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Housing Solutions for Low-Income Urban Communities in Rwanda

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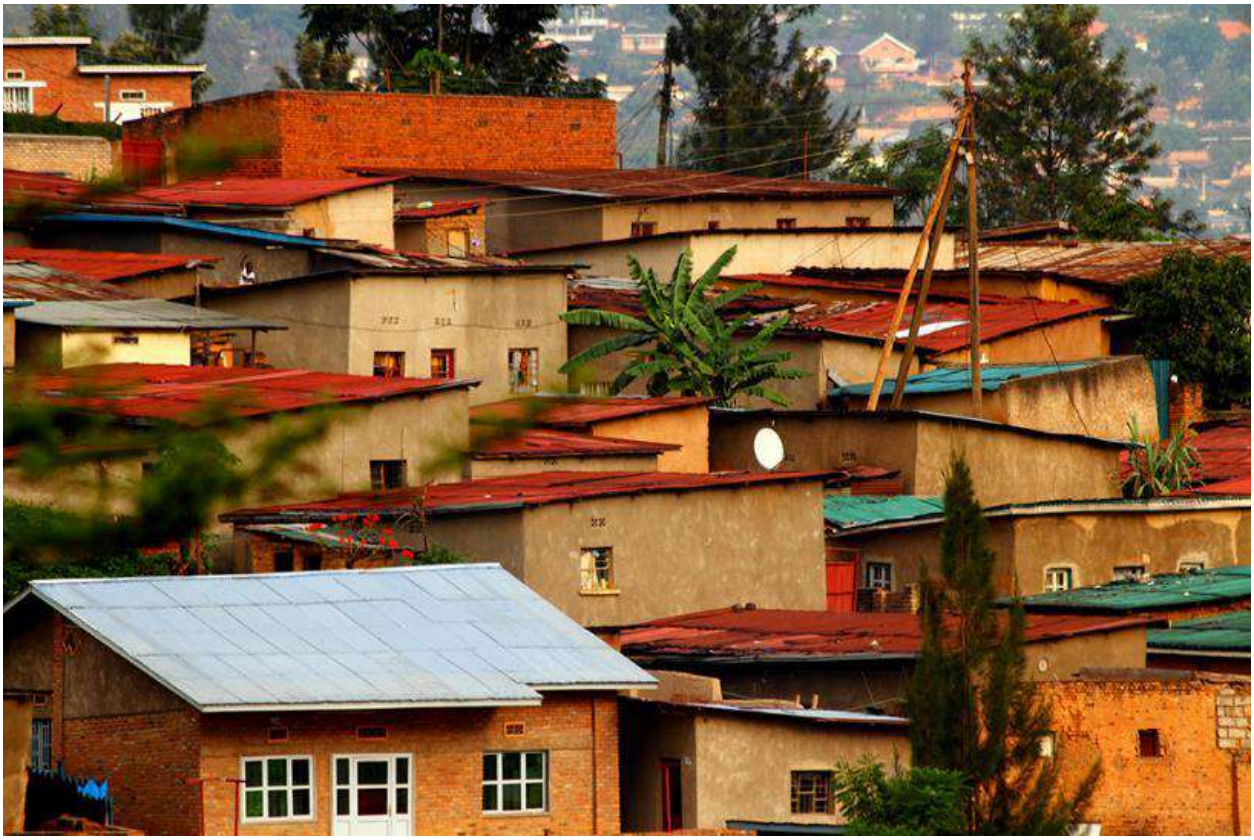

Draft Report

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List of Abbreviations and Acronyms

BRD	Rwanda Development Bank
CAHF	Centre for Affordable Housing Finance in Africa
CoK	City of Kigali
Du/ha	Dwelling units per hectare
EICV	Integrated Household Living Conditions Survey (Enquête Intégrale sur les Conditions de Vie des ménages)
RwF	Rwandan Franc
GIS	Geographical Information System
GoR	Government of Rwanda
IGC	The International Growth Centre
IFC	International Finance Corporation
KMP	Kigali Master Plan
KMPR	2019 Kigali Master Plan Review
KMPR	KMPR Kigali Master Plan Update April/May 2019
MINECOFIN	Rwanda Ministry of Finance and Economic Planning
MININFRA	Rwanda Ministry of Infrastructure
MINIRENA	Rwanda Ministry of Environment and Natural Resources
NHP	National Housing Policy
NIUSUS	National Informal Urban Settlement Upgrading Strategy
NUP	National Urban Policy
OSC	City of Kigali One Stop Centre
PROECCO	Promoting Climate Responsive Building Material Production and Off-farm Employment in the Great Lakes Region
RBC	Rwanda Building Code
RHA	Rwanda Housing Authority
RLMUA	Rwanda Land Management and Use Authority
RPC	Rwanda Planning Code
RRA	Rwanda Revenue Authority
RUDP	Rwanda Urban Development Program
Skat	Swiss Resource Centre and Consultancies for Development (Skat Ltd)
SME	Small and medium enterprises
US$	US Dollar ($)

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This report is prepared by Narae Choi (Senior Urban Development Specialist) and a team from Pegasys including Stephen Berrisford and Christian Alexander. The report received good guidance from Yasser El-Gammal (Country Manager for Rwanda), Helene Carlsson Rex (Program Leader), Meskerem Brhane (Practice Manager for Africa Urban and Disaster Risk Management) and Judy Baker (Lead Economist).

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The report builds on and adds to collective efforts to advance housing research, policy and practice in Rwanda with an aim to better serve Rwandan people, particularly low-income urban communities currently unserved by the market. In this regard, the team acknowledges and appreciates contributions of other development partners, namely: Catherine Kalisa (Country Coordinator, UN-HABITAT Rwanda), Fatou Dieye (Managing Director, Skat Consulting Rwanda Ltd.), Inhee Chung (Country Representative, Global Green Growth Initiative Rwanda) and Jonathan Bower (Country Economist, International Growth Centre).

The team hopes this report would continue the dynamic and constantly evolving discussions on housing in Rwanda.

Executive Summary

Affordable housing is an important policy agenda in Rwanda, where housing challenges are serious. A wide gap between housing supply and demand – approximately 1,000 units supplied by professional developers versus 15,000 new units needed in 2017 – is exacerbated by a huge affordability gap. In Kigali, the lowest price of a developer-built housing unit is around US$20,000. This is far out of the range of the bottom 50 percent of the income group, who can only afford to rent a unit priced below US$12,000. That is, at least half of the residents in Kigali currently cannot access formal housing options.

To serve more than half of the population, Rwanda needs a radical change in its approach to housing that goes beyond the conventional delivery by professional developers. This report defines those currently unserved by the market as low-income households and explores housing solutions for them. Specifically, upgrading of informal settlements and sites and services schemes are globally known and practiced to better accommodate low-income communities and thus this report examines the feasibility of implementing them or scaling them up in the Rwandan context.

First, the report addresses a primary need to define housing affordability in terms of and according to household income. In Rwanda's law and policy framework for housing, clear definition and calculation of affordability is missing. This raises a serious concern because government programs may not be well targeted at the low-income population and risk misallocation of public funds towards better resourced portions of the population. Establishing housing affordability will be the first step to enable the government to design a housing program dedicated to low-income households.

The report discusses land readjustment and incremental housing construction as key underlying mechanisms of both upgrading and sites and services, as they help reduce costs and/or increase efficiency of developing land for infrastructure and housing. A detailed review of the national and local laws, policies and programs in Rwanda demonstrates that the Government of Rwanda has indeed made concerted efforts to improve its planning documents, zoning regulations, and building codes to facilitate incremental development and land adjustment. In practice, "plot servicing" has emerged in Rwanda as a land reorganization strategy in which land owners voluntarily agree to pool and re-subdivide their undeveloped land and efficiently provide infrastructure and services without expropriation.

However, legal, economic and practical feasibility assessment of incremental housing and land readjustment in Rwanda reveals that certain laws and standards will inhibit operationalization of these concepts at large scale. Requirements in the national and Kigali building and zoning regulations place uneconomic or burdensome conditions such as submission of a final design envisioned at completion and full compliance with various standards. Such requirements not only increase the costs of incremental development but are often at odds with other planning objectives such as densification.

Land readjustment is legally feasible under current Rwandan law but there may also be a barrier for negotiating with private landowners over and above the government's expropriation authority. This undermines economic feasibility of land readjustment by making it difficult for the government to create surplus land or capture land value increase for cost recovery and revenue generation. Currently, any land value increase is accrued solely to the original landowners, which prevents land readjustment from being an instrument to drive affordable housing provision. Limited protection for tenants living in areas of potential land readjustment is a further concern. The government should target fuller scale land

readjustment in specific sites where the conditions will provide an opportunity for subsidization of infrastructure and housing for low-income households.

Using unplanned settlements and greenfield sites within and around the City of Kigali, the report examines applicability of land readjustment and incremental housing to upgrading and sites and services schemes. Upgrading of unplanned settlements in good locations and close to jobs has advantages in terms of connection to bulk infrastructure, increased density and provision of rental units through home improvements. However, the potential for land value increase should be thoroughly assessed before designing an upgrading project based on land readjustment. Concerted efforts should also be made to protect tenants, support landlords and engage and mobilize locally available labor and resources.

There are no significant legal barriers to implementing site and services schemes in Rwanda; but limited availability of public land is a significant challenge. As mentioned above, without further measures to capture or control land value increase resulting from servicing, it will be difficult for the government to subsidize or guarantee affordability for low-income residents in sites and services projects implemented on private land. With regulatory and real constraints on incremental housing development and the government preference for developer-built housing, plot servicing as currently practiced is different from sites and services as they are likely to provide middle-class and high-income housing.

In search for a model for innovative, low-cost housing development, the report reviews a housing developed by Swiss Resource Centre and Consultancies for Development (Skat) in Rwanda, with the funding from Swiss Agency for Development and Cooperation (SDC). Through innovations in building materials and techniques, the model realized significant cost savings and improvements on housing quality that are also in line with the urban design and density requirements. A multi-story apartment block of 10 units under the demonstration project is still priced higher than what is affordable for the lower two income quintiles. However, it warrants support for scale-up to bring down the costs. Considering that the model housing was built to respect the Rwanda Building Code 2017 before revision, with more relaxed standards, the costs could be reduced further. Being designed for densification, the model also helps to extend housing supply to segments that are currently priced out of the market by creating additional houses that could be reserved for low-income renters.

Based on the analyses, the report makes recommendations for improving the regulatory framework and practices in Rwanda to deliver on its ambition to create affordable housing for low-income households.

1. **Affordability definition**: The legal and policy frameworks needs to explicitly set out what constitutes housing affordability in Rwanda, so that housing and land supply instruments can be effectively targeted towards specific income groups, especially the low-income households.

2. **Incremental housing development**: Rwanda has recently expressed a commitment to supporting incrementalism in the construction of affordable housing, but restrictions in the regulatory framework need to be revised to realize this policy objective in practical terms.

3. **Sites and services**: Given limited availability of public land, the government needs to consider embedding a mechanism to cross-subsidize lower income households in the current practice of plot servicing or using land banks for sites and services projects.

4. **Land readjustment**: Plot servicing should be reformed to yield the opportunities for land value capture and fully leverage it to support low-income communities.

5. **Housing provision**: The government may consider supporting innovative, low-cost housing initiatives such as the one developed by Skat in Kigali, which demonstrates that housing design matters for affordability and that densification and upgrading can be a strategy for delivering more formal rental housing in the market. Depending on the location, land readjustment can make such housing model and area upgrading self-financing.

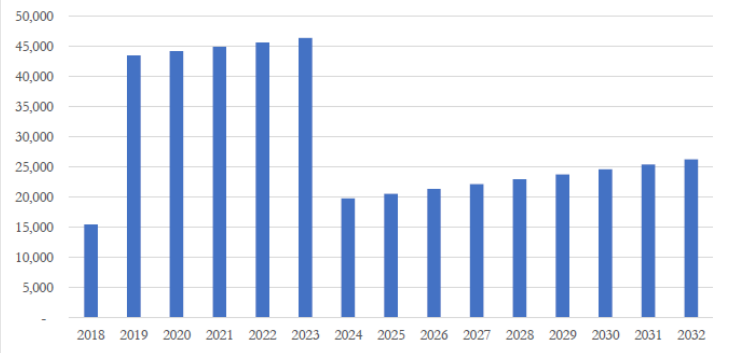
1 Introduction: Searching for Low-Income Housing Solutions in Rwanda

1.1 Housing gap in Rwanda and low-income housing crisis

The Government of Rwanda (GoR) has promoted affordable housing as an important policy agenda. An extensive land reform took place, redistributing land to private individuals to allow them to generate wealth and meet their basic needs (Sagashya and English (2009); Goodfellow (2015)). Since 2015, the GoR has published several policies and regulations to improve housing quality and quantity, including the National Urbanization Policy (2015), National Housing Policy (2015), the National Informal Urban Settlement upgrading Strategy (2017), and the Prime Minister's Instructions No. 001/03 of 23/02/2017 for Determining the Conditions and Procedures for Obtaining Government Support for Affordable and High Density Housing Projects. The City of Kigali (CoK) has also examined housing issues in its City-Wide Unplanned and Underserviced Settlements Upgrading Strategy (2019).

However, the gap between formal housing supply and demand is wide. The annual supply of formal housing by developers is estimated at just 1,000 new houses in Kigali.[1] This compares with the recent estimation that 18,000 new households will need to be accommodated in at least 15,000 houses in 2017 (Bower et al. 2019). This rises to 32,000 new households to be accommodated in at least 26,000 new houses in 2032. Meeting this demand simply maintains the status quo without making any inroads into the qualitative housing deficit. According to Integrated Household Living Conditions Survey (EICV) 5, nearly 137,000 houses or 40 percent of the total housing stock in Kigali alone require upgrading or replacement per current regulatory standards, due to build quality, overcrowding, and high-risk/ecologically sensitive locations.[2] Figure 1 shows the number of additional new houses needed, including backlog houses to be updated.

Figure 1. Additional new houses needed to house growing population and backlog houses needed by year



Source: Bower and Murray (2019) using EICV 5.
Note: The trend assumes medium population growth, medium household sizes and that the backlog is filled over a five-year period (2019-2024)

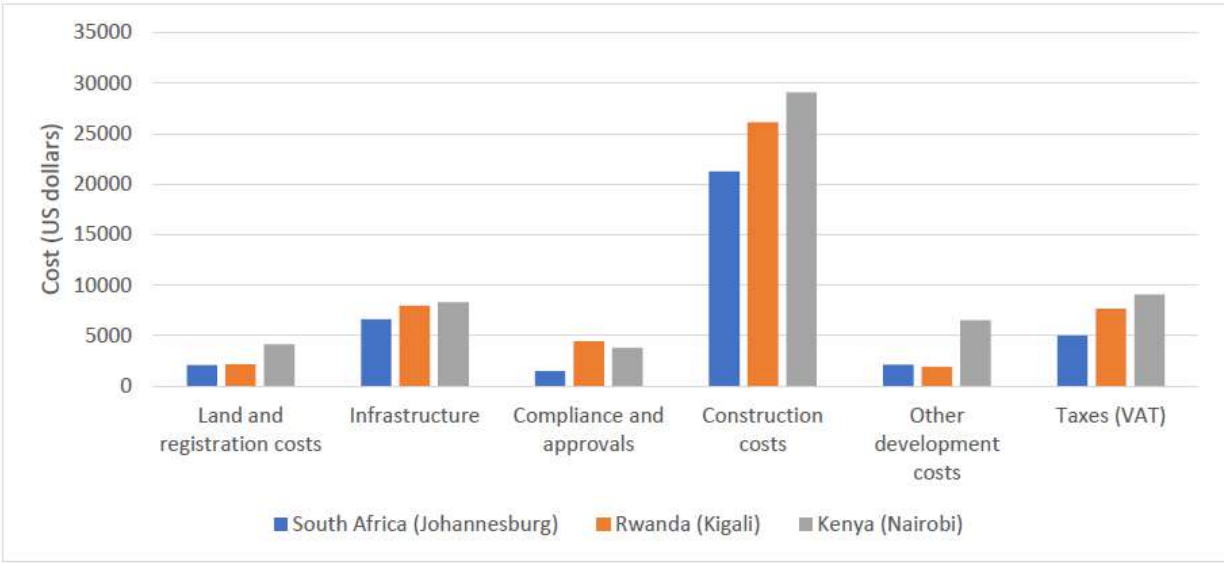
There is also a huge housing affordability gap in Rwanda. In Kigali, for example, the lowest priced housing unit provided by professional housing developers cost around US$20,000. This is far out of the

[1] This figure has been cited as a rough estimation in the absence of good data on housing supply in Rwanda. This is an important area for further research and the International Growth Centre (IGC) is planning such study (https://www.theigc.org/project/housing-market-study-for-kigali-city-rwanda/).

[2] The qualitative backlog of 136,930 houses consists of the overlapping categories of 54,839 overcrowded houses, 102,132 houses of poor quality and 13,079 houses in environmentally risky locations (Bower et al. 2019).

range for the bottom 50 percent of the income group, which can only afford to rent a housing unit priced below US$12,000 at maximum. According to the Country Private Sector Diagnostic (World Bank 2018), *Creating Markets in Rwanda*, the cost of a "standard house" (a 55m^2-house with two bedrooms, one bath and a veranda on a 255m^2-plot) was established for 15 cities in Africa and compared with one another. For Rwanda, the total cost of such standard house was around US$50,000 in Kigali as compared to US$39,000 in Johannesburg, South Africa (Figure 2). Construction costs are by far the largest cost category in Rwanda, representing 55 percent of the total cost in Kigali. This is followed by infrastructure (17 percent) and taxes (13 percent). Land and registration costs, compliance and approvals, and other development costs represent about 5 percent each.

Figure 2. Rwanda and comparators, 2018 (US$)



Source: CAHF 2018. *Note*: Infrastructure includes bulk, link, and connector.

The gap in formal housing supply is filled informally.[3] **It is critical to upgrade the quality of the existing housing stock and to support self-construction, which is a prime mode of home ownership.** According to the EICV 4 (2013/2014), around 79 percent of residents in Kigali are living in unplanned settlements where access to transport, water, electricity, and sanitation is limited.[4,5] In addition to enhancing access to basic infrastructure and services, sustained support is needed to improve the quality of housing, particularly given that the housing backlog affects lower-income groups more (Table 1). Such support should reflect the reality whereby most Rwandans build and finance their homes in phases, often using low-cost construction materials and techniques which are progressively improved over time. According

[3] In Rwanda, informal settlements are largely unplanned in the sense that they have developed not according to planning and engineering norms, while it is understood that most residents of the area have some right to be there and thus there are few, if any, informal occupiers or squatters in terms of their access to land.

[4] Hitayezu, Rajashekar and Stoelinga. 2018. The dynamics of unplanned settlements in the City of Kigali. International Growth Centre (IGC). This is an increase from an estimation of 63-66 percent by EICV 3 (2011) and Census 2012.

[5] Particular gaps stand out with regard to access to piped water within the house or yard (present in only 36 percent of houses); flush toilets (8.5 percent) rather than pit latrines; low build quality (37 percent use mud bricks without cement or lower quality wall materials and a further 54 percent use mud bricks with cement); and overcrowding (Source: Housing Market Study by the International Growth Centre, forthcoming).

to the 2016 FinScope survey, self-construction is the prevalent method of acquiring homeownership: 83 percent of homeowners have built their homes, while 6 percent report to have purchased their homes.

Table 1. Number of Houses in Kigali and Portion of Backlog (Calculated using EICV 5 data)

	All Kigali	Household Income Quintile				
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Number of dwelling units (#)	340,530	67,522	65,053	65,707	66,790	75,459
Of which requiring replacement (#)	136,930	46,501	37,204	24,319	20,676	8,243
Of which requiring replacement (%)	40.2	68.9	57.2	37.0	31.0	10.9

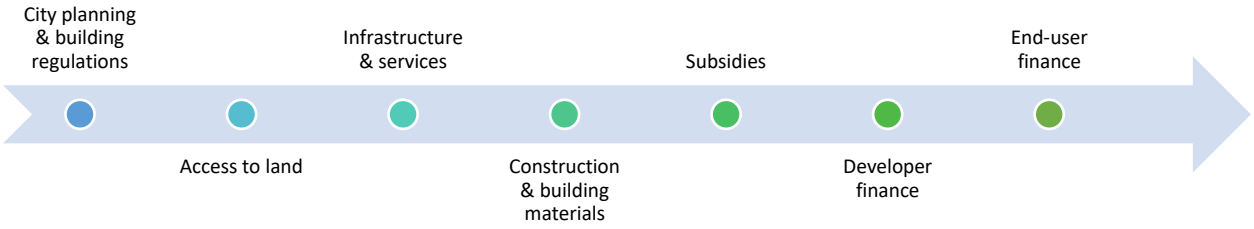
Source: Bower and Murray (2019) using EICV 5.

The housing market in Rwanda has also been constrained by the limited capacity of the financial sector to scale up housing credit. The lack of long-term funds is the biggest challenge to Rwandan banks as their source of funding predominantly comprises short-term deposits. The resulting mismatch between long-term assets and short-term liabilities creates increased liquidity and interest rate risks which limits the banks' ability and willingness to scale up long-term housing loans. As a result, banks allocate their limited funding resources to borrowers with the most favorable risk/return profile (higher income earners, salaried employees) which helps reduce risks, but it also reduces access to financing for large segments of the Rwandan population who, as a result, are unable to afford purchasing new homes.

In addition to financing, there are many constraints on both the supply and demand side of the housing market that contribute to the limited supply of affordable homes. The availability of land is limited by challenging terrains. For example, more than half of the land in Kigali is on steep slope or in wetland and is difficult and costly to develop. Available land is often fragmented in small plots. Land is mostly in private possession, leaving little leverage for the government to use it as an incentive for housing development. Urban planning norms and standards, although constantly evolving, need further improvement for facilitating housing supply. The preference of Rwandan households to inhabit single-story dwellings with some open space also gets in the way of high-density development. Construction costs are high in Rwanda because of the high cost of building materials, the lack of developer finance, and outdated building technologies. Large-scale local housing developers are missing in Rwanda, with the local construction industry lacking skills in architecture, engineering and construction to operate at scale. The combination of these constraints has contributed to the limited supply of new housing units in Rwanda and in price ranges that are affordable only to the highest-income percentiles.

The World Bank Group (WBG) has been supporting the GoR to address housing challenges across the demand and supply chain. The Rwanda Housing Finance Project (HFP), approved in November 2018, aims to expand access to housing finance to households and to support capital market development in Rwanda. The project utilizes US$150 million from the Scale-Up Facility for providing long-term finance through the line of credit and potentially the mortgage refinancing company. The Rwanda Urban Development Project (RUDP), financed by US$95 million Credit from the World Bank, aims to provide access to basic infrastructure and enhance urban management in Kigali and six secondary cities. The RUDP is supporting a pilot project of upgrading 86 ha unplanned settlements in Kigali with a total population of almost 19,000, through investments in access roads, footpaths, drains and streetlighting.

Figure 3. Building Blocks for the Housing Supply and Demand Chain



This report builds on and complements the existing WBG efforts by examining housing supply constraints and exploring housing solutions for low-income communities in Rwanda. The Rwanda HFP, which predominantly addresses the demand side constraints (i.e. end-user finance), notes that the limited housing supply in the formal market poses a major risk to the success of the project. The market is virtually nonexistent in the range affordable to the bottom 50 percent of the population. The need to address critical supply challenges is partially considered in the project through its technical assistance (TA) component.[6] The Rwanda Country Private Sector Diagnostic (CPSD) was conducted in 2018 and provided important insights into the housing value chain in Rwanda and its overall economic impact. This report builds on and complements the relevant analyses by WBG and others, by focusing on housing constraints for low-income groups and exploring options to address them.

1.2 Objective

This report examines if and how upgrading of unplanned settlements and sites and services can be viable housing options for low-income households in Rwanda. Studies conducted so far on low-cost and/or low-income housing in Rwanda have strongly recommended upgrading of the existing housing stock in Kigali and developing new low-income settlements in the periphery through sites and services programs, to address housing needs of low-income households as part of the well-managed urbanization process.[7] The report reviews the key Rwanda urban planning and housing documents with a focus on affordability, incrementalism and land readjustment as building blocks for low-income housing solutions. The report discusses key implications of the legal review, while a full analysis of applicable Rwandan laws, regulations and policies is available at Annex B. Actual and potential cases in the City of Kigali (CoK) will be assessed in terms of legal, economic and practical feasibility of utilizing incremental development and land readjustment in upgrading and sites and services.

Based on the legal review and case studies, the report aims to provide practical recommendations to improve the regulatory framework and practices for low-income housing provision. While Rwandan laws and policies increasingly foreground the ambition to create more affordable housing, they currently lack clear definition of affordability and focus on low-income households. There are also important distinctions between Rwandan and international approaches that need to be understood to calibrate support to Rwanda's affordable housing agenda. This raises the need to compare and clarify how these housing options are defined and practiced globally and in Rwanda; and the *de jure* urban planning, land and housing regime in Rwanda as written in the relevant law, regulations, policies, strategies and

[6] A range of activities envisaged under this component includes a review and update of the existing incentive framework (land, infrastructure, tax, and other financial incentives) and a rental market study. The budget for TA component is US$3 million.
[7] Buckley (2015); Buckley and Bajpai (2015) at https://www.theigc.org/project/delivering-affordable-housing-and-supporting-infrastructure-in-kigali-rwanda/

guidelines with the *de facto* operational environment and practice, which is driven by political directions, socio-cultural appetite and technical capacity.

Specifically, this report intends to inform the discussion on the design of the proposed Rwanda Urban Development Project (RUDP) II, a follow-on project of RUDP that runs for 2016-2021. Building on the lessons learned from the pilot upgrading experience under RUDP, RUDP II aims to scale up the upgrading efforts and consider other housing solutions through technical assistance. One of the key lessons from RUDP implementation is the importance of using cost-effective and functional planning and construction standards to minimize resettlement and keep communities in place, while improving living standards in the neighbourhood. Through a detailed legal review and feasibility assessment of practical cases, this report attempts to unpack bottlenecks in the current planning regime, which has been known for stringent and costly requirements, and make practical suggestions that can further facilitate provision of low-income housing, part of which can be considered for support under RUDP II.

2 Housing Affordability for Low-Income Households in Rwanda

2.1 Need for establishing affordability

'Affordable housing' often connotes a policy intention and public expectation for housing that is affordable to most of the population. Housing affordability for higher income earners is usually not a policy concern and thus the government support to affordable housing is generally focused on lower- or middle-income households. To evaluate whether and how such policy intention can be translated into a housing program that meets public expectation, it is critical to define housing affordability in terms of the household income and in view of the housing prices in the market. Without calculating affordability across income groups and defining target beneficiaries, affordable housing programs may not effectively address the housing needs of low-income populations who cannot afford options provided by the market and thus are in need of the government support.

Yet, the context-specific and subjective nature of affordability makes it difficult to define universal affordability standard. Internationally, housing affordability is often determined according to a percentage of overall household income that a household could realistically manage to pay for accommodation (Bower et al. 2019, p.60). In high income countries, housing is generally considered affordable if rent payments are no more than 30 percent of the household's income. In comparison, an average Rwandan household spends around 10 percent of their income on rent, which is common among many countries at similar levels of income to Rwanda (Ibid).

In Rwanda, although the housing policies notes affordability gap for most population, affordability is not clearly articulated or calculated to guide the housing programs. For instance, the National Housing Policy (2015, p.16) states that "[a]ffordability refers to financially and administratively accessible housing" and notes that "[b]ased on the average wage countrywide of RwF 37,664 and an average wage of RwF 223,527 in the City of Kigali, the monthly rates which a household may afford to pay for housing therefore, lies in the area between less than RwF 25,000 and RwF 150,000, with the majority toward the lower end" (Ibid., p.6). While affordability is presented in income terms, the average figure covering multiple income groups should be disaggregated to calculate affordability for different income groups.

In certain key programs and regulations, the term "affordability" is applied in a manner that does not clearly define the price range in view of the household income level. Notably, the Prime Minister's Instructions No. 001/03 of 23/02/2017 Determining the Conditions and Procedures for Obtaining Government Support for Affordable and High Density Housing Projects (Prime Minister's Instructions) does not set a standard for determining affordability, and instead provides that the Housing Minister (i.e. Minister of Infrastructure) shall make this determination. Similarly, a final draft of the National Rental Housing Strategy published by the Rwanda Housing Authority (RHA) in June 2019 defined "affordable rent" as 20 percent of income, without reference to income brackets.

The Kigali Master Plan Review (KMPR) Zoning Regulations, which were drafted along with the KMPR, also leaves the criteria for "affordable" housing to be determined periodically. Pursuant to Article 3 of the KMPR Zoning Regulations (2019, p.15), an affordable housing unit is defined as "a habitable unit for which households are presumed to pay 30% or less of their annual income, where such income is less than or equal to that City's median income". The percentage of annual income or the maximum annual price to make a unit affordable shall be established periodically by the CoK, based on EICV data or other

official NISR recognised surveys. However, it is not clear who in the CoK will initiate the process, through what procedure and how often.

While a definition of affordability should be flexible enough to adjust to changing demographic profiles, establishing a clear standard for affordability in reference to an overall household income at a given time is critical for understanding realistic housing prices that are truly affordable to different income groups and identifying strategies to provide housing for low-income households. The Bower et al. (2019, p.79) notes that existing government housing projects have often been priced above the incomes of most households. Without clear calculation of affordability, housing programmes with the government facilitation or support runs a high risk of ending up using housing subsidies to benefit wealthier purchasers and not meeting the housing needs of low-income households despite policy intention.

2.2 Need for housing program for low-income households

The Government of Rwanda has adopted several key strategies to address the growing housing needs of different groups, including low-income households. The National Housing Policy (2015) acknowledges three different categories of housing – (i) upper mid- and high-end housing, (ii) affordable housing, and (iii) social housing – with different beneficiaries and modalities of delivery as summarized in the table below. As noted above, target beneficiaries are not clearly defined by their income and housing affordability level and the 'affordable housing' category as proposed in the policy covers a wide range of groups including rural population and students. Urban population with secure, regular income (employees and entrepreneurs) and urban population with low and irregular income (the lowest income bracket) are the focus of this report, particularly the latter (highlighted in the table below).

Table 2. Mapping of the government housing program as written in the National Housing Policy and practiced

	Beneficiaries	**Programs (as written)**	**Implementation (as known)**
Upper mid- and high-end Housing	Population with an income to access mortgage financing	Through the private housing market	Able to access government-assisted housing PPP and plot servicing projects
Affordable Housing	Urban population with secured regular income	Suited for homeowner mortgages, rent-to-own schemes, provident fund schemes	Likely beneficiary group of the Housing Finance Project and for affordable housing programs
	Urban population with low, irregular income	• Real estate developers • Owner builders • Cooperatives	Upgrading of unplanned settlements – pilot under RUDP [Suited for sites and services]
	Rural population	IDP (Integrated Development Program) model villages	Ongoing
	Students	• Private development of rental housing for students • Housing units owned by educational institutions	Not researched under this project [RHA published the draft National Rental Housing Strategy in June 2019]
Social Housing	Vulnerable urban population	• Private housing development to cross-subsidize • Non-profit organizations with government support	Relocation housing for residents living in high risk zones (e.g. Karama Model Village)
	Landless and vulnerable rural population	Government allocates land for homeless, landless vulnerable rural and peri-urban residents	Not researched by this report
	Foreign refugees	Government gives land for camps	Not researched by this report

In practice, affordable housing programs for the urban population seem to take three main forms: upgrading of unplanned settlements, plot servicing and 'affordable' housing projects (mostly promoted through private-public partnership or PPP). Upgrading is often assumed to serve low-income households but the actual socio-economic status of the residents in such settlements, particularly the dynamic between home owners and tenants, should be better understood for upgrading programs to be truly inclusive.[8] For plot servicing whereby land owners pool and re-subdivide land for infrastructure and services, the government is open to work with and support property owners of any income groups. PPP for affordable housing with the government facilitation or support for land and infrastructure provision is largely governed by the Prime Minister's Instructions. However, by lacking an agreed meaning of "affordable" and the structure of the incentives tying the provision of public infrastructure to either income level or urban density, this programme will likely incentivize higher density housing but not necessarily produce housing affordable to the low-income group. Indeed, affordable housing projects so far have tended to produce units that are only affordable to the upper mid- and high-income groups.

Policy concern for low-income housing appears across different programs but needs to be refined further to provide clear focus and practical guidance. For instance, the NHP encourages upper mid- and high-end housing or any private housing projects to include cross-subsidized social or affordable housing units but without specifying terms and conditions for such cross-subsidy. Social housing under the NHP is the only housing program for which subsidies are explicitly mentioned[9,10] but as will be seen below, it is critical to support low-income households more broadly with subsidies or otherwise. This once again underlines the importance of establishing housing affordability to clearly define the low-income group.

2.3 Housing affordability of low-income households in Rwanda

Using income data from the Rwandan national household surveys (EICV 3, EICV 4, and EICV 5), the IGC has calculated minimum, maximum, and mean **affordable rent** for income quintiles (i.e. five 20% income brackets) for the City of Kigali between 2018 and 2032 (IGC 2019, pp.57, 60-64). An affordability level was set as 25 percent of the household income[11] and the mean ratio of house values to annual rental values was used to calculate rent by income quintile. According to this analysis, the median resident in the lowest income quintile (i.e. the bottom 20% income earners) of Kigali could afford to rent a unit for RwF 166,176 (or US$193.23)[12] annually. Divided by 12 months, this comes to RwF 13,848 (US$15.10) per month. Affordable annual rent in 2018 for the median household in the third quintile (40-60% income earners) was RwF 493,096 (US$573.37) annually, or RwF 41,091 (US$47.78) per month (Table 3).

Table 3. Affordable annual and monthly rent for Kigali residents by income quintile in 2018 (IGC (2019), p.62).

Income Quintile or Percentile Level	Annual Affordable Rent		Monthly Affordable Rent	
	RwF	US$	RwF	US$
Median for lowest quintile (poorest 0-20%)	166,176	$ 193.23	13,848	$ 15.10
Maximum for 20% income earners	222,087	$ 258.24	18,507	$ 21.52

[8] See the insightful study done by Hitayezu et al. 2019. The dynamics of unplanned settlements in the City of Kigali.

[9] For example, "Fully subsidized [social] housing is not permitted to be sold by beneficiaries." (NHP, page 17)

[10] Notably, the Rwandan government has undertaken substantial social housing projects such as the Karama Model Village, described in Appendix C 1.7. The pricing for the Karama Model Village suggests that the public sector can achieve housing costs at around or slightly below what the private sector can provide.

[11] This affordability percentage follows its prior use by UN-Habitat but is a maximum that households can pay (IGC 2019, p.61).

[12] For the sake of consistency and easier comparison with the PROECCO model housing costs, we have used IGC estimated price figures for 2018, and have used the same conversion rate used in the Skat Calculator (RwF 860 = $1 USD).

Median for second lowest quintile (20-40%)	289,663	$ 336.82	24,138	$ 28.07
Maximum for 40% income earners	375,745	$ 436.91	31,312	$ 36.41
Median for middle quintile (40-60%)	493,096	$ 573.37	41,091	$ 47.78
Maximum for 60% income earners	601,546	$ 699.47	50,128	$ 58.29
Median for second highest quintile (60-80%)	788,397	$ 916.74	65,699	$ 76.40
Maximum for 80% income earners	1,067,667	$ 1,241.47	88,972	$ 103.46
Median for highest quintile (richest 80-100%)	1,788,978	$ 2,080.21	149,081	$ 173.35

The IGC also calculated the minimum, maximum, and median **affordable house price** for tenants between 2018-2032 (see **Error! Reference source not found.**4 for 2018 figures). With respect to a ffordable housing prices, a household at the median of 40-60 percent income quantile can **afford to rent** a house worth RwF 10.2 million (US$11,945) in 2018 – or the bottom 50 percent of the Kigali population cannot rent a house priced above RwF 10.2 million.

Table 4 Value of home that Kigali residents could afford to rent in 2018 (IGC (2019), p.65).

Income Quintile or Level	House Value RwF	House Value USD
Median for lowest quintile (poorest 0-20%)	3,692,790	$ 4,293.94
20% income earners	4,935,257	$ 5,738.67
Median for second lowest quintile (20-40%)	6,636,958	$ 7,717.39
40% income earners	8,088,953	$ 9,405.76
Median for middle quintile (40-60%)	10,272,823	$ 11,945.14
60% income earners	11,279,011	$ 13,115.13
Median for second highest quintile (60-80%)	13,139,945	$ 15,279.01
80% income earners	17,827,779	$ 20,729.98
Median for highest quintile (richest 80-100%)	29,816,306	$ 34,670.12

The IGC (2019) also calculated **maximum affordable housing price to be owned**, with mortgage. Table 5 presents two mortgage terms for bottom 60 percent income groups: 17.3 percent for 15 years (the current market term) and 16.5 percent for 20 years, both with no down payment.

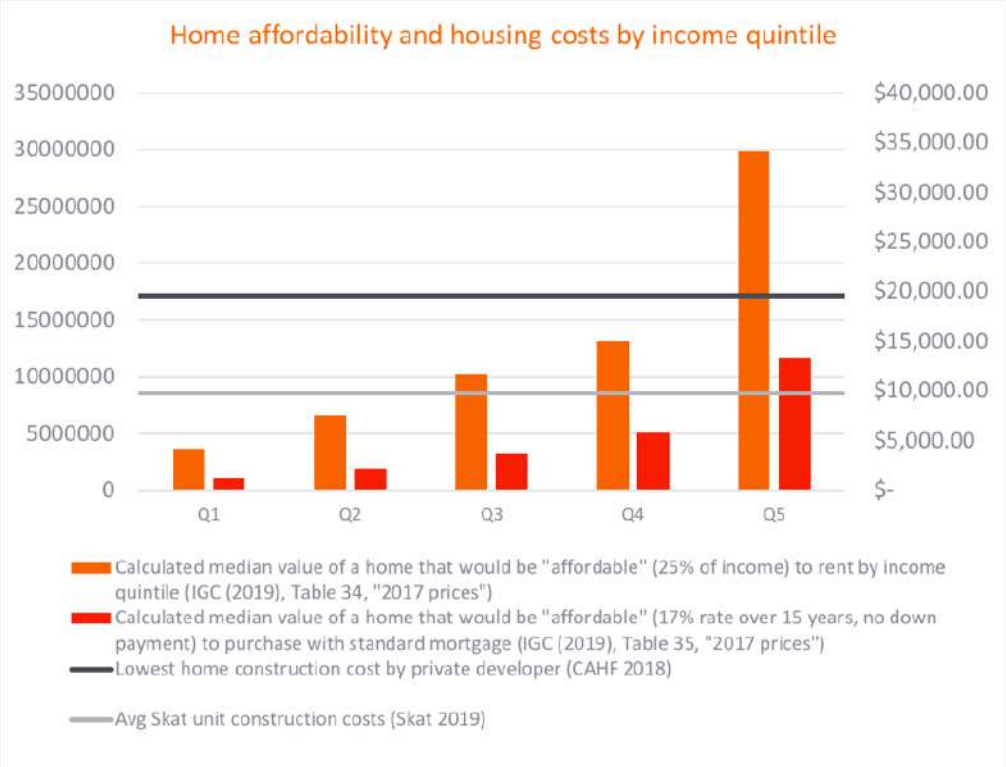
Table 5 Affordable mortgages for lowest three quintiles in 2018 (IGC (2019), 70, 72)

Income Percentile Level	Affordable mortgage value I (17.3%, 15 years, no down payment)		Affordable mortgage value II (16.5%, 20 years, no down payment)	
	RwF	USD	RwF	USD
Median for 0-20% income group	1,078,456	$ 1,254.02	1,214,307	$ 1,411.98
Median for 20-40% income group	1,938,282	$ 2,253.82	2,182,444	$ 2,537.73
Median for 40-60% income group	3,200,122	$ 3,721.07	3,603,235	$ 4,189.81

This is far off from the prevailing housing prices in Rwanda, indicating a serious gap in the market whereby most population is unable to afford a formal house. In Kigali, even the lowest priced housing unit provided by professional housing developers is around US$20,000, which is only affordable to the top 20 percent of the income hierarchy. Most developers target the price of their new products at the level of US$40,000 and above (CAHF 2018, pp.14, 35). In 2017, the cost of the cheapest newly built

house by a formal developer is US$57,246 (or Rwf17,500,000) and the average annual household income needed for this house is PPP$ 33,458 (CAHF 2018b, 219). This is way above the average annual household income of PPP$10,746.

Figure 4: Comparison of housing costs and affordability in Rwanda (RwF and USD).



Rwanda's housing market is diverse, with different needs, opportunities and challenges across the segments of the market – this calls for equally differentiated approach to meeting housing needs of different income groups. The World Bank-financed Rwanda Housing Finance Project, for example, is focused on creating effective housing demand by developing the mortgage financing market in Rwanda, first at the higher end of the income scale with a goal to bring the affordability level to where it overlaps with housing options offered by professional developers; and ultimately to bring down the market towards the lower end of the income scale in the long term.

It is clear from this affordability calculation, however, that completely different strategies are needed to meet the extremely low affordability rates and the pressing housing needs of most population. The Centre for Affordable Housing Finance (CAHF)in Africa states that "[t]he definition of Rwanda's 'affordable housing market' must be reviewed to include much more affordable housing solutions" to wider populations (CAHF 2018, p.35). The IGC specifies that "[a]ffordable housing should be affordable to households below the top two quintiles" (IGC (2019), p.13). In other words, affordable housing policy in Rwanda should focus on the bottom 60 percent of the income groups. Finding such solutions for low-income households is a prime driver of the analyses in this report.

3 Low-Income Housing Strategies: Globally and in Rwanda

3.1 Upgrading and Sites and Services

Upgrading of unplanned settlements and sites and services are globally understood and practiced as housing strategies that are geared towards serving low-income households that cannot afford a housing formally produced in the market by professionalized housing developers. **Urban upgrading** is aimed at physical, social, economic, organizational, and environmental improvements of existing settlements through cooperation with citizens, community groups, businesses, and local authorities (Nitti and Dahiya 2007, p.1). Upgrading often focuses on securing land tenure where current access to land has little or weak legal basis and combines it with efforts to expand access to basic infrastructure and services in existing settlements. Further, upgrading can support property owners to improve their houses often through microfinance schemes, which can contribute to densification if effectively executed.

Site and services are schemes to provide low-income housing on undeveloped (or "greenfield") sites by making low-cost land available to encourage and support the home buyer-builders to incrementally construct both their houses and neighborhoods (Gattoni 2009, p.5). Under this concept the government provides only what the households cannot easily get or afford themselves such as: a plot of land with basic, essential utilities (clean water, sanitation, flood protection, security lighting, etc.), municipal services (refuse collection, schools, etc.) and, importantly, financing. With infrastructure designed to be upgradable, small plots with infrastructure connections are sold at affordable prices to buyers who are then responsible for building their own structure. In some programs, the government provides sanitary cores or a starter core house, which buyers can integrate into the larger structure.

Both strategies intend to provide low-income housing by capitalizing on unique opportunities for access to land, infrastructure provision and housing, three key elements of housing development, while attempting to address challenges that come with such opportunities. This is summarized below.

	Upgrading	**Sites and Services**
Land	Inner city at location closer to jobs	Greenfield in urban periphery with space
Challenges	Compensation/relocation inevitable	Distant/difficult to access jobs
Infrastructure	Easy to connect to trunk infrastructure	Planned provision before building houses
Challenges	Retrofitting with limited space (costly)	Difficult to connect to trunk infra (costly)
Housing	Densification and improvement	Managed urban expansion
Challenges	Adaptive design needed; gentrification	Difficult to guarantee uptake/demands

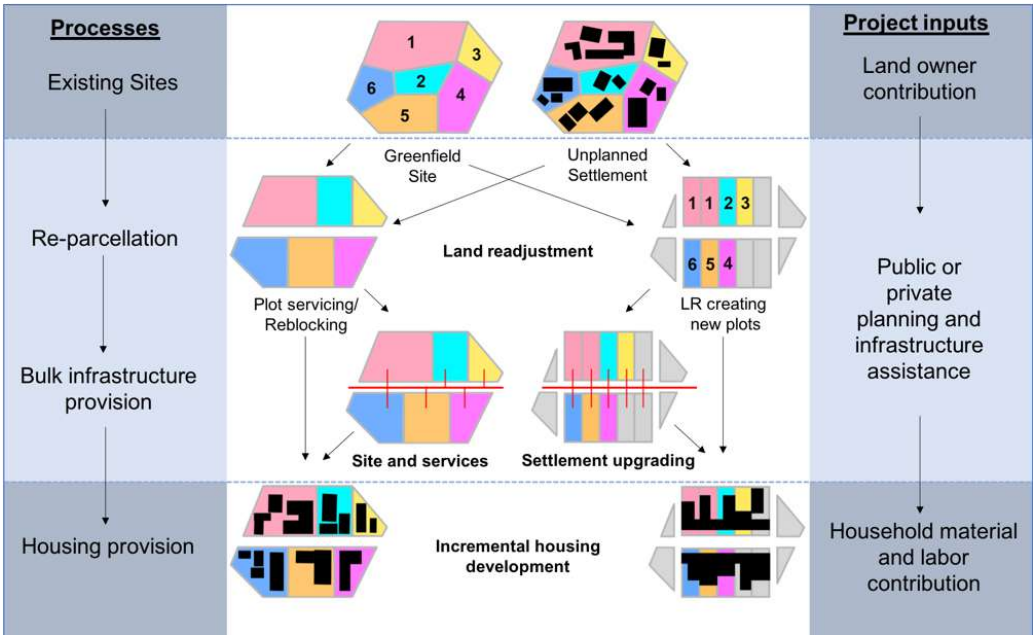
Upgrading of infrastructure and services in the settlements at locations close to jobs, often in the inner city[13], can improve living environments of residents without major disruptions in the existing socio-economic opportunities that the favorable location of such settlements offers, if carefully designed. Key challenges arise from having to work in the already built up area with limited space, that is, retrofitting infrastructure and services, which often does not facilitate the application of conventional planning requirements, if disruptions such as land acquisition and relocation are to be minimized.

[13] According to the study by Hitayezu et al. (2019), residents of unplanned settlements in Kigali live within 2km from jobs and common mode of commuting is to walk.

Sites and services in comparison have an advantage of working mainly in the greenfield area with enough space and putting in infrastructure prior to housing construction. Land readjustment is more applicable and likely less costly for new development on greenfield sites than attempts to reconfigure existing settlements. The key challenge, however, also arises from its location in the outskirts of the city, which makes it difficult to connect people to jobs. Affordable public services are particularly critical to livelihoods of poor households. Not only availability of good public transport but also transportation costs matter, both for individuals themselves and for the transport of resources and materials.

Land readjustment and incremental housing development are important elements for both upgrading of densely built unplanned settlements (if land can be pooled) and sites and services programs mostly in green fields, as depicted in Figure 4 below. Both are dependent on a form of land readjustment taking place in early stages to create space for basic infrastructure and services with limited expropriation and incremental approach to housing construction. These concepts are examined below as key mechanisms for potentially increasing efficiency of site development and bringing down the costs of housing.

Figure 5. Relationships between different affordable housing strategies in the Rwandan/Kigali context



Incremental Housing Development

Incrementalism refers to housing delivery and community development that occurs in a step-by-step manner over time using household and community resources as they become available (UN-Habitat 2004, p.15). Globally, incremental development is a critical element of both informal settlements upgrading and site and services schemes for reducing the costs of settlement improvement and development. In existing unplanned settlements, incremental housing improvement is critical since the opportunity for greenfield development is not available and resources have already been put into existing structures. Under sites and services schemes, the government provides very basic elements of a home and households then add to and improve that core as and when able to do so.

Figure 6: Photographs of incremental development of the Santa Rosa Cinco Dedos neighborhood in La Paz, Bolivia (Credit: Paul van Lindert, Utrecht University).

Although incrementalism may take years and buildings may not look tidy for periods of time, it has been proven to provide effective and financially manageable means of housing (IGC 2019, p.79). Indeed, incremental development, as a policy or simply a practice, is responsible for much of the urban fabric of cities globally, providing a distinctive aesthetic and local character to these places over time. Figure 5 illustrates this point well by depicting incremental development of the neighborhood called Santa Rosa Cinco Dedos in La Paz, Bolivia, over several decades through self-build and self-help methods (see also Bredenoord, Van Lindert, and Smets (2014)Incremental development contrasts with up-front, full development of a site and housing by a professional housing developer; and normally emphasizes strong involvement of communities, both in understanding and addressing concerns in the settlement and housing development process as well as mobilizing resources locally (Gattoni 2009, p.6).

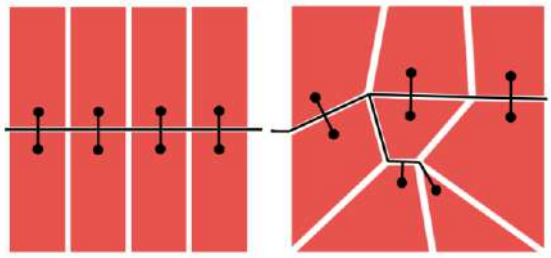
Incremental development requires flexible and attainable planning and engineering standards that are appropriate for low-technology and self-building techniques. Compliance with conventional building codes and standards is often unachievable and unaffordable for low-income populations, and inflexibility in these codes and standards prevents construction of housing that is both affordable and functional in the context (Gattoni 2009, p.16). Having planning documents appropriate for incremental development will certainly be beneficial for facilitating phased development of essential infrastructure and services. They could also include provision that allow for smaller plot sizes, higher densities, rental opportunities, and small-scale businesses (Gattoni 2009, p.6).

Land Readjustment

Land readjustment is a land management tool "used to pool all land parcels in a particular area and plan them as a unit" (UN-Habitat 2018, p.2; see also Figure 7). When conducted in a coordinated manner, it can unlock latent value in land that is restrained by inefficient plot boundaries and landownership patterns that hinder the provision of infrastructure and services. By reconfiguring land boundaries and saving some land for infrastructure, land readjustment can arrive at layouts that maximize plot accessibility to infrastructure, thereby minimizing the necessary bulk infrastructure laid per plot or

reducing the ratio of infrastructure cost per plot (see Figure 6). This allows for easier and less costly planning and construction of infrastructure such as roads, stormwater drainage, potable water pipes, electricity lines and sewerage, all of which increase both the financial and social value of the land.

Figure 7: Comparing efficiency of infrastructure in regularized vs non-regularized sites



Therefore, even if smaller plots are reallocated to participating landowners, they are nevertheless worth more after development than the larger and irregular plots contributed at the beginning. In this way, land readjustment provides a unique incentive for voluntary participation by landowners, which in theory, can reduce transaction costs compared negotiated sale or expropriation (UN-Habitat 2013; 2018). Importantly, the land not allocated to original owners is used for infrastructure and public space. New plots may be generated and sold to cover the project cost, while increasing density of urban areas.

Land readjustment is where a group of contiguous plots are voluntarily brought together or shared. This land may be in an urban fringe or in an inner city or municipality neighbourhood, or lie along the line of an infrastructure project such as a railway or road..

The consolidated plots are treated as a unit for the planning of new buildings and infrastructure such as roads, drains, water, electricity and sewerage.

The unit is re-divided into plots and re-allocated to the landholders according to the size or value of the land that each has contributed. The costs and benefits are shared equitably among the landholders.

The landholders get back a smaller amount of land than each contributed, but the value has increased because of the improved infrastructure. The excess land is used for public amenities such as roads and open space. Some land may be set aside as a reserve to be sold to cover the costs of the readjustment.

Definition adapted from: Global Land Tool Network/UN-Habitat, tinyurl.com/o4fyt4h

Graphic adapted from Kiyotaka Hayashi, Land readjustment in international perspectives tinyurl.com/pd99xbr

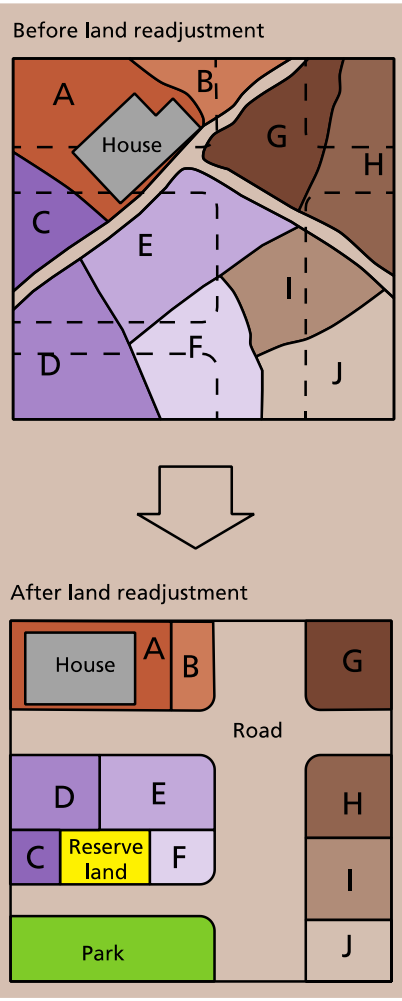


Figure 8. Explanation of land readjustment (UN-Habitat 2016).

Land readjustment is a flexible and adaptable land management tool that is applicable in both "brownfield" redevelopment of populated areas and "greenfield" development of undeveloped areas (UN-Habitat 2013; Berrisford 2012). Case studies suggest that urbanization and real estate development pressure is an important factor for successful land readjustment, which makes development of greenfield sites on the edges of fast-growing towns governed by large and well capacitated municipalities the best scenarios (Berrisford 2012). In China, India and Angola land readjustment has been

used to promote efficient urban expansion. In Ethiopia and Thailand, it has driven urban renewal and densification. It has proved effective in post-disaster reconstruction, e.g. in Chile (UN-Habitat, 2018).

Another key condition for successful land readjustment is functioning land market. Land readjustment is premised on the principle that it increases the value of the land forming part of the project as well as that of surrounding neighbourhoods (Berrisford 2012, p.41). A corollary of this principle is that the increased land value can be monetized and used to finance development. It is critical for both project funders and landowners to know that a "robust and rising land market" exists and facilitates economic incentives for them to participate (Doebele 2007; see also UN-Habitat 2013, p.47). The functioning land markets in turn require an effective land administration infrastructure, cadastre and land valuation systems, for which Rwanda has unique advantages (Berrisford 2012, p.11).

Benefits. Much of the benefit of land readjustment is its voluntary nature among participants, whose collaboration for mutual gain reduces the financial costs of project implementation as well as the political and social costs of land redistribution and settlement disruption. The voluntary nature of land readjustment means that all parties involved must see value in participation (Berrisford 2012, p.41). This depends on the right financial incentives but also a strong sense of good will and trust amongst stakeholders (Doebele 2007). The benefits of land readjustment, if successful, are far reaching: better serviced communities at low or no cost to the government, higher land values for landowners, additional opportunities for business and profits by builders and developers. Land readjustment can also support community cohesion and engagement, build governmental capacity, improve health standards through better living conditions, and meet housing demands (UN-Habitat 2013; 2018).

Challenges. There are, however, several challenges to effective implementation of land readjustment. Case studies indicate that because land readjustment is a negotiated process it can also incur significant human and financial resources and may take more time to complete than action by executive fiat (Berrisford 2012). Central to determining the utility of land readjustment is whether it will result in lower transaction costs than the alternative scenario of acquiring the land, either voluntarily or involuntarily, resurveying, subdividing, and retitling. In determining transaction costs, a critical factor is the degree to which "landowners are able to hold out against the land readjustment authority in the hope of achieving a higher value for their contribution to the scheme" (Berrisford 2012, p.40). More legal protections for property rights can allow landowners to have better leverage in holding out for higher compensation, making land readjustment more difficult to implement (Ibid.).

In some contexts, in order to mitigate the issue of hold-outs, governments have implemented laws providing that community consent to land readjustment need not be unanimous but may require only some form of majority agreement (Berrisford 2012, p.53). In Gujarat, India, after devastating earthquakes, the state government used the existing urban planning instrument, the Town Planning Scheme, to ensure that all land-owners had to follow the wishes of most landowners in a neighbourhood to achieve the overall public objective of more efficient and sustainable urban development patterns. Past examples also suggest that governments must be proactive in aligning incentives of the parties and anticipate the interests of their negotiating partners, to avoid being out-manoeuvred by them (Berrisford 2012, p.50).

Furthermore, there must be additional mechanisms to ensure that land readjustment is implemented in a pro-poor manner. Successful land readjustment necessarily results in increased land values, which adversely impacts the ability for poor residents to remain in the improved areas. The impact of land

readjustment on poor inhabitants, particularly tenants and those with insecure tenure, is an issue that has been frequently ignored in past implementation and suggests that strong protections for these stakeholders is necessary (see UN-Habitat 2018, p.4). Measures such as public subsidies for housing accessible to poorer residents are needed to mitigate the impact of rising land values displacing the poorer owners and tenants from the neighbourhood. In other words, without an effective housing program for the poor, land readjustment cannot be both self-financing and pro-poor—the government must decide which of these to prioritize (Berrisford 2012, p.41).

Lastly, the legal mechanisms facilitating land readjustment, like any legal tools, are limited in their practical ability to motivate change, and must be met with adequate capacity to implement. This includes government staff trained in land economics and with a good grasp of local land markets, public or private sector outreach and education of landowners, and governmental or non-governmental facilitators with enough time and resources to shepherd the negotiation process between officials, property owners, and developers and financiers. The relevant law must be clear, straightforward and unambiguous and supported by user-friendly guides (Berrisford 2012; UN-Habitat 2013).

3.2 Opportunities and Challenges in Rwanda

Upgrading and sites and services, with its underlying mechanism of incremental development and land readjustment, are envisioned as low-income housing solutions in Rwanda and practiced as such in full or part. There are specific features unique to Rwanda, however, and this section identifies and compares them with globally known strategies.

Upgrading

A distinguishing feature for upgrading is that Rwanda has secure land tenure and strong land administration systems, thanks to the country's land tenure regularization program which has surveyed and allocated land to inhabitants, removing underlying uncertainties regarding land ownership (see the National Informal Urban Settlement Upgrading Strategy (NIUSUS) 2017, p.8). Hence, in Rwanda, settlements are unplanned rather than informal in terms of access to land, whereby settlements predate formal urban plans and thus have not been fully aligned with them (Banes 2015, p.1). Consequently, the government is more concerned with improving the living conditions of the settlements that are characterized by overcrowding, inefficient use of land, lack of physical access to plots by roads, and limited infrastructure service than land tenure (NIUSUS 2017, p.8). Now the only tenure-related aspects of informality in Rwanda are non-recorded transfers and undocumented leases.

The other side of this land tenure coin, however, is that there is very little publicly owned land that can be used to provide the needed infrastructure and services. Land for this purpose can be secured in two ways: (i) to be acquired from owners for creating space for infrastructure and services, sometimes with in-situ housing improvements (often by homeowners with micro financing support); or (ii) being pooled and re-allocated with a planned layout for infrastructure and housing construction. The upgrading pilot in Agatare settlements in Kigali under RUDP is the example of the former, although without a housing improvement component. The Skat/PROECCO model house in Mpazi settlements is a noble initiative to roll out land readjustment combined with infrastructure and housing improvements in the Mpazi area.

For upgrading in Rwanda, where the government focuses its upgrading efforts on basic infrastructure and service delivery in compliance with the requirements of the spatial master plans, it is often pointed out that key challenge rise from highly prescriptive and demanding planning requirements and their

stringent application (World Bank 2019). The GoR has made consistent efforts to improve its legal framework for urban planning, infrastructure and service provision and housing construction and have recently revised the national and Kigali built environment codes and regulations to address housing shortages and issues regarding affordability.[14] This report reviews the set of improved regulations to examine further if and how they can facilitate upgrading as a prime low-income housing strategy.

Sites and Services / Plot Servicing

In Kigali, the revised masterplan established a new residential zone, Zone R5, for "Sites and services".[15] It is proposed for new "incremental" development on greenfield sites on the existing urban edge but close to transport corridors for ease of accessibility and is meant to provide affordable housing (KMPR 2019, p.81). It is also near the sites that the CoK believes will provide economic and income opportunities, such as industrial and manufacturing areas, and is anticipated to be "mixed use" (KMPR 2019, p.73). The KMPR also suggests that Zone R5 will facilitate and accommodate low income earners through participatory land readjustment with serviced sites attracting people to build their own homes and live in small clusters with shared community facilities and a variety of income generating activities; although there is no specific discussion to ensure that low-income households are the primary beneficiaries.

Provision of public lands in appropriate locations—i.e. areas with good access to economic opportunities and social services and networks—constitutes a major factor in the success of site and services schemes (Gattoni 2009, p.10). Yet again, a unique feature of the Rwandan context is that the government does not own much land and therefore cannot allocate public land to low-income households. Instead, capitalizing on secure land tenure and strong land administration systems, a practice known as "plot servicing" has emerged as a land reorganization strategy in which land owners voluntarily agree to pool and re-subdivide their un-serviced and generally undeveloped (i.e. greenfield) land in order to enable the government to provide basic bulk infrastructure such as roads and drainage efficiently and without the need for expropriation (see Figure 8 as an example and Annex A for plot servicing processes).[16]

The prime policy intention behind plot servicing is to ensure orderly planning of unplanned areas in the periphery of Kigali and other cities by providing infrastructure without incurring expropriation costs. Landowners may have incentives to participate because of the improved access to infrastructure and expected value increase of their land once serviced. CoK officials recounted that several groups of property owners owning land in unserviced and largely uninhabited areas of Kigali have indeed engaged the CoK to negotiate for the provision of basic infrastructure, e.g. roads and drainage, laid out in a formally planned manner, and that they have agreed to relinquish portions of their properties and to re-subdivide in order to allow for more efficient and regularized infrastructure and urban patterns.[17]

In the sense that the government provides infrastructure but not structures, plot servicing resembles site and services schemes. However, it differs from sites and services schemes internationally known

[14] See GoR's Building Permit Regulations, Urban Planning and Building Regulations, Urban Planning Code, and the Rwanda Building Code; and CoK's KMPR, and KMPR Zoning Regulations analysed in the Annexes.

[15] During the preparation of this report, the "Sites and services" Zone R5 was being changed to Zone R3, "Medium density residential – Expansion zone". While additional revisions were not available at the time of completion of this report, the change in the title of this zone alone may help alleviate some of the confusion regarding this zone and site and service schemes discussed below.

[16] Definition based on interviews with CoK and GoR officials.

[17] It will be useful to have more specific data on these projects to understand how infrastructure provision was done in practice.

and practiced in major ways. First, plot servicing lacks clear focus on low-income households. It is uncertain whether its primary beneficiaries have been or would be low-income landowners, landowners of wealthier means, or more speculative real estate developers. Based on interviews with CoK officials, government-funded provision of basic infrastructure is offered to unserviced communities regardless of wealth status. It is reasonable to assume that wealthier and better-connected landowners would be in a better position to negotiate with the government to gain access to infrastructure and improve their land value. It is even more likely that private real estate developers would take advantage of this practice to cater to higher income homebuyers and renters, given the higher rates of return for these projects.[18]

Figure 9: Photograph of plot servicing site, Kicukiro District, Kigali (Credit: Stephen Berrisford).

For housing, the predominant preference of the GoR is to work with professional developers rather than facilitating owners to build their houses incrementally, which is the major difference from sites and services as internationally practiced.

In the following section, this report analyzes the practicality of incremental housing development and extent to which the potential of land readjustment is realized in the practice of plot servicing as well as how known challenges of land readjustment are considered in the Rwandan context.

[18] This lack of pro-poor focus would particularly be a concern with respect to “option 1” under the NIUSUS framework, discussed below and in Appendix A 3.3.

4 Feasibility of Incrementalism and Land Readjustment in Rwanda

This section assesses the feasibility of applying incremental housing development and land readjustment in the Rwandan context of upgrading unplanned settlements and servicing peripheral greenfield areas. In view of the desired objective of providing more housing opportunities to low-income households in Rwanda, key questions to be explored from a legal, economic and practical perspectives.

- **Legal Feasibility**: Do existing legal requirements allow/provide for the proposed strategies in a manner that will achieve the desired objective?
- **Economic Feasibility**: Does available information indicate that the proposed strategies are an economically viable means of obtaining the desired objective?
- **Practical Feasibility**: Do the physical, social/cultural, and economic realities in Rwanda and Kigali indicate that the proposed strategies will achieve the desired objective?

4.1 Incremental Housing Development

Legal Feasibility

Government policy documents clearly promote incremental housing development. For instance, the National Housing Policy states that "self-construction may be developed in an incremental approach aiming at high-density housing" (NHP 2015, p.15), and advocates for "investment into maintenance and upgrading of already existing and adequate housing to complement new housing stock" (NHP 2015, p.20). The NHP (2019) also envisions a key role for small and medium sized enterprises to assist with incremental housing development and for local production of housing materials. National land reform efforts have also created a private property regime that incentivizes investment in private property, which can facilitate incremental housing development. Local planning and zoning laws in Kigali also supports incrementalism. The KMPR promotes incremental development and self-improvement as practical solutions to address the city's housing needs and dedicates Zone 2 and Zone 5 (now Zone 3) explicitly for incremental development (KMPR 2019, pp.79, 81; KMPR Zoning Regulations 2019, p.ix).

While the sprit for incrementalism is provided for under the law, other provisions in the law undermine this spirit. Notably, Rwanda Building Code (RBC) Chapter 6 (Special Provisions) requires incremental development applications must contain plans for design and construction of the entire building at its completion, even if only a portion of it can be financed and completed for the time being (RBC, 6.15.6.1.4, 6.15.6.2.1).[19] These provisions in the RBC suggest that officials will scrutinize earlier steps of the incremental process according to some final or completed form, which low-income households may neither aspire to nor have adequate means to finance in the short or medium term.

Further, the RBC requires that any incremental building to be permitted must conform to all standards applicable to the building as finally envisioned (RBC, Section 6.15.6.1.1). The RBC defines "incremental building" as building "to be constructed in stages in such a manner that in its intermediate stages a building can be occupied for the *limited specific period of time necessary to complete it and that is intended, in its finally approved form*" (RBC, Section 1.2.2.1; emphasis added). This language reiterates

[19] In addition, a critical provision in the RBC, Chapter 6 (Special Provisions) is unclear in its wording, partly because it is in an incomplete sentence. Section 6.15.6.1.5 states that "Any incremental house shall be in conformity of this Code at any intermediate stage of erection be deemed to be a temporary building."

that incremental housing development must have a final and definitive completion date and form to be approved and must progress as quickly as possible towards that completion.

Similarly, although the Kigali Master Plan identifies and describes incrementalism in a manner consistent with international conventions (see KMPR 2019, p.25), it also provides that incrementalism must be "*in respect of clear guidelines*" (KMPR 2019, p.82; emphasis added), but without further elaboration. The Zoning Regulations associated with the KMPR include permitting requirements like those provided under the national permitting regulations (KMPR Zoning Regulations 2019, p.31-32). Landowners or developers must submit applications for incremental construction permits that clearly show: (i) intended final design of the building, expected ground floor area, fulfilment of parking requirements and minimum density prescriptions where relevant; (ii) phasing plan, clearly showing planned stages of construction and timeframe for development. In addition, intermediate buildings "shall not, in any case, appear incomplete, under construction or have any 'unfinished like feeling' that may negatively impact on the aesthetic characteristics of the neighbourhood" (KMPR Zoning Regulations, Table 4.4., pp.32-33).

These provisions require a formality and rigor that is at odds with the aspiration of incrementalism as understood in the international context, that is, facilitating people to invest in their house, community and business, in view of their needs and means.

Economic Feasibility

The permitting process that requires advanced and fully compliant planning also raises the cost and thus limits the economic feasibility of utilizing the regulatory carve-outs to promote incrementalism. Whereas permitting of the complete structure as finalized might restrict incremental development, higher standards themselves do not necessarily preclude incremental development. Yet, they increase the costs of incremental development by requiring professional assistance from architects, engineers, developers and contractors – the costs that households with limited resources may not afford, which will then prevent them from incremental building if they are to comply with requirements.

The Urban Planning and Building Regulations indeed require "authorized technical supervision" for construction, further raising costs in a context where potentially small cost differences are very meaningful. It is unclear if this requirement applies to all construction, as appears to be the case, or to Category 3 and higher categories under the RBC.[20] In comparison, the Building Permitting Regulations exempt "Category 2" buildings[21] from various permitting requirements such as certification of plans by an architect or civil engineer (Ministerial Order No. 02/CAB.M/019 of 15/04/2019, Art. 5), potentially facilitating self-construction and improvement. However, the legal definition of Category 2 buildings includes only relatively small, single-story buildings. This means that flexibility allowed for Category 2 buildings is not applicable to the high densities and multi-storey building typologies that are envisioned under the KMPR Zone R2 and Zone R5. Both these zones emphasize multi-storey building and row house

[20] Category 3 under the RBC covers residential and commercial buildings that are physically larger and more complex than category 1 and 2 buildings. Category 3 is characterized by: i) total floor area not exceeding 1500 m^2 and plot size not exceeding 1000m^2; ii) not higher than two storied building (G+1); iii) Capacity to host 50 people or less; iv) The total height of the building not exceeding 7m. Category 4 buildings include all types of buildings, except industrial buildings and hazardous buildings which are characterized by the following aspects: i) buildings with three (3) storeys and above (≥G+2) with or without basements, ii) buildings with the capacity to host people not exceeding five hundred (≤500).

[21] Category 2 buildings includes "[a]dministrative, residential and commercial buildings except industrial buildings, hazardous buildings, [and] health facilities that are characterized by . . . i) Total floor area not exceeding 200 m^2; ii) Non storeyed and basement-free (G+0); iii) Capacity to host 15 people or less" (Rwanda Building Code, 1.3.3.9, Table 1.3.3-1, p.116).

or low-rise apartment typologies, which are likely to be proposed by private developers or landowner cooperatives and will fall into Category 3 or Category 4 buildings that require professional assistance, thereby incurring additional costs (see KMPR 2019, pp.79, 81).

The GoR may consider revisiting the application of such rigorous building and construction requirements to incremental housing development particularly in the context of upgrading of unplanned settlements and/or self-construction by low-income and poor households under site and services schemes, and potentially relaxing them in such cases. The GoR can also consider providing support to low-income and poor households to access and secure the professional services required for meeting high building standards or subsidizing the cost of such professional assistance, so that the economic barrier for compliance can be practically overcome, rather than left to individual households who do not have means to comply with the existing requirements in the law. This should be paired with a long-term investment in nurturing professions to provide services for higher categories of buildings, as has been proposed in the GoR regulations (see Order No. 03/CAB.M/19, Art. 26).

Practical Feasibility

Incremental development through techniques such as self-building with local materials is widely known and practiced in Rwanda as it has been a primary means of building most homes for many years. Rapid urbanisation and concerns with housing design standards have challenged the existing practice and gave rise to the government vision of Rwandan communities as attractive, neat, and orderly. Planning and building regulations have taken this vision too far, however, by requiring "final" plans for incremental building and forbidding buildings from having an "unfinished like feeling". This is understandable from an aesthetic perspective but is a subjective requirement that undermines an incremental approach in practical terms. Homebuilders may not know what the final designs of their building will be at the start and the final project as ultimately designed may trigger building code requirements that are unnecessarily rigorous to be applied to intermediary stages of building.

Further, the local building practices and lifestyles currently differ radically from the housing typologies included in the KMPR zones for upgrading and sites and services. Housing in Rwanda is dominated by stand-alone, single storey, homes. Outdoor ground-floor space is considered preferable to apartment living. It is unrealistic to think that incremental building will match the housing styles envisioned in Zone R2 and R5 (now R3) such as row houses or low-rise apartments, without significant intervention, either through capacity building, pilot projects, or partnerships with housing organizations. Both the public and policymakers need local precedents to demonstrate incrementalism that is suited to the urban context. For this reason, pilot projects such as the PROECCO/Skat housing project at Mpazi, to be discussed below, will be critical to raise awareness and build the skills of local small and medium enterprises.

The KMPR Zoning Regulations, when combined with the parameters for housing typology and density minimums, also make it hard to achieve densification objectives. The KMPR includes the two-tenant limit[22] whereas in reality some landlords in Kigali are housing many more than two on-site tenants. Even accounting for the new minimum plot sizes of 120 m^2 and 100 m^2 for Zones R2 and R5 (now R3), respectively, this requirement will weaken efforts to meet density targets. For instance, examples given in the National Urban Informal Settlement Upgrading Strategy indicate that some unplanned settlement

[22] Accessory residential units are permitted in R2 and R5 zones but are limited to two per principal dwelling (KMPR Zoning Regulations, Section 4.11.1, p. 38).

properties of 240 m^2 in plot size may house up to 12 tenants in addition to a seven-person household (see Figure 9). Even if this property were reduced to the minimum allowed under Zone R2 (120 m^2), the number of tenants would be around six, far exceeding the current regulatory limit of two.

Figure 10: Sample house in Biryogo, Kigali (Plot: 240 m^2/Users: 7-p-HH and 12 tenant HHs/1 pit latrine, 1 shower) (NIUSUS, p.12)

The RBC authorizes "locally produced building materials including Adobe bricks" and "secondary and alternative materials" for construction, which can be less costly (RBC, 2.6.5.1.2). However, there is little in the RBC regarding standards for these types of materials, other than that they must comply with the same performance standards as other materials. It is also unclear who will verify such compliance or through what procedures.

Finally, compliance is an overwhelming issue given that the Rwanda Building Code is a dense, thick and highly technical document of over 750 pages that is not accessible to self-builders or small enterprises. It is unrealistic for them to comply with its requirements without additional outreach and capacity-building by the government. Notably Kigali's One Stop Centres can proactively facilitate permitting processes and maintain a user-oriented and customer-friendly approach. One of the objectives of the PROECCO is also to develop a series of guides and tools to help the lay-person to build low-cost housing and the Swiss Agency for Development and Cooperation (SDC) financed the prototype building piloted in Mpazi with a view to use it as a vehicle for creating these guidance materials.

On the part of officials, a broad amount of discretion is given to determine variances from the KMPR Zoning Regulations in granting building and construction permits. This is positive and realistic if officials are empowered to make professional judgement and provide practical instructions that facilitate incrementalism. On the other hand, if the officials are not appropriately skilled and capacitated with clear standards for what acceptable incrementalism looks like, this sort of wide discretion can have a paralysing effect of deterring application of incrementalism altogether where officials may be too nervous to make decisions that might incur their managers' disapproval. Although less unlikely, a wide discretion can also have a corrupting effect where officials are tempted by illicit inducements and bribes to allow sub-standard buildings to proceed.

4.2 Land Readjustment

A central outcome of Rwanda's land reform and titling programme has been the allocation of almost all land to private individuals. Indeed, this process was an intentional step to allocate a valuable asset—land—as a vehicle to secure basic needs and generate wealth. However, this significantly increases the costs of infrastructure provision, particularly in upgrading, due to the need to (re)acquire land for this purpose. Notably, the costs of infrastructure provision through expropriation for the RUDP pilot upgrading have increased overall development costs by 30 percent. This raises a serious need to find more cost-effective methods to access land and generate economic benefits in Rwanda.

Land adjustment can be one alternative, utilizing private ownership of land and clear land records and a reliable cadastre in Rwanda. As a rapidly urbanizing city with robust and rising land values,[23] Kigali especially meets key economic preconditions for successful land readjustment. Kigali's relatively well-developed and state-regulated urban land market also provides a good economic context within which to implement land readjustment.[24] Rwanda's legal context allows for land readjustment but there are certain risks and challenges to address, particularly for sustainable financing of such projects from the government's point of view and to make land readjustment more pro-poor.

Legal Feasibility

The GoR promotes the use of land readjustment in national and city policies and plans. Specifically, the National Housing Policy (2015) emphasizes land readjustment as a favourable tool for development, and the National Urbanization Policy (2015) references efficient land subdivision and re-plotting as a policy objective. The KMPR also proposes land readjustment as a potential tool for facilitating land supply without incurring compensation costs (KMPR 2019, p.133). Although providing a clear policy directive to pursue land readjustment, these documents do not include an actual method for doing so.

The National Informal Urban Settlement Upgrading Strategy (NIUSUS, 2017, pp.36-37) offers some insights, by expressly noting that re-plotting or plot readjustment should combine small land tracts through negotiation with land-owners. The NIUSUS suggests five options for upgrading, each initiated by: (i) landowners, (ii) private developers, (iii) a Rwandan governmental entity, (iv) some form of collective trust, or (v) international development partners. All options provide potentially workable steps and timeline for implementing an upgrading process —conducting a feasibility study, negotiation of land development plan, engineering design, permitting, and infrastructure and structural construction.[25] They also include a "participatory, community based process" and development "of a Land Subdivision Plan elaborated by or in collaboration with the landowners and project owner(s)".

Some officials argue that government needs additional legal authority to implement land readjustment, even though a form of land readjustment, i.e. plot servicing, is already being practiced. While government officials have so far been able to successfully negotiate to acquire small portions of land for infrastructure for free, as in cases of plot servicing, the expectation in Rwanda is that landowners will not usually relinquish land to the government for infrastructure and planning and/or excess land in exchange for servicing. This is likely because landowners expect, based on the literal interpretation of Rwanda's land laws that guarantee compensation for expropriation of land, to get back the same land

[23] See Goodfellow (2017), 558; interviews with CoK and RHA officials and Jonathan Bower of IGC (2019).

[24] An important knowledge gap is the data relating to land values and prices. These need to be established before making final decisions in relation to the design of a land readjustment instrument.

[25] See Appendix E for a copy of the implementation matrix provided in the NIUSUS.

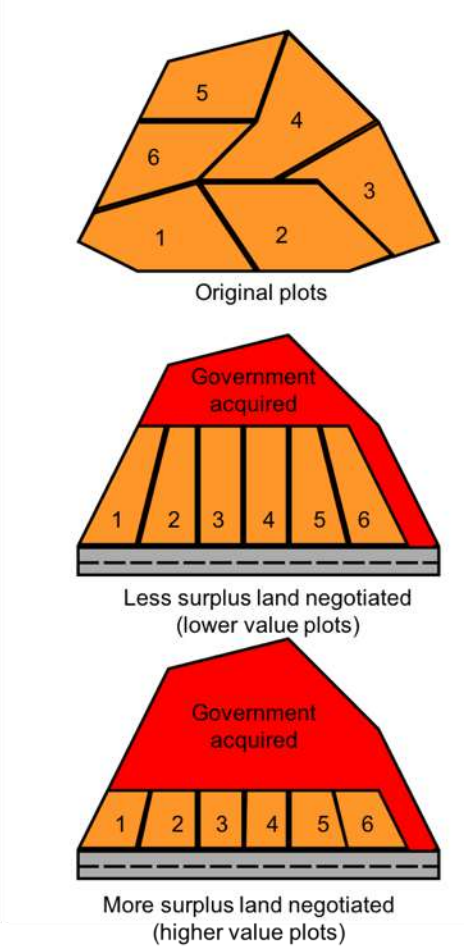


Figure 11: Less or more surplus land from land readjustment.

that they contributed (although now subdivided and serviced) or at least get compensated for any loss. Landowners seem to reject the idea of receiving back a smaller property, albeit one of a higher market value than the land that they contributed to the scheme.

That is, landowners in Rwanda are in an advantageous position with respect to negotiating with the government. They benefit from serviced land (the value of which is likely to increase) without contributing land for infrastructure and services (particularly if they are compensated for that) or for any excess land that the government can utilize to make a project viable. This is unsurprising if landowners have thus far been able to negotiate service provision without giving up very much land. However, if the government wants to address low income housing shortage, it needs to shift its position.

Global experiences indicate that the government may be able to negotiate to obtain a larger amount of land based on the value increase than in other areas (see Figure 10). This could be strengthened through an official policy regarding negotiation of land readjustment under which the government insists on a form of infrastructure financing and low-income housing guarantee.[26] To effectively induce speculative landowners to negotiate with the government, the government could also leverage its power under the national land law to confiscate unexploited land (Organic Law No. 43/2013 Article 58[27]) in Zone R5 (now Zone R3). Active enforcement of this law could discourage speculative behaviour by landowners[28] although the extent of actual confiscation powers and other social risks involved should be examined carefully.

There are also causes for concern in the relative lack of legal protections for tenants in Rwanda's legal framework. Poor tenants (or even landlords) are likely to be excluded from benefitting from land readjustment, which often increases land value (and rent) and make it unaffordable for the poor to stay in the area, if adequate protection mechanism is not in place. Tenant protections are absent outside of contract law and written contracts are apparently rare (NIUSUS, 1.4.3, pp.12-13), although they are required under the rental property tax law (Law No. 75/2018, Art. 49) and specifically with respect to accessory units under the KMPR Zoning Regulations (KMPR Zoning Regulations, Section 4.11.2, pp.38-

[26] Such a policy could, on the local level, be paired with land use regulations for "transfer of development rights" or "TDR".
[27] "Any land in the following categories may be confiscated: . . . 3. the land within urban areas where a detailed physical plan was approved by competent authorities and it is clear that it has spent three (3) consecutive years unexploited; 4. the land with approved physical plan, that is designated for rural settlement or land designated for fast development by competent authority, that has spent three (3) consecutive years unexploited; 5. land whose emphyteutic lease contract was terminated as provided for under Article 44 of this Law."
[28] Discussion with COK officials, 2019.

39). Already, it appears that weak tenancy laws are making low-income groups vulnerable to exploitation and poor living conditions (see NIUSUS, 1.4.3, p.12). This will only be exacerbated as multi-storey living increases, which is called for by the form and density of development anticipated in Rwandan policy and planning documents, such as row houses and apartment flats. Rwanda's condominium law (Law No. 15/2010 of 07/05/2010) is relatively new and appears not to be commonly used yet. Even at the PROECCO/Skat model housing project in Mpazi (discussed later), owners had not organised articles of association for a condominium association, although they were already living in condominium-style multi-storey units (interview with Skat team). Understanding and utilization of these laws must be strengthened through community outreach and enforcement.

Economic Feasibility

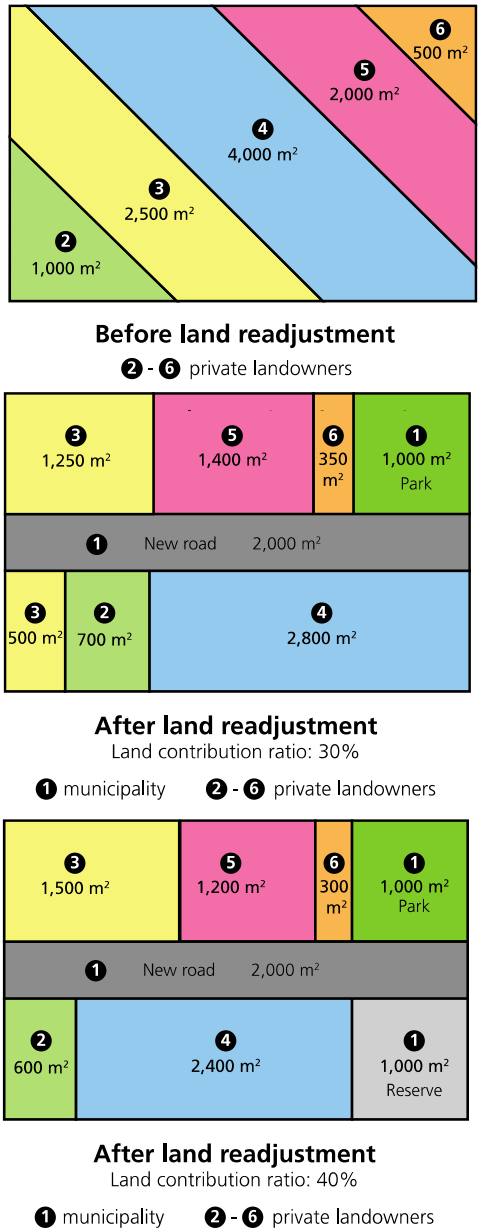


Figure 12: Forms of land readjustment (UN-Habitat 2016, p. 78-79).

For upgrading, the NIUSUS suggests a role for land readjustment as a means of self-financing some of the upgrading projects initiated by landowners, developers, or collective trusts (i.e. options 1, 2, and 4 mentioned above), for which no landowner compensation for land is envisioned, and financing of infrastructure is the responsibility of the initiating parties. Infrastructure may be "collectively financed for example through the sale of a portion of land" (NIUSUS 2016, 2.5.8., p.39) or "the sale of portions of land or property before implementation, or sale and rental after implementation" (NIUSUS 2016, 2.5.10., p.40). In comparison, options 3 (government-led) and 5 (donor-led) indicate that the infrastructure and home improvement costs for projects will likely be covered by the government and the donor and thus does not make mention of self-financing through sale of land. Explicitly encouraging or requiring government- and donor-driven projects to include financing based on land sales is a key revision needed to make these options also utilize land readjustment in a financially sustainable manner.

In practice, land readjustment's self-financing potential has not yet been leveraged in upgrading. The Skat/PROECCO housing project to be discussed in the next section is a very initial attempt at land readjustment in a small scale by pooling four land parcels, which is yet to be scaled up.

In comparison, plot servicing as discussed in Chapter 3 has already occurred organically in Rwanda as a means of avoiding high expropriation costs and regularizing land parcel boundaries. This practice includes most of the elements of land readjustment and so confirms that the country's property rights regime can handle the technical aspects of land readjustment. However, the financing mechanism that is generally part of standard land

readjustment processes appears to be missing in the current practice of "plot servicing", preventing it from being financially viable.

First, while portion of land is often ceded to the government to provide infrastructure, no additional land is generated to be leveraged for financing the project. This is a concern, and not in keeping with international practices, where a portion of readjusted land, either developed or undeveloped, is normally sold off to cover the costs of readjustment and servicing. Figure 11 illustrates this difference well by comparing scenarios without and with landowners' contribution to create reserve land to be used for recovering costs of plot servicing; in Rwanda. The second diagram in Figure 11 depicts a scenario where landowners' contribution is 30 percent of their land only to cater for infrastructure, which is the case for plot servicing in Rwanda. The third diagram describes a scenario where landowners contribute the total of 40 percent of their land to create a municipal sellable land carve-out. Basic financial information gathered from the fieldwork for this report indicates that land value increases from plot servicing are significant and creation and sale of excess land could cover some or all the project costs (the Box below).

Second, it appears that there are yet no effective mechanisms to capture the increased value of the property due to readjustment and the entire increase in property values is realized exclusively by the landowners. With an intention for cost recovery, CoK officials require landowners participating in plot servicing to covert from leasehold to freehold (Organic Law No. 43/2013, Art. 6). By making freehold title registration a condition of granting construction permits to develop properties, the CoK intends to bring those properties the City's property tax base and increase revenue because only freehold land is eligible for property tax, while leaseholders pay lease fees only. This is an important step but will have to be significantly scaled up before the City can truly benefit from this revenue stream. The revenue from general property tax collection is already low and uncertain with the new property tax law implementation (see Appendix B 2.1. for more discussion on taxation and tax revenue. See also Goodfellow 2015). Even if the property tax revenue increases with additional freehold titles from plot servicing, channelling it to capital investments and maintenance of infrastructure requires effective public financial management.

Land value changes for Zone R5 (now R3)

Interviews with officials indicated that some areas proposed to be zoned R5 (now R3) saw a **55.5-fold increase** in land value before and after basic servicing (with roads, drainage, and pipe water access), as seen in the indicative example below from a project site in Kicukiro District, Kigal (pers. comm, District officials):

Land value before servicing:	3 million RwF per hectare (**300 RwF or $0.34 per square meter**)
Land value after servicing:	5 million RwF per 300 square meter plot (**16,666 RwF or $1.94 per square meter**)

Financing details are critical, including a projection model for land value increase (if any), both for the government and landowners. It is essential that the government be able to demonstrate and articulate the benefit, and specifically the economic benefit, to landowners who may be unwilling to participate if they cannot determine how their land asset value will change due to plot servicing. In particular, the government needs to demonstrate with detail that the land value increase will more than compensate for any decrease in landownership area. Likewise, an elaborate financial modelling is needed to consider how increased land value, if any, can be captured and how part of it is used towards creating mixed-income housing to also benefit low-income households, while keeping land readjustment viable.

Considering that increased land value due to servicing often decreases the chance for poor landowners or tenants to afford to live there, a formal mechanism is needed to ensure housing affordability or provide housing options for the poor in case of displacement. In addition, since the government does not own land, it is limited in utilizing a common mechanism for regulating prices, financing infrastructure provision, and controlling the process to ensure that the poor are provided with opportunities to acquire land. Absence of these measures makes the existing practice of plot servicing likely not serving the poor.

Linking plot servicing to national housing subsidy programs may address part of the concern for low-income households, at present the existing program under the Prime Minister's Instructions do not adequately ensure that low-income households will be the primary beneficiaries of the program either. As discussed above, the Prime Minister's Instructions do not set a standard for determining affordability. Additionally, the Instructions subsidize both "affordable" and "high density" housing, with more stringent requirements for the former, which may make the latter more appealing to developers. This is concerning because there is no explicit consideration for low-income populations under the Instructions for high density housing. Finally, there seem no income thresholds for cooperatives, which are eligible under the Instructions for subsidies, meaning that groups of wealthier landowners could conceivably take advantage of the program under the "high density" criteria and receive subsidized infrastructure from the government (See Annex B3.4 for detailed review of the Instructions).

In short, simply redrawing boundaries and reallocating land parcels to their original owners albeit with more regular boundaries and some infrastructure provision, as currently practiced in plot servicing, does not yield the significant financial and economic gains that a well-designed land readjustment can achieve. Rather, increased value in the land is being captured entirely by landowners, who have not shouldered the financial burden of infrastructure provision. At scale and over time, it becomes costly and fiscally unsustainable for the government since it is practically providing subsidized infrastructure to property owners without requiring them to contribute fully to the costs. Further, without any verification of income level of landowners to benefit from plot servicing and in the absence of a mechanism that the increased value of the land can benefit low income households, plot servicing runs a high risk of subsidizing the landowners who do not need such government subsidies.

Practical Feasibility

Rwanda's often irregular property boundaries are at odds with urban plans and they undermine efficient infrastructure provision. Land parcels thus should be consolidated and re-subdivided in most cases, which are key steps in land readjustment. In practical terms, this process whereby landowners effectively forfeit to the state or to the developer – even if only temporarily – his or her land requires high levels of trust in the government's capacity to facilitate land readjustment.

Community participation is critical in the process but is a potential area of weakness in the NIUSUS, although that will largely be determined by how the process is implemented. Under the government-driven option, it is possible that the government will seek to override opposition from community members, and the NIUSUS acknowledges that involuntary resettlement is likely, although it will be minimized as much as possible (NIUSUS (2016), 2.5.6, p.38). Protection of low-income and tenant populations under the NIUSUS process, while discussed, also seems inadequate to mitigate displacement of low-income land owners and tenants following upgrading and gentrification. This issue was expressly highlighted by CoK officials, who recounted the challenges faced by commercial tenants where temporary relocation has been prolonged due to construction delays. The process of temporary

SIMULATION:

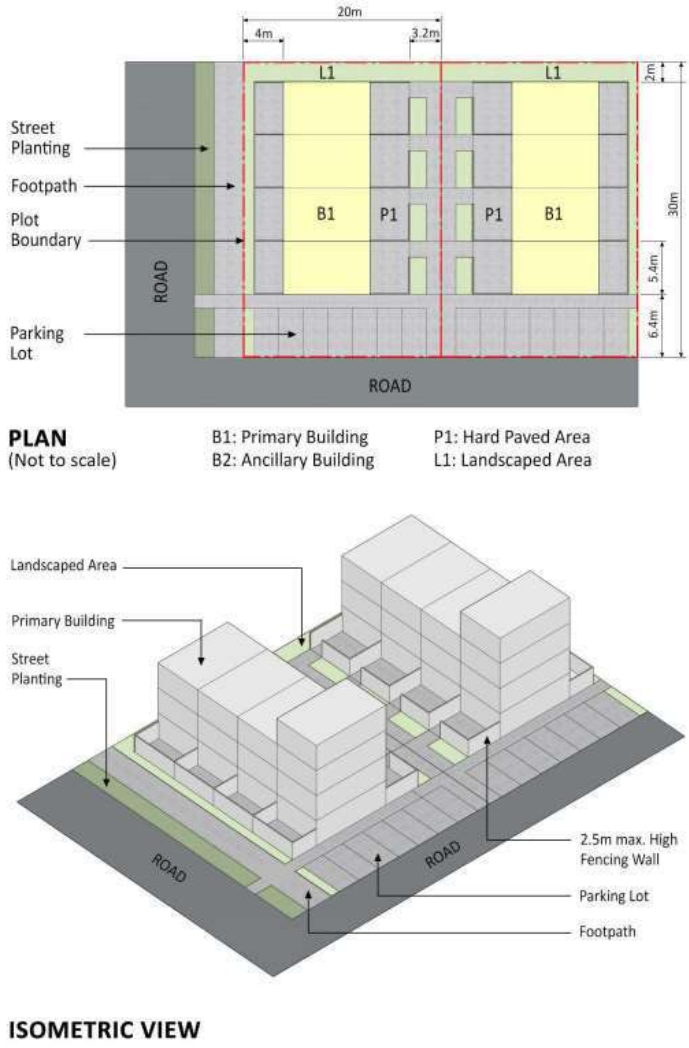


Figure 6-8: Rowhouses and Low-Rise Residential Zone (R2) Type B

Figure 13: KMPR Zoning Regulations diagram for Zone R2 and R5 rowhouses (KMPR Zoning Regulations, 75).

relocation and rights and remedies of displaced inhabitants is mentioned but not in any detail. Addressing issues and forms of redress regarding temporary (or permanent) displacement will be critical to the success of land readjustment in the upgrading process.

On a local planning level, the design parameters for areas for which land readjustment is anticipated generally appear consistent with the housing typologies envisioned in the KMPR (e.g. rowhouses and low-rise apartments; see Figure 15). The minimum plot sizes (120m^2 for R2 and 100 m^2 for R5, now R3) are in line with the required density for both Zones (70-100 Du/ha). The reduced minimum plot sizes from 300 square meters is an improvement, as larger plot sizes encourage a less compact urban form.

Having discussed legal, economic and practical considerations in implementing land readjustment in Rwanda, this report now examines them, taking into consideration the specific conditions in three unplanned settlements and three sites proposed for servicing in Kigali.

5 Case Studies: Upgrading and Sites and Services

Building on the legal, economic and practical feasibility assessment of incrementalism and land readjustment, this report overlays these assessments with actual case studies. For consideration under RUDP II, CoK has identified three unplanned settlements for upgrading in Kigali–Mpazi, Gatenga, and Kimironko[29]–and –three largely greenfield sites on the periphery for development–Gasharu, Masaka, and Ndera (Figure 13; profiles of these sites are discussed more in Annex C). These cases proposed for upgrading and housing development are examined through site visits and interviews with key stakeholders conducted during field visits in June, September and October 2019. Further, this section examines the affordability and scalability of the model houses developed under the Promoting Climate Responsive Building Material Production and Off-farm Employment in the Great Lakes Region (PROECCO) Programme by Skat and attempts to identify the role of the public sector/government in facilitating the scale-up and private investment.

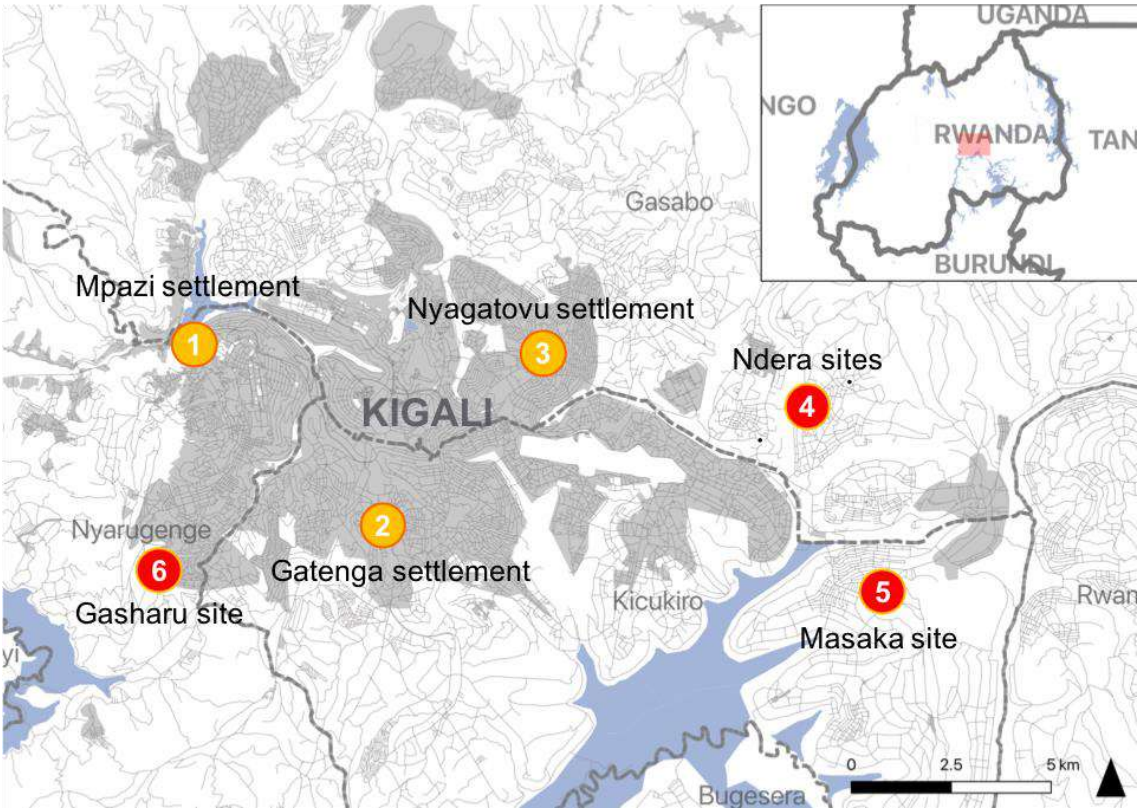


Figure 14: Unplanned settlement and "Site and services" sites in Kigali included in the project brief.

5.1 Upgrading of unplanned settlements in Kigali

Three unplanned settlements in Mpazi, Gatenga, and Kimironko share similar features that make land readjustment a feasible tool for consolidating land on which a new area plan can be drawn up to carve out spaces for infrastructure and services as well as for housing. Taking the example of the Mpazi unplanned settlement, the feasibility study conducted by a consulting firm PRISMA in 2019 for upgrading this area identifies features that favour the prospects of successful upgrading through land

[29] These are among the ten such projects proposed by the CoK for support in RUDP II.

readjustment. They are summarized below across the dimensions of land, infrastructure and housing. In addition, cadastre and average plot sizes[30] suggest that land readjustment could provide space for needed internal infrastructure (particularly footpaths and drainage) and plots could be resized[31] to increase the number of overall plots while maintaining minimum plot sizes required under KMPR Zone R2, which is 120 m^2. Additional land can also be used to protect steep sloped areas from erosion and provide necessary drainage, which is a major physical concern for the Mpazi site

Factors	Site features	Advantages for land readjustment/upgrading
Land	Good location close to jobs	• Well-located and thus valuable land near a major economic hub (central business district in case of Mpazi)
Infrastructure	Easy to connect to bulk infrastructure	• Lack of adequate internal infrastructure but proximity to external bulk infrastructure systems, likely reducing costs to connect internal infrastructure to external systems
Housing	High population density	• High population densities, combined with lower quality single-story housing arranged in potentially inefficient patterns that currently hinder development potential and economic value, which suggests that site-wide land reconfiguration could benefit both landowners and tenants.
	Predominance of rental units	• The predominance of rental units[32] suggests that renting is likely a business for landowners who may be interested and have capacity to invest in land which will expand or enhance their rental business.

However, there are significant concerns regarding land readjustment at the Mpazi site, as reviewed in legal, economic and practical perspectives. Steep slopes on much of the site, which characterizes many unplanned settlements in Kigali, pose extra challenges whereby development necessary for terracing or other earthworks could increase the costs of construction.

Dimensions	Challenges	Concerns for land readjustment/upgrading
Legal	Weak tenant protection	• High tenant populations (nearly 60%) are mobile and likely sensitive to both price and proximity to access economic areas. The potential for this population to be displaced during land readjustment is high, and the prospects for protecting them from involuntary displacement are low, given the lack of tenant protections under Rwanda law.
Economic	Potential land value saturation	• The economic value of properties adjacent to major roads might have already been established. That is, owners of these properties may be less likely to cede or pool their land if it already has high investment value.
Practical	Building regulations increasing costs	• Most of the area has already been developed using local materials. Additional densification and readjustment to create new plots would likely require multi-storey

[30] 45 percent of plots (1515 of 3379) within the site are smaller than 300 m^2 according to RLMUA data (PRISMA (2019), p.43).

[31] A more precise assessment of the potential for resizing plots would require access to cadastre GIS data. Some inferences may be made from the Skat Mpazi housing project, discussed further below in this section.

[32] 57.38% of house occupants are renters overall, and in Kora Cell within the site, 68.04% are renters, according to MINALOC/LODA/NIDA 2019 data (PRISMA (2019), pp.55-57).

	development, as called for in the KMPR Zoning Regulations for Zone R2. As discussed above, the relaxed building requirements for Category 2 do not apply to multi-storey buildings, which require professional assistance and involve more stringent standards, thereby likely increasing the overall costs.

Mpazi's location and its building and infrastructural profile suggest that it is relatively well suited for upgrading (as compared to other settlements) which uses land readjustment to make land available for infrastructure and service provision and facilitate housing improvements. Increased densification, upgrading and creation of new plots typically requires the involvement of professionals, whose contribution will increase land values but will also likely result in largescale tenant displacement. Efforts to build capacity among, and make available financing for, landlords (particularly in-situ landlords) would take more effort but result in better utilization of local resources and labour, both by the landlords themselves and small/medium business enterprises in the areas.

Areas that require further attention and innovation include:

- The conditions for land readjustment—areas where land is underutilised but valuable and thus where land value is expected to rise with interventions—are present in these areas, but further review is necessary using existing land valuation data and to identify groups of properties that can be targeted.
- There is no real precedent in Kigali/Rwanda for land readjustment that is driven by a value-creating and -sharing rationale, meaning that significant effort in developing and piloting a detailed process (beyond that provided in NIUSUS) will be required to initiate this, both with communities and any potential developers.
- Current building code provisions allow incremental housing upgrading using local materials and low-tech methods, but not at the level that will provide the scale and type of housing envisioned in the KMPR. Accordingly, upgrading of these settlements including land readjustment and housing improvements will likely be driven by professional developers.
- Professional developer driven land readjustment will likely result in housing cost increases that displace existing tenants and landowners (although landowners may receive compensation).
- Temporary relocation measures, procedures, and safeguards have largely been overlooked in processes developed by the government – this will be a critical component to getting residents on-board, and in minimizing the harm to them, especially if implemented at scale.
- Permanent displacement is almost guaranteed without further support for tenants in particular, who will likely be affected by rental price increases after land readjustment improvements.
- Increased reliance on rental apartments and condominiums (which may accommodate some of these tenants) means that education about and enforcement of the law regarding both needs to be strengthened, and potentially new laws introduced.

5.2 Site and Services Schemes

Three areas in Kigali proposed for "Sites and services" (now "Expansion") under the KMPR are largely greenfield sites with similar characteristics. The Kibenga site in Ndera Sector provides an illustrative

example of the features shared by other sites. The area is largely agricultural, with dirt road for access. Housing is mixed between rudimentary and new villa and apartment housing (Figure 14).

Figure 15: Photographs of Ndera (Kibenga), Kigali (Credit: Christian Alexander)

Several factors weigh in favour of land readjustment at this site. It is relatively well-located within 1-2km of a major industrial/manufacturing business park, and 3-5km of the current airport. New housing construction within the site and in the area indicate development pressures on the land, indicating potentially increasing property values. The area's infrastructure is not fully developed (e.g. roads are unpaved), providing opportunities for property value increase and land value capture through servicing.

The biggest task for developing these areas truly as envisioned for a sites and services program is keeping housing affordable for the poor and avoiding providing subsidies to wealthy landowners and/or speculating developers. While site visits indicate that there are some low-income residents in these areas, the high professional quality of new construction at all three sites indicates that many of the property owners are relatively wealthy or such development is intended for middle- and high-income households. Without creating additional plots that the government can leverage, it will be difficult to finance infrastructure or provide cross-subsidies for the poorer households.

There is an indication that the government and private developers are working together to acquire land in the "Sites and services" (now "Expansion") areas for the purpose of implementing "affordable" high density housing. For example, proposed BRD-Shelter Afrique housing project is constructed by the private developer RemoteGroup at the Masaka greenfield site. This type of development could be an opportunity to work out a program to both finance construction and ensure beneficiaries (purchasers or renters) are low-income. However, information gathered indicates that housing proposed for these areas is at retail prices (over $20,000) that would be only affordable cost to the wealthiest Rwandans.

If the government instead acquired, serviced, and provided this land for people to construct their own homes, poor households could potentially afford to purchase plots at affordable prices (e.g. below $3000, see IGC (2019)) and build houses themselves incrementally. Although current building code provisions allow incremental housing development using local materials and low-tech methods, this is not at the level that will provide the scale and type of housing envisioned in the KMPR as discussed above. Accordingly, sites and services will likely be driven by professional developers who can meet the requirements in the KMPR and other laws, which will increase costs.

Further, it is highly likely that government plans for development of Zone R5 (now R3) will drive speculation in these areas, resulting in more land being owned by wealthier people using land as an investment vehicle. The risk is that these landowners will be less interested in providing low-cost housing, while primarily benefiting from serviced plots and increased land values. In negotiating schemes for financing site and services, the government should guard against allowing wealthier landowners to capture all or most of the land value increase and find a way to protect the interests of low-income landowners and tenants. Notably, the government can use the land it is acquiring for affordable housing (land banking) for subsidized site and service schemes.

The government should be even more judicious with financial resources in facilitating land readjustment in greenfield sites on the urban periphery, since the land used to finance the projects may not sell as easily as property closer to the City's core. As discussed before, the only precedent for land readjustment in this context is plot servicing, which currently lacks the financing and land value capture rationale as discussed above. CoK officials must thus consider strategies for negotiating acquisition of land not just for infrastructure, but for resale or development to finance the projects.

More broadly, site and services schemes in the international context indicate that the success of these projects is highly reliant on providing adequate access to core urban areas and economic opportunities. Currently, many of the sites proposed for servicing in Kigali are yet to be served by affordable public transportation, although the KMPR provides that these areas will be connected by new public transportation routes in the future. Despite its relative proximity to developed areas, Kibenga is still relatively remote, particularly when accessed on foot. While CoK officials have highlighted the economic and accessibility opportunities available near the proposed "Sites and services" areas, significant investment in adequate services, commercial activity, and public transport will still be necessary to increase their attractiveness to potential occupants. Livelihood opportunities might include subsistence farming, although farming would not be viable at the densities proposed under Zone R5 (now Zone R3).

The location of these sites, currently far from socio-economic opportunities, also indicates that as it stands now these areas are not suitable for accommodating inhabitants displaced by upgrading of unplanned settlements. The mismatch between the cost of the units provided and the affordability levels of the people displaced is obvious. The KMPR anticipates that unplanned settlement upgrading and clearing of settlements from steep-sloped and flood-prone areas will result in some displacement, but this displacement should be minimised not least because the livelihoods and social support networks of many inhabitants there are tied to their living location. The farther away relocation takes people, particularly those economically and socially vulnerable, the more likely for them to be impoverished, as has been the case with many other largescale involuntary resettlements.

5.3 Affordable Housing Through Skat/ PROECCO Model

The Swiss Resource Centre and Consultancies for Development (Skat Ltd) is a Swiss consultant company. Since 2012, Skat is responsible for the implementation of SDC's projects in the Great Lakes Region such as Rwanda, Burundi and Democratic Republic of Congo, including the Promoting Climate Responsive Building Material Production and Off-farm Employment in the Great Lakes Region (PROECCO). One of the outcomes of PROECCO in Kigali has been a demonstration project constructing a small block of multi-storey rowhouses in the Mpazi unplanned urban settlement in Kigali (*See* http://skat.ch/portfolio-item/the-proecco-programme/ and Annex D for further details on the PROECCO).

While the project has resulted in a small amount of new housing, the innovative part of the PROECCO project is strategy for planning, constructing, and financing the project. The planning and development process involved expropriation of four plots of land totaling 600 square meters and containing rudimentary "unplanned" housing. Rather than receiving monetary compensation for the expropriated land, the participating property owners received ownership of the newly constructed condominium units according to the value of the land they contributed. The plot was then merged into one plot, and the condominium units were constructed on the land using innovative design and construction techniques and materials with technical oversight and funding from Skat. CoK temporarily relocated the participating households to nearby accommodation until construction was completed.

The purpose of the demonstration is to show how a different spatial form, using innovative design, locally produced building materials and low-cost techniques can generate a housing solution that is affordable to a wider band of income levels than is currently the case in Kigali. The project is particularly relevant because it experimented with land readjustment in the existing unplanned settlements by consolidating and redeveloping four plots, owned by three people, and constructed ten double-storey row-houses, each with its own entry and each with different design and floor areas.

Legal Feasibility

Formally, there are no major legal obstacles to implementing the PROECCO housing project, although there are some inconsistencies or gaps that could create challenges. The Condominium Law (Law No. 15/2010 of 07/05/2010) provides a legal mechanism for building co-ownership that is well-suited for the PROECCO model, and the articles of association can be tailor-suited to the specific needs of particular associations. The primary issue in this realm is the population's unfamiliarity with condominium associations, and with apartment ownership more generally. One means of overcoming this challenge would be investment in successful demonstration projects at scale.

A strong property rights regime necessitates negotiation with and persuasion of property owners to participate in pooling land, which would likely act to slow down the process but is nonetheless important to ensure owner concerns are heard. Tenant rights on the other hand are very tenuous, largely because they rely nearly entirely on contractual relationships that may not be well documented (or documented at all). Strengthening tenant rights, either through better enforcement of contractual rights and building codes, or establishment of new protections such as legislated tenant rights and protections, should be a priority in order to protect tenants during and after implementation of PROECCO and other similar housing projects. For instance, laws regulating or limiting the required deposit for tenant leases could help with affordability in Kigali and Rwanda more generally, where it is common practice for landlords to ask for two to three months' rent payment's up front (NIUSUS 2017, p.13). Other provisions, including rent stabilization and eviction protections laws, are potential options (see Levy et al. 2006, p.14; Haffner et al. 2009, pp.48-49, 120).

Financial Feasibility

The 10 units (8 units built and occupied with 2 units under construction) are sited on the total 500 square meter net floor area and are priced at approximately US$109,000[33] reflecting costs broken down as below while excluding costs to service the units with piped water and electricity. Dirt road infrastructure was already present, as was drainage.

Price of the 10 unit-condo (500 m^2 net floor area)	US$109,000
Including:	
Costs for foundation	US$17,000
Construction of the structure and ancillary costs[34]	US$79,000[35]
Excluding:	
Cost for piped water	RwF 2 million (US$2,326)[36]
Cost of moving an electrical pole	RwF 500,000 (US$581)
Price per square meter	US$218[37]

[33] Cost and price figures of the PROECCO model houses vary between sources. This is the figure stated by Skat officials.

[34] Including labour, taxes, and a 10 percent profit for the contractor

[35] This was RwF 68 million at the time. Rwanda's rising inflation rate compared to the dollar complicates comparisons over even relatively short amounts of time.

[36] A conversion rate of RwF 860 = US$1 is used, which was the rate in the last quarter of 2018 and is close to the time that the units were likely finished. The rate has since slipped further to RwF 937 = US$1 as of January 2020.

[37] These figures roughly align with the price of US$220 per square meter per the Skat calculator (discussed in Annex D) and prices provided in Dieye (2019) which estimates construction costs at US$200 per square meter and PRISMA (2019, p.16) which estimates PROECCO housing to be priced at between $6,500 and $9,400 per unit. In comparison, CAHF-IFC (2018, p.21) estimates formal construction costs at $416 per square meter.

The housing price numbers provided by Skat for the Mpazi project suggest that the PROECCO model could provide a promising template for constructing improved quality housing at a significantly lower price than the houses built by larger conventional developers in Kigali, which is estimated to be around US$20,000 per unit at the low end. Savings in the PROECCO model housing costs come from innovative design.[38] The cost of local building material is US$80 per square meters, a threefold reduction from US$220 per square meter cost benchmark for conventional building in Rwanda (Dieye 2019). These cost savings through Skat's building techniques mark a significant breakthrough in bringing good quality housing much closer to average costs for self-build and construction by small and medium enterprises (SMEs). The median range for Rwandan housing construction costs is estimated to be RwF 6-12 million or approximately US$7,980-14,000 (NIUSUS 2017, p.16).

Depending on the type of unit, he cost of the model housing overlaps with the price of houses that the bottom 60 percent of the income groups in Kigali can rent. The maximum the second lowest income quintile could afford to rent is a house worth RwF 8,088,953 (US$9,405), which overlaps slightly with the smallest PROECCO model housing unit costs. The most expensive unit (US$15,000) is above the price of housing unit that the median Rwandan household could afford to rent (i.e. a house worth RwF 10,272,823, or US$11,900).

Table 6 PROECCO housing unit costs vs. value of affordable house for rent

PROECCO Housing Unit Cost Range (excluding land or infrastructure)	Value of Affordable Home for Lowest (20%) income Quintile	Value of Affordable Home for 40% Income Quintile	Value of Affordable Home for 60% Income Quintile
RwF 13,000,000 (~$15,000) - RwF 6,000,000 (~$7,000)	RwF 4,935,257 ($5,738.67)	RwF 8,088,953 ($9,405.76)	RwF 11,279,011 ($13,115.31)

The unit size of the PROECCO housing varies from 16 square meteres(1 unit) to 66 square meteres (2 units). Four units (33 m^2 each) are smaller than the mean floor area for Kigali residents (36.46 m^2) and the smallest unit is smaller than what the lowest 20 percent income groups' residential space (18.87 m^2).[39] Assuming that an owner rented out 20 square meters of her unit at the cost of construction ($220/$m^2$), the cost value of that portion of the unit ($4,400) would achieve the range that is affordable for the lowest quintile of Kigali residents ($5,740).[40]

Of course, landlords in most cases will rather seek a profit at market value rates. This is the experience with the existing PROECCO project. The wealthiest owner who owns the two largest units has rented out one of the two units (estimated sales value of RwF 13 million or US$15,000) to a foreign tenant for RwF 200,000 (US$233) per month. Another owner is renting its unit out for RwF 150,000 (US$174) per month. This is far above the average rents in Kigali which range between RwF 20,000 and 100,000 (US$23-116), with rent much higher in centrally located areas (NIUSUS, 1.5, p.16). An estimated 58 percent of Kigali residents earn less than RwF 100,000 per month (KMPR, pp.46, 72). Assuming that "affordable" constitutes roughly 30 percent of income, this population can rent housing at around RwF 30,000 (US$35) per month. The smallest unit (studio) is now rented out at RwF 50,000 (US$58), split by two persons (i.e. US$29 each), closer to this going rental rate.

[38] The housing designs produced by Skat are freely available to interested parties wishing to adapt them to their own contexts.
[39] According to EICV 5 survey data (Bower et al. 2019, p.49). The remaining one unit of the PROECCO housing is 48 m^2.
[40] Notably, however, this excludes land and infrastructure costs.

Lastly, a review of a financial model that Skat had developed in conjunction with the PROECCO project (see Annex D4) reveals that the PROECCO model could self-finance housing improvements in areas with high value potential (i.e. well-located but underutilized) but the site context would be critical and financial conditions should to be very favourable. The types of units to be provided and how they are allocated to participating homeowners and/or the public are important factors determining affordability and the government should consider defining rules for distributing units and specifying rental conditions to ensure that the PROECCO housing is affordable to low-income renters, when scaled-up.

Planning and Practical Feasibility

From a planning standpoint, PROECCO housing project largely conforms with key aspects of the revised KMPR parameters for housing in Zone R2 (e.g. rowhouse typology) and could be made fully compliant fairly easily. The net density for the amalgamated Skat plot is 167 dwelling units (DUs) per hectare (ha), which exceeds the range for Zone R2 (70-100 Du/ha), although it is assumed under the PROECCO model that additional land would be allocated to open space.[41] Zone R2's minimum plot size of 120 square meters is difficult to reconcile with the PROECCO model where the total of 600 square meter plot is owned collectively through the condominium association. If taken as a whole, the total plot would easily conform to the minimum, but if divided by the new number of units, this would result in a far smaller average plot size per dwelling unit (60 square meters). This analysis raises the need to reconsider whether the minimum plot size provided in the KMPR for Zone R2 (or R5, now R3) is necessary or consistent with promising models for high-density housing.

The net floor area of the PROECCO housing is approximately 500 square meters, with the resulting floor area ratio of 0.83 as compared to the expected 1.4 floor area ratio called for under the Zone R2 parameters. Due to the regulations governing the placement of houses on the plot whereby a buffer of 25 meter from the channel was required, the houses could not be densified further without going much taller than what it is now. While this underlines the need to introduce flexibility in determining the level of compliance with planning requirements, the typology and design of the PROECCO housing could allow for additional similar housing to be built on the property, given the relatively small building footprint of the existing structure and the potential of the PROECCO model housing's modular design.

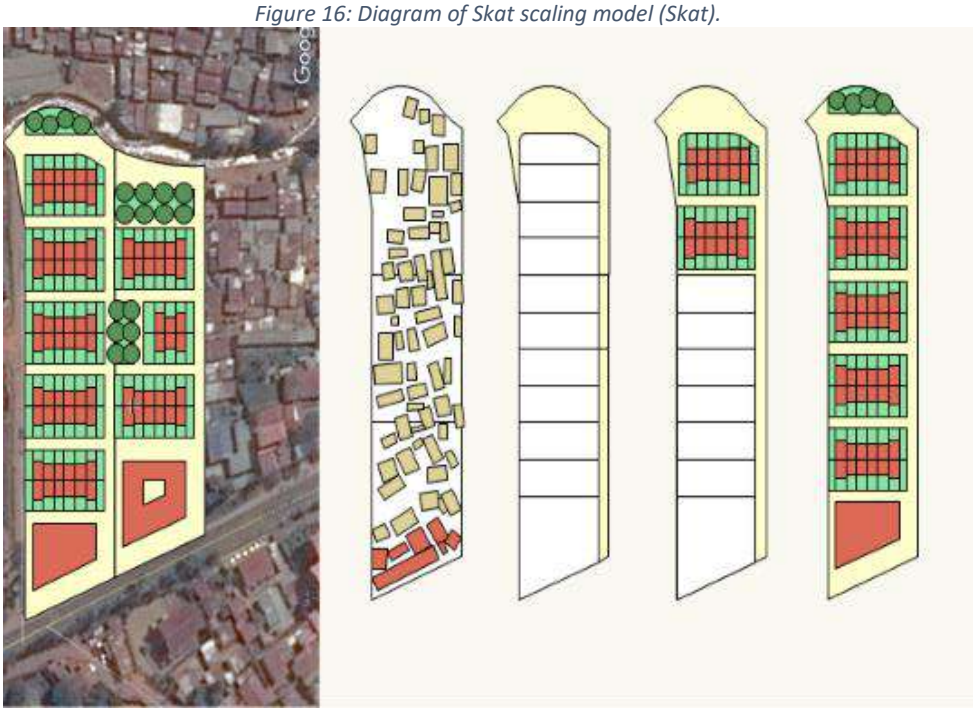
Ultimately, the most challenging obstacles to scaling up the PROECCO model in the short-term may be social and cultural. Skat representatives noted some resistance to multi-storey living, as evidenced by people's desire for ground-floor space and separate entrances. More generally, unfamiliarity with both multi-storey living and the legal rights and responsibilities of condominium ownership may lead to limited demand for multi-storey housing types. Social norms change over time, however, and it could be expected that demonstrating successful rowhouse and multi-storey unit housing that are available at affordable price may change perceptions.

It was envisioned that the initial PROECCO model house would be rolled out across the Mpazi neighbourhood in phases whereby a newly constructed units are used for accommodating landowners participating in the next round of land consolidation (see Figure 15). For this, it would have been ideal if one large and one small unit had been allocated to the participating households because smaller units are better for a household to rent out to individuals or small households whose land would be next in line to be pooled for constructing another set of apartment units. However, when the participating

[41] It is unclear from the KMPR whether the provided densities are gross or net.

landowners were given the option to select their own units, the wealthiest property owner selected the largest units, leaving only small units left for other owners.

Figure 16: Diagram of Skat scaling model (Skat).



In summary, the many apparent and potential benefits associated with the PROECCO housing model—higher densities and better planned communities; higher quality housing at lower construction costs; use of local resources, manufacturing, and labour; and property owner participation—suggest that it is still a model worth promoting. These benefits will likely create efficiencies and boost healthy growth for future building in the area, and its spread may help reduce housing costs while improving conditions in ways that go beyond the scope of the specific housing project. Subsidization of the PROECCO model might also benefit broader stakeholders in Rwanda by learning more about land pooling, formation of condominium associations, and familiarization with multi-storey unit living.

As a "best practice" demonstration so far, the PROECCO housing model offers an opportunity to broaden options in the housing market. With further support and experiment for scaled-up implementation, the model may also be able to serve the lowest two income quintiles. However, the limitations of the PROECCO model to achieve affordability at scale currently without subsidization is a serious sign that other models of professionalized redevelopment will likewise fall short of serving low-income populations. On this ground, GoR and other stakeholders should be sceptical of alternative development proposals that purport to provide "affordable" low-income housing. Given the serious gap between conventional professional housing development costs and poor Rwandans' affordability, it may be that the PROECCO model (whether conducted by Skat or another private developer) is one of the viable vehicles for facilitating the private housing market, even if some subsidy is required. More broadly, Skat's financial picture reinforces the conclusions drawn by many observers, that incremental upgrading through self-building or SMEs is critical to addressing low-income housing needs in Kigali, and Rwanda.

6 Recommendations

GoR has made concerted efforts to introduce more flexibility into its planning documents, zoning regulations, and building codes that supports incremental housing and settlement development. Incrementalism is described by the policy documents as strategies that are both accepted and encouraged (e.g., NHP 2015, p.15; Kigali USU Strategy 2019, p.45; KMPR 2019, p.25) in the manner that is consistent with a conventional understanding from an international context. The overall legal framework and some government subsidization of infrastructure for land readjustment is also consistent with international practices.

In practice, however, there are several bottlenecks that prevent the housing strategies discussed in this report – land readjustment and incremental development in unplanned settlement upgrading and site and services schemes – from serving the housing needs of low-income households. Although planning and policy documents support incremental development, building and zoning codes for low-scale incremental development do not meet the density or typology parameters set out for zones for upgrading and sites and services (Zone 2 and now R3 in Kigali) – likely increasing the cost of these strategies and impeding their potential for providing housing opportunities to low-income communities.

Further changes to Rwanda's legal and policy framework are needed for the current housing delivery approaches studied in this project to successfully provide housing that is affordable to low-income households, i.e. affordable to the bottom 50 percent of income earners in Rwanda. Recommendations are proposed in five categories and detailed below:

1. **Affordability definition**: The legal and policy frameworks need revision in order to explicitly set out what constitutes housing affordability in Rwanda, so that housing and land supply instruments can be more effectively targeted towards specific income groups, and especially towards the lowest income households.

2. **Incremental housing development**: Policy and regulatory frameworks have recently expressed a commitment to supporting incrementalism in the construction of affordable housing, but revisions are needed to realize this policy objective in practical terms.

3. **Sites and services**: The largest challenge to implementing a site and services model in Rwanda is financial sustainability. Because the government does not own land it can neither leverage land to finance infrastructure provision nor subsidise land acquisition for low-income home buyers. It is therefore necessary to establish some other mechanism for cost recovery for the government; and to ensure low-income households also benefit from the government support.

4. **Land readjustment**: Rwanda currently implements a form of land readjustment in its plot servicing practice, but legal and policy changes are needed to enable the practice to yield the opportunities for land value capture that land readjustment provides in other countries.

5. **Housing provision**: The PROECCO model houses developed by Skat provide a credible example of how housing affordability in Rwanda can be expanded to cater for income groups currently not served by the market. Recommendations are made to enhance its roll-out.

6.1 Designation of "affordability" in regulations and policies

6.1.1 Pursuant to the Prime Minister's Instructions No. 001/03 of 23/02/2017, **RHA** should issue criteria for affordability that clearly and unambiguously apply to income earners in the bottom two income quintiles, as determined by the latest EICV survey data. This definition of affordability should be based on a robust analysis like the one provided by IGC (2019).

6.1.2 The **Prime Minister**, with input from RHA, should consider revisions to Instructions No. 001/03 of 23/02/2017 to ensure government subsidies target low-income groups, i.e. those whose incomes are, at most, in the bottom half of the spectrum. This would include: (a) establishing a clear definition of "affordable" while maintaining some amount of flexibility to accommodate changes in economic circumstances; (b) reducing or eliminating the significant difference between criteria for affordable and high density projects; (c) simplifying the criteria for affordable projects; and (d) eliminating exemptions from the affordability criteria for negotiating landowners. It will be critical to reflect on these points in the review of the Instructions which we understand are ongoing.

6.1.3 The **City of Kigali** should consider improving on the definition of "affordability" in the KMPR and KMPR Zoning Regulations by incorporating a more robust and nuanced definition. While the current definition in the KMPR (30% of the City's median annual income, determined periodically based on EICV data) is positive, it could be refined by establishing affordability levels for different income groups. For instance, CoK might also consider establishing a definition for "low-income affordability" that targets the poorest two income quintiles in addition to a broader "affordability" definition based on the middle 50 percent of income earners.

6.1.4 More broadly, **MININFRA**, **RHA**, **CoK**, **District Authorities** should establish standards for "affordability" that targets income earners in the lower 50 percent of the income spectrum, as determined by the latest EICV survey data. For each policy and program these governmental bodies should clearly define affordability, which may vary within this spectrum depending on the objectives of the policy or program. For example, programs for the poorest Rwandans may need a definition of affordability that is more narrowly targeted to the lowest 20 percent of income earners. Housing policies and programs wherein products or services are affordable to only the upper half of income earners should not be labelled "affordable".

6.2 Incrementalism

6.2.1 **MININFRA** should consider amending the Rwanda Building Code to eliminate the requirement that incremental buildings be permitted only according to "final" design plans. Likewise, the **City of Kigali** should consider amending the KMPR Zoning Regulations to eliminate prohibitions on "unfinished" buildings, and instead focus on habitability and safety standards for buildings. Both national and local building codes and regulations could be supplemented by guidance on context-appropriate incremental building (see recommendation below regarding incremental workshop series) that would balance the policy concern that towns and cities appear orderly with the need to accommodate the unpredictable housing needs of individual households.

6.2.2 The **City of Kigali** should reconsider whether the minimum plot sizes provided in medium and high density zones under the KMPR and KMPR Zoning Regulations are necessary to protect health and safety, and whether they will facilitate or impede the densities sought. Information

on existing unplanned settlements and the PROECCO model housing suggest that the revised minimum plot sizes may still be too large to facilitate the densities sought.

6.2.3 Building on the recommendations of others, notably Bower et al. (2019), and policy goals elaborated in the National Housing Policy and NIUSUS, **RHA** and **MININFRA** should jointly convene a workshop series and working group to discuss and develop urban incremental building and design guidelines. The objective of the series should be to develop standards that take into account local materials, innovative designs and techniques, skills, experience, and socio-cultural factors specific to the Rwandan context. The series will also provide a platform for knowledge exchange and offer opportunities for SME development. The workshop should include CoK and District Authorities, building industry professionals, relevant civil society, and the public. Outcomes of the series should be to: (a) develop a set of non-binding best practices or guidelines for incremental building in Rwanda that are easy to understand and replicate for practitioners, and (b) contribute to amendments to the Rwanda Building Code to adopt.

6.3 Site and services

6.3.1 **District Authorities** need to revise their approach to plot servicing to: (a) include mechanisms for better understanding the value increase and value capture of these projects prior to and during implementation; (b) review potential plot servicing projects to determine the income levels of landowners and other beneficiaries of the projects; and (c) where the landowners and other beneficiaries are not low-income, ensure that their financial or land contributions cover the cost of infrastructure provision and, where possible, subsidize land or housing for low-income populations. This will require the support and guidance of the national government.

6.3.2 The **Rwanda Revenue Authority (RRA)**, **MINECOFIN and District Authorities** should strengthen enforcement of property tax laws to ensure the property value increase following infrastructure provision and housing improvements are adequately captured by the government. The government can also consider use of other tools such as development fee or taxation (or private landowners are required to make contributions to create reserve land) to gain extra revenue.

6.3.3 **RHA** and/or **BRD** could seek to acquire and land bank well-located and undervalued property for future reallocation to low-income households under a sites and services scheme. There is indication that BRD as well as RHA is already pursuing land banking.

6.3.4 The **Rwandan legislature** could consider passing tenant rights and protections, such as laws regulating or limiting the required deposit for tenant leases and conditions and process for evictions. This is a recommendation applicable to land readjustment as well.

6.4 Land readjustment

6.4.1 The **City of Kigali** and **District Authorities** should seek to more rigorously enforce requirements for written tenant agreements and condominium association agreements and require such written agreements as a condition of negotiations for land redistribution in land readjustment projects. They may also consider non-regulatory outreach efforts to educate tenants regarding the legal benefits of written contracts.

6.4.2 **MININFRA** should issue an amendment or supplement to the National Informal Urban Settlement Upgrading Strategy to articulate the imperative to negotiate with private landowners for land readjustment as an alternative to expropriation for land acquisition.

6.4.3 There is no obvious legal impediment to the government requiring excess land from participating landowners, providing that the value of the property received by landowners at the end of the project is greater than that of the land that they contributed at the outset. However, if GoR legal counsel believe it is necessary, further regulatory or legislative research should be taken to clarify the authority to negotiate, either through (preferably) instructions from the **Prime Minister** or, if necessary, through **legislative amendment** to Rwanda's expropriation law.

6.4.4 The **City of Kigali** and **District Authorities** should formalize internal guidance regarding the process, terms and conditions of negotiating plot servicing and other forms of land readjustment. In developing these guidelines, the City of Kigali and the District Authorities should coordinate policies with national government, including RHA and MININFRA. These guidelines should serve to help standardize the process, increase transparency, and ensure the government's housing policies and the public's interests are followed and protected. These guidelines should not be implemented rigidly, as flexibility is needed during negotiation with private landowners. For example, differences in the potential for value capture of infrastructure provision may mean that the government can seek to acquire different sizes of land.

6.4.5 **District Authorities** should, in close coordination with the national government, be proactive in invoking and leveraging the authority under the national land law to confiscate unexploited land (Organic Law No. 43/2013 Article 58) in Zone R5 (now Zone R3), in order to incentivize development and encourage negotiation with the government for public services.

6.4.6 Within Zone R2 and Zone R5 (now R3), the **City of Kigali** and **District Authorities** should put in place a policy of strategic negotiation for catalytic land readjustment wherein the government will acquire significant land that may be used to subsidize directly or indirectly low-income housing. The areas selected must be based on an analysis of existing and potential land values as well as proposed infrastructure provision. In the case of Zone R2 areas, areas with a high percentage of inhabitants who are landowners should be considered as a factor in favour of land readjustment, while areas with high tenant populations should be viewed more cautiously.

6.4.7 **RHA**, **City of Kigali**, **District Authorities** should work with Skat to modify the Skat Calculator (reviewed in Annex D) for use as an analysis and negotiation tool for land readjustment. In particular, the Skat Calculator has extremely promising potential for modelling the inputs and outcomes of land readjustment for a particular person (or an average individual) participating in a land readjustment scheme. The calculator, however, was developed for a very specific purpose and context and thus should be improved to be a tool for broader land readjustment purposes, supporting government officials in conveying the change in ownership and financial benefit in participating, thereby facilitating participation.

6.5 Housing provision

6.5.1 **RHA**, **MININFRA**, **BRD**, and **CoK**, among others, should support projects that demonstrate and pilot the above strategies – incrementalism and land readjustment. In the case of site and services and particularly land readjustment, there may be relatively few projects that fully

engage all aspects of these strategies (e.g. “core” units for site and services, and housing subsidization from land sale for land readjustment), yet pilot projects can still provide models for partial utilization of these strategies. Use of good urban design can also make the case for a fresh approach to the current concerns with the aesthetic dimension of incremental housing.

6.5.2 **CoK**, **District Authorities**, and **RHA** should continue to engage and facilitate a diverse array of housing programs and models that seek to reduce housing costs, including the PROECCO model housing. The PROECCO housing conforms with the high-density goals of national and Kigali planning documents (and could make a good candidate for the affordable and high-density housing infrastructure subsidy program (Prime Minister’s Instructions No. 001/03 of 23/02/2017), although it might not qualify under the affordability criteria of the Instruction. Skat played a critical role in financially backstopping the original PROECCO model housing project, including providing up-front funding and covering ancillary or unexpected costs. One of the government entities above could fill this role for subsequent rounds, with Skat’s technical support, in order to maintain momentum for the project and providing the housing benefits discussed in the review of the PROECCO model housing project explained above and in the Annexes. Building on this experience, the government can work closely to make models like the PROECCO housing better serve the lowest income earners, while facilitating other strategies, most notably their right and ability to build and live in incremental, self-built, and SME-constructed housing.

The challenges to implementing low-income housing strategies are significant but the consequences of not facing these challenges make the effort necessary. The economic data and supporting information reviewed in this project clearly show that Rwanda’s existing professionalized housing developers cannot provide housing at a cost that is affordable to most of the population. While there is real value in efforts to reduce professionally built housing costs through financing, use of local materials and resources, cost-saving designs, densification, and scale-up, there is also an urgent need to facilitate smaller-scale and self-build techniques. Professional builders and developers will continue to play a critical role, but they alone cannot meet the diversity of housing needs in the country. None of these are a silver bullet or panacea for addressing the complex and interconnected dynamics of Rwanda’s housing market, and indeed none of these should be considered in isolation.

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