

## Communal Programming-Budgeting: The Pathway to the Country's Development

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### Abstract

Poor management and misallocation of public finances have been one of the major challenges to the development of Burundi. From the colonial period till recently, the country adopted the traditional budget which focused on inputs such as resources rather than on outputs such as program out-comes. This system promoted corruption, embezzlement, money laundering, and on the overall, it slowed the economic development of the community and the country as a whole. Thus, the introduction of the new reforms in public finance spending that promote program-based budget initiated in recent years to accelerate economic development is being challenged by both local and national decision makers. Practice of gaming these reforms take different aspects such planning activities that are budget consuming without clear outcomes, overpricing the costs of activities, increase in numbers of meetings, outstation missions, seminars, workshops, per diems, etc. And as results, we argue that these communal plans for community developments cannot contribute neither to develop local communities nor can they lead to the achievement of objectives of national development plans such as the National Development Plan (PND2018-2027) and the Burundi Vision 2040 as an emerging country and 2060 as a developed country due to poor planning and disguised resistance to change attitudes in the public sector.

**Keywords:** Communal development planning, programming-budgeting, country's development

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### 1. Introduction

A commune in Burundi is a decentralized administrative entity. It is considered as the basis of the country's development. It integrates and operationalizes public policies of all national development plans in its five-year communal plan for community development (CPCD). And since the country has also introduced a new public financial management system to ensure efficiency and effectiveness of public programs and projects, this paper analysis at what extent these communal plans can contribute to ensuring food security and stabilising and/or increasing revenues for local farmers.

Planning for development implies the projection in the future of the objectives one wish to achieve. It is a highly demanding task in terms of human resources capacity and skills of the planners and in terms of the methodology used to comprehend what is likely to happen in an uncertain and unpredictable environment. Getting a healthy population who is economically productive requires communal planners to critically think about developing first, the agriculture sector while thinking at the same time about developing the secondary and tertiary sectors. The objective of this study was to analyse if coupling the budgeting and programming policy with the implementation of the CPCD would lead to the improvement of food security in the commune.

Programming and budgeting to enhance financial management and boost public policy efficiency and effectiveness have created both hope and fears since its introduction in 2022. At the one hand, losing some benefits from the old public financial budgeting and management system has pushed some public servants to game the new policy. And at the other hand, the lack of skills in planning at the communal levels has also created doubts and fear as to how the new policy is to be implemented. And as a result, both situations are creating confusion with regards to whether the plans designed and the budget allocated will really lead the commune to its intended development goals. This paper explores three possible scenarios of this new policy. Depending on the performance of this policy in terms of development, the commune is likely to move either (i) forward to development in case the policy is successfully implemented, or it can move (ii) backward to underdevelopment in case public servants try to game the policy during the implementation process or it can simply (iii) keep the status quo if they choose to resist the changes brought by the new policy.

In this paper, we will try to answer the question: “where do we go from here?” We argue that the implementation of the current communal plans for community development (CPCD) cannot serve as a planning tool that can serve to plan the development of agriculture and ensure food security in the country unless these PCDCs are redesigned; otherwise the public money is likely to be spent on poorly designed projects that are not contributing to the development of the commune while perhaps ending in the hands of some communal influential personalities. Our findings show that communal planners did not take into account important variables that would serve as the basis for the development planning such as the size of the population and their increase over the next five years, the problems mapping in the agriculture sector, land productivity and the real needs in nutrients. These led the communes we studied to severe food insecurity since they are implementing projects which are and will not contribute to develop the sector.

### **1.2 Need of the study**

This study is most needed because, it brings valuable contribution on how commune should really plan their development in terms of the quantity of tons of food crops needed to feed its population, the land required to grow enough food and all this in line with the increase of the population. This study will also provide a new planning format that can really trace a roadmap to communal development. This contributes to linking planned actions with available budget and projected development objectives. This study is also important because it will contribute to the realization of the objective pre-defined in the Vision Burundi 2040 as an emerging country and 2060 as a developed country, and the revised PND2018-2027.

### **1.3 Research Objectives**

The objective of this study was to analyse if coupling the budgeting-programming policy with the implementation of the CPCD would lead to the improvement of food security in the commune and communal financial management performance.

#### **Specific objectives**

More specifically, we want to make the CPCD a realistic development planning tool that can lead the country to economic development.

### **1.4 Hypothesis**

H0: The communal plan for community development (CPCD) is the commune’s development tool that will contribute to the development of the entire country.

H1: The current implementation of the communal plan for community development (CPCD) coupled with the planning and budgeting policy (the WPAB/PTBA) cannot lead to the improvement of food security in the commune nor to the communal financial management performance.

### **1.5 Scope of the study**

This study focuses on the 4th generation of the communal plan for community development which is a five-year plan from 2023 to 2028. And due to limitations of time and financial means, our study is limited to 20 communes. It also focuses on the first strategic axis: Development of agriculture, live-stock, and improvement of food security, programme 44 which is agriculture and on its action 04401 which is: Food production intensification.

### **1.6 Limitations of the study**

Given the importance and the interest of this study, there is no doubt that such a study requires a lot of time and a good budget. These constraints were amongst our major limiting factors. And as a matter of fact, we have to narrow our sample size to 20 communes, and, we had also to analyze only one strategic axis of the PCDC. This of course affects our ambition of selecting a big sample size for generalizing the results to the total population. Another limitation was related to the lack of accurate data on the population size of the all communes.

### **1.7 Justification of the current study**

Since the fiscal year 2022-2023, the government has introduced a new public finances management system that would help to improve the efficiency and effectiveness of public programs and projects. In this view, the commune is the foundation of the country’s development i.e. if communes are developed, the province will in turn be developed and then finally the

entire country. With a successful implementation of programs and projects at the commune level, there is no doubt that in 2040, the country will be an emerging economy while by the year 2060 the country will be a developed economy. However, the current situation shows that it is hard to know what projects communes are planning to do, for which population, and for the next five years of the PCDC that would really lead to economic development. On the one hand, there are many contradictions between what the commune intends to do to boost its economy and the allocation of the communal budget. On the other, there are also contradictions between the actions planned to do and the real needs of the commune. Planning for development is a major common challenge for all the communes.

Mapping the challenges and the risks that are likely to turn into blockers hindering this policy's successful implementation can help display them at early stages and take adequate correcting and preventing measures.

This current study is needed to assess all these risks in order to raise awareness of both the communal administrators and high-level decision makers on the benefits of planning for development; since it is quite common for administrators to deviate from the policy's key objectives and targets without even knowing, which can lead to policy failure after time and resources have been misused.

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## 2. Literature Review

### 2.1. Local community development planning

The basis of local community development planning is to encourage all sectors of the local community to consider and then make decisions that offer the most appropriate ways to solve the problems facing the community.

#### Economic development

In strict economic terms, development has traditionally meant achieving sustained rates of growth of income per capita to enable a nation to expand its output at a rate faster than the growth rate of its population. Levels and rates of growth of "real" per capita gross national income (GNI) (monetary growth of GNI per capita minus the rate of inflation) are then used to measure the overall economic well-being of a population—how much of really goods and services is available to the average citizen for consumption and investment.

Economic development in the past has also been typically seen in terms of the planned alteration of the structure of production and employment so that agriculture's share of both declines and that of the manufacturing and service industries increases.

Development must therefore be conceived of as a multidimensional process involving major changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality, and the eradication of poverty. Development, in its essence, must represent the whole gamut of change by which an entire social system, tuned to the diverse basic needs and evolving aspirations of individuals and social groups within that system, moves away from a condition of life widely perceived as unsatisfactory toward a situation or condition of life regarded as materially and spiritually better (Todaro and Smith, 2015).

Petty was concerned not merely with the growth of numbers and of incomes, but he also took a broad view of development problems, including concern with the exact content of the standard of living (Sen, 1988: 10). Economic problems do, of course, involve logistic issues, and a lot of it is undoubtedly "engineering" of one kind or another. On the other hand, the success of all this has to be judged ultimately in terms of what it does to the lives of human beings. The enhancement of living conditions must clearly be an essential- if not the essential-object of the entire economic exercise and that enhancement is an integral part of the concept of development (Ibid.).

The crucial issue, therefore, is not the time-dimensional focus of growth, but the salience and reach of GNP and related variables on which usual measures of growth concentrate. The relation between GNP and living conditions is far from simple (Op.cit.: 12). Even though an expansion of GNP, given other things, should enhance the living conditions of people, and will typically expand the life expectancy figures of that country, there are many other variables that also influence the living conditions, and the concept of development cannot ignore the role of these other variables (Ibid.: 13). Broadly, economic development is taken to be the structural transformation of an economy by introducing more mechanized and updated technologies to increase labor productivity, employment, incomes, and standard of living of the population. Economic development is regarded as important for a country to reduce its poverty by providing more employment, higher incomes, improved goods and services, and the latest technologies of production (Panth, 2020).

#### Planning and budgeting

The planning and budgeting strategy, whether at the central or decentralized levels remains of paramount importance in both sustainable development and social transformation achievements. In the broad literature of public sector administration and management (Waran et al. 2017) cited in Nti Obeng (2023) assets National development planning is thus a prerequisite for national development and has been used by governments across the globe for decades. The development planning hence is straightly tied to the axiom, "He who fails to plan is planning to fail," which unequivocally epitomizes the importance of planning in national development (Usui and Alisjhabana, 2005 and Issac, 2014). Therefore,

Central Budgeting Processes for the national development plans delineate desired development outcomes to be achieved by a nation and engender consensus building on the obstacles to and opportunities for achieving those outcomes.

### **Decentralized Community Development**

Concerning decentralized communities' development, UNDP-UNEP (2015) posits that both aspects stand as crucial instruments to secure the expected impact of decentralization since a general appraisal of budgeting and planning however shows that it is significantly tied to the successful performance of both individuals and organized entities in several aspects, while the influence of budgeting and planning exerts on goal attainment is unprecedented.

For the budgeting perspective, the achievement of development goals evokes running counter traditional budgeting as it calls for a top-down approach which is inconsistent with the need to be flexible and adapt to changing organization circumstances, emphasizes controls rather than focusing on helping the organization achieve its strategic objectives, triggers resource allocations to be driven by politics rather than strategy. In this regard, the political commitment takes the top instead of the strategic management (Kaplan et Atkinson, 1998).

However, Hansen and Mowen (2003) lauds/ provides priority to the "Activity- Based Planning" with its features to begin with output and then determine the resources necessary to create that output. Ideally, the organization translates its vision into a strategy with clear goals and definable objectives in order to create value that always bears the growth of market share, expenses reduction, the productivity increase, and the cost reduction of capital with definable objectives on a bid to create value. Though considering planning and budgeting salient in the development attainment, a different realization is that political parties in Burundi promote communal development leaders with the least training, which practically, hinders the expected communal development goals. A similar case worth to be mentioned is the funds allocated to the communes that, according to public opinion, are always deemed to embezzlement due to unclear projects settlement and management; and the lack of consistent and rigorous follow-up by higher hierarchy.

### **Community economic development**

Community economic development (CED) remains an utmost horizon to reach out for any community regardless of its culture, size, economic level, and location. With the trending world economic revolution, communities are inherently striving to boost their economies through a variety of sectors such as investing in infrastructure, human capital development, technological progress and innovation, access to financial resources, sound governance and institutions, international trade, and globalization, access to markets and entrepreneurship, natural resources, and sustainable development. Community economic development, when implemented correctly, has the potential to help communities not only remain competitive but, more importantly, adapt to a very complex and dynamic situation (Gallardo, 2015).

More importantly, CED ultimately vows about re-shaping the underlying economic system in a place, rather than working on improving people's capacity to live well within the existing environment – it creates new economic opportunities for local people rather than coping strategies (COOP-UK, 2017).

In the context of developing countries, community economic development mostly encounters some challenges notably human resources with knowledge and skills to engage in rational project implementation to help people achieve their well-being. This straightly recalls for the planning, monitoring, and assessment of ineffectiveness. Equally worth mentioning are the routine and shared responsibilities and accountability in public affairs management whereby leaders could associate with front-line stakeholders which arise a still wanting economic community development. Exploring the angles above mentioned would clearly support in defining the desired final outcomes, establishing objectives and measures that relate to these outcomes, gaining clarity on the drivers, needs, concerns, and objectives of all players and stakeholders involved, determining the competencies required and, providing the training to ensure they are in place, cultivating and sustaining a collaborative culture, measuring the effectiveness of delivering desired outcomes and monitoring progress towards achieving them (Lee, 2024).

## **2.2. Food Security**

Food security refers to a condition whereby all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 1996). WFP defines it as: "a condition that exists when all people, at all times, are free from hunger" (WFP, 2009). Food security is built upon four pillars, namely availability, access, utilization, and stability. Food security analysis revolves around these four tools.

### **Availability**

Availability is the first dimension that refers to the quantity of food at hand in a defined area or country. It includes domestic production, food aid, food stocks, and import (Ibib.). Another definition by the same organization includes commercial imports and cross-border trade. This does not include households and villages. There is another belief that food security is a synonym to availability of food (Shaw, 2007). Moreover, debates on the meaning of food security in the past decades have made efforts to demonstrate that food security is not just availability of food commodity. It includes the increase of food production to feed people within a given area.

### Access

Another dimension of food security is access, introduced by Amartya Sen in the 1980's. At first, it was not considered as a tool of food security. But the food crises in Niger in 1985 refers to the act of acquiring food commodities physically, economically and socially. The WFP restrains access to food security to its economical or financial dimensions. As such, it is "a household's ability to acquire adequate amount of food regularly through a combination of purchases, barter, borrowings, food assistance or gifts" (WFP, 2009). It is the assurance of access by people to food even in the face of natural or economic shocks. Three main elements are included in access to food:

- Physical or logistic aspect: transport means and communication facilities should be available to ensure distribution in different locations where it is needed.
- Financial aspect: it is the financial ability to acquire needed food commodities.
- Socio-cultural aspect: it refers to socio-cultural hindrances that may limit access to food such as gender bias or social reasons.

### Utilization

The third dimension of food security is food utilization. Food availability and accessibility to consumers are not sufficient; people need safe and nutritious food. Food utilization is defined as the safe and nutritious quality of food items meeting dietary requirements. The following items must be taken into account: selecting food commodities, ensuring conservation and preparation, and the absorption of nutrients. Food utilization emphasizes that food items must be safe and nutritious even in local or traditional entities. As such, training people to optimize the use of food available in their environment to avoid malnutrition. According to Conte and Morrow (2002) food utilization includes access to clean water, sanitation and health care.

### Stability

The last dimension of food security is stability. It encompasses the previous three dimensions, name-ly food availability, access, and utilization. It is concerned with having permanent food provision throughout a season or sustainability. It is based on this stability dimension that in some contexts, chronic and transitory food insecurity can arise. Chronic food insecurity refers to a long-term or persistent inability to meet minimum food needs; while transitory food insecurity is a short period or temporary length of time characterized by food deficit. There is also cyclical food insecurity such as seasonality (Stephen, 2006).

### Food security in Burundi

In Burundi, food security heavily relies on rainfall and agricultural production. There are two main seasons: season A and season B. Season A crop production contributes about 35 % of the annual crop production in Burundi. At times, rainfall delays in some areas and often leads to late planting, which extends the maturation of Season A crops to February/March for beans and March/April for maize, mainly cultivated in low-altitude areas of the east and north. The main crops cultivated in Burundi include: maize, rice, beans, banana, Irish and sweet potatoes, cassava, cereals, etc. As a consequence, season A harvest extends sometimes to February/March.

In poor families, part of food commodities is stocked and another portion sold to meet basic needs, pay pending debts or buy seeds and manure for season B. Stocks are expected to be exhausted by April/May. In western parts of the country, food availability and access are increased with Season A harvest. High food prices and below-average income from limited labor opportunities for poor and very poor households, is driving Crisis outcomes in the Northern Lowlands livelihood zone during the April to May 2023 minor lean season. The Season A harvest is contributing to improvements in food security in the Eastern part of the country. The Season A harvest is expected to be between 10 and 15 %. Food stocks for less privileged households will likely last until April to May. They must purchase food until the Season B harvest starts around June, particularly in the Northern Lowlands livelihood zone. High soil moisture from above-average rainfall has been promoting favorable growth and development for Season B crops since January 2023. The favorable rainfall during Season B is expected to enhance the crop production in June, likely to minimize the impact of reduced cultivated areas for the season. Note that the Burundian Franc (BIF) is not stable; it depreciates as headline inflation persists at over 25% in March 2024.

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## 3. Research Methodology

This study is an ex post facto research project. Though we could not control variables, we attempted to discover causes of the poor development performance of the PCDC. It is also analytical research because we used facts which are already available in the PCDC to make a critical evaluation of the material. The nature of this study also required the use of a combination of qualitative and quantitative analysis methods since both qualitative and quantitative data will be used.

### 3.1. Sample Size

The sample size is 20 communes chosen from a population of 119. All the items had equal probability of being chosen and equal chance to be included in the sample. Because this population is not homogeneous, we used a stratified sampling design to ensure representativity of the sample. And items within the stratum were randomly chosen.

**3.2. Data Sources**

In this study we have to collect qualitative and quantitative data from the communal plan and community development (PCDC) and from their respective Work Plan and Annual Budget (WPAB). These two planning tools contain both qualitative and quantitative data that will be critically analyzed and evaluated. A literature review on key words will also be another source of secondary data for this study.

**3.3. Data Analysis**

The data will be statistically analyzed i.e., for qualitative data we used measures of central tendency:

- the frequency distribution:

$$\bar{X} = \frac{\sum f_i X_i}{\sum f_i} = \frac{f_1 X_1 + f_2 X_2 + \dots + f_n X_n}{f_1 + f_2 + \dots + f_n}$$

while for quantitative data we used projection techniques. The formula is as follows:

$$Y_i = a_0 + a_1 X_i + \varepsilon_i \dots \dots \dots (1)$$

Where:

- $Y_i$  is the dependent variable;
- $a_0$  is the intercept;
- $a_1$  is the coefficient for trend;

$X_i$  is the independent variable; and  
 $\varepsilon$  is the error of estimation.

$$\hat{Y}_i = \hat{a}_0 + \hat{a}_1 \hat{X}_i \tag{1.a}$$

Where  $\hat{Y}$  is the estimated value of  $Y_i$ ,  $\hat{a}_0$  is the estimated intercept coefficient, and  $\hat{a}_1$  is the estimated slope coefficient. The values of residual term  $e_i = Y - \hat{Y}_i$  by replacing  $\hat{Y}_i$  with  $a_0 + a_1 X$  from equation (1.a), we get :

$$e_i = Y_i - a_0 - a_1 X_i \tag{1.2}$$

Then, we minimize

$$\sum_{i=1}^n (e_i)^2 = \sum_{i=1}^n (Y_i - a_0 - a_1 X_i)^2 \tag{1.3}$$

From the preceding expression (1.3), we can devise the following formula for the estimated coefficient of  $a_1$ :

$$\hat{a}_1 = \frac{\sum(Y_i - \bar{Y})(X_i - \bar{X})}{\sum(X_i - \bar{X})^2} \tag{1.4}$$

Where  $\bar{Y}$  and  $\bar{X}$  are the means for the variables  $Y_i$  and  $X_i$ .

The intercept term is estimated by:

$$\hat{a}_0 = \bar{Y} - a_1 \bar{X} \tag{1.5}$$

Accuracy of the results:  $R^2 = \frac{\sum(\hat{Y}_i - Y)^2}{\sum(Y_i - \bar{Y})^2}$

Where  $Y_i$  represents the actual values for Y observations,  $\bar{Y}$  is the mean of Y, and  $\hat{Y}_i$  represents the predicted values of  $Y_i$  on the basis of regression line (calculated using the estimated equation  $\hat{Y}_i = \hat{a}_0 + \hat{a}_1 \hat{X}_i$ ).

Relevance of the etimated cefficients

$$\frac{(\bar{X}_i - \mu)}{\sigma} \tag{1.6}$$

The significance of individual Coefficients is tested using t-student calculated as follow:

$$\frac{a_1 - \hat{a}_1}{\sigma} \tag{1.7}$$

$$t_{a_1} = \frac{a_1}{S\varepsilon_{a_1}} \tag{1.8}$$

$$t_{a_0} = \frac{a_0}{S\varepsilon_{a_0}} a_0^2 + a_1^2 = c^2 \tag{1.9}$$

$$SE^2 = \frac{\sum e_i^2}{n - 2} = \frac{\sum (Y_i - a - a_1 X)^2}{n - 2} \tag{1.10}$$

Where SE is the standard error of estimate.

With an estimate of  $\sum e_i^2$ ,  $a_0^2 + a_1^2 = c^2$ , we can estimate the variance associated with the estimated coefficients, a and b. The respective standard errors are calculated as:

$$SE_{a_0} = \sqrt{SE^2} \frac{\sum X_i^2}{n \sum (X_i - \bar{X})^2} \tag{1.11}$$

$$SE_{a_1} = \sqrt{\frac{SE_i^2}{\sum (X_i - \bar{X})^2}} \tag{1.12}$$

### 3.4. Expected contribution from the study

The major contribution of this study is to provide a new format of the communal plan and community development (PCDC). This will contribute to properly design development plan as it will also be easy to couple the new planning and budgeting policy with the PCDC. We also believe this study will contribute to the realization of the objectives of the country’s vision of Burundi 20240 as an emerging country and 2060 as a developed country. This study also will contribute to improving accountability and good financial management at the local authority’s levels.

## 4. Findings or Results of the research

### 4.1. Relevance of planned actions with identified problems

In the table 1 below, there are at least 16 common problems to all communes that are challenging the agriculture sector across the country. And these would be the focus of the communal planners for the next five years of the PCDC. However, contrary to our expectations, we found that problems mapping was the main issue in this PCDC 4th generation. Details on the problems found in the communal plan for community development and the number of problems that are identified by each commune are shown in the table and figure below.

Table 1: Identifying problems challenging the agriculture sector (See Appendix 1)

### 4.2. Discussion of the results

The results of our analysis show that, planners at the communal level did not value the importance of mapping the problems in agriculture and on solving them in their five-year plans. Thus, out of the 16 problems common to all the communes and of the 19 communes we studied, the results show that 10.5% have identified 8 problems to solve; 5% identified 6 problems challenging the sector; 5% identified 5 problems while another 5% identified 2 problems; 5% planned to solve 4 identified problems; another 5% of all the communes under study found 5 problems while 21% of the communes mapped 1 problem only. It was also interesting to find that 47% of the communes we studied have planned to develop their agriculture sector without indicating a single problem challenging the sector.

Since the CPCD is a five-years plan, there is a set of projects and activities planned every year and resources are also allocated accordingly. The following figure shows that of the 261 actions planned by all the communes in the agriculture sector alone in year one (Y1), only 21 actions i.e. 8% are re-lated to some identified problems, where 92% are planned actions which cannot contribute to solving any of the identified problems.

Table 2: Extent of Implementation of Trade Liberation of Strategies

COMMUNES	NO. OF PROBLEMS	%
BUGANDA	8	50
BUGENDANA	2	12.5
BUHINYUZA	1	6.25
BWAMBARANGWE	6	37.5
GIHANGA	8	50
GISURU	4	25
GITEGA	0	0
KABARORE	0	0
KAYOGORO	0	0

MATONGO	5	31.25
MISHIHA	1	6.25
MUHUTA	1	6.25
MURAMVYA	0	0
MUSIGATI	0	0
MWUMBA	0	0
NGOZI	0	0
NYANZA-LAC	0	0
ROGOMBO	0	0
RUMONGE	0	0

Source: Author's Compilation, 2025

The number of problems identified in agriculture sector in the communes are analyzed in the figure below:

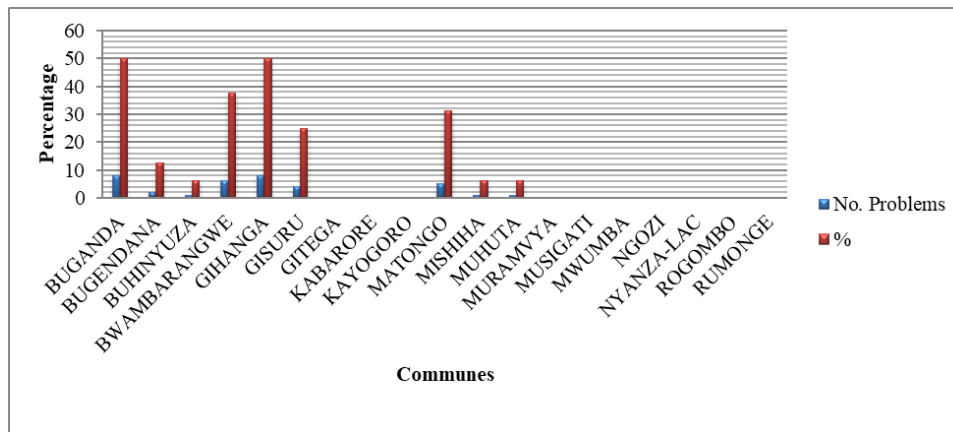


Figure 1: Percentages of the number of problems identified in agriculture  
Source: Communal plan for community development, 4th generation (CPCD).

### 4.3. Linking the CPCD to the annual plan and budgeting-programming

To improve the agriculture sector, the communal planners have set up a number of actions intended to meet the objectives of this sector in the coming five years. This made us analyse the coherence between the actions planned for the first year (2023) as the communal year working plan and budgeting programming (WPBP). The results show that the CPCD comprises at least 33 actions in the agriculture sector to be undertaken to develop agriculture and to ensure food security in the country in the next five years. Thus, we analysed the coherence between identified problems to be solved and the number of actions planned to be undertaken to tackle them for the first year i.e.2023-2024.

The results show that, in the first year of the implementation of the CPCD, 57% of the communes planned actions which cannot contribute to solving the problems facing agriculture in their communes, one commune identified 6 problems and planned 33 actions to face them. However, out of the 33 actions, only 8 (i.e. 24%) of them are related to the problems. In the overall, we found that during the year, all communes we studied will spend money on activities which will not necessarily contribute to solving problems challenging agriculture sector which in contradiction with the new budgeting and programming policy. The table below provides details on the relationship between identified problems, actions to be undertaken during the first year, and their relevance to related planned actions.

This table also show serious problems in terms of problem prioritization. On average there are at least 7 actions to be undertaken per year and per commune. And these actions must really contribute to solving the problem in order to meet the goals of the CPCD. However, we found that some planners have forgotten that the 33 actions are to be undertaken for a period of five years. For instance, 11% (i.e. 2 communes) of communes planned 33 (i.e. 100%) actions for the first year; 37% (i.e.7 communes) of the communes planned between 14 and 19 actions while 5% (i.e.1 commune) has planned 22 actions. And only 37% (i.e. 7 communes) planned actions which cluster around the mean ( $\bar{X}$ ) of actions per year (i.e. 37 communes).

Then we analysed whether these planned actions are really contributing to improving the sector. The results show that only two communes reached a score of 24%; another one has a score of 40%; three communes 17% and one commune 9%, while the remaining communes reached a score of 0% of planned actions which are directly linked to be identified problems.

Table 3: First year planned actions and their relevance

Communes	16 Identified problems in CPCD	Planned actions Y1	Relevant actions to identified problems Y1
BUGANDA	8	6	1
BUGENDANA	2	12	2
BUHINYUZA	1	2	1
BWAMBARANGWE	6	33	8
GIHANGA	8	6	3
GISURU	4	6	1
GITEGA	0	22	0
KABARORE	0	16	0
KAYOGORO	0	18	0
MATONGO	5	33	3
MISHIHA	1	6	0
MUHUTA	1	5	2
MURAMVYA	0	19	0
MUSIGATI	0	7	0
MWUMBA	0	18	0
NGOZI	0	18	0
NYANZA-LAC	0	15	0
RUGOMBO	0	14	0
RUMONGE	1	5	0

Source: Communal plan for community development, 4th generation (CPCD).

The relevance of planned actions in the CPCD and WPAB are given in the table below:

Table 4: The relevance of planned actions in the CPCD and WPAB

COMMUNE	16 Identified problems in CPCD	% of identified problem per commune	Planned actions Y1	Relevant actions to identified problems Y1	% of relevants actions
BUGANDA	8	50.0	6	1	16.6
BUGENDANA	2	12.5	12	2	16.6
BUHINYUZA	1	6.2	2	1	50.0
BWAMBARANGWE	6	37.5	33	8	24.2
GIHANGA	8	50.0	6	3	50.0
GISURU	4	25.0	6	1	16.6
GITEGA	0	0.0	22	0	0.0
KABARORE	0	0.0	16	0	0.0
KAYOGORO	0	0.0	18	0	0.0
MATONGO	5	31.3	33	3	9.1
MISHIHA	1	6.3	6	0	0.0
MUHUTA	1	6.3	5	2	40.0
MURAMVYA	0	0.0	19	0	0.0
MUSIGATI	0	0.0	7	0	0.0
MWUMBA	0	0.0	18	0	0.0
NGOZI	0	0.0	18	0	0.0
NYANZA-LAC	0	0.0	15	0	0.0

RUGOMBO	0	0.0	14	0	0.0
RUMONGE	1	6.3	5	0	0.0

Source: Communal plan for community development, 4th generation (CPCD).

The problems in agriculture, actions planned and their relevance are analyzed using the figure below.

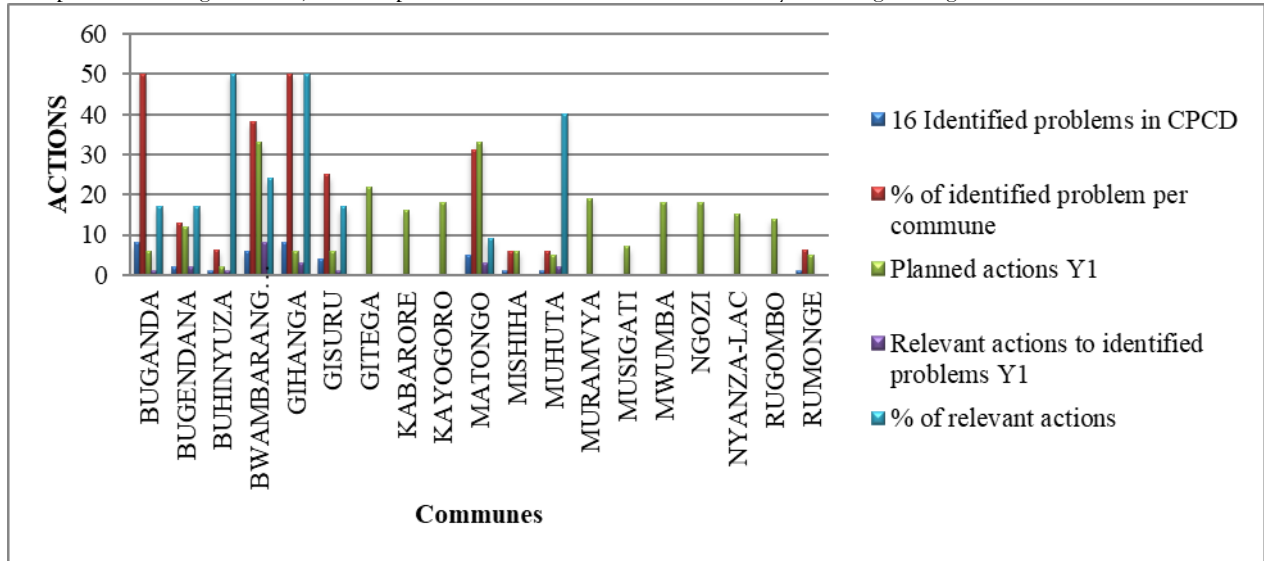


Figure 2: Total problems in agriculture, actions planned and their relevance

Source: Communal plan for community development, 4th generation (CPCD).

Coupling the CPCD with the new financial planning made us analyze the budget set for the agriculture sector in the five years of implementation and the actions planned for the first years and the budget allocation. The aim of this analysis was to know whether the money planned to be spent would be directed to actions that could really contribute to developing the sector. The results show that despite the incoherence between planned actions and the problems to be solved, one commune has planned to implement all the five-year actions in its 1st year plan (i.e.100%) with only 35% of the five-year budget set up for agriculture. Another commune whose five-year plan includes 33 actions, has planned to implement 67% actions in its first-year plan that will consume almost 10% of its total budget while another one planned to execute 63% of its five year planned actions which will require less than 1% of its total budget (i.e. 0.21%). The results also show that there are 11 communes that have zero actions that can contribute to developing the sector but which have set up an annual budget comprising between 0.04% to 9.8% of their total five years’ budgets. More details on these contradictions are included in the table below.

Table 5: Annual planned actions and annual Budget allocation

Strategic Axis 1 : PROGRAMME 44 -Agriculture						
COMMUNES	5 YEAR PLANNED ACTIONS	5 YEAR TOTAL BUDGET /BIF	1ST YEAR PLANNED ACTIONS	% 1st YEAR PLANNED ACTIONS	ANNUAL BUDGET /BIF	% OF 1st YEAR BUDGET PLAN
	PCDC	FOOD CROPS	PTBA	PTBA/WPAB	PTBA/WPAB	PTBA/WPAB
BUGANDA	33	2582139700	6	27	1440000	0.06
BUGENDANA	32	52430870000	12	19	3000000	0.06
BUHINYUZA	33	2177533340	2	6	2436000	0.11
BWAMBARANGWE	32	19012043432	33	13	0	0.00
GIHANGA	18	11356603413	6	33	7809300	0.07
GISURU	33	7165945553	6	18	27055320	0.38
GITEGA	33	2780888768	22	67	272589280	9.80
KABARORE	35	64789946125	16	46	2419425130	3.73
KAYOGORO	33	2476787580	18	55	800000	0.03
MATONGO	33	34722895867	33	100	12025162576	34.63
MISHIHA	33	1732109261	6	18	8527180	0.50
MUHUTA	25	92780000	5	20	1100000	1.19
MURAMVYA	33	45445000	19	61	285000	0.62
MUSIGATI	33	4191089300	7	21	3262960	0.08

MWUMBA	32	15564118297	18	63	33199000	0.21
NGOZI	34	7535838040	18	50	76602280	1.00
NYANZA-LAC	33	3199100000	15	45	218010000	7.00
ROGOMBO	28	139786996037	14	6	1145075000	1.00
RUMONGE	30	2385620000	5	17	1100000	0.50

Source: Communal plan for community development, 4th generation (CPCD).

**4.4. Projected population size for the years of the CPCD period of implementation**

The communal plan for community development is a five-years plan. And in terms of agriculture, its development will imply to produce enough food crops not only for household consumption but also and perhaps to set some for the market to generate revenues and for food security. Demographic fac-tor must be the basis for planning the population needs in terms of agriculture production. This would also serve as references during mid-term progress evaluation and during the final overall evaluation of the CPCD. However, though planners did not take into consideration their population size, the results of our study show that 53% of the communes mentioned the size of their population in 2023 while 47% of them did not provide any data. And all CPCD plans share in common the fact that their plans are not based on the real food needs of their respective population for the next five years. The table below provides projected population size for the year 2023 as the reference year, population size for 2026 which is the year of progress evaluation and report, and the data for 2028 which is the last year of the implementation of the CPCD.

Table 6: Projected population size for 2023, 2026 and 2028

YEAR COMMUNE	2023	2026	2028
BUGANDA	116753	129443	135071
BUGENDANA	183860	200421	209386
BUHINYUZA	92127	100540	104980
BWAMBARANGWE	112872	123667	129065
GIHANGA	93590	102149	106659
GISURU	168186	183549	191654
GITEGA	262110	286053	298684
KABARORE	105351	114973	120050
KAYOGORO	149739	170633	170633
MATONGO	114349	124625	128592
MISHIHA	85137	92914	97017
MUHUTA	102530	111899	116840
MURAMVYA	140855	152374	159786
MUSIGATI	139010	151709	158407
MWUMBA	104136	113647	118665
NGOZI	203862	222489	232314
NYANZA-LAC	190661	208080	217268
RUGOMBO	132889	145028	151431
RUGOMBO	246344	268450	280507

Source: Annuaire statistique de l’Institut National de la Statistique du Burundi (INSBU), 2023.

The projected population size for 3 years are analyzed in the figure below:

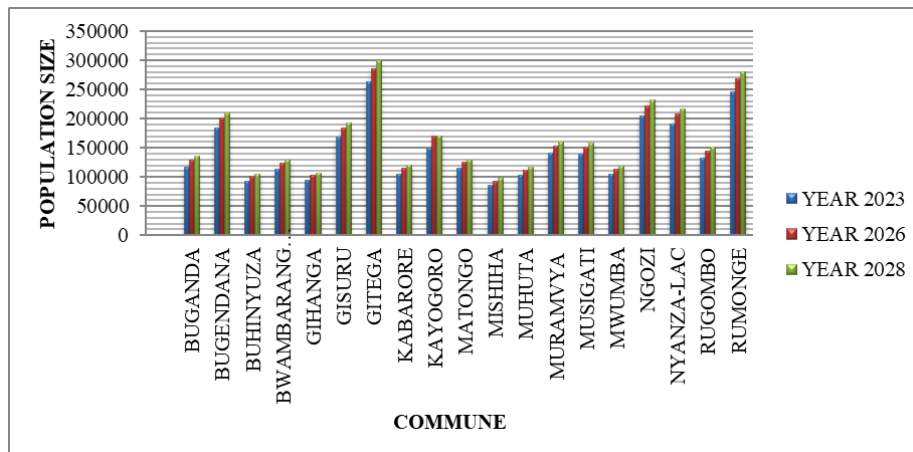


Figure 3: Projected Population Size for 2023, 2026 and 2028.

#### 4.5. Food requirements planning for the period of the 5th generation of the CPCD

The results of our research show that communal planners of the CPCD projected the soil productivity but did not provide details on the quantity of food the population of their communes will need and the size of land required to grow food crops. This raises the question about how they can ensure food security and how evaluators can get indicators of performance while evaluation the achievements of the objectives of the CPCD. And due to lack of data on age groups we decided to use categories of men and women to calculate the requirements in calories per day and per year. The results show that there was no way to estimate the quantity of food and the size of land required. But since we could not work on all food crops growing in these communes, we have worked on some crops which grow almost in all the communes or at least made the diet of all the population of the country. We selected crops which can provide protein, minerals, lipids, acids, calcium, vitamins, fibers, and carbohydrates.

Table 7: Projected tons per year and required land sizes to meet food needs of the population (See Appendix 2)

After we have seen the quantity of food that every commune must produce to feed its population due to low productivity of their soils, we calculated the size of the land that would be enough to ensure food security. Apart from the commune of Gihanga which grows mainly three food crops, we have considered six food crops for the other 18 communes we studied. The results of our analysis show that only commune Mwumba has enough space to grow the six food crops because it used only 36% of its total land. And six communes (31.5%) need more than 1000% of the total size to grow six food crops while the Ngozi commune needs over 2000% of its land to grow the same six food crops. The rest i.e. 11 communes need over 190% of their total land size for the same food crops. Since land productivity is very low, all these communes would need more than their total land sizes to be able to produce enough food only for household consumption.

Table 8: The size of land required to grow some food crops

COMMUNE	Year	2023	2026	2028
	Land size	%	%	%
BUGANDA	186	1349	1479	5538
BUGENDANA	274	1337	1466	10045
BUHINYUZA	263	643	704	5186
BWAMBARANGWE	193	1096	1209	7328
GIHANGA	287	295	334	348
GISURU	535	737	808	6570
GITEGA	315	965	1054	1116
KABARORE	209	319	459	1122
KAYOGORO	460	319	353	368
MATONGO	168	812	93	96
MISHIHA	381	190	213	220
MUHUTA	281	559	616	3394
MURAMVYA	193	667	729	764
MUSIGATI	294	211	234	244
MWUMBA	129	36	39	200
NGOZI	184	2429	2662	25180
NYAZA-LAC	385	1256	1387	14125
RUGOMBO	238	1301	1425	10622
RUMONGE	325	1580	1740	6651

Source: Estimated by authors

## 5. Conclusion and Recommendations

### 5.1. Conclusion

The commune is considered the basis of the development of the entire country. As decentralised ad-administrative entities, they are tasked to operationalize the policies from national development plans such as the National Development Plan (PND-2018-2027) and the Vision 2024 Burundi as an emerging country and 2060 Burundi as a developed country.

Communal planners have to translate national programs into projects according to the realities, the opportunities, challenges and needs of their re-spective populations. It is in this context that all communes have a five-year communal plan for community development (CPCD) as their development plans. Currently they are using the 4th generation CPCD, which started from 2023 to be closed in 2028. As we have showed it in the previous paragraphs, the implementation of the current CPCD has little chance to lead the country to the development of the agriculture sector and to ensure food security since it is not based on measurable variables nor has it not indicators which can serve as reference for progress monitoring and evaluation.

1. In the agriculture sector, we found that communal planners did not base their plan on real and reliable indicators such as the types of problems challenging the sector, the locally available opportunities in the sector, and the strategic objectives to achieve in the next five years of the CPCD.
2. The results have also shown that coupling the implementation of this planning tool with the new budgeting-programming policy has contributed to spending communal money on activities which have added value to the development of agriculture.
3. Financial management performance cannot be realized since the majority of planned activities for the first year of implementation of the CPCD are not related to be identified problems challenging agriculture at the communal level. There is a huge gap between planned activities for the first year of CPCD and the corresponding allocated budget. For instance, at least 11 communes out of 19 communes have allocated money on activities which cannot contribute to solving identified problems whereas other planned to spend more money on fewer relevant activities.
4. The development of the agriculture sector is the first objective of the CPCD. This means that the population of the commune will produce enough food for household consumption while setting aside part of their production for the market and for future security. However, we have found that these objectives cannot be met since planners of the CPCD did not refer to the growing size of the population, the increase of food needs, the lower productivity of the soil, or the size of the land required for achieving these goals. In this situation, it will be difficult or impossible to evaluate the performance of the implementation of both the CPCD and the new policy of budgeting and programming.

## 5.2. Recommendation

1. In order to meet the objectives of the communal plan for community development (CPCD) we recommend a new format of the CPCD which is based on real, relevant and accurate data.
2. Development planning should be done by experts and not left into the hands of mere public serv-ants of the communes.
3. All communes should put in place a statistics bureau that would collect data on a regular basis for effective and realistic planning.

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## Declaration of Competing Interests

The authors declare that they are not aware of any competing financial interests or personal relationships that may have influenced the work described in this document.

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## Ethical considerations

The article followed all ethical standards appropriate for this kind of research.

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## References

- Conte, A., & Morrow, N. (2002). Mali: Rural Community and Household food Security Profiles, Vulnerability Analysis and Mapping. Rome: World Food Programme.
- COOP-UK. (2017). Community Economic Development: Lessons from two years'action research. Development of government and local communitires.
- FAO. (1996, November 13-17). World Food Summit: Rome Declaration on World Food Security and World Food Summit Plan of Action. Rome.
- Gallardo, R. (2015). Community Economic Development: Key Concepts. Mississippi State University.
- Hansen, D. R., & Mowen, M. M. (2003). Cost Management: Accounting and Control. Peking University Press.
- Issac, L. (2014). Appraising the Impact of Budgeting and Planning on the Performance of Financial Institutions in Nigeria. Research Journal of Finance and Accounting, 12-26.

- Kaplan, R. S., & Atkinson, A. A. (1998). *Advanced Management Accounting*. Prentice-Hall International.
- Lee, F. (2024). *Structured Collaboration: The Key to Enabling Inclusive Growth*. Institute for Collaborative Working(IWC).
- Nti Obeng, K. (2023). *Public Sector Planning, Budgeting and Monitoring and Evaluation Frameworks and Systems in Ghana*. Johannesburg: Twende Mbele.
- Panth, P. (2020). *Economic Development: Definition, Scope and Measurement*. Hyderabad: Osmania University.
- Sen, A. (1988). *Handbook of Development Economics*. Elsevier Science Publisher.
- Shaw, J. D. (2007). *World Food Security: A History since 1945*. New York: Palgrave Macmillan.
- Stephen, D. (2006). Distinguishing between chronic and transitory food insecurity in emergency needs assessments: Desk Review. WPF.
- Todaro, M. P., & Smith, S. C. (2015). *Economic Development*. New York : Pearson.
- UNDP-UNEP. (2015). *Guidance Note on Integrating Environment linked Poverty Concerns into Planning, Budgeting, and Monitoring Processes*. UNEP.
- Usui, N., & Alisjahbana, A. S. (2005). Local Development Planning and Budgeting in Decentralized Indonesia: Missing Links in the Bottom-Up Approach. *Kansai University Review of Economics*, 71-97.
- WFP. (2009). *Hunger and Markets*. (Earthscan, Éd.) World Hunger Series.

## Appendix 1:

Table 1: Identifying problems challenging the agriculture sector

PROBLEM IDENTIFIED/COMMUNE	BUGANDA	BUGENDA	BUHINYUZA	BWAMBANGWE	GIHANGA	GISURU	GITEGA	KABARE	KAYOGORO	MATONGO	MISHIHA	MUHUTA	MURAMVYA	MUSIGATI	MWUMBA	NGOZI	NYANZALAC	RUGOMBO	RUMONGE
Weak agriculture productivity	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weak production diversification	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-use of modern techniques	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	X
Weak access to agriculture credits	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insufficient arable land	X	-	-	X	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Insufficient selected seed	X	X	-	X	X	X	-	-	-	X	-	-	-	-	-	-	-	-	-
Weak revenue of the households to buy fertilizers	X	X	-	X	-	X	-	-	-	X	X	-	-	-	-	-	-	-	-
Weak farmers' organisation	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Lack of shops of agriculture inputs	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil degradation/Erosion	-	-	-	X	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-
Lack qualified and enough agriculture monitors	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plants Diseases	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Lack of water for irrigation	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lack of maintenance services for irrigation canal	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lack of interest of the population to cultivate food crops	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil infertility	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: Communal plan for community development 4th edition (CPCD)

## Appendix 2

Table 7: Projected tons per year and required land sizes to meet food needs of the population

BUGANDA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026 127416	TOTAL CAL/D AY	TOTAL GRS/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans		48626545825	48626.54582	48627	121566		145398711	53070529338	53071	132676	133043	151818754	55413845171	55414	138535
Maize		196774115	71822551881	71823	20521		226538815	82686667432	82687	23625		236541579	86337676371	86338	24668
Banana		11739430	4284891770	4285	357		12812173	4676443291	4676	390		13377894	4882931236	4883	407
Sweet potatoes		243593162	88911504220	88912	7409		265852598	97036198296	97036	8086		277591296	1.01321E+11	101321	8443
Tomatoes		446820497	1.63089E+11	163089	10193		487689597	1.78007E+11	178007	11125		509222824	1.85866E+11	185866	11617
Soybean		308794219	1.1271E+11	112710	56355		337036891	1.23018E+11	123018	61509		4428305203	1.61633E+12	1616331	808166
Rice		364344160	1.32986E+11	132986	33246		397662521	1.45147E+11	145147	36287		415220851	1.51556E+11	151556	37889
Cassava		36725891	13404950348	13405	1676		40084382	14630799455	14631	1829		41854262	15276805541	15277	1910
BUGENDA	POPULATION SIZE 2023 183860	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026 200421	TOTAL CAL/D AY	TOTAL GRS/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans		209458725	76452434577	76452.43458	50968		228336473	83342812728	83343	55562	209386	238550192	87070820192	87071	58047
Maize		309876890	1.13105E+11	113105.0647	40395		355760198	1.29852E+11	129852	46376		371673708	1.35661E+11	135661	48450
Banana		18463254	67390878	6739.0878	674		2012706	73463792	7346	735		2102738	76749948	7675	767

			02	02			6	48				3	92		
Sweet potatoes		383112526	1.39836E+11	139836.0719	18645		417636628	1.52437E+11	152437	20325		436318203	1.59256E+11	159256	21234
Tomatotoes		700821626	2.558E+11	255799.8936	21317		764043144	2.78876E+11	278876	23240		798215963	2.91349E+11	291349	24279
Soybean		484413912	1.76811E+11	176811.078	176811		528110308	1.9276E+11	192760	192760		6942613819	2.53405E+12	2534054	2534054
Rice		571802189	2.08708E+11	208707.7988	52177		623372798	2.27531E+11	227531	56883		651254683	2.37708E+11	237708	59427
Cassava		57637661	21037746121	21037.74612	5259		62835978	22935131968	22935	5734		65646472	23960962308	23961	5990
BUHINYUZA	POPULATION SIZE 2023 92127	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026 100540	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans		104991215	38321793488	38321.79349	25548		114584696	41823414013	41823	27882	104980.3604	119644778	43670344075	43670	29114
Maize		155270369	56673684840	56673.68484	9446		178528965	65163072021	65163	10861		186412838	68040685899	68041	11340
Banana		9254035	3377722675	3377.722675	135		10099517	3686323731	3686	147		10545515.7	3849113233	3849	154
Sweet potatoes		192021221	70087745512	70087.74551	5841		209564979	76491217422	76491	6374		218819451	79869099575	79869	6656
Tomatoes		351473423	1.28288E+11	128287.7992	4276		383615844	1.4002E+11	140020	4667		400555839	1.46203E+11	146203	4873
Soybean		242932409	88670329111	88670.32911	88670		265147400	96778801013	96779	96779		3483771385	1.27158E+12	1271577	1271577
Rice		286730194	1.04657E+11	104656.5209	34886		312946364	1.14225E+11	114225	38075		326765797	1.1927E+11	119270	39757
Cassava		28902404	10549377309	10549.37731	301		31544994	11513922636	11514	329		32937992.3	12022367187	12022	343
BWAMBARANGWE	POPULATION SIZE	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE

	2023			EAR		2026			YEAR		SIZE 2028			TONE S/YEAR	
Beans	112872	104991215	38321793488	38321.79349	38322	123667	114584696	41823414013	41823	41823	129064.6358	119644778	43670344075	43670.34407	43670.344
Maize		155270369	56673684840	56673.68484	37782		178528964	65163072021	65163	43442		186412838	68040685899	68041	45360
Potatoes		93530036	34138463288	34138.46329	4877		107540290	39252205820	39252	5607		112289290	40985590829	40986	5855
Banana		9254035	3377722675	3377.722675	225		10099517	3686323731	3686	246		10545515.7	3849113233	3849	257
Sweet potatoes		192021221	70087745512	70087.74551	8761		209564979	76491217422	76491	9561		218819451	79869099575	79869	9984
Tomatoes		351473423	1.28288E+11	128287.7992	10691		383615844	1.4002E+11	140020	11668		400555839	1.46203E+11	146203	12184
Soybean		242932409	88670329111	88670.32911	88670		265147400	96778801013	96779	96779		3483771385	1.27158E+12	1271577	1271577
Rice		286730194	1.04657E+11	104656.5209	20931		312946364	1.14225E+11	114225	22845		326765797	1.1927E+11	119270	23854
Cassava		28902404	10549377309	10549.37731	1319		31544994	11513922636	11514	1439		32937992.3	12022367187	12022	1503
GIHANGA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Maize	93590	155270369	56673684840	56673.68484	56674	102149	178528964	65163072021	65163	65163	106659.0773	186412838	68040685899	68041	68041
Tomates		351473423	1.28288E+11	128287.7992	10691		383615844	1.4002E+11	140020	11668		400555839	1.46203E+11	146203	12184
Riz		286730194	1.04657E+11	104656.5209	17443		312946364	1.14225E+11	114225	19038		326765797	1.1927E+11	119270	19878
GISURU	POPULATION	TOTAL CALORIES	TOTAL Grs/YEAR	QUANTITY IN	LAND SIZE/K	POPULATION	TOTAL CAL/D	TOTAL Grs/YEAR	QUANTITY IN	LAND SIZE	POPULATION	TOTAL CAL/D	TOTAL Grs/YEAR	QUANTITY	LAND SIZE

	SIZE 2023	/DAY		TONES/YEAR	m <sup>2</sup>	SIZE 2026	AY		TONES/YEAR		TON SIZE 2028	AY		IN TONES/YEAR	
Beans	168186	191986813	70075186687	70075.18669	70075	183549	209533937	76479886953	76480	76480	191654.4362	218786114	79856931521	79857	79857
Maize		283460146	1.03463E+11	103462.9534	34487		326464860	1.1916E+11	119160	39720		340880237	1.24421E+11	124421	41474
Banana		16916241	6174427947	6174.427947	363		18462166	6738690564	6739	396.3935626		19277384	7036245143	7036	414
Sweet potatoes		351012000	1.28119E+11	128119.3799	8541		383089943	1.39828E+11	139828	9322		400005717	1.46002E+11	146002	9733
Tomatoes		644274280	2.3516E+11	235160.112	15677		703208608	2.56671E+11	256671	17111		734258661	2.68004E+11	268004	17867
Oranges		4468360	1630951276	1630.951276	67		4877404	1780252406	1780	74		6937962.5	2532356314	2532	106
Soybean		445235323	1.62511E+11	162510.8931	232158		485960390	1.77376E+11	177376	253394		6385008893	2.33053E+12	2330528	3329326
Rice		525276747	1.91726E+11	191726.0125	31954		573315925	2.0926E+11	209260	34877		598630754	2.185E+11	218500	36417
Cassava		52947896	19325982062	19325.98206	966		57790245	21093439495	21093	1055		60341980	22024822689	22025	1101
GITEGA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE
Beans		299235775	1.09221E+11	109221.058	182035	286053	326586057	1.19204E+11	119204	198673		341006521	1.24467E+11	124467	207446
Maize	262109	441758257	1.61242E+11	161241.7637	35832		508838200	1.85726E+11	185726	41272	298684.2306	531306040	1.93927E+11	193927	43095
Banana		26365494	9623405232	9623.405232	481		28775034	10502887268	10503	525		30045604.4	10966645623	10967	548
Sweet potatoes		547083996	1.99686E+11	199685.6586	13312		597081947	2.17935E+11	217935	14529		623446292	2.27558E+11	227558	15171

Tomatoes		1004352224	3.66589E+11	366588.5617	20366		1096227336	4.00123E+11	400123	22229		1144630280	4.1779E+11	417790	23211
Rice		818813998	2.98867E+11	298867.1091	49811		893701063	3.26201E+11	326201	54367		933161875	3.40604E+11	340604	56767
Cassava		82536451	30125804600	30125.8046	2510		90085067	32881049503	32881	939		94062717	34332891707	34333	981
KABARORE	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans	105351	120130411.1	43847600045	43848	43848	114973	131107704	47854312070	47854	47854	120049.7999	136896993	49967402354	49967	49967
Maize		177558665	64808912836	64809	14402		204272678	74559527420	74560	37280		213292693	77851832882	77852	38926
Banana		10587193	3864325455	3864	193		11554520	4217399727	4217	351		12064731.9	4403627134	4404	367
Sweet potatoes		219684255	80184753186	80185	5346		239756286	87511044342	87511	8751		250343186	91375263038	91375	9138
Avocadoes		2063187	753063105.5	753	75		22520169.7	821985839.7	822	82		3682377540	1.34407E+12	1344068	134407
Cassava		33090935	12078191367	12078	1007		36116624	13182567611	13183	1648		37711378.6	13764653194	13765	1721
KAYOGORO	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans	149739	170913179	62383310433	62383	34657	170633	186534067	68084934286	68085	37825	170633.2524	194770706	71091307791	71091	39495
Maize		252369620	92114911432	92114.91143	40050		290629857	1.0608E+11	106080	46122		303462973	1.10764E+11	110764	48158
Banana		15059701	54967908	5497	275		1643594	59991211	5999	300		1716170	62640205	6264	313

			51				8	52				0.3	99		
Sweet potatoes		312488795	1.14058E+11	114058	4562		341045929	1.24482E+11	124482	4979		356105281	1.29978E+11	129978	5199
Tomatoes		573474906	2.09318E+11	209318	8373		625932398	2.28465E+11	228465	9139		653570513	2.38553E+11	238553	9542
Rice		467570216	1.70663E+11	170663	56888		510331407	1.86271E+11	186271	62090		532865288	1.94496E+11	194496	64832
Cassava		47131078	17202843389	17203	1720		51441406	18776113123	18776	1878		53712821	19605179664	19605	1961
MATONGO	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans	114349	130377051	47587623452	47588	1190	124625	142100338	51866623381	51867	1297	128592.0854	146619916	53516269263	53516	1338
Maize		192723230	70343978762	70344	2345		221399778	80810918825	80811	2694		228441517	83381153609	83381	2779
Banana		11490475.18	4194023441	4194	65		12523560	4571099392	4571	70		12921939	4716507725	4717	73
Sweet potatoes		238427360	87025986391	87026	1450		259863870	94850312392	94850	1581		268130234	97867535290	97868	1631
Tomatoes		436758736	1.59417E+11	159417	901		476064447	1.73764E+11	173764	8688		491189216	1.79284E+11	179284	8964
Weat		356244083	1.30029E+11	130029	130029		161370280	58900152125	58900	982		166498491	60771949344	60772	1013
Cassava		35909404	13106932309	13107	328		39140361	14286231898	14286	357		40384209.1	14740236313	14740	369
MISHIHA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Maize	85137	143489522	52373675	52374	20949	92914	1652420	60313361	60313	24125	97016	1725387	62976644	62977	25191

			392				87	860			.82953	53	714		
Potatoes		86433620	31548271471	31548	2103		99536689	36330891408	36331	2422		103931973	37935170081	37935.17008	2529.0113
Banana		8562437	3125289595	3125	391		9344923	3410896871	3411	426		9757571.9	3561513743	3562	445
Tomatoes		326055190	1.1901E+11	119010	29753		355880475	1.29896E+11	129896	32474		371594905	1.35632E+11	135632	33908
Mangoes		2335594	852491735.2	852	122		2549398	930530339.2	931	931		1907394.74	696199081.3	696	99
Rice		265842547	97032529654	97033	12129		290154927	1.05907E+11	105907	13238		302967216	1.10583E+11	110583	13823
Cassava		26796929	9780878989	9781	652		29247617	10675380090	10675	712		30539095.4	11146769822	11147	743
Avocadoes		139447490	50898333652	50898	6362		152190348	55549476980	55549	6944		158910711	58002409452	58002	7250
MUHUTA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans	102530	117239117	42792277532	42792	13373	111899	127957965	46704657091	46705	14595	116840.3477	133607843	48766862636	48766.86264	15239.645
Maize		172804452	63073624915	63074	22526		199365218	72768304682	72768	25989		208168025	75981329051	75981.32905	27136.189
Potatoes		104092022	37993587935	37994	4130		120091401	43833361196	43833	4764		125393937	45768787043	45768.78704	4974.8682
Banana		10326539	3769186594	3769	698		11270557	4113753326	4114	762		11768200.8	4295393298	4295.393298	795.4432
Sweet potatoes		214275676	78210621836	78211	7110		233864059	85360381523	85360	7760		244190167	89129410934	89129.41093	8102.6737
Tomatoes		394422482	1.43964E+11	143964	10067		430513433	1.57137E+11	157137	10989		449521949	1.64076E+11	164075.5113	11473.812
Soybean		272523789	99471183064	99471	58512		297459165	1.08573E+11	108573	63866		3908294501	1.42653E+12	1426527.493	839133.82
Rice		321372391	1.17301E+	117301	39100		3507729	1.28032E+	128032	42677		3662607	1.33685E+	133685	44561.7

			11				59	11				74	11	.1824	27
Cassava		32394337	11823932994	11824	1478		35357914	12905638692	12906	1613		36919086	13475466382	13475.46638	1684.4333
MURAMVYA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans	140855	160773974	58682500552	58683	29341	152374	173915380	63479113703	63479	31740	159785.5308	182381677	66569312151	66569.31215	33284.656
Maize		237396825	86649841122	86650	21662		270969281	98903787642	98904	24726		284160216	1.03718E+11	103718.4789	25929.62
Potatoes		143000456	52195166564	52195	3480		163223459	59576562438	59577	3972		171169267	62476782526	62476.78253	4165.1188
Banana		14166288	5170695056	5171	259		15324327	5593379465	5593	280		16070196.3	5865621636	5865.621636	293.28108
Tomatoes		539458584	1.96902E+11	196902	7876		583522652	2.12986E+11	212986	8519		611964212	2.23367E+11	223366.9376	8934.6775
Weat		182788519	66717809312	66718	26687		197721615	72168389335	72168	28867		207355815	75684872549	75684.87255	30273.949
Cassava		44335355	16182404649	16182	809		47957378	17504442833	17504	875		50294153	18357365837	18357.36584	917.86829
Cabbage		2639009238	9.63238E+11	963238	38530		2854605811	1.04193E+12	1041931	41677		2993699582	1.0927E+12	109270.0347	43708.014
MUSIGATI	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Maize	139010	234286585	85514603507	85515	17103	151709	269891443	98510376581	98510	19702	158407.4334	281808459	1.0286E+11	102860.0874	20572.017
Palm oil		26410440	9639810637	9640	1928		28824406	10520908219	10521	2104		30097143.4	10985457332	10985.45733	2197.0915

Tomatoes		532798443	1.94471E+11	194471	9724		581538005	2.12261E+11	212261	10613		607215046	2.21633E+11	221633.4919	11081.675
Cabbage		2606132513	9.51238E+11	951238	31708		2844487914	1.03824E+12	1038238	34608		2970083341	1.08408E+12	1084080.419	36136.014
Cassava		43783026.21	15980804567	15980.80457	1598		47787397	17442399887	17442	1744		49897400.1	18212551047	18212.55105	1821.2551
MWUMBA	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE
Beans	104136	118777158	43353662669	43354	240	113647	129631293	47315422055	47315	263	118664.8092	135355277	49404675974	49405	275
Maize		175509738	64061054307	64061	256		201972352	73719908521	73720	295		210890618	76975075675	76975	308
Potatoes		105721602	38588384659	38588	67		121661857	44406577721	44407	77		127033943	46367389070	46367	80
Banana		10467337	3820578090	3821	45		11423757	4169671143	4170	49		11928184.4	4353787313	4354	51
Sweet potatoes		217197248	79276995374	79277	159		237042949	86520676211	86521	173		247509827	90341086750	90341	181
Tomatoes		398123214	1.45315E+11	145315	769		434535221	1.58605E+11	158605	839		453721983	1.65609E+11	165609	876
Soybean		275151773	1.0043E+11	100430	1545		300315439	1.09615E+11	109615	1686		3945828758	1.44023E+12	1440227	22157
Rice		324685462	1.1851E+11	118510	1394		354374715	1.29347E+11	129347	1522		370022122	1.35058E+11	135058	1589
Cassava		32728295	11945827528	11946	159.2777004		35720971.3	13038154523	13038.15452	173.8420603		37298229.9	13613853908	13614	182
NGOZI	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/DAY	TOTAL Grs/YEAR	QUANTITY IN TONS/YEAR	LAND SIZE

Beans	203862	233018368	85051704 385	85052	34021	222489	2543216 50	92827402 312	92827	37131	23231 3.662 2	2655514 15	96926266 600	96926	38771
Maize		343587794	1.2541E+1 1	125410	25082		3962464 66	1.4463E+1 1	144630	28926		4137430 29	1.51016E+ 11	151016	30203
Potatoes		206966590	75542805 261	75543	6295		2386865 35	87120585 137	87121	7260		2492259 19	90967460 588	90967	7581
Banana		20526079	74920187 20	7492	499		2240242 3	81768843 65	8177	545		2339162 2.5	85379422 18	8538	569
Sweet potatoes		425916133	1.55459E+ 11	155459	15546		4648502 76	1.6967E+1 1	169670	16967		4853761 67	1.77162E+ 11	177162	17716
Tomatoes		783494308	2.85975E+ 11	285975	13950		8551834 24	3.12142E+ 11	312142	15226		8929436 90	3.25924E+ 11	325924	15899
Avocadoes		4028962	14705711 67	1471	67		4397882	16052269 56	1605	73		7166635 641	2.61582E+ 12	261582 2	118901
Soybean		541371737	1.97601E+ 11	197601	304001		5909039 57	2.1568E+1 1	215680	331815		7763855 278	2.83381E+ 12	283380 7	4359703
Rice		638473867	2.33043E+ 11	233043	46609		6968816 84	2.54362E+ 11	254362	50872		7276524 06	2.65593E+ 11	265593	53119
Cassava		64358166	23490730 520	23491	1958		7024567 4	25639670 913	25640	2137		7334736 2.5	26771787 318	26772	2231
NYANAZA -LAC	POPUL ATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTI TY IN TONES/Y EAR	LAND SIZE/K m <sup>2</sup>	POPUL ATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANT ITY IN TONES/ YEAR	LAND SIZE	POP ULA TION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUAN TITY IN TONE S/YEA R	LAND SIZE
Beans	190662	217762934	79483470 920	79483	15897	208080	2376684 33	86748977 907	86749	17350	21726 8.070 8	2481627 54	90579405 272	90579	18116
Maize		321340007	1.17289E+ 11	117289	24435		3702998 80	1.35159E+ 11	135159	28158		3866505 83	1.41127E+ 11	141127	29402
Banana		19185256	70026185 86	7003	1401		2093876 0	76426474 85	7643	1529		2186332 0.5	79801119 78	7980	1596
Sweet potatoes		398094070	1.45304E+ 11	145304	969		4344792 75	1.58585E+ 11	158585	1057		4536639 00	1.65587E+ 11	165587	1104
Tomatoes		731371099	2.6695E+1 1	266950	19922		7982808 67	2.91373E+ 11	291373	21744		8335283 80	3.04238E+ 11	304238	22704

Avocadoes		3757130	13713522 76	1371	5		4101108	14969045 22	1497	6		6690305 580	2.44196E+ 12	244196 2	9768
Soybean		505396063	1.8447E+1 1	184470	368939		5516297 23	2.01345E+ 11	201345	402690		7247831 045	2.64546E+ 12	264545 8	5290917
Rice		596165920	2.17601E+ 11	217601	51810		6506950 87	2.37504E+ 11	237504	56549		6794262 23	2.47991E+ 11	247991	59045
Cassava		60093525	21934136 514	21934	4387		6559006 5	23940373 636	23940.37 364	4788		6848616 3.3	24997449 589	24997	4999
RUGOMBO	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/ YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/ YEAR	LAND SIZE
Beans	132889	151716440	55376500 467	55377	79109	145028	1655831 87	60437863 385	60438	86340	15143 1.45	1728944 79	63106484 951	63106. 48495	90152
Maize		223969620	81748911 432	81749	23357		2579872 88	94165360 180	94165	26904		2693786 64	98323212 508	98323	28092
Banana		13367557	48791583 22	4879	1394		1458919 9	53250576 98	5325	1521		1523338 4.5	55601853 38	5560	1589
Sweet potatoes		277376809	1.01243E+ 11	101243	7788		3027258 83	1.10495E+ 11	110495	8500		3160927 28	1.15374E+ 11	115374	8875
Tomatoes		509245143	1.85874E+ 11	185874	7435		5558286 25	2.02877E+ 11	202877	8115		5803705 18	2.11835E+ 11	211835	8473
Avocadoes		2614648	95434649 6.7	954	29		2854003 25	10417111 25	1042	32		4658531 485	1.70036E+ 12	170036 4	51526
Soybean		351916060	1.28449E+ 11	128449	160562		3841058 97	1.40199E+ 11	140199	175248		5046742 443	1.84206E+ 12	184206 1	2302576
		415164980	1.51535E+ 11	151535	27552		4531345 43.1	1.65394E+ 11	165394	30072		4731422 35	1.72697E+ 11	172697	31399
		41848630	15274749 932	15275	1909		4567596 2	16671726 109	16672	2084		4769273 7.3	17407849 102	17408	2176
RUMONGE	POPULATION SIZE 2023	TOTAL CALORIES /DAY	TOTAL Grs/YEAR	QUANTITY IN TONES/YEAR	LAND SIZE/K m <sup>2</sup>	POPULATION SIZE 2026	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/ YEAR	LAND SIZE	POPULATION SIZE 2028	TOTAL CAL/D AY	TOTAL Grs/YEAR	QUANTITY IN TONES/ YEAR	LAND SIZE

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Beans	246344	281424323	1.0272E+11	102720	51360	268450	306693432	1.11943E+11	111943	55972	280506.5051	320466966	1.1697E+11	116970	58485
Maize		415186304	1.51543E+11	151543	50514		477844448	1.74413E+11	174413	58138		499304336	1.82246E+11	182246	60749
Sweet potatoes		514449961	1.87774E+11	187774	15022		560636904	2.04632E+11	204632	16371		585815167	2.13823E+11	213823	17106
Tomatoes		945501751	3.45108E+11	345108	34511		1030472460	3.76122E+11	376122	37612		1076748294	3.93013E+11	393013	39301
Oranges		11958044477	4.36469E+12	4364686	198395		13035130089	4.75782E+12	4757822	216265		1.362E+10	4.97145E+12	4971454	225975
Mangoes		6780695	2474953705	2474.953705	92		7390539	2697546831	2698	2698		5533382.84	2019684736	2020	75
Soybean		653350373	2.38473E+11	238472.8861	119236		712062340	2.59903E+11	259903	129951		9362494818	3.41731E+12	3417311	1708655
Rice		770646528	2.81286E+11	281285.9826	43275		839888301	3.06559E+11	306559	47163		877605994	3.20326E+11	320326	49281
Cassava		77681170	28353627050	28353.62705	945		84660741	30901170358	30901	1030		88462684.2	32288879716	32289	1076