A Review of the Data Landscape in Rwanda's Housing Ecosystem

November 2021

Introduction

Rwanda has a developing housing and housing finance sector – but there are constraints. While Rwanda's mortgage to GDP ratio (3,35 percent) is relatively high for the region, mortgage lending is concentrated at the upper end of the income pyramid; and while Rwanda's microfinance sector is an important source of finance for lower income segments of the market, the products and services of microfinance providers are not typically addressed towards housing. In addition, Rwanda has a critical, but poorly documented residential rental sector. As is the case in most countries, the affordable rental sector operates off the radar, unattended by both policy and finance.

In 2020, the Government of Rwanda partnered with the World Bank to access two grants, one of which is for housing finance. US$150 million has been approved to fund the Rwanda Housing Financing Project, the main objective of which is to expand access to long term housing finance for the benefit of middle-income segments that have limited or no access to mortgages, while also supporting capital market development. While this is important, it is unlikely to cover the breadth of the need for housing finance, specifically for lower income earners who are outside the scope of mortgage lending. How the end user finance intentions align with the availability of construction finance, and whether this addresses the needs of the so-called informal, or small-scale supply sector (and critically, rental accommodation) is also not clear. To this end, a broader and more detailed understanding of the demand and supply sides, how they intersect, and the specific housing value chains engaged with and served by each, is required.

Rwanda's Vision 2050 "sets a new pathway that will lead the country to the livings standards of upper middle income by 2035 and high-income countries by 2050". In line with this vision, the National Land Use Development Management Plan predicts a 2% annual growth rate, such that by 2050, Rwanda's population will be 22.1 million people. To meet the housing needs of these people, the NLUDMP projects that 5,5 million dwelling units will be required by 2050, or an annual delivery of 150 000 dwelling units between 2020 and 2050. The research finds the urban figure to be an estimated 3,2 million units by 2050. Even just this urban projection demands a higher rate of annual delivery than current formal capacity has been able to achieve. The report finds that most housing in Rwanda is being delivered by smaller scale players and by households themselves, often informally. Meeting the Vision 2050 affordable housing targets both in terms of the anticipated scale and quality will require strong partnerships between market players and with government, while also explicitly leveraging and growing the capacity of smaller scale players.

As Rwanda develops in line with its vision, there is an opportunity for AFR to support the development of a housing finance sector in Rwanda that meets the needs of all residents and all housing supply approaches, with a variety of products and services designed explicitly to engage with the breadth and nuance of their capacity.

This review of Rwanda's affordable housing sector and its financing explored the overall institutional, policy and legislative environment for affordable housing, scoped the demand side, interrogated the capacity and activities of the supply side, and considered where finance could make a difference. **This report provides a review of the data landscape in Rwanda's housing ecosystem.** The full study was presented to Rwandan stakeholders for a validation workshop on 24 August 2021. The team is grateful for the detailed engagement and inputs from all stakeholders and looks forward to further engagement on the recommendations.

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1. **Introduction**

2. Key custodians of housing data

3. Summary of data collection

4. Populated indicators

5. Replicating the analysis

This data landscape review seeks to support investment decision-making for affordable housing by disseminating available data and encouraging the provision of additional data. Various organizations could potentially provide access to data useful for housing investment decision-making

Private Sector Institutions

Private sector participants will maintain data on their own activities but might be **reluctant to share** data because of competitive concerns

Where data is made publicly available, it may be provided **sporadically** and **partially**, and often with the objective of building reputational capital in higher income segments of the market

Non-uniformity of data provided by various companies and **unsynchronized releases** reduces the usability and value of this data and constrains one's ability to take sector/nationally representative views

Industry-wide data sharing initiatives can succeed, but there is the risk that some **participants fail to submit data** while making use of data provided by others. Further, if only a sample of companies release their data, it will not be representative

Regulators and Administrators

DATA DISSEMINATION

- There is an opportunity in working with regulators to make the data that they collect **publicly available**
- The entities that authorise activity and regulate participants across the formal housing and housing finance value chains will naturally generate vast amounts of data. **Legislation** that empowers the state and regulators to collect data can drive **efficiencies** and **generate more complete data**. This may also address the challenges of data representativeness, uniformity, and vintage

MARKET-DEVELOPMENT OBJECTIVE

- Regulators typically do not collect data with a market-development objective in mind and may be unaware of the potential value to market participants of the data they have
- In part, the objective of CAHF's Data Agenda is to highlight this **potential value to data curators**, and encourage them to gather and disseminate more data, more often

FORMAL HOUSING SUPPLY

- **Administrative data**, which may include data collected by planning authorities, can be very useful in characterising formal housing supply
- Indicators relating to lending activity and loan performance are collected by central banks using compliance returns submitted by regulated financial services providers

One of the key caveats to keep in mind when using housing data sourced from regulators and administrators is that it characterizes formal housing activity only

Regulators and Administrators

- A more limiting feature of data collected and maintained by regulators and other government authorities is that this data, by definition, characterises formal housing activity only

- In Rwanda as in most African countries, many households do not live in dwellings that are administratively visible or formally registered with any authority. Dwellings are built on land that may not be formally demarcated without any formal planning permission and without any connection to municipal servicing infrastructure. While these dwellings may be characterised as slums, the households who have built them have clearly invested in them, often incrementally over extended periods of time

- Where data is not available or is severely limited, underlying administrative or regulatory processes are inefficient or poorly aligned with the needs of the market. This poor alignment is often the underlying cause of informality

Household survey data can go some way toward quantifying and characterizing informal housing activity, but this data is prone to error and expensive to collect. New data such as image recognition software and distributed ledger technologies can address the shortcomings of these traditional datasets

Household Surveys

- Typically, household surveys are the primary data source used to quantify and characterise informal housing activity
- Household surveys typically include questions on dwelling characteristics, access to services and tenure. They also include detailed data on household members and can include questions on sources of income and income levels
- However, surveys are prone to **error**, including misreporting by respondents, a common limitation of income data collected by surveys. They are also expensive to conduct

New Technologies and Data

- New technologies to generate and process alternative forms of data can provide more **accurate** and **detailed** characterisations of informal housing activity while reducing the costs of collecting data and improving the accuracy of data collection processes. New technologies also enable new forms of data to be collected at scale, and processed and analysed at lower cost and in close to real time, creating new possibilities for the way regulators and authorities monitor the activity of participants in the value chain
- In addition, distributed ledger technologies, including blockchain based land registries can enable that data to be maintained over time. Data creates administrative visibility and provides a basis for formalisation, notwithstanding the lack of regulatory compliance
- CAHF's Data Agenda challenges existing notions of formality and seeks to explore how new data could enable **improved visibility**, laying the foundation for better **governance**, more appropriate **regulations** and sustainable **participation** of the financial sector

This data landscape review explores Rwanda's existing housing data landscape with reference to data availability for a set of indicators that characterize housing activity. It focuses on the custodians of key housing related data, identifying data gaps and potential avenues for engagement to close these gaps and improve the visibility of the sector

This **housing landscape review** aims to facilitate further in-country engagements around housing data. This report explores the availability of data required to populate a set of priority indicators that characterise activity along the **Housing Value Chain** and identifies gaps and quality concerns in a number of key administrative datasets explored by the project team

In addition, in line with project objective of **scoping the affordable housing sector**, a number of indicators relating specifically to the first four income or wealth deciles (the so-called Bottom 40* of the market) have been included in the process

In many cases indicators are difficult to populate using publicly available data and the project team had to rely on proxies. These can be a poor reflection of actual experience. In particular, data relating to actual development costs and processes are typically not available and must be collected directly from participants in the housing value chain. Often data collection is limited to a single respondent and there is no way to assess whether this data is representative of the sector
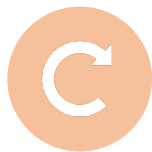
The entire data collection and indicator population process was documented to facilitate replication and updating by AFR going forward

*According to the World Bank, the goal of shared prosperity "entails fostering the income growth of the Bottom 40 percent of the population in every country". Gathering data on incomes of poorer households is particularly challenging. Household units are unlikely to be stable in the face of changing economic circumstances. In addition, income itself can vary significantly over time. Survey respondents may also incorrectly report income. Increasingly, survey collection of income data relies on daily diary studies which track income and expenditure. While this reduces measurement error, data is expensive to collect and may be updated infrequently. In order to overcome challenges with measuring income and expenditure, some approaches to measuring poverty rely on asset ownership. Asset ownership is easier to measure, more stable and is thought to have a fairly direct relationship to income or expenditure. Asset-based indicators are contained in a number of survey instruments including Demographic and Health Surveys which are widely available and regularly repeated. While the World Bank relies on income or expenditure to measure Bottom 40 households, this data is not available in many cases. Where it is available, survey instruments may not explore data points required to generate specific indicators. Some flexibility with regard to the determination of the Bottom 40 as well as the measurement of indicators is therefore required.

CAHF, 71point4, and Reall have developed 114* key indicators that provide information on activity across the housing value chain as well as critical contextual areas. By populating these indicators, the team is able to identify key custodians of housing data in Rwanda, current gaps in the housing data landscape, and potential avenues for improving the quality of existing data or filling data gaps

VALUE CHAIN

CONTEXT

| Land & Infrastructure | Construction & Investment | Sales & Rental | Maintenance & Management | Enabling Environment | Economic Environment | Demand |

LAND ASSEMBLY ● Smallest residential plot size ● Regulated minimum size of a residential plot in urban areas in square meters ● Average land costs per m2 ● % of land for residential development acquired from the private sector ● World Bank DBI geographic coverage index score ranking: Africa ● World Bank DBI geographic coverage index score ranking: Global ● World Bank DBI quality of land administration index ranking: Africa ● World Bank DBI quality of land administration index ranking: Global ● **LAND TITLE** ● Total number of residential properties with a title deed ● Cost to register residential property ● Number of procedures to register residential property ● Time to register residential property (days) ● Name of residential property registration procedure that takes the longest to complete ● World Bank DBI transparency of information index ranking: Africa ● World Bank DBI transparency of information index ranking: Global ● **INFRASTRUCTURE** ● % of residential development projects where developers are paying for bulk infrastructure or the building of roads ● Transport as a % of household expenditure ● World Bank DBI reliability of infrastructure index ranking: Africa ● World Bank DBI reliability of infrastructure index ranking: Global ● % of households without access to improved drinking water services ● % of households without access to improved sanitation services ● % of households without access to electricity ● % of households living in dwellings built using durable building materials (walls and roof) with inadequate services

STOCK ● Size of cheapest, newly built dwelling by a formal developer or contractor in an urban area in square meters ● Number of people per sleeping room in formal dwellings ● Number of people per sleeping room in informal dwellings ● % of population living in slums, informal settlements, or inadequate dwellings ● Number of households living in dwellings built using durable building materials (walls and roof) ● % of households living in dwellings built using durable building materials (walls and roof) that are overcrowded ● **FLOW** ● Residential construction sector as a % of GDP ● Gross fixed capital formation of dwellings as % of GDP ● Number of dwellings completed annually ● Residential rental sector as a % of GDP ● **INDUSTRY** ● Number of formal private developers / contractors serving the bottom-end of the market ● Number of completed developer built dwellings that are accessible to the bottom-end of the market ● Is there a body that organises developers / contractors? ● Number of people employed in the residential construction sector ● Number of people employed in residential rental sector ● **BUILDING MATERIALS** ● Cost of standard 50kg bag of cement in local currency units ● Average residential building cost inflation for dwellings over 5 years ● **PROCESS** ● Total cost of all residential construction permit-related procedures in local currency units ● Time (in days) from application to completion for dwellings in the main urban city

OWNERSHIP ● Average inflation for dwellings over 5 years ● World Bank DBI equal access to property rights index ranking: Africa ● World Bank DBI equal access to property rights index ranking: Global ● % of households that own their dwelling ● % of households with female or joint ownership of a dwelling ● Price of the cheapest, newly built dwelling by a formal developer or contractor in local currency units ● % of households with female ownership of a dwelling ● **RENTAL** ● Typical rental price for cheapest, newly built dwelling by a formal developer or contractor in local currency units ● % of households that rent their dwelling ● **TRANSACTIONS** ● Does government or industry publish any data on land prices in the main urban city? ● Number of formal estate agents ● Resale transactions as a % of all residential transactions ● Number of new residential transfers ● Number of residential resale transactions ● Number of residential transfers financed with a mortgage ● World Bank DBI land dispute resolution index ranking: Africa ● World Bank DBI land dispute resolution index ranking: Global ● **FINANCE** ● Number of residential mortgage providers that serve the bottom-end of the market ● Number of residential mortgages or formal loans provided to the bottom-end of the market ● Does an operational mortgage refinancing company exist? ● Does a foreclosure policy exist? ● Number of residential mortgage providers ● Value of residential mortgages outstanding in local currency units ● Number of residential mortgages outstanding ● Value of residential mortgages issued per annum in local currency units ● Number of residential mortgages issued per annum ● Non-performing residential mortgages as a % of total outstanding residential mortgages ● Mortgages as a % of properties ● Value of residential mortgages outstanding as % of GDP ● Is there a regulatory cap on residential mortgage interest rates? ● Prevailing residential mortgage rate ● Maximum residential mortgage term ● Maximum LTV on a residential mortgage ● Maximum instalment to income ratio ● % of the adult population that borrowed formally ● Income distribution thresholds ● **AFFORDABILITY** ● Maximum dwelling price affordable to B40 households based on market mortgage finance terms ● % of households that can afford the cheapest, newly built developer by a formal developer or contractor ● Maximum dwelling rent affordable to B40 households

HOME IMPROVEMENTS ● Number of approved building permit applications for improvements to residential properties ● Improvements to dwellings as a % of household expenditure ● **MUNICIPAL MANAGEMENT** ● Number of residential properties that are rated for property taxes in the main urban centre ● % of households without access to basic waste collection services ● **FINANCE** ● Number of microfinance providers ● Value of microfinance loans in local currency units

OPERATING ENVIRONMENT ● Human development index (HDI) country ranking: Africa ● Human development index (HDI) country ranking: Global ● Ease of doing business index rank: Africa ● Ease of doing business index rank: Global ● Corruption perceptions index rank: Africa ● Corruption perceptions index rank: Global

MACROECONOMIC INDICATORS ● Yield on 2-year government bonds ● Yield on 10-year government bonds ● USD Exchange rate (1 USD = x LCU) ● PPP conversion factor for private consumption ● GDP per capita in current local currency units ● GDP per capita in current local currency units growth rate ● GDP growth rate ● Government construction of dwellings and serviced stands as a % of national budget ● Unemployment rate ● % of individuals aged 15-49 that have not worked in the past 12 months ● % of females aged 15-49 that have not worked in the past 12 months ● % of population below national poverty line ● Gini coefficient index ● Inflation rate (CPI)

DEMOGRAPHICS ● Population size ● Population growth rate ● Population pyramid ● Number of households ● Average household size ● Country income pyramid ● List of main urban centres

* Two of the Headline Indicators were excluded as these related specifically to data submitted by developers to Reall, a funder of affordable housing projects (https://www.reall.net/). Reall does not have any partners in Rwanda, and as such, these indicators were excluded from the analysis.

1. Introduction

2. **Key custodians of housing data**

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5. Replicating the analysis

The building permitting system (BPMIS, managed by the RHA), land registration, and land transactions procedures are captured digitally while nationally representative surveys and other economic data are frequently released by its statistics bureau (NISR)*. Together, these data sources provide visibility on both the demand (NISR and RLMUA) and supply sides (BPMIS and RLUMA) of Rwanda's housing market

RHA

- BPMIS captures data on 7 different permits

- All building permit related data is captured and archived by this system

- System has built in reporting functionality with time-stamps recorded throughout the submission, review, and approval process

- Data is not currently publicly disseminated

NISR
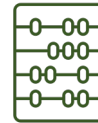
- Survey microdata is primary source for assessing current housing conditions, backlog and access to services

- Statistical Yearbook curate data from a variety of administrative and transactional databases (incl. land transactions and mortgages)

- National Accounts data can provide an aggregate view on housing sector's contribution to the economy

RLMUA

- Land Administration Information System (LAIS) captures all land registration and transactions data

- RLUMA hosts a publicly accessible land dashboard that pulls data from LAIS on a daily basis

- Currently visible data includes land ownership by gender, spatial distribution of land parcels, and the number of transactions per year

* The RHA is the Rwanda Housing Authority, BPMIS is Rwanda's Building Permit Information Management System, RLMUA stands for Rwanda Land Management and Use Authority, the National Institute of Statistics Rwanda goes by the acronym NISR.

The NISR's survey data is the main source for data on incomes, a critical input into housing affordability assessments. As shown below, its estimates vary greatly - both between its own surveys and from other sources of income data. The NISR should collaborate with the RRA to provide annual releases of Rwanda's income distribution using RRA income tax data

Comparisons of income data from multiple sources

Estimates of median monthly incomes (RWF)

Occupation	LFS 2019	Public salaries (net pay, 2020)	EICV5 (inflated to 2021)	PAYE data (median average basic pay, 2020)
Public sector workers				
Median	**99 000**	**450 000**	**181 000**	**380 000**
Primary school teachers	50 000		113 000	
Secondary education teachers	126 000		113 000	
Armed forces occupations, other ranks	50 000			
Security guards	48 000			
Nursing professionals	156 000		232 000	
Accountants	140 000	277 000	290 000	
Police officers	60 000			
Education managers	240 000		113 000	
University and higher education teachers	500 000		113 000	
Generalist medical practitioners	198 000			
Administrative assistants		277 000	165 000	
Director generals		616 000		
Directors		466 000		
Head of departments		753 000		

Data was triangulated between different sources as best as possible

Discrepancies are larger than what would be expected from different surveys/sources

In addition to suffering from measurement error, the NISR's survey data on incomes/expenditures is also difficult to work with in that it requires extensive manipulation by users to arrive at aggregate household incomes/expenditures. The NISR should provide instructions on how to do this, or better yet, provide the manipulated data themselves

DATE:

I) - EXPENDITURE DURING THE LAST 12 MONTHS

ITEMS	0 ITEM NUMBER	1 COICOP CODE	2 Has your household purchased any "…." over the last 12 months? Yes....... 1 No...... 2 => next item	3 How much did you spend on "…" over the last 12 months?	4 Where did you buy it most often? Small shop/boutique................01 Supermarket/ big shop............02 Specialized shop.....................03 Market.....................................04 Mobile seller...........................05 Individual.................................06 Service provider......................07 Bar/restaurant........................08 Other..09 Do not ever buy it.................10 Don't know 11
				Amount	
CLOTHING					
Fabric (cloth) for men	1	03.1.1.1.01			
Fabric (cloth) for women	2	03.1.1.1.02			
Wrap around cloth for women(Igitenge)	3	03.1.3.1.01			

II) - EXPENDITURE DURING THE LAST 4 WEEKS   DATE:

ITEMS	0. ITEM NUMBER	1. CODE	2. Has your household purchased any "…." over the last 4 weeks? Yes....... 1 No...... 2=> next item	3. How much did you spend on "…" over the last 4 weeks?	4. Where did you buy it most often? Small shop/boutique..............01 Supermarket/ big shop ....02 Specialised shop ....03 Market ....04 Mobile seller ....05 Individual..................................06 Service provider ....07 Bar/restaurant........................08 Other ....09 Do not ever buy it ....10 Don't know..............................11
				Amount	
DOMESTIC HYGIENE & PRODUCTS					
Laundry services (washing clothes & others)	1	03.1.4.1.01			
Rubbish collection services	2	04.4.2.1.01			

III) – FREQUENTLY MADE EXPENDITURE

ITEMS		1st visit	2nd visit	3rd visit	4th visit	5th visit	6th visit	7th visit	8th visit	9th visit	10th visit	11th visit	
	DATES OF THE VISITS	DD MM	DD MM	DD MM	DD MM	DD MM	DD MM	DD MM	DD MM	DD MM	DD MM	DD MM	
0. ITEM NUMBER	1. COICOP CODE	2. How many months did you purchase this out of the last 12 months?	3. How much did you spend on "…" over the last 7 days?	4. How much did you spend on "…." since my last visit?	5. How much did you spend on "…." since my last visit?	6. How much did you spend on "…." since my last visit?	7. How much did you spend on "…" since my last visit?	8. How much did you spend on "…." since my last visit?	9. How much did you spend on "…." since my last visit?	10. How much did you spend on "…." since my last visit?	11 How much did you spend on "…." since my last visit?	12 How much did you spend on "…." since my last visit?	13 How much did you spend on "…." since my last visit?	14. Where do you buy "…" most often? Small shop/boutique.............01 Supermarket/ big shop ....02 Specialised shop ....03 Market ....04 Mobile seller ....05 Individual..................................06 Service provider ....07 Bar/restaurant........................08 Other ....09 Do not ever buy it ....10 Don't know...........................11
		No. of months	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	
LEISURE AND CULTURE														
Stadium entry	1	09.4.1.1.01												

Expenditure data has three different reference periods. There are also differences in the frequency of visits between households in Kigali and other households.

All these factors need to be taken into account when deriving aggregate household expenditure

The Rwanda Land Dashboard is an interactive national land data visualization platform that displays and shares real-time statistical data on land use, transactions, and parcel sizes at different levels of aggregations

Parcels Owned by
Men only, Women only, Co-Owned only, & Others

Legend: Men, Women, Co-Owned, Others

Reference lines: 415296.17, 360207, 212619.5, 12215.33

Categories: Kigali City, Eastern, Western, Southern, Northern

Pie chart values:
- Fishing : 0%
- Economic : 1.11%
- Commercial : 0.61%
- Forestry : 9.15%
- Industrial : 0.19%
- Livestock : 0.41%
- Residential : 14.73%
- Scientific : 0.03%
- Social : 0.28%
- Tourism : 0.13%
- Administration : 0.02%
- Agriculture : 73.34%

Legend: Administration, Agriculture, Commercial, Economic, Fishing, Forestry, Industrial, Livestock, Residential, Scientific, Social, Tourism

Transactions — Years
All transaction made per year

Years: 2011, 2020, 2013, 2018, 2017, 2019

Trial Version

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It would be useful to extend the land dashboard to allow for separation of residential transactions from other transactions and to include views on primary and secondary residential transfers to get an idea of "churn" in the residential market

Transaction types (June 2020 – June 2021)

Transaction Type	Share of transactions
Sporadic Registration	61.8%
Adding or Removing Rightholders	9.7%
Convert Rights	9.5%
Transfer by Voluntary Sale	3.3%
Parcel Merge	2.7%
Subdivision	2.6%
Transfer by Donation	2.5%
Parcel Change of Land use	1.9%
Cancel Restriction for Stateland, Bufferzone or Wetland	1.8%
Confirmation of Ownership	0.6%
Boundary Rectification / Area Correction	0.6%
Cancel Restriction Under Dispute	0.6%
Land Documents not Collected during SLR	0.5%
Replacement of title	0.3%
Requesting Title from Public Land	0.3%
Change of Person (Name or ID)	0.2%
Establish Restriction by Caveat	0.2%
Transfer by Succession	0.2%
Cancel Restriction by Caveat	0.2%
Change Parcel Representative	0.1%
Establish Restriction by Surety	0.1%

Transaction Type	Share of transactions
Cancel Restriction by Surety	0.1%
Transfer by Expropriation	0.1%
Split into Condominium	0.1%
Transfer by Court Decision	0.0%
Transfer by Exchange	0.0%
Change Parcel Number	0.0%
Transfer by Auction as Court order	0.0%
Change of Party Representative	0.0%
Transfer by Auction authorised by Registrar	0.0%
Add Parcel	0.0%
Establish Restriction for Stateland, Bufferzone or Wetland	0.0%
Switch Parcel	0.0%
Remove Parcel	0.0%
Cancel Restrictions on a Parcel	0.0%
Establish Restriction by Sublease	0.0%
Changes on Right shares	0.0%
Cancel Restriction by Requisition	0.0%
Transfer of Rights by Forced Sale auction by RRA	0.0%
Establish Restriction by Requisition	0.0%
Cancelling of Seizure	0.0%
Cancel Restriction by Statement	0.0%
Cancel Restriction by Sublease	0.0%
Establish Restriction by Bankruptcy	0.0%

Currently, one cannot distinguish residential land parcels from others when looking at parcels with mortgages. Another useful addition to the dashboard would be to include a time series dimension to this data (as is done with the transactions data)

Parcel with mortgage
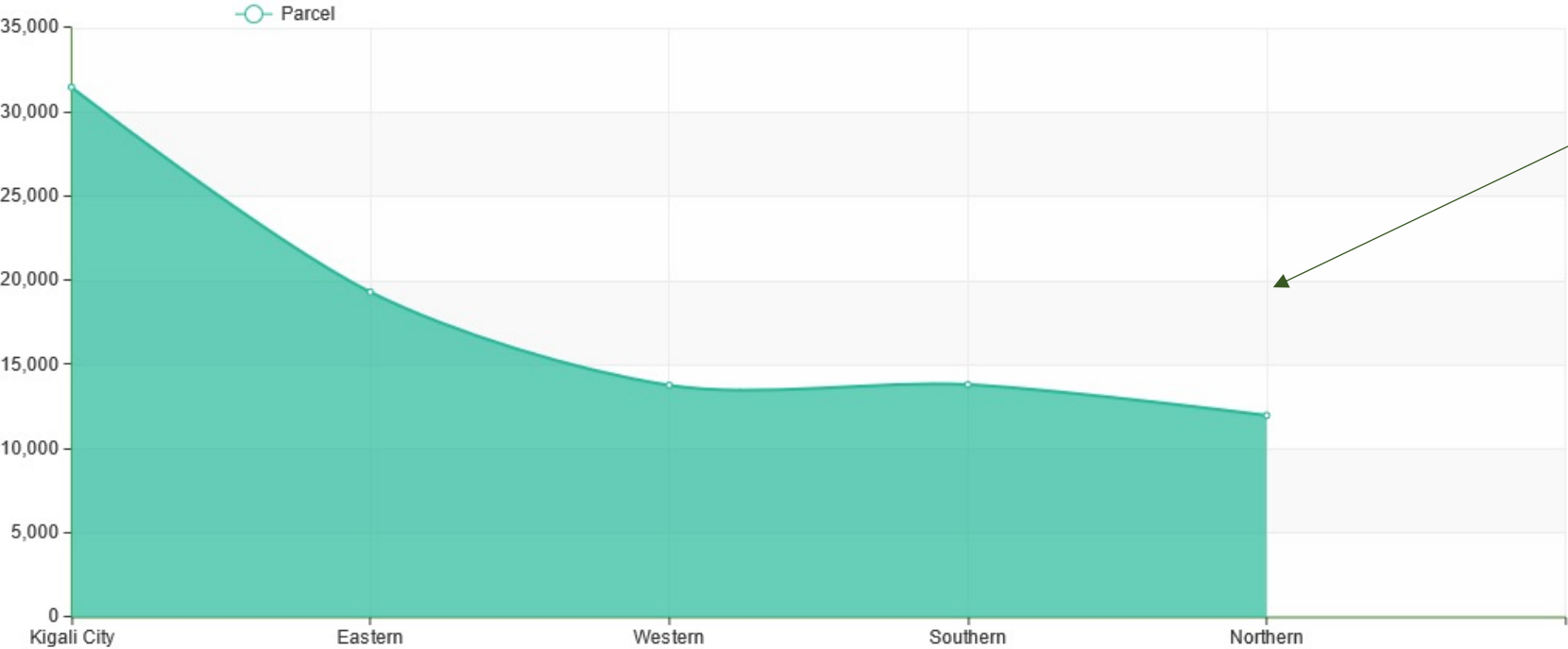
Is this the current stock of outstanding mortgages?

What about parcels with mortgages that are in foreclosure?

The central bank (NBR), development board (RDB) and tax authority (RRA) collect valuable data related to housing affordability and finance. Banks submit detailed financial data to the NBR related to mortgage financing agreements. The RDB's eMRS system collects data related to all mortgaged properties while the RRA curates detailed payroll and property and rental tax data*. Together, these data sources can be used to identify affordable housing prices and gauge mortgage market performance

NBR

- Annual Financial Stability Report and Monetary Policy and Financial Stability Statements publicly disseminate useful housing finance data

- NBR has an electronic data warehouse (EDW) which houses data on customers, accounts, transactions, and loans at all regulated financial institutions

- Credit Survey Reports contain valuable information on loan applications, approvals, rejections, and credit standards

- NBR also publishes various aggregate economic statistics

RRA

- Payroll data could be used to generate accurate income distributions and insight on wages in the construction sector

- Property and rental tax data could be used to show contribution of housing sector to local government revenues

- Potential for RRA to host an anonymized tax dataset in a secure location to provide better visibility on incomes in Rwanda

RDB

- All mortgages must be registered through eMRS system which is integrated with LAIS and National Identification Agency (NIDA)

- eMRS data has information on the land/house including its value and the identity of the owner(s) and can be linked back to NBR electronic data warehouse and RRA payroll data

- eMRS system also contains data on foreclosure process

- Some of the eMRS data is publicly accessible using unique parcel identifiers

* The National Bank of Rwanda (NBR) is Rwanda's central bank, RDB stands for Rwanda Development Board, and RRA refers to the Rwanda Revenue Authority. eMRS is the Electronic Mortgage Registration System.

NBR's data submission template for banks captures data relevant to the mortgage market

Bank	XXXXXXXX	
Date	DD/MM/YYYY	
Report	Breakdown of Loans by Sector of activity. Code 40-	
Frequency	Monthly	Amounts in RWF thousands
Document Code 40-1		

Line Code	Loans	Education	Health and Social Actions	Other activities of collective, social and personal services	Private Household empoying local personal	Organisations and extra territorial organisations	Total	Restructured Loans
		21	22	23	24	25	26	27
B.LSEC.L.20	20. Overdrawn accounts						0	
B.LSEC.L.21	21. Treasury loans						0	
B.LSEC.L.22	22. Equipment loans						0	
B.LSEC.L.23	23. Consumer loans						0	
B.LSEC.L.24	24. Mortgage loans						0	
B.LSEC.L.25	25. Finance lease						0	
B.LSEC.L.27	27. Other loans of clients						0	
B.LSEC.L.28	28. Receivables in transit						0	
B.LSEC.L.29	**29. Non performing loans and similar assets**	0	0	0	0	0	0	0
B.LSEC.L.291	291. Substandard						0	
B.LSEC.L.292	292. Doubtful						0	
B.LSEC.L.293	293. Loss						0	
B.LSEC.L.298	298. Suspended interests	0		0			0	
B.LSEC.L.299	299. Depreciation						0	
B.LSEC.L.02	02. Accrual receivable interests						0	
B.LSEC.L.TT	**TOTAL**	0	0	0	0	0	0	0
B.LSEC.L.RL	**Included restructured loans**						0	

NBR's data submission template for banks captures data relevant to the mortgage market

Bank XXXXXXXX
Date DD/MM/YYYY
Report Breakdown of Type of Loans
Frequency Monthly
Document Code 40-1

Amounts in RWF thousands

Line Code	Loans	Normal loans	Watch loans	Substandards loans	Doubtful loans	Loss loans	Total loans	General provisions	Specific provisions	Written off loans
		1	2	3	4	5	6	7	8	9
B.TLoan.L.20	20. Overdrawn accounts						0			
B.Tloan.L.21	21. Treasury loans						0			
B.Tloan.L.22	22. Equipment loans						0			
B.Tloan.L.23	23. Consumer loans						0			
B.Tloan.L.24	24. Mortgage loans						0			
B.Tloan.L.25	25. Finance lease						0			
B.Tloan.L.27	27. Other loans of clients						0			
B.Tloan.L.28	28. Receivables in transit						0			
B.Lloan.L.02	02. Accrual receivable interests						0			
B.Lloan.L.TT	TOTAL	0	0	0	0	0	0	0	0	0

NBR's data submission template for banks captures data relevant to the mortgage market

Bank   XXXXXXXX
Date   DD/MM/YYYY
Report   Breakdown of Loans by Institutional Sectors
Frequency   Monthly   Amounts in RWF thousands

Document Code 20

Line Code	Loans	Residents — Non Financial Companies — Private	Residents — Non Financial Companies — Public	Residents — Financial Clients	Residents — Government — Central Government	Residents — Government — Local Government	Residents — Government — Pension Funds	Residents — Non profit making organisations	Residents — Individuals	Non Residents — Rwandan living abroad	Non Residents — Other non resident	Total
		1	2	3	4	5	6	7	8	9	10	11
B.BLIS.L.239a	a. RWF											0
B.BLIS.L.239b	b. Foreign currencies											0
B.BLIS.L.24	24. Mortgage loans	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.24a	a. RWF	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.24b	b. Foreign currencies	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.241	241. Residential mortgage loans	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.241a	a. RWF		0	0	0	0	0		0	0	0	0
B.BLIS.L.241b	b. Foreign currencies											0
B.BLIS.L.242	242. Mortgage loans to promoters	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.242a	a. RWF											0
B.BLIS.L.242b	b. Foreign currencies											0
B.BLIS.L.249	249. Accrual receivable interests on mortgage loan	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.249a	a. RWF											0
B.BLIS.L.249b	b. Foreign currencies											0
B.BLIS.L.25	25. Finance lease	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.25a	a. RWF	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.25b	b. Foreign currencies	0	0	0	0	0	0	0	0	0	0	0
B.BLIS.L.251	251. Intangible fixed assets finance lease	0	0	0	0	0	0	0	0	0	0	0

NBR's data submission template for banks captures data relevant to the mortgage market

Bank	XXXXXXXX
Date	DD/MM/YYYY
Report	Risk Weighted Analysis
Frequency	Quarterly
Document code.	

Amounts in RWF thousands

Line Code	Description	Amount per BS	Risk Weighted (%)	Required Capital
B.RWA.1	**1. ASSETS COMMITMENTS**	**0**		**0**
B.RWA.10	10. cash in hand		0%	0
B.RWA.11	11.Balances with Central Bank		0%	0
B.RWA.121	121.Due from banks in Rwanda		20%	0
B.RWA.122	122.Due from other financial institutions		20%	0
B.RWA.123	123.Due from assimilated banks and other FI in Rwanda		20%	0
B.RWA.124	124.Postal account		20%	0
B.RWA.125	125. Due from central banks, banks and other FI abroad		20%	0
B.RWA.131	131.Overnight reverse repurchase agreement		20%	0
B.RWA.132	132. Term reverse repurchase agreement		20%	0
B.RWA.134	134. Term treasury loans		20%	0
B.RWA.135	135. Finance loans to banks and other FI		20%	0
B.RWA.138	138. Other overdrawn accounts		20%	0
B.RWA.20	20. Overdrawn accounts (overdrafts)		100%	0
B.RWA.21	21. Treasury loans		100%	0
B.RWA.22	22. Equipment loans		100%	0
B.RWA.23	23. Consumer loans		100%	0
B.RWA.24	24. Mortgage loans: residential house		50%	0
B.RWA.25	25. Mortgage loan: other		100%	0
B.RWA.26	26. Leased assets		100%	0

Amount of capital held by bank to cover residential mortgages

The NBR provided the team with some of this mortgage data in an anonymized format. The team used this data to populate indicators related to issued and outstanding mortgages (values and volumes), mortgage finance terms (duration), and non-performing mortgages. These calculations were sense-checked using the NBR's Annual financial Stability Report for 2019

Description and notes on data fields in the NBR data

Dataset	Field	Description
	Period	Year when loan was outstanding
	Person type	Whether loan is for an individual or a business
	Amount in 000 FRW	Value of the mortgage that is outstanding
Outstanding mortgages	Class	The performance class of the mortgage (performing, non-performing, written off)
	Approval date	Date when the loan was issued
	Duration	Term of the loan in months
	Gender	Gender of the person who holds the loan
	Sector	Whether the loan is for residential or commercial buildings
	Approval date	Date when the loan was issued
	Date of birth	Date of birth of holder of the loan
	Duration	Term of the loan in months
	Gender	Gender of the person who holds the loan
New mortgages	Borrower type	Whether loan is for an individual or a business
	Amount in 000 FRW	Value of the mortgage when it was issued
	Term	Whether the loan is for short, medium, or long-term
	Sector	Whether the loan is for residential or commercial buildings
	District business location	The district where the holder of the loan is located

Many of the mortgage loans in the data have durations of no more than 6 years (72 months), although there is some clustering around the 10 year mark (120 months)

Number of *outstanding* mortgages by duration
(89 464 outstanding mortgages in 2020)

Number of *issued* mortgages by duration
(147 532 issued mortgages in 2020)
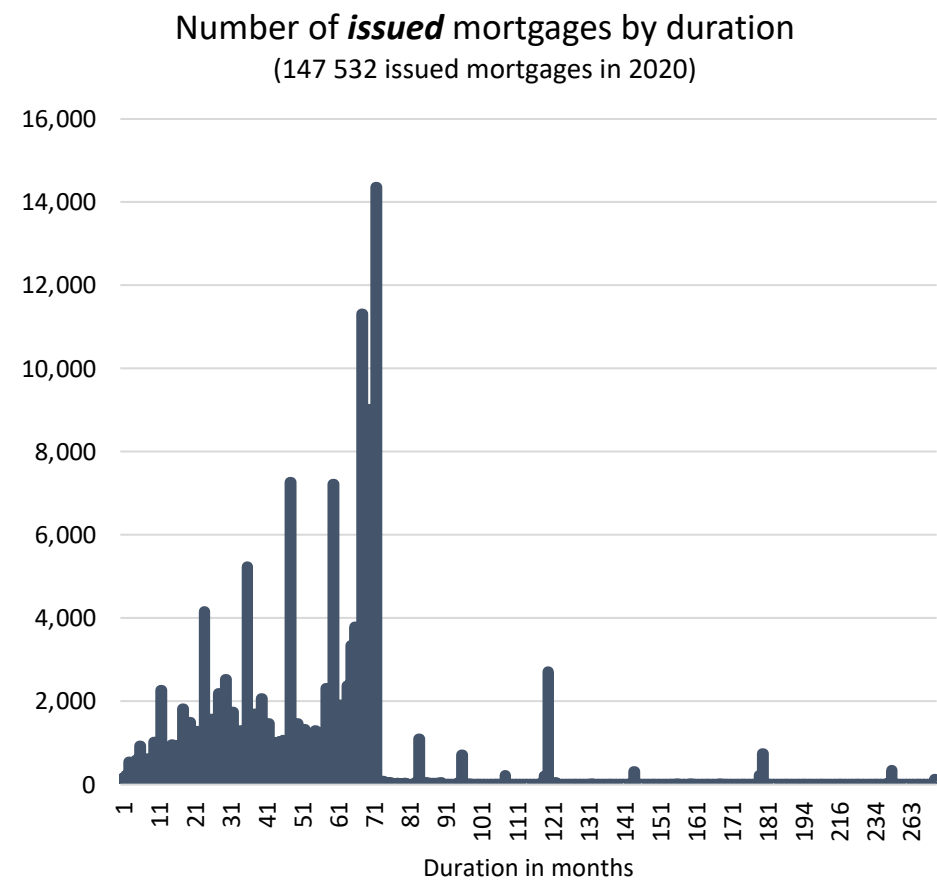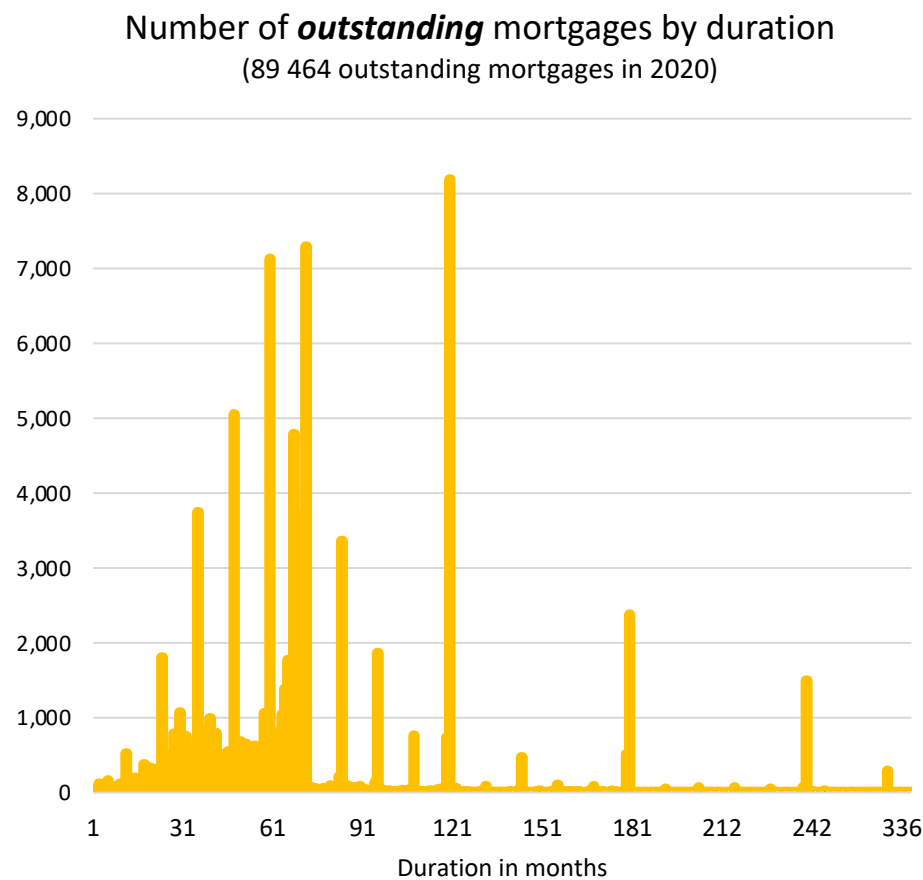
In line with the distribution of mortgage duration, most of the outstanding mortgages were issued in the last 6 years. There are also a few mortgages that have an erroneous approval date value – 1 Jan 1899

Number of outstanding mortgages by year issued
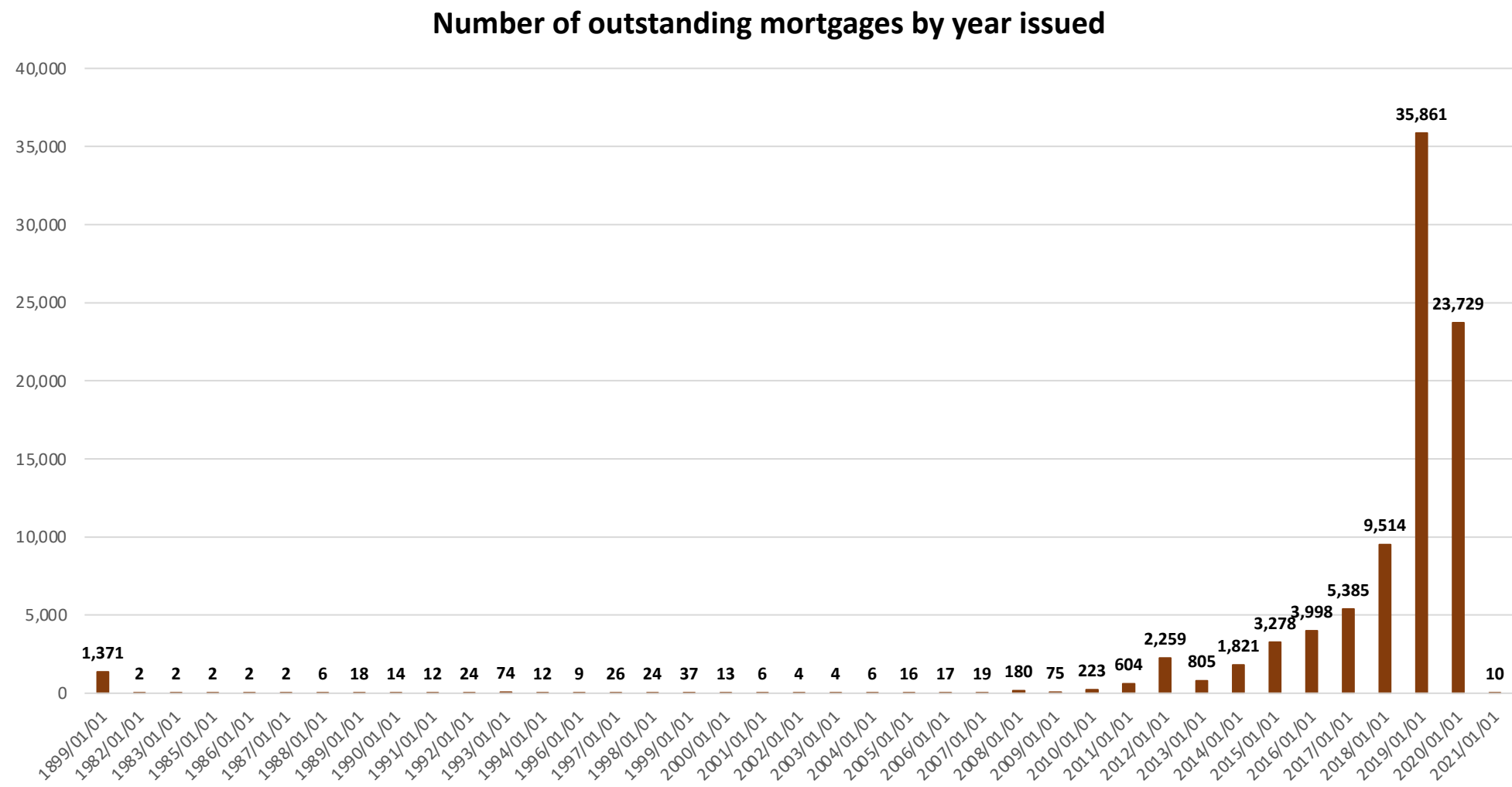
Another anomaly relates to the gender field in the data: in 2019the number of issued mortgages for males exceeds that which is outstanding at the start of the year. Female and Business issuance also looks very high relative to the number outstanding mortgages

Gender breakdown of mortgage loans: Outstanding vs. Issued

Legend: Outstanding, Issued

Female: Outstanding 4,714 — Issued 4,488
Male: Outstanding 37,307 — Issued 75,508
Business: Outstanding 645 — Issued 241
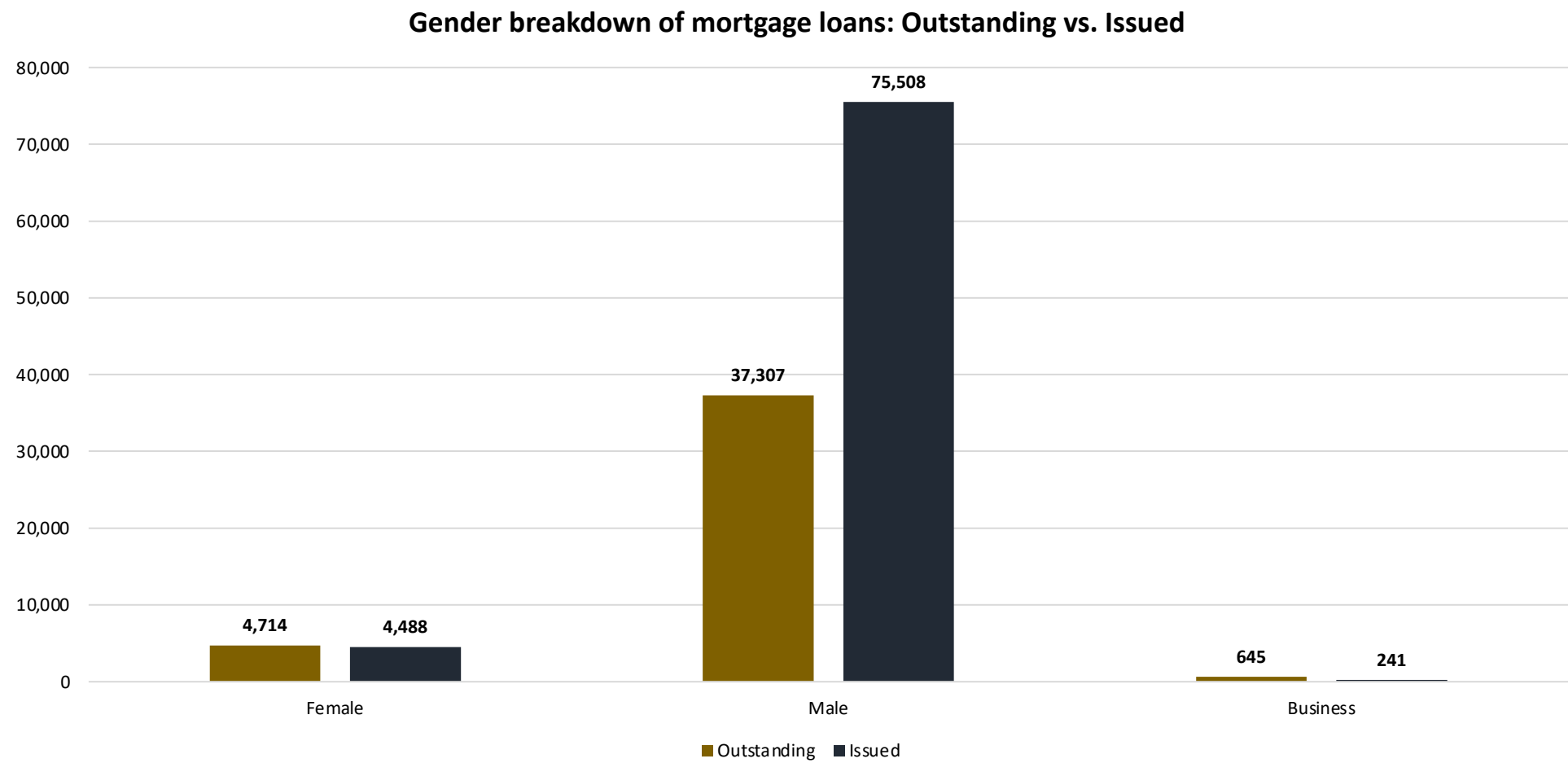
Approximately 70% of the total value of mortgages that were issued in 2020 related to borrowers in the City of Kigali. Kicukiro district saw the largest issuance followed by Musanze. The highest value mortgages were issued in Nyarugenge

The average value of mortgages issued in Nyarugenge was RWF 16.6 million, Gasabo is a distant second with average values of RWF 5.9 million

District	No. loans issued in 2020	Value of loans issued (RWF 000) in 2020	Prop. of total value issued in 2020
NYARUGENGE	2 889	48 110 441	27%
GASABO	7 118	41 625 305	23%
KICUKIRO	11 461	37 368 303	21%
MUSANZE	5 705	7 559 811	4%
RUBAVU	3 543	5 141 879	3%
BUGESERA	2 253	3 996 985	2%
GICUMBI	1 850	3 328 783	2%
RWAMAGANA	1 849	3 321 662	2%
MUHANGA	1 307	3 288 254	2%
HUYE	1 827	3 259 679	2%
GISAGARA	5 080	2 580 916	1%
RUSIZI	1 294	1 992 596	1%
NYAGATARE	2 020	1 893 863	1%
NYABIHU	2 491	1 866 553	1%
KAMONYI	1 224	1 453 238	1%
KAYONZA	1 132	1 345 637	1%
NGOMA	1 480	1 289 899	1%
RUHANGO	1 152	1 227 400	1%
KARONGI	1 321	1 173 207	1%
NYANZA	1 141	1 123 381	1%
NYARUGURU	1 651	1 009 548	1%
NYAMAGABE	1 024	972 297	1%
RULINDO	921	857 325	0.5%
NYAMASHEKE	682	854 126	0.5%
GATSIBO	1 100	816 516	0.5%
KIREHE	964	673 991	0.4%
BURERA	836	669 059	0.4%
GAKENKE	678	626 162	0.3%
NGORORERO	629	619 326	0.3%
RUTSIRO	673	548 577	0.3%

The lowest average mortgage value is RWF 508 000, recorded in Gisagara

The team also accessed anonymized PAYE data from the RRA for 2018, 2019, and 2020. This data was aggregated at a firm level so it was not possible to derive the income distribution using it, but it did provide insight on the different data fields in the RRA database

ISIC code is a key field in the data as it links with survey data – most firms in the data set do not complete this field

Number of firms in PAYE database

Number of firms in PAYE database by ISIC code

ISIC category
Missing ISIC code
Wholesale and retail trade; repair of motor vehicles and motorcycles
Other service activities
Manufacturing
Construction
Accommodation and food service activities
Financial and insurance activities
Professional, scientific and technical activities
Transportation and storage
Invalid ISIC code
Information and communication
Education
Human health and social work activities
Administrative and support service activities
Real estate activities
Electricity, gas, steam and air conditioning supply
Arts, entertainment and recreation
Water supply; sewerage, waste management and remediation activities
Public administration and defence; compulsory social security

Interesting data fields in the PAYE dataset are listed below

Field	Description	Notes
ISIC R4	ISIC Revision4 code	
Main activity	The main activity of the business	Affords identification of residential construction firms
Entity type	Classifies the business into entity type categories (e.g. private corporation, NGO, individual, government body)	
Entity type group	Classifies the business as either a public or private business	
Business activity description	Classifies the business' activities into one of 22 categories (e.g. general commerce, public works and construction)	
Tax center	Location of the tax center where the returns are filed	
Number of employees	Number of employees for which the business files PAYE	This can be split between permanent and casual workers
Total basic pay	Total basic pay across all employees	This can be split between permanent and casual workers
NSF contribution	Value of NSF contribution deducted from basic pay	This can be split by employer and employee
Tax PAYE due	Value of total tax due for PAYE	This can be split between permanent and casual workers

We can calculate the number of firms, their total PAYE contribution, total employment, and the median of average wages across a specific category of firms*. If this data included ISCO codes, we could do the same by occupation. Here, we focus on firms in the residential construction sector** as defined using the *Main activity* field

80% are private corporations, 18% are sole proprietors. Many of these are not in the Construction ISIC category

Number of residential construction firms

Total basic pay and PAYE for residential construction firms
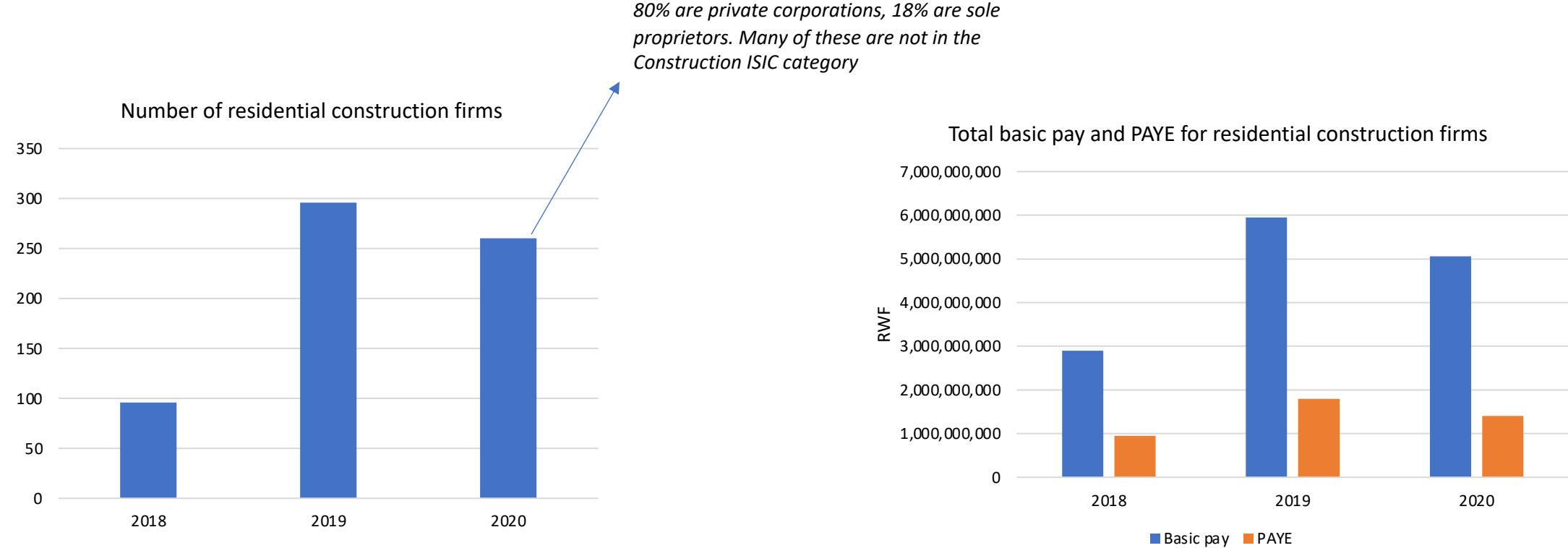
*Average wages per firm are calculated and then the median is taken across firms in a sector

** Main activity: Construction Of All Types Of Residential Buildings: single-family houses multi-family buildings including high-rise buildings, Remodeling Or Renovating Existing Residential Structures

In per capita terms (i.e. dividing the total basic pay by the number of permanent workers per firm and taking the median across residential construction firms within a tax year), the median average basic pay per month was RWF 100 000 in 2020, down from RWF 130 000 in 2018. There were a total of 39 000 individuals employed in the residential construction sector in 2020, down from 49 000 in 2019. Almost half of employees were casual workers, and in 2019, there were 2 casual workers for every permanent worker.

Median of average monthly wages across residential construction firms

Number of employees on the payroll in the residential construction sector
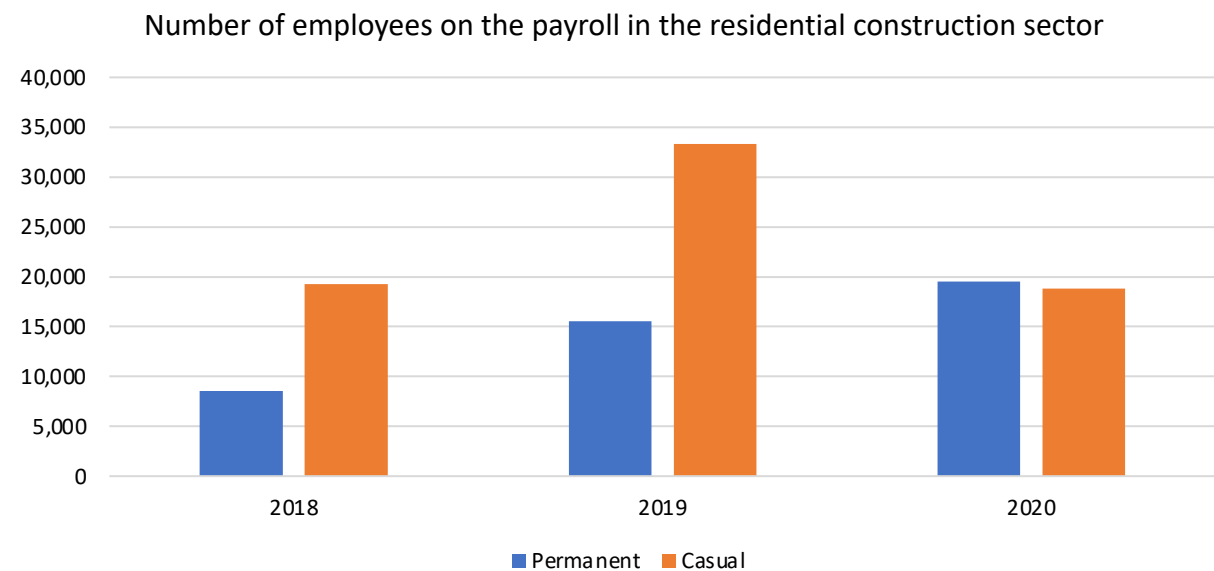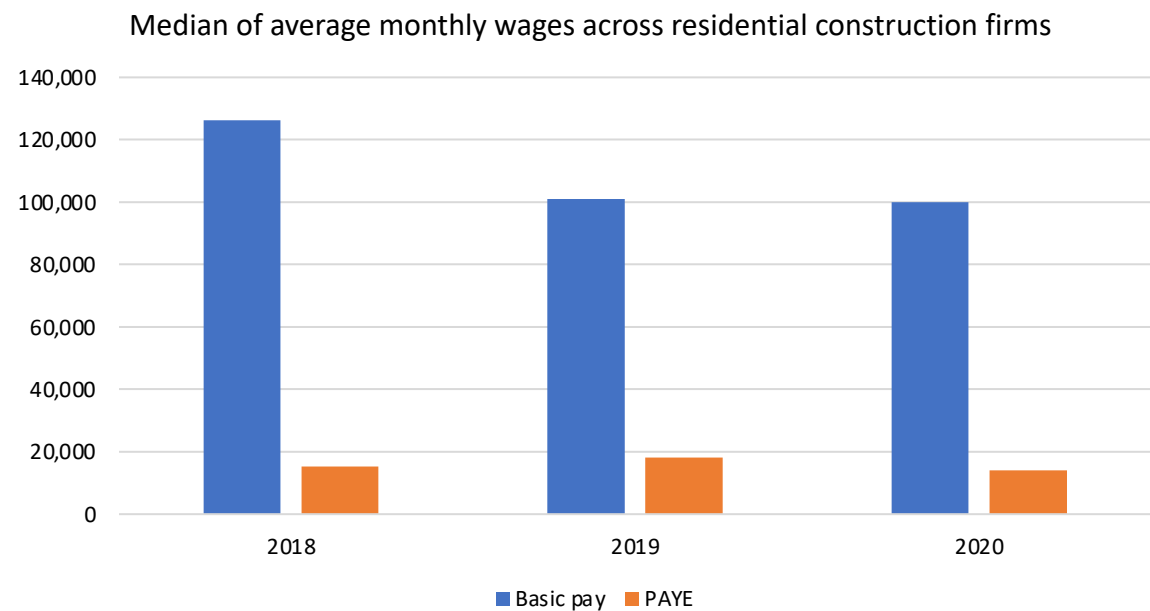
Rwanda already has a rich administrative data landscape that can offer valuable insights on the state of the housing market. Key next steps are provided below with high value interventions highlighted in red

	Rwanda Housing Authority	National Institute of Statistics Rwanda	Rwanda Land Management and Use Authority	National Bank of Rwanda	Rwanda Revenue Authority	Rwanda Development Board
Unlock	Extract and analyze e-permit system data to track applications and completions	Provide an EICV dataset where expenditure data has been aggregated to an annual frequency	Add primary and secondary transfer metrics to dashboard	Extract and analyze housing related data from the EDW	Provide access to an anonymized version of the tax data in a secure data center	Link eMRS with the BPMIS, NBR's EDW and RRA payroll database to have a full view of the housing value chain
Disaggregate	Create key housing supply metrics (incl. volume, timelines, cost) by typology and location	Disaggregate National Accounts data to show gross fixed capital formation on residential dwellings	Incorporate more user flexibility in dashboard to allow for existing metrics to be viewed from all dimensions (national, district, sector)	Segment borrowers and create key housing finance metrics (incl. providers, value, volume, and financing terms)		
Disseminate	Extract and analyze data on IDP villages including typologies and cost	Disseminate annual income distribution per ISCO/ISIC group using income data received from RRA		Release a periodic report on housing market developments as well as excel versions of property price index and mortgage market metrics	Release property and rental tax revenues per district	
Gather		Conduct a real estate survey to track performance of the rental and sales markets		Work with institutions to improve the quality of the data that they submit	Improve compliance with submission of ISIC codes with tax returns to better link more firms to sectors	

1. Introduction

2. Key custodians of housing data

3. **Summary of data collection**

4. Populated indicators

5. Replicating the analysis

The team managed to populate a total of 96 out of 114 indicators (84% of all indicators) along several aggregations*. Areas for improvement were identified with regards to supply-side data, demand-side data, and housing transactions data. The slides that follow identify areas for improvement in existing data and provides suggestions for filling data gaps

Supply

- ❑ Units supplied
  - ▪ Applications vs. completions
  - ▪ Typology of dwelling units
  - ▪ Location of housing delivery
- ❑ Procedural timelines
  - ▪ Timeline from application to completion
- ❑ Construction costs
  - ▪ Land, labour and materials as a % of total construction costs

Demand

- ❑ Income
  - ▪ Accurate net income distribution per occupation
- ❑ Financing
  - ▪ Borrower profiles (income, age, gender, location)
  - ▪ Typical terms by borrower profile (size, duration, interest rate. LTV)
  - ▪ Loan performance by borrower profile

Transactions

- ❑ Sales
  - ▪ Value and volume by region
  - ▪ Mortgaged purchases
  - ▪ Primary and secondary transfers
- ❑ Rental
  - ▪ Typical rental prices by typology
- ❑ Performance
  - ▪ Property price index
  - ▪ Government income from property market

*Where possible, the team populated at more than one level of aggregation. These included National, Urban, Kigali (urban areas only), Bottom 40, and Developer (Marchal Real Estate Developers). These levels of aggregation provide different cross-sectional perspectives (e.g. how household do access to services in Kigali compare to Rwanda as a whole?) and also makes it easier to collect certain data points that are not stored in a centralized repository (e.g. rely on data provided by a specific developer as opposed to data which is representative of the market as a whole)

	VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand	

	LAND ASSEMBLY	• 8 indicators, all populated. Available data is from the Ease of Doing Business database, Kigali Master Plan 2050, a Government Gazette, and Marchal Real Estate Developers (MRED) • **Digitization of Government Gazette data would make it easier to analyze land prices**
	LAND TITLE	• 7 indicators, all populated. Available data is from the Ease of Doing Business database and the RLMUA land dashboard • **No improvements needed or gaps to be filled**
	INFRASTRUCTURE	• 8 indicators, all populated. Available data is from the Ease of Doing Business database, NISR (EICV5 and FinScope 2020), and MRED • **The EICV5 expenditure data could be provided in a more user-friendly format and is slightly outdated – it could be updated using DHS 2020 when that is released. More representative data than that from MRED could be sourced using the BPMIS**

	VALUE CHAIN			CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

	STOCK	• 6 indicators (all populated). Available data is from the World Bank World Development Indicators, NISR (EICV5 and FinScope 2020), and MRED • **More representative data than that from MRED could be sourced using the BPMIS**
	FLOW	• 4 indicators (2 gaps). Available data is from CAHF's 2017 Housing Economic Value Chain report for Rwanda • **CAHF data could be updated using disaggregated National Accounts data from the NISR** • **Data gaps could be filled by way of the BPMIS and disaggregated National Accounts data from the NISR**
	INDUSTRY	• 5 indicators (2 gaps). Available data is from CAHF's 2017 Housing Economic Value Chain report for Rwanda and MRED • **CAHF data could be updated using more accurate payroll data from the RRA (better capturing of ISIC codes). More representative data than that from MRED could be sourced using the BPMIS** • **One data gap can be addressed using the BPMIS**
	BUILDING MATERIALS	• 2 indicators (1 gap). Available data is from a local building store in Kabeza, Kigali • **Rwanda Housing Authority (RHA) data on bills of quantity (BoQ) for housing projects or BPMIS data would be more representative** • **RHA data on BoQ could also be used to fill the data gap**
	PROCESS	• 2 indicators (1 gap) . Available data is from Ease of Doing Business database • **BPMIS data could be used to fill the data gap**

| | VALUE CHAIN | | CONTEXT |

VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	**Sales & Rental**	Maintenance & Management	Enabling Environment	Economic Environment	Demand

	OWNERSHIP	• 7 indicators (1 gap). Available data is from NISR (EICV5 and FinScope 2020), DHS 2014/15, and Ease of Doing Business database • **The EICV5 expenditure data could be provided in a more user-friendly format and is slightly outdated. The EICV5 and DHS 2014/15 data could be updated using DHS 2020 when that is released. EICV questionnaire could incorporate a home ownership question at an individual level to assess female home ownership** • **The NBR's Financial Stability Directorate could release their Property Price Index data in excel format to fill the data gap**
	RENTAL	• 2 indicators (all populated). Available data is from NISR (EICV5 and FinScope 2020) as well as MRED • **The EICV5 expenditure data could be provided in a more user-friendly format and is slightly outdated – it could be updated using DHS 2020 when that is released. More representative data than that from MRED could be sourced using the BPMIS**
	TRANSACTIONS	• 8 indicators (5 gaps). Available data is from Government Gazettes and the Ease of Doing Business database • **No improvements needed for available data** • **Rwanda Land Use and Management Authority (RLMUA) land dashboard should be expanded to address data gaps**
	FINANCE	• 19 indicators (3 gaps). Available data is from the NBR (Financial Stability Directorate), RLMUA land dashboard, NISR (EICV5), Government Gazettes, Global Findex Report, and World Bank • **RRA data at an individual level with ISCO and ISIC codes could replace the need to use less accurate EICV5 data to derive the income distribution** • **NBR should publish a list of licensed mortgage providers to fill one data gap. The RLMUA land dashboard should be expanded to include mortgaged transactions as well as primary and secondary transfers to address the other gaps**
	AFFORDABILITY	• 3 indicators (all populated). Available data is from the NISR (EICV5 and FinScope 2020) as well as MRED • **RRA data at an individual level with ISCO and ISIC codes could replace the need to use less accurate EICV5 data to derive the income distribution. RHA data on house prices may be more representative than that provided by MRED**

VALUE CHAIN	CONTEXT

Land & Infrastructure	Construction & Investment	Sales & Rental	**Maintenance & Management**	Enabling Environment	Economic Environment	Demand

	HOME IMPROVEMENTS	• 2 indicators (1 gap). Available data from the NISR (EICV5) • **The EICV5 expenditure data could be provided in a more user-friendly format and is slightly outdated – the data should be updated when EICV6 data is released** • **Data gap can be addressed using the BPMIS**
	MUNICIPAL MANAGEMENT	• 2 indicators (1 gap) . Available data from the NISR (EICV5) • **The EICV5 data is slightly outdated – the data should be updated when EICV6 is released** • **Data gap can be addressed using immovable property tax data from the RRA**
	FINANCE	• 2 indicators (all populated). Available data is from the NBR (Annual Financial Stability Report 2019) • **No improvements needed or gaps to be filled**

	VALUE CHAIN				CONTEXT		
	Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

	OPERATING ENVIRONMENT	• 6 indicators (all populated). Available data is from the UNDP Human Development Report, Ease of Doing Business database, and Transparency International • **No improvements needed or gaps to be filled**
	MACROECONOMIC INDICATORS	• 14 indicators (1 gap). Available data is from the World Bank, ILO, DHS 2014/15, NISR (LFS 2019) and Rwanda Stock Exchange • **No improvements needed** • **RHA expenditure data on housing could be used to fill the data gap**
	DEMOGRAPHICS	• 7 indicators (all populated). Available data is from the NISR (EICV5, LFS 2019 and FinScope 2020), World Bank and IGC • **No improvements needed**

1. Introduction

2. Key custodians of housing data

3. Summary of data collection

4. **Populated indicators**

5. Replicating the analysis

Indicators were populated along 5 different aggregations: National, Urban, Kigali, Marchal Real Estate Developers, and B40. As such, each indicator can have multiple values (one for each aggregation). Indicators highlighted in red identify those that the team was unable to populate

VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

LAND ASSEMBLY

- Smallest residential plot size – Marchal Real Estate Developers 300 sqm
- Regulated minimum size of a residential plot in urban areas in square meters – Kigali 100 sqm
- Average land costs per m2 – Kigali RWF 7 522, Marchal Real Estate Developers RWF 10 000
- % of land for residential development acquired from the private sector – Marchal Real Estate Developers 0%
- World Bank DBI geographic coverage index score ranking: Africa – National 1 out of 54
- World Bank DBI geographic coverage index score ranking: Global – National 31 out of 209
- World Bank DBI quality of land administration index ranking: Africa – National 1 out of 54
- World Bank DBI quality of land administration index ranking: Global – National 3 out of 209

LAND TITLE

- Total number of residential properties with a title deed – National 1 606 401
- Cost to register residential property – National 10%
- Number of procedures to register residential property – National 3
- Time to register residential property (days) – National 7
- Name of residential property registration procedure that takes the longest to complete – National Finalize registration at the District Land Registry and obtain new deed
- World Bank DBI transparency of information index ranking: Africa – National 3 out of 54
- World Bank DBI transparency of information index ranking: Global – National 37 out of 209

INFRASTRUCTURE

- % of residential development projects where developers are paying for bulk infrastructure or the building of roads – Marchal Real Estate Developers 100%
- Transport as a % of household expenditure – National 3.7%, Urban 6.9%, Kigali 8.3%, B40 3.6%
- World Bank DBI reliability of infrastructure index ranking: Africa – National 1 out of 54
- World Bank DBI reliability of infrastructure index ranking: Global – National 28 out of 209
- % of households without access to improved drinking water services – National 3.7%, Urban 2.4%, Kigali 1.2%, B40 14.3%
- % of households without access to improved sanitation services – National 15.7%, Urban 3.7%, Kigali 1.1%, B40 13.1%
- % of households without access to electricity – National 45.8%, Urban 9.6%, Kigali 27.9%, B40 49.2%
- % of households living in dwellings built using durable building materials (walls and roof) with inadequate services – National 17.6%, Urban 1.8%, Kigali 0%, B40 0%

Indicators were populated along 5 different aggregations: National, Urban, Kigali, Marchal Real Estate Developers, and B40. As such, each indicator can have multiple values (one for each aggregation). Indicators highlighted in red identify those that the team was unable to populate

VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

STOCK
- Size of cheapest, newly built dwelling by a formal developer or contractor in an urban area in square meters – Marchal Real Estate Developers 108 sqm
- Number of people per sleeping room in formal dwellings – National 1.6, Urban 1.5, Kigali 1.4, B40 2.0
- Number of people per sleeping room in informal dwellings – National 2.1, Urban 1.9, Kigali 1.9, B40 2.4
- % of population living in slums, informal settlements, or inadequate dwellings – National 42.1%
- Number of households living in dwellings built using durable building materials (walls and roof) – National 339 084, Urban 192 854, Kigali 162 534, B40 122 661
- % of households living in dwellings built using durable building materials (walls and roof) that are overcrowded – National 7.8%, Urban 4.0%, Kigali 3.7%, B40 23.4%

FLOW
- Residential construction sector as a % of GDP – National 10.4%
- Gross fixed capital formation of dwellings as % of GDP – GAP
- Number of dwellings completed annually – GAP
- Residential rental sector as a % of GDP – National 10.8%

INDUSTRY
- Number of formal private developers / contractors serving the bottom-end of the market – GAP
- Number of completed developer built dwellings that are accessible to the bottom-end of the market – Marchal Real Estate Developers 7
- Is there a body that organises developers / contractors? – GAP
- Number of people employed in the residential construction sector – National 160 000
- Number of people employed in residential rental sector – National 400

BUILDING MATERIALS
- Cost of standard 50kg bag of cement in local currency units – Kigali 12 000
- Average residential building cost inflation for dwellings over 5 years – GAP

PROCESS
- Total cost of all residential construction permit-related procedures in local currency units – National 3 778 179
- Time (in days) from application to completion for dwellings in the main urban city – GAP
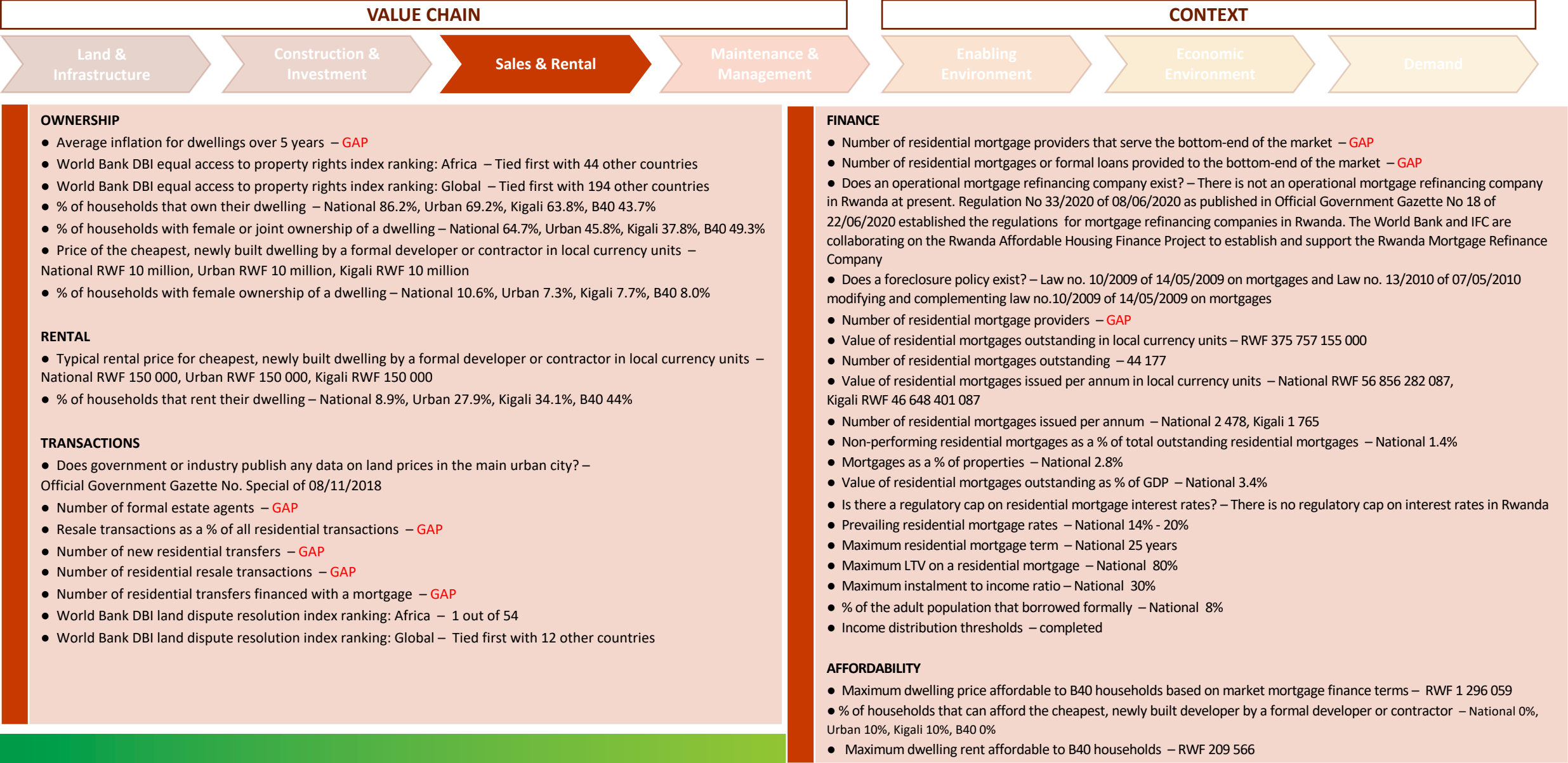
Indicators were populated along 5 different aggregations: National, Urban, Kigali, Marchal Real Estate Developers, and B40. As such, each indicator can have multiple values (one for each aggregation). Indicators highlighted in red identify those that the team was unable to populate
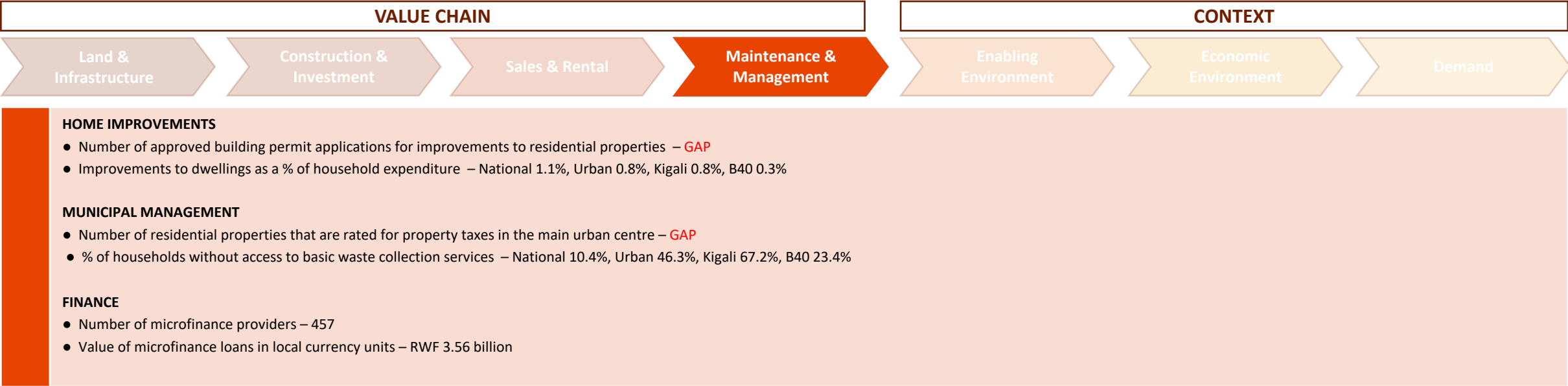
VALUE CHAIN

Land & Infrastructure → Construction & Investment → **Sales & Rental** → Maintenance & Management

CONTEXT

Enabling Environment → Economic Environment → Demand

OWNERSHIP

- Average inflation for dwellings over 5 years – GAP
- World Bank DBI equal access to property rights index ranking: Africa – Tied first with 44 other countries
- World Bank DBI equal access to property rights index ranking: Global – Tied first with 194 other countries
- % of households that own their dwelling – National 86.2%, Urban 69.2%, Kigali 63.8%, B40 43.7%
- % of households with female or joint ownership of a dwelling – National 64.7%, Urban 45.8%, Kigali 37.8%, B40 49.3%
- Price of the cheapest, newly built dwelling by a formal developer or contractor in local currency units – National RWF 10 million, Urban RWF 10 million, Kigali RWF 10 million
- % of households with female ownership of a dwelling – National 10.6%, Urban 7.3%, Kigali 7.7%, B40 8.0%

RENTAL

- Typical rental price for cheapest, newly built dwelling by a formal developer or contractor in local currency units – National RWF 150 000, Urban RWF 150 000, Kigali RWF 150 000
- % of households that rent their dwelling – National 8.9%, Urban 27.9%, Kigali 34.1%, B40 44%

TRANSACTIONS

- Does government or industry publish any data on land prices in the main urban city? – Official Government Gazette No. Special of 08/11/2018
- Number of formal estate agents – GAP
- Resale transactions as a % of all residential transactions – GAP
- Number of new residential transfers – GAP
- Number of residential resale transactions – GAP
- Number of residential transfers financed with a mortgage – GAP
- World Bank DBI land dispute resolution index ranking: Africa – 1 out of 54
- World Bank DBI land dispute resolution index ranking: Global – Tied first with 12 other countries

FINANCE

- Number of residential mortgage providers that serve the bottom-end of the market – GAP
- Number of residential mortgages or formal loans provided to the bottom-end of the market – GAP
- Does an operational mortgage refinancing company exist? – There is not an operational mortgage refinancing company in Rwanda at present. Regulation No 33/2020 of 08/06/2020 as published in Official Government Gazette No 18 of 22/06/2020 established the regulations for mortgage refinancing companies in Rwanda. The World Bank and IFC are collaborating on the Rwanda Affordable Housing Finance Project to establish and support the Rwanda Mortgage Refinance Company
- Does a foreclosure policy exist? – Law no. 10/2009 of 14/05/2009 on mortgages and Law no. 13/2010 of 07/05/2010 modifying and complementing law no.10/2009 of 14/05/2009 on mortgages
- Number of residential mortgage providers – GAP
- Value of residential mortgages outstanding in local currency units – RWF 375 757 155 000
- Number of residential mortgages outstanding – 44 177
- Value of residential mortgages issued per annum in local currency units – National RWF 56 856 282 087, Kigali RWF 46 648 401 087
- Number of residential mortgages issued per annum – National 2 478, Kigali 1 765
- Non-performing residential mortgages as a % of total outstanding residential mortgages – National 1.4%
- Mortgages as a % of properties – National 2.8%
- Value of residential mortgages outstanding as % of GDP – National 3.4%
- Is there a regulatory cap on residential mortgage interest rates? – There is no regulatory cap on interest rates in Rwanda
- Prevailing residential mortgage rates – National 14% - 20%
- Maximum residential mortgage term – National 25 years
- Maximum LTV on a residential mortgage – National 80%
- Maximum instalment to income ratio – National 30%
- % of the adult population that borrowed formally – National 8%
- Income distribution thresholds – completed

AFFORDABILITY

- Maximum dwelling price affordable to B40 households based on market mortgage finance terms – RWF 1 296 059
- % of households that can afford the cheapest, newly built developer by a formal developer or contractor – National 0%, Urban 10%, Kigali 10%, B40 0%
- Maximum dwelling rent affordable to B40 households – RWF 209 566
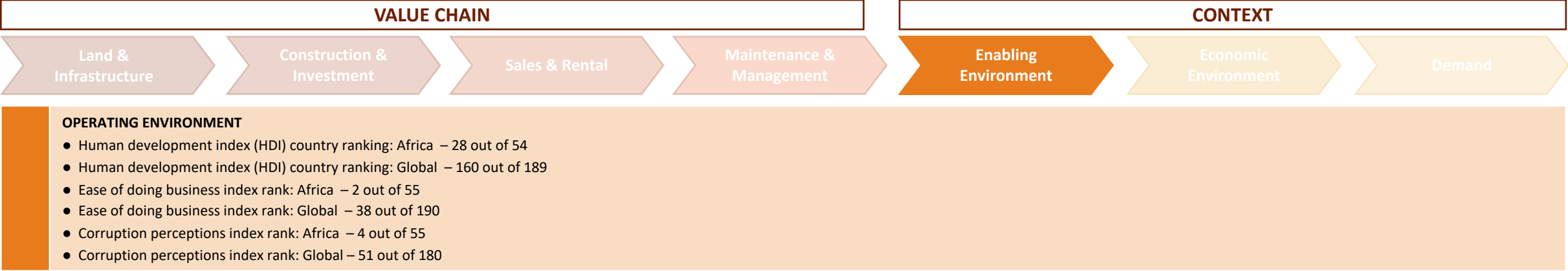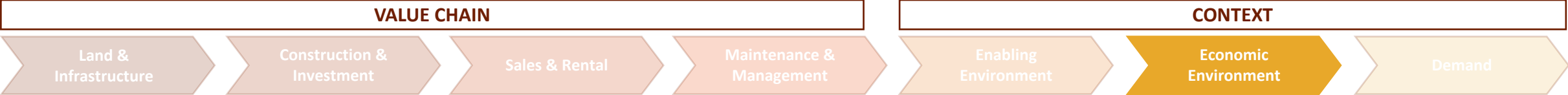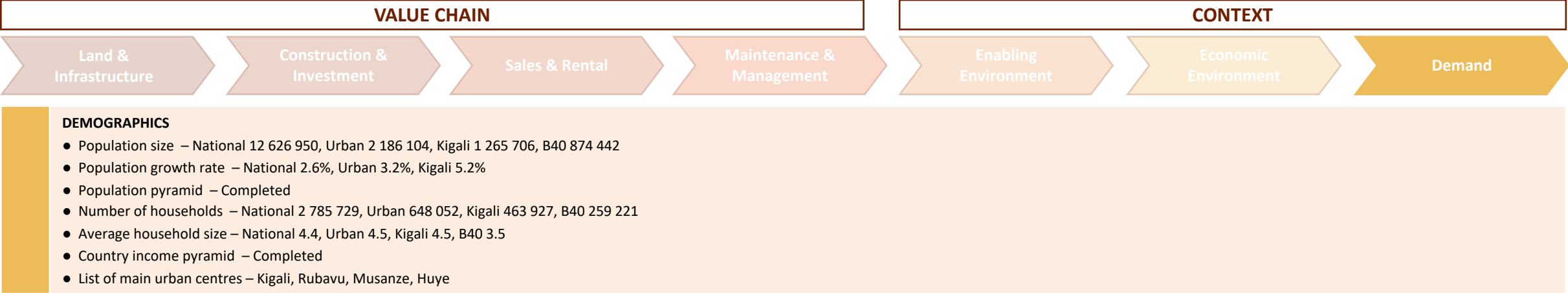
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VALUE CHAIN	CONTEXT

Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

HOME IMPROVEMENTS
- Number of approved building permit applications for improvements to residential properties – GAP
- Improvements to dwellings as a % of household expenditure – National 1.1%, Urban 0.8%, Kigali 0.8%, B40 0.3%

MUNICIPAL MANAGEMENT
- Number of residential properties that are rated for property taxes in the main urban centre – GAP
- % of households without access to basic waste collection services – National 10.4%, Urban 46.3%, Kigali 67.2%, B40 23.4%

FINANCE
- Number of microfinance providers – 457
- Value of microfinance loans in local currency units – RWF 3.56 billion

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VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

OPERATING ENVIRONMENT

- Human development index (HDI) country ranking: Africa − 28 out of 54
- Human development index (HDI) country ranking: Global − 160 out of 189
- Ease of doing business index rank: Africa − 2 out of 55
- Ease of doing business index rank: Global − 38 out of 190
- Corruption perceptions index rank: Africa − 4 out of 55
- Corruption perceptions index rank: Global − 51 out of 180

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VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

MACROECONOMIC INDICATORS

- Yield on 2-year government bonds – Rwanda does not have 2-year government bonds
- Yield on 10-year government bonds – 12%
- USD Exchange rate (1 USD = x LCU) – 899.35
- PPP conversion factor for private consumption – 290.12
- GDP per capita in current local currency units – RWF 737 578.59
- GDP per capita growth rate – 6.6%
- GDP growth rate – 9.4%
- Government construction of dwellings and serviced stands as a % of national budget – GAP
- Unemployment rate – 15.5%
- % of individuals aged 15-49 that have not worked in the past 12 months – National 5.4%, Urban 15.6%, 19.5%
- % of females aged 15-49 that have not worked in the past 12 months – National 6.8%, Urban 19.3%, Kigali 23.6%
- % of population below national poverty line – National 38.2%
- Gini coefficient index – 43.7%
- Inflation rate (CPI) – 2.7%

Indicators were populated along 5 different aggregations: National, Urban, Kigali, Marchal Real Estate Developers, and B40. As such, each indicator can have multiple values (one for each aggregation). Indicators highlighted in red identify those that the team was unable to populate

VALUE CHAIN				CONTEXT		
Land & Infrastructure	Construction & Investment	Sales & Rental	Maintenance & Management	Enabling Environment	Economic Environment	Demand

DEMOGRAPHICS

- Population size – National 12 626 950, Urban 2 186 104, Kigali 1 265 706, B40 874 442
- Population growth rate – National 2.6%, Urban 3.2%, Kigali 5.2%
- Population pyramid – Completed
- Number of households – National 2 785 729, Urban 648 052, Kigali 463 927, B40 259 221
- Average household size – National 4.4, Urban 4.5, Kigali 4.5, B40 3.5
- Country income pyramid – Completed
- List of main urban centres – Kigali, Rubavu, Musanze, Huye

1. Introduction

2. Key custodians of housing data

3. Summary of data collection

4. Populated indicators

5. Replicating the analysis

All the data sources as well as the procedure for populating the indicators was documented in a Rmarkdown script. This means the entire exercise can be replicated (and updated in future) using R. The key resources required to do this are explained below

Data

- All of the datasets that were downloaded or provided to the team are in the *data.zip* file provided to AFR

- These include microdata from the NISR, PAYE data from the RRA, and regulatory data from the NBR

CAHF's R package

- Prior to replicating the analysis, AFR must install the cahR R package provided *(cahR_0.0.0.9000_R_x86_64-pc-linux-gnu.tar)*

- This package contains all the functions for automatic population of the indicators

Rmarkdown script

- The Rmarkdown script *data_audit_collection_notes.rmd* documents the entire procedure and can be edited to incorporate new data sources (to fill existing gaps and to replicate in future)

- When run, this script produces an html report that can be disseminated to a less technical audience

Outputs

- The Rmarkdown script collates all the collected data, documents required metadata (e.g. reference, url, collection notes) and produces an excel workbook with all of the populated indicators and the collected elements
- *Rwanda_headline_indicators_2021-06-01.xlsx*

Data sources

Access Finance Rwanda (2020). Finscope Survey 2020. https://www.statistics.gov.rw/file/9343/download?token=X40OYCeI
NISR. (2017). Integrated Household Living Conditions Survey 5 (EICV 5). https://www.statistics.gov.rw/datasource/integrated-household-living-conditions-survey-5-eicv-5
NISR. (2019). Labour Force Survey 2019

NBR
- Mortgage extracted from the NBR's Electronic Data Warehouse by the Financial Stability Directorate

World Bank
- World Development Indicators Database
- Ease of Doing Business Database
- Global Findex Report 2017

Other
- ILOSTAT Database
- UNDP Database
- Transparency International 2019 Report
- Rwanda Stock Exchange data on Government Bond Yields
- RLUMA Land Dashboard
- RRA Firm level tax data
- DHS Rwanda Survey 2014-15
- Marchal Real Estate Developers
- CAHF Housing Economic Value Chain Report on Rwanda
- Local Building Store in Kabeza Kigali
- Commercial banks: Banque Populauire du Rwanda and Zigama CSS

ADDITIONAL DOCUMENTS

The following documents are available as separate files:

1. Scoping Rwanda's Affordable Housing Demand & Supply: Full Report
2. Scoping Rwanda's Affordable Housing Demand & Supply: Executive Summary
3. Affordable Housing in Rwanda: Demand-side analysis
4. Affordable Housing in Rwanda: Housing Finance Access Frontiers
5. Affordable Housing in Rwanda: Housing Submarkets
6. Affordable Housing in Rwanda: Sale and rent prices in Rwanda's housing market
7. **A Review of the Data Landscape in Rwanda's Housing Ecosystem**
8. Rwanda's affordable housing sector: overview of the institutions, policies and legislation that shape the sector