

LAND REALLOCATION FOR AN UPGRADED URBAN DEVELOPMENT PLAN IN RWANDA: A CASE STUDY OF PLANNING FOR UPGRADING KABUYE PHASE II SITE/GASABO DISTRICT, KIGALI CITY

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ABSTRACT

Land is required for development of basic public infrastructure. Compensation for current rights holders of such land must be negotiated. Also, the resulting subdivisions will thus be smaller than the original portions of land, and the parcellation exercise will mean that households do not hold the same portion of land they held originally. All of these aspects can lead to conflicts over land if not properly managed. Kigali City Master plan 2050 has its main objective of making a smart city particularly Kabuye Phase II site is rising growth trajectory requires rapidly expanding infrastructure facilities to support it with making detailed Physical planning as a key component of urban development initiatives and sets the boundaries that will help to have Access to affordable infrastructure services for consumption purposes serves to improve household welfare through resident initiative. The detailed topographic survey of the area was undertaken. Secondary data was obtained from the District level and other stakeholders. The Kigali City master plan provides useful information while the Google Earth Pro platform proved beneficial. Existing parcels were 2125 Parcels with informal planning having area of 156ha. The new plot and different land use have proposed as Residential with 1902 new plots, off-core commercial, Road, Pathway and 1252 Parcels have remained as Existing one but arranged referring to the planning and total cost of priorities activities within the site is 1,430,661,116Frw. Each plot will be contribute land at 23.84% and financial contribution in order to finalize this project will be 632,924frw by new one plot to be developed and 181,182frw/previously permitted and previously constructed plot. However, there are still some serious concerns evident in the newly readjusted area. These should be viewed as recommendations to be taken into account by future project implementers and partners, particularly the local government units overseeing the project sites. The most important emerging issues are the growing income disparity with the exclusion of the poorest from the development process.

Keywords: Local land development plan. Level terrain. Land reallocation.

RESUMO

São necessários terrenos para o desenvolvimento de infraestruturas públicas básicas. A compensação para os atuais detentores de direitos de tais terras deve ser negociada. Além disso, as subdivisões resultantes serão, assim, menores do que as

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porções originais de terra, e o exercício de parcelamento significará que as famílias não detêm a mesma porção de terra que detinham originalmente. Todos estes aspectos podem conduzir a conflitos sobre a terra se não forem devidamente geridos. O Plano Diretor da Cidade de Kigali 2050 tem o seu principal objetivo de tornar uma cidade inteligente, particularmente o sítio de Fase II de Kabuye, está a aumentar a trajetória de crescimento, requer instalações de infraestrutura em rápida expansão para apoiá-lo com a realização de um planeamento físico detalhado como um componente-chave das iniciativas de desenvolvimento urbano e define os limites que ajudarão a ter acesso a serviços de infraestrutura acessíveis para fins de consumo serve para melhorar o bem-estar do agregado familiar através da iniciativa residente. Foi realizado o levantamento topográfico detalhado da área. Foram obtidos dados secundários a partir do nível distrital e de outras partes interessadas. O plano mestre da cidade de Kigali fornece informações úteis enquanto a plataforma Google Earth Pro provou ser benéfica. As parcelas existentes eram 2125 parcelas com planeamento informal com área de 156ha. A nova parcela e diferente uso do solo propuseram como Residencial com 1902 novas parcelas, off-core comercial, Road, Pathway e 1252 Parcelas permaneceram como Existente, mas arranjado referindo-se ao planeamento e custo total das atividades prioritárias dentro do site é 1,430,661,116Frw. Cada parcela contribuirá com terreno a 23,84% e a contribuição financeira para finalizar este projeto será de 632.924frw por novo terreno a ser desenvolvido e 181.182frw/parcela previamente permitida e construída. No entanto, subsistem ainda algumas preocupações graves evidentes na área recentemente reajustada. Estas devem ser encaradas como recomendações a ter em conta pelos futuros responsáveis pela execução do projeto e parceiros, em particular as unidades da administração local que supervisionam os locais do projeto. As questões emergentes mais importantes são a crescente disparidade de rendimentos, com a exclusão dos mais pobres do processo de desenvolvimento.

Palavras-chave: Plano de desenvolvimento de terras locais. Nível de terreno. Realocação de terras.

1 INTRODUCTION

According to the United Nations (UN), 924 million people, almost one out of three urban dwellers, were living in informal settlements in 2003 (Rwanda Land Management and Use Authority (RLMUA), 2021). Of these, 874 million live in low and middle-income countries (RLMUA, 2021). The proportion of urban poverty is undoubtedly increasing: 43% of the population of developing cities is living in informal settlements while 71% of sub-Saharan Africa cities are informal (RLMUA, 2021). In Rwanda, 61.7% of the population lives in informal settlements although the urbanization rate stands at around 18.4% as per 2017 statistics (RLMUA, 2021).

The process of land reallocation involves the assembly of all properties belonging to different landowners in a certain area, followed by a new subdivision of land into parcels and redistribution of the land to the same landowners, based on the

share (in terms of the area and valuation) of each one's land as a percentage of the whole area (Sonnenberg, 2002). The urban upgrading component is integrated by an 'Urban Communities sub component' which promotes the use of community driven development approaches. As such, it aims to support strengthening of the legal framework governing community-based organizations and the formalization of their links with local governments; and building the capacity of community-based organizations for organization and management, self-regulation and active participation in decision making and service delivery (Community Driven Development in Urban Upgrading, 2004).

Rwanda is a developing country. As such, the government plans focus on solving problems arising from poor local urban upgrading. The service infrastructures must be maintained, constructed, or reconstructed for better achievement of a range of goals. These goals are expressed at different levels of government: the Central, Provincial, District, and Sector levels. An example are the Kigali City goals. In order to maintain the city's vision ; the Local Urban upgraded development planning should be comprehensive, efficient, inclusive, informative, integrated, logical and participative, and fair while contributing to common interest operations such as securing public space, facilities and utilities (Rwanda National Land Use Planning Guidelines, 2017).

Many countries in Africa have not considered urban upgrading as part of their official policy. Of particular interest is the tension national governments and donors face between, on the one hand, setting planning standards that would ensure upgrading projects make a substantial difference and, on the other hand, acknowledging the need for a policy emphasis on basic standards to achieve replicability. This tension has engulfed standards for minimal plot sizes and infrastructure (Sumila G. et al. , 2002).

This paper reports on a case study of the planning for urban upgrading of Kabuye Phase II site in 2020-2022. This site falls within Jabana Sector in Gasabo District and cover part of Kabuye and Bweramvura Cell especially in Amakawa, Gikingo, Rebero, Rugogwe, Nyagasozi, Buriza villages within Kigali City. Urban upgrading in Kabuye Phase II site depended on the willingness of citizens to move. This relies on the encouragement by the Local Authority, and the initiative of local community. The Local Land development plan of Kabuye Phase II site was developed using a participatory approach, but some dwelling land will be lost to basic

infrastructure and public infrastructure. Compensation is planned for those (if any) who will not be accommodated in the upgrading plan. After the upgrading, various problems are expected - those who no longer have access to any land in the settlement may be unhappy, there may be conflict related to the smaller land parcels than were held before, and conflicts may be expected relating to the sharing of land from a former parcel to a new parcel held by another. This paper focuses on the planning for land reallocation for upgraded urban development in order to allocate each landholder a common share of the total area (equality rather than equity). Another aim is to make sure that each former landholder acquires a parcel in the new plan of Kabuye Phase II site where Bweramvura Cell occupied 9.60% of total area of the site and Kabuye cells with 90.40% of total area of the site.

2 MATERIALS AND METHOD

The case study is selected as it is an example of an area chosen for planned urban upgrading based on the development of the region and demands for development of the district. The planned upgrading is in line with the government aim to make Kabuye a smart city. The author is involved in the project as a Project Manager and hence, in the scientific process, is a participant observer rather than an external observer. Within regional and observational design will be using during this studies as a chosen type of design that is very important during measurement.

A participatory approach was adopted by the implementers in order to facilitate active involvement of all stakeholders in the formulation of development policies and strategies. This carries through to the analysis, planning and development of local development plans. Once the upgrading begins, it will also carry through to the monitoring and evaluation of development activities. Land owners became actively involved in the project after they were informed in a community meeting, while the local authority is an important stakeholder throughout the process.

The results from this project are an initial reallocation plan, and a detailed upgraded urban development plan of Kabuye Phase II site. These aim to make sure that every landholder, who holds a parcel before the implementation of the upgrading project, obtains a new parcel in a systematic and transparent manner. This planning process took into account the original parcel area and considered the need for public land for all public infrastructures.

2.1 RESEARCH PROCEDURE

The following steps were used during preparation for the planning process:

- reconnaissance,
- overlaying developed base map on the existing Land Use Development Plan (LUDP) to compare proposed land uses versus existing situation on the ground,
- carry out topographic survey to collect data and verify information,
- generating topographic maps as a better way of understanding and analyzing the terrain of the study area,
- generating layout plan of the upgraded urban development plan of the site,
- generating reallocation plan of the site.

2.2 INSTRUMENT, DATA COLLECTION AND DATA ANALYSIS

2.2.1 Field Survey

The topographic data was conducted in the field in order to develop an understanding of topography of the area and existing development and infrastructure. Differential Global Navigation Satellite Systems (DGNS) technology was used as well as conventional total station.

2.2.2 Secondary data

For this study, the data from National Land Authority, Kigali City master plan and Google Earth Pro were used.

2.2.3 Data analysis

During data analysis the following software was used:

- AutoCAD 2018 & CAVADIS17 for topographic surveying reporting to prepare the topographic map with the mapping of existing features.
- ArcGIS Pro for designing the new layout from the existing layout, taking into account the aims of the project. It was also necessary to include the design of basic infrastructure. The surface water flow after rains also required a hydrology analysis by showing flow accumulation within the study area.

3 RESULTS AND DISCUSSION

3.1 CURRENT SITUATION

Most existing parcels in this area have no access to roads and basic infrastructure. Some plots have an area greater than 300 m², while others are smaller, according to the land titles. Although the Kigali master plan has this site as a low density residential densification zone (R1A), the current uses are for agriculture, small commercial ventures, and residential uses.

3.2 TOPOGRAPHY

The site sits at an average height of 1,631.89m of height and with difference in elevation of is 165m where the high level is 1,730m and minimum level is 1,565m. Kabuye Phase II site is Level terrain and the slope is presented in percentage between of 5.92% to 20.23% with average of 13.078% of slope in general.

Each road on this site must have drainage channel since the area is a high rainfall area. These channels need to be different dimensions depending on the layout of the designed settlement (ranging from 0.60m to 2m in width). All runoff water from building roofs will be collected in water tanks for household use. Other runoff will feed into the Karuruma wetland via a main drainage channel proposed within the site.

3.3 REPLOTTING

A replot of lands happens when the lines of a parcel are redefined or when an existing parcel of land incorporates additional land into it without creating a new, independent parcel of land.

With reference to the Kigali Masterplan 2020 zoning guidelines, the new plots must have maximum area of 300 m² for residential areas such as this site.

The following procedures have been followed:

- all site land parcels were combined to allow for the upgrading process. Each landowner signed to confirm his/her input land and structures thereon,
- a land inventory was compiled showing each parcel's identification number and respective owner,
- in order to minimize the compensation costs, plots with valuable existing buildings, especially in already built-up areas, must maintain the size and shape by integrating those buildings

- internal neighbourhood access roads having a minimum of nine meters width, unless the existing conditions indicate other wise. These road widths include the carriageway, sidewalks, linear infrastructures and drainage channels.

The planned upgraded Kabuye Phase II site includes the necessary residential parcels to accommodate the existing residents, roads, green space, Off-core Commercial center as mixed use, and Cemetery plot remained as it was before planning, reserved plot for Chapel purpose and Proposal location of Sewage and solid waste disposal zoning defined according the site residents'needs.

Figure 1: Sample of the Local Land Development Plan of Kabuye Phase II Site



The smallest plot has 211m² and the maximum size of the plots is 2088m². The roads have a total length of 28.84km. Table 1 indicates the resulting data before and after planning.

Table 1: Areas of different uses before and after planning for upgrading. The abbreviations in brackets are explained below and form part of the Contribution Coefficient Factor

Description	Prior parcels	Total parcel area (ha)	New parcels	Total parcel area (ha)	% total area (ha)
Residential new	2125	97 (TNP)	1863	63 (TPP)	48.38
Residential retained		84 (TEP)	1241	55	35.26
Roads	47.52Km	25.37Km for new	22Km extended	42	27
Path way	2.9Km			4.41	2.83
Public infrastructures within the site				1.05	3.2 (PD)

Mixed use zone			37	4.65	
Cemetery			1	0.57	
Green space				0.15	
Parcel destroyed			19	0.76	0.49

3.4 LAND REALLOCATION

Land reallocation referred to as land re-parcelling, is inherently a spatial planning process and in particular, is a complex spatial allocation problem.

The following steps have been followed in order to decide on land reallocation:

- calculation of the available land for various uses within the case study area,
- calculation of the Contribution Coefficient Factor (CCF). The CCF is expressed as a percentage of the land that is available for residential purposes in the re-planning. Each new parcel area is computed from the old parcel area reduced by this percentage. This is necessary to free up land for planned public facilities, i.e. roads, storm water channels, etc.,
- the CCF is calculated, as one value for the whole resettlement, as follows:

$$CCF = \left(\left| \frac{TEP - TNP}{TPP} \right| * 100 \right) + PD,$$

Where:

- TEP Total area of Existing parcels before planning (Initial parcel) except the improvements on the site,
- TNP Total area to be replanned including occupied area of the New proposed infrastructures,
- TPP Total area of proposed parcels except infrastructures area occupied,
- PD Percentage of total area necessary for public infrastructures within the site,

Given the data in Table 1, the CCF for the case study area is determined as follows:

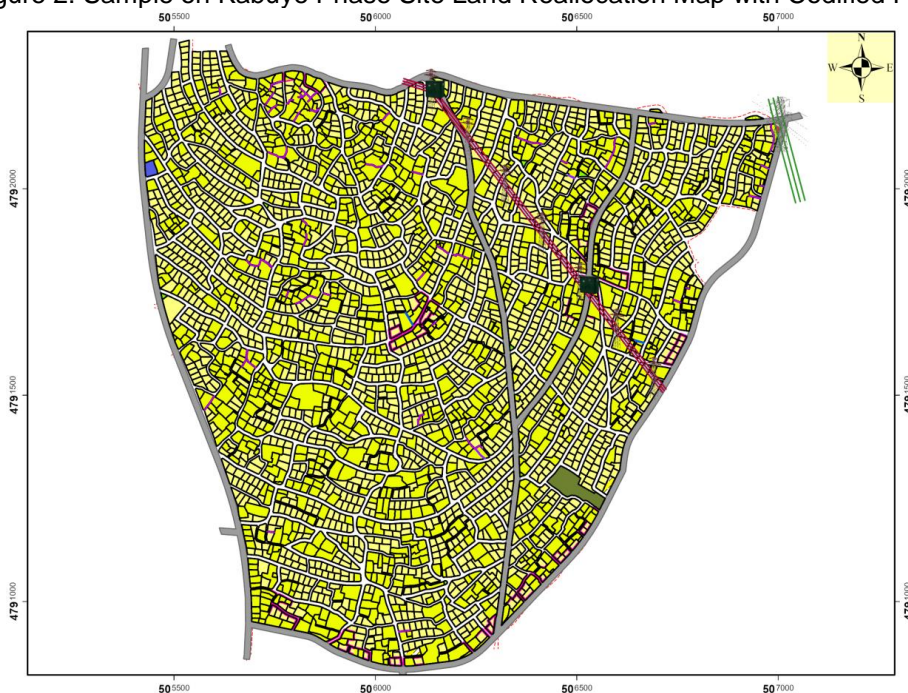
$$\text{Then, } CCF = \left(\left| \frac{84 - 97}{63} \right| * 100 \right) + 3.2 = 23.84\%$$




















- This is rounded up to 24% - so each new parcel should be only 76% of the area held before the upgrading project.

- calculation of the land area for each parcel as a factor of the former area using the contribution coefficient factor. It is not possible given the rigours of town planning to achieve the exact area for all parcels. In such cases the landholder pays in extra or is paid out – this is explained below,
- determination of the number of parcels that can be allocated to each landowner from the available land area identified for that purpose,
- design of the new layout with the reallocation of properties. This is an iterative, trial and error process, in order to arrive at a design with the right number of parcels and with each one the correct area for that landholder. Each plot must have road access. The design includes storm water channels and drainage ravine.
- determination of the final areas of each new parcel.

Every landowner who receives his/her initial land minus calculated land contribution (24%) should be satisfied with respect to their allocation. Ownership that does not have the minimum plots size as stated by Kigali Masterplan 2020 in zoning regulation will be expropriated or the landholder will need to pay for the additional area. When it is not practically possible to apply the equivalence principle (the CCF). Similarly, landowners receiving properties of a smaller value than their due, or who receive no property at all, shall be paid compensation. The site residents will base this compensation on a generic market price.

Figure 2: Sample on Kabuye Phase Site Land Reallocation Map with Codified Plots



Legend			
	Transformer		Pathway
	MV Pole		Ravine
	HV Pole		Plots Land
	Medium Voltage		Subdivision Plan
	High Voltage		Road from Master plan
	Road		R1A - Existing Low density residential
	Existing Water Tank		Green Space
	R1A - Low density residential densification zone		Commercial
			Sewage
			Cemetery
			HV
			MV

After making land reallocation the following process for plots registration and making new land titles have used:

- preparation of the reallocation plan,
- production of deed plan of each new plots,
- assembly of documentation for transfer: collection of existing land title by Sector Land Manager with the full file having deed plan of the plot, proof of payment for land transaction fees as it is defined by competent public institution, proof of payment for basic infrastructures fees, copy of identification card of the plot owner, civil status certificate, physical plan approval letter from Kigali City ,
- subdividing of the new plots by considering submitted Kabeza site reploting plan shapefiles and inserting it in Land Information System (LIS),
- production and printout of land title in line with submitted shapefiles of the reallocated plan,
- submission of land title by National Land Authority to the each parcel landowner by email or downloding from **Parcel Information Inquiry Portal**.

4 CONCLUSION

The preparation of land reallocation for an upgraded urban development planfor the Kabeza Site is demonstrated. This wasbased on consultations with stakeholders and included a participatory approach with the community landholders. Planning parameters were taken into account. Field information and topographic survey showed that the existing situation is poorly planned and is not developed according tostandards. The new design amelioratesas much as possible the issues with the current layout.The erplanning of the settlement took into consideration infrastructure development and storm water flow.

This case study demonstrates the use of the Contribution Coefficient Factor as

a method to ensure equity in the reallocation of parcels after replanning. It further demonstrates the necessity for site survey data and to new planning to arrive at an upgraded settlement plan that serves the desired goals. These are to deliver parcels fairly for residential purposes while adhering to minimum parcel size restrictions, to accommodate the need for public infrastructure and public spaces to benefit all, and to retain existing positive land uses such as forest, nut tree plantations, and public recreation spaces.

The planned upgrading foresees some possible issues in the future, It is thus recommended that developers and state entities should work hand-in-hand to identify measures to minimize the negative impacts of interventions on the poor and women, to minimize negative impacts on the environment, and to follow a structured process of implementation of land reallocation by the Site Committee in collaboration with the key public institution – most importantly the local Government.

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