicization of land matters rather than the technicisation of land matters. The public urban lands are accessed by powerful people in the army, police, politics, and business. The way land is managed is as if there are no policies and institutions that are in place to effectively manage land. However, legal and institutional frameworks are there and sometimes contributed largely to worsening the situation. The situation contradicts the new call by developed countries and development agencies to have land policies and institutions in the land sector so that land can be a booster of development in developing countries (Balas et al., 2021; Musinguzi & Enemark, 2019; World Bank, 2017).

4.6.3 Institutions Involved in Public Urban Lands Management

The existence of legal texts from colonial to date marked also the existence of institutions that were responsible for implementing these texts. During the pre-colonial period, there were Kings, notables, and Bashingantahe[13] who were exercising their power in land matters. The King had the power to allocate and or expropriate any land to anyone. In the colonial era, an appointed representative of colonisers confiscated the King's power in land dealing. The literature shows that this arrangement is shared with many countries in the region (Barras, 1982; Reintsma, 1981). Furthermore, the colonial era marked the start of modern land management institutions crafted by Europeans. The written certificate of occupancy was first delivered by Germans to missionaries. The large land held by the Notables and Princes was taken from them during the colonial era, specifically during Belgium's occupation. All bare land in rural and public urban lands was nationalised during the Belgium colonisation to allow new allocation. In urban areas, prime land was given to white people, economically strategic land was given to Asians, and marginal land to Africans.

The 2000-2022 period marks an evolution of institutions from the local level to the central government (Figure 16). This structure emanated from the Madagascar Meeting with land experts. Step by step, Burundi restructured and decentralised the land administration system from the village level up to the national level. The role was to manage the land at their level especially in protecting public urban lands, solving land-related disputes at the village level, and participating in all land matters, especially allocation and expropriation. However, the findings show that these village institutions are powerless regarding allocation and expropriation. They are not involved in allocating public urban lands to investors or for expropriation so that they can discuss the compensation or land use compatibility with the existing land use. They are not even consulted in policy formulation that relates to land management.

The recent decree is the adoption of a Ministerial Ordinance $N^0$710/553 of 2022 that relates to updating tariffs on compensating land, crops, and buildings during property expropriation for the public interest. The ordinance was to respond to the recurrent disputes on compensation tariffs that were outdated almost for a decade. However, the

[13] Local elders at village level who were in charge of conflict resolution of all kind, land disputes included. It is a low-level traditional institution that remained from the precolonial up to date.

local leaders and other stakeholders at low levels of land management were not informed about the computation of such tariffs. Local leaders consulted during this research reveal that the prices are too low in comparison to the actual land value and market prices of crops. This means that there is a need to define the level of participation that is needed in decision-making for land transactions.

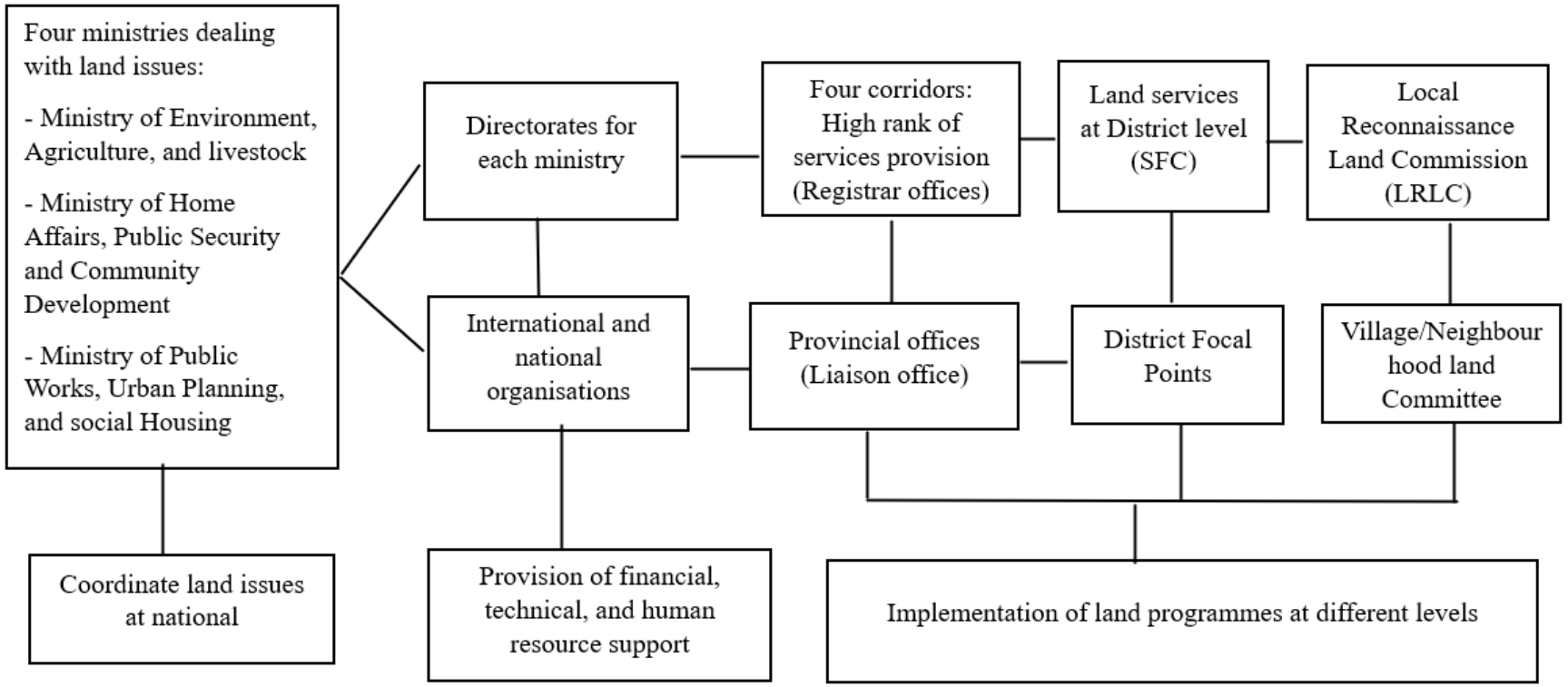


Figure 16**:** Institutional Framework for Land Management in Burundi

(Source: Author's construct, 2023)

4.6.4 Public Institutions Involved in Land Management

The desk review results show that the existence of public institutions that are involved in land management has shown a strong correlation with the improvements in land management through effective land administration systems. In this research, countries like Rwanda, Ethiopia, Kenya, Uganda, and Ghana are referred to as best practice cases in revising legal and institutional frameworks before embarking for example on the fit-for-purpose approach. Ali et al. (2010) and Sagashya & English (2010) showed that the Government of Rwanda systematically started by formulating a new land policy and other land-related regulations. The next step was to establish land governance institutions (Biraro et al., 2021). The process was almost the same in the other countries above-cited. However, they recorded a successful result, especially in managing public urban lands. Most of these lands are registered and recognised as public urban lands, well managed in Rwanda, Kenya, Tanzania, and Ghana. Recently, Mozambique and Uganda cases have reportedly confirmed the effectiveness of this approach in massive land registration, digitalisation of cadastre, and well-maintained LIS. This should be a lesson for Burundi to improve land management in general, and public urban lands in particular.

For example, it is pointed out by Balas et al. (2021) that in Mozambique, 5 million parcels were registered and 4000 communities delimitated within a short time and low cost. Private properties were separated from public holdings. In urban areas, public urban lands were registered and municipalities and local authorities. In Uganda, the approach envisages registering properties through unconventional approaches that are time and cost-saving (Musinguzi & Enemark, 2019). The benefits are not time and cost, but private properties will be registered to actual holders and public properties to public entities.

The results from different sources show that Burundi established different institutions in different ministries with different missions and responsibilities (Fig.17). The following are institutions that are dealing with land management:

- ***Ministry of Environment, Agriculture, and Livestock***: This ministry is concerned with land management in general but with emphasis on land for agricultural use. The minister and advisors are involved in analysing or proposing any land allocation for agricultural use either in an urban or rural area.

- ***Ministry of Justice***: This ministry has the responsibility to legalise all transactions, surveying, certifying, and land titling. This ministry assists in conflict resolution through court judgments.
- ***Ministry of Public Works and Urban Planning***: It is concerned with urban land use planning and urban development control. The management of public urban lands is among the responsibilities of this ministry.
- ***Ministry of Interior, Community Development, and Public Security***: The main responsibilities related to land management include the coordination and mainstreaming of land administration strategies at the commune level such as the land service at the commune level (SFC) and local reconnaissance land commission (LRLC). Also, this ministry is endowed power to coordinate and monitor NGOs and CBOs that are involved in land management. It also has to collaborate with the Ministry of Justice in land conflict resolution.

  The existence of many institutions in land management in Burundi was supported to be an opportunity for effective land administration through decentralisation which is recommended by many authors like Bruce (2014), and Adam et al (2021). However, the situation in Burundi is quite different to the ones projected by these authors. The only benefit to boast of is having these institutions, with the hope in future to dynamise and restructure them to save the purpose. However, it is acknowledged that in other countries these institutions played key roles in shortening the distance from home to land offices by clients which minimised the overall cost of services.

  Research done in countries like Laos by GIZ (2019), in Rwanda Government of Rwanda (2007) and Goodwin (2022), and in Ghana by Be-ere (2022) narrate successful stories of institutions to provide services to land owners and seekers in time and less cost. Likewise, the decentralisation observed in land management in Burundi was supposed to respond to challenges observed in the land sector such as encroachment of public urban lands, land grabbing, land conflicts, illegal change of use, and so forth. Unfortunately, the findings revealed the opposite. Issues related to poor services when applying land certificates and titles, requesting for property surveying, public urban land protection, and conflict resolution are still observed in the land sector despite the existence of these institutions. The major problem is the lack of collaboration among institutions and the existence of power overlap as well as office fragmentation.

From the case study, this research has tried to know if participants know the existence of these institutions and what are problems observed that hamper effective land management. The results from FGD and KII disclosed by local leaders and influential people revealed that these institutions are available and offices are found at different levels of administration (Neighbourhood/Village level to national level). However, the participants agree that these institutions are not offering the services as expected. Furthermore, the questionnaire results show that 75% of participants do not know the differences between institutions and their responsibilities in land management.

Similarly, 70% disclosed that they had been in a dilemma of knowing where to start when they were planning to look for land titles. As a result, they have commissioned this task to brokers who very well know the different offices and established networks with various land officers. This arrangement does not go alone without involving corruption in land deals. It establishes a network corruption from the client-broker-land officer. The study revealed that those who tried to do a follow-up for themselves disclosed that they were not satisfied with the services from different offices (Table 21). Those who had judicial cases have expressed their worries that they do not know where to start and to end given that they are directed in different institutions(offices) and prefer to include politicians and other powerful people. The findings proved the controversial situation to the ones expressed by Adam et al. (2021) and Auzins (2004) at different times. Having land services and decentralised institutions in the country did not smoothen the processes and shorten the time for getting the service to applicants. Rather, the situation created another 'hidden institution' that liaises the client with land officers to access services at extra cost.

Table 21: Summary of service satisfaction by clients in land offices

Element of evaluation	**Appreciation**	**Respondents (%)**
1. Time bind	Very poor	85
2. Cost	Extreme high cost*	75
3. Customer caring	Extremely poor	60
4. Extra cost without receipt	Obvious	80

* *The costs expressed here are related to transport costs incurred due to the postponement of appointments. However, the issue of corruption was not openly expressed. some 'technical' words in the local language were used to express it.*

In the Ministry of Justice, they point out how cases in courts related to land are decided politically, with nepotism, and corruption because of the long processes to go through, especially in urban areas. The economically and politically powerful people became *Amicus Curiae brief,* underlined the KII contacted. The participants in FGD used the same terms and explained how powerful people can build in public urban lands without any problems; and how top leaders are acquiring land in rural and peri-urban areas despite the existence of these institutions. It was revealed that the existing institutions are overwhelmed and cannot make any decision without consulting powerful people.

Besides, it was disclosed by many authors that the interference of political and economic powerful people in land management is a major challenge for developing countries despite the existence of institutions (Baland & Robinson, 2003; Batterbury & Ndi, 2018; Clement & Amezaga, 2013; Krishnaveni & Anilkumar, 2018; Rafiee & Stenberg, 2018). We argue that the existence of many institutions dealing with land management and decentralised did not help to address challenges that pertain land sector, particularly public urban lands. This study argues that the encroachment of public land, the change of use (illegally and informally), the haphazard urban expansion, and the informal settlements that are observed in different urban areas of Burundi should not be observed given the existence of public and private institutions.

4.6.5 Private Institutions in Land Management

The role of private institutions has been cited as undeniable, especially in providing funds and techniques to improve the land administration system (García-Morán et al., 2021). Private institutions that are mostly dominated by NGOs and local Associations are sometimes important in addressing some developmental challenges that emanate from poor land management such as land-related conflicts, environmental degradation, and social instability (Tchatchoua-Djomo & van Dijk, 2022; Günay, 2018). This is the case in Burundi according to the desk review results. Private sectors and NGOs involved in land administration focus on reducing land-related conflict through land certification, clarifying boundaries, recording transactions systematically, and testing new approaches related to land administration. The NGOs and Local Associations involved in land administration mostly came to assist returnees and Internally Displaced People (IDPs) to access the land that was taken after fleeing (Table 22). Others came to assist the Government in clarifying the boundaries of public lands like National Parks and Forest Reserves.

Table 22: Private institutions involved in land management in Burundi

NGO /Local Association	**Communes covered 129**	**Year of intervention**	**Area of focus**	**Achievements**
HCR&CO	116	2001	-Resolving land conflicts	614 cases
CNTB	116	2009	-Resolving land conflicts and boundary clarification	3413 cases
PABG	14	2011-2014	-Land certification	1782 certificates
DDC	6	2011-2015	-Boundary clarification	875 inventoried 519 beacons fixed
ZOA	2	2014-2016	Certification and Land conflict resolution	
GIZ		2015-2018	-Public urban lands registration and boundary clarification -Conflict resolution -Land registration at the local level	- 80% of public urban lands registered -60% of conflicts resolved -75% land registered systems at the local level
LADEC	2	2021-2022	Boundary clarification and land certification of private properties	Ongoing project

Source: Author's Construct, 2023

The NGOs and Local associations supported by development partners involved in land management in only 12 districts of 119 districts that are in Burundi. However, most actors have been focusing on rural areas and less concern is observed in public urban lands (Beaupré, 2015; Tchatchoua-Djomo & van Dijk, 2022). This is the situation that results in public urban land encroachment and incompatible land use observed that jeopardise urban sustainability. The interview with these NGO managers highlighted that they were not concerned with urban areas, but trying to improve the rural people's livelihoods through property certification. The existence of these NGOs has been much-admired by local people because they tried to address some challenges related to land conflicts especially the boundary reconnaissance among local landowners. However, the major objective was to provide certificates to land owners which could help to access loans in financial institutions. Yet, these certificates are not recognised by financial institutions.

This study observed also that these NGOs and local Associations did not work in PPP arrangements as advised by UNECE (2021) and World Bank (2020). The desk review and KII showed that no project was implemented in the PPP arrangement. Rather, all mentioned NGOs and Associations (Table 22) were working without direct government involvement. This means that the funds, techniques, and approaches were all provided by NGOs. The involvement of governments ended with the authorisation and surveillance of these NGOs to implement projects that comply with local security. This is where most of the projects failed to meet their objectives and some were even ended at the piloting stage only.

4.6.6 Approaches and Technologies Applied in Managing Public Urban Lands

Developed countries have used strategies and approaches in land management that assisted in economic development through the provision of property tenure security and revenue generation as well as transforming land into a marketable commodity (UNECE, 2005; Wanjohi, 2007). Also, these approaches help respond to the drivers of global and local thinking on the existing relationship between people and land that needs land administration interventions. These include development sustainability, urbanisation, reform in the economy, and spatial information revolution (Burns, 2007).

i. Participatory Approach in Land Management

The classic approach in project formulation or land use planning was a top-down approach (Pissourios, 2014) dominated by bureaucracy and consultation, while the contemporary approach is bottom-up (Casazza & Pianigiani, 2016; Koontz & Newig, 2014; Semeraro et al., 2020) dominated by the involvement of local people to identify the pertinent problems and proposes some solutions. To implement this approach in the land management arena, pro-poor land recordation (UN-Habitat, 2004), and the Fit for Purpose (FFP)(Enemark, et al., 2014) are the most known approaches in land management.

With this study, the dominant approach used in public urban lands management by the government is the Top-down approach. Land managers at different levels of the country do not involve local people in the process. The KII with local leaders asserted that they are ignored in the public urban lands management and are only given orders. 'People and local leaders are not consulted during public urban lands management'; one of the local leaders said. What is worse is that they now think that if they are consulted, their views are not included in the final decisions. As mentioned by (Becker et al. (2003); and Salter et al., 2019) on participation, the non-inclusion of local people has affected negatively the implementation of land management strategies.

ii. Pro-poor Land Recordation and FFP in Land Management

The pro-poor land recordation was appreciated as a tool that is a locally practicable, integrative, implementable, and scalable alternative approach to participatory in promoting land rights and improving access to land by poor and vulnerable people (Hendriks, et al., 2019). Its definition by UN-Habitat (2007) is to be an approach that considers widely the people's needs. In urban areas, the approach was seen as a tool useful to address informal settlement through the provision of safer lands and avoiding eviction as well as shanty resettlement (UN-Habitat, 2004). The approach works easily with conventional land administration systems, allowing experiences and best practices to be integrated into the approach (Hendriks et al., 2013).

This study shows that in Burundi, NGOs and local associations that are involved in land management have tried to apply a pro-poor land administration approach in their projects. However, the interview results revealed that women and vulnerable people

were not easily included due to cultural practices and social values[14] that marginalise women. Women are taken as homecare and homeworkers. These are among the shortfalls that Bussu, et al. (2022) mentioned in handicap participation in developing countries. Also, the projects covered rural areas at 90% with 10% in urban areas of small towns like Ngozi and Mabanda.

The application of FFP has been considered costly or difficult to implement in the existing land administration system and infrastructure of Burundi. The KII results with NGOs and Local Associations revealed that they opt to use participatory and pro-poor land recordation to inculcate local people in land management. This is an approach that they can undergo without strict processes and complexity according to the KII informant interview results with managers of NGOs and Associations. The respondents in KII from government and NGOs converged on the same idea that other approaches are strict and costly, especially in their preparations, logistics, and contexts. The empirical findings in the literature showed that is not as cheap as it is said, and flexible as it is praised in some case studies as cited by Ali et al. (2010), Biraro et al. (2021), Kline et al. (2013), and Sagashya & English (2010).

4.6.7 Modern Technologies in Land Management

The use of modern technologies is also identified in this research as the challenge of effectively managing land in general and public urban land in particular. Countries in the region cited in section 4.4.4 reported success in land administration due to applying modern technologies. In the case of Burundi, the interview results with government officers revealed that they are still using a mechanical theodolite, low-precision Global Positioning System (GPS), low-resolution satellite images, QGIS programme, tape measures, and other classic measuring tools. Some calculations are sometimes handled by simple calculators in the field. However, NGOs that are involved in land management are using some modern technologies and adapted software in data handling.

The interview and desk review results disclosed that NGOs like PAGGF, GIZ, and LADEC have used technologies in spatial data collection, manipulation, and processing. However, they lament that they cannot afford the advanced technologies

[14] Woman does not have the right to inherit land from their parents, the woman is not allowed to speak in front of men, and the woman cannot sell land. However, this is progressively changing with time.

applied in developed countries such as UAVs and Razers. Not only technologies, these NGOs also disclosed that even qualified human resources to manipulate the little equipment were hired in neighbouring countries like Rwanda, Tanzania, Uganda, and Kenya. For GIZ, they requested a supporting team in Germany to manipulate some spatial data. The findings show that Burundi is lagging behind when it comes to acquiring new technologies, not only in the land sector, but even in other domains of economic, social, and environmental development.

Burundi falls in the group of countries that do not use modern technologies in land management which are needed to solve social, economic, and environmental problems related to ineffective land management Chukwuma (2021). It is underlined by Stöcker et al. (2022) and World Bank (2017) that the use of UAVs and other advanced technology is probable to change conventional techniques of surveying and mapping with modern technology such as automated photogrammetric. Furthermore, the authors disclose that the drones known as Unmanned Aerial Vehicles (UAVs) assist in the collection of low-cost, high spatial resolution, 3D data for topographic or surface modeling and have advantages over conventional techniques as cost and time saving, efficiency, and in data acquisition.

4.7 Consequences Failure of Land Administration Systemin Burundi[15]

4.7.1 Encroachment of Public Urban Lands in Bujumbura City

While public urban lands in Bujumbura City were reserved for different purposes rather than commercial and residential use (Figure 10), the findings show that in different periods, wetlands for example have been encroached upon and transferred to individuals for commercial and residential uses (Plates 1&2 and 3&4). The questionnaire results show that from 1993 to 2005 is a period where people started settling in the wetlands of Bujumbura City. During a period of civil war, many people fled the rural areas to urban areas for security issues and or in search of improved livelihoods.

[15] This section is rooted in a published paper in GeoJournal: Turimubumwe, P., Adam, A.G. & Alemie, B.K. Managing public urban lands for sustainable urban development in Bujumbura, Burundi: The role of land administration system. GeoJournal 89, 10 (2024). https://doi.org/10.1007/s10708-024-10998-8

Plate 3&4: Recent floods observed in wetlands of Bujumbura

Source: Photo taken in the fieldwork, 2022

Plate 5&6: Wetland encroached and changed into residential and rice-farm

Source: Photo taken in the fieldwork, 2022

During this period, the municipality was and still not producing enough surveyed and serviced plots to satisfy the demands. Also, there was no housing programme for low and medium-income earners. As a result, everyone was arranging how to get land for shelter, and this caused unguided city expansion (Figure 12). Likewise, the increase in informal housing and encroachment of hazardous areas are attributed to the lack of surveyed and serviced plots in the city for decades (Figure 10). Furthermore, the findings show that from 2005 to 2020 wetlands were massively encroached and arbitrarily their uses changed (Table 23) despite the security stability that was observed in this period. The results from the KII such as the Ministry responsible for urban planning and the mayor of Bujumbura disclosed that the government and municipality could not afford to provide surveyed and serviced plots to these people.

Table 23**:** Wetland encroachment in different periods

Wetland location	**size as Master Plan of 1982 (ha)**	**Encroached in 1993-2005 (ha)**	**Encroached in 2005-2020 (ha)**	**Total of encroached wetlands (ha)**
Buterere	3 ha	0. 5	2	2.5
Ngagara	2.5	0	2	2
Carama	3	0.2	2.2	2.5
Buyenzi	0.5	0.3	0.2	0.5
Kanyosha	1	0.3	0.7	1
Mutakura	2	0.5	1.3	1.8
Total	12	1.8	8.4	10.2

This failure of governments to provide surveyed and serviced land has been reported in other developing countries and linked to informal settlement (Fekade, 2000; Takele et al., 2014); haphazard urban development, inducing tenure insecurity, causing the threat of destruction of heritage sites, and triggering environmental challenges that include poor waste management (Awuah & Abdulai, 2022; Slaev & Nedovic-Budic, 2017). However, despite the acknowledgment of this problem, many governments in developing countries are still watching this phenomenon without taking measures to address it. The unguided expansion of cities and other urban centres is still happening, informal settlements are increasing, and environmental challenges multiplying in sight of the governments and other stakeholders. There is a need for all stakeholders to work in synergy to design and implement some strategies and programmes that can address these issues so that urban development can be realised sustainably.

The findings disclose that from 1993 through 2005 wetlands were slightly encroached on with 1.8/12ha despite the civil war situation where municipalities and other institutions responsible for protecting wetlands were not in a position to protect these lands. Likewise, the land administration system of that time was not as strong as it is now with technological advancement. The period of 2005-2020 is marked by massive encroachment of public urban lands with 8.4 /12 ha. Similarly, the interview and questionnaire results reveal that in the 2005-2020 period, public urban lands were encroached on and transferred to individuals dominated by political figures, high-ranking personnel in the army and police, the ruling party, and other powerful people.

The same encroachment and or change of use was observed in open spaces and road reserves. The findings from observation and FGD show that open spaces were encroached on by elites and powerful people whose names were cited but with the reservation of not recording them. it was estimated that within ten open spaces located in the case study, some have been encroached on at 20-50%. Whereas wetlands have been encroached on even in other countries by various land seekers in urban areas of developing countries according to Isunju and Kemp (2016); Kabiri et al. (2022), and Krishnaveni and Anilkumar (2018), the case of Burundi is quite different to the existing knowledge in developing countries. The encroachment is related to peace instability and political agenda. This means that if there was a civil war and diverse political agenda, wetlands would remain protected as it was before 1993. However, the study recognises the increase in urban population and rapid urbanisation that over time may require extra land as well as land administration that may leave loopholes for land grabbers to acquire lands in wetlands.

Likewise, this study unveiled that road reserves were encroached on by landowners by extending their houses. The observation showed that all along the major roads (National roads throughout the country, 60% of those who had houses along these roads have at least extended or annexed some constructions (permanent or temporal) for commercial use. Most of the uses are dominated by kiosks, carpentry, fruit vending, garages, and car wash. These activities have been disturbing the transport and road circulation in general. However, in 2021 the process of cleaning road reserves was initiated by the Minister of the Interior, Community Development and Public Security to address the issues of road accidents. "*This measure, to demolish houses built informally, concerns everyone."* Said by the Minister, in a meeting with the municipal administration, the minister ordered that "no *structure informally built will be spared. Yet, there are houses that are not marked"*. The Minister and the Mayor emphasized cleaning the city so that it can have the image that it deserves(Iwacu, 2021). However, this order did not apply to all. Some structures remained untouched because of the social status and power of the owners in the country[16]. This shows how powerful people influence land management, especially for public urban lands for their interests. The study findings evidenced the existing claims by different authors like Bae (2019), Batterbury and Ndi

[16] The houses that remained in the demolution campaign of cleaning road researves were those belonging to Generals in army and police as well as influential people in the ruling party.

(2018), and Rafiee and Stenberg (2018) who showed that land deals are influenced by political and economic power in developing countries. But, the nuance in Burundi is that it adds powerful people in the army and police who dictate every decision in different sectors of the country, land sector included.

4.7.2 Public Urban Lands Encroachment and Informal Property

The acquisition of shelter in flooding and hazardous areas which is dangerous to residents (Plate 1&2); farming in wetland areas that were designed for keeping the ecological balance (plate 3&4), and densification of neighbourhoods in which the existing infrastructure cannot satisfy the demand are the major consequences of encroaching the public urban lands such as wetlands. The image of the city and the city's sustainability are impacted remarkably due to recurrent informal settlements and unguided city expansion.

According to KII and reports on urbanisation in Burundi, it is shown that 40 % of informal settlements are located in wetland areas, especially in Buterere (25%), Carama (18%), and Mutakura (2%) with shanty settlements in Kanyosha. The study also reveals that the residents in these informal settlements can hardly access social economic and transport infrastructure. The interview and questionnaire results generated information that 10% of school dropouts are caused by congested classrooms; 60% of residents are accessing hospitals at 5-12 km given that all hospitals are in the city centre; 45% access different services hardly due to transport problems (congestion and overpopulation in public transport), 60% affirm that their children do not access to playgrounds and open spaces in their neighbourhood. The consequences of unguided urbanisation in the case study are similar to what Dlamini (2021) found but lack support from a study by Kironde (2019) and de Soto (2000) who propose the urban regularisation and formalisation of informal settlements given that these settlements are in either public lands or hazardous lands. The properties in these settlements are not supposed to be formalised but demolished to ensure the public urban lands are protected.

CHAPTER FIVE

DEVELOPING A FRAMEWORK FOR EFFECTIVE PUBLIC URBAN LANDS MANAGEMENT

5.1 Introduction

The framework designed to achieve effective public urban land management is presented in this chapter. The formulation of this framework was motivated by the gaps remarked in the findings on how the existing system fails to effectively manage public urban lands. Moreover, the best practices from the literature have been used as the benchmark for designing this framework. Finally, the author's experience nurtured by both the findings and best practices from the literature supported the formulation of this framework. The chapter contains two major sections the first explains the features of the framework and the second tries to show its validity and applicability.

5.2 Key features of the framework

Managing public urban lands requires a framework that puts together the stakeholders that have what to contribute to making sure public urban lands are properly managed. The framework also shows the responsibility of each stakeholder so that no issues related to conflicts of interest may arise during management (Figure 17). Furthermore, this framework identifies the tools/ instruments and strategies that are apt to manage public urban lands. This study proposes one framework that can help to manage public urban lands in urban areas so that in the end, the city can achieve sustainable urban development.

The framework is smartly designed in process form with three major elements that are the legal framework, institutional framework and affordable approaches and technologies. These elements were selected among others in the findings which manifested as key challenges in managing public urban lands. It was found that there are unfocused legal texts that are in use in Burundi to manage public urban lands; fragmented institutional frameworks, and the lack of applying adequately the existing approaches and technologies in land deals. To respond to legal frameworks, several propositions are identified and recommended to be integrated into the framework to address this challenge. These include legal texts that are focused on public interest,

open and democratic, and free from influence by elites. For institutional frameworks, this designed framework proposes establishing a cadastre system, establishing offices, availing Adequate and qualified personnel and materially equipped. For affordable approaches and technologies, the framework proposes considering the country's financial capacity (context); country priorities, and country resource capacity and education focus. These should be completed by a practice of good governance which will facilitate the stakeholder participation and contribution.

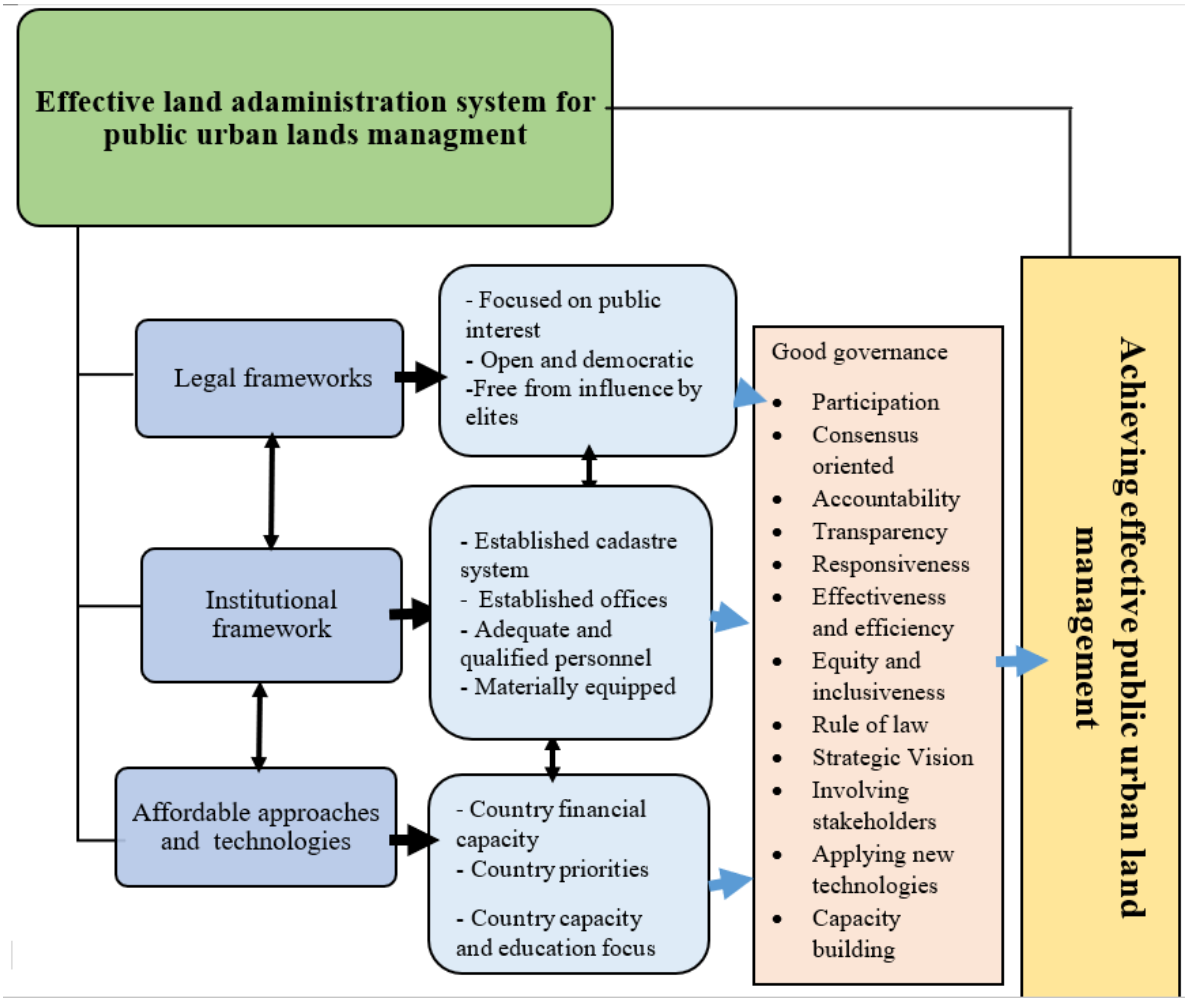


Figure 17. Proposed framework for establishing effective LAS to achieve sustainable urban development

(Source: Author's construct based on literature and findings of this research)

5.3 Explaining the Framework Features for Managing Public Urban Lands

5.3.1 Formulating and Adopting Focused Legal Framework for Managing Public Urban Lands

The existing legal frameworks are constituted by policies, codes, constitutions, ministerial decrees, and Commission proceedings related to land. Burundi is endowed with legal frameworks that are related to land management. However, they are not focused on specific land portions like wetlands, open spaces, and riverbanks. These texts are general to land management and this favours those who know that there is no specific legal framework that can bind them if they outrage public urban lands. One of the sources of this lack of focus is the way these legal frameworks are formulated and in which sphere they are adopted.

Normally, policies and Codes are drafted by advisors of the Minister. The content and format depend on the educational background and experience in the field. As shown in the findings section 4.3.3., most of the 'so-called' experts do not have a background in their fields. The same advisors who are supposed to provide a specific legal framework to protect public urban lands are not doing so because they do not understand the importance of formulating specific policies on public urban lands that contribute to urban sustainability. Further problem is that when these bills are presented to the minister and then to the Member of Parliament (MP) and Senate, they are validated without objections because the majority of the MPs and senators originate from the ruling party. This impacts democracy because even an opponent who has a constructive idea to amend a certain article in the bill presented has no chance due to negative solidarity (political fanatism). There is a need to have policies that are formulated openly and democratically where all voices are heard and suggestions are incorporated into the bills. This is possible if there is good governance where all components are respected in formulating policies.

i. Participation of all stakeholders

The participation of outsiders in the ministry that has land in its responsibility who are working in the land sector, urban planning, and environment management should be encouraged. This is the participation of all, men and women, whose voices in decision-making, either directly or through legitimate intermediate institutions that represent their intention should be accommodated during policy formulation. This broad

participation is built on freedom of association and speech, as well as the capacity to participate constructively. This leads to consensus orientation. Besides, the practice of good governance mediates different interests to reach a broad consensus on what is in the best interest of the group and, where possible, on policies and procedures.

Legal frameworks that are to be adopted should have direction "Strategic vision where broad and long-term perspective along with a sense of what is needed for development are in the forefront. There must be a common understanding of the historical, cultural, and social complexities in managing the common resource. Additionally, there is a need to formulate and adopt policies that their performance can be detected by looking at responsiveness, effectiveness, and efficiency. This will entail establishing institutions and elaborate processes that serve all stakeholders (inclusive). This will assist in the formulation and adoption of policies which are results-oriented with the existing resource (context-bind).

ii. Accountability of organisations and institutions

Likewise, the policies to manage public urban lands should be those that can strengthen accountability where decision-makers in government, the private sector, and civil society organizations are accountable to the public, as well as to institutional stakeholders that are involved in public urban lands management. This accountability will differ depending on the organization. The accountability will be completed by transparency which is built on the free flow of information. To fruitfully be operationalised, the processes, institutions, and information are directly accessible to those concerned with public urban lands management. Furthermore, fairness is guided by equity where men and women may have the same opportunity in managing public urban lands and the rule of law where all land-related legal frameworks should not be supporting powerful while harming vulnerable groups. The legal frameworks should give equal opportunity to access and use public urban lands at the same time providing protective actions. The findings show that there is an attempt to influence some land-related laws during their adoption or during their formulation which makes some of them have loopholes and gaps. These loopholes/gaps are used to access lands informally and illegally by land grabbers. There is a need to amend some policies such as land policy, land code, and environmental code of Burundi because they present loopholes as shown in Table 25 and subsequent sections.

iii. Testing the feature

In testing the above feature in the case study, procedures for elaborating a by-law to manage existing public urban lands were undertaken and the process was successful. Local people participated in general meetings and contributed their ideas. However, the problem remains in the structure of people who participated in the meeting and their influence during the discussion (Table 24). The stereotype that exists among residents related to wealth and social status manifests during discussion. The framework reminds participants of the principles of good governance. The session showed how people think of managing public urban lands through protection or sustainable management. The collected views were balanced and strategies were clear to every participant. The results of the feature are promising in collecting ideas to be included in policy formulation if applied at the national level.

Table 24: Category of participants per occupation

S/N	Category of participants by occupation	Number of participants	Level of influence in meeting
1	Commerce	15	Very influential
2	Public Service	22	Influential
3	Private service (NGOs)	6	Influential
4	Farming and livestock-keeping	18	Limited influence
5	Garage and petty trading	5	Limited influence
6	Transport (tricycle and motorcycle)	8	No influence
7	Other occupation	12	No influence
	Total	**76**	

Source: Own construct

5.3.2 Establishing a Competent and Enabled Land-related Institutional Framework

One of the major problems that Burundi is experiencing in managing public urban lands is the lack of a competent institutional framework that can stick to managing land with specifications. The existing institutions that are established to manage lands are too general and responsibilities are not specified. The management of public urban lands requires specific institutions (commissions and committees) at different levels of jurisdiction as is observed in other countries like Rwanda, Tanzania, Nigeria, Canada,

and so forth. Establishing a national commission with offices in the provinces, communes, and village/Neighbourhood level dealing specifically with the management of public urban lands will help

- to identify the public urban lands: This will help to distinguish public lands and private ones. The land will be recognised by the local community and considered as common resource/land;
- to protect or use them sustainably: The community will be the custodian of these lands whereas the community will establish strategies for their management;
- to increase in number, and expand their area where possible: it will be possible to work together in creating new public urban lands such as open spaces through buying or compensating the owners of bare lands within the neighbourhood. Also, it will be possible to acquire land from public allocation by the Commune or municipality where available if it is for communal use according to the existing land policies.

Moreover, the establishment of such a commission will help to mainstream the financial and technical support in managing public urban lands (Figure 18). One of the problems observed in Burundi is the allocation of funds for land management in the Ministry of Agriculture, Environment, and Land, Ministry of Justice, and Ministry of Public Works and Social Housing which in the end, the funds are used for other projects prioritised by the Ministry, and not related to public urban lands management. This commission will help to collect funds from different sources (internal and external), signing partnerships with different institutions so that public urban lands are properly managed. The partnership will not only provide financial assistance but may provide technical support useful in managing public urban lands.

Enabled institutions in the land sector are needed in Burundi. This study proposes that land-related institutions require experts and technicians from the region of the East African Community (EAC) who have already made a remarkable pace in land management. These human resources will assist different institutions in Burundi to embark on digitalising land transaction procedures, building capacities of academic institutions that are offering land administration courses, and establishing projects related to systematic land registration and titling. Burundi still has some pieces of land

in urban or rural areas which powerful people can easily grab. If any, the claimant does not have tangible documents for defence in court. The land is considered *terra nullius* (land without owner) and can be used by anyone who feels untouchable by the existing institutions.

Establishing committees at the local level will be a response to the proper management of open spaces, wetlands, and other public urban lands in urban areas. These committees will be transformed into Community-Based Organisations (CBOs) which will decide how these lands can be managed for sustainable urban development. They will decide whether to develop these lands or to protect them from land grabbers who in most cases are coming from outside the neighbourhood. It will be also an opportunity to locally mobilise available funds and human resources to manage the public urban lands. In the Burundi context, it was confirmed that if the public resource is handed over to communities, their management is effective and fruitful. This is attested by the Cooperatives that were created to increase agricultural produce through using the communal land in urban and rural areas.

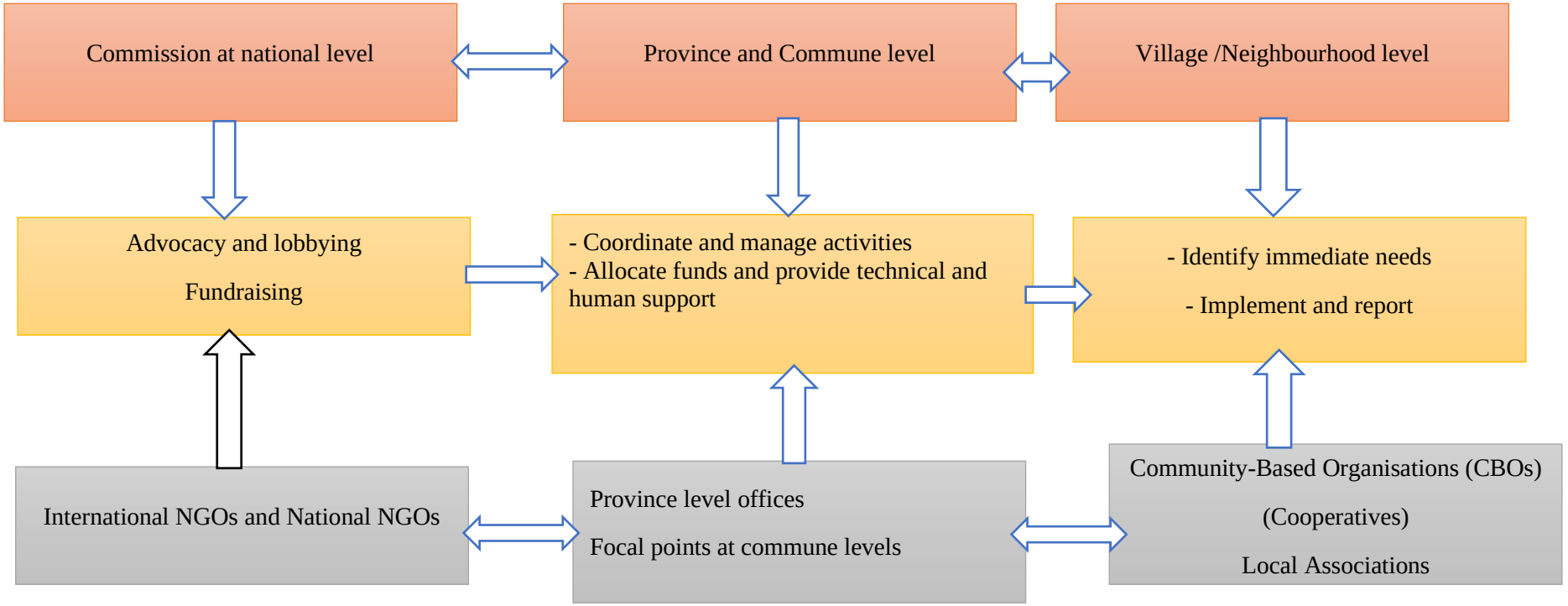


Figure 18: Proposed Competent and Enabled Land-related Institutional Framework
(Source: Group discussions with people living around and in public urban lands, 2022)

5.3.3 Affordable approaches and technologies in managing public urban lands

One of the issues identified with this study was the application of land management approaches that have not been mentioned as affordable whereas they require financial capacity, and qualified and equipped human resources that are not easily mobilised. Other countries in the region (EAC) and in Africa have adopted the participatory approach in land management where local communities have been invited to participate in land issues. However, it is not easy in a country torn by ethnic conflicts where ethnic groups are having land-related conflicts. Similarly, the pro-poor land management that was praised to be affordable to low-income, is not the case in Burundi where more than 70% are suffering from food insecurity in quality and quantity. The approach requires the land owner a monetary contribution to cover some expenditures during land demarcation and title processing.

This is not possible and the experience of development partners that tested it in some communes of Burundi shows that only 15% were able to pay and collect their certificate of ownership at the commune level. Finally, the fit for the purpose that has recently been tested and adopted in different countries such as Rwanda, Ghana, Ethiopia, and the Middle East has shown success if they are well financially supported to recruit land experts and apply new technologies. This approach is also difficult to implement in Burundi. We have seen how the existing land administration system lacks supportive institutions and departments like Cadastre, registry, and LIS.

In Burundi, we need first to address issues related to the cadastre system that is still analog and manual in all processes. Digitalising the cadastre system will help even to embark on other approaches such as fit for purpose where the application of digital equipment and devices are advised. Also, it will assist development partners in land management and link their activities and projects to the national cadastre. This is missing now and NGOs (local and international) are working in isolation. Most of the projects undertaken by NGOs in different communes do not have reference or support from the national cadastre and have no backup for future replication by local experts.

The cadastre system is also in need of experts in all departments who are qualified for their responsibilities. One of the challenges in Burundi is that from independence up to 2019 we did not have a higher learning institution that is teaching land administration

courses. The recent institute was created in 2019 under Nelga-EALAN initiatives which due to Covid-19 did not get further support. It is working under difficulties and challenges such as a lack of qualified lecturers, absence of equipment, and only one department operating instead of the three planned in 2018. There is a need to support this institution especially so that it can produce human resources that can fill this gap. The production of GIS experts, land valuers, land managers, and land surveyors will help to digitalise the land administration system and undertake systematic land registration and titling. This will help to effectively manage public urban lands and other public lands in rural areas. It will also help in addressing land-related conflicts that are observed in different courts of Burundi which have attained 80% of court cases.

CHAPTER SIX

CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Introduction

The major objective of this research is pinned on exploring how land administration can contribute to managing public urban lands for sustainable urban development in Burundi. Bujumbura City has been taken as a case study area. To make land administration effectively manage land, we need to evaluate policies and know how far they are striving to support land management in general and public urban lands in particular. Furthermore, there is a need to assess how the existing land administration system is working to manage some typical public urban lands and find out the shortfalls that are hindering effective public urban land management. Therefore, this chapter gives a summary of key findings and indicates the implications to various key areas of land management. Finally, it recommends further areas of research that are not covered by this study.

6.2 Key Conclusions

This section summarises key findings based on three specific objectives explored in this study and conclusions are outlined accordingly.

6.2.1 Land Acquisition in Public Urban Lands of Bujumbura

The major land acquisition strategy in public urban lands is through purchase. Most of these lands were located in marshlands/wetlands, along the riverbanks, open spaces or lakeshores. There were no legal procedures for the first acquirers to access these lands except encroachment. Land encroached in public urban land was transferred from one individual to another through many ways such as selling and allocation by local leaders. This study concludes the following:

- Majority of landowners are educated people with at least a secondary education. These landowners were informed about these areas and knew why they could acquire land and how to secure titles and other legal documents.
- This majority are working or worked either in the public or private sector

- They are migrants from other provinces whereas the rest are natives who were living around public urban lands
- Public urban lands in the case study have been encroached on from 1993- to date. 1993-2005 was a civil war period where laws were all efforts were concentrated on war. The 2005-to date, there is a deliberate laissez-faire of institutions to allow elites and powerful people to access land in any area.
- Buying and allocation have been used to access land in public urban lands and were motivated by different factors including loopholes in policies and laissez-faire of institutions responsible for land management.
- The public urban lands were before planned for botanical use, refusal and dumpsites, open spaces, riverbanks, and road reserves. Today, these uses have been changed to residential, commercial, or both.

6.2.2 Land Administration System for Public Urban Lands Management in Bujumbura

The existing land administration system in Burundi is viewed as the continuation of colonial land administration arrangements where elites and powerful people have hands on the land. What is different is that there are rules that prohibit it which are not implemented but with the hope that one day they will be implemented and land grabbed from public holdings surrendered to the public. What is also concluded is that the public urban lands have been encroached upon and uses changed. One of the pulling factors is the lack of an updated Master Plan. The outdated master plan of Burundi that is of 1982 was one of the convincing reasons to conclude that the land administration system cannot be responsive in managing public urban lands.

The spatial information about public urban lands does not exist and their uses, values, ownership, and other attributes are not available in the existing land administration system. Consequently, local leaders and powerful people acquire public urban lands informally and illegally, mainly through purchasing and allocation. This affected the urban development sustainability by allowing city expansion haphazardly, jeopardizing future urban functionality and aesthetics. Public urban lands are the most affected among other public land in Burundi. This study shows that in comparison to other countries in the region and globally, public urban lands are the target of encroachment and illegal change of use for different incompatible uses. This has been accompanied

by some observable side effects such as informal settlements, loss of properties, and incompatible uses to adjacent developments.

The cadastre system and registry are also challenged by a lack of experts and technicians in various land offices, urban planning offices, and environmental institutions. To this challenge, we add the inadequacy of equipment that makes the land administration system operate in analogue. Furthermore, the application of new approaches and new technology becomes difficult if not impossible. As a consequence, challenges related to unmanaged land such as public urban lands engender complex problems that include encroachment of public lands, change of uses that are incompatible with existing uses, and then unsustainable urban development.

6.2.3 Shortfalls in Applying Technologies and New Approaches for Managing Public Urban Lands in Burundi

Most of the pitfalls are related to gaps observed in the lack of keeping land offices and land managers updated and prepared for new approaches and technologies. The application of FFP and pro-poor land management has not been used in Burundi as it is in other countries like Rwanda and Ethiopia. The reasons are not far away from the lack of knowledge and building capacity by land officers about the effective approaches and technologies useful for managing public lands. Also, the application of digital instruments for spatial data collection and analysis is not prioritised by governments. The government has left the land sector in the hands of development partners without any follow-up and collaboration for knowledge transfer. It is acknowledged NGOs have been applying new technologies and approaches in some communes(districts) and governments have failed to replicate these technologies and approaches in other communes that are not covered by these NGOs. This is among the pitfalls that hinder effective public urban management. There is no collaboration at the national level among the actors of land management, that is to say, the Government does not support NGOs and Local associations, and there is no platform that puts together land actors in Burundi to work in synergy. Everyone is doing what he/she can.

6.2.4 Legal Text Related to Public Urban Lands Management in Burundi

The management of public urban lands in other countries showed that was supported by focused policies, strategies, and instruments linked directly to land management

within the land administration system. Therefore, the evaluation results show that public urban lands are not effectively managed. Policies recognise the public urban lands and give details on how these lands can be managed. In the case of Burundi, the results from the evaluation by applying CAF on the Land Policy of 2008, Land Code of 2011, Urban Planning and Housing Development Code of 2016, Forest Policy of 2012, and Water Policy of 2009 showed that there are gaps related to managing public land. These gaps include:

- Unfocussed land-related policies: Burundi has many land-related legal frameworks, but they address land issues in isolation.
- Fragmentation of institutions related to land management: This is a major challenge to the successful implementation of the policies. Public urban lands are suffering from encroachment and illegal and informal changes of use despite the existence of institutions.
- Unimplemented strategies and instruments: Burundi has many stations and instruments designed to implement land-related policies, but they are 'white elephant'
- Negligence of the land sector during budget allocation by government and development partner: This is a shared challenge with other developing countries. However, in the Burundi context, the persistence of repetitive civil war and peace instability has given room for the land sector to be of land administration system priority among other sectors.

6.3 Implication of the Results

The findings of this study will be of importance to different people individually by providing knowledge of how the land administration system is in Burundi. In the academic arena, policy formulation, development partners, and other stakeholders will provide information that will be a benchmark for further interventions in the land sector.

6.3.1 Implication to the Academic Arena

This study is one of a small number of PhD theses written on Burundi by a Burundian in land administration. Whereas there exist some PhD studies that were written by PhD candidates in Law and addressing issues of law and legislation in the land, this provides typical insights on land administration. This study provides some information on land

administration that the literature review on Burundi was missing. Researchers, students, teachers, and professionals will refer for some information on managing public urban lands and sustainable urban development.

6.3.2 Implication to Policy

The results of this study show policy-makers that the existence of policies is not an end, but there is a need to evaluate at a specific time to know how far they are meeting the objectives. Therefore, the results from the evaluation will be a basis for policy amendment or reformulate policies that are fit for the purpose and the context. This study shows that having land-related policies and many institutions involved in land management does not mean challenges and pitfalls in the land sector are addressed. Rather, there is a need to know how far they are meeting the objectives formulated. Therefore, this study provides a way forward to how policies should be evaluated the framework, and the areas to evaluate. It is believed by doing so, the existing policies will render what are designed for. If not, the amendment will be proposed accordingly.

6.3.3 Implication of Sustainable Development

Finally, this research is subscribed among researchers that address at the same time more than two goals of SDGs that are Goal 11, Goal 13, and 15. This study discusses many issues related to public urban land with a direct link to having sustainable cities (Goal 11), an indirect link to climate issues (Goal 13), life on land (Goal 15), and having partnerships (Goal 17). It gives insights into how sustainable urban development can be achieved through effective public urban management. It is believed that climate change shocks and stress like floods that cause catastrophes to settlements installed in wetlands will be addressed. Also, by managing public urban lands, life on land will be easy since there are no health risks related to diseases as it is observed in residents who live in wetlands and other public urban areas of developing countries.

6.4 Recommendations for Further Research

The findings in this study have proved the existence of many policies, but fewer outcomes in addressing land issues that include encroachment, change of land uses without following legal procedures, informal settlement, and haphazard urban expansion. Additionally, the lack of an updated Master Plan is linked to the failure of land policies in Burundi. However, there is a need to carry out further investigation to

find out how these issues have affected the physical and social infrastructure of city dwellers. This will help to supplement this study and widen the understanding of economists and politicians of the impact of neglecting the management of public urban lands.

Moreover, this study tried to elucidate how a responsive land administration system is useful in managing public urban lands like wetlands, and in some countries, these lands are shrinking. The case study findings showed that the existing land administration system is not responsive in managing public urban lands. The digitalisation has been one of the major shortfalls that hampered the effectiveness of land administration. The failure of cadastre, registry, and LIS is related to the lack of digitalisation of land sector and application of e-gouvernance in land management. Yet, the initiatives taken by the government of Burundi to make the land administration system responsive in land management (public urban lands) is an area that was not covered due to time and cost constraints. This is another area recommended for further research. Furthermore, there is a need to investigate how much the failure of existing land administration has affected the urban economies and environment setting of Bujumbura.

Finally, this research recommends updating the Master Plan of Bujumbura so that it can serve as a tool for implementing the existing land-related policies. The Government of Burundi is urged to invest in digitalising the land sector to make sure the cadastre, registry, and LIS satisfy the needs of land owners, land managers, and other stakeholders.

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APPENDICES

Appendix 1: Introduction and courtesy letter for all participants and interviewees[17]

Dear respondent,

Prosper Turimubumwe, a PhD candidate in Land Policy and Governance at Bahir Dar University, Institute of Land Administration-Ethiopia has the pleasure of welcoming you to participate in responding to questions related to a study entitled "**Land Administration for Sustainable Urban Development: The Case of Public urban lands in Bujumbura City, Burundi"** which is my PhD research title, supervised by **Prof. Achamyeleh GashuAdam**, and assisted by **Dr. Berhanu Kefale Alemie.**

Questions herein are developed to explore how land administration can assist in managing public urban lands and achieving sustainable urban development. Therefore, we kindly invite you to take time to respond and provide us with your feedback, opinions, and remarks, to the best of your professional understanding in the land administration/urban planning/ cadastre.

The information provided will be solely used for academic purposes and be kept confidential; hence your genuine reflections are vital for the success of this research.

We kindly appreciate your generosity in participating in this research

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Prosper Turimubumwe

[17] This letter applies to all data collection tools engaged in this study.

Appendix 2: Questionnaire for Households Living or Working in Public Urban Lands[18]

General information

Commune…… Date …../…./2021

Zone ……..

Neighborhood name …….

Gender of participant: Male ☐ Female ☐

Age ☐

Part I: Profile of participants (Selected HH settling in public urban lands)

1. What is your level of education? *Wize kugera muwakangahe?*

☐ Primary education: *amashure mato mato*

☐ Secondary education: *Ayisumbuye*

☐ VTE: Ay'Imyuga

☐ Tertiary education: Kaminuza

☐ Not attended any formal education: *Sinize*

2. What is your occupation? *Ukora akazi nyabaki (kagutunze n'umuryango)*

☐ Commerce: *urudandaza*

☐ Civil Servant: *Nkorera Letacanke ishirahamwe*

☐ Farming and livestock keeping: *Ndarima & nkorora*

☐ Informal trading: *Urudandaza rutoruto*

☐ Garage and or related activities: *gukora ibigendeshwa canke akandi kazi bijanye*

☐ Transportation (tricycle -Bajaj, motorcycle, bicyclist, and others): *Ntwara ibigendeshwa*

☐ Others (specify): *ibindi, dondagura*
…….

3. Are you a native of this neighbourhood? *Woba uri imvukira yo ngaha?*

Yes ☐ No ☐

4. When you or your parents settled in this area? *Abavyeyi bawe/canke wewe mwahaje ryari*

[18]Questions are translated in local language to facilitate enumerators and respondents be conversant and feel free to respond fluently.

☐ 1976- 1987: Known as the Great Period of Economic Growth during J.B Bagaza Gvt.

☐ 1987-1993: During Buyoya's First term period

☐ 1993-2005: Civil War period

☐ 2006-2020: After the Civil War

5. What was the use of land when you acquired it? *Aha hantu bahakorera iki*

☐Agricultural use: *Baraharima*

☐ Residential use: *haba abantu*

☐ Solid waste disposal: *Bahamian imyavu*

☐ Bare land: *Ntaco bahakorera*

☐Others, specify: *Ibindi bahakorera tutavuze*
…….....

Part II. Questions on various issues

A. Questions on land acquisition: *Ibibazo bijanye n'ukuntu abantu baronse amatongo*

1**.** How did you get land in this area? *Aha uba waharonse gute?*

☐ By purchase from individuals: *Nahaguriye umuntu*

☐ Inheritance from my family: *Naho nahawe n'unuryango (Abavyeyi)*

☐ Gift from my friend or close family: *Naho nagabiwe n;umugenzi canke incuti*

☐ Allocation by local (informally) : *Nahahawe n'abatware/ umutware*

☐ Allocation by municipal authorities : *Nahahawe na Mairie (nguze canke ngabiwe)*

☐ Others, specify Ubundi buryo, dondagura
……
……

2. If by allocation, elaborate more on the following: *Hamwe yoba yahahawe n'abatware*

a. Was the information about land availability accessible to the public?

Hoba hariho abamenyeko bariko barata amatongo aha hantu?

Yes ☐ No ☐

b. If No, how did you get information about availability of this land?

Hamwe boba bahatanze mw'ibanga, wewe wabimenye gute?

……
……
…….. c. Did you pay anything? *Hari ico woba wararishe/waratanze ngo uronke aha hantu?*

Yes ☐ No ☐

3. Do you think many residents accessed land like you? *Wibazako benshi baronse amatongo nkuko kwawe*

Yes ☐ No ☐

4. If No, how they accessed land and why ?

Hamwe inyishu ari oya, wibazako baronse amatongo mubuhe buryo? Kuberiki

How/Ubuhe buryo/inzira…….……

Why/Kubera iki……..……

C. Questions on tenure security: *Ibibazo bijanye n'umutekano w'amatongo*

1. Do you have any legal document (s) for your plot? *Woba ufise impapuro z'itongo?*

Yes ☐ No ☐

2. If yes, which authority delivered it? *Ari ego, wazikuye he muri aha hakurikira*

☐ Office of registrar/cadastre: *Kuwujejwe kwandika amatongo/ cadatre*

☐ Office of local authorities (Commune level): *kuri Komine/igista c'amatongo*

☐ Purchase contract signed by local leaders and witnesses: *Urupapuro rwubuguzi*

☐ Other authorities, specify: *ahandi, dondagura*

……

3. Is your plot surveyed? *Mbe itongo ryawe rira pimye/riri muri cadastre ?*

Yes ☐ No ☐

4. If Yes, by whom was it surveyed? *Ari ego, ninde yaripimye?*

☐ The municipal surveyor: *Abo muri Mairie*
☐ The private surveyor (hired): *Abo nizaniye bakora kugiti cabo*
☐ Others, specify, *Abandi, dondagura*

……

5.Have you been informed by any authorities that originally; this place was for other use rather than commercial-residential?

Mbe hari umutegetsi/umuntu araza kubabwira ko aha muba ataraho kuba canke kudandariza

Yes ☐ No ☐

6. If Yes, which of the following reason(s) pushed you to live or work here?

Ari ego, ni izihe mpamvu zatumye muguma kuba/gukorera ngaha?

☐ I could not access any other land *Narabuze ahandi noronka itongo*

☐ We do not worry eviction *Ntabwoba dufise ko bazohadukura kunguvu*

☐ I saw other people coming and settling here *Nabonye abandi baguma baza kuhaba*

☐ The municipality recognises our plots by collecting taxes *Turatanga tax muri Mairie*

☐ Other reason, specify *Izindi mpamvu, dondagura*
……
……....

7. Do you feel to have tenure security for your property?

Wumva umutekano w'iri tongo ryawe ukwiye?

Yes ☐ No ☐

8. If No, do you plan: *Ari oya, utegura iki mwibi bikurikira*

☐ To relocate yourself: *kwiyimura nkaja ahandi*

☐ To wait until evection by government

Ndindiriye ndabe ko Leta/Mairie izonyirukana

☐ To open judicial case because I was granted land by competent authorities

Ahubwo nzitwarira Mairie kuko ariyo yahampaye

☐ No action envisaged: *Ntaco nteganya gukora*

D. Questions on urban land use plan and urban development

Ibibazo ku migambi yo gukoresha amatongo yo mubisagara n' niterambere bijanye

1. Do you know that you live in public urban lands. *Woba uziko uba ahantu habujiwe*

Yes ☐ No ☐

2. Do you know that settling or grabbing public urban land is legally prohibited? *Woba uziko kuba canke kwigarurira amatongo n'ibibanza rusangi bibujijwe n'amategeko?*

Yes ☐ No ☐

3. If Yes, what motivated you to live or work here even though you know it is public land?

Hamwe ari ego, nigiki catumye uza kuba canke gukorera aha?

☐ I found other residents: *Nahasanze abandi*/niho navukiye

☐ It is a good location for business: *Ni ikibanza ciza kuru rudandandaza rwanje*

☐ There are no threats to live here: *Nta kibazo mbona kuba/gukorera ngaha*

☐ It was an abandoned land: *Ntaco bahakorera*

☐ The government control of these lands is poor: *Ntabantu/abategetsi bahatubuza*

☐ Others, please specify, *ibindi, dondagura*
……
……

4. Do you access easily within 30 min by walk to the below-mentioned social and physical infrastructure: *woba/abawe mukoresha umwanya uri munsi yiminuta 30 kugira mushike:*

Yes ☐ No☐Schools and healthcare services: *kwishure canke kwa muganga*

Yes ☐ No ☐ Churches and mosques: *kurusengero canke kumusigiti*

Yes ☐ No ☐Public transport: *kugituro c'imiduga rusangi*

Yes ☐ **No** ☐Market places**:** *kw'isoko*

5.Do you face the following challenges due to location of your Neighbourhood

Woba uhura n'ingorane zikurikira bivanye n'aho ubaye?

☐ Long distance from home to working place*: urugendo rure rure kuva muhira uja ahokorera*
☐ Difficulties to reach main road when using vehicles: *Gushikira ibarabara rikuru*
☐ Frequent outbreak of diarrhoea related diseases and Malaria: *Kugwaragurika mumuryango cane cane ingwara zo gucibwamwo na Malaria*
☐ Disturbances related to closeness of houses and incompatible development for residential settlement: *kudateka bivanye ninzu zegeranye caane*
☐ Others, specify, *ibindi, dondangura*
……

6. Have you received any threats any high rank authority asking you to leave this neighbourhood? *Hoba hamaze kuza umutegetsi wo hejuru abasaba kuva ngaha*

Yes ☐ No ☐

7. If Yes, who are they? *Ari ego, ni bande*?

☐ The Ministry of Public Works and Urban planning: *Umushikiranganji w'inyubakwa n'itunganya ry'ibisagara*

☐ The National Security Council: *Komite y'umutekano w'igihugu*

☐ The Ministry of internal affairs and Risk Management: *Umushikiranganji w'intwaro yo hagati no gukinga ibiza*

☐ The Minister of environmental management: *Umushikiranganji w'ibidukikije*

☐ All of them: *Bose baraje*

☐ Others, specify: *uyundi/abandi, dondagura*
……...

8. Why these authorities urged you to leave this neighbourhood?

Wibazako ari izihe mpamvu babasaba kuhava?

☐ It is frequently flooded and cause human and material losses;

Kubera imyuzure ikunze kuhatera igahitana abantu n'ibintu

☐ The area was designed for other uses rather than residential use;

Aha hantu hari hateguriwe gukoreshwa ibindi ntabwo haraho kuba.

☐ Residents threaten the urban sustainability like ecosystem conservation and landscape and built environment maintenance;

Ngo twoba tubangamiye iterambere ry'igisagara nko kubungabunga ibinyabuzima bidukikije ndetse no kubungabunga ibidukikije;

☐ Other reason, specify: *ibindi, dondagura*
……

……
…….

E. Questions on Land Administration services (land related services)

Ibibazo bijanye na servisi zo gutunganya amatongo

1. Have you ever visited the land administration offices?
Woba umaze kuja kwitura mubiro bitunganya amatongo
Yes ☐ No ☐
2. If Yes, which of the following offices you visited? *Ni ikihe gisata wituye*
☐ Office of Registrar: *igisata co kwandika amatongo*

☐ Office of Land: *Igisata c'amatongo*

☐ Office of urban planning: *Igisata kijejwe gutunganya ibisagara*

☐ Office of cadastre: *igisata kijejwe gupima amatongo*

☐ Office of local authorities (for land matter): *ubutegetsi bwo hasi bujejwe amatongo*

3. For what services were you looking for: *Warondera iyihe service*

- ☐ land for purchasing: *Itongo (parcelle) ryo kugura*
- ☐ Land title/certificate (*Icemezo c'itongo*)
- ☐ Technician to survey my plot: *Umuhinga ampimira itongo*: parcelle
- ☐ Assistance to land related conflict: *gusaba ubufasha bw'amatati y'itongo:ikibanza*
- ☐ other service, specify: ibindi, dondagura

……

4. The service you looked for was it related to this property (developed in PUL)

Iyo service warondera yari iyijanye n'iri tongo/ikibanza?

Yes ☐ No ☐

5. If yes, how did you manage to get the services (*you can choose more than one answer*)

Ari ego, vyakugendekeye gute mukugira uronke service

☐ You got service immediately

Naronse service atangorane/ ubwo nyene

☐ You were supported by someone else (elite)

Hariho uwamfashije (umuntu yubashwe)

☐ You arranged yourself with the officers

Hariho ukuntu nabanje kubigenza

☐ If any other, please specify, *ubundi buryo, dondagura*

……

6. In your experience and opinion, how do you rate the service they provided to you when you consider:

Ufatiye ukuntu vyakugendeye, service baguhaye wovugako

A. time spent: *Umwanya wakoresheje*

☐ Excellent: *Nimwiza cane*
☐ Very good: *Mwiza bukebuke*
☐ Good: *mwiza bisanzwe*
☐ Poor: *Simwiza*
☐ Very Poor: *Simwiza na gato*
☐ Extremely poor: *Simwiza biteye n'ubwoba*

B. Cost incurred: *Uburyo bw'amafaranga mwakoresheje*

☐ No cost: *ntakiguzi banyatse*
☐ Average cost: *ibiciro bigereranye*
☐ Low cost: *Ibiciro bito.bisanzwe*
☐ Average cost: *Biragereranye*
☐ High cost: *Ibiciro birebire*
☐ Extremely high cost: *Birazimvye caane gose*

C. Customer caring: ukuntu bakwakiriye

☐ Excellent: *Neza caane gose*
☐ Very good: *Neza cane*
☐ Good: *Neza Bisanwze*
☐ Poor: *Nabi*
☐ Very Poor: *Nabi cane*
☐ Extremely poor: *Nabi cane gose*

7. In order the government to provide various infrastructure and social services, citizens have to pay taxes on properties owned in the urban areas? Did you pay land and other related property tax?

Kugira Leta ishobore kutwubakira amashure, amabarabara n'izindi nyubakwa umunyagihugu ategerezwa gutanga ikori n'amatagisi kunyubakwa eka namatongo ari mugisgara, none, woba uriha ikori canke itagisi y'itongo/ikibanza canke inzu?

Yes ☐ No ☐

8. If Yes, how much and how long have you been paying this tax?.....(ask for receipt if any) *Ari ego, utanga angahe k'umwaka, woba umaze kuyatanga imyaka ingahe? Urafise icemezo?*

9. If No, why you did not? *Ari oya: Kubera iki?*

……
……
…….

10. According to you, is the tax paid fair or unfair for you?

Kubwawe, iyo tagisi uriha irakwiye canke irarenze ubushobozi bwawe

Fair ☐ Unfair ☐

11. If unfair, how much do you propose? *Hamwe yoba irenze ubushobozi bwawe wosaba iki?*

.....
.....

12. Can we assume that the land adaministration systemwhich is in place has failed to manage public urban lands? *Kubwawe, igisata c'amatongo carananiwe no gukingira amatongo ya reta na rusangi*

Yes ☐ No ☐

13. If yes, in which areas it failed: *Ari ego, nihehe ubona ico gisata cananiwe*?

☐ Land recordation and land information management

Kwandika amatongo no kwegeranya ibiyaranga

☐ Parcel boundaries demarcation for individuals and public owned land
Gupima amatongo y'abantu n'aya Leta

☐ Provision of land tenure security to individual and public owned land
Gutanga umutekano wamatongo y'abantu naya Leta

☐ Availing surveyed and serviced land affordable by low- and medium-income earners

Gutunganya amatongo kuburyo abanyagihugu bose bayaronka bivanye n'uburyo baf

☐ Delivering property certificates/titles to property owners on time for secured property transfer of all kind

Gutanga ivyemeza vy'itongo mugihe hose habaye ihererekanya ryitongo iryo ariryo ryose

14. If No, what do you know the system has done to manage the public urban lands?

Ari oya, n'ibiki woba uziko ico gisata cakoze mugukingira amatongo ya leta?

……
……
……..

F. Information about management of public urban lands

Amakuru ajanye no gutunganya amatongo/ibibanza rusangi

1. Which types of public urban lands found near your neighbourhood?
Ni ibihe bibanza/amatongo rusangi ari ngaha iwanyu

☐ Marsh land: *imyonga*

☐ Open space: *Ibibanza bigaragara*

☐ Road reserve: *Ibibanza bibitswe*

☐ Other (Specify) *ibindi, dondagura* a)……...
b)……..
c)……..d)…….e)……
……

2. Can you rate at which level these lands are protected?
Wotubwira ni kuruhe rugero ayo matongo/ ibibanza bikingiweko

☐ Highly protected: *birakingiwe caane gose*
☐ Considerably protected: *Birakingiwe bimwe biboneka*
☐ protected: *Birakingiwe bisanzwe*
☐ less protected: *bikingiwe gake gake*
☐ Not protected: *Ntabwo bikingiwe*
☐ Not protected at all: *Ntivyigeze bikingigwa nagato*

3. Which of the following problems residents in these areas experience?
Mbega , nizihe ngorane abantu babangaha bahkunze guhura nazo muri izi zikurikira?

☐ Floods during rainy season: *Imyuzurira mugihe c'imvura*

☐ Road accidents: *Amasanga yo mwibarabara*

☐ Sanitary problems related to solid and liquid waste management:

ingwara zivuye kw'isuku rike

How do you rate the happening of these challenges?

Kubwawe wogereranyako izingorane zikurikira ziba ryari

A.Flooding: *imyuzurira*

☐ Frequently: *kenshi mumwaka*
☐ Annually: *Burumwaka*
☐ Occasionally? *Rimwe na rimwe*

B. Road accidents: *Amasanganya yo mwibarabara*

☐ Frequently: *kenshi mumwaka*

☐ Annually: *Burumwak*a

☐ Occasionally: *Rimwe na rimwe*

C**.** Sanitary problems related to solid and waste management: *Ingorane zitewe n'isuku rike*

☐ Frequently: *kenshi mumwaka*
☐ Annually: *Burumwaka*
☐ Occasionally: *Rimwe na rimwe*

G. Diseases dominated by malaria, diarrhoea and cholera:
Ingwara zigizwe no gucibwamwo hamwe na Malaria
☐ Frequently: *kenshi mumwaka*

☐ Annually: *Burumwak*a

☐ Occasionally: *Rimwe na rimwe*

4. Do you support the idea that public urban lands have to be protected?
Woba ushigikiye iciyumviro ko ibibanza /amatongo rusangi yokingirwa
Yes ☐ No ☐

5. If Yes, what can be done for these land to be protected?
Ari ego, nibande boyakingira
a…….b…….....

6. If No, why? *Ari oya, kubera iki*?
……
……
…….

7. Have you heard or seen any initiatives envisaged to protect the remaining public urban lands spaces?
Woba umaze kwumva cankekubona imugambi yogukingira ayo matongo/ibibanza
Yes ☐ No ☐

8. If Yes, who were (are) initiators (you can choose more than one answer)
Ari ego, wawumvanye bande canke wabibonye he?
☐ Central Government: *Leta*

☐ Municipality: *Uburongozi bw'igisagara*

☐ Local Government: *Abatware bohasi (abahe)*

☐ NGOs: *Amashirahamwe mpuzamakungu (ayahe)*

☐ Civil society (local associations): *Amashirahamwe y'abanyagihugu (ayahe)*

☐ Individuals (local people): *Abanyagihugu basanzwe? (bande)*

9. What are initiatives that were taken by these initiators
Hamwe hoba hariho ikimaze gukorwa, hoba hakozwe iki mwibi bikurikira?
☐ Record all related information about these piece of lands

Kwegeranya amakuru ajanye nayo matongo/ibibanza

☐ Demarcate the boundaries with beacons

Kuyapima no kwerekana imbibe zayo bashinze ibipoto

☐ Nominate a committee responsible for managing these lands

Gushiraho amakomite ajejwe gukoresha ayo matongo/ibibanza

☐ advocacy for policy formulation or adjustment that can protect these lands

Gushiraho amategeko n'amabwiriza agenga ayo matongo/ibibanza

☐ Sensitization and awareness creation for proper management of public urban land

Kwigisha abanyagihugu ibijanye nikoreshwa neza canke gukingira ivyo bibanza

☐ Others, specify, *ibindi, dondagura*
……
……..

10. . Have you or are you ready to participate and contribute in protecting the remaining public urban lands if any in your neighbourhood once you are asked to do so?

Woba witeguriye gufasha gukingira ibibanza bisigaye mukubikingira?

Yes ☐ No ☐

11. If Yes, what contribution are you ready to offer if it is required by municipality or another competent body

Niyihe mfashanyo witeguriye gutanga mugihe wobisabwa

- ☐ Monetary contribution for managing public urban lands: *gutanga amafaranga*
- ☐ Participate in community works that relate to managing these lands

Kuja mubikorwa rusangi

- ☐ Participate in meetings and awareness creation sessions related to protecting these lands : *Kuja mumanama n'ibiganiro vyo kwigisha ibijanye no gukingira ayo matongo*
- ☐ Provide technical assistance in managing these lands: *Gutanga ubuhinga mfise*

12. Are you ready to hand over the land to the municipality and accept to be relocated to other areas if the government provides you other land?

Wokwemera kwimukira ahandi mugihe wosabwa kwimuka baguhaye irindi tongo

Yes ☐ No ☐

13. If No, why? *Ari oya, kubera iki?*
……
……

G. Questions on role and contribution of the policy frameworks, institutions and stakeholders to the current land administration system:

Ibibazo kuruhare n'intererano z'inzego za politiki, ibigo nabafatanyabikorwa mu mugambi wo gucunga amatongo

a. Land in Burundi is guided by different policies and other regulations, do you know any policy related to land? Mention them

Hariho amategeko agenga amatongo mu Burundi. Ni ayahe woba uzi?

a…….b…….....
.....c…….d……
…….

b. Among the above-cited policies, which one (s) are related to the management of public urban lands?

Nayahe mategeko agenga amatongo/ibibanza rusangi?

……b…….....
.....c……d……
…….

c. Currently, are these policies and regulations adequately protecting public urban lands

Wihweje ubona ayo mategeko haricot afasha mukubungabunga ayo matongo/ibibanza

Yes ☐ No ☐

d. If Yes, why these lands are encroached?

Ari ego, kuki ivyo bibanza baguma babikoresha/bavyihagira

a……b……
…….....c……d……
……..

e. On your opinion, what can be done for these policies to protect these lands against encroachment?

Kubwawe ubona ariki cokorwa kugira ayo mategeko akingire ayo matongo/ibibanza

……
……
……

f. In your neighbourhood or at commune level, do you have a committee or a known person who is in charge of protecting public urban lands like wetlands, open space or riverbank against any mismanagement

Hoba hariho komite ijejwe gukingira amatongo/ibibanza rusangi nk' imyonga, inkombe z'inzuzi,….

Yes ☐ No ☐

g. If No, what do you propose to make sure these lands are properly managed?

Ari oya, ubona hokorwa iki ngo ayo matongo akingirwe?

……
……
……

h. Who do you think can play key role in managing public urban lands

Ni bande wibaza bogira ico bakoze kiboneka mugukingira ayo matongo

- ☐ Local people: *Abanyagihugu begereye ayo matongo*
- ☐ Local leaders: *abatware bo kunzego zo hasi*
- ☐ Local associations: *Amashirahamwe y'abigenga*
- ☐ Central government bodies : *Inzego za Leta*
- ☐ Private sector and NGOs : *amashirahamwe mpuzamakungu*

i. Do you agree that local people (residents) are key stakeholders to properly manage public urban lands like wetlands, open spaces and riverbank?

Woba wemerako abanyagihugu begereayo matongo aribo boba abambere mugukingira ayomatongo

Agree ☐ Disagree ☐

j. If agree, what happens to local people not to be involved in the management of public urban lands?

Hamwe woba uvyemera, nikubera iki ubu ataco bafasha mugukingira ayomatongo

☐ They are neglected by the central government: *Leta irabakumira*
☐ They are not willing to involve in such activities: *Ntabwo bashaka gufasha*
☐ They are not informed on what they can contribute: *Ntabwo baziko bogira ico bafasha*
☐ They participate in the mismanagement: *Bari mubonona/bihagiye ayo matongo*

k. What do you think can be done by these stakeholders to improve the current state of public urban lands especially on their protection?

Niki ubona abofasha mugukoresha/ gukingira ayo matongo/ibibanza bokora

a……
……..b…….

c……
…….d……

1. According to your opinion, do you advise any strategies that can be adopted to develop public urban lands for residential, commercial and offices buildings to have a sustainable urban development?

Kubwawe, ubona hokorwa iki kugira amatongo/ibibanza nkibi kugira akoreshwe neza abantu bayabemwo, bayakoreremwo ataco vyononye.

Yes ☐ No ☐

2. If yes, what are they? *Ari ego, hokorwa iki*?

a……b……
…....c……d……
……

3. If No, agree or disagree the following statements:

ari oya, hakana canke wemere ibi bikurikira?

i. Developing urban public lands is source of informal settlement in Bujumbura

Kwubaka mubibanza rusangi nimwe mumpamvu zo kwubaka muburyo budakurikije amategeko aho nahadakwiye kwubakwa usanga hubatswe

Agree ☐ Disagree ☐

ii. The loss of human and material in Bujumbura caused by inundation can be minimised by protecting public urban lands

Imyuzure yama iba igahitana abantu n'ibintu vyo gwanywa igihe abantu bokingira ibibanza bidakwiye kwubakmwo bakabireka?

Agree ☐ Disagree ☐

iii. The frequent accidents observed along the main roads can be avoided if people cannot exploit the road reserve.

Amasanganya yibonekeza kumabarabara bivanye nukwubaka kunkombe zayo zohera hamwe hoba hakingiwe?

iii. Having a well-functioning land adaministration systemcan minimise the encroachment of public urban lands in Bujumbura.

Iyo igisata c'amatongo kiba gikora neza ibibanza rusangi ntabwo biba vyubakwamwo canke bikorerwemwo ivyo bitagenewe

Agree ☐ Disagree ☐

iv. Urban sustainability in Burundi will be achieved if public urban lands are protected

Iterambere rirama ry'ibisagara rizoshikwako hamwe hokingirwa ibibanza rusangi

Agree ☐ Disagree ☐

If existing policies and regulations guiding land and environment management are implemented and reinforced adequately

Hamwe amategeko agenga amatongo nayo gukingira ibidukikije yokwubahirizwa

Agree ☐ Disagree ☐

Thank you for your collaboration and time

Appendix 3: Questionnaires for officers in urban planning, land management, and Cadastre

A. General information of the respondent

1. Which department are you working in?

i. Urban planning and management ☐

ii. Land management ☐

iii. Environmental and sanitary management ☐

iv. Agriculture and livestock ☐

v. Cadastre and GIS offices ☐

vi. Title, land and other property certification offices ☐

2. How long have you been in this department?

i. Less than 5 years ☐

ii. Between 6-10 years ☐

iii.11 years and above ☐

What is your field of specialisation?

I. Urban planning/town planning ☐

ii. Architecture ☐

iii. Civil Engineering ☐

iv. Surveying and cartography ☐

v. Land management/administration ☐

vi. Natural resource management ☐

3. What is your level of education?

PhD ☐

Masters ☐

Bachelor Degree with 3 years ☐

Bachelor Degree with 4 or 5 years ☐

Secondary school Diploma (Certificate) ☐

Other,
specify……

4. Which position do you hold in your department or office

5. i. Director general ☐
6. ii. Director /Assistant ☐ iii. Head of office ☐
7. iv. Officer ☐
8. v. Technician ☐
9. vi. Field /site agent ☐

B. Questions on land administration of public urban lands

1. According to you, do we have public urban lands in Bujumbura City?
   Yes ☐ No ☐
2. If Yes, how do you see their management
   - ☐ properly managed
   - ☐ averagely managed
   - ☐ poorly managed
   - ☐ I have no information about their current state
3. Within five years ago, have you been involved in the strategy adoption or revision for managing public urban management
   Yes ☐ No ☐
4. If yes, according to different literature, below are the suggested strategies for properly administering or managing public urban lands. Please indicate which of the following you adopted or suggested?

	Strategies for managing public urban lands	Suggested and Adopted	Not suggested	Suggested but not adopted
1	Formulation and adoption of legal frameworks including bylaws that directly protect public urban lands			
2	Inform the public and local leaders about the importance of these lands so that they can fully participate in their protection			
3	Involve various stakeholders and co-ordinate the grassroots level implementation of policies and activities related to the protection of public urban lands for their sustainable utilization, restoration, and development			
4	Surveying and mapping all public urban lands, then keeping information open to all			
5	Put in place committees at national, regional, and local levels plus technical and financial support that are dedicated to managing public urban lands			

6	Integrating public urban lands in urban development agendas as important lands that contribute to ecosystem, economic, social, and political development			

5. It is acknowledged that less than 30% of the world's countries have a complete land administrationsystem capable of supporting the design and implementation of land management activities. Does Burundi belong to the countries with a complete land administration system?

   Yes ☐ No ☐

6. If No, what are the major challenges in the following list
   a. Financial ☐
   b. Technical ☐
   c. Inadequate legal frameworks ☐
   d. Negligence of land sector ☐
   e. Others, specify?
   ……..
7. Has Burundi implemented any programmes or projects targeting mass land recordation for gathering spatial information on parcels in urban areas

   Yes ☐ No ☐

8. If yes, how public urban lands were recorded

   i. As central government lands ☐

   ii. As local government lands ☐

   iii. Lands without specific owner ☐

   In Burundi, do public urban i. Open space ☐

   ii. Road reserves ☐

   iii. Wetlands/marshland ☐

   iv. Steep slop ☐

   v. Beaches ☐

   vi. Parks ☐

   vii. Others, specify ……

9. In your opinion, rank these public lands by the importance of size and explain why?
10. Do you share the same idea with the existing empirical and theoretical findings that public urban lands offer benefits ranging from ecological, economic, social, and aesthetic of urban settings?

Yes ☐ No ☐

11. If Yes, in what aspect do these lands are offering for Bujumbura City's built environment?

    i. Habitat of different and various flora and fauna ☐

    ii. Job opportunities related to tourist and leisure ☐

    iii. Areas of meeting and socialization ☐

    iv. Good scenery, vistas, and green spaces ☐

    v. botanic and waterbodies research sites ☐

12. Does the municipality collect property taxes from these areas?

    Yes ☐ No ☐

13. If Yes, what types of taxes do they pay

……

14. Are you satisfied with the current management of public urban lands in Bujumbura City?

    Yes ☐ No ☐

15. If No, can we conclude that public urban lands are poorly managed in reference to other lands because:

S/N	Causes	Surely true	True	Doubtful
1	Existing institutions do not consider these lands as important to urban sustainability			
2	These lands are not designed for any use and are considered wasteland			
3	These lands are not among the priorities since they lack legal and institutional frameworks to guide them			
4	No one who oversees the contribution of public urban lands to urban sustainability			
5	The local governments are supposed to care of it but are not capable			
6	Other causes that are not mentioned here Specify 1……. 2……. 3…….. 4……			

16. The public urban lands are developed even those that are marginal land and threaten the urban sustainability. Do you agree or disagree with this statement?

Agree on Disagree ☐

17. If agree, how do people access lands

18. i. By purchase ☐
19. ii. inheritance ☐
20. iii. gift ☐
21. iv. allocation by local ☐
22. v. municipal authorities ☐
23. vi. encroachment ☐

24. How your office makes sure these lands are not accessed by anyone?
……
……
…….

25. What do you think are the major causes of land acquirers to search for land in public lands?
……
……
…….

26. What is the dominant development that are found in these lands in the following list?

i. Residential building ☐

ii. Commercial buildings ☐

iii. Administrative buildings ☐

iv. Agriculture activities ☐

v. Sand and aggregate quarrying ☐

vi. Garage and garbage disposal ☐

9. On your opinion, in what do these development activities threaten the urban development sustainability?
……
…

10. Do you think there are still opportunities to stop these development activities in these lands?

Yes ☐ No ☐

11. If Yes, what can be done
    ……
    ……
12. If No,
    why?.....
13. Who do you think can intervene?

==========

Thank you for your time to complete the questionnaire

Appendix 4: Key Informant Interview questions for Authorities working in land administration

A. Questions to Director General of Infrastructure, Equipment and Social Housing; and Director General of Environment, Agriculture, and livestock

1. Which land(s) do you consider as public urban lands in Bujumbura?

2. Is there any department or at least a section in your office that is responsible for managing public urban lands?

3. Who do you think are major stakeholders in managing public urban lands in Burundi and what are their contributions?

4. How do you see the protection of public urban lands in Bujumbura?

5. In reference to your perception, do you believe that managing urban public lands can contribute significantly to achieve sustainable urban development?

6. Generally, how do you see urban planning in Burundi in reference to the existing urban management?

7. How do you see the contribution of the current land policy in managing the public lands?

8. From your experience, which policy directions need to be followed/revised to properly manage urban lands

9. How does your organization deal with public urban land encroachments and mismanagement of these lands in general?

B. Questions to the Urban planning officer, Local authorities, and office of Environment management

1. During land use planning, what are major land use categories?
2. Which pieces of land do you consider as public urban lands?
3. Is there any special treatment or consideration to manage it? If any, how is that?
4. What are the major uses you allow to take place in public urban lands?
5. How and where spatial information of public urban lands can be found?
6. How do you protect these lands or what have you done to protect them?
7. How the public is informed about public urban lands and their benefit of having and protecting public urban lands in urban areas?
8. How your office collaborates with local leaders or local people in protecting these lands?
9. How your office works with other departments as well as other stakeholders in managing public urban lands?
10. What are major problems that your office faces in managing public urban lands?
11. In reference to your experience and knowledge, how do you see the urban planning development in Burundi and its sustainability?
12. How do you prepare land use plans? What was the contribution of the local community during the preparation of the land use plan? What is/are the role/s of your office in managing the public lands?
13. How do you see the efficiency of the current policy in dealing with public lands?

14. What policy directions, institutional reforms and stakeholder roles are you suggesting to improve the current situation?

C. Questions to the National Office of cadastre and Land Title

1. What land do you consider as public urban lands?
2. How can we get complete information about public urban lands?
3. Do all pieces of land that are in Bujumbura city surveyed and registered including public urban lands?
4. To whom are public urban lands registered to (considered as owner or responsible for their management)
5. How local people participate in the existing land adaministration systemand their contribution?
6. How the existing land adaministration systemcontributes in protecting public urban lands?
7. How many land titles/property certificates have you delivered to residents who live in public urban lands?

D. Questions to the Parastatal and Enterprises/companies involved in land management (OBUHA, HYDROCOCO, ECOCOGEM

1. How many Neighbourhoods have you involved in preparing land use planning? (Mention names and the year of preparation)?

2. What pieces of land were you considering as public urban lands?

3. What were standards for each public urban land during land use plans preparation

4. What uses were you planning for these lands?

5. How do you see the uses of these lands now?

6. What is your perception on the protection of these lands?

7. How do you see the neighbourhood (s) you planned in terms of urban development and sustainability?

E. Questions to the Office of Mayor in Bujumbura City

1. Which land do you consider as public urban land?

2. What are benefits of having public urban areas in Bujumbura City?

3. What the city council does to protect public urban lands

4. What are the major challenges you face while managing public urban lands?

5. Are you satisfied with their management? Why?

6. What are the major problems do you observe in the city that are linked to the mismanagement of public urban areas?

7. How do you see urban planning and land adaministration systemin Bujumbura City?

8. How do you see the future of Bujumbura City in terms of urban development and sustainability?

9. How do you explain the current status of public lands in Bujumbra?

10. What are the roles of public lands? Are properly used in line with their roles?

11. What policy, institutional and stakeholders related reforms are suggesting to improve the management of public urban lands in Bujumbura?

Appendix 5: Checklist questions in FGD

A. Guiding question with elders living in public urban lands

1. When have you settled in this area and how was it in terms of physical development

2. Which period between 1993-2005 and 2006-2020this area has been massively developed?

3. How land as accessed in the period 1993-2005 and 2006-2020. Do you see any differences and similarities in approaches and processes used by land acquirers?

4. What are the major problems you face in your neighbourhood related to land that you think are emanating from the location and status of land?

5. How have you attempted to solve them?

6. In what local, central government, and civil society has assisted you to solve the problems

7. How do you see the protection of public lands?

8. Do you think the legal texts are adequate to protect public urban lands?

B. Guiding questions with youths and elders living in and around the public lands

1. What do you know about public urban lands (Wetlands, open spaces and river banks) in your area of residency? Their availability and importance in socio-economic and environmental development.
2. Are you planning to inherit any property in the area? Why?
3. Are you comfortable with your neighbourhood yes or No?

a. If yes, why?
b. If No, what are the major problems you face in your neighbourhood related to land that you think are emanating from the location and status of land?

4. How have you attempted to solve these problems?
5. In what local, central government, civil society, and NGOs assisted you to solve the problems?
6. Do you think the legal texts are adequate to protect public urban lands?
7. How do you see the protection of public lands in your neighbourhood and the city of Bujumbura?
8. Do you think that public lands will disappear in Bujumbura? What will be the consequences to the urban sustainability?
9. How do you see the future of the city considering how the public lands are managed?

Appendix 6: detailed timetable of data collection activities

S/N	Activities	30 Dec'2018-4Jan'2019	4 Jan'-30 Apr'2021	May2021-Dec'2021	1st Jan2022 – 30 Apr'2022	May 2022-Dec'2022	Jan'2023-Dec'2023	Jan'2024-Aug'2024
Phase one: Pre-field activities								
	Transact walk							
1	Literature review							
2	Article concept notes							
3	Data collection tools preparation							
Phase two: Field activities								
4	Data collection							
5	Data scrutiny							
Phase three: Post field activities								
7	Data analysis							
12	Paper writing and submission							
13	Report writing (Thesis compilation)							
14	Draft Thesis submission and internal defence							
15	Final Thesis submission Defence of thesis							

Appendex7: Authorisation letters for conducting questionnaires, interviews, and FGD in Burundi

A. Introduction letter from the University of Burundi[19]

Faculté des Sciences de l'Ingénieur (FSI)
B.P. 2720 Bujumbura
Bujumbura – Burundi
UNIVERSITE DU BURUNDI

V/R : _____ Bujumbura, le 04/06/2021

N/R : 2021/DFSI 424.

ATTESTATION A QUI DE DROIT

Je soussigné, NIYONGERE Abraham, Doyen de la Faculté des Sciences de l'Ingénieur à l'Université du Burundi, atteste par la présente que **Monsieur Prosper Turimubumwe**, Maître-Assistant à la Faculté de Science de l'Ingénieur (FSI) est régulièrement inscrit en thèse doctorale à l'Université de Bahir Dar en Ethiopie (Bahir Dar University Institute of Land Administration, Ethiopia).

Son projet de thèse de doctorat porte sur « ***Land Administration for Sustainable Urban Development : The case of public urban lands in Bujumbura City, Burundi*** ».

Dans le cadre de ses travaux de recherche et de terrain, le doctorant aura besoin des données et information en provenance des autorités municipales et locales, des représentants des associations ou ONG concernées par la gouvernance foncière et gestion de l'environnement au niveau national et local ainsi que les chefs de ménages sélectionnés pour participer dans cette recherche. Par conséquent, je vous saurai gré de lui faciliter l'accès à la documentation pertinente en rapport avec son domaine de recherche.

Il va sans dire que l'intéressé se conformera aux lois et règlements régissant l'accès à la documentation dans le cadre de la recherche scientifique ainsi qu'aux dispositions particulières éventuelles régissant l'accès à l'information dans votre institution.

Doyen de la FSI,

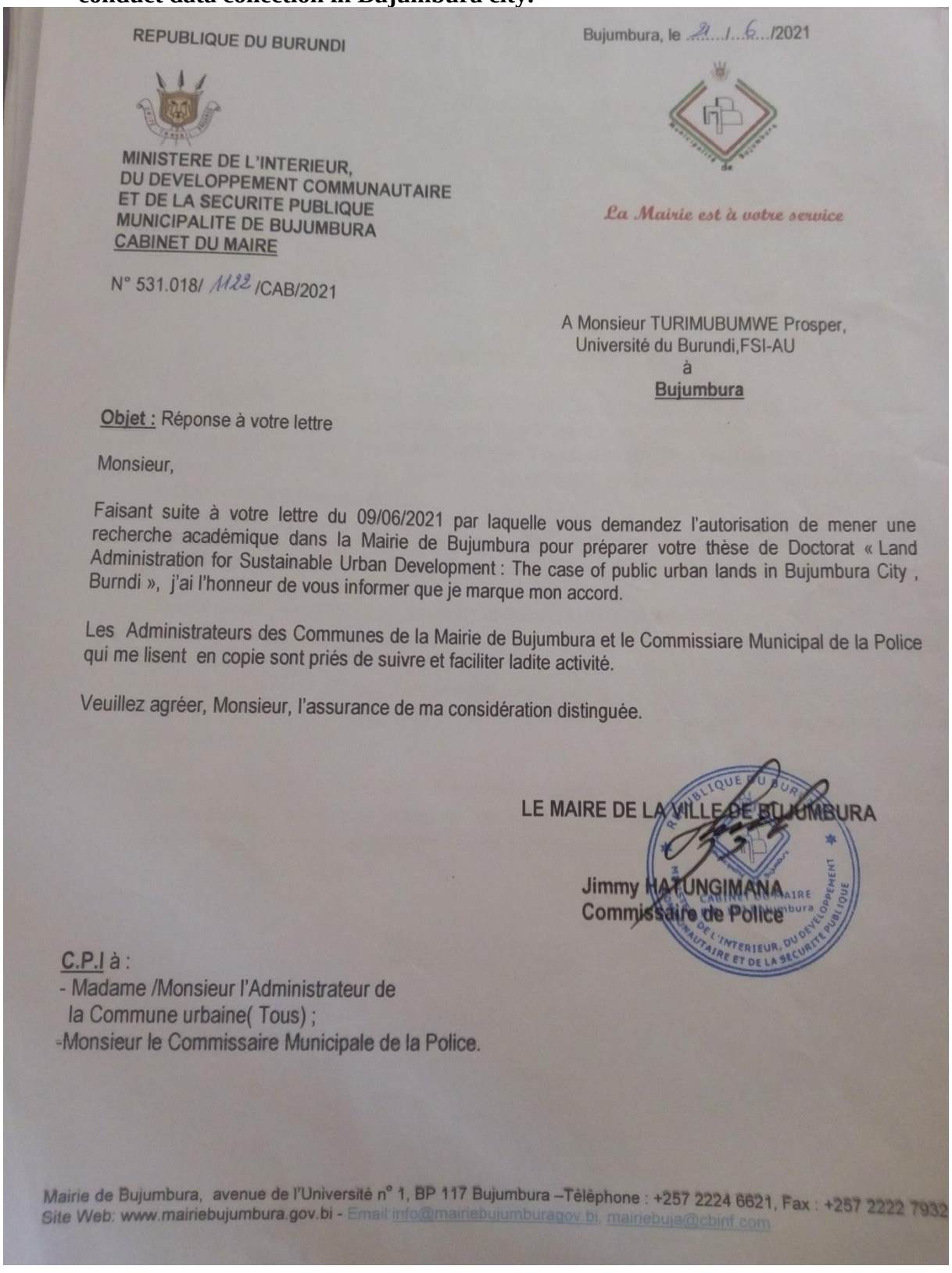
Dr-Ir NIYONGERE Abraham

Tél : (257) 22 22 48 82
(257) 22 22 47 94

E-mail : fsi-info@ub.edu.bi
Site web : fsi.ub.edu.bi

[19] It introduces me as Burundian, University Assistant lecturer, and PhD candidate who is in study leave authorised by the University.

B. Acceptance letter from Mayor's Office of Bujumbura City Council to conduct data collection in Bujumbura city.



REPUBLIQUE DU BURUNDI

Bujumbura, le 21/6/2021

MINISTERE DE L'INTERIEUR,
DU DEVELOPPEMENT COMMUNAUTAIRE
ET DE LA SECURITE PUBLIQUE
MUNICIPALITE DE BUJUMBURA
CABINET DU MAIRE

La Mairie est à votre service

N° 531.018/ 1122 /CAB/2021

A Monsieur TURIMUBUMWE Prosper,
Université du Burundi,FSI-AU
à
Bujumbura

Objet : Réponse à votre lettre

Monsieur,

Faisant suite à votre lettre du 09/06/2021 par laquelle vous demandez l'autorisation de mener une recherche académique dans la Mairie de Bujumbura pour préparer votre thèse de Doctorat « Land Administration for Sustainable Urban Development : The case of public urban lands in Bujumbura City , Burndi », j'ai l'honneur de vous informer que je marque mon accord.

Les Administrateurs des Communes de la Mairie de Bujumbura et le Commissiare Municipal de la Police qui me lisent en copie sont priés de suivre et faciliter ladite activité.

Veuillez agréer, Monsieur, l'assurance de ma considération distinguée.

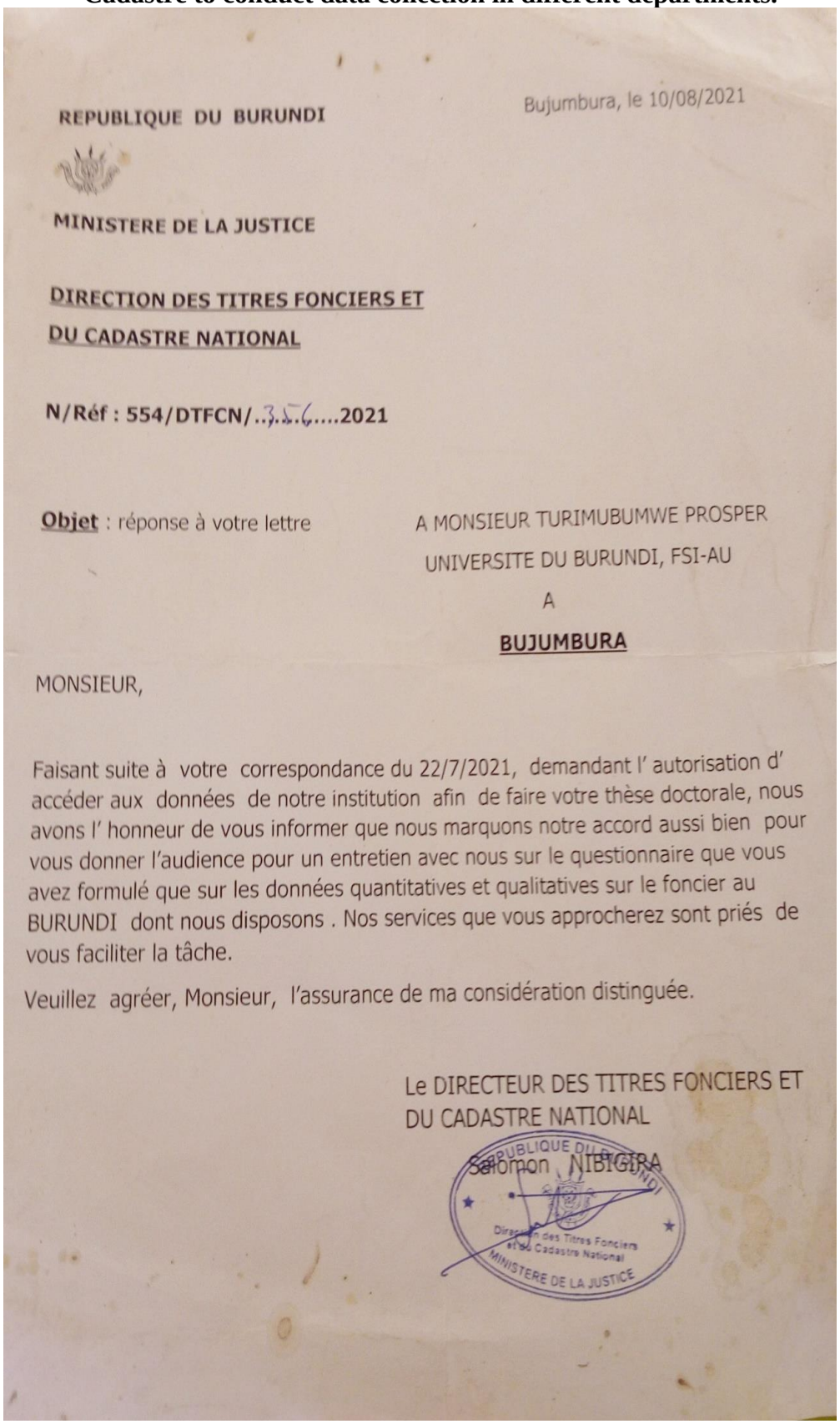
LE MAIRE DE LA VILLE DE BUJUMBURA

Jimmy HATUNGIMANA
Commissaire de Police

C.P.I à :
- Madame /Monsieur l'Administrateur de la Commune urbaine(Tous) ;
-Monsieur le Commissaire Municipale de la Police.

Mairie de Bujumbura, avenue de l'Université n° 1, BP 117 Bujumbura –Téléphone : +257 2224 6621, Fax : +257 2222 7932
Site Web: www.mairiebujumbura.gov.bi - Email info@mairiebujumburagov.bi, mairiebuja@cbinf.com

C. Acceptance letter from the General Directory of National Land Title and Cadastre to conduct data collection in different departments.



REPUBLIQUE DU BURUNDI

MINISTERE DE LA JUSTICE

DIRECTION DES TITRES FONCIERS ET
DU CADASTRE NATIONAL

N/Réf : 554/DTFCN/..356....2021

Bujumbura, le 10/08/2021

Objet : réponse à votre lettre

A MONSIEUR TURIMUBUMWE PROSPER
UNIVERSITE DU BURUNDI, FSI-AU
A
BUJUMBURA

MONSIEUR,

Faisant suite à votre correspondance du 22/7/2021, demandant l' autorisation d' accéder aux données de notre institution afin de faire votre thèse doctorale, nous avons l' honneur de vous informer que nous marquons notre accord aussi bien pour vous donner l'audience pour un entretien avec nous sur le questionnaire que vous avez formulé que sur les données quantitatives et qualitatives sur le foncier au BURUNDI dont nous disposons . Nos services que vous approcherez sont priés de vous faciliter la tâche.

Veuillez agréer, Monsieur, l'assurance de ma considération distinguée.

Le DIRECTEUR DES TITRES FONCIERS ET
DU CADASTRE NATIONAL

Salomon NIBIGIRA