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Utilization of Cadastral Records for Effective Resolution of Land Expropriation Challenges: Insights from Musanze District, Rwanda

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Abstract

The study examines the utilization of cadastral records to mitigate the obstacles associated with land expropriation in Musanze District, Rwanda. Land expropriation is commonly carried out to support infrastructure development; however, it often encounters challenges such as inadequate compensation and lack of transparency, particularly in developing regions. This research focuses specifically on Musanze District and offers practical insights into how cadastral records can enhance the fairness and efficiency of the expropriation process. The study employed a descriptive design, utilizing both qualitative and quantitative data collection methods. These methods included interviews and questionnaires administered to 35 respondents who were directly impacted by land expropriation. The findings highlight the crucial role of cadastral records in clarifying property boundaries, ensuring equitable compensation, and promoting transparency in land-related procedures. Despite persistent challenges such as disputes over land tenure and limited awareness of national land policies, the study emphasizes the

potential of cadastral records in addressing expropriation challenges. The study recommends promoting land registration, improving public understanding of land laws, and fostering collaboration between citizens and the government to streamline land administration services. By integrating cadastral records into land management systems, the study advocates for securing land tenure and facilitating equitable land expropriation, which can contribute to sustainable development in Musanze District and similar contexts throughout Africa.

Keywords: Cadastral records, expropriation, compensation, Rwanda

Introduction

Background

The Land has always been a pivotal element in societies' socioeconomic framework, serving as the primary source of wealth and a symbol of power and stability. Land ownership and management history is as ancient as human civilisation, with cadastral records playing a critical role in defining and protecting land ownership rights. This paper delves into the crucial interplay between cadastral records and land expropriation processes, focusing on the Musanze District in Rwanda as a case study.

Cadastral records, which serve as an authoritative record of land ownership, date back to the earliest civilisations, including the Royal Registry of Ancient Egypt in 3000 BC and the land survey records in China around 700 AD. These records were instrumental in tax collection, land management, and establishing a recognised system of land ownership (James, 1972; Ting, 2001). The significance of these records has evolved over the centuries, especially in addressing contemporary challenges associated with land expropriation.

Land expropriation refers to the process by which a state or an entity authorised by the state forcibly acquires private land for public use, ideally compensating the landowner fairly. This practice, known as eminent domain or simply taking in various jurisdictions, is a potent tool for implementing land policies and facilitating public interest projects such as infrastructure development (Alterman, 2012; Barklem, 2011). However, the execution of appropriation has been fraught with challenges, particularly in developing countries like Rwanda, where issues of fair compensation, transparency, and the impact on affected individuals' socio-economic conditions are prevalent.

In Rwanda, land expropriation has been a cornerstone of land policy, facilitating urban and rural infrastructure development. Despite its intentions, the process has sparked increasing societal

opposition and complaints, underpinned by inadequate fair compensation and transparency. The crux of the issue lies in the inaccurate reflection of market values and the adverse effects on the livelihoods of those primarily dependent on the land (Goodfellow, 2014).

Cadastral Records' role in this context is to provide a reliable database for fair compensation and streamline the expropriation process by ensuring clarity and accuracy in land ownership details. This study focuses on the Musanze District, utilising the conceptual model of an easy-to-understand cadastre to explore the integration of cadastral systems into the land expropriation framework (McGinnis, 2014).

The process of land expropriation in Rwanda, particularly in the Musanze District, is burdened by significant challenges that undermine the effectiveness and fairness of the procedure. Key issues include the inaccurate reflection of land values, insufficient compensation, and the resulting socio-economic ramifications for the affected landowners. These challenges are compounded by inadequate use or outright neglect of cadastral records, which could otherwise offer a more equitable and efficient expropriation process. The resulting dissatisfaction and disputes affect individual landowners and pose a broader societal risk, fueling unemployment and poverty among those reliant on land for their livelihood (Enemark, 2014).

The research objectives are twofold: firstly, to evaluate the current state of cadastral records in Musanze District and identify gaps in the existing land management system, and secondly, to propose recommendations for enhancing the utilisation of cadastral records to improve land tenure security, streamline land expropriation processes, and mitigate disputes over land ownership. By achieving these objectives, the study aims to provide valuable insights that can guide policy interventions and practical strategies for addressing land expropriation challenges in the Musanze District and similar contexts across Africa (Chigbu et al., 2019).

This research hypothesised that using accurate and up-to-date cadastral records in the land expropriation process in Musanze District, Rwanda, significantly reduces tenure disputes, enhances the transparency of compensation procedures, and improves the efficiency and fairness of the expropriation process.

Literature review

The literature review explores the transformative potential of cadastral records in mitigating land expropriation challenges, focusing on Musanze District, Rwanda. This analysis emphasises the importance of formalising land rights through cadastral surveys and record-keeping, highlighting how ambiguous land tenure systems and inadequate record-keeping practices lead to disputes and inefficient land use, thereby impeding economic development and fostering social tensions (Çağdaş & Stubkjær,

2009). The comprehensive documentation provided by cadastral records is crucial for verifying land ownership and ensuring fair compensation for landholders, thereby safeguarding against unjust takeovers (Çağdaş & Stubkjær, 2009).

The paper explores the integration of cadastral information with Building Information Modeling (BIM) and Geographic Information Systems (GIS), illustrating how this integration enhances the representation and visualisation of 3D cadastral boundaries and supports improved decision-making processes in land administration (Sun et al., 2019). The literature review underlines their integral role in land valuation, taxation, and ownership disputes by examining the role of cadastral records across different jurisdictions and considering the historical evolution of cadastres. It also highlights their relevance in urban planning, land use management, and sustainable development, thereby broadening the scope of the discussion (Wijenayake, 2015; Leslie, 2007).

The paper strongly emphasises the importance of just and prior compensation when discussing the legal frameworks surrounding expropriation. This principle is crucial in ensuring the equitable treatment of landowners during land acquisition for public projects (Dolzer, 2002; Scheiber, 1973; Mugisha, 2015). The utility of cadastral systems extends beyond documentation, proving instrumental in urban planning, development financing, and property taxation (Merrill, 2002; Kumar, 2013).

The paper also considers the cadastral-based challenges of expropriation within the Rwandan context, highlighting the effects of new land use plans and the importance of assessing fair compensation in alignment with legal provisions (Republic of Rwanda, 2005; Republic of Rwanda, 2015; Huggins, 2010). Through a comprehensive examination of cadastral records' impacts, both positive and negative, on land expropriation challenges, the paper suggests potential solutions for effective cadastral recording, including the trend towards 3D registration and the enhancement of spatial uncertainty perception (Williamson et al., 2010; Lemmen, 2012; Goodchild, 2010; Haubrich & Müller, 2014).

Methodology

The study conducted in the Musanze district in Rwanda employed a descriptive research design to investigate compensation payments to expropriated individuals within the cadastral system (Yacim et al., 2021). The research utilised qualitative and quantitative data collection methods, including interviews, questionnaires, focus group discussions, and observations (McGehee & Andereck, 2004). Primary data were collected through interviews with key stakeholders and expropriated persons, while secondary data were obtained from various published materials (Waligo et al., 2013). The study used purposive sampling to select 35 respondents directly impacted by land expropriation to ensure the study's relevance to its objectives (Yacim et al., 2021).

Data analysis involved editing, coding, and tabulating collected data, with descriptive statistics used to present findings in tables and figures (Yacim et al., 2021).

The study's focus on compensation for expropriated individuals aligns with the broader context of land expropriation challenges faced in the Musanze district, characterised by a high population density and involvement in cadastral recording activities (Waligo et al., 2013). By concentrating on stakeholders directly affected by land expropriation, the research aimed to provide a comprehensive understanding of the impact of the cadastral system in the region (Yacim et al., 2021). I am using qualitative and quantitative data collection methods to allow a nuanced exploration of the compensation process and its implications for expropriated persons in the Musanze district (McGehee & Andereck, 2004).

In conclusion, the study in the Musanze district employed a robust methodology combining various data collection techniques to delve into the complexities of compensation payment to expropriated individuals within the cadastral system. The research contributes valuable insights into compensation dynamics in such contexts by focusing on a region grappling with land expropriation challenges.

Results and Discussion

Profile of Surveyed Respondents

The study was conducted in the Musanze district of Rwanda, and 35 respondents were surveyed to explore utilising cadastral records in addressing land expropriation challenges. The respondents were categorised based on gender, marital status, education level, occupation, and land use types affected by expropriation.

Gender Distribution

The survey revealed that 71.4% of the respondents were male, while 28.6% were female. This analysis aimed to compare how male and female respondents approach family challenges and property control, considering the societal roles typically associated with each gender.

Marital Status Breakdown

Among the respondents, 74.3% were married, while 25.7% were single. The study investigated the effectiveness of addressing expropriation challenges based on marital status, highlighting that married individuals often exhibit better strategies in handling such issues due to their stable residence and family ties.

Educational Background

The educational distribution indicated that 48.6% of respondents were illiterate, 25.7% had primary education, 20% had secondary education, and 5.7% had university education. This analysis aimed to assess the respondents' familiarity with legal rights in appropriation and the significance of cadastral records in addressing such

challenges, emphasising the impact of education on effectively navigating land-related issues.

Occupational Diversity

Regarding occupation, 48.6% of respondents were farmers, 40% were business owners, and 11.4% were civil servants. The study explored how different occupational groups resolve land-related issues, highlighting that business-oriented respondents, who often move across areas, face challenges in addressing property issues efficiently.

Affected Land Use by Expropriation

This research study investigated the impact of expropriation activities on land use in Musanze District, specifically within the sectors of Muhoza, Busogo, Cyuve, and Kimonyi from 2015 to 2021. The study aimed to assess the changes in land use resulting from projects initiated for public interest through expropriation. The respondents were surveyed to determine the extent of losses experienced by individuals whose land was expropriated. The findings revealed that commercial land use was the most affected among the expropriated individuals.

The data presented in Figure 1 indicated that the projects planned in the study areas affected various land uses. Of the 19 land parcels surveyed, 20.93% were residential areas with houses, 48.84% were commercial areas with shops, and 30.23% were agricultural lands cultivating crops like maize, beans, and potatoes. Most of the expropriated land parcels were situated in Musanze District, an urban area undergoing infrastructure development, including roads and office buildings.

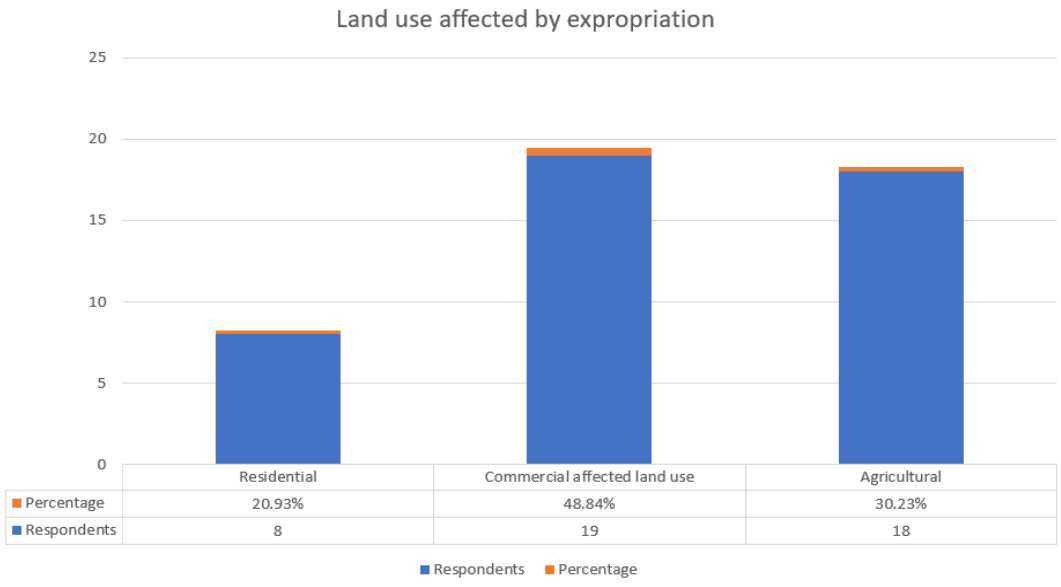


Figure 1. *Land use affected by expropriation*

For example, in the Muhoza sector, the construction of the Bereshi-Sonrise road project led to the expropriation of eight individuals who were compensated within 84 days. Among the fifteen expropriated persons, nine were safeguarded by cadastral records as they had already registered their land. However, one individual did not receive compensation for being expropriated due to failure to register their land. This study provides valuable insights into the impact of expropriation activities on land use in Musanze District. It highlights the importance of proper land registration in safeguarding individuals' property rights during expropriation. The findings emphasise the need for effective compensation mechanisms and adherence to legal procedures to protect the rights of individuals affected by expropriation.

Role of Cadastral Records

Figure 2 shows the crucial role of cadastral records in administrating the Musanze district's land. These records are essential for legal boundary determinations, supporting property subdivisions and boundary demarcations, aiding in expropriation procedures, and creating cadastral maps. Data analysis reveals the multifaceted contributions of cadastral records in the region: facilitating property subdivision (33.33%), assisting in boundary demarcation (41.66%), supporting expropriation procedures (16.66%), and managing accurate property information (8.33%). This finding aligns with the works of James (1972) and Ting (2001), who emphasise the significance of cadastral records in ensuring secure land ownership rights and effective land management practices. James (1972) and Ting (2001) provide historical context to the evolution of cadastral records, emphasising their foundational role in the ancient and medieval periods in tax collection, land management, and ownership recognition. This background establishes the enduring significance of cadastral records in modern land administration systems, underpinning their application in contemporary challenges such as land expropriation.

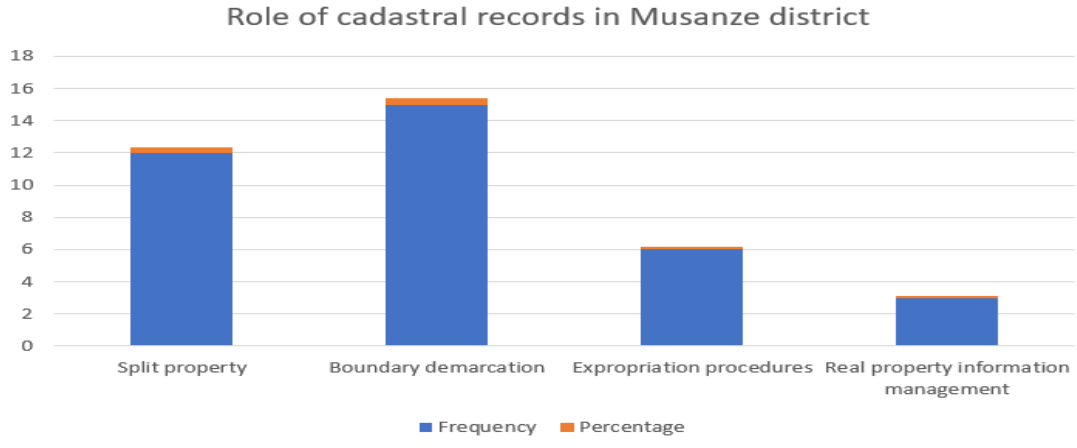


Figure 2. Role of cadastral records

The Research highlighted the significant role of cadastral records in the Musanze district. Cadastral records are necessary to help determine the boundary of real property on the ground. Especially for this research, the researcher looked at how cadastral records help to work in favour of the people in terms of receiving just/fair compensation when the government or private investors are doing expropriation. In addition, Cadastral maps are an essential part of the land management infrastructure. When the citizens know this, it helps them justify themselves when any cadastral-related challenge occurs. Cadastral records clarify property boundaries, ensure fair compensation during expropriation, and enhance transparency in land-related processes.

Land expropriation challenges in Musanze district

Examining land expropriation challenges within Musanze District reveals significant issues grounded in the insights from surveyed sector land managers. Predominant challenges highlighted are tenure disputes (36.36%), low levels of literacy (54.54%), and awareness of land policy (9.09%), which affect individuals and families (fig.3).

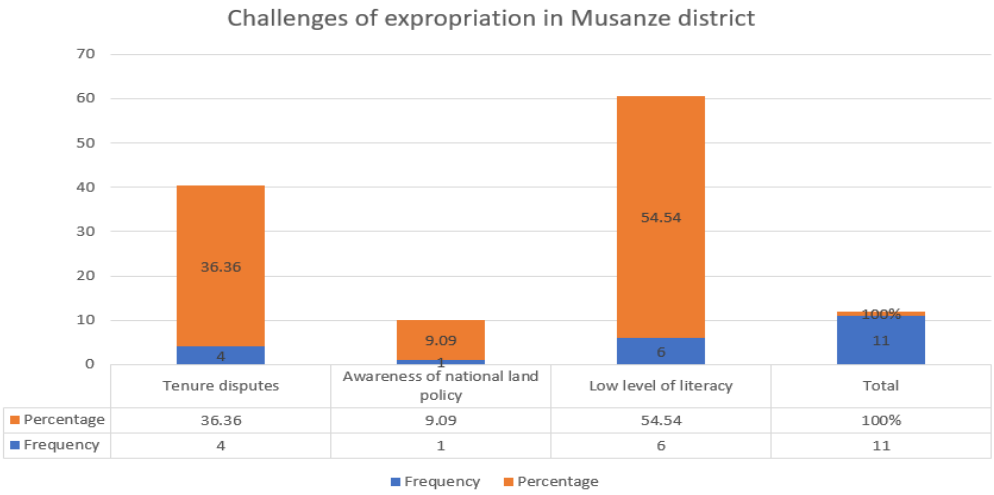


Figure 3. Challenges of expropriation in Musanze district

Respondents identified that many land parcels are subject to caveats due to tenure disputes and ongoing conflicts. This situation complicates the compensation process, potentially delaying payments and fostering tensions between authorities and the community. A substantial portion of respondents (54.54%) emphasised that individuals with limited literacy skills face difficulties comprehending the reasons behind land takeovers and their associated benefits. Communicating the purpose and implications of expropriation to illiterate individuals without relying on written

documentation can significantly prolong the process and hinder effective communication.

Additionally, 9.09% of participants noted a lack of awareness regarding the national land policy. The core aim of the national land policy—to foster a secure land tenure system, promote optimal land resource utilisation, and support socio-economic development without compromising environmental sustainability—remains elusive to some. Enhancing understanding of these objectives could significantly improve cooperation between citizens and the government.

Role of Cadastral Records in Addressing Land Expropriation Challenges

Discussions with residents and local leaders explored the role of cadastral records in mitigating land expropriation challenges in the Musanze district. The findings highlighted the significant impact of cadastral records in addressing various obstacles encountered during land expropriation processes (fig.4).

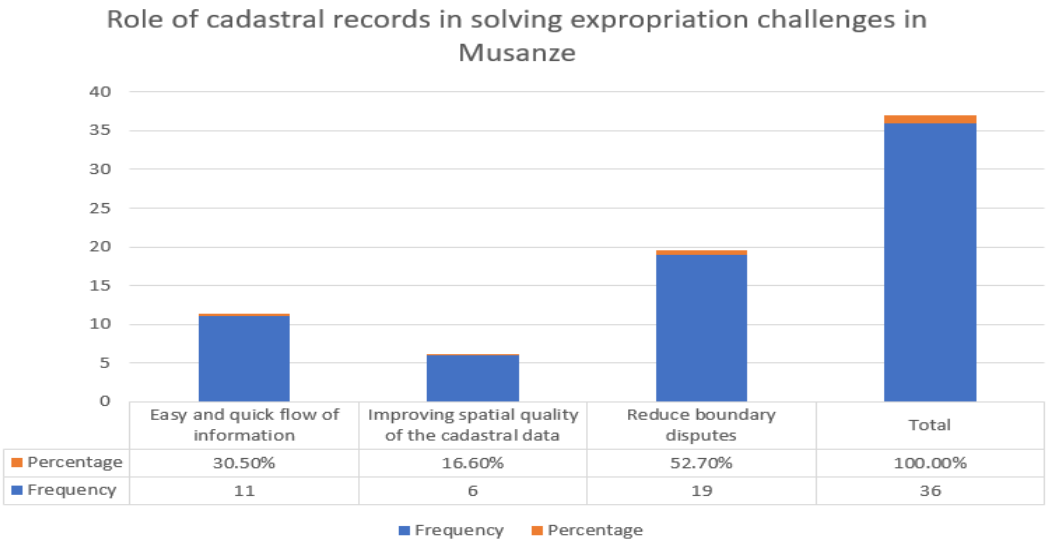


Figure 4. Role of cadastral records in solving expropriation challenges in Musanze

Figure 4 indicates that one crucial role identified during this research was facilitating an easy and rapid flow of information, as highlighted by 35.50% of respondents. Cadastral records enable authorities responsible for expropriation to access essential data swiftly, aiding in identifying areas for expropriation and providing comprehensive information necessary for decision-making.

Moreover, 16.60% of participants emphasised that cadastral records enhance the quality of stored cadastral data. Continuous recording and updating of cadastral

information ensure accuracy and relevance, enabling fair compensation during expropriation by utilising correct and up-to-date data. Another vital function of cadastral records identified by 52.70% of respondents is the reduction of boundary disputes. By providing clear and accurate information on property boundaries, cadastral records help prevent conflicts and delays arising from boundary-related disputes during expropriation processes.

The research identified that cadastral records could mitigate challenges in the land expropriation process, highlighting the need for accurate and up-to-date records. Enemark (2014) and Chigbu et al. (2019) provide insights into the role of cadastral records in addressing challenges during land expropriation, highlighting the importance of maintaining accurate and current cadastral data.

Advice from discussions with Musanze district inhabitants emphasises the importance of landowners ensuring their properties are legally registered in their names, accompanied by valid documentation. This proactive measure is crucial for asserting ownership rights and seeking rightful compensation, including market value appraisals, legal expenses, and relocation costs. Assigning these rights and receiving fair compensation becomes a formidable challenge without correct registration and cadastral documentation.

As highlighted above, cadastral records serve as a cornerstone for addressing and overcoming the hurdles of land expropriation in the Musanze district. By fostering transparent, efficient information exchange, ensuring the integrity of cadastral data, and minimising disputes over property boundaries, these records significantly contribute to fair and just expropriation processes.

Conclusions and Recommendations

Conclusion

The study examined the role of cadastral records in solving land expropriation challenges in Musanze district, Rwanda. The results show that expropriation is often delayed in compensating the affected landholders. The leading cause of these challenges is the lack of required documents, many of which are cadastral-related. Additionally, the expropriated persons are not entirely familiar with the expropriation procedures as stated by the law, and it takes time to gather all the necessary documents. The study concludes that the affected landowners should ensure the cadastral information in the system is accurate, as this can prevent delays in the compensation process. Finally, the study emphasises that takeover is crucial for government projects that benefit the public, and cadastral records play a vital role in ensuring a fair process.

Recommendations

Recommendations to the Land Holders

To minimise the challenges of land expropriation, recommendations for landholders are:

- *Importance of Registering Land Changes:* Landowners should prioritise registering any changes on their land to ensure that land records are updated. This practice maintains current and relevant land information essential for effective land administration.
- *Understanding Land Laws and Policies:* Landholders are encouraged to educate themselves on the laws and policies governing land in Rwanda. This knowledge equips them to understand their rights, obligations, and responsibilities concerning land ownership, facilitating compliance with legal requirements.
- *Reporting Land Changes to Authorities:* Landholders are recommended to report any modifications or developments on their land promptly. This proactive approach supports continuously updating land administration records, ensuring the security of land rights and preventing discrepancies in property information.
- *Promoting Land Registration and Document Safekeeping:* Advocating for land registration and the proper safekeeping of related documents can significantly reduce the incidence of tenure disputes. Such proactive measures ensure smoother land administration services and foster a cooperative relationship between the public and the government.
- *Collaborating with authorities during expropriation:* Landowners who ensure accurate registration and documentation are better positioned to assert their rights and collaborate effectively with authorities during expropriation.

Recommendations to the Government of Rwanda

The government, through the Rwanda National Land Authority (NLA), should encourage and improve collaboration among authorised agencies to manage land administration records effectively. The government should also continue to decentralise NLA staff locally to increase sensitisation and awareness among landholders about the benefits of expropriation, helping them address their challenges.

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