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Full Length Research Paper

Burundi's Access to and Use of Agricultural Land

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The This study has studied and examined Burundi's agricultural land accessibility and utilization. Its strengths, weaknesses, opportunities, and threats have been examined using SWOT and SOR analysis, and several methods that can result in sustainable agriculture have been identified. Burundi has been noted to have a significant issue with the atomicity of its agricultural land. Over 40% of farming households work plots smaller than 0.25 hectares. The provinces with the densest populations are Kayanza and Ngozi. A total of 145.3 tons/ha of arable land are lost annually, and sloping hills make up 44% of the agricultural land. Arable land, however, has expanded and now makes up 79.17% of the nation's total area in 2018 as a result of land development projects. Regretfully, research indicates that throughout the past ten years, the rate of increase in agricultural output was only 2%, while the pace of population growth was between 2.6% and 3%. A land consolidation policy should be put into place, particularly in places with a high population density. To preserve soils and conserve water, it is best to bolster anti-erosion measures for degraded soils. By sharing strategies and tactics that will guarantee sustainable land management, the Burundian government and non-governmental organizations should assist the agricultural industry.

Key words: Agricultural land, Land accessibility, Land use, SWOT and SOR analysis.

INTRODUCTION

The Burundi Burundi is a small East African landlocked nation with a humid tropical climate and steep mountains (ADB, 2022). In 2008, there were an estimated 8,060,000 people living there, with 51% of them being women and over 90% of them residing in rural areas. It is estimated that 10.2 million people called Burundi home in 2016. Over the previous seven years, the population has grown at an average yearly rate of 3% (PAM, 2016 and ISTEEBU, 2015). Burundi is one of the most densely inhabited nations in Africa, with almost 300 people per square kilometer. There are more than 500 persons per km2 in the country's central-western provinces of Kayanza and Bujumbura. Nearly 46% of the population is under the age of 15, and less than 10% of people live in urban areas (BM, 2019; WFP, 2016 and ISTEEBU, 2015).

With over 90% of the workforce employed, 40% of the country's GDP, and 30% of all export earnings, agriculture is the backbone of the Burundian economy. Burundi ranked second in terms of gold exports (49%) and coffee exports (21%) (FSIN, 2019). According to Grebmer et al. (2020), further agricultural exports include tea (8%), wheat (4%), processed goods (1%), and tobacco (1%). The Burundian agricultural system relies heavily on livestock, which contributes 12% of the country's GDP (Jeníček et al., 2016). For rural communities, livestock is a traditional source of household savings as well as a source of income, food, and fertilizer (Kearney, 2010). 85% of all households experience food insecurity, and the per capita income is less than $1 per day (EGAE, 2014). Over 70% of Burundians in 2020 live below the international poverty level, which is set at $1.90 per day; over 64% live below the national poverty line, which is set at $0.88 per day; and 65% of young people are unemployed (WFP, 2019). Sectoral contributions to GDP growth served as the primary basis for the analysis of Burundi's economic position before being extended to other growth metrics. Agriculture, industry and crafts, forestry, and energy are currently the main economic sectors. The GDP is 40% contributed by the agriculture sector and 2% by the forestry sector. The GDP contributions of the industrial and energy sectors are 18.3% and approximately 4.6%, respectively (1% for electricity) (MINAEGRIE, 2018).

According to Minani (2014), population expansion invariably results in the depletion and excessive utilization of agricultural land. As a result, in an already constrained space, crop productivity and soil fertility both diminish. The author claims that because agriculture takes precedence over other uses of the limited land resources due to demographic pressure, pastures are being reduced.

Low soil fertility and low agricultural yields are caused by intensive farming and grazing on steep, extensively eroded hills, high soil acidity, and a lack of agricultural inputs. This study looks at Burundi's agricultural land use and accessibility in light of these limitations. In order to show the ways to increase access to and use of agricultural land, this article examines a wide range of advantages, disadvantages, possibilities, and dangers.

MATERIAL AND METHOD

The qualitative and quantitative data used in this study were gathered from books, publications, scientific articles, theses, and the websites of various organizations and institutions. The agricultural system and land use, the distribution of land and population pressure, the availability of arable land, and the loss and degradation of arable land were the main topics of the thorough literature review. However, surveys that were administered during the focus groups were used to collect the primary data. Additionally, secondary data were employed in the authoring and discussion of this research study's findings.

Information and data from many sources were analyzed, assessed, and interpreted in light of the land access and use situation's goals. Additionally, in order to facilitate clear and intelligible information, the classification and organization of quantitative data were compared based on the pertinent literature.

An organization's or any industry's strengths, weaknesses, opportunities, and threats can be shown and identified using a SWOT analysis. Both primary data from surveys and secondary data from publications and organizations were used in this analysis. To identify the internal and external effects and the best course of action for the Burundian agricultural industry, SWOT and SOR analyses were employed. Table 1 shows the layout of the SWOT analysis matrix.

Table 1: SWOT analysis table

	Factors	**In terms of impact**	
		Positive	Negative
From the sourcing point of view	Internal factors	Strengths	Weaknesses
	External factors	Opportunities	Threats

According to Vermeire and Gellynck (2009), OR analysis is a technique used in many different fields to assess the performance, management, and production processes of activities. SWOT analysis is the process of developing a strategy based on the findings of an analysis (Rajasekaran, 2009). SWOT and SOR analyses of Burundi's agricultural land status have been conducted in

this study. Following a list of opportunities and strengths, plans are created to stop and lessen threats and weaknesses. The strategic orientation matrix (SOR) then identifies the weaknesses and assesses which strengths have been employed for each suggested solution. A synopsis of the SOR analysis presentation is shown in Table 2.

Table 2: SOR matrix summary

Points	What is its significance?	What can be done?
The total score is calculated for each S (Strength), W (Weakness), O (Opportunity) and T (Threat)	How important are the different S, W, O, T?	The development of two or three strategies around the most important opportunities and threats to maximize external factors.
Calculation of each of the scores	How to convert S, W, O or T?	Development of strategic objectives for the combinations that achieve the highest scores.
Combination	What are the general solutions?	High S-O: Attack; high chance. High ST: Defense; we have the strength to deal with threats. High W-O: Work on weaknesses to take advantage of opportunities. High W-T: The threats are heavy; it is difficult to produce solutions.

RESULTS AND DISCUSSIONS

Current situation of Burundi's agricultural land

Information regarding Burundian agricultural areas has been provided in this section of the study. The distribution of Burundi's land by regions and land uses is the main emphasis of this study's findings. The effects of population density on agricultural land evolution have been studied.

Land distribution and population pressure

Burundi's rural areas have been under a lot of strain due to its demographic and topographical features, which have been made worse by climate concerns. Ten to twelve percent of the country is covered by natural forests, whereas the majority of the land is rough and mountainous (WFP, 2021). In addition, the nation boasts a rich network of rivers, freshwater lakes, fertile arable land, productive marshes, and copious amounts of rainfall. Burundi, on the other hand, is the second most densely populated country in Africa, with a population density of roughly 470 people per km2, and it is growing at a pace of 3.3% annually (PAM, 2016).

Despite gradual urbanization, 87% of people still reside in rural areas and work primarily in small-scale agriculture. This has put a great deal of strain on agricultural land and forests. Due to the progressive growth in intensive farming techniques brought on by the decline in soil fertility and land degradation, the steep slopes were more farmed without erosion management, and there was a considerable intermediate fragmentation of tiny plots. Agricultural land use is currently in a dangerous and unsustainable state. In mountainous agricultural regions, landslides have become more frequent and intense. These events are exacerbated by climate calamities including droughts, floods, and torrential rains. Because of this, there is more pressure to turn the remaining forests into agricultural land because it impacts arable land (WB, 2018). With about 90% of the population living in agriculture, Burundi's economy is mostly focused on subsistence farming. The country is also known for its fragmented farmland and extremely low production. Over the past ten years, agricultural production has grown at a pace of 2%, which is slower than the population growth rate, which has ranged from 2.6% to 3% (WFP, 2016). According to research conducted by the FCSVA (Comprehensive food security and vulnerability analysis), Figure 1 displays the average land ownership per household in each province of the nation (WFP, 2008).

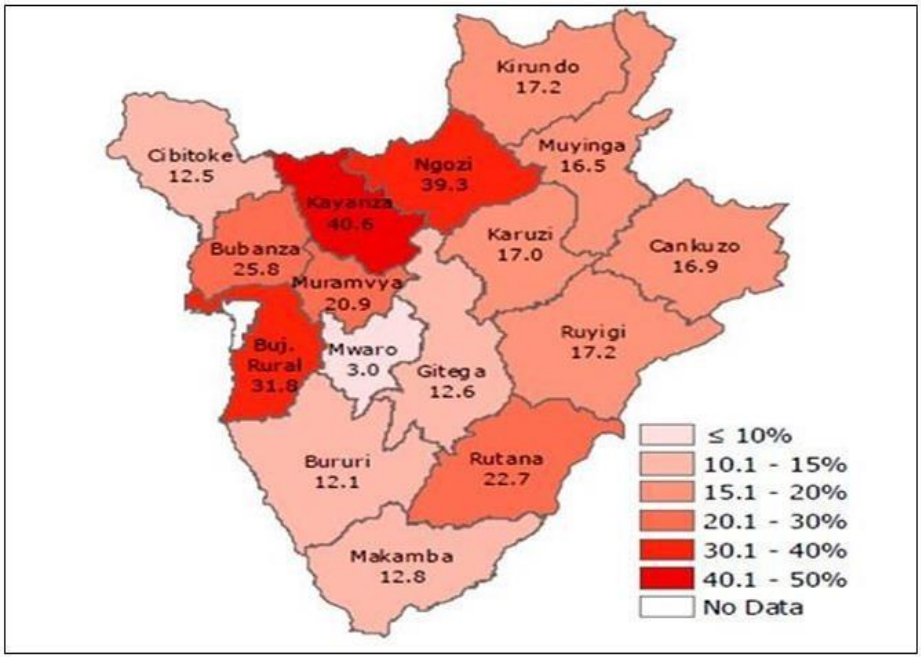

Figure 1: Distribution of households with less than 0.25 ha (hectare) of land by province

The FCSVA's 2008 survey reports, which depict households' ability to acquire land, are depicted in Figure 1. 40.6% of houses in Kayanza province had an area of less than 0.25 ha, according to a research by FCSVA. With percentages of households with fewer than 0.25 hectares, the provinces of Ngozi and Bujumbura Rural come next, accounting for 39.3% and 31.8% of all households, respectively. Between 15.1% and 20% of households in numerous provinces of the

nation farm on land smaller than 0.25 hectares. Large family plots are found in Mwaro province, where just 3% of households have an area of less than 0.25 ha, and areas with a particularly low rate of less than 15% have somewhat favorable land access rates (WFP, 2008). Plots are often somewhat modest, despite the fact that land is widely accessible. Nonetheless, rapid population expansion causes the amount of land used for food production to steadily decline. 23.1% of rural residents have access to 0.25 hectares or less of arable land when the various methods of land access (ownership, rental, and borrowing) are combined. In general, the rate of increase in agricultural production does not keep pace with the rate of population expansion. According to recent data, food demand is rising between 3 and 6% annually, whereas agricultural production is primarily constrained by land scarcity and diminishing land productivity, which lowers food production per capita (Quentin et al., 2008). The unpredictability of land availability in Rwanda encourages members of Domestic Units to work in non-agricultural occupations. In Kimonyi Sector, Domestic Units typically exploit a tiny area of land (0,25 ha). According to Miero (2022), the land dependency ratio is 4/1.

According to several research, food insecurity and poverty are still big issues in Burundi. Furthermore, according to a study on household vulnerability analysis, 72% of people in the northern part of Burundi are food insecure, meaning they consume less than 2,100 kcal of food per day, and 66% of people live in poverty (Niragria, 2009). According to Quentin's research, 63% of the country's population experienced food insecurity (Baghdad et al., 2008) and 67% of the population lived in poverty (Quentin et al., 2008).

General land use

Burundi's agricultural methods combine multiple food crops on a single plot and are primarily focused on self-sufficiency. Seldom is fallow observed. About 1,210,000 hectares, or 43.5% of the country's total land area, are used for food crops (not including farmed marshes), whereas 104,000 hectares, or 3.7% of the total area, are used for cash crops. Approximately 81,403 hectares, or 2.9% of the nation's total land area, are made up of cultivated wetlands (MINATTE, 2008).

128,375 hectares, or roughly 4.6% of the country's total land area, are covered by forested regions. Ninety-seven percent of the fuel is wood. Over the last 20 years, the pace of deforestation has increased, averaging 3.2% between 1983 and 1998. The prevalence of less productive breeds further reduces productivity. 775,506 hectares, or 27.9% of the entire country, are pastures (MİNATTE, 2008). The usage of organic fertilizer, the primary fertilizer available to farmers, has been significantly curtailed due to the decrease in livestock.
For further details on the allocation of Burundian lands based on their availability and utility, see Figure 2 (MAP, 2021 and FAOSTAT, 2022).

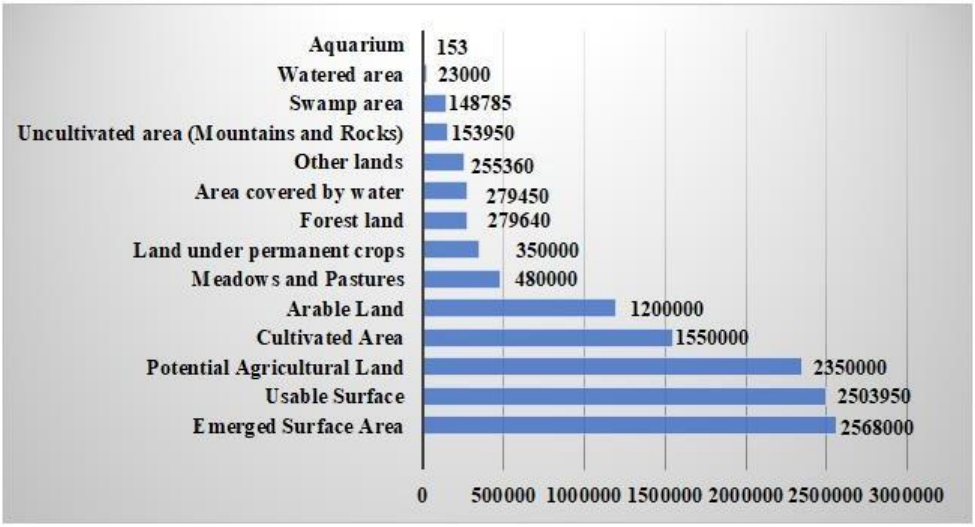

Figure 2: Distribution and land use in 2016 (ha)

The region of Burundi is depicted by usage in Figure 2. Of the country's about 2,783,000 hectares of land, 1.2 million ha (46.7%) are arable land and 2,350,000 ha (80%) are regarded as prospective agricultural land. Only 23,000 ha (1%) are irrigated, 480,000 ha (24%) are permanent meadows and pastures, and 350,000 ha (17%) are continuously planted (World Data Atlas 2021). The total area under cultivation is actually 1,550,000 hectares, which includes 153,950 hectares of non-arable land (rocks and mountains) that cannot be used for agriculture (WFP, 2021). Burundi's forests, which make up only 279,640 ha, or roughly 10.9% of the country's total land area, are being severely exploited for building materials, firewood, and charcoal. As a result of population pressure fighting for limited resources, the forests are progressively being turned into agricultural land. Burundi's forests, which make up only 279,640 ha, or roughly 10.9% of the country's total land area, are being severely exploited for building materials, firewood, and charcoal. As a result of population pressure fighting for limited resources, the forests are progressively being turned into agricultural land. The aquarium only takes up 153 hectares of the nation's entire land area (WFP, 2021).

Availability of arable land

94% of households nationwide have full or partial access to land, 43% of agricultural households in Burundi rent land in cash, and 5% rent land in exchange for in-kind compensation. A significant percentage of farmers whose property is insufficient for plant production are represented by 48% of land renters (Minaegrie, 2012). This united group lacks sufficient fertile soil, yet not being landless. The agricultural land availability of the households surveyed is displayed in Table 3 (Minaegrie, 2012).

Table 3: Areas grown by households

Percentage of households (%)	Agricultural area (ha)
21	Less than 0.1
39	0.1-0.25
26	0.25- 0.5
8	0.5- 0.75
5	More than 0.75

Small farms dominate agriculture, with 86% of households growing on areas smaller than 0.5 hectares. Less than 0.1 hectares of agricultural land are used by 21% of families in Table 3. 10.6% of plots are exploited by individuals, according to the findings of a survey carried out by MINAEGRIE (MINAEGRIE, 2012). Only 5% of rural households own a parcel larger than 0.75 hectares, according to the same survey.

Geographical factors, unsustainable farming methods, inadequate infrastructure, and a lack of institutional and governmental ability all contributed to Burundi's agricultural difficulties (Collins et al., 2013). The topography of the region determines the distribution of these arable lands, and Figure 3 displays the location and proportion of agriculture.

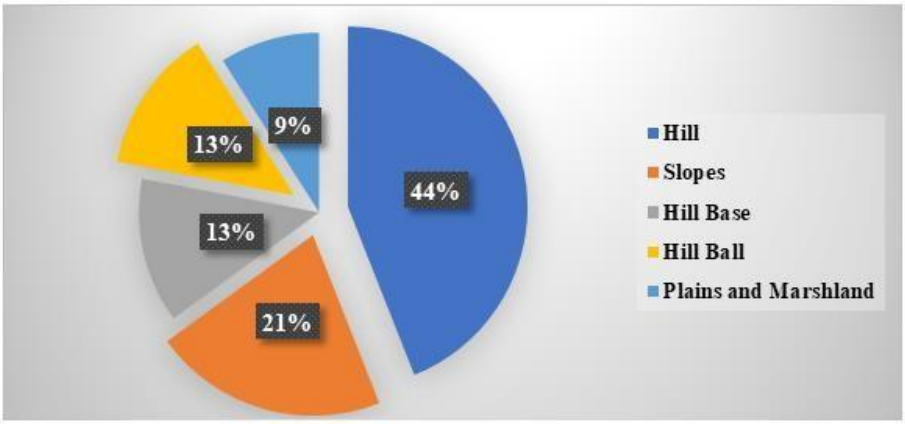

Figure 3: Topography of agricultural land

Burundi's predominantly green terrain is crucial to its agricultural industry. A total of 44% of agricultural activities are conducted on sloping hills, 21% on the bases of hills, 13% on hills and plains at the same time, and 9% on swampy ground (MINAEGRIE, 2012). Because of the country's rough topography, mechanical agriculture is used sparingly, resulting in poorer production per manual worker (Collins et al.,

2013). Furthermore, the agricultural instruments are inadequate and not as strong as they could be to enable large-scale competitive land management.

If production and income are sufficiently high, higher agricultural productivity can help lift people out of poverty. Even with a high output, farms of a minimum size would not be able to supply the rising demand for food (Valdés and Foster 2010). In Burundi, access to land is frequently regarded as a major issue for sustainable living (Pedro, 2011). Researchers believe that land access has a significant role in determining income potential, risk and disaster susceptibility, and food security (Ricker-Gilbert et al., 2014).

Degradation and loss of arable land

Over 6.6% of the nation's land is made up of forests that have been removed for agricultural purposes (WB, 2018). With little erosion control and a considerable amount of land fragmentation into small plots, the steep slopes are being farmed more and more. There is a significant risk of losing arable land because the majority of agricultural operations are conducted on steeply sloping hills. The amounts of arable land lost annually as a result of erosion are displayed in Table 4.

Table 4: Soil degradation and loss by ecological zone

Ecoregions	Erosion (t/ha/year)	Alan (ha)	Share of total area
Imbo	2.5	194,000	7%
Mumirwa	100	270,000	10%
Congo-Nile Basin	21.5	410,000	15%
Central plateau	18	1,237,000	44%
Northeast Depressions	2.6 - 4	670,000	24%

Mumirwa is extremely susceptible to erosion, as Table 4 demonstrates, with an average annual loss of 100 tons of soil per hectare. A notable loss of 21.5 tons/ha/year was also seen in the Congo-Nile basin. Imbo has also been eroded, causing a loss of 2.5 tons of soil per hectare each year, despite its flat extension. According to table 4, this results in an average annual loss of 145.3 tons of arable land per hectare in these ecological regions (World Bank 2018). The extent of sustainable concentration is limited by intensive agriculture, which has resulted in significant issues with soil erosion and productivity (Oketch and Polzer 2002). Rwanga et al. (2017) state that 90% of Burundi's population resides in rural areas. Due to the severe fragmentation of rural regions for essential subsistence needs, this has resulted in considerable strains on rural natural resources and land degradation (Niyuhire, 2018).

SWOT analysis of Burundi's overall agricultural condition

The external factors influencing Burundian agriculture's sustainability as well as its advantages and disadvantages were noted. The SWOT analysis was used to look at the threats and opportunities that lead to limited access and underutilization of agricultural land resources. Table 5 lists and categorizes each of these traits below.

Table 5: SWOT analysis of Burundian agriculture

	STRENGTHS		WEAKNESSES
S1	Good climatic conditions for diversified agricultural production.	W1	Lack of reliable and up-to-date agricultural data.
S2	Low labor costs.	W2	Limited access to agricultural financing.
S3	Strategic location for export to 4 countries via Tanganyika Lake.	W3	Uncertain land system with a growing land shortage population.
S4	Strong comparative advantage in the production of cash products (sugarcane, coffee, tea, dates, cotton, etc.)	W4	Poor rural transport infrastructure.
S5	The presence of 4 different agricultural season.	W5	Poor water management and soil degradation.
S6	The presence of undeveloped marshes	W6	Low economic power.
S7	Agricultural business potential.	W7	Low land productivity.
S8	Water potential.	W8	Low active population.
S9	The presence of the land law of 2011 regulating the agricultural sector.	W9	The weakness of technology in the agricultural sector.
S10	Presence of environmental law, water law, forestry law, mining law, etc. The existence of complementary legal frameworks to land for the promotion and conservation of natural resources.	W10	High rural population and pressure on natural resources.
		W11	More mountainous and hilly lands susceptible to erosion.
		W12	Although translated into the national language, the Land Code is not disseminated and popularized at all levels of the population.
		W13	A very impressive number of cases of land disputes at the court level (about 70% of registered land disputes from the courts of residence).
		W14	Low level of private investment in agriculture and processing of agricultural products (agribusiness, agro-industry).
		W15	Inadequate capacities of the departments responsible for land management (human, technical and material resources).

OPPORTUNITIES		THREATS	
O1	Creation of new techniques to improve the productivity and quality of agricultural products.	T1	Increase in competition from the EAC (East African Community) countries for local agricultural producers and industries.
O2	Low-cost micro fertilization allowing the improvement of land preparation techniques.	T2	Restrictions of harmonization of agricultural products.
O3	Excavation of the land on steep slopes.	T3	Unpredictable weather conditions and the lack of historical data hamper the development potential of agricultural insurance.
O4	Reduce post-harvest losses by transforming the harvest into a marketable food product.	T4	Free entry of products, programs and food aid from donor countries can disrupt internal exchanges.
O5	Development of value chains of cash crops	T5	The 2015 elections created uncertainty about the preservation of peace and stability.
O6	Rapid population growth (increased food demand, labor force)	T6	Great support and financing of the agricultural sector of the other EAC countries.
O7	Possibility of irrigable land and development of marshy land.	T7	Increased urbanization in fertile agricultural areas.
O8	Existence of national and international organizations that support the agricultural sector.	T8	Conflicts caused by the lack of land registration.
O9	Students in foreign countries to develop the agricultural sector.	T9	Congested land for small and medium-sized farmers.
O10	Establishment of common land services throughout the country.	T10	Depletion of natural resources.
O11	Delimitation of public and private lands.	T11	The insufficiency or almost absence of the commitments of agricultural institutions and financial institutions in the granting of loans.
O12	Accessibility of local land services in terms of proximity and also in terms of the cost of a local land document.	T12	Low soil protection at the level of watersheds.
O13	Increase in the level of investment in agriculture due to better land security.	T13	Low selling price of agricultural products in the harvest period.
O14	The possibility of converting the land document into a title deed according to the specified modalities (the provisions of the Land Law Article 410)	T14	Persistence of the land inheritance system favourable to extremely land fragmentation.
		T15	A system of traditional land inheritance discriminating the women and girls that has not been definitively solved.

Table 5 attempts to provide a concise summary of the advantages, disadvantages, opportunities, and dangers associated with Burundian agricultural land access and use. Ten strengths, fifteen weaknesses, fourteen opportunities, and fifteen threats were determined as a consequence of the analysis. The presence of different ecosystems allows for a very diverse agricultural system (food and commercial crops, development of the value chain of animal and fish production), 120,000 hectares of drained marshy area, irrigated plains of Imbo and Mosso agro-ecological regions, and the availability of agricultural labor. The rainfall status also allows for the possibility of having a cycle of two crops per year with four growing seasons. The Burundian agricultural systems have the potential for an ideal water supply due to the abundance of rainfall and the extensive network of rivers.

Despite Burundi's agricultural systems' great potential, the sector faces numerous challenges and threats, including low soil fertility that restricts productivity, low input utilization, land fragmentation, inadequate agricultural supervision,

poor water management, issues with crop processing and conservation, poor agricultural mechanization, a lack of technological innovations, poor irrigation techniques for managing water resources, a lack of technology for processing and preserving agricultural products, and a lack of rural electrification. The primary obstacles that make it difficult to obtain land are low agricultural financing, demographic pressure, and an inadequate supply of both high-quality and low-quantity inputs. Implementing structural reforms is challenging in this area, and the private sector's lack of involvement in

funding the industry. A lack of power supply, lack of product certification, technical flaws in processing methods, and poor storage capacity are some of the main reasons limiting the processing capacity of agri-food processing.

Most households are constrained by the atomicity of the land, even though their output is higher. Income and consumption seem to increase as the farm's size grows. Consequently, it is challenging to understand how the negative relationship between farm size and land production might

enhance nearly landless households or demonstrate how Burundian small farms might decouple their livelihoods (Niragira, 2018).

The SOR analysis has been conducted using the SWOT analysis data to ascertain which strategy should be developed to take the best position of an opportunity or a vulnerability and transform it in a strong way to prevent and avoid threats and minimize weaknesses. Survey results were used to calculate the scores for each component of the analysis.

Table 6: SOR analysis of Burundian agriculture

Strengths	Points	Weakness	Points	Opportunities	Points	Threats	Points
S1	86	W1	76	O1	64	T1	63
S2	82	W2	72	O2	58	T2	71
S3	54	W3	90	O3	71	T3	78
S4	46	W4	63	O4	60	T4	53
S5	50	W5	71	O5	70	T5	60
S6	40	W6	45	O6	91	T6	47
S7	36	W7	51	O7	77	T7	59
S8	77	W8	43	O8	77	T8	49
S9	38	W9	62	O9	56	T9	68
S10	30	W10	73	O10	53	T10	90
		W11	78	O11	50	T11	66
		W12	29	O12	33	T12	32
		W13	48	O13	58	T13	84
		W14	74	O14	41	T14	51
		W15	56			T15	48

The SOR study showed that Burundian agriculture benefited greatly from diverse agricultural production for favorable climatic circumstances (S1: 86 points), cheap labor costs (S2: 82 points), and water potential (S8: 77 points). In fact, the existence of laws pertaining to the environment, water, forestry, mining, etc., is equally crucial. The existence of the legal framework created by the Land Law of 2011 (S9) and the existence of complementary legal frameworks to land for the promotion and preservation of natural resources (S10) come last, notwithstanding their importance. The primary issues plaguing the agricultural sector are the increasing population and land scarcity, the presence of an ambiguous land tenure system (W3), the expansion of hilly and mountainous regions (W11), and the absence of accurate and current agricultural data (W1).

Naturally, the most obvious opportunities on Burundian agricultural land are the existence of irrigable land and the development of marshes (O7), the fast population growth and rising food demand for labor (O6), and international organizations assisting the agricultural sector (O8), among the 14 opportunities mentioned. Agricultural businesses have significant prospects. Accordingly, the loss of natural resources (T10), the inability of rural farmers to obtain a fair price, and the unpredictability

The concerns that impede the nation's agriculture are meteorological circumstances (T13) and the absence of historical data, which endangers the possibility for agricultural insurance development (T3). Making major contributions and providing facilities in the process of deciding on the management and decision-making strategy to improve the agriculture sector is ideal, according to the SOR analysis.

It is especially significant because the rural sector, which provides the bulk of the population with their livelihoods, has been largely ignored by the Burundian government's development agenda (Ndikumana,

2001). Therefore, the government's interest in efficient land use planning, the drastic change in land use, and soil conservation techniques must demonstrate that this exacerbates soil erosion and degradation (Vansarochana and Ntakirutimana, 2020). A study carried out in two northern Burundian provinces found a substantial correlation between farm size and household food security, but a negative link between farm size and land production (Verschelde et al., 2013).

The strategy is decided by considering the possibilities with the greatest rating score in the SOR matrix that was developed with strengths and weaknesses, opportunities, and threats. The best practices for attaining sustainable agriculture are shown in Table 7.

Table 7: Strategies for Burundian Agriculture

INTERNAL FACTORS/ EXTERNAL FACTORS	Strengths (S) S1 S2 S8	Weaknesses (W) W3 W11 W1
Opportunities (O) O6 O7 O8	SO Strategics Investing in agriculture to maximize agricultural production in order to meet the growing food needs of the population. Installation of irrigation systems to expand agricultural land and thus fight against the unemployment of the active population. Support and encourage investments in the agricultural industry.	WO Strategics Avoiding the division of land by inheritance, working in cooperatives and putting forward a policy of land consolidation and title deeds. To establish the system for recording and updating agricultural and meteorological databases to minimize agricultural risks.
Threats (T) T10 T13 T3	ST Strategics Awareness and promotion of natural resource management. Promote the dissemination of new agricultural technologies and the harmonization of agricultural products to be competitive on international markets. To regulate market prices taking into account the cost of production of agricultural products.	WT Strategics Stimulate and strengthen the search for non- agricultural sources of income. Direct urbanization plans to non-agricultural land. Development of anti-erosive practices to protect agricultural land. Promotion of agricultural insurance.

Burundi has numerous agricultural challenges and vulnerabilities because it is a country with agricultural potential. Threats and possibilities, however, also significantly impede its advancement. Various tactics that can result in a modern, competitive, and sustainable agriculture are shown in Table 7.

CONCLUSION AND PERSPECTIVES

Policies pertaining to agriculture should encourage land consolidation and discourage the partitioning of land into tiny pieces. It is necessary to design new irrigation strategies, erosion control measures, crop transformation strategies, and crop conservation strategies. The people who make decisions ought to take farmers into account and support them. It is imperative that agricultural database systems be established. The government and its allies should encourage the creation of current agricultural statistics and make significant investments in the agricultural industry. Establishing low-interest lending banks for farmers is desirable. To expand the potential of small-scale managed sustainable agriculture and its influence on the national economy, fundamental adjustments to agricultural systems and policies are required. Furthermore, as the agricultural sector is seen as the foundation of the nation's economy, significant state interventions are necessary to address its issues.

The Malthusian theory is frequently proposed to explain the development of Burundian agriculture. Then, the description is straightforward: "the demographic explosion" and "reduction of cultivable areas" lead to a considerable increase in the exploitation of fallow plots and grazing regions, which hinders the growth of agriculture. It is claimed that the "demographic explosion" will result in a "population / resource imbalance" that will be the root cause of the present and upcoming economic

crises because agricultural practices have not altered (Hubert, 2020). According to this assessment of the recent changes in Burundian agricultural systems, the population-land ratio is the primary variable taken into account, and population increase is the cause of a number of the agricultural sector's restrictions. The "traditionalist" mindset of farmers has demonstrated their resistance to the "modern" methods provided by extension services and their conscious wish to produce primarily in accordance with their present needs, which is a second barrier to development that is also underlined (Hubert, 2020). The Malthusian theory is not the most appropriate framework for comprehending the state of land access and use, as our paper has shown. The Burundian land use system and access can be thoroughly analyzed using the SWOT and SOR frameworks. It makes it possible to talk about various strategies for improving agricultural land utilization. But land access continues to be a major obstacle while

The value and strategic investments of alternative land uses are more competitive. This issue of land use conciliation has not been developed in our paper.
Furthermore, ensuring family food security has become extremely challenging due to the fast population growth, limited farm sizes, and declining soil fertility. Even with great productivity, farming may not be a viable option for making a living because most people own so little land. Farmers must contend with the fact that their land is too tiny for their farming operations. Even though small-scale agriculture has seen tremendous productivity, the findings cast doubt on the sustainability of these little farms in the nation's most populated regions. To get around this problem, it would be best to put in place a program of agricultural land consolidation. To increase yields on tiny plots, farmers should want to collaborate and fortify agricultural cooperatives. A decline in production results from the frequent loss of arable land, particularly on sloping terrain, which deteriorates agriculturally cultivated land and depletes soil fertility. Installing anti-erosive systems on such flooring ought to be advised.

In order to replenish the nutrients lost from the soil and restore the hydrological functions of the soil systems, degraded and deforested land should be actively repaired by establishing a suitable vegetation cover. This would assist ease access to agricultural land and address the severe scarcity of arable land. Rethinking rural development policies is advised in order to create tactics that effectively reduce poverty. The government should concentrate its efforts on the following tasks in order to put these strategies into practice: educating and informing all parties involved about the prudent management of natural resources; providing equipment and training to specialists in watershed management; and assisting and directing local communities in the mechanization and application of technologies in their farms. National land use planning will prioritize land management. Implementing an occupation policy based on standards created by all parties involved should be part of it. To persuade village communities to band together for the sake of cooperative agricultural production, awareness-raising initiatives should be implemented.

Lastly, expanding the use of contemporary farming methods helps to improve overall agricultural sustainability, lower soil erosion, and boost land production.

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