HOUSING MARKET DEMAND, HOUSING FINANCE, AND HOUSING PREFERENCES FOR THE CITY OF KIGALI

EuropeAid/127054/C/SER/multi

FINAL REPORT

PLANET CONSORTIUM

KIGALI, 29 JUNE 2012

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FOREWORD

The rebirth of Rwanda after the genocide of 1994 is remarkable in many ways. One of them is the extraordinary effort to plan the present and future development of the City of Kigali.

Rarely, in any part of the world, has a planning effort of such a magnitude been undertaken in such a short span and with such attention to detail. Kigali is fast becoming an example of sustainable urban development in Africa: and housing will play an integral part of that.

Our team feels honored to contribute to that process of urban development through the present study about the Housing Market in Kigali, which has been generously funded by the European Union and which has received the support from many people during its preparation. We hope that the effort carried during 11 weeks of intensive work will shed light on the structure of the housing market, the need for affordable housing, and the steps that are required to improve access to quality housing for all.

We are especially grateful to the City of Kigali and to the One Stop Center for all their support and receptiveness to our ideas and proposals and for steering our process of analysis. We are also indebted to the Rwanda Housing Authority and to the Ministry of Economy and Finance for actively contributing with our research. We also should mention the contribution of the Rwanda Social Security Board and the National Institute of Statistics, which provided key data and information. We also thank all that have directly or indirectly supported our work.

In addition to the invigorating intellectual and logistical challenge involved in preparing this study, we have enjoyed the hospitality and pleasantness of the citizens of Kigali, the sense of purpose manifest in the cleanliness of the city's streets and the perfumed air, not from engine exhaust, but from flowers and lush vegetation. This has been a truly remarkable experience.

Kigali, 29 July 2012.

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EXECUTIVE SUMMARY

A. Purpose, Objectives and Scope of the Study

This EU funded study was prepared for the City of Kigali, RHA / MININFRA and MINECOFIN to estimate the demand and supply of housing in Kigali. It runs from the baseline year of 2012, plus 10 years, or until 2022, and proposes a housing typology and housing finance mechanisms to meet demand, especially for affordable housing. The study seeks to improve access to housing for all segments of the population and to provide investors and stakeholders with a clear understanding of the market.

B. Demand

Total housing requirements in Kigali by 2022 are projected to be 458,265 dwelling units (DU).

These requirements could be met by maintaining part of the existing housing stock that is in good condition or upgradeable (114,197 DU) plus building of new dwellings (344,068 DU).

Thus, new housing demand is estimated to be 344,068 DU between 2012 and 2022.

> **Kigali Housing Demand**
>
> **IN SUMMARY:**
>
> **Total Demand in 2022: 458,265 DU**
>
> **Existing Housing Stock in 2011: 223,000 DU**
>
> - **Existing Housing that is adequate: 114,197 DU**
>   - **In good condition: 42,710 DU**
>   - **Estimated Upgradeable: 71,487 DU**
>
> - **Estimated In Poor Condition, to be replaced (Backlog): 108,803 DU**
>
> **New Housing To Be Built 2012-22: 344,068 DU**
>
> - **New Demand: 235,265 DU**
> - **Estimated Backlog Demand: 108,803 DU**

To simplify policy implementation, four different categories of housing have been identified according to household income and financing, within new housing demand: *social housing* (12.62% of new DU, housing that needs to be totally subsidized); *affordable housing* (54.11% of new DU, housing which needs some support but that could be off-loaded to end-users through a rental or rent-to-own mechanism); *mid-range housing* (32.80% of new DU, housing for middle-income households, with potential access to mortgage financing) and *premium housing* (0.47% of new DU, housing for higher income households that already *has access to bank loans and traditional mortgage financing*).

1	Assessment of Existing Housing Stock (2011)	DU	%
1.1	Good Condition	42.710	19,15%
1.2	To be Upgraded	71.487	32,06%
Subtotal A	*(1.1 + 1.2)*	*114.197*	
1.3	To be Replaced	108.803	48,79%
		223.000	**100,00%**

2	New Dwellings (including backlog) to be built 2012-22	DU	%
2.1	Social Housing	43.436	12,62%
2.2	Affordable Housing	186.163	54,11%
2.3	Mid-range Housing	112.867	32,80%
2.4	Premium Housing	1.601	0,47%
Subtotal B	*(2.1 + 2.2 + 2.3 + 2.4)*	*344.068*	*100,00%*

3	Meeting Housing Needs in Kigali 2012-22	DU	%
Subtotal A	Existing Housing Stock	114.197	24,92%
Subtotal B	New Dwellings	344.068	75,08%
	Total	458.265	100,00%

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78% of demand for new housing concentrates in the lowest income quintile (Q1), where households earn RWF 300,000/month and less. In Q2, where households earn between RWF 300,001 and 600,000, there are 13% of the households. Q3, which has a household income of RWF 600,001 to RWF 900,000 has 5% of the population; Q4, which has a household income of RWF 900,001 to RWF 1.500,000 has 2% of the households, and Q5, which earns above RWF 1.500,001, has 1% of the households.

Quintile	Segment	Monthly HH Income RwF		TOTAL DU	Total DU per Quintile	Proportion
		From	To			
Q1	1	<	100.000	147.761		
	2	100.001	200.000	81.838		
	3	200.001	300.000	39.266	268.865	78%
Q2	4	300.001	400.000	22.914		
	5	400.001	500.000	14.100		
	6	500.001	600.000	9.225	46.239	13%
Q3	7	600.001	700.000	7.035		
	8	700.001	800.000	5.147		
	9	800.001	900.000	3.627	15.809	5%
Q4	10	900.001	1.000.000	2.599		
	11	1.000.001	1.100.000	1.987		
	12	1.100.001	1.500.000	3.669	8.254	2%
Q5	13	1.500.001	2.000.000	2.193		
	14	2.000.001	2.500.000	1.107		
	15	2.500.001	<	1.601	4.901	1%
			TOTAL DU	344.068		

C. Supply

The formal housing market, as it is currently operating, supplies around 1,000 DU per year, but the city will demand around 31,000 DU per year. Therefore, approximately 30,000 DU must be supplied through other mechanisms: increased formal market supply, some combination of formal pubic-private partnerships, or the informal market. The strategy mix for housing solutions will reflect a variety of different factors, and the combination of more than one solution may be required to address housing needs in Kigali.

Supply of new housing could be accomplished in three general ways:

1. Through the market, using banking and mortgage finance,

2. Through special programs and incentives or other innovative means for reaching households that currently pay rent but do not qualify for mortgage finance (for example, rent-to-own), and

3. Through policies for subsidizing housing provided by the government.
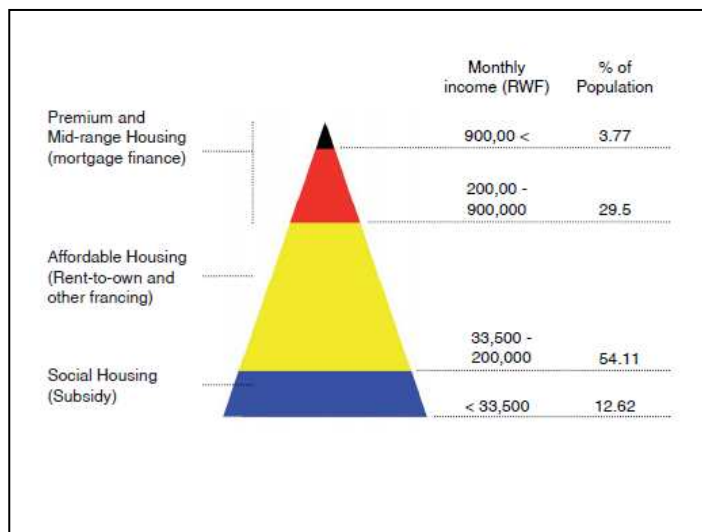
In the lowest income quintile (Q1), where households earn RWF 300,000/month and less, 12.62% corresponds to social housing, at the lowest end of the pyramid, and 54.11% of new demand corresponds to affordable housing. Both social and affordable housing require some government support, ranging from full subsidy to special programs and incentives.

The remaining 33.27% of housing demand can potentially be covered by market financing. This includes the highest level of Q1 (segment 3, 11.27% of the households), plus mid-range and premium housing demand in Q2 to Q5.

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D. Housing Typology

The housing typology proposed in this study is based on the preferences study presented in Chapter 2, financial factors (such as building costs and household payment capacity), and cultural, environmental and urban sustainability considerations. Three basic types of dwellings are proposed.

Type A: Basic House

Type A housing focuses on the needs of the poorest population in Q1 and Q2, approximately 229,559 DU and for households earning RWF 200,000/month, or less. This represents about one half (50%) of housing needs for 2012-2022. Type A housing consists of a parcel with basic utility services, a basic roof built with temporary technology[1] and an enclosing wall. Type A could be built using auto-construction by the future occupant (A1) or by contractor (A2). An important aspect of this housing type is its flexibility to grow or respond to household changes.

Type B: Row House

These are contiguous dwellings aligned into rows or clusters. Type B would be built with hybrid technology[2] and developed incrementally, mostly for households in Q3 and Q4. This type could be 2 or 3 stories and could be incrementally developed over time by residents who start with a small unit and expand it horizontally or vertically.

Type C: Apartments/Condominiums

These are units built in four-storey structures, with each building including multiple dwellings in horizontal or vertical property. Apartments would be built with reinforced concrete frame or reinforced walls with hybrid technology, enjoy common amenities and will be destined mostly to middle income households in Q4 and higher income households in Q5.

Type C: Apartments

Type B: Row House

Type A: Basic House

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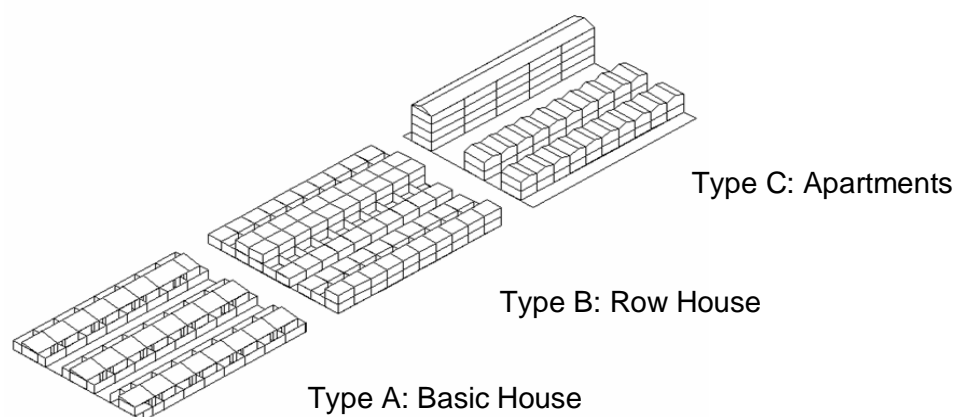
[1] Temporary materials such as stabilized earth blocks and metal sheet roofing.
[2] Hollow cement blocks, vertical and horizontal reinforcement of walls with steel bars and metal or concrete roofing.

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NB: These images only show form based programs, not recommended site design

In Chapter 4, examples are provided for each typology. Following a sample of these examples to illustrate typology:

Illustration for Typology A (please Chapter 4 see for further detail)

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Illustration for Typology B (please Chapter 4 see for further detail)

BENCHMARKING
WORLD EXAMPLES OF HOUSING TYPOLOGY FOR THE CITY OF KIGALI

Q2

VivendaSocialDinámica sinDeuda
Chile
2004

ARCHITECT Elemental-Alejandro Aravena
CLIENT Minvu, Government of Chile
ADDRESS Av. Pedro Prado, Iquiqhe
GFA 3.620 sm2
DWELLING N°93 Houses
DWELLING SIZE 30 sqm/72 sqm
ANCILLARY SERVICES parking and public facilities

ELEMENTAL is a for profit company with social interest, whose shareholders are the Universidad Católica de Chile, COPEC (Chilean Oil Company) and the Elemental founders.

ELEMENTAL's first project in Iquique, back in 2001, consisted in re-establishing 93 families on the site where they had been squatting for the last 30 years with a budget of just US$7,500 per family.

THE RESULTS? People were able to double the square meters of their initial homes (36 square meters) for only US$1.000 each. 5 years later, any house in the Elemental Iquique project is now valued at over US$20.000.

http://www.elementalchile.cl
http://www.alejandroaravena.com

Executive Summary

Illustration for Typology C (please Chapter 4 see for further detail)

BENCHMARKING
WORLD EXAMPLES OF HOUSING TYPOLOGY FOR THE CITY OF KIGALI

Q5
MD HOUSE
Spain
2007

ARCHITECT Foreign Office Architects (FOA)

CLIENT Empresa Municipal

GFA 11.384 sqm

DWELLINGS N° 87 apartments

DWELLING SIZE
VT 1 44 smq – VT 2 45 smq
VT 3 44 smq – VT4 67 smq
VT5 72 smq – VT7 79smq

The residential units are therefore opened to two different gardens on each orientation, and are fully glazed in the façades. Each side of the building is provided with a 1.5m wide terrace along the full façade that will make possible a semi-exterior type of use during certain seasons. These terraces are enclosed with bamboo louvers mounted on folding frames that will provide with the necessary protection from the strong East-West sun exposure

Photographs: Francisco Andeyro Garcia & Alejandro Garcia Gonzalez (FAG, AGG), Sergio Padura (SP)

Executive Summary

The proposed housing typology should be introduced in Kigali at different speeds, in order to adapt to existing and future income capacity and mind-setting of the city's population. Typology A is dominant until 2022, with Typologies B and C gradually growing in importance.

Development of Proposed Typology in Kigali 2012-2040

	2022	2030	2040	Total	Proportion
Low-rise row house (Type A)	240.850	103.218	53.562	397.631	34,95%
Mid-rise row house (Type B)	68.814	77.413	214.249	360.477	31,68%
Multi-storey Apartment (Type C)	34.407	77.413	267.812	379.632	33,37%
Total DU	344.072	258.045	535.623	1.137.740	100%

Typology	2022	2030	2040	Total	Proportion	Net Density DU/Ha
A. Low-rise Row Houses (1 or 2 storeys)	240.850	103.218	53.562	397.631	34,95%	86
Proportion	70%	40%	10%			
Land Surface	3.035	929	675	4.639		
Parcel Size (m²)	90	90	90			
Net Residential Land	2.168	929	482			
Common Uses	867	372	193			
B. Mid-rise Row Houses (2 to 4 storeys)	68.814	77.413	214.249	360.477	31,68%	159
Proportion	20%	30%	40%			
Land Surface	434	488	1.350	2.271		
Parcel Size (m²)	45	45	45			
Net Residential Land	310	348	964			
Common Uses	124	139	386			
C. Apartment Blocks (4 storeys)	34.407	77.413	267.812	379.632	33,37%	317
Proportion	10%	30%	50%			
Land Surface	108	244	844	1.196		
Parcel Size (m²)	23	23	23			
Net Residential Land	77	174	603			
Common Uses	31	70	241			
Total DU	344.072	258.045	535.623	1.137.740	100,00%	
Total Residential Land Requirements (Ha)	3.143	1.173	1.518	8.105		

Net= Density calculated over residential land only, assuming an average of 60% of said land for net residential use (Net/Net) and 40% for streets, common spaces and services for same said residential land.

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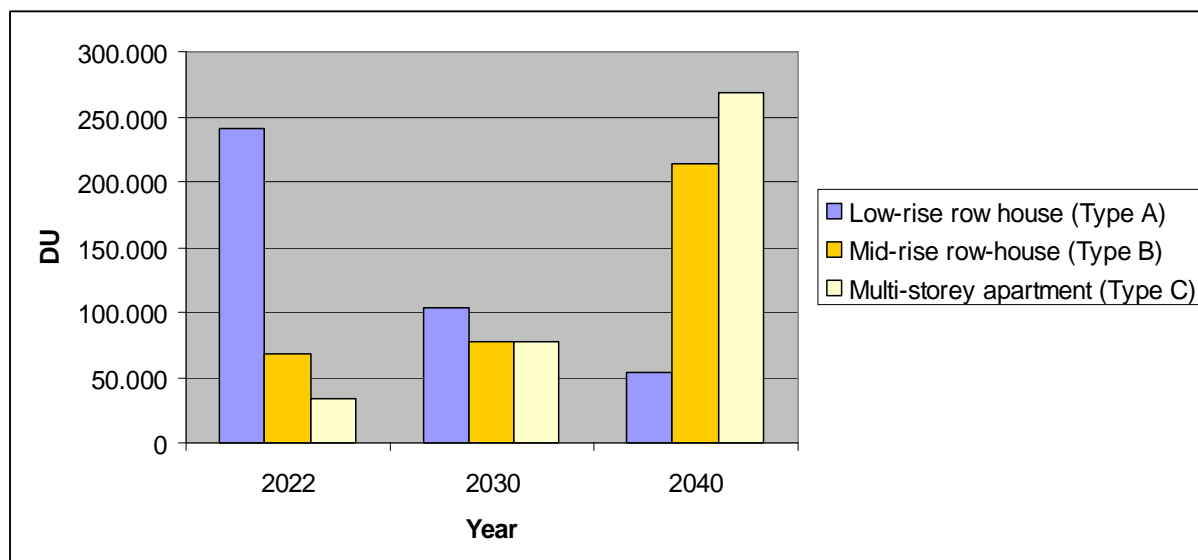Planet Consortium
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D. Housing Finance in Kigali

Mortgage financing in Rwanda is currently accessible to households with monthly income greater than RWF 900,001 (3.8% of population in Rwanda).

In 2012, 96.2 % of HH had no access to housing finance (population with monthly income of RWF 900,000 and less).

However, there has been a clear increase in the provision of mortgage finance in Rwanda since 2004. The provision of mortgage finance has been recently estimated between RWF 64.7 and RWF 84 billion. The number of banks offering mortgage finance is also greater than a few years ago. In 2012, the main providers of mortgage finance are BCR, KCBR, BK, and BRD. A few microfinance institutions such as Zigama CSS are also actively growing their mortgage loan portfolio. BNR has taken over BHR mortgage assets (valued at RWF 8 Billion) and by issuing new loans, has doubled the value of the portfolio.
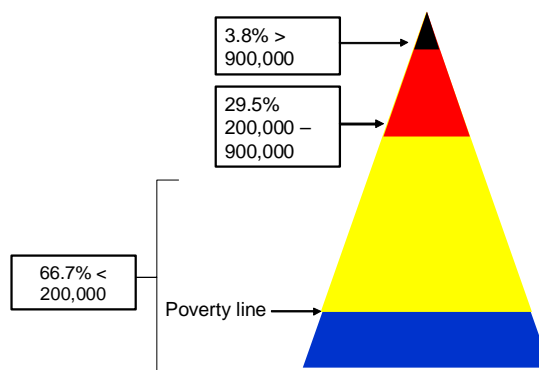
Recommended Housing Finance Modality per Income Segment

A. *High and middle income strata (Q2, Q3, Q4, Q5): Mortgage Finance*

Mortgage finance is already available for the higher income group (people earning above RWF 900,001 per month). Assuming availability of housing units in the RWF 5 to 30 million ranges, all providers of mortgage finance have declared their willingness to go down market and to provide housing finance for lower income group (monthly income between RWF 200,000 and 900,000).
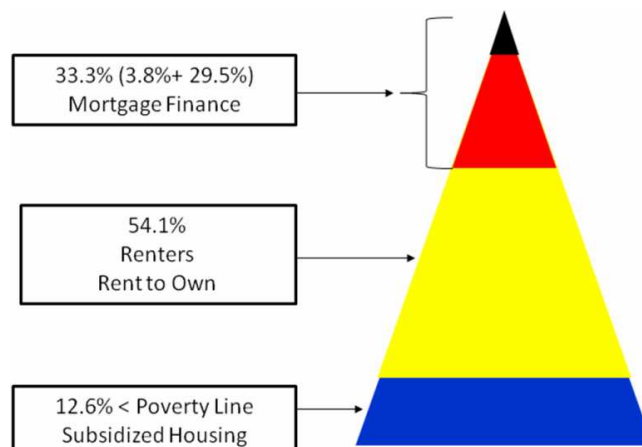
B. *Lower income segments (Q1): Innovative Solutions*

For monthly income segments ranging from RWF 33,100 to 200,000, mortgage finance would not be accessible through the banks: However, most people in these brackets do pay rent and therefore should be able to contribute to the cost of the DU provided to them. A rent to own solution would fit with that rental pattern.

The Rent to Own Model. Rent to own is commonly used in many countries such as the Unites States, Canada, the Philippines or Singapore. In several countries, rent to own has been used to transfer ownership of affordable housing units to their renters.

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This has been done in Queensland, Australia, for instance, and it is envisaged in Nicaragua. In Singapore there is a Rent and Purchase Scheme used as one of the "home ownership schemes for the needy." Household would rent a dwelling unit from a public or non-for-profit affordable house company that would be created to that effect. The loan mechanism could be put in place either directly by the affordable housing company or preferably, through a bank or microfinance institution.

1. Rental contract   **Pay rent for X years**
                                 Build credit record

Exclusive right to purchase DU

2. Transfer of Property to HH

Accumulated rents (or part of it) used as down payment   Mortgage loan to pay for Y years

Below the poverty line (lowest part of Q1): Housing Fund/Subsidy and Integration with Economic Development/Poverty Alleviation

The lowest income segments are below the poverty line and would not be able to pay any housing loan or even rent.

A Housing Fund should be established to provide housing solutions for this group.

AFFORDABLE HOUSING FUND

TAX
- Building tax
- Compulsory Savings
- Income Tax
- Municipal tax
- Other

SOFT LOANS

COOPERATION

Special subsidy support for this group could include:

- Public Housing: DU remains property of the City. Nominal rent could be charged.
- Housing units delivered to low income people (South African model).
- Subsidy pays for plot, basic services and basic dwelling.
- Property is immediately transferred to household.
- Land plus basic services only.
- Materials voucher.
- Suppliers of building services voucher.
- Land provided to Housing Cooperatives.
- Technical assistance for design & construction.

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Volume of Finance

Mortgage Finance: The total amount of housing finance needed over the 2012-2022 period for this group is projected to be RWF 996 billion (about US$1.6 billion) or an average of RWF 91 billion per year (about US$149 million per year).

Non Mortgage Finance: The total budget needed to build affordable housing over the period 2012-2022 was estimated by this study at RWF 623 billion (US$1 billion). This amount can then be divided into two categories:

<u>**Affordable Housing**</u> (ie. Rent to Own scheme and other approaches**)** where the cost should eventually be recovered through rents and transfer of property/mortgage lending: RWF 505 billion (approximately US$ 830 million); or an average RWF 75 billion per year.

<u>**Subsidized Housing**</u> for the poorest which cost would not be recovered: RWF 118 billion (approximately US$ 193 million) or an average RWF 11 billion per year.
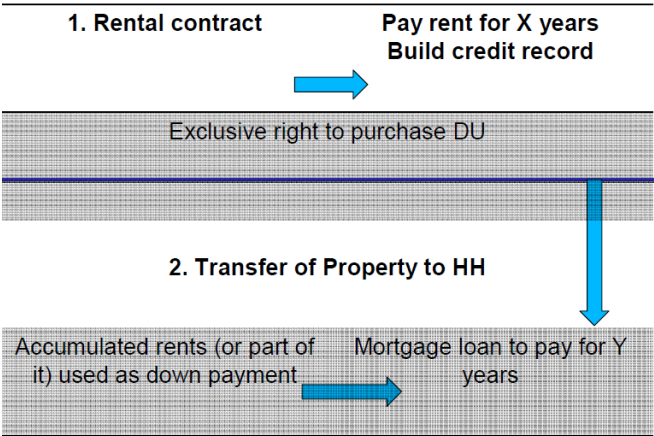
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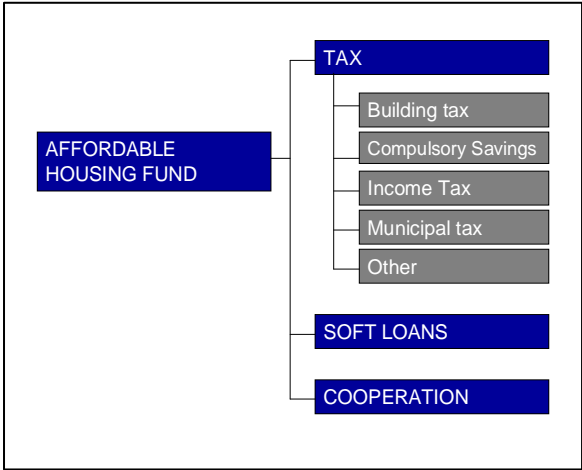Planet Consortium
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Exchange rate   608,27

CATEGORY	DESCRIPTION	Financing	Quintiles (Q)	Monthly Gross Income Range in Rwf		Typology	DU	%DU	Cost per DU			
									RWF		USD	
				From	To				From	To	From	To
New Dwellings							344.068					
Social	Low-rise row housing(possibly in autoconstruction)	Full subsidy, some rent, contribution with labor during construction period	Q1/Segment 1 / Below Poverty Line	>	33.500	A1	43.436	9,48%	n.a.	2.711.089	n.a.	4.457
Affordable New	Low-rise row hosing	For instance, rent to-own	Q1/Segment 1/Above Poverty Line	33.501	200.000	A2	186.163	40,62%	2.711.089	3.333.823	4.457	5.481
Mid-range	Low rise and Mid-rise row housing and multi storey apartments	Mortgage loans	Q1/Segment 3 to Q5/Segment 14	200.001	2.500.000	B1-B4, C1-C3	112.867	24,63%	3.333.823	69.827.778	5.481	114.797
Premium	multi storey apartments, attached and detached units	Mortgage loans	Q5/Segment 15	2.500.001	<	C3 and Detached	1.601	0,35%	69.827.779	<	114.797	<
Existing Stock							71.487					
Existing DU in Good Condition	Various existing typologies, mostly low rise but also apartments	Mostly mortgage loans or self financing	Mostly in Q4 and Q5	Above 2.000.000		Various existing.	42.710	9,32%	n.a.	n.a.	n.a.	n.a.
Affordable Upgraded	Various existing typologies, mostly low rise	Micro-loans (micro-finance and mortgages) and other programs	Q1/Segment 1/Above Poverty Line	33.501	200.000	Upgraded existing DU	71.487	15,60%	n.a.	n.a.	n.a.	n.a.
							458.265	100,00%				

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I. SYNOPSIS

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ACRONYMS

BK	Bank of Kigali
BNR	Banque Nationale du Rwanda, Central Bank
BPR	Banque Populaire du Rwanda
BRD	Banque Rwandaise de Développement
BRH	Banque de l'Habitat du Rwanda
CRI	Collateral Replacement Indemnity
DU	Dwelling Unit(s)
EICV	Integrated Household Living Conditions Survey
HH	Household
KCBR	Kenya Commercial Bank Rwanda
KCMP	Kigali City Master Plan
Km²	Square Kilometer
Kw	Kilowatt
MFI	Micro Finance Institution
MINECOFIN	Ministry of Economy and Finance
MININFRA	Ministry of Infrastructure
M²	Square meter
M³	Cubic meter
Mw	Megawatt
NISR	National Institute of Statistics of Rwanda
Q	Quintile (referred to income)
RHA	Rwanda Housing Authority
RCF	Reinforced Concrete Frame
RDB	Rwanda Development Board
RSSB	Rwanda Social Security Board

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1. INTRODUCTION

1.1 Preparation and Organization of Report

This report has been prepared in Kigali over a period of 11 weeks, starting on 16 April 2012, by a team of three experts:

- Marco A. CUEVAS – Expert 1, Team Leader, Real Estate, Socio Economics.

- Costantino COSTANTINI – Expert 2, Architecture.

- Dominique BROUWERS – Expert 3, Housing Finance.

The team had research support from:

- Institute for Policy Research and Analysis, Rwanda (IPAR) – Preferences Study.

- Alexandre NDAHUMBA – Costs and Construction Industry.

- Mark SONEGO – Research on World Examples.

Preparation of the report was supervised by Donna RUBINOFF PhD, Senior Advisor for the City of Kigali, who also contributed with comments and editing during the review process.

The report is organized in three parts.

Part I - Synopsis provides an overview of the study's purpose and background, methodology and context. It also provides a summary of findings.

Part II – The Kigali Housing Study contains five stand-alone chapters. Each chapter contains a study on the specific topics of Housing Demand and Supply, Preferences, Housing Typology, World Examples and Housing Finance.

Part III – General Annexes containing relevant information of general nature.

In addition to these three parts, the report includes a mathematical model to forecast housing demand, demand of affordable housing and inputs (investment, land, and infrastructure). The model is presented in a separate document. The team also prepared an Investor Brochure that summarizes all the key findings.

1.2 Purpose, Background and Objectives

This report has been prepared with the purpose of providing the City of Kigali, investors, and stakeholders with a tool for improving understanding of the housing market by estimating the demand and supply of housing in the city from 2012 until 2022 – including existing housing stock and an estimation of units that may be upgraded or replaced -- the typology of housing that may be built, including references to world examples of housing typology, and housing finance mechanisms adequate for the different income segments of the market.

In addition, the report was prepared to establish the volume of affordable housing required in the City and to identify adequate housing typologies and financing mechanisms for large-scale delivery. Affordable housing is a key component in the growth strategy of Kigali, which has already been identified as such by the Kigali Conceptual Master Plan (KCMP) prepared

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by OZ Architects and by the Detailed Physical District Plans under preparation by Surbana. The focus on affordable housing, however, responds primarily to the political will of the City of Kigali and of the Rwanda Housing Authority (RHA), to promote access to housing for the widest possible segment of the market, seeking to create a sustainable and harmonious process of urban growth.

The study was scoped and designed by the City of Kigali, who requested and obtained funding from the European Union Delegation in Rwanda for its implementation.

The Terms of Reference (please see ToR in General Annex section) for the study establishes the following objectives:

- **Global objective**

  To further the construction of affordable housing at all demographic strata in the City of Kigali by developing a market study that complements and harmonizes with all other work being done by the City and Government of Rwanda on affordable housing policy, finance, design, construction and preferences/needs.

- **Specific objectives**

  The consultant will prepare a baseline market study for the City that will examine demographic, economic, social and other changes over the next ten years as well as current preferences and circumstances that will influence housing design/typologies.

  These factors will be combined to prepare a projection of likely demand from the market for residential development in the City. The consultant will also provide a housing demand forecast model, prepare and deliver marketing material for a workshop (brochures and power point presentation).

1.3 Scope

This study is concerned with the housing market in Kigali for the period from 2012 to 2022. A ten year time frame is typical of market studies, which unlike planning studies, are predicated on financial analysis. Whenever necessary, reference is made to the larger urban system in Rwanda and, in certain cases, projections have been made until 2040, horizon-year for the ongoing master planning. The main focus of the study is affordable housing in Kigali. However, a complete overview and estimation of housing demand and supply is provided as a frame to affordable housing requirements.

1.4 Relation to Other Studies

This report forms part of a wider study effort which includes the Kigali Conceptual Master Plan, District Plans for Nyarugenge, Kicukiro and Gasabo; the Kigali CBD Master Plan, Sub Area Plans for Kinyinya, Kimihurura, Masaka and Rebero and other previous planning studies.

In addition, this study builds on findings from the *Housing Sector Qualitative Assessment* prepared by the World Bank in 2011 and uses data from the *Case Study: Housing through Real Estate*, prepared by RHA in 2012.

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1.5 Methodology

The methodology used for preparation of this report is illustrated in the exhibit shown in the following page. It comprises the simultaneous analysis of four different aspects of the housing market in Kigali: Demand and Supply, Preferences, Housing Typology and Housing Finance. Results from analysis in those areas were used for estimating total housing demand and affordable housing demand. Subsequently, financing mechanisms were proposed and investment requirements were estimated.

These simultaneous analyses were carried out by the team of experts, in their respective areas of expertise, while maintaining constant communication and feedback with each other and the City of Kigali project supervisor. Fine tuning of typology and housing finance proposals was conducted in two synthesis exercises, the first one of which took place on week number 8 of the mission, when preliminary results were presented to the Kigali City Council. The second synthesis took place on week number 9 and 10 of the mission, during the project's workshop with the Kigali City Council, main stakeholders (RHA, MININFRA, and MINECOFIN), representatives from the Architects' and Engineers' communities and with representatives from the financial sector, including the National Bank of Rwanda, which commented and validated results. Observations and comments of the workshop were then incorporated into the overall analysis.

Exhibit 1: Methodology Flowchart

```
┌─────────────────┐
│ Definition of   │
│ Baseline        │
│ Parameters      │──────┐
└─────────────────┘      │        ┌──────────────┐     ┌──────────────┐
                         ├───────▶│ Mathematical │───▶ │ Estimation of│
┌─────────────────┐      │        │ Model        │     │ Housing      │
│ Definition of   │──────┘        └──────────────┘     │ Demand       │
│ Indicators      │                                    └──────┬───────┘
└─────────────────┘                                           │
                                                              │
┌─────────────┐   ┌─────────────┐   ┌──────────────┐          │
│ Housing     │──▶│ Existing    │──▶│ Estimation of│─────────▶│
│ Supply      │   │ Stock       │   │ Replacement, │          │
│ Analysis    │   │ Analysis    │   │ Upgrading    │          │
└─────────────┘   └─────────────┘   └──────────────┘          │
                                                              │
                  ┌─────────────┐                             │
                  │ Preferences │────────────────────────────▶│
                  │ Study       │                             │
                  └──────┬──────┘                             │
                         │                                    │
┌─────────────┐   ┌──────▼──────┐   ┌──────────────┐          │
│ Analysis of │──▶│ Proposed    │──▶│ Cost         │─────────▶│
│ Existing    │   │ Housing     │   │ Analysis     │          │
│ Typology    │   │ Typology    │   └──────────────┘          │
└─────────────┘   └──────▲──────┘                             │
                         │                                    │
┌─────────────┐          │                                    │
│ Research on │──────────┘                                    │
│ World       │                                               │
│ Examples    │                                               │
└─────────────┘                                               │
                                                              │
┌─────────────┐   ┌─────────────┐   ┌──────────────┐          │
│ Analysis of │──▶│ Affordability│─▶│ Forecast     │◀─────────┘
│ Existing    │   │ Analysis    │   │ Affordable   │
│ Housing     │   └─────────────┘   │ Housing      │
│ Finance     │                     └──────┬───────┘
└─────────────┘                            │
                                    ┌──────▼───────┐
                                    │ Proposed     │
                                    │ Financing    │
                                    │ Mechanism    │
                                    └──────┬───────┘
                                    ┌──────▼───────┐
                                    │ Investment   │
                                    │ and Input    │
                                    │ Requirements │
                                    └──────────────┘
```

2. CONTEXT

2.1. Rwanda

Located in East-Central Africa, the Republic of Rwanda is the 149th largest in the World, with surface of 26,338 km² (slightly smaller than Belgium). Most of its territory is hilly and mountainous and at high altitude (lowest point at 950 m a.s.l.) and has no direct access to the sea. It borders with the Democratic Republic of Congo, Uganda, Tanzania and Burundi.

Rwanda has a temperate tropical highland climate, with lower temperatures than are typical for equatorial countries due to its high elevation.

Rwanda's population in 2012 was estimated at 11,689,696. The population is young: an estimated 42.7% are under the age of 15, and 97.5% are under 65. The annual birth rate is estimated at 40.2 births per 1,000 inhabitants, and the death rate at 14.9. The life expectancy is 58.02 years (59.52 years for females and 56.57 years for males). The gender ratio of the country is relatively even (NISR). At 408 inhabitants per km², Rwanda's population density is amongst the highest in Africa (World Bank; roughly the same population density as The Netherlands)). The population is predominantly rural.

Kigali, the capital, is the largest city, with a population of around one million. Other notable towns are Muhanga (Gitarama), Huye (Butare), and Gisenyi, all with populations below 100,000.The urban population rose from 6% of the population in 1990, to 16.6% in 2006. By 2011, however, the proportion had dropped slightly, to 14.8% (NISR). The country's economy is based on agriculture. The manufacturing and services sector are relatively small and mostly concentrated in Kigali. Nominal per-capita GDP is estimated at approximately USD 550/year in 2011 (IMF).
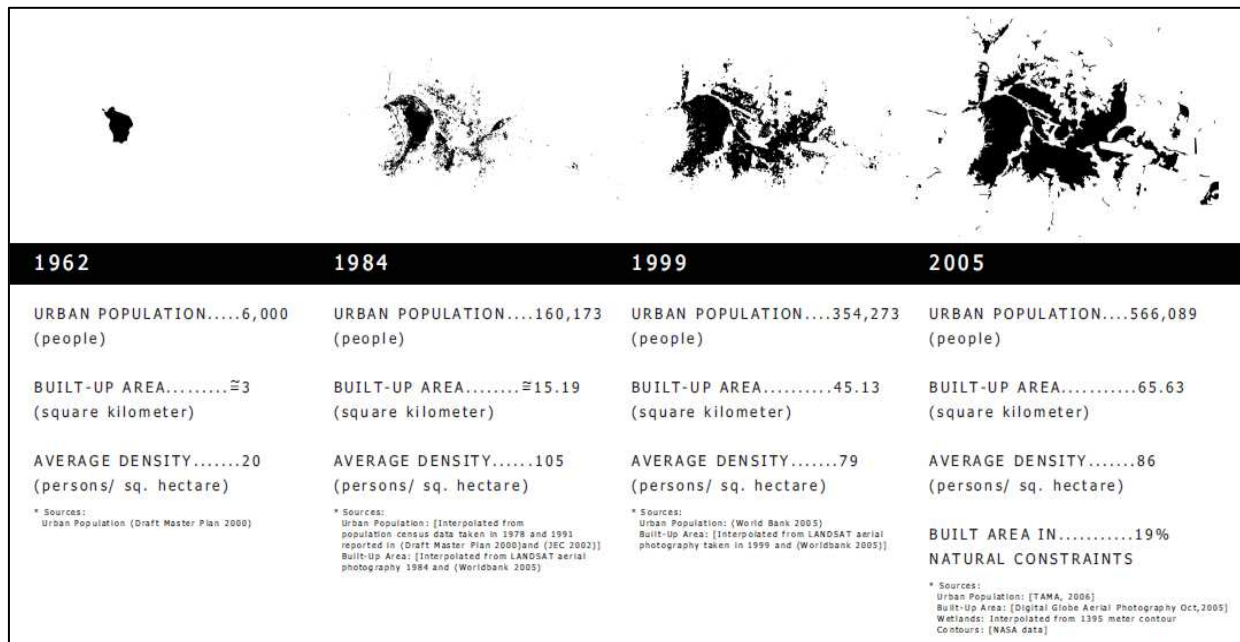
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2.2. Kigali

Kigali is the capital city of Rwanda, seat of government and main economic centre. It is also the primary city, concentrating around 67% of the total urban population in the country[3]

In 2011, Kigali had a population of 1,059,000. The city has been growing very fast and its growth accelerated in the second half of the 1990's as a result of the political events in the country, as shown in the illustration from Kigali Conceptual Master Plan.

Exhibit 2: Evolution of Built Kigali from 1962 to 2005

1962	1984	1999	2005
URBAN POPULATION.....6,000 (people)	URBAN POPULATION....160,173 (people)	URBAN POPULATION....354,273 (people)	URBAN POPULATION....566,089 (people)
BUILT-UP AREA.........≅3 (square kilometer)	BUILT-UP AREA........≅15.19 (square kilometer)	BUILT-UP AREA..........45.13 (square kilometer)	BUILT-UP AREA...........65.63 (square kilometer)
AVERAGE DENSITY.......20 (persons/ sq. hectare)	AVERAGE DENSITY......105 (persons/ sq. hectare)	AVERAGE DENSITY.......79 (persons/ sq. hectare)	AVERAGE DENSITY.......86 (persons/ sq. hectare)
* Sources: Urban Population (Draft Master Plan 2000)	* Sources: Urban Population: [Interpolated from population census data taken in 1978 and 1991 reported in (Draft Master Plan 2000)and (JEC 2002)] Built-Up Area: [Interpolated from LANDSAT aerial photography 1984 and (Worldbank 2005)]	* Sources: Urban Population: (World Bank 2005) Built-Up Area: [Interpolated from LANDSAT aerial photography taken in 1999 and (Worldbank 2005)]	BUILT AREA IN..........19% NATURAL CONSTRAINTS

* Sources: Urban Population: [TAMA, 2006] Built-Up Area: [Digital Globe Aerial Photography Oct,2005] Wetlands: Interpolated from 1395 meter contour Contours: [NASA data] |

Source: Kigali Conceptual Master Plan, 2007.

Exhibit 3: Satellite Photo Built portions of Kigali 2012

Currently, although the city boundaries incorporate 731 square kilometers as shown on the next page, the city occupies about 100 km², half of which are covered with structures and infrastructure. The other half corresponds to high gradient slopes and wetlands, as shown in the satellite photo to the right.

Source: SIO, NOAA

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[3] Estimated urban population in Rwanda stands at 14.8% in 2011. (EICV3)

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The city is coterminous with the province of Kigali City, which was enlarged in January 2006, as part of local government reorganization in the country. The city's urban area covers about 70% of the municipal boundaries[4]. Exhibit 4 shows the City boundaries as they currently are. The City of Kigali is divided into three (3) Districts comprising Sectors (35), Cells (161), and Cells are sub divided into Imidugudu (which literally means villages) (1061)[5].

Exhibit 4: Kigali City Boundaries (KCMP)
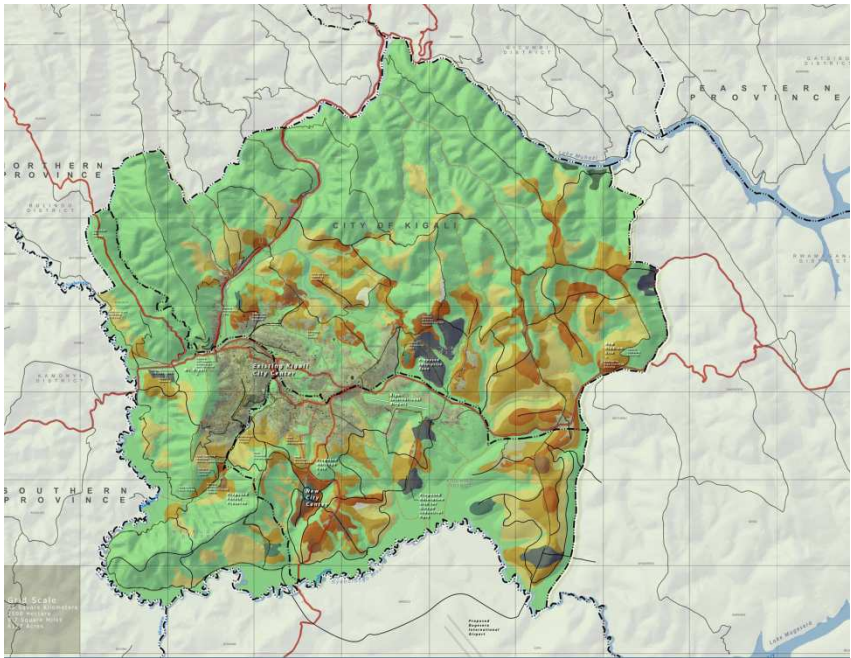
Source: Kigali Conceptual Master Plan

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[4] City of Kigali official website.
[5] Taken from the City of Kigali website, together with the illustration above, showing the city's districts.

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Exhibit 5: Gahanga Planned New Town Center
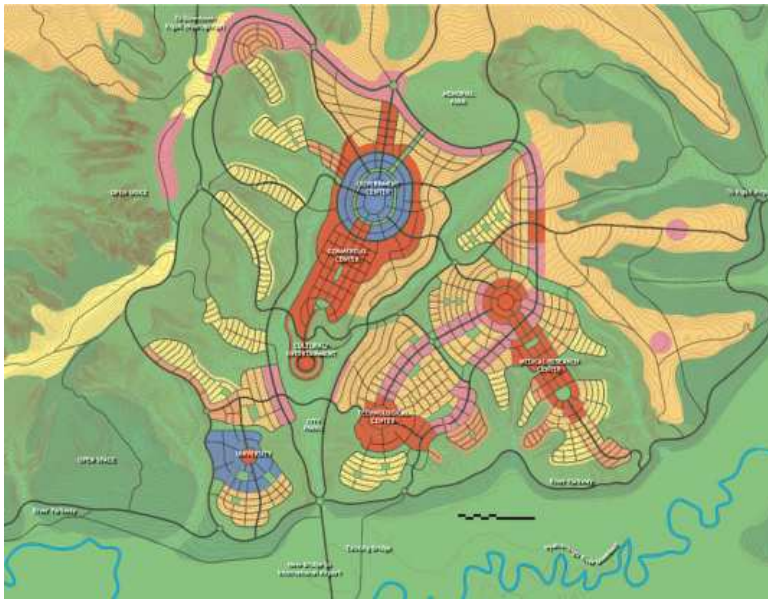
Current growth in Kigali is 5.7% annually, based on census data (EICV2 and EICV3). If current trends continue, the city will reach about 5.3 million in 2040[6]. To order the city's growth, the Kigali City Council has initiated, since 2005, a process of Master Planning which includes the city's conceptual master plan, several district plans and the ongoing detailed physical planning for Kicukiro and Gasabo.

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[6] Please see baseline population estimations.

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2.3. Stakeholder Mapping Housing Sector

Access to adequate housing is considered a right in Rwanda. This concept emanates from the Rwanda Development Plan (RDP) of 1994, which asserts that minimum housing must be provided to all.

Responsibility for housing provision was delegated on the Ministry of Infrastructure (MININFRA), which in 2011 formed the Rwanda Housing Authority (RHA) to implement national housing, urbanization, construction and asset management policies.

At the national level, policies are coordinated by MININFRA with the Ministry of Economy and Finance, which oversees economic planning, finance and development cooperation.
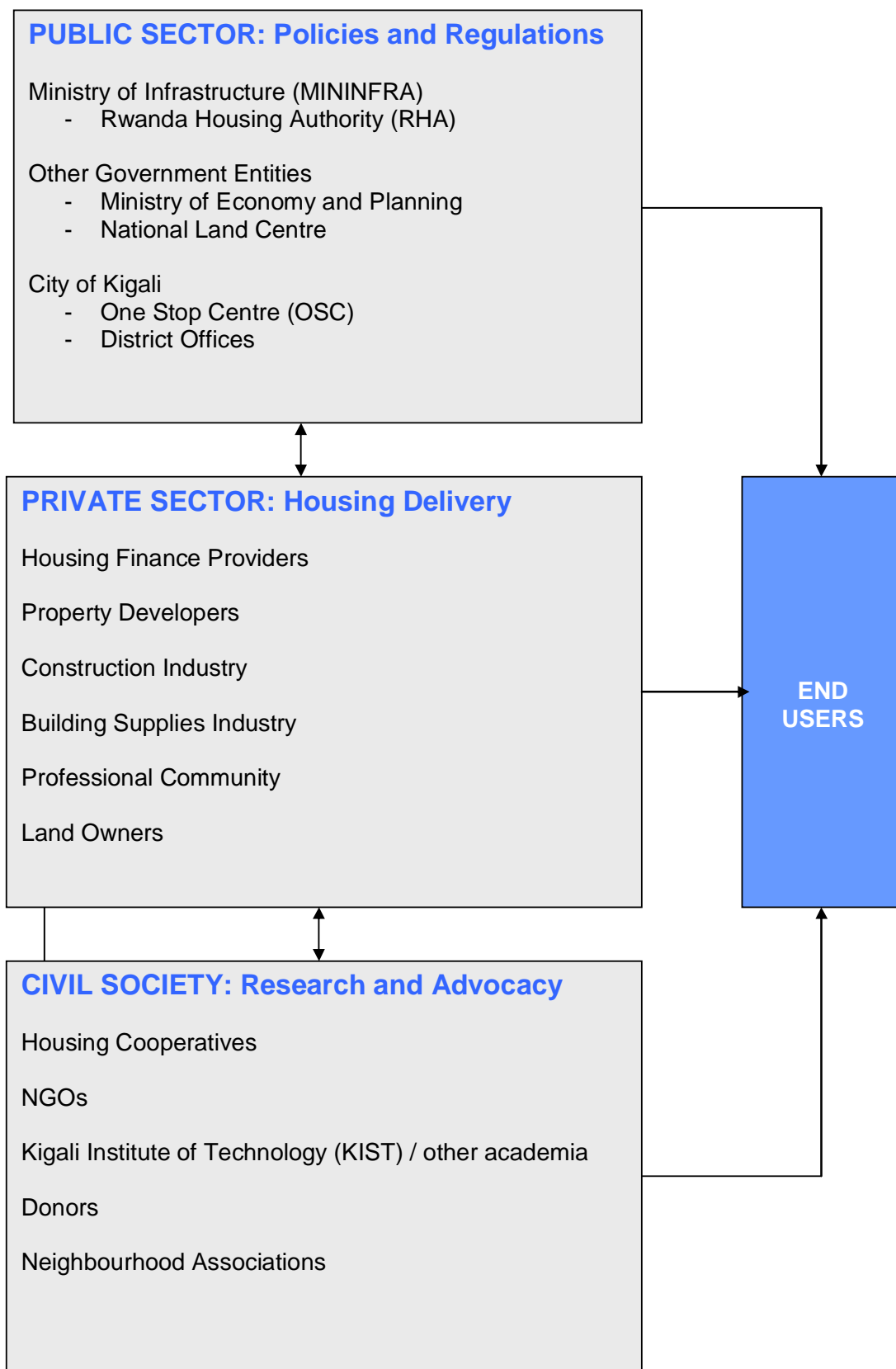
General planning, policies and regulations for the City of Kigali are centralized by the City of Kigali Council which coordinates with the Rwanda Housing Authority (RHA) and, at the local level, with the District Offices.

On the private sector side, main stakeholders are the providers of housing finance and private developers, as well as the construction industry, building materials industry and all professionals and services linked to the delivery of housing.

Civil society participates in the housing development process in a limited, albeit gradually growing way, through numerous partners and stakeholders such as cooperatives (i.e. Goboka Cooperative, Zigama), technical NGOs such as Engineers Without Borders, micro-finance lending institutions, academia such as the Kigali Institute of Technology, and donors such as the European Union Cooperation, the Dutch cooperation, the German Development Cooperation (DED), and USAID.

The illustration shown in the next page provides an idea of main stakeholders in Rwanda's housing sector.

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Exhibit 6: Stakeholder Mapping Housing Sector in Rwanda

PUBLIC SECTOR: Policies and Regulations

Ministry of Infrastructure (MININFRA)
- Rwanda Housing Authority (RHA)

Other Government Entities
- Ministry of Economy and Planning
- National Land Centre

City of Kigali
- One Stop Centre (OSC)
- District Offices

PRIVATE SECTOR: Housing Delivery

Housing Finance Providers

Property Developers

Construction Industry

Building Supplies Industry

Professional Community

Land Owners

END USERS

CIVIL SOCIETY: Research and Advocacy

Housing Cooperatives

NGOs

Kigali Institute of Technology (KIST) / other academia

Donors

Neighbourhood Associations

3. GENERAL SUMMARY

3.1 Housing Demand and Supply

3.1.1   What is a Demand and Supply Study?

A demand and supply study is an _estimation_ of how many dwellings will be needed in Kigali in the period 2012-22 and how many new/upgraded dwellings will be needed to satisfy those needs. This estimation was made by:

- Dividing the city's estimated future population (in 2022) by the number of people per household (household size), and

- By assuming that each household needs one dwelling unit.

- Then it is assumed that housing needs will be met by existing stock that is adequate and by producing new dwelling units (DU).

- An estimation of conditions of existing housing stock was made to determine which portion of the existing stock is in good condition, which can be upgraded, and which is not suitable in the long run.

- Then, a calculation was made to estimate how many new dwelling units should be built in the period; and this is detailed to project DU demand per year over the study period.

3.1.2. Total Housing Needs in 2022

Total housing requirements in Kigali (2012-2022) reach 458,265 DU. These requirements will be met by using existing stock in good or upgradable condition and by building new dwellings. A summary is presented in the table to the right:

> **Kigali Housing Demand**
> _IN SUMMARY:_
>
> _Total Demand in 2022: 458,265 DU_
>
> _Existing Housing Stock in 2011: 223,000 DU_
>
> - _Existing Housing that is adequate: 114,197 DU_
>   - _In good condition: 42,710 DU_
>   - _Estimated Upgradeable: 71,487 DU_
>
> - _Estimated In Poor Condition, to be replaced (Backlog): 108,803 DU_
>
> _New Housing To Be Built 2012-22: 344,068 DU_
>
> - _New Demand: 235,265 DU_
> - _Estimated Backlog Demand: 108,803 DU_

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3.1.3 Assessment of Existing Housing Stock

According to the EICV3, there were 223,000 households in Kigali in 2011. Assuming one DU per household, it is possible to conclude that there were 223,000 DU in Kigali, for the same year. This number corresponds to the existing housing stock in the city. An estimation of conditions of the existing housing stock is possible by analyzing existing conditions of housing described by EICV3. The following exhibit summarizes the assessment of the existing housing stock.
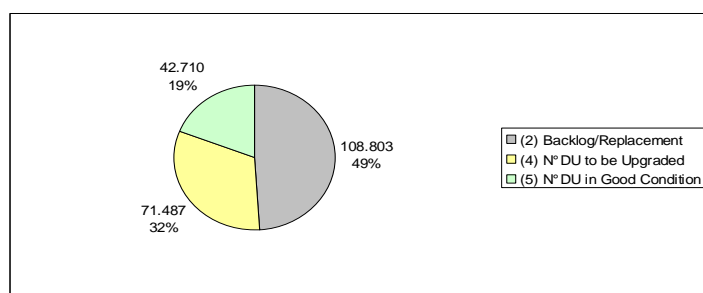
Exhibit 7: Assessment of Existing Housing Stock in Kigali

(1) Estimated Existing Stock in 2011 (DU)	223.000
(2) Backlog/Replacement	108.803
(3) = (1)-(2) Diference Existing - Replacement	114.197
Proportion Upgrading (EICV3)	62,60%
(4) N° DU to be Upgraded	71.487
(5) N° DU in Good Condition	42.710

Based on information provided by EICV3, of the 223,000 existing DU in Kigali, there are 108,803 DU that need to be replaced due to overcrowding and low-quality. The remaining 114,197 DU are split into housing in good condition (42,710 DU) and housing to be upgraded (71,487 DU). Housing to be upgraded is calculated assuming that 62.5% of remaining DU are units in informal settlements which need, at least, retro-fitting of infrastructure but that probably also need upgrading in walling and roofing materials. This proportion was taken from EICV3, which indicates that 62.5% of housing in Kigali is in informal settlements. The following exhibit summarizes an estimation of conditions of existing housing stock:

Exhibit 8: Structure of Existing Housing Stock

	Assessment of Existing Housing Stock (2011)	DU	%
1.1	Good Condition	42.710	19,15%
1.2	To be Upgraded	71.487	32,06%
1.3	To be Replaced	108.803	48,79%
	Totals	**223.000**	**100,00%**

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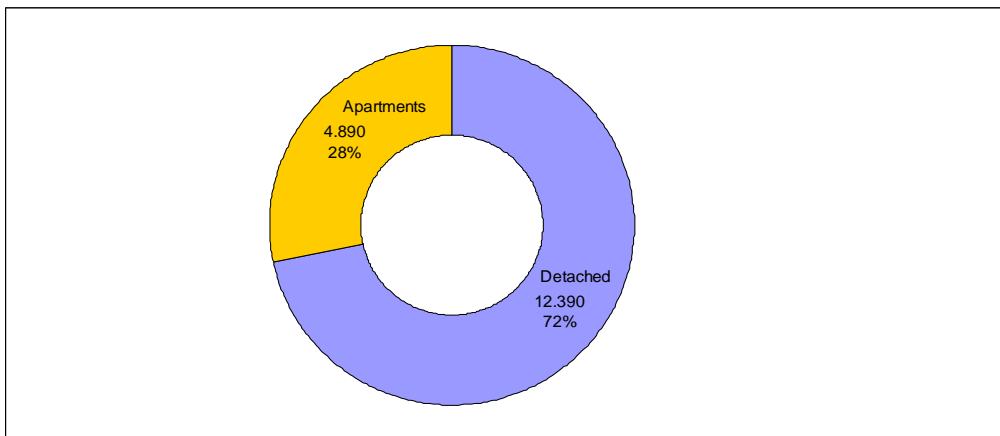
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3.1.4 Projected Housing Supply

In addition to assessing the existing stock that is suitable for future use, an analysis was conducted of current housing supply in Kigali, estimating supply for the next ten years based on housing construction trends in previous years and research on planned construction. The analysis was broken into categories of housing supply in the formal and informal markets.

Formal market supply includes housing that is legally occupied; built and maintained in accordance with prevailing laws; complies with requirements for access to land; and has clear and transferable title (was purchased and can be conveyed legally). The *informal* market supply, on the other hand, is that which does not comply with legal regulation, building standards or transferable property title.

Volume of formal supply was deduced by analysing information collected in the *Assessment of Affordable Housing through Real Estate Development*, prepared by the Rwanda Housing Authority, Ministry of Infrastructure in 2012, which includes a list of real estate projects in the city of Kigali. This information was completed and validated through interviews with key developers and professionals -- active in the real estate market in Kigali -- and compared with construction permit's data bases from the One-Stop Centre (OSC) of the City of Kigali (2010-2012) and those from Gasabo and Kicukiro districts. Based on this information, it was estimated that annual housing supply in the formal market in Kigali in the last several years has ranged from 800 to 1,000 DU per year.

For the next 10 years (until 2022), if projects in the planning stage are actually built, the formal market will supply approximately 17,280 DU for Q3, Q4 and Q5. Over one quarter of that forecasted supply will be apartments and the rest will be detached units.

Formal supply concentrates on units costing USD 25,000 (equivalent to about RWF 15,000,000) and more, and is directed towards Q3, Q4 and Q5.

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In Q1 and Q2, formal supply has not been very significant. However, there are some interesting examples in this segment, such as the Batsinda Housing project, which includes a 250 DU pilot project developed by the City of Kigali in the Gasabo district, on a site of about 154 Ha, 15 minutes away from the city center (according with the City's official website).

Units built cost USD 10,000 and are built with stabilized earth bricks produced on site (to decrease costs) and metal roofing.
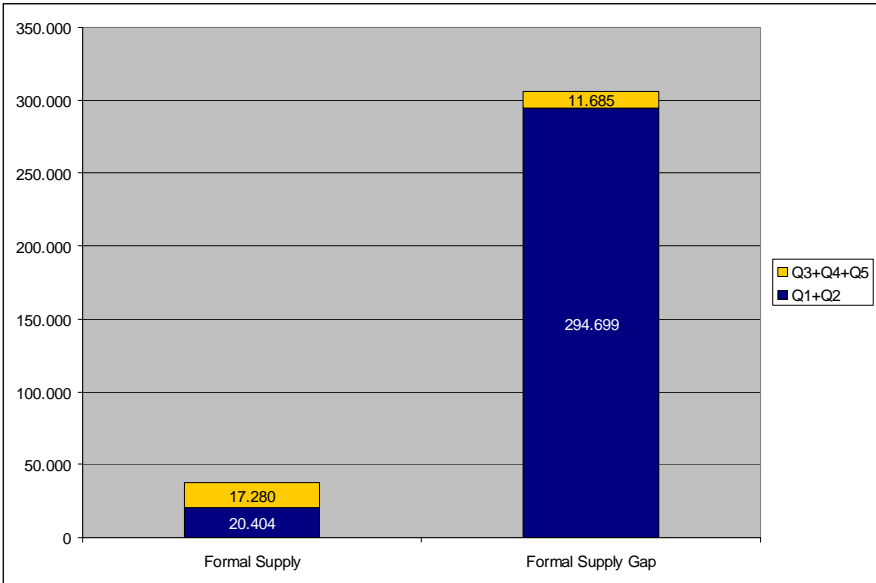

Typical housing unit in Batsinda

However, apart from 20,000 DU planned by MINELOC in Imidugudu projects[7], future supply in Q1 and Q2 is basically unattended by the formal market.

Therefore, there exists a gap in formal supply, which is illustrated in the following exhibit:

Exhibit 9: Demand-Supply Gap 2012-2022

Projected Structure of Supply under Current Conditions 2012-2022		
	Formal Supply	Formal Supply Gap
Q3+Q4+Q5	17.280	11.685
Q1 + Q2	20.404	294.699
	37.684	306.384
Totals	344.068	

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[7] The consultant was unable to obtain further details about MINILOC's Imidugudu projects. The exact number of units, production schedule and unit characteristics have to be confirmed with MINILOC.

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If the formal market (as it is currently operating) supplies around 1,000 DU per year, and the city demands around 31,000 DU per year, around 30,000 DU must be supplied through other mechanisms: increased formal market supply, some combination of formal pubic private partnerships (PPP), or the informal market. The composition of strategic housing solutions will reflect a variety of different factors, but it is clear that no "one" solution will provide a silver bullet solution.

Each of these solutions has its own challenges and advantages, yet given the relatively large volume of the overall need, each one of them must contribute in some way to the solution. The formal market must be nurtured and stimulated. PPP require institutional and financial development. Upgrading must also be supported and guided. Informal housing is not always substandard, and it can become formalized with proper documentation and support.

The informal sector can play an important role in providing temporary or even long term housing for Kigali. However, not all housing supply in the informal market will be transferred into full new DU. Sometimes additional housing can be generated by extending an existing DU capacity. In other parts of the world, housing "add ons" are an important part of the housing portfolio. For instance: a poor land owner could add one or two additional rental rooms to his property, thereby generating two new "housing solutions".

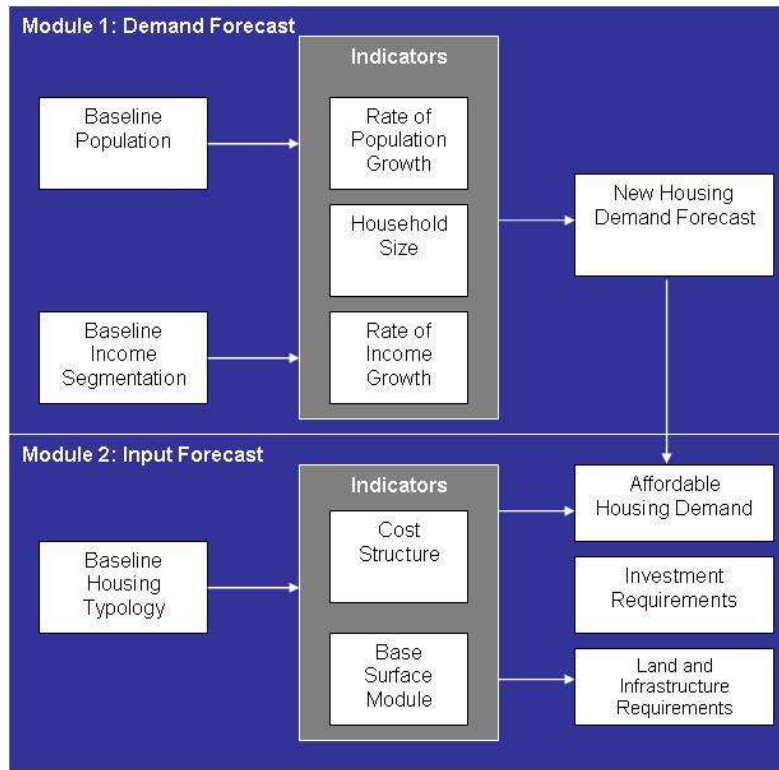### 3.1.5. Estimation of New Dwelling Unit Demand

A. The New Dwelling Demand Forecast Model

Estimation of demand for new housing (or new dwellings) was accomplished through a mathematical model built for the purpose. This model is a tool that can be adjusted with new data inputs over the long term to refine market demand. When new census data is received, when housing is built, and when new policies evolve, the model can be refined to help decision makers, investors and citizens determine which housing should be built.

The mathematical model is structured in two modules. The first module is used to forecast demand in terms of the number of DU per income segment and per year. The second module serves to estimate inputs required to meet demand, in terms of investment and land, and to estimate affordable housing demand.

In both modules, baseline assumptions are used as starting points. These baseline assumptions are then projected in time by virtue of selected indicators. Main results of calculations are shown in Exhibits 12 and 13. The mathematical model is contained in an Excel calculation spreadsheet presented in a separate document. The following exhibit illustrates the structure of the model:

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Exhibit 10: New Demand Forecast Model

B. Assumptions and Indicators for Estimating New Dwelling Demand

The basic assumptions used as inputs in calculations of the mathematical model are the following:

- *Population*

  New housing demand in Kigali is primarily driven by population growth. Kigali is expected to double its population until 2022 due in part to "push factors" (migration from the countryside), but also to "pull factors", due to the city's position as the pre-eminent urban centre of Rwanda. Between 2006 and 2011, migrant population in Kigali accounted for almost half the total population in the city and this has been assumed to continue.[8] With changing national urban policy that emphasizes development of second tier cities and towns, however, this assumption can potentially be revised downward.

  Population in Kigali in 2011 was 1,059,000. In 2022, if current pace of growth continues and if City policies remain unchanged, it will reach 1,957,312 inhabitants and in 2040 it will reach 5,347,178 inhabitants.[9]

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[8] EICV3, 2010
[9] Calculation based on EICV2 and EICV3 data.

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- ***Household Size***

  Based on a comparison of data from EICV2 and EICV3 (covering the period 2005-2010), it was estimated that household size in Kigali will decline from 4.70 in 2012 to 4.27 in 2022.[10]

- ***Income Earners per Household***

  It is assumed that in Q1, there are more than one income earners, varying from 2 income earners in the segment 1 to 1.21 income earners in segment 4.[11]

- ***Household Income***

  Household income in Kigali will grow at a rate equal to the national target of 7% per year, as originally indicated by Vision 2020[12]. According to the IMF,[13] Rwanda's economic growth in the period 2002 to 2012 has been around 7% on average, which provides support to this assumption.

- ***Income Segmentation by Quintile (Q)[14]***

  In 2012, up to 54.92% of the city's households earn less than RWF 100,000 per month. Q1, which includes households with monthly income below RWF 300,000 comprises 81,03% of households; Q2, with monthly income ranging from RWF 300,001 to 600,000 accounts for 11,25% of households; Q3, with income ranging from RWF 600,001 to RWF 900,000 includes 4,17% of households; Q4, with monthly income ranging from RWF 900,001 to RWF 1,500,000 accounts for 2,14% of households; Q5, with monthly income from 1,500,001 to RWF 2,500,000 and more, accounts for 1,13% of the population.[15] Please see following exhibit.

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[10] Assumption on decline of household size is based on household size changes in EICV2 and EICV3.

[11] Based on analysis of EICV2 data done by IPAR (IPAR, 2012).

[12] The growth targets of Vision 2020 have been recently revised to 11.5% per annum. 7% p.a. was the target in the original document.

[13] IMF (http://www.imf.org/external/country/rwa/index.htm)

[14] A Quintile is a statistical term indicating that a sample or population has been divided into fifths. This division is the international standard for income segmentation.

[15] Calculation based on RSSB data base adjusted for number of income earners per household.

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Exhibit 11: Household Income Distribution in Kigali

Quintile	Segment	Monthly Salary Range in RwF		Annual Salary Range in RwF		Estimated % of HH	Cumulative	Total % per Quintile
		From	To	From	To			
	1	<	100.000	<	1.200.000	**54,92%**	54,92%	
	2	100.001	200.000	1.200.001	2.400.000	**18,28%**	73,20%	
Q1	3	200.001	300.000	2.400.001	3.600.000	**7,83%**	81,03%	81,03%
	4	300.001	400.000	3.600.001	4.800.000	**5,47%**	86,50%	
	5	400.001	500.000	4.800.001	6.000.000	**3,46%**	89,97%	
Q2	6	500.001	600.000	6.000.001	7.200.000	**2,32%**	92,28%	11,25%
	7	600.001	700.000	7.200.001	8.400.000	**1,88%**	94,17%	
	8	700.001	800.000	8.400.001	9.600.000	**1,35%**	95,52%	
Q3	9	800.001	900.000	9.600.001	10.800.000	**0,94%**	96,45%	4,17%
	10	900.001	1.000.000	10.800.001	12.000.000	**0,68%**	97,13%	
	11	1.000.001	1.100.000	12.000.001	13.200.000	**0,53%**	97,66%	
Q4	12	1.100.001	1.500.000	13.200.001	18.000.000	**1,20%**	98,87%	2,41%
	13	1.500.001	2.000.000	18.000.001	24.000.000	**0,52%**	99,38%	
	14	2.000.001	2.500.000	24.000.001	30.000.000	**0,23%**	99,61%	
Q5	15	2.500.001	<	30.000.001	<	**0,38%**	100,00%	1,13%

C. Estimating New Dwelling Demand

Estimated demand of new dwellings for 2012-2022, by income segment and by year, was forecasted by virtue of the mathematical model and the assumptions discussed in sections 3.1.4 A and B.

Results are shown in exhibits 12 and 13, following.

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Exhibit 12: Estimation of New Dwellings (RWF) 2012-2022 / Number of DU per Income Segment

Quintile	Segment	Monthly HH Income RwF From	To	Year 2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	TOTAL DU	Total DU per Quintile	Proportion
	1	<	100.000	13.720	13.661	13.603	13.545	13.488	13.431	13.374	13.318	13.262	13.207	13.152	**147.761**		
	2	100.001	200.000	4.567	5.167	5.758	6.341	6.915	7.481	8.039	8.588	9.130	9.663	10.189	**81.838**		
Q1	3	200.001	300.000	1.957	2.155	2.396	2.680	3.005	3.371	3.777	4.221	4.703	5.223	5.778	**39.266**	268.865	78%
	4	300.001	400.000	1.367	1.449	1.546	1.660	1.795	1.953	2.137	2.350	2.594	2.874	3.189	**22.914**		
	5	400.001	500.000	866	924	987	1.058	1.136	1.224	1.324	1.436	1.563	1.708	1.873	**14.100**		
Q2	6	500.001	600.000	579	615	656	701	751	807	869	938	1.014	1.100	1.196	**9.225**	46.239	13%
	7	600.001	700.000	470	495	521	551	583	620	660	704	754	808	869	**7.035**		
	8	700.001	800.000	338	357	379	402	428	455	485	518	554	594	637	**5.147**		
Q3	9	800.001	900.000	234	248	264	281	299	320	342	367	394	423	455	**3.627**	15.809	5%
	10	900.001	1.000.000	169	179	190	201	215	229	245	262	281	302	325	**2.599**		
	11	1.000.001	1.100.000	133	140	147	156	165	176	187	199	213	228	244	**1.987**		
Q4	12	1.100.001	1.500.000	301	306	311	317	323	330	338	346	355	366	377	**3.669**	8.254	2%
	13	1.500.001	2.000.000	129	142	155	169	183	197	212	227	243	259	276	**2.193**		
	14	2.000.001	2.500.000	59	63	71	77	87	95	106	117	131	143	158	**1.107**		
Q5	15	2.500.001	<	95	103	109	118	127	139	151	164	179	198	218	**1.601**	4.901	1%
			TOTAL DU	**24.982**	**26.003**	**27.094**	**28.257**	**29.501**	**30.827**	**32.244**	**33.756**	**35.372**	**37.096**	**38.936**	**344.068**		

Exhibit 13: Estimation of New Dwellings (USD) 2012-2022 / Number of DU per Income Segment

Quintile	Segment	Monthly HH Income USD From	To	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	TOTAL DU
	1	<	164	13.720	13.661	13.603	13.545	13.488	13.431	13.374	13.318	13.262	13.207	13.152	**147.761**
	2	165	329	4.567	5.167	5.758	6.341	6.915	7.481	8.039	8.588	9.130	9.663	10.189	**81.838**
Q1	3	330	493	1.957	2.155	2.396	2.680	3.005	3.371	3.777	4.221	4.703	5.223	5.778	**39.266**
	4	494	658	1.367	1.449	1.546	1.660	1.795	1.953	2.137	2.350	2.594	2.874	3.189	**22.914**
	5	659	822	866	924	987	1.058	1.136	1.224	1.324	1.436	1.563	1.708	1.873	**14.100**
Q2	6	823	986	579	615	656	701	751	807	869	938	1.014	1.100	1.196	**9.225**
	7	987	1.151	470	495	521	551	583	620	660	704	754	808	869	**7.035**
	8	1.316	1.315	338	357	379	402	428	455	485	518	554	594	637	**5.147**
Q3	9	1.316	1.480	234	248	264	281	299	320	342	367	394	423	455	**3.627**
	10	1.481	1.644	169	179	190	201	215	229	245	262	281	302	325	**2.599**
	11	1.645	1.808	133	140	147	156	165	176	187	199	213	228	244	**1.987**
Q4	12	1.809	2.466	301	306	311	317	323	330	338	346	355	366	377	**3.669**
	13	2.467	3.288	129	142	155	169	183	197	212	227	243	259	276	**2.193**
	14	3.289	4.110	59	63	71	77	87	95	106	117	131	143	158	**1.107**
Q5	15	4.111	<	95	103	109	118	127	139	151	164	179	198	218	**1.601**
			TOTAL DU	**24.982**	**26.003**	**27.094**	**28.257**	**29.501**	**30.827**	**32.244**	**33.756**	**35.372**	**37.096**	**38.936**	**344.068**

3.1.6. Classification of New Dwellings

Demand for new dwellings was classified according to income level and with the type of financing (please see housing finance in Chapter 5) into four categories:

Exhibit 14: Classification of Demand of New Dwellings (2012-2022)

	New Dwellings (including backlog) to be built 2012-22	DU	%
	Social Housing	43.436	12,62%
	Affordable Housing	186.163	54,11%
	Mid-range Housing	112.867	32,80%
	Premium Housing	1.601	0,47%
		344.068	*100,00%*
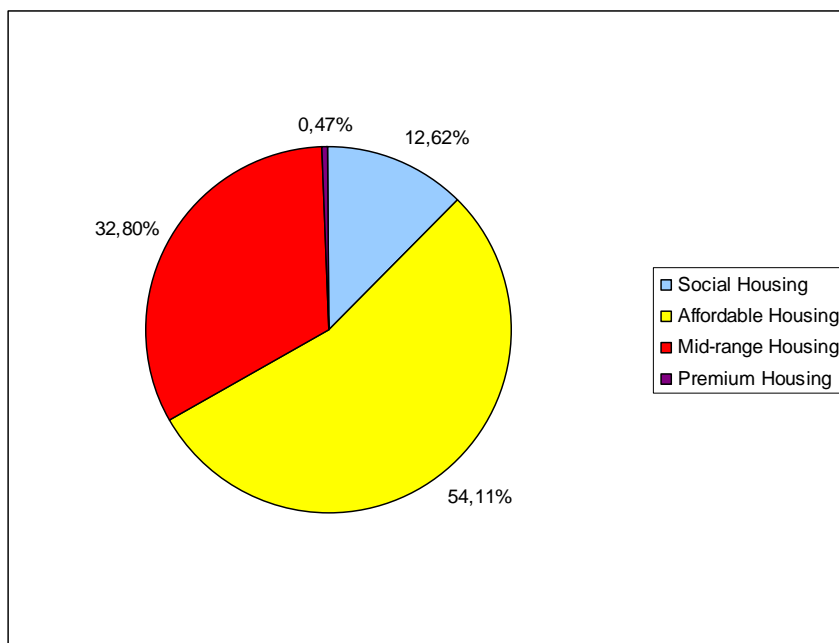
→ *Social Housing : 43,436 DU (12.62% of new demand)*
For households below the poverty line, earning less than RWF 35,500 per month (USD 59 per month). This type of demand will necessarily be met by the government through a subsidy system yet to be determined. Analysis of best practices using public, private and public/private solutions should be explored and a variety of solutions tested in Kigali.

→ *Affordable Housing: 186,163 DU (54.11% of new demand)*
This is demand from households earning between RWF 35,501 and RWF 200,000 per month (USD 329 per month). It is the largest segment of the market. Households have some payment capacity and different "best practices" for addressing this category should be explored. One option elaborated below is a special rental market which may include, for instance, leasing or rent-to-own mechanisms. There will likely be other variations on this theme as well as policy strategies that will require builders of higher end housing to include this category in their developments. For example, permits for higher end housing can require a certain percentage of this category of housing be built.

→ *Mid-range Housing: 112, 867 DU (32.80% of new demand)*
This subcategory includes a wide variety of income segments from approximately RWF 200,001 (USD 335 per month) up to 2,500,000 RWF per month (USD 4,111 per month). It is the second largest segment and most of it would be eligible for traditional mortgage financing if lending institutions decide to liberalize their mortgage programs.

→ *Premium Housing: 1,601 DU (0.47% of new demand).*
This is housing demand for the highest income segments of Kigali, in Q4 and Q5.This segment is currently covered by existing mortgage financing.

3.1.7. Affordable Housing Demand and Market Demand

The above analysis categorizes housing according to household's ability to pay and suggests general groupings based on quintiles which will help to analyze and implement housing policies, finance and design.

From another perspective however, that of the "market", banking, and investment, it is useful to divide housing between that which can be satisfied by financial institutions through mortgages and other conventional financial instruments and that which will need subsidies and special policies to support.

Based on the findings of research on housing finance in Kigali (see section 3.8), it is envisaged that financial institutions may, in the near future, offer mortgages to households with incomes of RWF 200,000 per month, and above. This includes the highest segment of Q 1 and Q2 to Q5. For all the other Q1 segments, non-market solutions must be found. This group has been divided into two categories: "Affordable" and "Social" housing.

While the term affordable housing is used to define households that do not pay more than 30% of their gross income to access housing, for the purpose of this study, the same term is used to define a segment of the housing market that includes households with incomes ranging from RWF 33,501 to 200,000. In this range, housing demand in Kigali for 2012-2022 will reach 186,163 DU (an average of 16,923 affordable DU per year); and is equivalent to 54.11% of total new demand.

The category of "affordable housing" in this study must be contrasted with the category of "social housing", which falls in the lowest income segment of Q1, below the poverty line; and where there is a demand for 43,436 DU (12.62%), which are classified as "social demand" since these households need full subsidy in order to access housing.

Market demand -- formed by households that can afford payment of DU without outside support -- reaches 114,468 DU, and consists of demand from households in the upper segment of Q1, and Q2 to Q5 (33.27%).

3.2 Housing and Housing Finance Preferences

3.2.1 Survey Results

In order to refine the design of housing typology, a Preferences Survey using qualitative methodology (focus group) was undertaken. This survey was used to identify attitudes and preferences of potential end-users about housing and housing finance preferences.

The selection of focus groups discussions participants is not statistically but purposively oriented. Four focus group discussions were held, two with low- income groups and two with middle income groups. The discussions focused on attitudes, preferences towards affordable housing and financing strategies. The following table provides details of the income levels of participants.

Exhibit 15: Focus Group Participant's Income Levels

Essentially, the informants -- especially in low-income groups -- have indicated that they are <u>dissatisfied</u> with their current living conditions and therefore wish to improve or leave their current house because they consider it inadequate.

Household income by intervals (Rwf)	Category of interviewees		
	Middle	Low	Total
Less than 50000	0	5	5
	0.00%	18.50%	18.50%
50001-100000	0	6	6
	0.00%	22.20%	22.20%
100001-150000	0	2	2
	0.00%	7.40%	7.40%
Above 200000	13	1	14
	48.10%	3.70%	51.90%
	13	14	27
	48.10%	51.90%	100.00%

All the respondents want safe and decent houses but according to them, they are not affordable. Both income groups' preferences are for single story houses with basic facilities. However, the middle-income groups were not necessarily opposed to apartments especially for households without children. They also thought apartments should provide a range of communal amenities including play areas if children were to live in them.

Although most respondents expressed needs to acquire their own house due to the fact that renting is very expensive, most of respondents repeatedly showed the lack of financial capacity. All respondents are willing to pay back a loan if they are financially supported but at an affordable price.

An affordable payment varies between 15,000 RFW and 50,000 RFW per month for low-income group (house ownership). As far as renting (ordinary houses and apartments) is

concerned, the low-income group respondents indicate that they cannot go beyond 35,000 RFW. The amount to be paid for house ownership by middle-income group varies between 80,000 RFW and 200,000 RFW per month.

However, the willingness to acquire housing may be limited by access to finance. Results indicate that while most of respondents made substantial use of formal and informal financial systems, a need for more financial and practical supports like subsidies, public transportation and protection from exploitative landlords is very urgent. Needless to say, economic development is an overarching element of citizens' ability to pay rent; and housing development can be a component of economic growth. Planners and policy makers should consider households opinions, preferences and needs regarding the essential factors to be considered in the design and allocation of the project by identified suitable location, safety and security, and privacy.

3.2.2 Housing Preferences

- **Preferences of low income households**

  - A house that is affordable compared to the household's income

  - A low-rise dwelling built with materials that could resist rain

  - Low maintenance costs

  - Indoor toilet facilities

  - Private and separate bedrooms

  - Orderly distribution in urban setting

  - A dwelling that could be upgraded and developed over time

  - Access to utility infrastructure (water, sewerage and waste collection/recycling electricity and transport)

  - Located in proximity to schools and other services and to work place

  - Possibility to install a home-base family business

  - Safety from natural risks. Security, especially for female children

- **Preferences of medium income households**

  In addition to the above, medium income households indicate their willingness to live in apartments, provided that they have access to common areas where their children could play safely and where they can socialize.

3.2.3. Housing Finance Preferences

- The focus groups first showed a high usage of financial products:

  - All groups used deposit or savings accounts; some participants used several types of accounts.

- Credit products are commonly obtained by middle income households, much less by low income participants.

- Some participants had applied for housing loans. They found the process complicated and intimidating.

This first set of findings is good news as it confirms that financial inclusion has increased in Kigali. It shows a typical progression in accessing financial services: all income levels have access to basic services (deposit/savings accounts), the middle class is also able to access short terms loans. Housing loans however, remain out of reach of most participants and it is clear that some effort should be made to facilitate access to mortgage finance by simplifying the loan application process if possible. Some financial education on home ownership and housing finance would also help empowering the end-users.

- **Preferences of low income households**

  - Participants wished for affordable loan (monthly installments in the range of RWF 15,000 to RWF 50,000).

  - Some participants said that the interest rate should be lower than it is at present and suggested a subsidized interest rate.

  - In the case of rent, payment should not go beyond RWF 35,000.

- **Preferences of medium income households**

  Participants also stressed the need for affordable loans (monthly installments in the range of RWF 80,000 and RWF 200,000).

3.3 Housing Typology

3.3.1. Baseline Criteria

Housing typology is a tool to translate the general standards set by the planning documents into practical directions to developers and architects, so that the City of Kigali develops as projected and envisioned by master plans. Housing:

- Must comply with planning standards.

- Must meet basic needs and aspirations of the inhabitants.

- Must be feasible in economic, financing and technical terms.

3.3.2 Land Available for Development

The first step in the process for proposing housing typology in Kigali is to analyze density factors based on master planning assumptions for preservation of ecological lands such as wetlands and slopes. This gives us an estimation of land available for development.

According with KCMP there is 35,590 Ha for new development in Kigali (see Exhibit 17). In addition, it was estimated that about 234 Ha will be freed for re- development in informal settlement areas due to replacement and/or relocation (see following exhibit).

Exhibit 16: Land Available for New Development in Informal Settlements

Total Replacement/Backlog DU	108.803	DU
Mean Floor Area per DU (m²)	53,5	m²
1. Total Floor area of Replacement/Backlog	5.820.974	m²
2. Estimated Existing Net Residential (1. = 80%)	582,10	Ha
3. Estimated Existing Common Uses (20%)	145,52	Ha
Total area for redevelopment (2.+3.)	**727,62**	**Ha**

Exhibit 17: KCMP – Land Available for New Growth

District	Sector	Hectares	Urban Area	Natural Constraints	Growth Potential(Ha)	Growth Potential(%)	Notes
Gasabo	BUMBOGO	6,019	0.3%	48.65%	3,075	51.1%	high growth potential
	GATSATA	603	26.7%	69.05%	25	0%	
	GIKOMERO	3,487	0.0%	53.25%	1,630	47%	
	GISOZI	850	17.2%	40.20%	362	42.6%	
	JABANA	3,651	2.7%	57.57%	1,452	40%	
	JALI	3,758	1.0%	68.93%	1,131	30%	
	KACYIRU	582	70.9%	23.39%	33	6%	
	KIMIHURURA	489	60.2%	10.61%	143	29%	
	KIMIRONKO	1,146	44.0%	2.37%	614	53.6%	
	KINYINYA	2,464	7.3%	19.62%	1,800	73.1%	
	NDERA	5,026	2.2%	37.02%	3,055	60.8%	high growth potential
	NDUBA	4,681	0.0%	64.28%	1,671	35.7%	
	REMERA	704	63.1%	0.32%	258	36.6%	
	RUSORORO	5,256	2.4%	39.59%	3,051	58.0%	high growth potential
	RUTUNGA	4,286	0.2%	66.14%	1,443	34%	
	Subtotal	**43,002**	**5.5%**	**36.09%**	**25,122**	**58.4%**	
Kicukiro	GAHANGA	3,669	0.8%	45.64%	1,966	53.6%	
	GATENGA	1,133	16.8%	29.82%	605	53.4%	
	GIKONDO	352	74.0%	35.41%	0	0%	33 Ha targeted for redevelopment
	KAGARAMA	968	18.9%	26.67%	527	54.4%	
	KANOMBE	2,460	11.4%	46.57%	1,035	42.1%	
	KICUKIRO	213	93.6%	1.99%	9	4%	
	KIGARAMA	778	25.8%	31.53%	332	43%	
	MASAKA	5,240	3.4%	54.16%	2,221	42.4%	high growth potential
	NIBOYE	504	63.9%	11.67%	123	24%	
	NYARUGUNGA	1,384	26.7%	30.39%	594	42.9%	
	Subtotal	**16,702**	**13.3%**	**42.56%**	**7,379**	**44.2%**	
Nyarugenge	GITEGA	117	100.0%	45.55%	0	0%	53 Ha targeted for redevelopment
	KANYINYA	2,465	0.4%	77.74%	538	22%	
	KIGALI	3,031	1.1%	71.54%	828	27%	
	KIMISAGARA	320	61.0%	51.78%	0	0%	
	MAGERAGERE	5,502	0.4%	69.57%	1,655	30.1%	
	MUHIMA	292	85.7%	45.94%	0	0%	92 Ha targeted for redevelopment
	NYAKABANDA	240	65.4%	32.78%	4	2%	
	NYAMIRAMBO	895	34.7%	33.71%	283	32%	
	NYARUGENGE	456	90.9%	16.19%	0	0%	32 Ha targeted for redevelopment
	RWEZAMENYO	103	100.0%	0.70%	0	0%	
	Subtotal	**13,423**	**12.0%**	**64.97%**	**3,089**	**23.0%**	
	TOTAL	**73,128**	**8.5%**	**42.87%**	**35,590**	**48.7%**	

Source: Kigali Conceptual Master Plan, chapter 3, exhibit 3.7a

3.3.3. Estimating Average Density

The second step in housing typology design is to estimate the average density required by projected housing needs based on total DU/available land. Gross density is the number of DU/total land available. The gross density projected for 2040 is 32 DU/Ha.

But we also need to identify net density, which is calculated by reducing the gross land area by area devoted to city wide infrastructure, open space and city level community facilities (not including neighborhood facilities). If these "common" areas are removed from developable land, the required densities become much higher. Exhibit 18 shows that, in

2040, average net residential density of newly developed areas in Kigali should reach 80 DU/Ha.

Exhibit 18: Estimation of Average Density

Year	2011	2022	2030	2040	Total
DU Required	223.000	458.265	716.309	1.251.932	
New DU		235.265	258.045	535.623	
Backlog		108.807			
Total DU		**344.072**	**258.045**	**535.623**	**1.137.740**
		100%	100%	100%	

DU in 2040	**1.137.740**	**DU**
LAND FOR NEW DEVELOPMENT (KCMP)	35.590	Ha
REDEVELOPMENT OF INFORMAL SETTLEMENTS (30%)	235	Ha
Total Land for Development of New DU	35.825	Ha
Gross Density (Available Land/DU) - 2040	**32**	**DU/HA**
Net Density		
Common Uses (Ha)	**21.354**	**60,00%**
Transport/Circulation		*20,00%*
Industrial/Logistics (Secondary Sector)		*10,00%*
Commercial/Services (Tertiary Sector)		*10,00%*
City Scale Public Use		*20,00%*
Residential (Ha)	**14.236**	**40,00%**
Net Density Residential - 2040	**80**	**DU/HA**

3.3.4. Existing Housing Typology

The next step in defining the ideal housing typology for Kigali is to analyze the existing housing typology. In combination with preferences, density requirements, costs, etc, this informs the development of site plans, building envelopes, height, and other factors that define the proposed housing typology.

- **Low income households** live in informal, unplanned settlements (slums). Housing units are built with mud bricks and temporary roofing materials and are subject to damage due to rain. Many dwellings are subdivided into rental units. Toilet facilities are normally outside the units. The degree of overcrowding is high, there is little privacy and security and utility infrastructure is insufficient.

  Medium and high income households live in formal or informal units built with durable materials, in detached, fenced, low rise dwellings or apartments.

3.3.5 Recommended Housing Typology

A. Basic Principles

- **Development in Incremental Steps**
  - Dwelling Units should give to the household the possibility to increase and improve their house over time.
- **Adapt dwelling to income level**
  - Low-rise housing for low-income households
  - High-rise housing for middle and high-income households
- **Maximum height: four to five storeys**
  - Allows sufficient urban density
  - Allows apartments without elevator
  - Allows inexpensive hybrid technology

B. Density and Height

Given the density demands for providing an average of 80 DU/hectare net, the existing housing typology, and housing preferences of the Kigali population, a Density/Height matrix was developed to show options for achieving these goals. Each density (high, medium and low) can be achieved through a variety of form based options, ranging from 1 to 16 stories and site coverage ranging from locations in the center of parcels to distributing the buildings over the site.

Exhibit 19: Density and Height Parameters

	NUMBER OF STOREYS					
	1	2	4	8	12	16
HIGH DENSITY (1.5 m2/ m2)	NO	NO	144 DU/Ha	144 DU/Ha	144 DU/Ha	144 DU/Ha
MEDIUM DENSITY (1 m2/ m2)	NO	96 DU/Ha	96 DU/Ha	96 DU/Ha	96 DU/Ha	NO
LOW DENSITY (0.5 m2/ m2)	48 DU/Ha	48 DU/Ha	48 DU/Ha	48 DU/Ha	NO	NO

The graphic to the right shows height options for each density, ranging from 1 to 16 stories. *These are property development and architectural programming options, NOT urban design/site planning/architectural design.*
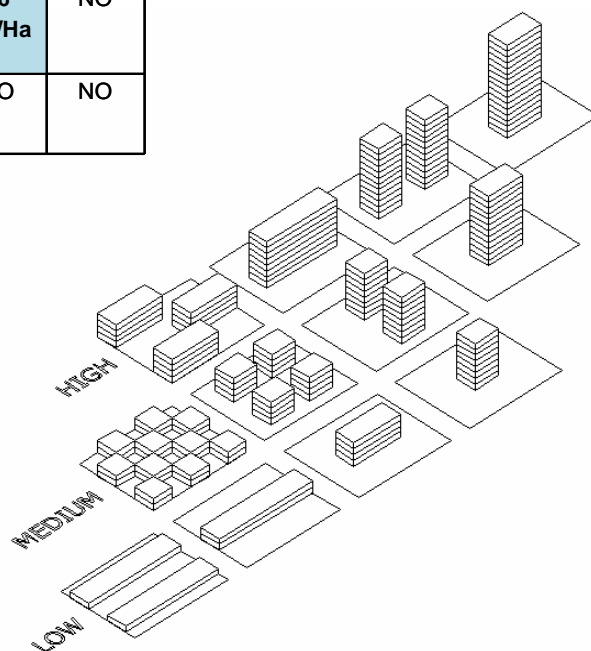
C. Technology and Cost

Based on local conditions, existing building materials and technology adequateness, three construction techniques are recommended for housing typology in Kigali:

- Temporary: walls of mud bricks, roofs of sticks and corrugated sheets, floor of cement screed. It can be used only for one-storey houses, and is easily replaced with more permanent structure in the course of the time.

- Hybrid: load bearing walls of sand and cement hollow blocks, reinforced concrete tie-columns and ring-beams. It is used for buildings up to six floors.

- Reinforced concrete frame, in which walls have no load-bearing function. RC frame construction is considered as compulsory beyond five storeys.

- Application of innovative techniques using local materials should be encouraged. An example: *Hydraform*, interlocking dry-stacking blocks of soil with 12% of cement compressed in a machine. The following table shows the cost structure estimated for these three construction techniques:

Exhibit 20: Cost Structure

Exchange Rate RwF/USD   608,27

Technology	Low		Medium		High	
	Temporary		Hybrid		RCF	
ITEM	RwF/M2	%	RwF/M2	%	RwF/M2	%
I. DIRECT COST	**38.338**	**100%**	**120.728**	**100%**	**333.576**	**100%**
1. Land	168	0,44%	168	0,14%	8.340	2,50%
2. Site Development	4.520	11,79%	4.520	3,74%	5.480	1,64%
3. Building	33.650	87,77%	116.040	96,12%	319.756	95,86%
3.1 Structure	30.610	79,84%	74.610	61,80%	207.826	62,30%
3.2 Finishing	3.040	7,93%	41.430	34,32%	111.930	33,55%
II. INDIRECT COST	**13.235**	**100%**	**54.528**	**100%**	**183.667**	**100%**
4. Professionnal Services	1.917	14,48%	9.055	16,61%	25.018	13,62%
5. Building Permit	200	1,51%	200	0,37%	200	0,11%
6. Financial (During Building Time)	5.367	40,55%	21.127	38,75%	58.376	31,78%
7. Sales & Marketing	0	0,00%	0	0,00%	16.679	9,08%
8. Developer Margin	5.751	43,45%	24.146	44,28%	83.394	45,41%
Total in Rwf/m²	**RWF 51.572,92**		**RWF 175.255,60**		**RWF 517.242,80**	
Total in USD/m²	$85		$288		$850	

I. Direct Cost	RWF 38.338	74,34%	RWF 120.728	68,89%	RWF 333.576	64,49%
II Indirect Cost	RWF 13.235	25,66%	RWF 54.528	31,11%	RWF 183.667	35,51%
Total	RWF 51.573		RWF 175.256		RWF 517.243	

D. Proposed Architectural Typology

Based on the above analysis three basic types of dwellings are proposed:

- Type A : Basic House. This consists of a parcel with basic utility services, a basic roof built with temporary technology and an enclosing wall, mostly for lower income households in Q1 and Q2. Type A could be built using auto-construction by the future occupant (A1) or by contractor (A2).

- Type B: Row House. These are contiguous dwellings aligned into rows or clusters. This typology is proposed for Kigali due to the fact that it could be adapted to several topographic conditions, urban densities and uses. It could be single or multiple occupancy and single or multi-storey. Moreover, this typology is cheaper to build and can be enlarged and improved in the course of the years; also, there are no charges for the maintenance of semi-public space such as common entry, stairs and so on. Allows incremental building while providing privacy and security to its occupants, and responds to housing preferences expressed in the Focus Group survey. Type B would be built in hybrid technology and developed incrementally, mostly for households in Q3 and Q4.

- Type C: Apartment.These are units built in four-storey structures, with each building including one or more dwellings in horizontal or vertical property. Apartments will be built with reinforced concrete frame or reinforced walls with hybrid technology, enjoy common amenities and will be destined mostly to middle income households in Q4 and higher income households in Q5 which can afford multi-storey dwelling units and can afford energy costs and other costs associated with indoor living and cooking. Apartment buildings could be interspersed into row-housing areas in order to form mixed neighborhoods. Over time, row housing plots could be converted into apartments.

Exhibit 21: Proposed Typology

Type C: Apartments

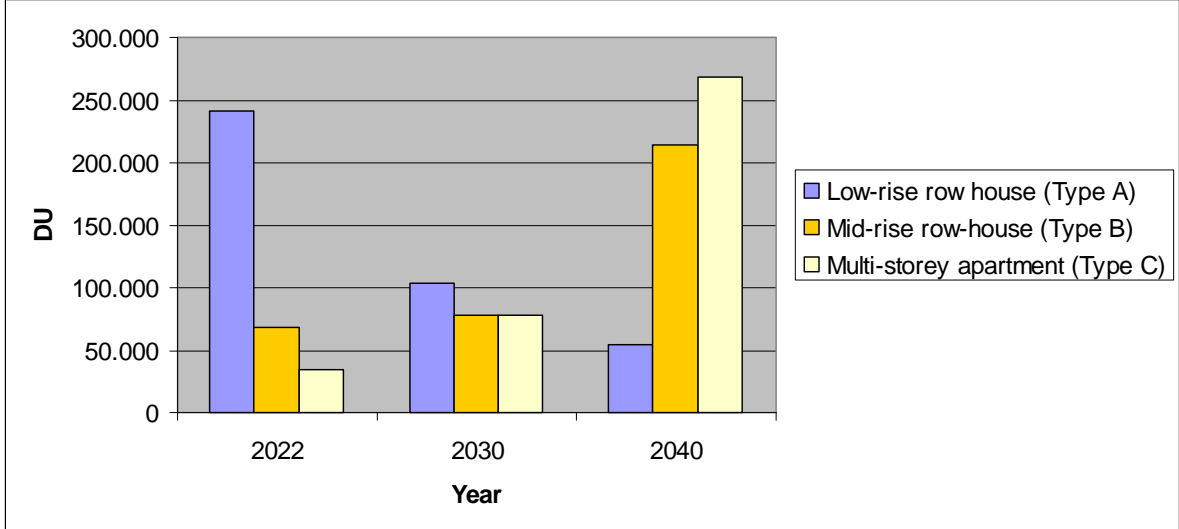Type B: Row Houses

Type A: Basic House
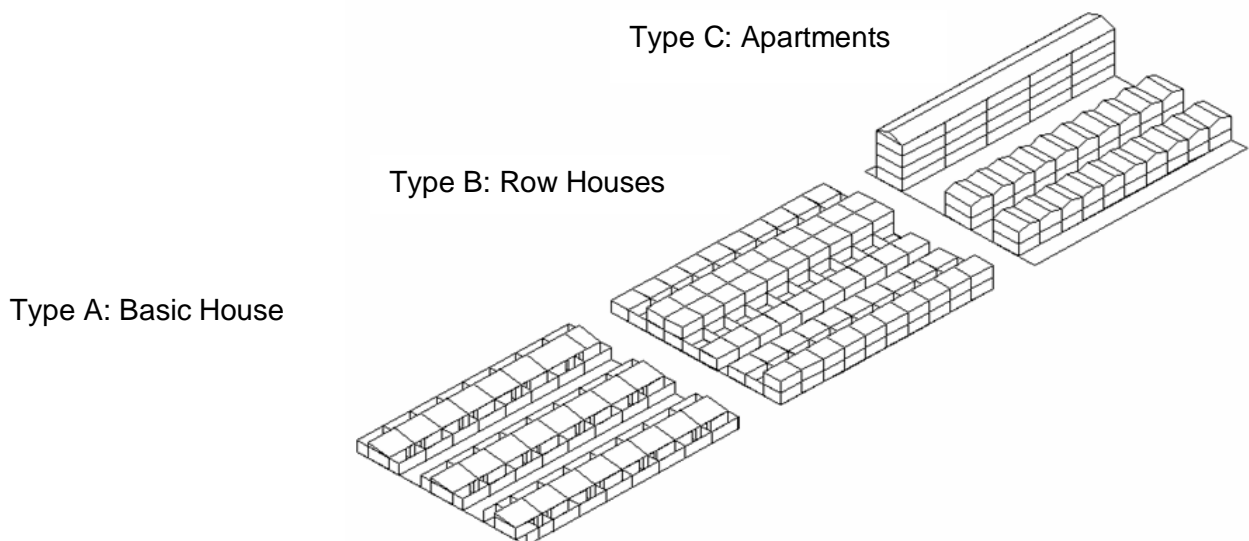
As in the case of height and density programming, it is important to highlight that, the graphic used to illustrate typology do not represent site plans or architectural designs. They are merely "programming models" for space and density.

As applied to sites, they would be modified and adapted to site conditions, socio-economic characteristics of end-users, and other factors such as design for open space, community facilities, and transportation.

3.3.6 Kigali: Changing Typologies over Time

The proposed housing typology should be introduced in Kigali in an incremental manner, in order to adapt to existing and future income capacity and mind-setting of the city's population. Exhibit 22 shows a possible scenario, where typology A is dominant until 2022, with typologies B and C gradually growing in importance. Then, in the year 2040, it is expected that the three typology will have a balanced presence in the city (please see exhibits 19 and 20).

Exhibit 22: Development of Proposed Typology in Kigali 2012-2040

	2022	2030	2040	Total	Proportion
Low-rise row house (Type A)	240.850	103.218	53.562	397.631	34,95%
Mid-rise row house (Type B)	68.814	77.413	214.249	360.477	31,68%
Multi-storey Apartment (Type C)	34.407	77.413	267.812	379.632	33,37%
Total DU	344.072	258.045	535.623	1.137.740	100%

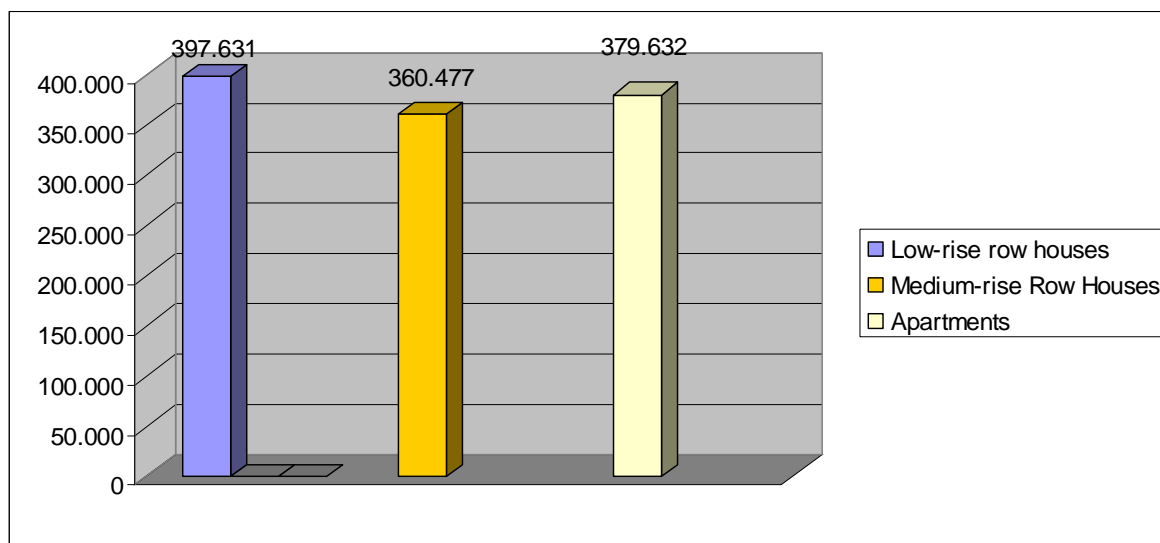**Exhibit 23: Proposed Typology in Kigali at Build-up in 2040**

Exhibit 24: Development of Proposed Typology in Kigali 2012-2040

Typology	2022	2030	2040	Total	Proportion	Net Density DU/Ha
A. Low-rise Row Houses (1 or 2 storeys)	**240.850**	**103.218**	**53.562**	**397.631**	**34,95%**	**86**
Proportion	70%	40%	10%			
Land Surface	3.035	929	675	*4.639*		
Parcel Size (m²)	*90*	*90*	*90*			
Net Residential Land	*2.168*	*929*	*482*			
Common Uses	*867*	*372*	*193*			
B. Mid-rise Row Houses (2 to 4 storeys)	**68.814**	**77.413**	**214.249**	**360.477**	**31,68%**	**159**
Proportion	20%	30%	40%			
Land Surface	434	488	1.350	*2.271*		
Parcel Size (m²)	*45*	*45*	*45*			
Net Residential Land	*310*	*348*	*964*			
Common Uses	*124*	*139*	*386*			
C. Apartment Blocks (4 storeys)	**34.407**	**77.413**	**267.812**	**379.632**	**33,37%**	**317**
Proportion	10%	30%	50%			
Land Surface	108	244	844	*1.196*		
Parcel Size (m²)	*23*	*23*	*23*			
Net Residential Land	*77*	*174*	*603*			
Common Uses	*31*	*70*	*241*			
Total DU	**344.072**	**258.045**	**535.623**	**1.137.740**	**100,00%**	
Total Residential Land Requirements (Ha)	**3.143**	**1.173**	**1.518**	**8.105**		

3.3.7. World Examples

A selection has been made of world examples which, regardless of particular design preferences, *reflect the application of principles supported by this study* (please see Chapter 4 for more details). These examples comply with one or several of the following criteria.

- Demanding topographic location, similar to the sloping terrain of the Rwandan hills.
- Climatic conditions requiring strong natural ventilation against humidity (rather than isolation from extreme temperatures.)
- Moderate size of the dwellings, near the average of 72m^2 proposed in this study.
- Potentiality for enlargement and/or improvement of the dwellings.
- Use of local or readily available materials.
- Construction cost affordable to income segments identified by this study.
- Replicability: some examples combine more of the above criteria than others; hence they are naturally apt to closer imitation in the Rwandan environment.
- Originality of design beyond the common, unimaginative patterns.
- Cultural setting in highly animated, popular environment.

Following, a summary list of selected world examples (please see Chapter 4). The list contains cost information and scoring for each example according with the criteria met by said example.

Exhibit 25: List of World Examples

#	Name	Location	Architect	From	To	Income Quintile	Originality	Cultural Setting	Topographic Condition	Moderate Size	Climatic Conditions	Potential for Enlargement	Affordable Cost	Use of Local Materials	Replicability	Score	Technology	Cost USD/m²	From	To
1	Standford Housing Initiative	South Africa	Frederik Groos	45	70	1		1		1	1		1	1	1	6	Temporary	$85	$3.825	$5.950
2	Standford Housing Initiative	South Africa	Frederik Groos	36,5	40	1		1		1	1		1	1	1	6	Temporary	$85	$3.103	$3.400
3	Luanda House	Angola	Sousa, Ferreira, Coelho, Silvia, Madureira		100	1	1	1		1	1			1		5	Hybrid	$288		$28.800
4	Subsidized Housing	South Africa	26'10 South Architects, Peter Rich	38	44	1	1	1		1	1		1	1	1	7	Hybrid	$288	$10.944	$12.672
5	Subsidized Housing	South Africa	26'10 South Architects, Peter Rich	36	42	1	1	1		1	1		1	1	1	7	Hybrid	$288	$10.368	$12.096
6	Dharamshala	India	Matharoo Associates		75	1	1			1	1		1	1		5	Hybrid	$288		$21.600
7	Bouca	Portugal	Alvaro Siza	72	80	2	1			1	1		1	1		5	Hybrid	$288	$20.736	$23.040
8	Built VSDsD	Chile	Alejandro Elemental	30	72	2	1			1	1	1	1	1		6	Hybrid	$288	$8.640	$20.736
9	Quinta de Malagueira	Portugal	Alvaro Siza	65	130	2	1		1	1	1		1	1		6	Hybrid	$288	$18.720	$37.440
10	Djenan el Hasan	Algeria	Roland Simounet	n.a.	n.a.	2	1	1	1	1	1		1	1	1	8	Hybrid	$288	n.a.	n.a.
11	Pelip Housing	South Africa	Noero Wolff	40	80	2	1	1		1	1	1	1	1	1	8	Hybrid	$288	$11.520	$23.040
12	Incremental Housing	India	Charles Correa	45	70	2			1	1	1	1	1	1	1	8	Hybrid	$288	$12.960	$20.160
13	Social Housing	Spain	Antonio Jimenez & Elisa Valero		70	3	1		1	1	1		1	1	1	7	Hybrid	$288		$20.160
14	Self Built Houses	Spain	Antonio Jimenez & Elisa Valero		70	3	1			1	1		1	1	1	6	Hybrid	$288		$20.160
15	Bio Climatic Social Housing	Spain	Gabriel Verd & Simone Solinas		90	3				1	1		1	1	1	6	Hybrid	$288		$25.920
16	Siedung Halen	Switzerland	Atelier 5	160	180	3	1		1						1	3	Hybrid	$288	$46.080	$51.840
17	Oxley Woods	England	Rogers Stirk Harbour + Partners		60	3	1			1			1	1	1	5	Hybrid	$288		$17.280
18	Social Housing	Italy	Giorgio Macola & Adolfo Zanetti	45	90	4	1			1			1	1	1	5	Hybrid	$288	$12.960	$25.920
19	Rokko Housing	Japan	Tadao Ando		77	4	1		1	1			1		1	5	RCF	$850		$65.450
20	MD Houses	Danemark	Bjarke Ingels		90	5	1		1	1			1		1	5	RCF	$850		$76.500
21	MD Houses	Spain	Foreign Office Architects	44	79	5	1			1	1		1		1	5	RCF	$850	$37.400	$67.150

3.4 Housing Finance

3.4.1 Financial Inclusion

Accessing a housing loan is one of the last steps in financial inclusion; a natural progression goes from using a simple deposit or savings account, accessing short term credit which in turn builds good a credit history. Housing finance comes at a later stage. Therefore the level of financial inclusion in Rwanda is an indicator of the potential to increase the provision of housing finance over time. The level of financial inclusion is quite high in Kigali as national statistics show that 67.5% (see exhibit 26) of the population use a savings account and therefore have access to formal financial services.

Exhibit 26: Financial Inclusion in Other African Countries
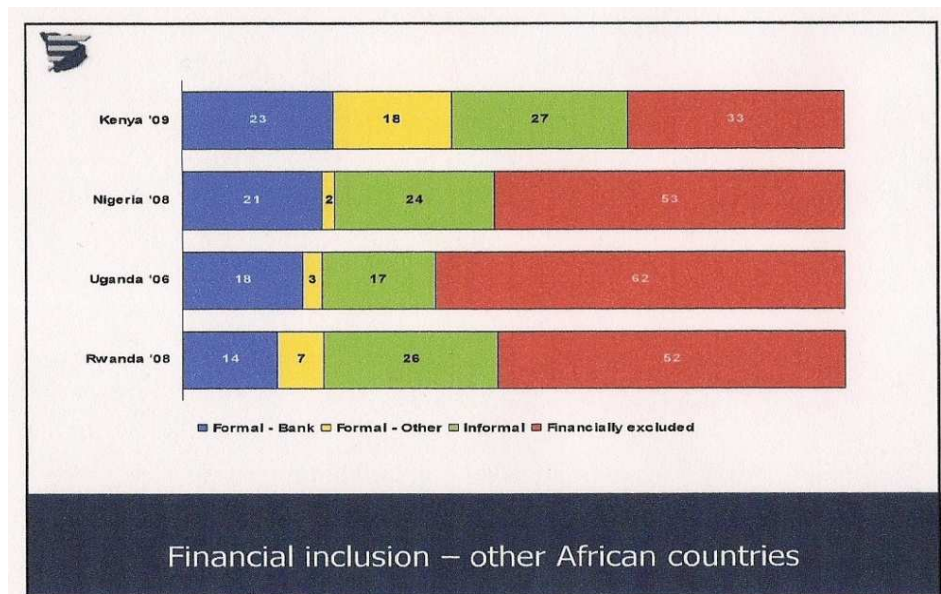
Source: *Access to Financial Services in Africa,* Maya Makanjee, African Women's Economic Summit, Nairobi, 2010

Exhibit 27: Households with at least one Savings Account (2006-2011)
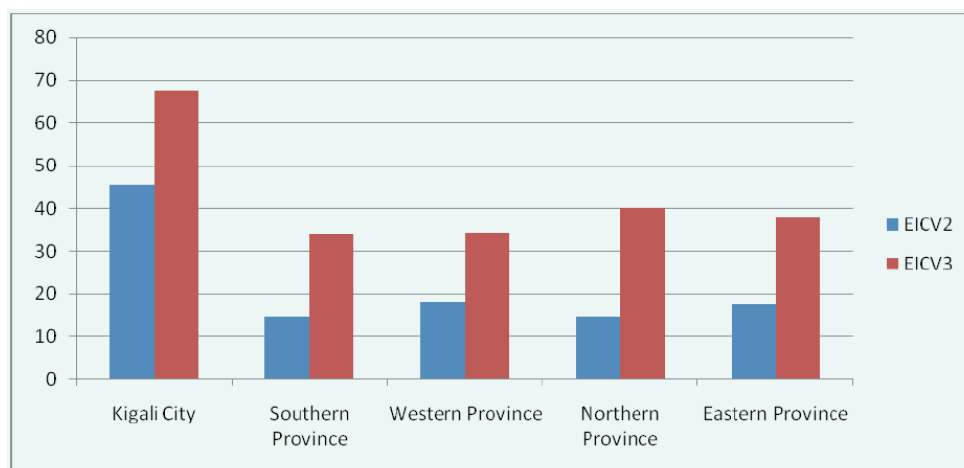
Source: NISR/EICV

3.4.2. Current State of Housing Finance in Kigali

There has been a clear increase in the provision of mortgage finance in Rwanda since 2004. The provision of mortgage finance has been recently estimated between RWF 64.7 and RWF 84 billion. The number of banks offering mortgage finance is also greater than a few years ago. In 2012, the main providers of mortgage finance are BCR, KCBR, BK, and BRD. A few microfinance institutions such as Zigama CSS are also actively growing their mortgage loan portfolio. BNR has taken over BHR mortgage assets (valued at RWF 8 Billion) and by issuing new loans, has doubled the value of the portfolio.

Due to increased competition, loans terms and conditions are also becoming more favorable for the clients:

- Interest rates are falling, from a reported 19% p.a. 2 years ago to a rate of 16% or even 15% p.a. in 2012.

- Required down payments are also lower now than 5 years ago when a 30% client's contribution was the norm. Now most banks require 10% to 20%. There is also a new initiative, the Collateral Replacement Indemnity under which clients can buy an insurance product that substitutes the down payment.

- Loan repayment tenure has increased: from a reported maximum of 7 years in 2006, banks now propose loans over 15 to 20 years.

- Some banks are also stretching the criteria used for calculating repayment capacity and consider repayment up to 50% of household income.

- Banks are now starting to target lower income levels. If traditionally, mortgages have been used to finance houses or building projects that had a total value above RWF 50 million, commercial banks are now financing projects or purchase of lower values; the minimum mentioned was of Rwf 5million.

Long term funding has been one of the major constraints to the development of mortgage finance in Rwanda. However, this has started to ease out as the banks are using various sources of funding such as issuing corporate bonds, using their own or their parent company's equity or, borrowing from international organizations. However, these individual efforts have their limits and there is a need for a more systematic mechanism to channel long term funding.

Exhibit 28: Access to Housing Finance in Kigali

There is no housing microfinance as such in Rwanda or at least there is no microfinance product specifically designed for housing use. However, there is some anecdotal evidence that generic micro-loans are used for small housing projects, especially in the rural areas which show that there is a clear demand for small non-mortgage housing loans which would be better satisfied with a product specially designed to that effect.

Mortgage financing is accessible to households with monthly income greater than

3.8% > 900,000

29.5% 200,000 – 900,000

66.7% < 200,000

Poverty line
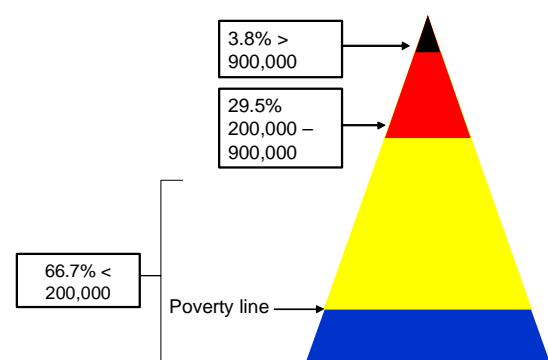
RWF 900,000 (3.54% of population in Rwanda). In 2012, 74.4% of HH had no access to housing finance. A housing loan is one of the last steps in financial inclusion. In Rwanda, where there is a low level of financial intermediation, in 2009, 52% of the population did not use any formal or informal financial products (see exhibit 25).

3.4.3. Affordability

Exhibit 29 shows household payment capacity -- estimated at 30% of gross income – that was applied to a housing loan over a period ranging from 10 to 20 years according to income strata. The interest rate applied is 15%, which is presently the most favorable on the market. Assuming increased competition in mortgage lending and stable macro-economic conditions, it was agreed that 15% interest rate was a reasonable average.

Comparing total repayment capacity with the cost of DU, the difference, positive or negative, provides an indication of affordability. The red-colored differential (far-right column) shows those households that require some sort of support in order to access housing.

Exhibit 29: Estimation of Affordability

| Quintile | Monthly HH Income RwF | | Median Income | Monthly Payment | | Credit Capacity | | | Down Payment | | Total Payment Capacity | DU Type | Investment per DU | Diferential | Number of Units |
	From	To		% of Income	Monthly Payment Value	Annual Interest Rate	Term (Years)	Loan Amount	As % of Loan	Down Payment Amount					
Q1-1-1	<	8.500	4.250	n/a	0			0				A1	2.711.089	-2.711.089	971
Q1-1-2	8.501	16.500	12.501	n/a	0			0				A1	2.711.089	-2.711.089	7.522
Q1-1-3	16.501	33.500	25.001	n/a	0			0				A1	2.711.089	-2.711.089	34.943
Below Poverty Line													Subtotal Below Poverty Line		43.436
Q1-1-4	33.501	50.000	41.751	33%	13.778	8%	10	1.135.576	7.5 years	1.239.990	2.375.565	A1	2.711.089	-335.524	26.081
Q1-1-5	50.001	66.500	58.251	33%	19.223	10%	8	1.266.802	5 years	1.153.360	2.420.162	A1	2.711.089	-290.927	26.081
Q1-1-6	66.501	83.500	75.001	33%	24.750	15%	8	1.379.192	3.5 years	1.039.507	2.418.699	A1	2.711.089	-292.390	26.081
Q1-1-7	83.501	100.000	91.751	33%	30.278	15%	7,5	1.630.333	2 years	726.664	2.356.997	A1	2.711.089	-354.092	26.081
			Subtotal Q1											Subtotal Q1-1	147.761
Q1	<	100.000	50.000	see detail in upper rows											147.761
	100.001	200.000	150.001	33%	49.500	15%	2,5	1.232.005	2 years	1.188.004	2.420.009	A1	2.711.089	-291.080	81.838
	200.001	300.000	250.001	33%	82.500	15%	20	6.265.250	0%	0	6.265.250	B1	4.292.407	1.972.844	39.266
	300.001	400.000	350.001	33%	115.500	15%	20	8.771.346	0%	0	8.771.346	B2	7.886.502	884.844	22.914
	400.001	500.000	450.001	33%	148.500	15%	20	11.277.441	0%	0	11.277.441	B2	7.886.502	3.390.939	14.100
Q2	500.001	600.000	550.001	33%	181.500	15%	20	13.783.536	0%	0	13.783.536	B3	11.829.753	1.953.783	9.225
	600.001	700.000	650.001	33%	214.500	15%	20	16.289.631	0%	0	16.289.631	B3	11.829.753	4.459.878	7.035
	700.001	800.000	750.001	33%	247.500	15%	20	18.795.726	0%	0	18.795.726	B4	15.773.004	3.022.722	5.147
Q3	800.001	900.000	850.001	33%	280.500	15%	20	21.301.821	0%	0	21.301.821	B4	15.773.004	5.528.817	3.627
	900.001	1.000.000	950.001	33%	313.500	15%	20	23.807.917	15%	3.571.187	27.379.104	B4	15.773.004	11.606.100	2.599
	1.000.001	1.100.000	1.050.001	33%	346.500	15%	20	26.314.012	15%	3.947.102	30.261.113	B4	15.773.004	14.488.109	1.987
Q4	1.100.001	1.500.000	1.300.001	33%	429.000	15%	20	32.579.250	15%	4.886.887	37.466.137	C1	34.913.889	2.552.248	3.669
	1.500.001	2.000.000	1.750.001	33%	577.500	15%	20	43.856.678	20%	8.771.336	52.628.013	C2	34.913.889	17.714.124	2.193
	2.000.001	2.500.000	2.250.001	33%	742.500	15%	20	56.387.154	20%	11.277.431	67.664.584	C2	69.827.778	-2.163.194	1.107
Q5	2.500.001	<	3.000.000	33%	990.000	15%	20	75.182.855	20%	15.036.571	90.219.426	C3	69.827.778	20.391.648	1.601
															344.068

3.4.4. Recommended Housing Finance Modality per Income Segment

Following an indication is given about the type of financing that would be recommended for the average household in each income group:

High and middle income segments (Q1.3, Q2, Q3, Q4, and Q5)

Mortgage finance is already available for the higher income group (people earning above RWF 900,000 per month. Assuming availability of housing units in the RWF 5 to 30 million ranges, all providers of mortgage finance have declared their willingness to go down market and to provide housing finance for lower income group (monthly income between RWF 200,000 and 900,000).

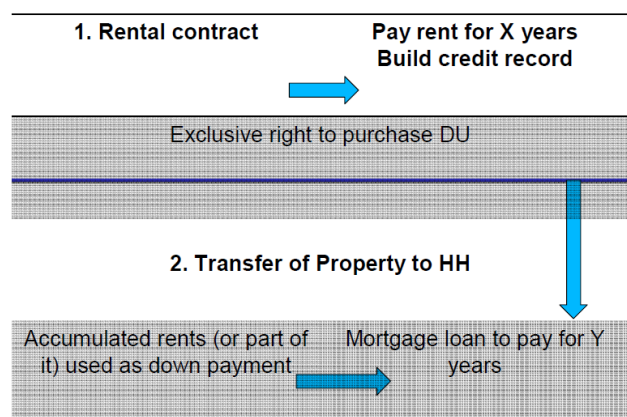***Exhibit 30: Proposed Housing Finance Mechanisms***

33.3% (3.8%+ 29.5%) Mortgage Finance

54.1% Renters Rent to Own

12.6% < Poverty Line Subsidized Housing
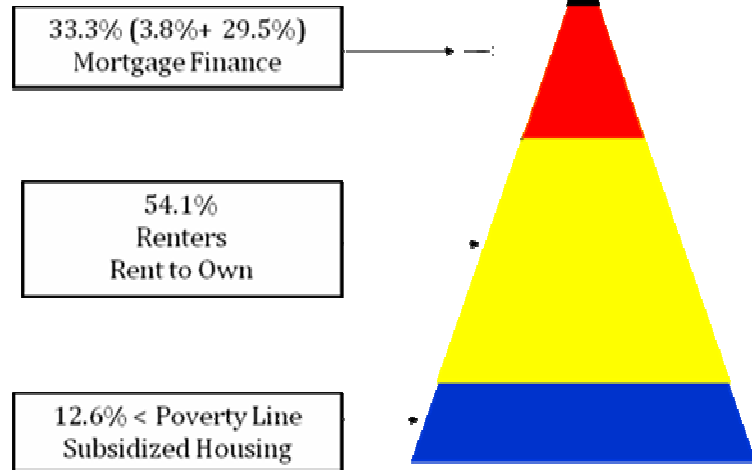
Lower income segments (Q1.2 and Q1.1.4 to Q1.1.7)

For monthly income below RWF 200,000, mortgage finance would not be accessible through the banks:

- The level of finance that could in theory be available is not enough to buy or build a house that could have a resale value and acceptable building standard. If there is no market for reselling such a property, mortgage is not an option.

- Household are often not formally employed, do not have regular income which makes long term finance extremely unlikely.

- Most households in these groups do not have any access to formal financial services.

However, most people in these brackets (between RWF 200,000 and 33,500) do pay rent and therefore should be able to contribute to the cost of the DU provided to them. A rent to own solution would fit with that rental pattern.

1. Rental contract   **Pay rent for X years**
Build credit record

Exclusive right to purchase DU

2. Transfer of Property to HH

Accumulated rents (or part of it) used as down payment   Mortgage loan to pay for Y years

The Rent to Own Model

Rent to own is commonly used in many countries such as the Unites States, Canada, the Philippines or Singapore. The mechanism is explained in the following diagram:

In several countries, rent to own has been used to transfer ownership of affordable housing units to their renters. This has been done in Queensland, Australia, for instance, and it is envisaged in Nicaragua. In Singapore there is a Rent and Purchase Scheme used as one of the "home ownership schemes for the needy. In Rwanda, households could rent a DU from a public or non-for-profit affordable house company that would be created to that effect. Exhibit 31 shows how rent-to-own could be applied to a sizable part of the Q1 income strata.

Exhibit 31: Income Segments for Rent-to-Own Mechanism

Qui	Monthly HH Income RwF From	To	Median Income	% of Income	Monthly Payment Value	Annual Interest Rate	Term (Years)	Loan Amount	Down Payment	Down Payment Amount	Total Payment Capacity	DU Type	Investment per DU	Diferential
Q1		8,500	4,250	n/a	0			0				A1	2,711,089	-2,711,089
Q1-1-	8,501	16,500	12,501	n/a	0			0				A1	2,711,089	-2,711,089
Q1-1-	16,501	33,500	25,001	n/a	0			0				A1	2,711,089	-2,711,089
Poverty Line									Years rent				Subtotal Below Poverty Line	
Q1-1-4	33,501	50,000	41,751	30%	12,525		0	0	18.5	2,780,583	2,780,583	A1	2,711,089	69,494
Q1-1-5	50,001	66,500	58,251	30%	17,475		0	0	13	2,726,123	2,726,123	A1	2,711,089	15,034
Q1-1-6	66,501	83,500	75,001	30%	22,500	15%	2	464,048	8.5	2,295,015	2,759,064	A1	2,711,089	47,975
Q1-1-7	83,501	100,000	91,751	30%	27,525	15%	2	567,685	6.5	2,146,962	2,714,647	A1	2,711,089	3,558
Q1-2	100,001	200,000	150,001	30%	45,000	15%	2.5	1,120,005	3	1,620,005	2,740,010	A1	2,711,089	28,921
Q1-3	200,001	300,000	250,001	30%	75,000	15%	10	4,648,723	0%	0	4,648,723	B1	4,292,407	356,316
	300,001	400,000	350,001	30%	105,000	15%	10	6,508,208	0%	0	6,508,208	B1	4,292,407	2,215,801
	400,001	500,000	450,001	30%	135,000	15%	10	8,367,694	0%	0	8,367,694	B2	7,886,502	481,192
	500,001	600,000	550,001	30%	165,000	15%	10	10,227,179	0%	0	10,227,179	B2	7,886,502	2,340,677
	600,001	700,000	650,001	30%	195,000	15%	15	13,932,691	10%	1,393,269	15,325,960	B3	11,829,753	3,496,207
	700,001	800,000	750,001	30%	225,000	15%	15	16,076,180	10%	1,607,618	17,683,798	B4	15,773,004	1,910,794
Q3	800,001	900,000	850,001	30%	255,000	15%	15	18,219,670	10%	1,821,967	20,041,637	B4	15,773,004	4,268,633
	900,001	1,000,000	950,001	30%	285,000	15%	15	20,363,159	15%	3,054,474	23,417,633	B4	15,773,004	7,644,629
	1,000,001	1,100,000	1,050,001	30%	315,000	15%	15	22,506,648	15%	3,375,997	25,882,646	B4	15,773,004	10,109,642
Q4	1,100,001	1,500,000	1,300,001	30%	390,000	15%	15	27,865,371	15%	4,179,806	32,045,177	B4	15,773,004	16,272,173
	1,500,001	2,000,000	1,750,001	30%	525,000	15%	20	39,869,707	20%	7,973,941	47,843,649	C1	34,913,889	12,929,760
	2,000,001	2,500,000	2,250,001	30%	675,000	15%	20	51,261,049	20%	10,252,210	61,513,259	C2	69,827,778	-8,314,519
Q5	2,500,001 <		3,000,000	30%	900,000	15%	20	68,348,050	20%	13,669,610	82,017,660	C3	69,827,778	12,189,882

Below the poverty line (lowest part of Q1)

The lowest income strata (< RWF 33,500) are below the poverty line and would not be able to pay any housing loan or even rent. At that level, this is a livelihood problem which is broader than housing. Special subsidy support should be considered for this social group.

Some Ideas for Subsidized Housing

- Public Housing: DUs remain property of the City. Nominal rent could be charged.
- Housing units delivered to low income people (South African model).
- Subsidy pays for plot, basic services and basic dwelling.
- Property is immediately transferred to household.
- Land plus basic services only.

- Materials voucher.
- Suppliers of building services voucher
- Land provided to Housing Coops.
- Technical assistance for design & construction.

3.4.5 Volume of Finance

Mortgage Finance: The total amount of finance projected over the 2012-2022 period for this group is RWF 996 billion (or about US$1.6 billion) or an average of RWF 91 billion per year (about US$149 million).

Non Mortgage Finance: According to our projections, the total budget needed to build affordable housing over the period 2012-2022 is RWF 622 billion (US$1 billion). This can then be divided into two categories:

- **Affordable Housing** (ie. Rent to Own scheme and other approaches**)** where the cost should eventually be recovered through rents and transfer of property/mortgage lending: RWF 505 billion (equivalent to US$ 830 million) or an average RWF 75 billion per year.

- **Subsidized Housing** for the poorest which cost would not be recovered: RWF 118 billion (equivalent to US$ 193 million) or an average RWF 11 billion per year.

3.5 Demand, Typology, Finance (DTF) Matrix

The recommendations discussed in the previous sections on Demand, Typology and Finance are integrated below in the DTF matrix.

Exhibit 32: DTF Matrix

Exchange rate   608,27

CATEGORY	DESCRIPTION	Financing	Quintiles (Q)	Monthly Gross Income Range in Rwf		Typology	DU	%DU	Cost per DU			
									RWF		USD	
				From	To				From	To	From	To
New Dwellings							344.068					
Social	Low-rise row housing(possibly in autoconstruction)	Full subsidy, some rent, contribution with labor during construction period	Q1/Segment 1 / Below Poverty Line	>	33.500	A1	43.436	9,48%	n.a.	2.711.089	n.a.	4.457
Affordable New	Low-rise row hosing	For instance, rent to-own	Q1/Segment 1/Above Poverty Line	33.501	200.000	A2	186.163	40,62%	2.711.089	3.333.823	4.457	5.481
Mid-range	Low rise and Mid-rise row housing and multi storey apartments	Mortgage loans	Q1/Segment 3 to Q5/Segment 14	200.001	2.500.000	B1-B4, C1-C3	112.867	24,63%	3.333.823	69.827.778	5.481	114.797
Premium	multi storey apartments, attached and detached units	Mortgage loans	Q5/Segment 15	2.500.001	<	C3 and Detached	1.601	0,35%	69.827.779	<	114.797	<
Existing Stock							71.487					
Existing DU in Good Condition	Various existing typologies, mostly low rise but also apartments	Mostly mortgage loans or self financing	Mostly in Q4 and Q5	Above 2.000.000		Various existing.	42.710	9,32%	n.a.	n.a.	n.a.	n.a.
Affordable Upgraded	Various existing typologies, mostly low rise	Micro-loans (micro-finance and mortgages) and other programs	Q1/Segment 1/Above Poverty Line	33.501	200.000	Upgraded existing DU	71.487	15,60%	n.a.	n.a.	n.a.	n.a.
							458.265	100,00%				

4 GENERAL CONSIDERATIONS ON HOUSING DEVELOPMENT

4.1 Economic Impact of Housing

Investment required by housing demand in Kigali from 2012 to 2022 reaches the equivalent of USD 2.5 billion. This means that, if housing investment is done through the formal sector and with the quality requirements proposed in this study, Kigali would have to invest the equivalent of 4.5% of the annual national GDP in housing, in the next ten years. This number does not include expenses in trunk infrastructure for utilities and investment related to increased production or import of building materials, which estimation is beyond the scope of this analysis.

Although this investment appears to constitute a very large cost, it should be seen in the context of economic development opportunities. Investment in housing could have an important socio-economic impact on Kigali, through the generation of employment, taxes and through the overall multiplier effect on the city's economy. According with our own calculation, housing development could generate up to 60,000 employment posts in Kigali in the next years:

- 30,000 DU/year divided by 3 building shifts/year = 10,000 DU per shift x 5 workers/DU = 50,000 workers;
- Assuming 0,2 indirect employment (i.e. services, administration), then 50,000 x 0,2 = 10,000;
- 50,000 workers + 10,000 indirect employment = 60,000 jobs/year.

4.2 Economic Impact of Housing and Neighborhood Design

The spatial organization of neighborhoods can stimulate or stifle economic development. Spatial and architectural design can reduce costs of construction, energy use and long term maintenance. (See Kigali Sub Area Plans, Chapter 2, Sustainable Development for more elaboration).

- Clustered neighborhoods can reduce infrastructure costs.

- Sustainable infrastructure design that integrates drainage, water, sanitation, can reduce resource use by re-using and recycling these resources.

- Integrated town center and neighborhood centers can reduce resident's travel time and free up time for economic and other development related activities by population.

- Clustering primary schools and community facilities can facilitate education and foster economic development.

- Clustering primary schools and community facilities to promote "walkable communities" could promote public health and reduce disease and health risks associated with driving and obesity. Reduces health care budget.

- Integrating outdoor green systems throughout neighborhoods can promote outdoor recreation, which is proven to increase intelligence and healthy development in children.

- Integrating business development/innovation centers in all neighborhoods/town centers can stimulate micro and SME growth.

- Clustering and densification of development can reduce energy costs and energy opportunity costs.

- Housing and neighborhood design with "smart grid" alternative energy and resources can contribute energy into the grid, not just draw down on it. Energy production by individuals can contribute to their income or at least reduce their expenses.

- Neighborhood design that emphasizes resource recycling can promote business development at the local, city and regional scales.

4.3 *Addressing Potential Supply Bottlenecks*

Increasing housing supply in Kigali requires simultaneous actions in different sectors to avoid the formation of bottlenecks in infrastructure, long-term funding, residential land and building materials. Increasing supply of housing in Kigali from 2012-2022 requires *coordinated multi-sector action to ensure availability of the following inputs*:

- 2,562 Ha of residential land as determined by proposed typology in Chapter 3 (not including common uses, such as streets, parks, shopping & service areas and others),

- 2.5 billion USD in long-term funds (net figure, not including only funds from financing entities, to be completed by down-payments from clients),

- Building materials (200,000 tons of cement, 13,000 tons of steel bars, 1.7 million m² of metal roofing),

- Yearly reinforcement of utility infrastructure (increased water supply by 29,598 m³/day; increased power supply by 123 Mwh; treatment of 22,199 m³/day of liquid waste; collection and recycling of 67 tons/day of solid waste; building of 1,480 m²/day of streets; increased transport capacity in 177,588 trips/day)

- In addition, capacity of the construction industry must be strengthened to ensure delivery of 17 million m² of residential building annually, which may require up to 50,000 laborers (assuming labor-intensive building technology).

5 GENERAL CONCLUSIONS

A. The city of Kigali faces a very important challenge: raising housing supply to about 31,000 DU (344,000 DU in 11 years), more than half of which are in the affordable housing category.

B. There is enough land to build new housing up to 2040 and beyond. The proposed typology uses 60% of net residential land and generates high densities while maintaining a human scale environment dominated by row houses while including multi-storey apartments.

C. Implementation of the proposed typology model should be gradual, evolutionary and balanced in order to adapt to economic and cultural realities.

D. The rent-to-own mechanism proposed for most of the low income strata allows for the production of the bulk of affordable housing, would allow the City to recover over time a large part of its investment in social housing. It remains however certain that below the poverty line, finance can only play a peripheral role as the main issue is one more related to livelihood than purely housing needs. If the City of Kigali wants to address the housing needs of the poorest households, a system of subsidized houses would have to be created.

E. Whenever possible, informal settlements should be either upgraded or re-built with safer techniques, as this is much less costly than new housing. Where relocation is inevitable, it should be made towards redevelopment areas where adequate housing for ex-informal dwellers is part of a combined typology. Population to be relocated should involved in the location decisions, planning and design of new settlements.

F. It would be advisable to undertake a Quantitative Survey on housing in order to cross check and/or adjust data from the forecast model prepared for this project.

G. The City should consider establishing a Registry of households in need of affordable housing in order to facilitate socio-economic analysis/eligibility and programming.

H. The authorities should consider developing a Pilot Project for affordable housing using the typology and financing mechanism (rent-to-own) herein suggested.

I. A housing MIS/M&E system should be developed in order to monitor demand and supply, inputs, costs and accomplishment of targets.

J. Housing cooperatives should be promoted as developers of affordable housing, upgrading and housing in general.

K. Housing is part of a bigger set of issues that revolves around livelihood, improved and more stable income for a large part of the population. Therefore Livelihood and Job Creation Strategies (such as support to micro and small enterprise) in Kigali should be given priority in line with the EDPRS strategy.

L. Kigali alone cannot bear the entire effect of urbanization in Rwanda. Government has already adopted some strategy to decentralized urban growth away from Kigali and towards secondary and tertiary cities in Rwanda, in line with the National Land Use Master Plan.

6 RECOMMENDATIONS

Meeting present and future housing needs in Kigali requires coordinated action in several fronts, both in the public and private sectors. This is specially the case for the production of affordable housing, where policies, institutions and plans are required to ensure availability of five key inputs:

→ Housing Finance
→ Infrastructure
→ Land
→ Labor
→ Building Materials

Exhibit 33: The Affordable Housing Pentagon
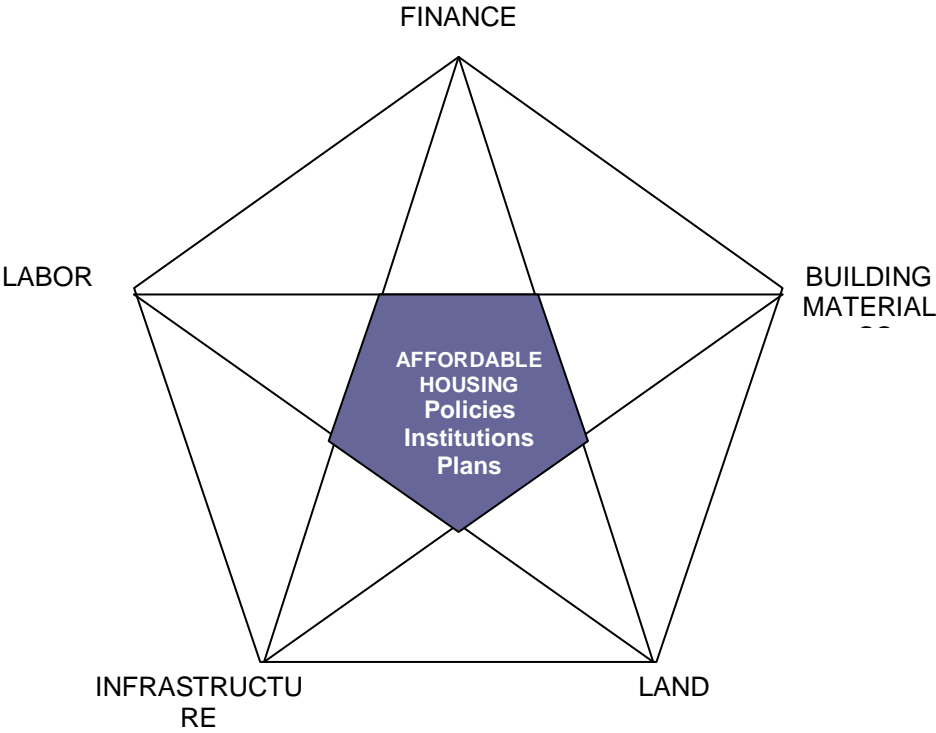
Source: UN HABITAT

Based on this multi-sector approach to affordable housing, and on the results of analysis, three steps are proposed to the stakeholders as follow up to this study:

A. *Institutional Buildup*

a. Creation of the Kigali Housing Partnership

The process of housing development has to be coordinated, promoted and executed by an agency specially created for the purpose of fostering supply of housing, specially affordable housing, in Kigali. This new institution could adopt the form of a public-private partnership, with participation of the City of Kigali, RHA, MINECOFIN and other relevant government stakeholders, the BNR and the housing finance community, the developer and construction community and citizens' organizations. A special study for creation of this partnership is required to take into account global experience and best practice and to carefully design and implement it.

b. Creation of the Affordable Housing Fund

In conjunction with the Housing Partnership, a special fund would need to be created by the city to finance the building of rent to own and subsidized housing. A special study is required for defining the functioning of the fund and sources of funding. Global best practice should be taken into account.

c. Creation of Housing Institution(s)

According with this study's proposals, a good portion of housing to be developed by the city in the next years corresponds to affordable housing under the rent-to-own scheme and subsidized housing. Specialized housing institutions, private or public, should be developed to act as developers and operators of low-cost rental and leased housing. A detailed feasibility study would be required to define the institutional and legal framework as well as the capitalization and financial modalities of such institutions. The legal framework of the rent-to-own scheme will also need to be investigated with the context of the existing Rwandan laws.

B. *Policy Formulation*

a. Long-term Funding and Housing Finance

The provision of long term finance available for mortgage finance will have to increase dramatically. This is a point that will need further investigation. It is important to remember that the new Financial Sector Development Program currently under development can play a central role in that regard with MINECOFIN as the implementing agency. Special attention should be given to the role of the RSSB, pension funds and the insurance industry in funding mortgage finance as well as taping international sources of funding. BRD's intention to become a facilitator or provider of wholesale finance needs to become operational as soon as possible.

Policy makers and financial institutions should seriously consider a specific saving product which would encourage longer term savings. Developing such a mechanism can also be part of the new FSDP.

Housing microfinance could provide finance for improvement and upgrading. The authorities need to start a dialogue with potential providers of housing microfinance to define the areas where these types of loans would be in line with the desired development and the Master Plan. Again, the new FSDP can include the development of housing microfinance in its set of actions. Rwanda host two remarkable donor-funded programs that might be able to provide technical support to the development of housing microfinance: DFID-funded Access to Finance Rwanda and UNCDF Building an Inclusive Financial Sector.

b. Land for affordable housing

Rapid increases of land prices in Kigali may become a serious bottleneck for developing affordable housing. Therefore, special analysis should be undertaken to determine the most effective strategies to ensure availability of sufficient land for affordable housing, at reasonable cost. This analysis should then be translated into ad-hoc policies.

c. Building materials

As in the case of land, high cost of building materials is one of the factors that may hamper production of affordable housing in Kigali. Whenever possible, local production of key materials -- such as cement, steel bars, metal roofing, stabilized earth bricks and cement blocks -- should be encouraged. Special policies to attract investment to the building materials industry should be formulated. In addition, alternative and appropriate building materials experimentation and innovation should be of the highest priority. Conventional building materials and design used in other climates and countries evolved from the unique geographies of those locations. Rwanda should develop its own unique and appropriate construction materials, designs and technologies.

d. Construction industry

The capability to deliver large volume of built surface has to be developed in Kigali, either by supporting development of local firms and labor or by facilitating the arrival of world-class construction firms, particularly those specialized in housing and infrastructure. Special policies to foster growth of the construction industry should be studied and implemented. The housing construction industry is a major opportunity for Rwanda to foster development of its economy, and every effort should be made to build alliances with local developers in order to keep capital flows within Rwanda's economy.

C. *Plans*

A housing and infrastructure plan has to be formulated in coordination with ongoing master planning efforts. This plan should outline areas for developing housing typologies such as the ones proposed by this study coupled with its corresponding utility and community infrastructure. Specific development targets according with housing demand requirements should be set, complete with programming and investment schedules. Whenever possible, project profiles should be developed and offered o local and international investors for development.