# Housing Affordability in Rwanda

Analysing the Impact of the Government's Affordable Housing Schemes on Housing Affordability in Rwanda and Targeted Households

Callixte Dushimiyimana

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Supervisor: Helena Bohman - Associate Professor/Senior lecturer

# Abstract

Many developing countries are undergoing rapid urbanization which often outpaces affordable housing development, aggravating housing shortages. To address this, some governments initiate affordable housing schemes, aiming to provide low-income households with access to affordable housing. This thesis examines the impact of government affordable housing schemes on housing affordability in Rwanda, focusing on their distributional impact and their targeted households. Using a mixed-methods approach, this study analyses data from the fifth Integrated Living Conditions Survey (EICV5) to investigate income distribution, housing expenditure patterns, and expenditure-to-income ratios across different population segments and geographical regions. Complemented by a review of government policies and institutional frameworks, the study contextualises its findings within consumer theory, New Institutional Economics (NIE), and Housing Supply Value Chain frameworks.

The analysis reveals significant disparities in income and expenditure-to-income ratios (EIR) among households across different deciles and geographical regions. These variations are shaped by factors such as household economic capacity, institutional frameworks, housing supply value chain, and regional population density. The study emphasizes the importance of strict eligibility criteria for beneficiaries of affordable housing units set by the government of Rwanda to maintain long-term affordability and prevent speculation in government-supported projects. However, variations in target beneficiaries, income requirements, and housing costs across the ongoing affordable housing projects highlight the complexity of defining and implementing affordable housing in Rwanda. Some projects target displaced households, while others target higher-income brackets, challenging the local definition of affordable housing. This master's thesis sheds light on the distributional impact of government affordable housing schemes in Rwanda, highlighting the challenges and opportunities in ensuring housing affordability for low-income households amidst rapid urbanization and evolving housing dynamics.

**Key Words: A**ffordable Housing, Expenditure-to-Income Ratio, Urbanization, Housing Affordability, Rwanda, Household Housing Expenditure, Housing Supply Value Chain

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# Chapter 1. Introduction

The world is facing rapid urbanization. The global urban population share increased from 43% in 1993 to 55% in 2016, with a projected 60% by 2030 UN-Habitat (2016). Although it is recognized as a worldwide phenomenon, urbanisation occurs disproportionately across regions, as do its consequences. According to UN-Habitat (2016), urbanisation is accelerating in African, Latin American, and Asian cities, and these regions, which are home to the majority of developing countries, account for 70% of the world's urban population (UN-Habitat, 2016). At the heart of this trend is increased rural-urban migration, with cities providing more economic opportunities to incoming migrants (World Bank, 2022).

While the global urbanization trend has been viewed as a positive development as it provides more opportunities, the conditions under which urbanization takes place in cities of some developing countries raise many challenges. One of the main challenges for these cities is ensuring the availability of decent affordable housing for both present and future populations (UN-Habitat, 2011; Nkubito, 2022; World Bank, 2022). The Global Risks Report that was made in the World Economic Forum in Davos January 2024, shows how housing prices and other asset prices are becoming higher and increasingly isolated from the normal economy. This report warned that amid of the current global economic crisis, major infrastructure projects might be cancelled or delayed, which can highly destabilise low-income countries, notably in Sub-Saharan Africa (World Economic Forum, 2024).

There are different ways that governments use to promote housing affordability, however, government subsidies are commonly used to facilitate the construction of affordable housing units to bridge the affordability gap, enabling low-income individuals and families to access housing options that would otherwise be out of their reach. However, according to Buckley et al. (2016), government subsidies often do not address the housing needs of lower- and middle-income families. Rather, instead of making housing affordable to the intended beneficiaries, governments subsidise the middle- to high-income classes (Buckley, Kallergis, & Wainer, 2016).

According to Nkubito (2022), the Rwandan government, through the National Housing Policy (NHP), recognizes housing as a fundamental right for all citizens and identifies affordable housing as a pressing issue requiring significant policy attention. Once the problem of affordable housing gained official acknowledgment and became part of the policy agenda, institutional responses were initiated. The government introduced new legal measures to facilitate the involvement of the private sector in affordable housing development. Under these policies, financial support is extended to interested affordable housing developers, conditional upon meeting specified conditions. This support involves funding for basic infrastructure at affordable housing sites, corporate tax discounts, and administrative assistance during land acquisition (Nkubito, 2022). In addition to the National Housing Policy, the government of Rwanda decentralized capacity to satellite (secondary) cities to improve the population's well-being (Global Green Growth Institute, 2015). One of the key goals of these secondary cities is to support Kigali in ensuring that Rwandan inhabitants have access to high-quality, sustainably built, and affordable housing in well-planned communities. These communities aim to build strong social networks and improve the overall well-being of their residents (Global Green Growth Institute, 2015).

## 1.1. Decentralised Urban Development in Rwanda

To illustrate Rwanda's urban planning strategy, Figure 1 displays the geographical location of Kigali city and the secondary cities across different provinces. This visualization helps in understanding the spatial distribution and strategic placement of these urban centers. Additionally, Figure 2 presents the population density across the districts of Rwanda, providing insights into the demographic patterns and how they correlate with the urban planning and development efforts. According to the Global Green Growth Institute (2015), secondary cities are envisioned as compact, continuous grids with acceptable density levels and high levels of access for inhabitants. These cities are supported by integrated public transportation systems, which are crucial for their development and sustainability. This strategic move is aimed at fostering regional growth, reducing the urban pressure on Kigali, and promoting sustainable development across the country.

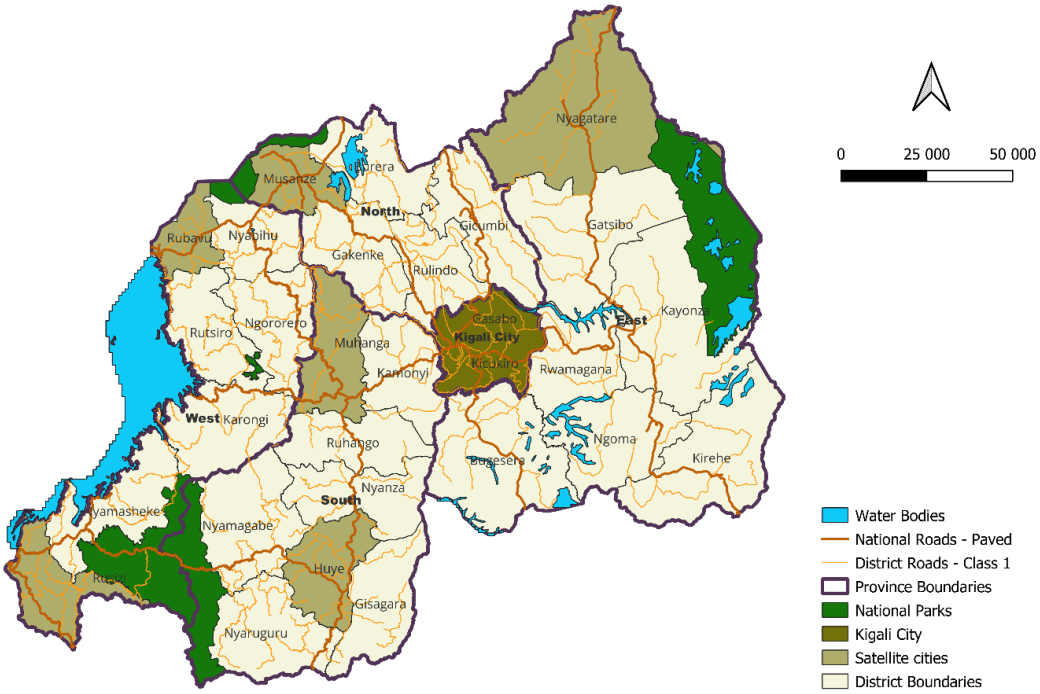


**Figure 1:** Geographical Location of Kigali City and Secondary Cities in Rwanda

Figure 1 illustrates Rwanda's urban planning strategy, showing Kigali city at the center with secondary cities distributed across different provinces. This distribution seems to have been designed to balance regional development and reduce urban pressure on the capital. The map likely includes integrated transportation routes, which would be crucial for accessibility and the successful implementation of the National Housing Policy. Additionally, the proximity of national parks to these urban areas suggests an effort to incorporate environmental sustainability and tourism into urban planning. This strategic layout presumably aims to create a balanced and resilient urban system, fostering regional growth and supporting Rwanda's broader sustainable development objectives.

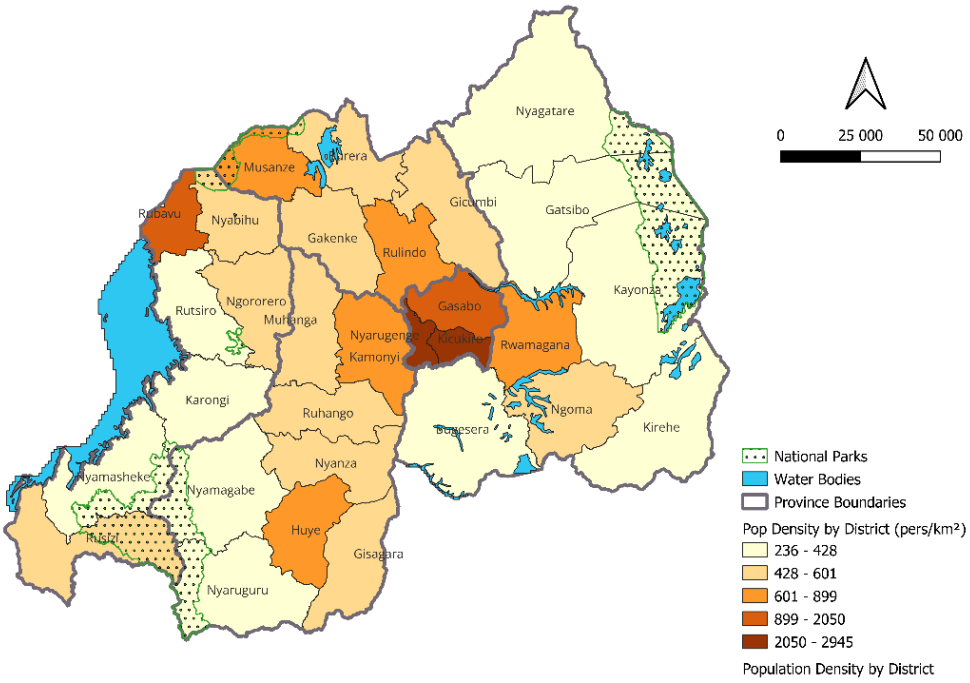


**Figure 2:** Population Density Across the Districts of Rwanda

Figure 2 illustrates significant variations in population density across Rwandan districts, with a significant difference between urban and rural areas. The districts within Kigali City; Kicukiro, Nyarugenge, and Gasabo, exhibit exceptionally high population densities of 2,944, 2,793, and 2,050 people per square kilometre (pers/km²), respectively, reflecting urban concentration. In contrast, rural districts such as Kayonza (236 pers/km²) and Nyaruguru (314 pers/km²) demonstrate much lower densities. Notably, some districts with secondary cities also show higher population densities, such as Rubavu (1,409 pers/km²), Musanze (899 pers/km²), and Huye (656 pers/km²), suggesting emerging urbanization. Conversely, other secondary city districts like Rusizi, Nyagatare, and Muhanga have lower population densities, possibly due to their substantial rural areas. Nonetheless, their proximity to Kigali signifies strategic planning to disperse urban growth across various regions and promoting balanced regional development.

## 1.2. Problem Formulation and Study Purpose

Despite the Rwanda's government efforts to promote affordable and sustainable housing, housing experts claim that high housing prices across the country disproportionately affect low- and middle-income households. Buckley et al. (2016) highlight that despite significant investments in housing programs in developing countries, the recent focus on constructing multi-million-dollar housing developments on city outskirts with expensive infrastructure may not adequately address affordability issues. Nkubito (2022) argues that when government interventions fail to meet the housing needs of urban poor individuals, it indicates a need for resources to be redirected in other ways.

According to Hammam (2014), the primary justifications for government involvement through subsidies include addressing negative externalities that impact public safety and social stability, ensuring equity by providing housing assistance to low-income groups, and addressing market failures. Akinwande and Hui (2022) also argued that understanding the interconnectedness of

different elements of the Housing Supply Value Chain (HSVC) in both affordable housing feasibility studies and policy formulation can improve the effective and long-term delivery of affordable housing for urban poor populations (Akinwande & Hui, 2022). Despite this trend, little study has been conducted on assessing the distributional impact of the government's affordable housing schemes and their targeted households. This master's thesis examined the distributional impact of the government's affordable housing schemes on housing affordability in Rwanda and targeted households, with a focus on quantitative analysis of data from the fifth Integrated Living Conditions Survey as well as analysing different housing policies and institutional frameworks. Specifically, the study addresses the following research questions:

1. What are the distributional characteristics of housing affordability in Rwanda?
2. What are the de facto-targeted households of the government's affordable housing scheme in Rwanda?
3. What is the distributional impact of the government's affordable housing schemes on housing affordability in Rwanda?

# Chapter 2. Housing affordability: a Literature Review

This chapter offers an extensive review of the persistent global challenge of providing affordable housing for urban population, particularly in developing countries, where efforts often fall short. It explores subsidy approaches in addressing the complexity of providing affordable housing as well as reviewing the literature on methods for calculating housing expenditure-to-income ratios, crucial for assessing affordability and guiding policy interventions.

As several studies have shown, providing housing for the urban poor remains a global challenge. Despite governments' efforts to establish affordable housing solutions, many developing countries are still encountering difficulties in achieving significant progress in this area. Moreover, there exists a distinct contrast in housing discussions between developed and developing countries (Akinwande & Hui, 2022). In her research on the housing matters, Hammam (2014) reveals that there is no universally applicable solution or ideal set of policies for enabling housing markets, as each locality has its unique dynamics. Instead of seeking universal models, cities should focus on comprehending and monitoring local market dynamics, including factors such as supply and demand, formal and informal markets, and housing stock and flow. Therefore, this understanding can be crucial for developing suitable policies and interventions tailored to specific local contexts.

Africa is undergoing rapid urbanization, with the current 43% urban population expected to surpass half of the continent's total population by 2040 (Rust, 2022). This projection equates to approximately 700 million people, twice the population of European cities today. Notably, some cities are experiencing an urbanization rate exceeding 3.2%. According to the World Bank (2020), the continent's urban population is expected to double over the next 25 years, making Africa the fastest urbanizing region in the world (World Bank, 2021). This rapid urban growth presents both opportunities and challenges for sustainable development. The United Nations Department of Economic and Social Affairs (2018) also highlights that by 2050, 58% of Africa's population will reside in urban areas, up from 40% in 2018 (The United Nations, 2018). Across the continent, housing disparity between demand and supply, coupled with limited resources and compromised sustainability, is prevalent.

Early research on housing in developing countries typically criticized existing supply side subsidy programs, advocating for their reduction. Economic studies on housing subsidies often support market-friendly, demand-side subsidies over project-based, supply-side subsidies. Hammam (2014) supports demand-side subsidies as they are more cost-effective and fairer, allowing low-income individuals to access affordable housing options through competitive markets. Unlike public housing programs, demand-side subsidies create fewer distortions on the normal housing market and can be phased out more easily as beneficiaries' incomes increase. However, there has been little empirical investigation into the distributional perspectives of formalization programs and their targeted demographic groups (Hammam, 2014).

On the other hand, there is a big gap in housing supply in most of the African countries. In her study on promoting affordable housing in African cities, Rust (2022), claims that in the absence of a sufficient supply of affordable housing on a large scale, housing shortages persist, reaching almost absurd levels. Nigeria reports a backlog of 17 million housing units, while Kenya's backlog is estimated at around two million units, increasing by over 200,000 units annually as the formal housing sector struggles to meet the needs of new family's formation (Rust, 2022).

As per Rwanda Housing Authority (2017) there is a need for 700,000 extra housing units by 2028 in Kigali City alone, not accounting for the entire country of Rwanda. Of these units, 70% are expected to be falling under affordable housing category (Rwanda Housing Authority, 2017).

However, some researchers still advocate for demand-side subsidies, as demand side subsidies have been shown to effectively improve housing situations in certain African countries. For example, Katsura & Romanik, (2002), argued that capital grants have been particularly beneficial in post-disaster scenarios in South Africa, aiding relocation efforts and complementing housing finance programs. However, they emphasized that demand-side subsidies work best in countries with a well-established private sector capable of supplying and rehabilitating housing units. Additionally, they supported the idea that housing allowance programs are most viable in relatively stable countries with strong institutional capacities, secure tenure, and high-quality housing stocks (Katsura & Romanik, 2002).

## 2.1. Measuring Housing Affordability: Expenditure-to-Income Ratio (EIR)

Housing affordability is a critical issue in urban economics, commonly measured using the expenditure-to-income ratio (EI). This ratio evaluates the proportion of household income spent on housing costs, providing a clear indicator of financial burden. According to Stone (2006) & UN-Habitat (2011), the most widely accepted threshold for expenditure-to-income ratio is 0.3, meaning that households spending more than 30% of their income on housing are considered cost burdened. This method is beneficial for its simplicity and direct reflection of the financial strain on households. However, Stone also notes that this threshold does not account for the varying income levels and necessities of different households, potentially misrepresenting affordability for lower-income families who may face higher relative burdens even at lower percentages (Stone, 2006).

The expenditure-to-income ratio (EI) method has been extensively utilized in housing policy research to identify affordability issues and guide policy interventions. Kutty (2005) highlights that this ratio serves as a fundamental metric in assessing housing affordability trends over time and across different geographic regions. Moreover, Kutty argues that the ratio can inform policymakers about the effectiveness of existing housing policies and the need for new measures to assist cost-burdened households (Kutty, 2005). For instance, in high-cost urban areas, rising housing expenditures often outpace income growth, exacerbating affordability challenges and necessitating targeted policy responses. By using the expenditure-to-income ratio, researchers and policymakers can better understand the scope and scale of housing affordability problems, ultimately leading to more effective and equitable housing solutions (Kutty, 2005).

### 2.1.1. Housing Expenditure

Housing affordability requires clarity on which expenses are encompassed within housing costs and expenditures. According to Lynch et al. (2023), economists focus on the user cost, incorporating capital opportunity cost and depreciation, while policymakers tend to prioritize out-of-pocket cash flows. Financial institutions typically measure housing costs as upfront payments, recurrent expenses, and transaction costs. Renters' housing expenditures include rent and utility payments, which can be computed both inclusively and exclusively (Lynch, Singh, & Zhang, 2023).

Homeowners are responsible for maintenance, property taxes, insurance, transaction expenses, and loan payments, with variations in informal settlements when housing financing is limited. Incremental home building in such places results in variable costs over time, reflecting people' changing circumstances and investment choices (Belsky, Goodman, & Drew, 2005). In their research, Alcántara & Romeu Gordo (2020), utilized data from the German Socio-economic private households panel (SOEP) to calculate housing expenditures for tenants. They defined housing costs as the total of rental expenses, utility bills, electricity charges, and heating costs. Additionally, the authors argued that homeowners' housing expenditures should encompass utility bills, electricity expenses, heating costs, maintenance charges, property taxes, and, for households with an outstanding mortgage, mortgage interest payments (Alcántara & Romeu Gordo, 2020).

To better understand socioeconomic trends in housing affordability, it is effective to categorize household housing expenditure and levels across different quintiles or deciles (Shlay & Rossi, 1992). This approach provides valuable insights into the distribution of housing expenditure among various segments of the population, helping to identify vulnerable groups struggling with housing costs. Such statistical data is crucial for policymakers, as it highlights the efficiency of housing policies and programs and indicates where interventions may be necessary to enhance affordability (Galster, Andersson, & Musterd, 2010). Additionally, comparing housing expenditure levels across different population deciles and geographical regions enables researchers to assess temporal changes and regional disparities in housing affordability (Galster, Andersson, & Musterd, 2010). This comprehensive analysis aids in understanding the broader socioeconomic impacts of housing policies and identifying areas in need of targeted support.

### 2.1.2. Household Income

As per Canberra Group (2011), household income includes monetary or in-kind receipts received regularly, typically annually, which are available for immediate consumption. It serves as a key indicator of economic well-being, representing the resources accessible to the household for spending and saving. While individuals may earn income, it is often pooled within the household, making household income the preferred measure for assessing economic welfare. Income from employment, comprising earnings from paid or self-employment activities, constitutes a significant component. This includes both employee income and income from self-employment, which encompasses profits or losses from unincorporated businesses operated by individuals or partnerships (Canberra Group, 2011).

Lynch et al. (2023) also highlighted the challenges encountered in collecting data on household income and expenditure in surveys, particularly in developing countries where informal employment and reluctance to disclose income are prevalent. Lynch et al. (2023) proposes the use of a Progressive Expenditure-to-Income Ratio (EIR) approach to measure housing affordability, acknowledging the limitations of applying a uniform threshold across income segments. The progressive EIR methodology involves calibrating affordability thresholds by income quintiles, ensuring a more detailed assessment. Moreover, they suggest using household expenditure as a proxy for income. The paper cites examples of applying the progressive EIR methodology in Indonesia and Mongolia, demonstrating its feasibility and effectiveness. However, it is also recommended to use a modified EIR as an alternative method when data constraints prevent the use of the progressive approach (Lynch, Singh, & Zhang, 2023).

The analysis conducted by the National Institute of Statistics of Rwanda (2011) in the EICV3 Income Thematic Report highlights the complexities of estimating household income in surveys, suggesting a potential for underestimation. Despite these challenges, the report identifies agriculture, wages, and business income as key income sources (National Institute of Statistics of Rwanda, 2011). Bower et al. (2019) also assessed housing affordability for Kigali's growing urban population as part of their study on housing need in Kigali. They considered both the average income level and the income distribution among Kigali inhabitants by determining appropriate housing expenses, and the study used income data from the EICV5 survey to divide Kigali's population into five quintiles and determine their median incomes (Bower et al., 2019).

# Chapter 3. Conceptual and Theoretical Frameworks

Housing research in which affordable housing belongs, is a broad field that intersects with various other research areas (Kemeny, 1988). Clapham (2018) explained how interdisciplinary nature of housing research allows for the incorporation of concepts and theories from different fields such as economics, sociology, political science, geography, and psychology, and making it a diverse subject of study Clapham (Clapham, 2018). Kemeny (1988) also argued that a full theory of housing is unachievable. As a result, the study of housing can be based on established frameworks, requiring the application of different conceptual tools to understand housing phenomena. For example, he identified the new institutionalism as a viewpoint that can be used to contextualise and make interaction-based analysis for housing research (Kemeny, 1988). In this master's thesis, two theoretical frameworks are employed to guide the analysis. Consumer theory is used to examine household consumption behaviours, particularly to analyse housing expenditure patterns in relation to household income levels and to understand the concept of affordable housing. Additionally, New Institutional Economics (NIE) is applied to explore the institutional perspective of the housing market, providing a comprehensive understanding of how institutions influence housing affordability.

## 3.1. Consumer Theory

Consumer theory primarily aims to assess how different assumptions regarding consumers' objectives, behavioural patterns, and decision-making constraints influence the observable demand for goods and services (Levin & Milgrom, 2004). Consumer theory serves as a convincing analytical framework for examining housing expenditure rates in relation to household income. Within this framework, households are viewed as rational actors who allocate their limited resources, including income, to maximize utility derived from housing consumption. According to Becker (1962), households and individuals strive to optimize their utility, or satisfaction, subject to budget constraints, implying that households allocate a portion of their income to housing expenditure based on their preferences and financial capacity (Becker, 1962).

Building on Debreu (1959) concept of preferences, households make consumption choices regarding housing in accordance with their subjective valuation of housing services relative to other goods and services available in the market (Debreu, 1959). The law of demand, as outlined by Marshall (1890), suggests that as household income increases, there is typically a corresponding rise in housing expenditure, reflecting an inverse relationship between housing price and quantity demanded (Marshall, 1890). Moreover, the concept of indifference curves, as illustrated by Hicks (1939), aids in understanding how household's trade-off between housing expenditure and other consumption goods, depicting various combinations of housing and other goods that render households equally satisfied (Hicks, 1939).

## 3.2. Affordable Housing as a Concept

The concept of affordable housing can be explained in different ways. In their study, Lawrence & Shomon (2014) explained the complex nature of discussions surrounding affordable housing which prompts a series of critical questions about: for whom it is affordable, how long it will remain affordable, the specific criteria used to define affordability, who should be responsible for providing affordable housing, the mechanisms that can be put in place to ensure that it remains affordable over time, and the differences in design and location between affordable and market-rate housing. These elements collectively highlight the key considerations and

challenges associated with the provision and maintenance of affordable housing, emphasizing the need for a comprehensive approach to address this complex matter (Lawrence & Shomon, 2014).

According to Agrawal et al., (2020), affordable housing definition differ from country to country, but generally it is a comprehensive term covering various housing options across the housing field. It usually involves both rented and owned housing, requiring financial support for capital and/or ongoing operations. Affordable housing units typically have rents or payments below the average market rates and are designed for long-term occupancy by families with incomes below specified thresholds or those spending a certain proportion of their income on housing. It's important to note that this definition excludes market housing units and short-term accommodations like emergency shelters or transitional housing (Agrawal, Pallathucheril, & Sangapala, 2020). Many countries have identified what they consider to be a realistic definition of affordable housing and affordability, which are more closely aligned with local conditions, and they use different methods to measure housing affordability. UN-Habitat (2011) identifies three key approaches to assess housing affordability: the Price-to-Income Ratio, the Rent-to-Income Ratio, and Housing-related expenditure as a percentage of income.

**Table 1:** Approaches for Measuring Housing Affordability

| APPROACHES | IMPLICATIONS |
|---|---|
| **Price-to-Income Ratio** | When ratio is very high or rising, implies an ineffective housing market or scarce land, often due to regulatory inefficiencies or restrictions. |
| **Rent-to-Income** | High values signify an imbalance between housing supply and demand, leading to poor affordability. Conversely, low values typically indicate controlled tenancies or a significant presence of public housing. |
| **Housing-related expenditure as a percentage of income** | When Housing-related expenditure as a percentage of income is high, it suggests that housing costs are impeding the ability to meet non-housing basic needs, potentially indicating a malfunctioning housing market. |

*Compiled by the Author – Source (UN-Habitat, 2011)*

Among these three approaches, the third method for assessing housing affordability is also known as the “residual income assessment”, is widely used by many countries. This approach calculates the percentage of household income spent on housing-related expenses, indicating a household's ability to manage housing costs without compromising essential non-housing expenditures (UN-Habitat, 2011). While there is no universally agreed-upon percentage, UN-Habitat (2011) defines housing affordability by adopting the usual 'rule of thumb' where housing is generally considered affordable when a household spends less than 30% of their income on housing-related expenses, including mortgage or rent payments, taxes, insurance, and service payments. However, some researchers have criticized this definition. For example, Abelson (2009) argued that none of the affordability measures account for travel costs. Some households may spend more on housing to minimize travel expenses, while others may reduce housing costs but increase travel expenses. Households that allocate less to housing but more to travel might not necessarily be in a better financial position than those who spend more on housing but less on travel (Abelson, 2009).

## 3.3. Institutional perspectives on affordable housing

This thesis starts with the assumption that policies and strategies for addressing housing challenges are embedded within institutional frameworks that can either support or hinder the various actors involved in housing supply. As a result, The New Institutional Economics (NIE) is employed as the primary theoretical framework guiding the analysis. The New Institutional Economics (NIE), aimed at explaining the initiation and continuity of institutions based on their efficiency. North (1990, 1993) introduced the NIE framework, which includes interrelated concepts of institutions, transaction costs, and property rights. The New Institutional Economics (NIE) also addresses the challenges posed by imperfect market conditions, particularly emphasizing the role of institutions and the coordination issues among market actors (North, 1992). It explores the impact of these policies on housing affordability and assesses their efficiency in addressing housing-related challenges caused by different factors including high population growth and rural-urban migration. These factors increase the demand for housing tremendously, resulting in imperfect housing market conditions to be addressed by institutions.

Institutions, as defined by Bromley (1989), encompass the regulations governing interactions among individuals, including formal legal structures, private legal frameworks, organizational procedures, informal regulations, and broader cultural norms (Bromley, 1989). North (1991) characterizes institutions as human-made constraints shaping political, economic, and social transactions. These constraints include both informal elements such as social norms and traditions, and formal rules like constitutions and property rights (North, 1991). In the context of affordable housing, understanding these institutional regulations and constraints is crucial. Formal institutions, including government policies, legal frameworks, and regulatory bodies, significantly influence housing accessibility and affordability. Thus, the New Institutional Economics (NIE) framework helps analyse how these institutions impact the housing market, focusing on their role in addressing housing affordability challenges.

One way to consider the institutional framework in the provision of affordable housing is through the value chain. As per Akinwande & Hui (2022) recognizing the interdependence among the various components of the Housing Supply Value Chain (HSVC) within affordable housing feasibility studies and policy development can enhance successful sustainable provision of affordable housing for the urban poor. It is important to note that they considered that the housing value chain comprises three main components: housing finance, land acquisition, and housing construction (Akinwande & Hui, 2022).

## 3.4. Housing Market Value Chain

Different scholars have referred to the housing value chain as the housing ecosystem and different researchers revealed different components of the housing value chain. Burlotos et al. (2020) explained how each country's housing ecosystem is unique, and can be influenced by geography, climate, historical context, culture, government structure, legal framework, economic conditions, macroeconomic factors such as inflation and interest rates, taxation policies, and current political and governmental systems. Housing is the result of this ecosystem, and its quality is defined by the efficiency and harmony of its constituent aspects. Just as in a natural ecosystem, the strength and coherence of each component are critical to the housing ecosystem's ability to provide high-quality housing. As a result, underdevelopment of any one subsystem might have a negative impact on the overall performance of the housing ecosystem (Burlotos, Kijewski-Correa, & Taflanidis, 2020).

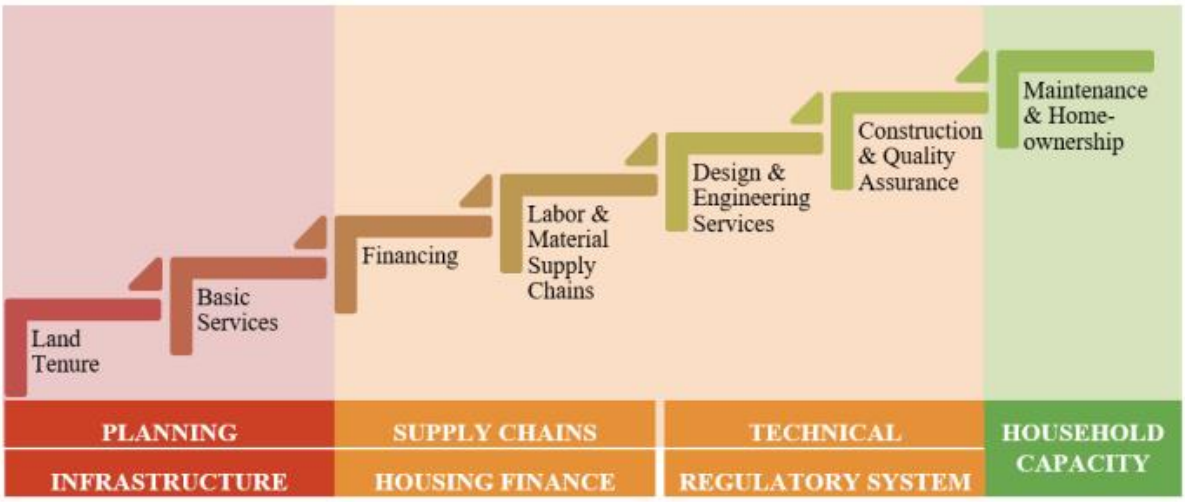


**Figure 3:** Housing Market Value Chain for Informal Residential Construction – (Burlotos et al., 2020)

As per Burlotos et al. (2020), the Housing Supply Value Chain framework is pivotal in understanding housing affordability, comprising several interconnected components. Planning and infrastructure play a foundational role, involving land tenure and the provision of basic services. Secure land tenure is essential for attracting investment and ensuring stability in housing markets. The availability of basic services such as water, sanitation, and electricity are crucial for making land viable for development. According to the UN-Habitat (2018), integrating land tenure systems with urban planning and infrastructure development can significantly enhance housing affordability by reducing the costs and uncertainties associated with land acquisition and development (UN-Habitat, 2018). Hammam (2014) further emphasizes that effective urban planning and the provision of essential services are critical for reducing informal settlements and improving overall housing conditions.

The supply chain and housing finance component highlights the importance of efficient financing mechanisms and the seamless availability of labour and materials. Housing finance structures, including mortgages and subsidies, are critical for making homes affordable to different income groups (World Bank, 2015). The supply chain for labour and materials also directly impacts construction costs and timelines. World Bank (2015) emphasizes that disruptions in the supply chain, whether due to material shortages or labour disputes, can lead to increased housing prices and reduced affordability. Rust (2022) notes that innovative financing models and effective supply chain management are crucial in addressing the housing backlog and ensuring the timely delivery of affordable housing units.

The technical and regulatory system and household capacity components address the construction process, quality assurance, and the end-user's ability to maintain and own property. Regulatory frameworks balance efficiency with safety and quality standards. Furthermore, household capacity in terms of maintenance, homeownership, and property rights is crucial for sustaining housing affordability (Glaeser & Gyourko, 2008). Homeowners must have the knowledge and resources to maintain their properties and secure property rights to safeguard their investments. As highlighted by Glaeser & Gyourko (2008), regulatory systems that support sustainable building practices and strong property rights frameworks can enhance long-term housing affordability by reducing maintenance costs and protecting home values. This is supported by Rust (2022), who highlighted the importance of regulatory reforms and capacity-building initiatives to empower households and ensure the sustainability of affordable housing projects.

Government subsidies also play an important role in addressing the challenges of housing affordability by influencing one or both the supply and demand sides of the market (Blake, 2018). Regarding the supply side, incentives such as tax breaks, grants, and loans with low interest rates serve as encouragements for developers to augment the availability of affordable housing units (Turner & Walker, 2019). On the demand side, subsidies such as assistance programs for rent or down payments empower households with low to moderate incomes to afford housing options that might otherwise be financially out of reach (Olsen, 2003).

## 3.5. Government strategies for housing affordability: Supply Side Vs Demand Side Interventions

Demand-side housing subsidies aim to enhance consumers' ability to afford housing, whether through rental subsidies or assistance for home purchases. They are typically considered more efficient than supply-side subsidies since, under constant market conditions, they do not introduce market distortions concerning the location and manner of housing provision (Turner & Walker, 2019). Supply-side housing subsidies, on the other hand, focus on funding housing construction. These subsidies can serve as a valuable tool for reducing housing production costs, especially in regions where the local construction industry is underdeveloped (Malpezzi & Wächter, 2005). When integrated into a comprehensive policy framework, supply-side subsidies can contribute to the growth of the local construction sector over time. However, international experiences have revealed challenges in incentivizing developers to effectively utilize these subsidies to deliver suitable housing in well-positioned areas (Blake, 2018).

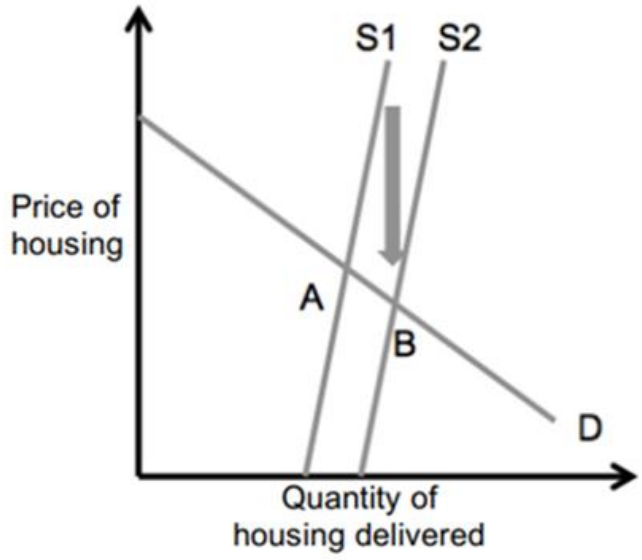


**Figure 4:** Supply Side Interventions - (Blake, 2018)

The figure 4 shows how a supply-side subsidy lowers the price of housing, shifting the supply curve from S1 to S2. The housing market equilibrium shifts from A to B, leading to a fall in prices and an increase in quantity provided. Subsidies do not increase total housing stock if the supply curve is inelastic, as some inputs (e.g., land) are fixed in amount. Instead, they push out unsubsidized suppliers (Blake, 2018).

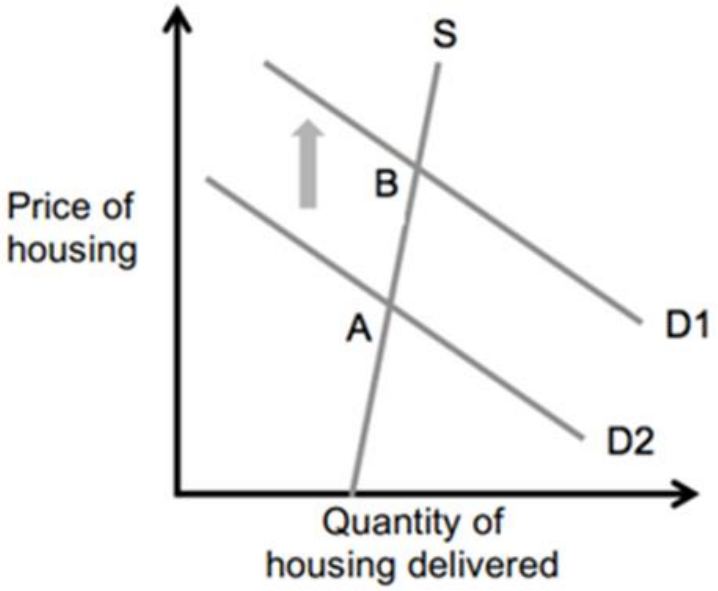


**Figure 5:** Demand Side Interventions - (Blake, 2018)

As illustrated in the figure 5, When housing providers cannot increase the housing supply in response to rising prices (e.g., due to a shortage of well-connected land), the supply curve S becomes steep. This situation is known as an inelastic supply response to price increases. When a demand-side subsidy shifts the demand curve from D2 to D1, the housing market equilibrium shifts from point A to point B. Consequently, the primary effect of the demand-side subsidy is a price increase rather than an increase in the quantity of housing available. This price increase results in higher profits for housing suppliers (Blake, 2018).

# Chapter 4. Research Design and Methodology

This master's thesis utilises a mixed-methods research design, integrating both quantitative and qualitative data to comprehensively explore housing affordability in Rwanda. This approach leverages the strengths of diverse data types, enhancing the validity and robustness of the study's findings (Guest & Fleming, 2015). By combining numerical data with contextual insights, the research aims to provide a well-rounded understanding of housing affordability distribution in Rwanda by calculating housing expenditure-to-income ratios and analysing the distributional impact of government affordable housing schemes and the targeted households (Mark, Philip, & Adrian, 2009). The quantitative component involves an analysis of the fifth Integrated Living Conditions Survey (EICV5) dataset to assess the expenditure-to-income ratio. This dataset offers valuable insights into household income distribution and housing-related expenditure patterns, enabling a thorough quantitative evaluation of housing affordability rates (The United Nations, 2018). By utilizing this comprehensive dataset, the study identifies key trends and disparities in housing costs relative to household incomes, as well as the geographical distribution of expenditure-to-income ratios across different provinces and districts of Rwanda.

The qualitative component includes a detailed desk review of government policies that impact housing affordability. This part of the study examines various policy documents, including the National Urban Housing Policy, Kigali City Master Plan, the Operational Procedures Manual on Affordable Housing, and Prime Minister's Instructions (PMI) No 001/03 of 23/02/2017 and No 002/03 of 21/10/2022, which relate to government support for affordable housing projects (Republic of Rwanda, 2017; 2022). Additionally, the study reviews project documents for some of the ongoing affordable housing projects, selecting five key projects based on their influence in terms of the number of housing units as well as their uniqueness. By analysing these documents, the research aims to illustrate the quantitative findings and provide concrete examples of how government policies influence housing affordability. This approach not only contextualises the numerical data but also highlights the practical implications of policy decisions on affordable housing projects in Rwanda.

## 4.1. Survey Data/Research Framework

As per Groves (1987), survey research is not itself an academic subject, but rather a set of standards for assessing new ideas and a well-organized professional reference group, and survey research has emerged via diverse contributions of researchers from different fields such as: statistics, psychology, political science, and sociology. The diversity within survey research leads to varying perspectives on the importance of different aspects of survey data. This field encompasses various roles, such as data collectors responsible for implementing surveys, survey analysts who examine substantive issues using data, describers who use surveys to depict populations, and modelers who test causal theories using survey data. Each role emphasizes different elements of survey data design and implementation (Groves, 1987).

### 4.1.1. The EICV5 Survey Data Description and Process for this Thesis

The survey data utilized in this study were obtained from the fifth Integrated Living Conditions Survey (EICV5), conducted by the National Institute of Statistics of Rwanda from October 2016 to October 2017. The EICV5 aimed to monitor changes in key socioeconomic indicators over time among a nationally representative panel of households. Additionally, it sought to

provide updated statistics to monitor progress in poverty reduction and evaluate policies aligned with national development strategies and international frameworks such as the First National Strategy for Transformation (NST1), 2030 Sustainable Development Goals (SDGs), Vision 2020, and Vision 2050 (National Institute of Statistics of Rwanda, 2022).

The EICV5 survey interviewed households previously surveyed in EICV3 and EICV4, enhancing the accuracy of the analysis. It covered 1,260 sample villages and 14,580 sample households at the national level. In urban areas, there were 245 sample villages and 2,526 sample households, while rural areas had 1,015 sample villages and 12,054 sample households. The survey achieved a response rate of 100%, with all sampled households interviewed without refusal (National Institute of Statistics of Rwanda, 2022).

## 4.2. Demographic Representation in the Survey

The following table 2 highlights the distinct demographic distribution between urban and rural areas across Rwanda's five provinces. Kigali City uniquely has a predominantly urban population, contrasting sharply with the other provinces where rural residents constitute the vast majority. The Southern Province, for instance, has the highest proportion of rural inhabitants, whereas the Northern Province has the smallest rural population. Overall, the rural population significantly outweighs the urban population across the country, emphasizing Rwanda's largely rural demographic composition outside the capital city.

**Table 2:** Rural and Urban Demographics

| | | Urban/Rural | | | |
|---|---|---|---|---|---|
| **Province** | **Urban** | **%** | **Rural** | **%** | **Total** |
| Kigali City | 1,242 | 76.67 | 378 | 23.33 | 1,620 |
| Southern Province | 360 | 9.38 | 3,480 | 90.62 | 3,840 |
| Western Province | 420 | 12.50 | 2,940 | 87.50 | 3,360 |
| Northern Province | 240 | 9.09 | 2,160 | 90.91 | 2,400 |
| Eastern Province | 264 | 7.86 | 3,096 | 92.14 | 3,360 |
| **Total** | **2,526** | **17.32** | **12,054** | **82.68** | **14,580** |

## 4.3. Dataset Selection and Data Processing and Analysis

The statistical part of the data analysis for this thesis focuses on assessing the Expenditure to Income ratio (EI) by examining household income and housing expenditures. Household income, particularly from employment, serves as a crucial indicator of economic well-being and is fundamental for assessing housing affordability. The analysis includes both renters and homeowners, ensuring a comprehensive overview of the housing market.

To calculate monthly household housing expenditures, the analysis draws on insights from Lynch et al. (2023) and Alcántara & Romeu Gordo (2020). A detailed review of the dataset was conducted to select relevant variables, which included actual rent for tenants and estimated rent for homeowners, utility payments such as cooking fuel expenses, electricity, water bills, and other related costs. New variables were created to accurately capture the total monthly housing expenditures for each household. This detailed process ensures that all significant housing costs are accounted for, providing a clear picture of the financial burden on households.

Household income was calculated using data from the "Employment, Salaries, and Business" dataset, which includes variables related to net salary/wage, in-kind payments, subsidies,

benefits, and business profits. The analysis incorporated insights from the Canberra Group (2011), Lynch et al. (2023), and the National Institute of Statistics of Rwanda (2011) to define and estimate monthly household income accurately. By integrating these variables into a new dataset, the study facilitated a comprehensive examination and comparison of the Expenditure to Income ratio (EI) across Rwanda. QGIS was utilized to map the geographical distribution of housing expenditures and household income, as well as to map housing affordability rates across the districts of Rwanda. This spatial analysis helps identify areas with significant affordability issues and evaluate the impact of government affordable housing schemes on targeted households.

For the qualitative analysis of government policies regarding housing affordability, a deductive approach to qualitative content analysis was employed. This method was chosen after conducting preliminary tests using various approaches. Qualitative content analysis is well-suited for identifying themes and meanings within the analysed material, particularly when guided by a theoretical framework (Bryman, 2016). In order to make sure that the analysis remained focused on the predefined themes**,** coding process followed a deductive approach, utilizing a code document developed from existing literature on government policies related to housing affordability and the selected theoretical framework.

## 4.4. Limitations of the Study

While this study benefits from the utilization of official data from the National Institute of Statistics of Rwanda, it is crucial to acknowledge the inherent limitations associated with survey data. These limitations include potential reporting biases and constraints in capturing certain aspects of household income and expenditure dynamics. Despite efforts to ensure the accuracy and reliability of the data, there remains a possibility of underreporting or misreporting by survey respondents (Groves, 1987). Moreover, while the fifth Integrated Living Conditions Survey (EICV5) provides a comprehensive overview of living conditions and socioeconomic indicators, its static nature may not fully capture the real-time changes and distinctions in expenditure to income, especially in rapidly evolving socioeconomic contexts like Rwanda (National Institute of Statistics of Rwanda, 2018).

Another limitation relates to the standardization of different time units to a monthly basis for consistency in analysis may overlook seasonal variations in income and expenditures, potentially leading to small inaccuracies in evaluating household expenditure to income ratios over time (Cragg et al., 2017). Despite these limitations, the study provides valuable insights into expenditure to income ratios and distributional impacts of affordable housing schemes on housing affordability in Rwanda, laying a foundation for future research ideas.

# Chapter 5. Empirical Findings

The empirical section is divided into three parts: the first part provides an overview of Rwanda's policies and institutional framework for affordable housing; the second part involves a statistical analysis using data from the fifth Integrated Living Conditions Survey (EICV5) by the National Institute of Statistics of Rwanda, where household housing expenditure, income, and expenditure-to-income ratio were calculated and analysed based on population deciles and geographical distribution to assess housing affordability rates across Rwanda; and the final part discusses ongoing affordable housing projects in Rwanda, initiated under the institutional framework, to support the study's analysis.

## 5.1. Housing Affordability in Rwanda

The concept of affordable housing is relatively recent in Rwanda's housing system, originating in response to the Millennium Development Goals (MDGs) established in the 1990s. These objectives, endorsed by all United Nations member countries in 2000, set benchmarks for global development progress. In Rwanda, they influenced the development of Vision 2020, the Poverty Reduction Strategic Paper (PRSP), the Economic Development and Poverty Reduction Strategies (EDPRS 1&2), and, later, the National Strategies for Transformation (NST 1&2). Through Vision 2020 program, in 2015, the government launched the "Affordable Housing Development Project for Government Employees" in acknowledgment of the housing challenges encountered by middle-class urban population, who frequently struggle to buy homes owing to market dynamics that favour profit maximization by private developers (Rwanda Housing Authority, 2017). The Housing Market Study conducted by the City of Kigali in 2018 revealed a significant deficit of 700,000 housing units, requiring to be addressed by 2028, with 70% falling within the affordable housing category. In response, the Rwandan government is collaborating with different stakeholders to increase the supply of affordable housing, with several initiatives currently in progress in Kigali (Rwanda Housing Authority, 2017).

## 5.2. Policies/Institutional Frameworks

As previously discussed in this paper, UN-Habitat (2011) defines housing affordability using the standard 'rule of thumb', which states that housing is considered affordable when a household spends less than 30% of its income on housing-related expenses such as mortgage or rent payments, taxes, insurance, and service payments. Like most of the developing countries, the Rwanda ‘government policy also aligns with the UN-Habitat's definition as a recommendation in initiating affordable housing schemes (Nkubito, 2022).

The Prime Minister's Instructions (PMI) No 001/03 of 23/02/2017 outline the criteria and procedures for accessing governmental support for affordable and high-density housing projects, with eligibility restricted to low and middle-income individuals. 'Low-income' households, as defined by the government, are those unable to afford housing costs under normal market conditions and thus require assistance. According to Nkubito (2022, beneficiaries of affordable housing are further defined by the government as households and individuals earning monthly incomes ranging from 200,000 to 1,200,000 Rwandan Francs [1].

[1] *1 RWF = 0.0007128 EUR*
*1 EUR = 1,402.92 RWF* *Last update 2024-5-19 10:00 AM UTC*

The new prime minister's instructions n° 002/03 of 21/10/2022 relating to the government support for affordable housing projects which draw upon resolution No. 9 from the National Leadership Retreat (2015) and the National Housing Policy (2015), outline conditions and procedures for obtaining government support for affordable and high-density housing projects, and detailing criteria for eligibility and protocols for project initiation, assessment, approval, and monitoring as well as the types of government support for affordable housing (Prime Minister's Office, 2022). These instructions are also aligned with the Operational Procedures Manual on Affordable Housing, which defines terms and guidelines for government-supported affordable housing projects and provides the requirements for beneficiaries of housing units from those projects (Rwanda Housing Authority, 2024).

### 5.2.1. Eligibility Criteria for Government-Supported Affordable Housing Units Beneficiaries

The table 3 below, outlines the specific criteria that applicants must meet to be eligible for government-supported affordable housing units in Rwanda. The criteria include residence status, age requirements, first-time homeownership, and income limits. Applicants must be citizens or permanent residents of Rwanda and at least eighteen years old, with exceptions for full orphans.

**Table 3:** Eligibility Criteria for Government-Supported Affordable Housing Units Beneficiaries

| No | Criteria | Description |
|---|---|---|
| 1 | Residence Status | Applicants must be citizens or permanent residents of Rwanda. |
| 2 | Age Requirement | Eligible individuals must be at least eighteen (18) years old, except in the case of full orphans. |
| 3 | First-Time Homeownership | Applicants should be first-time owners of affordable housing. |
| 4 | Income Limit | The net monthly household income should not exceed one million two hundred thousand Rwandan Francs (RWF 1,200,000) per month, with a yearly ceiling of 14,400,000 RWF as accumulated monthly income.<br><br>**Note:** In cases of families applying civil marriage or separation of property, the assessment of net monthly income is based on the applicant alone. |

### 5.2.2. Benefits Provided to the Eligible Beneficiaries

According to Rwanda Housing Authority (2024), one of the key benefits extended to eligible beneficiaries is access to affordable mortgage financing. This provision enables individuals to secure the necessary funds for acquiring a housing unit under the government-supported affordable housing development project. Beneficiaries are offered a favourable payback period for the loan extended to them. With a duration of 20 years, this extended repayment period allows households to manage their financial obligations more effectively while fulfilling their homeownership aspirations. The maximum property value for eligible beneficiaries is capped at 40 million Rwandan Francs (RWF). However, it's important to note that the actual property

value available to beneficiaries may vary based on their capacity for repayment. This provision ensures that housing units remain affordable and accessible to the target demographic (Rwanda Housing Authority, 2024).

### 5.2.3. The Application Process for Affordable Housing Unit Beneficiaries

The application process for Rwanda's affordable housing project is streamlined through the "Giriwawe (Own your home) system," an official platform designed for seamless registration and timely processing. Eligible beneficiaries seeking to benefit from the affordable housing project are required to register their interest through the designated channels, namely the "Giriwawe (Own your home) system." This official platform facilitates the seamless registration of interested applicants, ensuring timely processing and allocation of affordable housing units. Upon accessing the "Giriwawe system", beneficiaries complete the necessary information required for registration. The system's interface accommodates multiple stakeholders involved in the process. The Rwanda Housing Authority (RHA) utilizes the system to communicate with applicants and provide updates on their applications. Banks receive contact information of eligible beneficiaries to facilitate loan processing and inform relevant authorities, including the Development Bank of Rwanda (BRD) and Rwanda Housing Authority, about the loans provided. Developers leverage the system to advertise available housing units, receive contact information of eligible beneficiaries, and update the BRD and RHA on units sold (Rwanda Housing Authority, 2024).

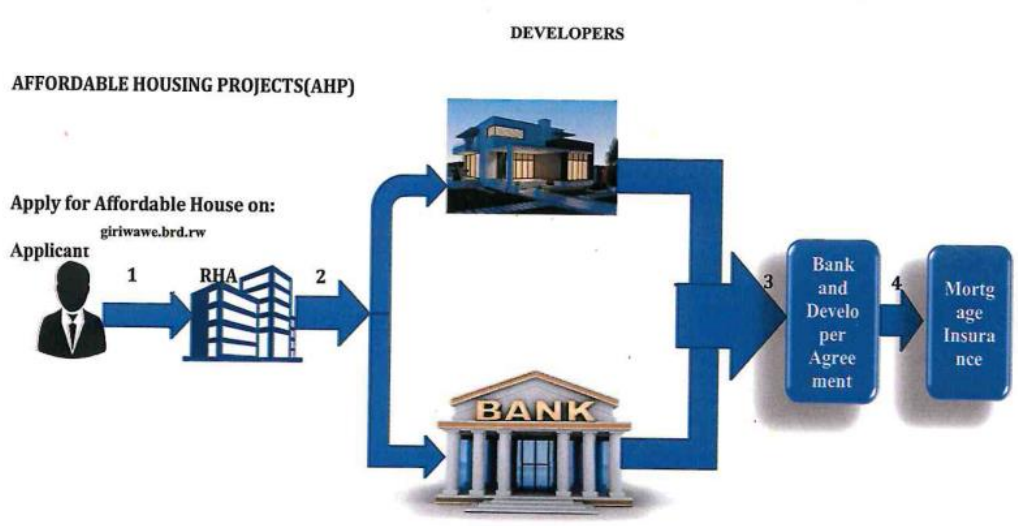


**Figure 6:** The process of applying to be a Beneficiary of an Affordable Housing Unit - (Rwanda Housing Authority, 2024)

### 5.2.4. Property Rights Limit for Affordable Housing Unit

According to the Rwanda Housing Authority (2024), beneficiaries of the affordable housing program are prohibited from selling their government-supported homes within five years of purchase. However, exceptions are permitted if the beneficiary experiences job loss, rendering them unable to meet bank payments, as demonstrated by a termination contract or other supporting documents within six months of unemployment, or if there is a divorce or the death of a spouse, confirmed by a court resolution or death certificate. Additionally, beneficiaries suffering from a serious illness or permanent disability, as certified by a qualified doctor, and unable to meet bank payments, may also qualify for an exception. In such cases, beneficiaries must seek approval from the Rwanda Housing Authority.

The Operational Procedure Manual on Affordable Housing also highlights that the beneficiary becomes the legitimate owner of the affordable housing unit and fails to comply with the Government's special support conditions for the Affordable Housing Development Project for five years, the following steps will be taken: A 40% fine on the entire value of the bought home must be paid within one year. If the fine is not paid, the sales contract is regarded null and invalid, and the buyer is given three months' notice to vacate the dwelling unit, which will then belong to the government. The government may then resell the dwelling unit or include it into the social housing stock (Rwanda Housing Authority, 2024).

### 5.2.5. Application Process for Developers Seeking Government Support for Affordable Housing Projects

The following table 4, outlines the step-by-step process that developers must follow to apply for government support for affordable housing projects in Rwanda. Starting with the submission of a formal request for proposal, the process includes presenting a preliminary development proposal, submitting a business case for infrastructure support, and applying for building permits. Based on the evaluation of these submissions, recommendations for government support, including subsidies, are made. Following successful contract negotiations, developers proceed to the implementation phase, executing the affordable housing project as per the approved plans and timelines (Rwanda Housing Authority, 2024).

**Table 4:**Developers' Application Process for Government Support for Affordable Housing Projects

| Steps | Activities | Descriptions |
|---|---|---|
| Step 1 | **Request for Proposal** | The process starts by submitting a formal request outlining the proposed affordable housing project. |
| Step 2 | **Preliminary Development Proposal** | Following the request, developers present a preliminary development proposal detailing the scope, objectives, and anticipated outcomes of the project. |
| Step 3 | **Infrastructure support business case** | A comprehensive business case highlighting the infrastructure requirements and associated costs is submitted for evaluation. |
| Step 4 | **Building Permit Application** | Upon approval of the preliminary proposal, developers proceed to apply for building permits in compliance with regulatory requirements. |
| Step 5 | **Government Support(subsidies) Recommendation** | Based on the merits of the proposal and alignment with government objectives, recommendations for government support, including subsidies, are proposed. |
| Step 6 | **Contract Negotiation** | Negotiations between developers and relevant authorities ensue to finalize contractual agreements, ensuring mutual understanding and commitment to project implementation. |
| Step 6 | **Implementation** | With contracts finalized, developers commence the implementation phase, executing the affordable housing project according to approved plans and timelines. |

Through the Operational Procedure Manual on Affordable Housing, Rwanda Housing Authority (2024) defines affordable housing in Rwanda's housing context through identifying its key aspects. An affordable housing project is characterized by the construction of a minimum of 100 dwelling units, with a density of at least 50 housing units per hectare, of which 40 units per hectare must be affordable. Real estate developers, whether public or private entities, play a central role in planning, investing, and building affordable housing. An affordable housing unit is defined as a residential house with a maximum selling cost 500,000 Rwandan Francs per square meter and 40,000,000 Rwandan Francs per housing unit, along with a maximum net internal area of 80 square meters (Rwanda Housing Authority, 2024).

The government offers various types of support for affordable housing projects, including infrastructure support, land provision, investment incentives, and buyer mobilization among others (Rwanda Housing Authority, 2024). Infrastructure support covers essential elements such as roads, drainage systems, electricity, water supply, sanitation services, rainwater harvesting, firefighting facilities, and basic social amenities. Additionally, eligible developers can access state land concessions, preferential corporate income tax rates, and assistance in connecting with potential buyers through the "Giriwawe system".

### 5.2.6. Strategies for Mobilising Buyers for the Affordable Housing Units

According to Rwanda Housing Authority (2024), the Development Bank of Rwanda (BRD), in collaboration with the Rwanda National Housing Agency (RHA), has launched the Giriwawe program, aimed at assisting low-income individuals in securing housing through loans from financial institutions. The program is designed to offer financial support to those with limited incomes, enabling them to purchase homes and improve their living conditions. Giriwawe is divided into two categories: households earning less than 1.2 million Rwandan francs (Frw) per month can receive loans up to 40 million Rwandan Francs at an 11% interest rate over 20 years for their first home. Those earning between 1.2 million Rwandan Francs and 1.5 million Frw are eligible for loans to buy houses valued between 40 million Frw and 60 million Frw at a 13% interest rate. Additionally, the program helps homeowners with heavy debts, allowing them to extend their repayment period and lower their interest rates. Those with their own plots are also allowed to apply for construction loans, which can be converted to more affordable homeownership loans under this program (Muganga SACCO, 2023).

In the Giriwawe program, the Development Bank of Rwanda (BRD) collaborates with different banks operating in Rwanda including Bank of Kigali (BK), ZIGAMA CSS, Bank of Africa (BoA), Umwalimu SACCO, NCBA Bank, and BPR Bank. Additionally, BRD intends to expand the number of participating banks to further support the initiative (Igihe, 2023). As per Rwanda Housing Authority (2024), mobilization of potential buyers is one of the government supports for the eligible developers. Affordable housing program developers are connected with potential buyers through different ways including “Giriwawe System”, where households interested in affordable houses register.

### 5.2.7. Key Stakeholders in the Assessment and Approval of Government Support for Affordable Housing Projects

The table 7 below, identifies the key stakeholders involved in the assessment and approval process for government support of affordable housing projects in Rwanda. Each institution plays a specific role in ensuring the successful evaluation, funding, and implementation of these projects. The National Approval Committee provides strategic guidance and final approval, while the Ministry in Charge of Infrastructure oversees the overall coordination. The Ministry of Finance and Economic Planning allocates necessary funds, and the Agency in Charge of Housing manages the application process and compliance. The Agency in Charge of Investment Promotion attracts investors and facilitates land grants, while utility agencies ensure infrastructure integration. The City of Kigali or relevant district issues permits and monitors compliance, and the technical team assesses applications and provides recommendations. Real estate developers are responsible for the execution and development of the housing units, working closely with the Rwanda Housing Authority to market the projects and identify eligible buyers (Rwanda Housing Authority, 2024).

**Table 5:** Stakeholders Involved in Affordable Housing Projects' Government Support Assessment and Approval

| No | Institution | Institution's Role |
|---|---|---|
| 1 | **National Approval Committee** | Providing strategic guidance for infrastructure evaluation, reviewing evaluation reports, approving, or rejecting projects for infrastructure support, determining implementation modalities, allocating land grants, addressing cost fluctuations, and taking corrective measures for non-compliance. |
| 2 | **Ministry in Charge of Infrastructure** | Overseeing the National Approval Committee's activities and coordinating infrastructure provision through affiliated agencies. Additionally, it monitors the implementation progress of supported projects to ensure compliance and effectiveness. |
| 3 | **Ministry of Finance and Economic Planning** | Allocating funds for affordable housing projects requiring government support in infrastructure-related matters. |
| 4 | **Agency in Charge of Housing** | Coordinating the application process, engages government stakeholders during project appraisal and implementation, and ensures compliance with relevant laws. Additionally, it organizes quarterly stakeholder meetings to report progress and address challenges, while also raising funds for infrastructure-supported affordable housing projects. |
| 5 | **Agency in Charge of Investment Promotion** | The institution overseeing investment promotion appoints focal persons to join the technical team, attracts investors to affordable housing projects, advises on incentives, and facilitates the granting of state land for land subsidies. |
| 6 | **Agencies in Charge of Utility** | Utility Agencies appoint focal persons to join the technical team and incorporate affordable housing sites into their planning for road and public service provision, while also monitoring the implementation of government-supported infrastructure projects. |
| 7 | **City of Kigali or Concerned District** | The City of Kigali/District is responsible for appointing focal persons to the technical team and issuing building and occupancy permits for affordable housing projects. Additionally, it evaluates implementation weekly and ensures compliance with project requirements. |
| 8 | **Technical Team** | The technical team is responsible for assessing property developers' applications for concept development, bill of quantities, and detailed designs of proposed affordable housing projects. Additionally, it offers technical recommendations to the National Approval Committee regarding all relevant aspects of affordable housing projects and suggests any necessary technical modifications to be made. |
| 9 | **Real Estate Developers** | Real estate developers are responsible for funding the execution of housing units based on the project's financial mode. Additionally, they undertake activities such as concept development, detailed designs, and bill of quantities for affordable housing projects, while also collaborating with the Rwanda Housing Authority to advertise and generate a list of qualified prospective home buyers. |

*Compiled by the author, source: (Rwanda Housing Authority, 2024)*

## 5.3. Housing Expenditure-to-Income Ratio (EIR)

This section includes second part of the empirical which details statistical analysis. This analysis focuses on calculating household housing expenditure, household income, and the expenditure-to-income ratio (EIR). The results are presented by population deciles to examine the economic distribution and compare these metrics with the eligibility criteria for affordable housing beneficiaries and the 30% expenditure-to-income rule of thumb. Additionally, the analysis includes geographical distribution to illustrate housing expenditure, household income, and housing expenditure to income across different regions of Rwanda.

### 5.3.1. Rural/Urban Distribution and Household Housing Tenure Status

The table 6 below, provides an overview of the current occupancy status of dwellings in urban and rural areas in Rwanda, highlighting the different housing tenure statuses. It categorizes households into owner-occupied, tenancy renting, employer-provided, free-of-charge, temporary camps, and other types of dwellings. This classification offers a comprehensive view of the housing situation before delving into the calculation of housing expenditures and the expenditure-to-value ratio. By examining the data, we can see the prominence of owner-occupied dwellings in both rural and urban areas, with rural areas having a significantly higher number of owner-occupied homes. Tenancy renting is more prevalent in urban areas compared to rural ones. The data also reveals the relatively smaller proportions of dwellings provided by employers, free of charge, and temporary camps across both settings. This distribution lays the groundwork for analysing the affordability and financial burdens associated with different types of housing in Rwanda.

**Table 6:** Rural/Urban and Households Housing Tenure Status

| **Urban/Rural** | **Current occupancy status** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Owner occupied** | **Tenancy renting** | **Provided by employer** | **Provided free of charge** | **Temporary camp** | **Other** | **Total** |
| Urban | 1,146 | 1,208 | 18 | 142 | 7 | 5 | **2,526** |
| Rural | 10,290 | 944 | 40 | 739 | 25 | 16 | **12,054** |
| **Total** | **11,436** | **2,152** | **58** | **881** | **32** | **21** | **14,580** |

### 5.3.2. Household Housing Expenditures

In the context of this master's thesis, 'housing expenditure' refer to the ongoing cash and in-kind expenditures essential for inhabiting and maintaining the housing unit (monthly rent for renters and estimated monthly for homeowners plus utilities). Nevertheless, when evaluating housing affordability for program or policy development, it is essential to account for the entire housing expenditure incurred by a household, encompassing any initial capital investments. In the context of this study, the fifth Integrated Living Conditions Survey (EICV5) dataset were used and underwent careful processing involving, organizing, cleaning, and preparing the data for subsequent analysis. The analysis begins with the selection of the appropriate dataset labelled "Household" to obtain relevant variables for the study. Within the "Household" dataset containing 96 variables, a thorough review was conducted to identify variables specifically related to housing-related expenses. After careful consideration, a subset of variables was chosen from the dataset, focusing exclusively on those relevant to housing costs. These variables were selected based on their direct impact on household expenditures associated with

housing. In addition to the existing variables, three new variables were created to facilitate a more comprehensive analysis of total monthly household housing expenditures, and five variables as shown in the following table 7 were used to compute the total monthly household housing expenditures.

**Table 7:**Descriptions of Variables for Monthly Household Housing Expenditures

| NO | List of Variables | Descriptions |
|---|---|---|
| 1 | **Monthly Household Estimated Rent for Dwelling** | The variable was calculated by combining two variables from dataset namely, estimated rent for homeowners and actual rent for tenants. Respondents provided rent payments in different time units such as weekly, quarterly, monthly, and annually. To ensure consistency, all these values were transformed and converted into monthly equivalence. |
| 2 | **Monthly Household Water Bill Expenses** | This variable includes both drinking water and water used for domestic purposes. This variable was calculated by combining three variables: the amount of the previous water bill from utility providers, payments to private water vendors, and contribution to the maintenance of water sources, all converted to monthly unit before aggregation. Some households access water from natural sources and therefore do not incur any water costs. |
| 3 | **Monthly Household Cooking Fuel Amount** | This variable represents the amount of money households spend on cooking fuels, which includes the combined expenditure on various types of cooking fuel such as gas and charcoal. Due to the possibility of households using multiple cooking methods, the dataset includes separate variables for each type of cooking fuel expenditure, which were then aggregated to calculate the total monthly expenditure on cooking fuel for each household. Some households have not reported any expenditure for cooking fuel, possibly due to the use of traditional cooking methods in rural areas. |
| 4 | **Monthly Household Electricity Expenses** | This variable indicates the amount of money households spend on electricity, with responses recorded in monthly units. Notably, as electricity infrastructure is not yet fully developed across the country, this question was answered only by households using electricity. |
| 5 | **Monthly Household Services/Payment in Kind** | The table below presents data on Monthly Service Payments, which reflect the value of services or payments in kind provided by households in place of rent. The numbers are obtained from responses to questions regarding whether households offer services or payments in kind to their landlords instead of paying rent, and if so, the value of these services. |

### 5.3.2.1. Household Housing Expenditure Distribution in Rwanda

Examining total household housing expenditures across different population deciles provides crucial insights into the affordability of housing among various socio-economic groups. This analysis helps to identify disparities and vulnerable populations that may struggle with housing affordability, highlighting areas where targeted interventions could be beneficial. By exploring housing expenditure across deciles and geographical regions, the following table 8 offers

valuable information for understanding the impact of economic policies and urban development factors on housing affordability in Rwanda.

**Table 8:** Household Housing Expenditure Levels Across Deciles (Rwf)

| **Housing_Exp_Deciles** | **Mean** | **p50** | **Min** | **Max** | **N** |
|---|---|---|---|---|---|
| **1st (≤10%)** | 1,080 | 1,000 | 0 | 1,500 | 1,524 |
| 2nd **(>10% ≤20%)** | 1,981 | 2,000 | 1,520 | 2,000 | 1,779 |
| 3rd | 2,791 | 3,000 | 2,020 | 3,000 | 2,393 |
| 4th | 3,147 | 3,160 | 3,001 | 3,200 | 243 |
| 5th | 3,873 | 4,000 | 3,220 | 4,500 | 1,391 |
| 6th | 5,048 | 5,000 | 4,540 | 5,500 | 1,494 |
| 7th | 6,808 | 6,800 | 5,520 | 8,350 | 1,382 |
| 8th | 10,855 | 10,500 | 8,360 | 14,300 | 1,462 |
| 9th | 20,662 | 20,000 | 14,320 | 30,000 | 1,454 |
| **10th (>90% ≤100%)** | 93,883 | 58,900 | 30,100 | 1.28e+06 | 1,458 |
| **Total** | **14,934** | **4,500** | **0** | **1.28e+06** | **14,580** |

The table 8, provides an insightful look into household housing expenditure levels across different population deciles[2], offering a snapshot of the socio-economic landscape. Each decile represents a distinct 10% segment of the population based on their housing expenditure. The data reveals non-linear development, particularly the steep increase in expenditure between the 9$^{th}$ and 10$^{th}$ deciles, stresses the substantial socio-economic differences among the population based on the housing expenditure. The table also suggests that higher expenditures could be linked to better housing quality or additional costs such as utilities, which may not affect lower deciles as much. Such trends highlight the critical need for targeted interventions to improve housing costs, especially for the lower-income groups who may struggle with inadequate housing standards or financial burdens for higher income groups. Policymakers can use this data to design tailored housing policies that address these disparities, promote equitable access to quality housing, and mitigate the impact of income inequality on housing affordability. Understanding these expenditure patterns is essential for identifying vulnerable populations and regions requiring focused support to ensure comprehensive and inclusive housing solutions.

[2] *The mean column provides the average expenditure within each decile, offering a general understanding of typical spending patterns. The p50 column indicates the median expenditure, representing the midpoint where half of households spend more, and half spend less. Minimum and maximum columns display the lowest and highest expenditures observed in each decile, respectively, showcasing the expenditure range. The N column denotes the number of households included in each decile, providing context for the data's representativeness.*

### 5.3.2.2. Geographical distribution of housing expenditures

Presenting statistical data by the geographical distribution of housing expenditures is essential for interpreting regional disparities and variations in housing costs, which are crucial for both policymakers and researchers. By analysing housing expenditures across provinces and districts of Rwanda, we can gather insights into the spatial distribution of housing affordability rate and understanding geographical factors that can influence housing affordability. Understanding regional disparities in housing expenditures enables targeted interventions to address specific affordability issues in each province or district, promoting more equitable access to housing resources. By investigating housing expenditures at the provincial and district levels as illustrated in the following table 9 and figure 7, our research provides a comprehensive understanding of socioeconomic disparities across different areas, which is crucial for informed policy development and resource allocation.

**Table 9:** Distribution of Household Housing Expenditure across Provinces

| **Provinces** | **Mean** | **p50** | **Min** | **Max** | **N** |
|---|---|---|---|---|---|
| Kigali City | 68,679 | 32,275 | 0 | 1.28e+06 | 1,620 |
| Southern Province | 7,704 | 3,310 | 0 | 235,400 | 3,840 |
| Western Province | 8,034 | 3,200 | 160 | 324,000 | 3,360 |
| Northern Province | 8,846 | 4,780 | 0 | 485,000 | 2,400 |
| Eastern Province | 8,532 | 4,000 | 0 | 591,500 | 3,360 |
| **Total** | **14,934** | **4,500** | **0** | **1.28e+06** | **14,580** |

The table 9, provides a comprehensive overview of household housing expenditures across Rwanda's provinces, highlighting significant regional disparities in housing costs. Kigali City stands out with a markedly higher mean and median housing expenditure, indicating that households in the capital city generally face higher housing costs. In contrast, the Southern, Western, Northern, and Eastern provinces exhibit much lower mean and median expenditures.

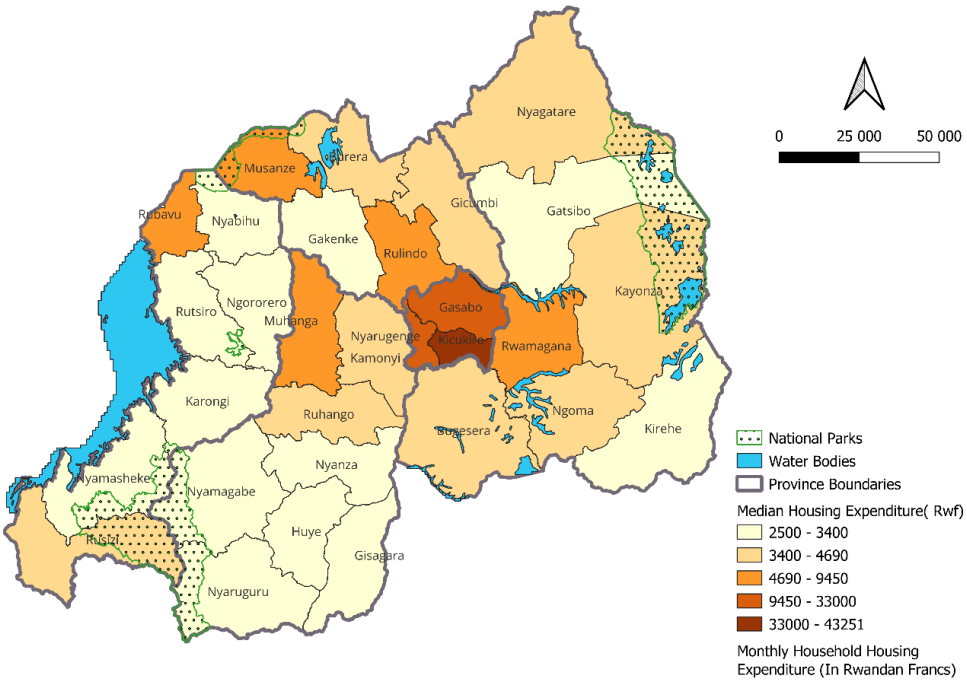


**Figure 7:**Distribution of Household Housing Expenditure Across the Districts of Rwanda

The idea to utilize the median value for the geographical analysis of housing expenditures was driven by the skewed distribution of the data. As high skewness in the dataset tends to disproportionately influence the mean, potentially inflating its value and providing a misleading representation of typical spending patterns. By contrast, the median offers a more robust measure of central tendency, particularly in skewed distributions, as it represents the middle value of the dataset. Therefore, opting for the median value provides a more accurate illustration of housing expenditure distribution across districts, mitigating the impact of outliers and skewed data distributions on the analysis.

Figure 7 shows the median household housing expenditures by district in Rwanda, indicating that housing expenditure distribution vary significantly among districts. The median housing expenditure varies from 2,500 Rwandan Francs (RWF) in Ngororero district to 43,251 RWF in Kicukiro district. This gap reflects the differences in economic situations and living standards between districts. For instance, urban districts such as Nyarugenge, Gasabo, and Kicukiro, which are part of the capital city Kigali, tend to have higher median housing expenditures compared to rural districts. For example, Gasabo which comprises a significant portion of rural areas of Kigali city has a lower median housing expenditure compared to other Kigali city districts which are strictly urban districts. This difference highlights the importance of considering both urban and rural dynamics when analysing housing affordability.

Among the districts with satellite or secondary cities in Rwanda, Rubavu stands out with a median housing expenditure of 9,450 Rwandan Francs, showcasing relatively higher housing costs compared to the other secondary cities districts. However, its strategic location near touristic sites such as Kivu Lake and volcano national park, and cross-border trade between Rwanda and Democratic Republic of Congo (DRC) may influence its housing expenditure dynamics. Meanwhile, other districts with satellite cities like Huye, Nyagatare, Musanze, Rusizi, and Muhanda demonstrate varying median housing expenditure values, reflecting diverse economic activities, infrastructure development, and regional disparities. For example, it is interesting to compare housing expenditure patterns in Huye, which is known as a student city because it is home to the former National University of Rwanda, and Musanze, which is known for its proximity to Volcanoes National Park as well as the fastest growing city in the past decade. This might be because student housing is more inexpensive than newly developed ones.
Conversely, districts such as Nyanza, Gisagara, and Nyaruguru exhibit lower median expenditures, suggesting the dominance of rural areas and inadequate housing infrastructure. The spatial distribution of housing expenditure values provides valuable insights for policymakers and urban planners to address housing affordability challenges across different regions, with a particular focus on ensuring equitable access to affordable housing options.

### 5.3.3. Household Income

For this master's thesis, the monthly household income (Employment income) analysis commenced with the selection of the dataset labelled "Employment, Salaries and Business" to obtain relevant variables specifically related to employment, income, and business activities. Within the "Employment, Salaries and Business" dataset containing 52 variables, a detailed examination was conducted to identify variables relevant to monthly household income calculation and employment-related factors.

After thorough analysis, a subset of variables was chosen from the dataset, focusing exclusively on those relevant to household income estimation. These variables were selected based on their

direct association with employment earnings and business profitability. All variables in the "Employment, Salaries, and Business" dataset are based on individual household members. This resulted into merging the values of individuals of the same household to get the variable values at the household level. The following variables shown in the table 10 were specifically chosen for the purpose of calculating monthly household income.

**Table 10:** Descriptions of Variables for Monthly Household Housing Expenditures

| NO | List of Variables | Descriptions |
|---|---|---|
| 1 | **Monthly Household Estimated Net Salary/Wage** | This variable provides insights into the distribution of this income category among households. Respondents detailed their main usual job and economic engagements over the past 12 months, providing valuable information on employment duration, nature, and sector involvement. The questionnaire also delved into the number of months and hours worked, as well as the sectors and occupational statuses of respondents' jobs. It's essential to note that the data represent household net salaries and wages, incorporating earnings from all household members, including those with multiple jobs. Additionally, to ensure consistency in analysis, the time units in the dataset varied from daily to annually but were standardized monthly. |
| 2 | **Monthly Household Business Profitability** | This variable derived from turnover minus total business expenditures. The dataset encompasses turnover for household business, and both labour and non-labour expenditures made by the business. Furthermore, to ensure consistency in analysis, the time units in the dataset varied from daily to annually but were standardized monthly. |
| 3 | **Monthly Household Value of in-kind payments** | This variable captures the value of in-kind payments or services received by households in terms of monetary payments. |
| 4 | **Monthly Household Housing Subsidise Amount** | This variable represents the housing subsidies provided by employers to any member of the household. |
| 5 | **Monthly Household Other Benefits Amount** | This variable encompasses miscellaneous benefits received by any member households apart from net salary, wage, business earnings, in-kind payments, and housing subsidies. |

### 5.3.3.1. Assessing Time Units for Net Salary/Wage of the Surveyed Population

The aim of this statistical section is to analyse the distribution of expenditure-to-income ratios across Rwanda, with the target of mapping housing affordability rates and analyse households targeted by the government's affordable housing schemes. However, after recognizing the complexity of household finances and varying employment patterns, particularly due to different time units for salaries and wages, which constitute the primary source of income for most households, three scenarios were developed to analyse net salaries and wages in relation to total household income.

**Table 11:** Time Units for Net Salary/Wage of the Surveyed Population

| Net Salary/Wage Time Unit | Mean | p50 | Min | Max | N |
|---|---|---|---|---|---|
| Daily | 3.29 | 3 | 1 | 7 | 9,554 |
| Weekly | 4.11 | 4 | 1 | 7 | 362 |
| Monthly | 5.74 | 6 | 1 | 7 | 1,059 |
| Yearly | 4.56 | 5 | 1 | 7 | 25 |
| **Total** | **3.56** | **3** | **1** | **7** | **11,000** |

Table 11, provides insights into the diverse nature of net salaries/wages as the main type of income among the surveyed population, showing variations in the number of days worked per week based on net salary/wage time units. The data show that a high percentage of the surveyed population receive daily income, and the table also displays a wide range of working day frequencies, from one to seven days per week, highlighting the heterogeneous nature of employment arrangements. This variability underlines the importance of considering different scenarios when evaluating household income. This study looked at three different possibilities. However, further analysis of the data was limited to three days per week because the mean and median number of working days for individuals receiving daily income was both around three (3). However, for the Expenditure-Income Ratios across Deciles, all scenarios were examined.

**Different Scenarios for Household Net Salaries/Wages Calculations:**

1. Assuming that individuals with a daily net salary/wage work five days a week
2. Assuming that individuals with a daily net salary/wage work three days a week
3. Assuming that individuals with a daily net salary/wage work one day a week

The table 12 below, presents the total monthly household income by deciles, with a focus on the assumption that individuals receiving daily net salary/wage work three days a week. The first decile (≤10%), the mean income is negative (-2,727), which could indicate outliers or anomalies in the data, possibly arising from irregular or unstable income sources. More specifically, this anomaly occurred because the calculations account for monthly benefits for households that rely on business income, where the total business expenditures are subtracted from the turnover. This methodology results in negative values when the expenditures exceed the turnover, reflecting the financial challenges faced by some households reliant on business profits. The data reveals significant disparities in household income and non-linear the more it goes to higher deciles. For instance, the steep increase in household income between the $9^{th}$ and $10^{th}$ deciles, the mean income for the 10th decile (>90% ≤100%) is substantially higher compared to the lower deciles, indicating a concentration of wealth among a small proportion

of households. This disparity highlights the unequal distribution of income within the population, which has implications for socio-economic inequality and access to resources.

**Table 12:** Distribution of the Total Monthly Household Income Across Income Deciles

| **Household Income Deciles** | **Mean** | **p50** | **Min** | **Max** | **N** |
|---|---|---|---|---|---|
| **1st (≤10%)** | -2,727 | 0 | -1.74e+06 | 0 | 2,823 |
| **2nd (>10% ≤20%)** | 3,503 | 3,600 | 83 | 5,000 | 115 |
| 3rd | 7,724 | 8,000 | 5,040 | 9,600 | 1,663 |
| 4th | 12,633 | 12,000 | 9,700 | 14,400 | 1,311 |
| 5th | 17,965 | 18,000 | 14,500 | 20,400 | 1,423 |
| 6th | 24,853 | 24,000 | 20,500 | 28,800 | 1,489 |
| 7th | 33,797 | 33,600 | 28,850 | 39,000 | 1,386 |
| 8th | 48,622 | 48,000 | 39,200 | 60,000 | 1,462 |
| 9th | 93,243 | 87,950 | 60,200 | 147,667 | 1,450 |
| **10th (>90% ≤100%)** | 836,221 | 310,000 | 147,800 | 9.07e+07 | 1,458 |
| **Total** | **106791.83** | **20,400** | **-1.74e+06** | **9.07e+07** | **14,580** |

### 5.3.3.2. Geographical distribution of household income Across Rwanda

By examining household income across provinces and districts of Rwanda, valuable insights can be gained into the spatial distribution of housing affordability rates and the geographical factors influencing these dynamics. Understanding regional disparities in household income enables targeted interventions to address specific affordability challenges in each province or district, thereby enhancing equitable access to housing resources. Through our investigation of household income at the provincial and district levels, as detailed in Table 13 and Figure 8, this study contributes to a comprehensive understanding of socioeconomic disparities across different geographical areas, providing essential insights for informed policy development and resource allocation.

**Table 13:** Distribution of Total Monthly Household Income by Provinces

| **Province** | **Mean** | **p50** | **Min** | **Max** | **N** |
|---|---|---|---|---|---|
| Kigali City | 408,991 | 68,200 | -6.50e+05 | 9.07e+07 | 1,620 |
| Southern Province | 59,053 | 18,000 | -4.43e+05 | 6.83e+06 | 3,840 |
| Western Province | 86,812 | 19,450 | -7.27e+05 | 8.48e+07 | 3,360 |
| Northern Province | 80,394 | 18,350 | -37334.00 | 4.29e+07 | 2,400 |
| Eastern Province | 54,481 | 18,000 | -1.74e+06 | 4.98e+06 | 3,360 |
| **Total** | **106,791** | **20,400** | **-1.74e+06** | **9.07e+07** | **14,580** |

The table 13, provides insights into the distribution of total monthly household income across different provinces in Rwanda, highlighting regional variations in economic prosperity. Kigali City, with the highest mean and median household income, reflects its status as the capital city, economic epicentre, and urban hub, offering more job opportunities and higher wages. In contrast, other provinces show significant disparities influenced by factors like economic activities, industrialization, agricultural productivity, and access to infrastructure. By considering both mean and median incomes, which offer insights into central tendencies and

disparities within each province, researcher was able to understand the influence of income variation between different provinces as well as its influence on the distribution of expenditure to income ratio. Policymakers and other researchers can also consider this finding to better understand income dynamics and inequalities. This comprehensive view can support the development of targeted interventions and policy measures to promote economic growth, reduce poverty, and enhance overall well-being across Rwanda's provinces.

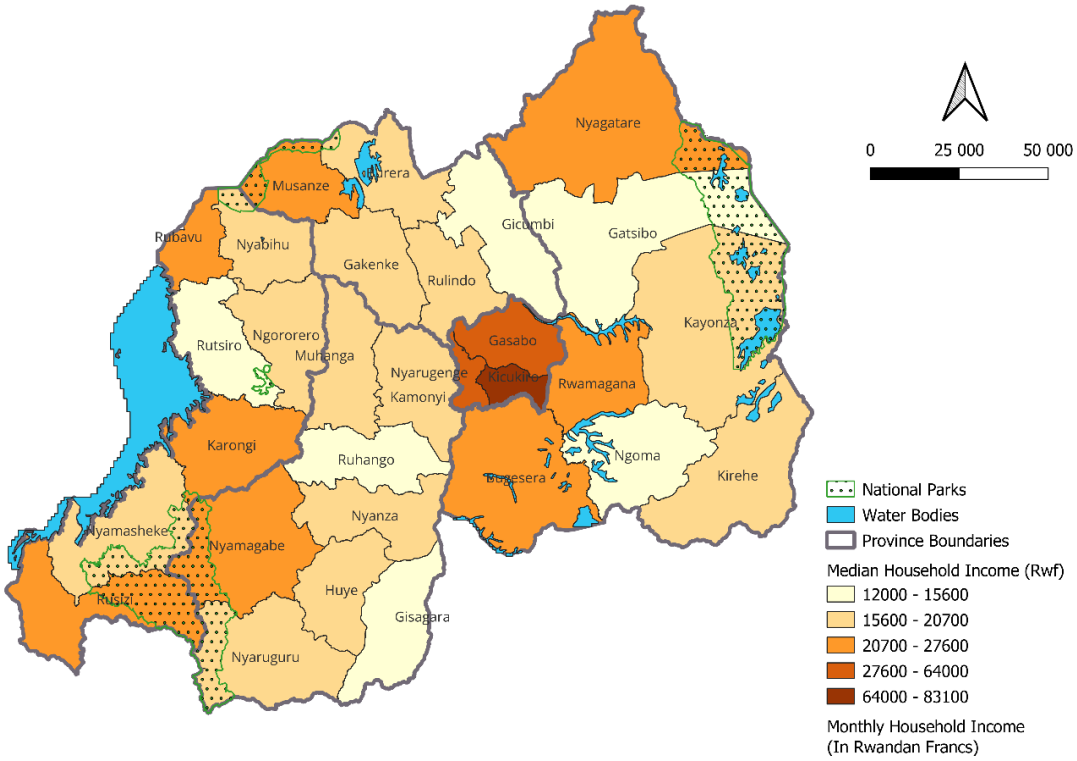


**Figure 8:** Distribution of Household Income Across the Districts of Rwanda

The Figure 9 illustrates the median household income figures across Rwanda's districts and provides valuable insights into the economic landscape and living standards across different regions. For instance, disparities in median income levels are evident, ranging from 12,000 Rwandan Francs (RWF) in Rutsiro district to 83,100 RWF in Kicukiro district. Urban districts from the capital city Kigali: Nyarugenge, Gasabo, and Kicukiro, generally exhibit higher median incomes compared to rural districts. Notably, Kicukiro stands out with a median income of 83,100 RWF, reflecting the economic activity and employment opportunities present in the area. Similarly, Nyarugenge and Gasabo demonstrate median incomes of 60,000 RWF and 64,000 RWF, respectively, indicating relatively higher monthly household income and more economic activities in these urban centers.

Conversely, rural districts like Rutsiro, Gisagara, and Gicumbi display lower median incomes, ranging from 12,000 to 14,400 RWF, suggesting comparatively lower economic prosperity and limited employment opportunities. The district of Rutsiro, for example, has a median income of 12,000 RWF, reflecting the challenges faced in rural areas in terms of income generation and livelihoods. However, it's important to note that some rural districts like Nyabihu, Nyamasheke and Nyamagabe exhibit median incomes of 16,800 RWF, 20,700 RWF, and 20,700 RWF respectively, indicating slightly better economic conditions in these areas compared to others. This could be due to high agricultural production from their more fertile soil, as those three districts are very close to the bigger natural forests: Nyungwe National Park,

which its big part is in Nyamagabe and Nyamasheke, and Volcanoes National Park and Gishwati natural forest, which are connected to Nyabihu district which is known its better livestock farming as associated production.
Districts such as Rubavu and Musanze, renowned for their secondary cities and significant tourism attractions, demonstrate median incomes of 24,000 RWF, highlighting moderate economic prosperity and potentially improved access to employment opportunities or economic activities. Rubavu, located near Kivu Lake and with an active tourism industry, reflecting the positive economic impact of tourism on local livelihoods. Similarly, Musanze, known for its proximity to Volcanoes National Park and Gorilla trekking, exhibits a median income within the same range, indicative of robust economic activities driven by tourism. These figures suggest that districts with thriving tourism sectors tend to have higher income levels, emphasizing the role of tourism in driving economic growth and providing employment opportunities in these regions.

The spatial distribution of income values across Rwanda highlights the pressing need for targeted interventions to address income disparities and promote equitable economic development nationwide. While urban centers like Kigali City and secondary cities such as Rubavu and Musanze enjoy relatively higher incomes and economic prosperity, rural districts often face economic challenges and lower income levels. By understanding the socioeconomic dynamics at the district level, policymakers can tailor interventions to meet the specific needs of each community, thereby fostering inclusive development and reducing income inequalities across the country.

### 5.3.4. Distribution of Housing Expenditure-to-Income Ratios in Rwanda

Understanding the distribution of Housing Expenditure-to-Income Ratios (EIRs) across income deciles and geographical regions in Rwanda is crucial for policymakers and researchers alike. Table 14 provides detailed insights into how housing affordability varies among different socio-economic groups, highlighting disparities that may arise from income levels and housing quality. The scenarios presented reveal that while lower income deciles generally exhibit more favorable EIRs, factors such as reduced working days significantly impact affordability, particularly for the most economically vulnerable. Figure 10 complements this analysis by illustrating regional differences in median EIRs, emphasizing the influence of urban infrastructure and economic activities on housing costs across districts. These findings underscore the complexity of housing affordability dynamics in Rwanda and the necessity for targeted interventions that address income disparities and improve access to affordable housing nationwide.

**Table 14:** Distribution of Housing Expenditure-to-Income Ratios (EIRs) Across Deciles

| **Income Deciles** | **EI ratio scenario 1** (by assuming that daily income earners work five days a week) | **EI ratio scenario 2** (by assuming that daily income earners work three days a week) | **EI ratio scenario 3** (by assuming that daily income earners work one day a week) |
|---|---|---|---|
| **1st (≤10%)** | 0.04 | **0.06** | 0.46 |
| **2nd (>10% ≤20%)** | 0.06 | **0.10** | 0.80 |
| **3rd** | 0.08 | **0.13** | 1.00 |
| **4th** | 0.09 | **0.15** | 1.23 |
| **5th** | 0.10 | **0.16** | 0.90 |
| **6th** | 0.13 | **0.20** | 0.70 |
| **7th** | 0.15 | **0.22** | 0.51 |
| **8th** | 0.20 | **0.28** | 0.37 |
| **9th** | 0.26 | **0.34** | 0.36 |
| **10th (>90% ≤100%)** | 0.40 | **0.44** | 0.41 |
| **Total** | 0.11 | **0.17** | 0.59 |

The table 14, illustrates the housing expenditure to income ratios in Rwanda across different deciles, which provides valuable insights into the affordability of housing across different income segments. In scenario 1, where individuals with daily net salary/wage were assumed to work five days a week, expenditure to income ratio ranges from 0.04 for the lowest decile to 0.40 for the highest decile, indicating varying degrees of affordability. Remarkably, the expenditure to income ratio exhibits an upward trend as income deciles increase, implying that households in lower income brackets might have a more favourable housing affordability rate compared to their wealthier counterparts. However, this can be interpreted differently.

This trend could also have been influenced by various factors, including housing quality disparities. Individuals in lower deciles might be residing in sub-standard houses, potentially skewing the expenditure to income ratio. Moreover, regional variations could play a significant role, with certain areas not yet equipped with essential utilities such as water and electricity, thus reducing housing expenses for residents. These factors underline the complicated nature of housing affordability and the need for comprehensive analysis to account for diverse socio-economic dynamics. For the highest income decile, an expenditure-to-income ratio (EIR) of 0.40 might suggest that housing affordability remains a challenge even for the wealthiest segment of the population. However, while the EIR is a common method to measure housing affordability, it can be misleading if not considered alongside other factors. This high EIR could also indicate that individuals with very high incomes can afford multiple homes, luxury properties, and still have substantial disposable income for other expenditures.

In scenario 2, where individuals with daily net salary/wage were assumed to work three days a week, expenditure to income ratio shows a similar trend, with an increase from 0.06 for the lowest decile to 0.44 for the highest decile. This suggests that the reduction in working days by two does not significantly alter the affordability dynamics, and housing affordability remains relatively consistent across income deciles. However, the affordability ratio in scenario 2 is slightly higher compared to scenario 1, indicating that fewer working days may marginally impact housing affordability, although not significantly.

In scenario 3, which assumes individuals with daily net salary/wage to work only one day a week, the expenditure to income ratio increases drastically across all income deciles. Particularly noteworthy is the sharp increase in the expenditure to income ratio for the lowest decile, jumping from 0.46 to 1.23. This indicates that households in the lowest income segment face severe challenges in accessing affordable housing, with the expenditure to income ratio surpassing 1, suggesting that housing costs may exceed their income. Conversely, while the expenditure to income ratio remains relatively lower for higher income deciles compared to the lowest decile, there is still a notable increase, underlining the widespread impact of reduced working days on housing affordability across all income segments. Overall, the analysis highlights the importance of income stability and adequacy in ensuring housing affordability, with implications for policy interventions aimed at addressing income disparities and promoting affordable housing for all segments of the population.

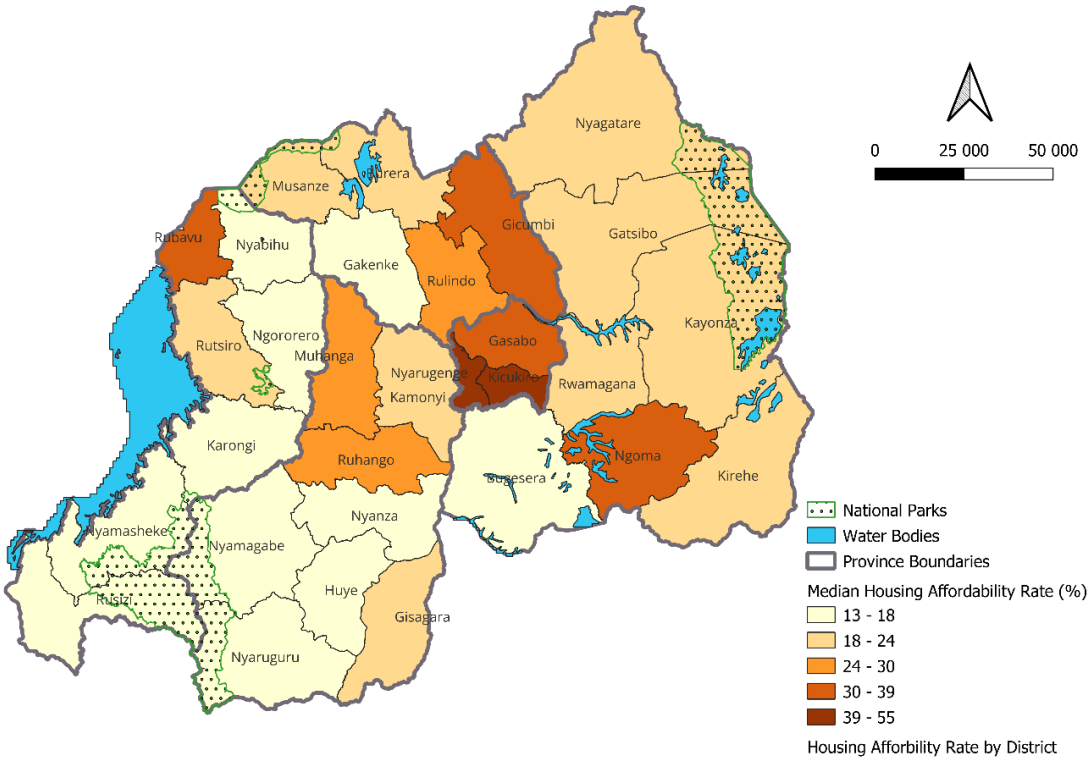


**Figure 9:** Housing Affordability (Expenditure-to-Income) Distribution Across Districts of Rwanda

Figure 10 displays the median household income figures across Rwanda's districts. Analysing the median housing Expenditure-to-Income Ratios (EIRs) across districts provides valuable insights into the diverse housing affordability landscape of Rwanda. In urban districts like Nyarugenge, Gasabo, and Kicukiro, which encompass the capital city of Kigali, the median EIRs stand at 55% (0.55), 39% (0.39), and 52% (0.52), respectively. These relatively high ratios may reflect the greater availability of urban infrastructure, contributing to improved housing facilities as well as housing costs. Nyarugenge and Kicukiro, apart from being smaller compared to Gasabo district, also cover a significant part of the urban area of Kigali city. Nyarugenge encompasses almost all parts of the city center, including the surrounding old town neighbourhoods such as Kiyovu and Nyamirambo, while Kicukiro comprises many new neighbourhoods with expensive buildings, such as Rebero. Conversely, Gasabo, despite hosting well-known wealthier neighbourhoods like Vision City, Nyarutarama, Kimihurura, and Kacyiru, it also covers a larger area, including rural parts like Bumbogo, Gatsata, Jali, Gikomero, Jabana, Ndera, Nduba, and Rutunga. This significant rural presence in Gasabo

might contribute to the observed differences in EIR of 39% (0.39) compared to other Kigali city districts. This observation is built on the earlier discussed trend about regional variations that could play a significant role in the EIR, as some areas might not yet be equipped with essential utilities such as water, electricity, internet cables, or other advanced housing facilities, thus reducing housing expenses for residents.

Generally, the EIRs across districts in Rwanda highlight significant variation between rural and urban areas. Rubavu and Ngoma districts demonstrate concerning trends. Despite their different contexts, both districts exhibit relatively high housing EIRs of 39% (0.39) and 33% (0.33), respectively, apart from the Kigali city districts. While this observation might suggest that housing is more expensive in these districts, the two districts might have two different reasons for having higher EIRs. For Rubavu, as a secondary city known for its economic activity driven by tourism and cross-border trade, the high housing EIR of 39% (0.39) can be in the same way as those in Kigali city where high-standard housing facilities and infrastructure raise the housing prices. On the other hand, Ngoma district, which is a rural district with lower mean and median household income levels, the 33% (0.33) housing EIR signifies that housing costs absorb a substantial share of household earnings, potentially impacting residents' overall financial well-being.

Gicumbi district also presents a notable case, as it is predominantly rural yet exhibits a relatively high housing EIR of 31% (0.31). Like Ngoma district, Gicumbi is a rural district with lower mean and middle household income levels. The 31% (0.31) housing EIR indicates that housing prices consume a significant portion of household income, potentially affecting inhabitants' overall financial well-being. Another possible explanation for this phenomenon could indeed be its proximity to Kigali city, the capital and economic hub of Rwanda. As urbanization continues to expand outward from Kigali, districts like Gicumbi may experience spillover effects, including rising housing prices driven by increased demand from individuals seeking more affordable living options outside the city center.

On the other hand, in other secondary cities such as Huye, Nyagatare, Muhanga, Rusizi, and Musanze, the housing EIRs vary, reflecting the diverse housing and economic landscapes across these urban areas. Huye, also known as a city with many students, has a median housing EIR of 16% (0.16), demonstrating a relatively moderate affordability level, indicating that households in this city allocate a manageable portion of their income to housing expenses. Nyagatare and Muhanga exhibit similar affordability patterns, with ratios of 19% (0.19) and 28% (0.28), respectively, suggesting differing degrees of affordability challenges faced by households in these regions. Rusizi and Musanze, with EIRs of 17% (0.17) and 21% (0.21), respectively, also highlight the complexities of housing affordability dynamics in secondary cities. While these ratios may seem comparatively lower than those in primary urban centers, they still imply significant financial commitments towards housing costs for residents in these areas. Rubavu, previously noted for its high EIR of 39% (0.39), presents a distinct case among secondary cities, indicating the presence of unique socioeconomic factors influencing housing affordability within Rwanda's urban landscape.

## 5.4. Summary of the Quantitative Empirical Section

This quantitative component of the study analysed data from the fifth Integrated Living Conditions Survey (EICV5) to assess the expenditure-to-income ratio in Rwanda. It provided insights into household income distribution and housing-related expenditure patterns across different income deciles. In addition to highlighting key trends and disparities in housing costs relative to household incomes, this section examined the geographical distribution of household income and housing-related expenditure, as well as expenditure-to-income ratios across various provinces and districts in Rwanda.

The next section will contextualize these trends within the affordable housing institutional framework by examining ongoing affordable housing projects. It will analyse these projects in the context of both the quantitative results and government policies from the institutional framework

## 5.5. Analysing the Dynamics of the Affordable Housing Projects in Rwanda

This section introduces some of the key affordable housing projects currently under different phases of construction in Rwanda, providing a comprehensive context for analysing the institutional frameworks governing affordable housing in the country. It examines the projects in terms of local definition and key aspects of affordable housing, including the monthly income requirements for beneficiaries to be eligible for affordable housing units. By integrating these projects with statistical findings on the distribution of monthly household income deciles and the distribution of housing affordability rate, the chapter offers insights into the influence of housing policy on addressing affordability challenges and its relation to the targeted beneficiaries of these projects.

Furthermore, the five key projects highlighted in this section were chosen for their significant impact in both the number of housing units and their distinctive features compared to the other projects currently underway in Rwanda. Analysing the dynamics of these projects serves to provide context to the numerical data while also shedding light on analysing the practical implications of policy influence regarding affordable housing initiatives in Rwanda.

### 5.5.1. Busanza Housing Estate

Busanza Housing Estate, located in the Kanombe sector of Kicukiro district, is one of the affordable housing projects currently under construction in Kigali. This development aims to accommodate families who previously lived in Kigali's largest slum, which includes the three zones of Kangondo I, Kangondo II, and Kibiraro I. According to the memorandum of understanding between the City of Kigali and GC Investment Limited on the "Redevelopment of Kangondo I, Kangondo II, and Kibiraro Villages in Gasabo District into 'Savannah Creek Residential Development' and Resettlement of Affected Residents in Busanza," the Rwanda Housing Authority (RHA) provided 7 hectares of land at acquisition cost for the development of 780 housing units at the Busanza site for relocated households. RHA assessed and approved the housing typology and technology for relocation and provides basic infrastructure once conditions are met as per the Prime Minister's instructions. Additionally, RHA monitors and inspects the development of housing projects in Kangondo I, Kangondo II, Kibiraro, and Busanza in collaboration with the City of Kigali. Kigali City facilitated the acquisition of land ownership documents for the developer and coordinates the relocation of households to the Busanza Housing Project.

The uniqueness of this project lies in the fact that the targeted households are not based on the usual criteria mentioned in Rwanda's affordable housing policies, as the primary beneficiaries are those relocated from Kigali's largest slum. This makes it difficult to relate the project to the household income deciles from statistical findings, highlighting a distinctive aspect of the intervention that differs from typical affordable housing criteria.4

**Figure 10:** Busanza Housing Estate - *Source: (Rwanda Housing Authority, 2024)*

### 5.5.2. Vision city

According to the Rwanda Housing Authority (2024), Vision City is a multi-phase housing development in Kigali, constructed by Ultimate Developers Ltd for the Rwanda Social Security Board. Construction began in 2013 in Gacuriro, Gasabo district. The first phase includes 504 housing units out of a larger plan to provide 4,500 units with a total investment of US$150 million. This phase features villas and apartments, and by 2020, 77% of the units had been sold, with 87% of the total cost paid. Buyers comprised 37% public servants, 27% Rwandan diaspora members, and 9% foreigners. In September 2018, apartment prices were reduced by 60% to make them affordable for 'eligible' civil servants, allowing them to purchase on a 20-year mortgage at an 11% interest rate. This discount reduced the price of a two-room unit from Rwf108 million to Rwf63 million, a three-room unit from Rwf163 million to Rwf94 million, and a four-room unit from Rwf187 million to Rwf108 million.

Despite being listed as an ongoing affordable housing project; Vision City appears to exceed the local definition of affordable housing. This definition considers a unit affordable if it costs no more than 500,000 Rwandan Francs per square meter and 40,000,000 Rwandan Francs per housing unit. Additionally, it is difficult to compare the project's housing prices with household income deciles from statistical findings, as the project only provides the total price for the housing units while the household income deciles are on a monthly basis. However, given that the housing units are purchased through loans with a 20-year mortgage at an 11% interest rate, it can be assumed that only households from the 10th income decile can afford these units. This discrepancy highlights the project's deviation from the typical criteria for affordable housing in Rwanda.

**Figure 11:** Vision City Project - Source: (Rwanda Housing Authority, 2024)

### 5.5.3. Bwiza Riverside

Bwiza Riverside Estate is an ongoing affordable housing project located in Kigali sector, Nyarugenge district, inaugurated in 2022. These eco-friendly homes are part of a multibillion initiative by ADHI Rwanda Ltd. According to the Rwanda Housing Authority (2024), ADHI Rwanda designed the Bwiza Riverside project primarily for first-time homeowners, offering four distinct affordable home sizes and styles, with each unit priced between Rwf16 million and Rwf35 million. The Rwandan government signed agreements with ADHI Rwanda Ltd in November 2020 to execute the project in five phases.

Though the available information on this project does not provide specific details about the size and other relevant characteristics of the housing units, based on the prices, the entire project falls within the local definition of affordable housing. Regarding the household income deciles from statistical findings, like the other projects, this project only provides the total price for the housing units, while the household income deciles are given monthly. However, given that the housing units are purchased through loans with a 20-year mortgage at an 11% interest rate, it can be assumed that households from both the 9th and 10th income deciles can afford these units. For a more precise figures of the exact household monthly income required to afford a housing unit from this project at the recommended affordability rate, considering further and precise information from the financial institutions that provide the loans to eligible beneficiaries would be necessary.

**Figure 12:** Bwiza Riverside Homes - *Source: (Rwanda Housing Authority, 2024)*

### 5.5.4. Gahanga Riverside City Estate

Gahanga Riverside City Estate is one of the ongoing affordable housing projects in Kigali, aimed at constructing 100 homes in Gahanga, Kicukiro district. The developer owns the plots, and housing units are priced below Rwf50 million. Buyers can choose instalment payment plans. Each house includes three rooms, a living room, dining room, toilets, and a kitchen, along with parking for two to three cars, an annex with an outdoor kitchen, a storage room, and a security guard room. The houses range from 300 to 350 square meters. The project's second

phase will add 200 more housing units in Gahanga and feature amenities like a nursery school, health center, supermarket, and children's play area (Rwanda Housing Authority, 2024).

According to the accessible information, the exact prices of the housing units are not provided, making it difficult to analyse this project in the context of the local definition of affordable housing in Rwanda and the household income deciles from the statistical section of this study. However, the project's uniqueness lies in the developer owning the land and the single-story housing design, offering a new perspective on ongoing efforts to increase the supply of affordable housing in Rwanda. This highlights the significant role of private sector intervention in addressing the challenges of housing affordability.

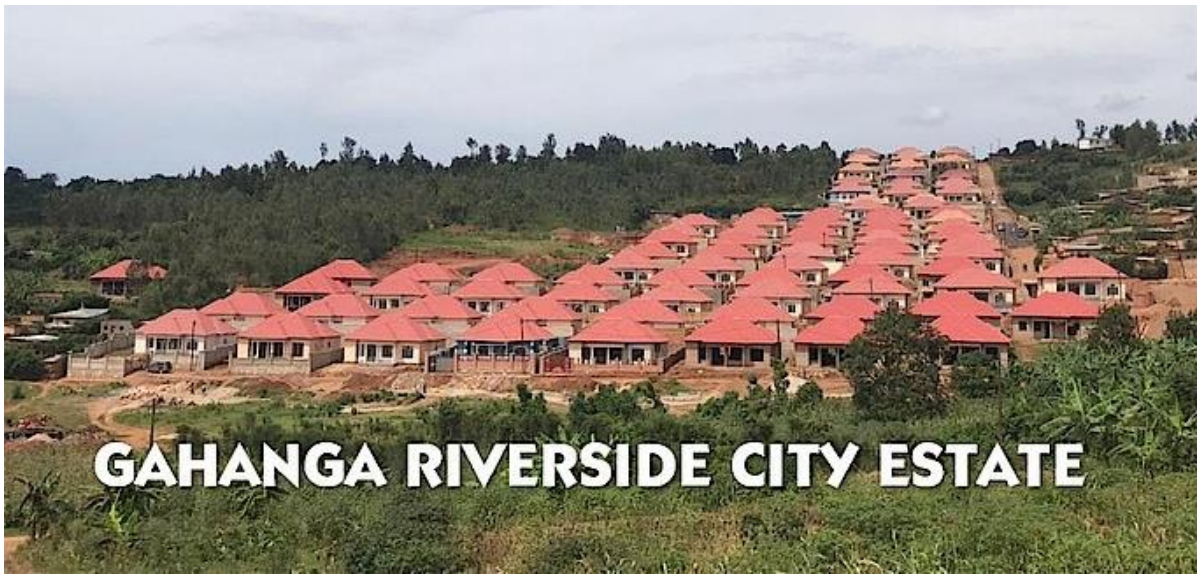


**Figure 13:** Gahanga Riverside City Estate - *Source: (Rwanda Housing Authority, 2024)*

### 5.5.5. Rugarama Park Estate

The Rugarama Park Estate project, managed by Remote Group, aims to construct 2,000 affordable homes on 42 hectares in the Nyamirambo sector of Nyarugenge district. This project is a joint venture involving Shelter Afrique, the Development Bank of Rwanda (BRD), and Remote Group. The estate will feature recreational facilities and shopping malls. It will include 1,200 housing units, with prices ranging from Rwf 12 million for a one-bedroom studio to Rwf 35 million for a convertible four-bedroom unit. Targeting first-time homeowners with monthly incomes between Rwf 200,000 and Rwf 700,000, the project is estimated to cost US$131 million. It will accommodate 14,000 residents (Rwanda Housing Authority, 2024).

Although the available information on this project does not provide specific details about the size and other relevant characteristics of the housing units, the project's pricing indicates that it falls within the local definition of affordable housing. However, when it comes to beneficiaries' eligibility criteria, it seems to exclude a portion of the targeted households stated in the government instructions. The project targets first-time homeowners with monthly incomes between 200,000 and 700,000 Rwandan Francs per month. According to Rwanda Housing Authority (2024), the government initiated Giriwawe program to assist low-income individuals in securing housing through loans from financial institutions. The program is designed to offer financial support to those with limited incomes, enabling them to purchase homes and improve their living conditions. Giriwawe is divided into two categories: households earning less than 1.2 million Rwandan Francs (Frw) per month can receive loans

up to 40 million Rwandan Francs at an 11% interest rate over 20 years for their first home. It is difficult to compare the project's housing prices with household income deciles from statistical findings, as the project only provides the total price for the housing units while the household income deciles are monthly. However, given that the housing units are purchased through loans with a 20-year mortgage at an 11% interest rate, it can be assumed that only households from the 10th income decile can afford these units.

**Figure 14:** Rugarama Park Estate - *Source: (Rwanda Housing Authority, 2024)*

# Chapter 6. Analysis and Discussion

## 6.1. Study Analysis: Factors Influencing Housing Affordability in Rwanda

This section of the analysis reviews the empirical findings and contextualizes them within theoretical frameworks by delving into a comprehensive examination of various factors influencing housing affordability in Rwanda.

### 6.1.1. Households Economic Capacity

Household economic capacity, as understood within the consumer theory framework, plays a pivotal role in determining housing affordability in Rwanda. Levin & Milgrom (2004), reveal that households aim to maximize their utility or satisfaction given their income constraints by making rational decisions about how to allocate their resources among different goods and services. This theory emphasizes the direct influence of household economic capacity on the availability of income for housing expenses, as highlighted by Becker (1962). Higher household incomes typically afford greater flexibility in housing choices, enabling access to higher-priced housing options, and broadening the spectrum of choices within the housing market. Conversely, lower household incomes may constrain housing options, necessitating a higher proportion of income allocation to housing expenses, potentially threatening affordability. UN-Habitat (2011) further insist on that housing is generally deemed affordable when households expend less than 30% of their income on housing-related expenses.

In Rwanda, the significant disparity in monthly household incomes across different population segments greatly influences housing affordability. The statistical analysis of this study shows varying expenditure-to-income ratios (EIR) across households' deciles, ranging from 0.06 (6%) for the lowest decile to 0.44 (44%) for the highest decile. This variation can be seen in different ways. For example, it can suggest that lower-income households might be experiencing more favorable housing affordability rates compared to wealthier counterparts. However, this trend is complex and may be influenced by factors such as disparities in housing quality. Lower-income households might live in sub-standard housing, which can distort the EIR. Additionally, regional differences, such as the absence of essential utilities like water and electricity in certain areas, can lower housing expenses and contribute to these variations in affordability. On the other hand, the EIR of 0.44 (44%) for the highest income decile can highlight the persistent challenge of housing affordability, even among the wealthiest population segments. This high EIR could also indicate that households with substantial incomes can afford multiple or luxury homes while still maintaining significant disposable income for other expenditures. Therefore, while the EIR is a common method to measure housing affordability, it can be misleading if not considered alongside other factors. To fully understand housing affordability, it is crucial to complement the EIR with additional factors, including actual household income and spending behaviours. A comprehensive understanding of household economic capacity is essential for policymakers and stakeholders engaged in housing affordability initiatives. Such an understanding will help devise targeted interventions that address the diverse needs of Rwanda's population effectively.

Analysing households' economic capacity from a geographical perspective reveals significant variations in housing affordability across Rwanda's districts. Urban areas such as Nyarugenge, Gasabo, and Kicukiro exhibit relatively high median housing Expenditure-to-Income Ratios (EIRs), ranging from 0.39 to 0.55, reflecting better housing infrastructure availability but also higher housing costs. Conversely, rural districts like Ngoma and Gicumbi present EIRs of 0.33 and 0.31, respectively, indicating that housing expenses absorb a considerable portion of

household income due to lower income levels. Rubavu, a secondary city known for its economic activity driven by tourism and cross-border trade, also shows a high EIR of 0.39, comparable to urban areas, highlighting the need for extending affordable housing projects beyond Kigali. This emphasizes the complexity of affordability dynamics, as high EIRs in Rubavu suggest a strategic approach to address housing needs in high-density areas outside the capital. These findings emphasize the importance of considering geographic and economic disparities in housing affordability when formulating targeted interventions to meet the diverse needs of Rwanda's population.

### 6.1.2. Institutional Framework

In Rwanda, the institutional factors, encompassing policies, legal frameworks, and regulatory bodies, significantly shape housing affordability within the housing market. Utilizing the New Institutional Economics (NIE) framework, which elucidates the initiation and continuity of institutions based on their efficiency, allows for a comprehensive analysis of institutional factors. North's (1990, 1993) conceptualization of NIE offer insights into how institutions address housing-related challenges. Moreover, Bromley's (1989) characterization of institutions as regulations governing social interactions, comprising both formal legal structures and informal norms, highlights their pivotal role in shaping housing affordability. This theoretical lens enables examination of how institutional regulations and constraints influence housing affordability, particularly within the context of Rwanda's housing market.

The institutional landscape governing affordable housing in Rwanda is multifaceted, encompassing various policies and procedures outlined by government authorities such as the Prime Minister's Office and the Rwanda Housing Authority. For instance, the Prime Minister's Instructions No. 002/03 of 21/10/2022 set conditions and procedures for obtaining government support for affordable housing projects, aligning with the National Housing Policy. These instructions establish eligibility criteria for beneficiaries, emphasizing factors such as residence status, age, and income limits. Additionally, the Operational Procedures Manual on Affordable Housing provides guidelines for government-supported projects, defining key aspects of affordable housing such as minimising housing prices and net internal area. Furthermore, the government offers various forms of support for affordable housing projects, including infrastructure development, land provision, investment incentives, and buyer mobilization. This institutional framework, shaped by formal regulations and administrative protocols, plays a crucial role in facilitating access to affordable housing for Rwandan citizens.

By embedding policies and strategies within institutional frameworks, Rwanda seeks to address housing challenges and enhance housing affordability. The institutionalization of affordable housing initiatives through formal regulations and administrative procedures underlines the government's commitment to providing accessible housing options for its citizens. However, the analysis of some of the ongoing government supported affordable housing projects reveals that the projects vary significantly in terms of target beneficiaries, income requirements, and housing costs, reflecting the complexity of defining and implementing affordable housing. While some projects, like Busanza, cater specifically to displaced households from Kigali's largest slum, others, like Vision City, target higher-income brackets, challenging the local definition of affordable housing.

### 6.1.3. Housing Supply Value Chain

Housing Supply Value Chain (HSVC) is a vital framework for comprehending housing affordability dynamics, comprising interconnected elements like housing finance, land acquisition, and housing construction. Recognizing their interdependence is crucial for sustainable provision of affordable housing, especially for marginalized urban populations, as emphasized by Akinwande & Hui (2022). Burlotos et al. (2020) stress the uniqueness of each country's housing ecosystem, shaped by factors like geography, culture, and government structure.

Drawing upon the government strategies for housing affordability and the Housing Value Chain Perspectives, it becomes evident that the Rwandan government predominantly employs supply-side interventions. However, it's essential to note that the government's affordable housing policy also incorporates incentives aimed at supporting the demand side of the housing market (Blake, 2018). Also recognizing the interdependence among the various components of the Housing Supply Value Chain (HSVC) is crucial for the successful provision of affordable housing in Rwanda to significantly consider the three primary components of HSVC: housing finance, land acquisition, and housing construction. The development of affordable housing in Rwanda follows a structured process that includes all three major components of the housing value chain, which may appear to be promising for favourable outcomes.

According to Glaeser & Gyourko (2008), property rights also play a significant role from the Housing Supply Value Chain (HSVC) and housing affordability, particularly in the context of government-supported affordable housing programs. The Rwanda Housing Authority imposes strict regulations to ensure the sustainability of affordability initiatives, prohibiting beneficiaries from selling their government-supported homes within five years of purchase, except under specific circumstances like job loss, divorce, or serious illness. The Operational Procedure Manual on Affordable Housing outlines consequences for non-compliance, including fines and potential repossession of the property by the government. Additionally, criteria for eligibility, such as being a first-time homeowner, further emphasize the importance of property rights in accessing affordable housing opportunities. These regulations are designed to uphold long-term affordability by averting speculation and guaranteeing that subsidized housing benefits the intended recipients, thus fostering sustainable housing development in Rwanda. However, there is a concern that low-income households residing in substandard accommodations could be excluded from affordable housing opportunities due to the criteria stipulating property ownership for eligibility in Rwanda. Despite their pressing housing needs, these households, often living in precarious conditions, merit inclusion in affordable housing initiatives to address their immediate needs.

### 6.1.4. Population Density

Figure 13 illustrates the correlation between population density and housing affordability rates across the districts of Rwanda. It reveals a strong positive relationship between these two variables, with a correlation coefficient of 0.8768 indicating a robust positive linear correlation. This suggests that districts with higher population densities tend to have higher housing affordability rates, implying that households from those districts face challenges where housing costs absorb a substantial share of household earnings, potentially impacting residents' overall financial well-being. This correlation emphasizes the complex interplay between demographic factors and housing affordability dynamics in Rwanda's urban landscape.

**Table 15:** Correlation between Population Density and Expenditure-to-Income ratio (EIR) Across Rwanda

| **Variables** | | **Correlation Coefficient** |
|---|---|---|
| Population Density | Expenditure-to-Income ratio | 0.8768 |

According to the Rwanda Housing Authority (2017), Rwanda's urban population was 18% in 2015, with the government aiming to boost this figure to 35% by 2024. Between 2017 and 2023, it was expected that at least 310,000 additional families in Kigali would require housing, highlighting the pressing need for affordable housing solutions. Facilitating an appropriate supply of housing for low-income households is crucial for successful urban land use and preventing the formation of new informal settlements, as emphasized by the Global Green Growth Institute (2015). The government's initiative to construct 150,000 new housing units every year to fulfil the projected need of 5.5 million households by 2050 reflects the recognition of the importance of addressing housing affordability challenges, particularly in rapidly growing urban areas like Kigali. In this context, the ongoing construction of ten affordable housing projects in Kigali exemplifies a proactive approach to addressing the housing needs of the population and mitigating the potential adverse effects of high population density on housing affordability. However, there certain districts outside Kigali city with high population density that also demonstrate high housing affordability rate, as indicated by the positive correlation between these two variables such as Rubavu. This suggests that initiating affordable housing projects in these high-density districts could be a strategic way forward, extending the benefits of such interventions beyond Kigali and addressing the broader housing challenges across the country.

## 6.2. Discussion

This section of discussion, contextualised both empirical findings and the analysis section with the aim of answering the research questions and draw conclusive insights. The study addresses the following research questions: (1) What are the distributional characteristics of housing affordability in Rwanda? (2) What are the de facto-targeted households of the government's affordable housing scheme in Rwanda? (3) What is the distributional impact of the government's affordable housing schemes on housing affordability in Rwanda? Through the structured analysis, this section provides a comprehensive understanding of the study purpose by answering these research questions.

### 6.2.1. What are the distributional characteristics of housing affordability in Rwanda?

According to the findings from the statistical analysis, the housing affordability in Rwanda reveals significant distributional characteristics that highlight both economic and regional disparities. As also discussed in the previous sections, household income, derived primarily from employment, serves as a crucial indicator of economic well-being and housing affordability. By examining monthly household housing expenditures, the analysis highlights a trend where households in higher income deciles allocate a greater proportion of their income to housing compared to those in lower deciles. This trend indicates that the wealthiest households are spending more on housing, while lower-income households may be spending less not necessarily due to favorable housing affordability options, but rather due to difference in housing standards and regional variations, whereby low-income households are residing in sub-standard housing or regions with fewer utilities like water and electricity.

The spatial distribution of housing expenditures provides valuable insights into the regional dynamics of housing affordability. Urban districts like Nyarugenge, Gasabo, and Kicukiro, part of Kigali City, exhibit high median housing affordability rates (55%, 39%, and 52% respectively), reflecting better urban infrastructure and higher housing costs. Conversely, rural districts such as Ngoma and Gicumbi also show high affordability rates (33% and 31% respectively), not because of better economic conditions, but due to a significant portion of household income being consumed by housing costs. This indicates that in these rural areas, despite lower incomes, housing expenses still take up a large share of earnings, potentially impacting residents' overall financial well-being.

The variation in housing affordability across districts stresses the need for targeted interventions by policymakers. For instance, districts like Rubavu and Ngoma present unique challenges. Rubavu has a high affordability rate of 39%, reflecting urban-like housing costs. In contrast, Ngoma, with its lower income levels, indicates that housing costs absorb a substantial share of household earnings, highlighting the financial strain on residents. By understanding these dynamics, policymakers can design tailored strategies to enhance housing affordability, addressing both income disparities and the quality of housing across different regions, thereby promoting equitable economic development and improving overall socio-economic well-being.

Generally, by adhering to the UN-Habit (2011) definition of affordable housing, which utilizes the standard 'rule of thumb,' stating that housing is considered affordable when a household allocates less than 30% of its income to housing-related expenses, this study unveils significant challenges in the wealthiest households, specifically, the last two deciles, as well as six districts in terms of geographical distribution. These encompass three districts within Kigali city and three others from different provinces, Rubavu (Western Province), Ngoma (Eastern Province), and Gicumbi (Northern Province). It reveals that households in these areas face difficulties in housing affordability, as they expend more than 30% of their monthly income on housing-related costs. This indicates that a significant portion of household income is being allocated to housing expenses, leaving fewer resources for other essential needs such as healthcare, education, and savings.

### 6.2.2. What are the de facto-targeted households of the government's affordable housing scheme in Rwanda?

The targeted households of the government's affordable housing scheme in Rwanda are primarily defined by income criteria and eligibility requirements outlined in the new the Operational Procedures Manual on Affordable Housing. These instructions restrict eligibility to low and middle-income individuals, with 'low-income' households described as those unable to afford housing costs under normal market conditions and thus in need of assistance. Specifically, households with monthly incomes which is below 1,200,000 Rwandan Francs are eligible. However, to access affordable housing, potential buyers must demonstrate their economic capacity to secure and repay a mortgage, which can exclude many low-income households due to their insufficient financial stability.

The Giriwawe program, which was launched in partnership of different public institutions, further broadened the scope of targeted households by offering loans to low-income individuals, thereby facilitating their access to housing. Under this program, households earning less than 1.2 million Rwandan Francs per month can receive loans up to 40 million Rwandan Francs at an 11% interest rate over 20 years for their first home. Those earning between 1.2 million and 1.5 million Rwandan Francs are eligible for loans for houses valued between 40 million and 60 million Rwandan Francs at a 13% interest rate. This initiative aims to provide financial support to a wider range of income groups, ensuring that more people can improve their living conditions through homeownership.

However, despite these inclusive policies, a significant portion of the population may still be excluded from benefiting from the affordable housing schemes due to practical financial constraints. Analysis of Total Monthly Household Income by population deciles shows that the mean and median incomes for all deciles are below the 1,200,000 Rwandan Francs threshold, suggesting that nearly all households theoretically fall within the targeted range. Yet, the reality of obtaining a loan is complex; households must apply through the Giriwawe system and undergo financial appraisals conducted by financial institutions. These appraisals evaluate the value of the provided security or guarantee, and many low-income households may be rejected if their collateral is deemed insufficient.

Additionally, examining the prices of housing units in various affordable housing projects shows that some developers specify a monthly income range for potential buyers. For example, one ongoing project is aimed at first-time homeowners with monthly incomes ranging from 200,000 to 700,000 Rwandan Francs. Analysing this target income bracket in the context of household income deciles from the statistical results reveals that only households within the highest income decile (10th) are eligible to purchase these housing units. Moreover, some households may own properties that are very sub-standard, which also disqualifies them from eligibility since there is a criteria for being considered a first-time homeowner.

### 6.2.3. What is the distributional impact of the government's affordable housing schemes on housing affordability in Rwanda?

The government's affordable housing schemes seem to be pivotal in addressing the pressing need for housing in Rwanda, particularly in urban centers like Kigali. The Rwandan government aimed to significantly increase its urban population from 18% in 2015 to 35% by 2024, reflecting a substantial urbanization effort. The analysis of these schemes within the context of New Institutional Economics (NIE) highlights the critical role of institutions in facilitating housing supply. According to NIE, efficient institutions are essential for reducing

transaction costs and coordinating among market actors, thereby addressing market imperfections. North's (1990, 1993) NIE framework suggests that the efficiency of these institutions can significantly influence the initiation and continuity of housing projects.

While the government's affordable housing schemes in Rwanda, including the Giriwawe program, are steps in the right direction, their impact on housing affordability is mixed. The initiatives have undoubtedly expanded housing availability and aimed to include a broader range of income groups. However, financial constraints, stringent eligibility requirements, and the practicalities of securing a loan continue to limit the accessibility of these schemes to the lowest-income households. The success of these policies hinges on further reducing transaction costs, improving institutional efficiencies, and perhaps reconsidering the financial criteria to ensure that truly low-income households can benefit from affordable housing initiatives.

# Chapter 7. Conclusion and Contribution of the Study

## 7.1. Conclusion

This master's thesis utilised a mixed-methods research design to comprehensively explore the distributional impact of affordable housing schemes on housing affordability in Rwanda and the targeted households. By integrating diverse data types, including statistical analysis of the fifth Integrated Living Conditions Survey (EICV5) data and a desk review of housing policies, the study provides a thorough examination of various factors influencing housing affordability in the country, contextualized within theoretical frameworks.

The analysis revealed insights into factors such as household economic capacity, institutional framework, housing supply value chain, and population density, highlighting disparities in income distribution and regional variations in housing affordability dynamics. The expenditure-to-income ratios (EIRs) reveal distinct challenges for both lower and higher-income households. Geographically, urban areas especially Kigali city districts have higher EIRs which might reflect the availability of developed housing infrastructure and higher housing costs. In contrast, rural districts such as Ngoma and Gicumbi, also have higher EIR due to lower household incomes, and their households experience challenges of substantial portions of household income absorbed by housing costs, leaving fewer resources for other essential needs. Institutional factors, including government policies, legal frameworks, and regulatory bodies, play a pivotal role in shaping housing affordability. However, targeted interventions and enhanced institutional efficiencies are needed to address housing affordability challenges effectively.

Furthermore, the study examined the Housing Supply Value Chain (HSVC) factors influencing housing affordability, recognizing the interdependence among housing finance, land acquisition, and housing construction. The analysis of ongoing government-supported affordable housing projects reveals significant variations in target beneficiaries, income requirements, and housing costs, posing challenges in defining and implementing affordable housing. The strong positive correlation between population density and expenditure-to-income ratios (EIRs) indicates that higher-density districts face high housing affordability challenges. As Rwanda's urban population grows, addressing housing needs becomes critical to prevent the formation of informal settlements. The government's initiative to construct 150,000 new housing units annually reflects a proactive approach to urban housing needs. However, high EIRs in densely populated districts like Rubavu suggest that affordable housing projects should also target high-density areas outside Kigali to address broader housing challenges.

In conclusion, while government affordable housing schemes address housing needs, challenges remain in ensuring equitable access for the lower income households. Despite significant steps in policy and planning, the impact of affordable housing schemes remains mixed due to practical challenges, including strict eligibility requirements and financial constraints. Moving forward, policymakers should focus on improving institutional efficiencies and reassessing financial criteria and improving inclusivity within programs to achieve sustainable urban development in Rwanda. Addressing these challenges will be crucial for promoting equitable access to housing and achieving sustainable urban development in Rwanda.

## 7.2. Contribution of the Study

This study significantly contributes to the understanding of housing affordability in Rwanda by employing a comprehensive mixed-methods approach that integrates both quantitative and qualitative data. Using a mixed-methods research design, the study integrates quantitative data from the fifth Integrated Living Conditions Survey (EICV5) and a qualitative desk review of key policy documents, including the National Urban Housing Policy, Kigali City Master Plan, and Operational Procedures Manual on Affordable Housing. This comprehensive approach allows for an in-depth analysis of various factors influencing housing affordability, providing valuable insights into the efficacity of current policies and practices. This study adds to the existing literature on housing affordability in Rwanda and the developing world in general, providing new insights that are crucial for both local and international contexts.

Moreover, the study's findings offer practical implications for policymakers and stakeholders involved in housing policy and urban planning in Rwanda. The detailed examination of household economic capacity stresses the pressing need for income-based interventions and financial support mechanisms tailored to lower-income households, who are disproportionately affected by housing affordability challenges. Furthermore, the analysis of institutional factors highlights the critical role of efficient regulatory frameworks and government policies in shaping housing market dynamics. By identifying gaps and inefficiencies within the current institutional landscape, the study provides actionable recommendations for enhancing policy implementation and administrative procedures. The insights gained from this research thus serve as a valuable resource for informing and refining housing policies aimed at promoting equitable access to affordable housing in Rwanda.

## 7.3. Proposals for the Future Research

Future research on housing affordability in Rwanda should build upon the findings of this study by exploring several key areas. Firstly, longitudinal studies tracking changes in housing affordability over time would provide deeper insights into the long-term impacts of government housing schemes and policy interventions. Such studies could help identify trends and shifts in the housing market, offering a dynamic perspective on affordability challenges. Secondly, qualitative research involving in-depth interviews with diverse households across different income brackets and regions could enrich the understanding of lived experiences and factors influencing housing affordability. These qualitative insights could complement quantitative data, offering a more holistic view of the housing landscape in Rwanda.

Additionally, future research could investigate the potential of innovative financing models and public-private partnerships in enhancing housing affordability. Examining case studies from other countries with successful affordable housing initiatives could provide valuable lessons and best practices that could be adapted to the Rwandan context. Lastly, research focusing on the environmental sustainability of affordable housing projects and their integration with urban development plans could offer critical insights into creating resilient and sustainable housing solutions. By addressing these areas, future research can contribute to developing comprehensive strategies that ensure inclusive, affordable, and sustainable housing for all Rwandan citizens.

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