working paper
CBMS-2020-15

Sustainable Development Goals in Cibitoke and Kirundo Provinces, Burundi

Jean Claude Nsabimana
Jeanine Nkunzimana
Lydia Bukuru
Charles Kabwigiri
Belyse Mupfasoni
Nesha Ramful
Rama Lionel Ngenzebuke

July 2020

PAGE
policy analysis on growth and employment

Sustainable Development Goals in Cibitoke and Kirundo Provinces, Burundi

Abstract

In this paper, progress on some of the key Sustainable Development Goal (SDG) targets for the two poorest provinces of Burundi namely Cibitoke and Kirundo are measured. Primary data, using a survey as research instrument, was collected for 4,839 households and 21,501 individuals. Results show more than 98% of the population in those regions are monetary poor while 28.7% are multi-dimensionally poor. Other areas where high deprivation rates were observed are in SDG 2 (Zero hunger), SDG 3 (Good health), SDG 4 (Quality Education), SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 9 (Access to Mobile Phones) and SDG 10 (Reduced Inequalities). The provinces are doing relatively better in SDG 8 relating to "employment and decent work for all" with unemployment rate of less than 1% and child labour rate of about 9%. Although, it is found that none of the communes from the two studied provinces is doing well in the SDG indicators, the Bugabira commune in Kirundo is the poorest and most deprived of all almost consistently across the analysis. Further, not much difference was observed across wealth quintiles because almost everyone in the two provinces is poor; the "richest" quintile is doing comparatively better than the other four quintiles but not by a high percentage. Gender inequality is also observed across indicators such as school enrollment, adult literacy rates, and ICT skills, in which men are more privileged than women. Based on the findings, the report suggests a set of contextualised recommendations to improve the socioeconomic well-being of the inhabitants of Cibitoke and Kirundo.

JEL codes: I31, I32, I38, and P36

Keywords : SDG, poverty, well-being, Burundi

Authors

Jean Claude Nsabimana
Social Development Specialist
African Development Bank, Burundi
nsabiclaud@yahoo.fr

Jeanine Nkunzimana
Analyst, Ministry of Finances
Burundi
nkunzijne@gmail.com

Lydia Bukuru
Statistician
Republic Bank of Burundi
Burundi
lylybu@yahoo.fr

Charles Kabwigiri
Senior Lecturer, University of Burundi
Burundi
charles.kabwigiri@ub.edu.bi

Belyse Mupfasoni
PhD Student
Wageningen University and Reseach (WUR)
University of Burundi (UB)
The Netherlands & Burundi
mbelyse2@yahoo.fr

Nesha Ramful
Research Analyst
Social Policy Research Institute, Mauritius
nesharamful@yahoo.com

Rama Lionel Ngenzebuke
Research analyst
R.A Malatest & Associates Ltd.
Canada
ngenzeramajlionel@yahoo.fr

Acknowledgements

This research work was carried out with financial and scientific support from the Partnership for Economic Policy (PEP) (www.pep-net.org) with funding from the Department for International Development (DFID) of the United Kingdom (or UK Aid), and the Government of Canada through the International Development Research Center (IDRC). Particular thanks go to the PEP-Community Based Monitoring System (CBMS) Network for their support.

Table of Contents

List of Figures

List of Tables

I. Introduction

Burundi is a land-locked, low-income country in East Africa. It is one of the poorest countries in the world, ranking 184th of 188 countries in the 2016 Human Development Index (United Nations Development Program, 2016). Poverty is omnipresent in Burundi and has been quite resilient to change. As of 2014, the proportion of the population below the national poverty line stood at 64.9%. Some mild progress resulted in a drop of 2.2 percentage points from 67.1% to 64.9% between 2006 and 2014 (Institut de Statistiques et d'Etudes Economiques du Burundi, 2014), but change has been very slow.

At the 70th Session of the United Nations General Assembly in September 2015, the post-2015 development agenda, Transforming Our World: The 2030 Agenda for Sustainable Development, was adopted along with new global Sustainable Development Goals (hereafter, SDG). At the core of the 2030 Agenda was a list of seventeen SDG and 169 targets to end poverty, hunger and inequality; take action on climate change and the environment; improve access to health and education; care for people and the planet; and build strong institutions and partnerships. Sustainable Development Goals go far beyond the Millennium Development Goals (hereafter, MDG) of 2001-2015 in both scope and significance by including economic growth, sustainable production and consumption, sustainable urbanization, innovation, data generation for tracking progress, and the importance of peace and justice for all. The Agenda calls for action by all countries, poor, rich, and middle income. Though SDG are not legally binding, governments are expected to take ownership of them and establish national frameworks to achieve them.

Since the advent of the Sustainable Development Goals, in fact, the Government of Burundi has taken the initiative to establish national frameworks to achieve them, but it will remain difficult for Burundi to reach SDG by the 2030 deadline In this study, we measured twenty indicators from six SDG with data collected in 2018 from selected collines (departments or wards) in the Provinces of Kirundo and Cibitoke, the two poorest provinces in Burundi, comprising 4,839 households and 21,501 individuals.

We used a Community Based Monitoring System (CBMS) methodology, supported by the CBMS Network and Partnership for Economic Policy (PEP) Network. Table 1 summarizes the key findings and results, from which we were able to develop a set of recommendations to improve the well-being of the inhabitants of the provinces of Cibitoke and Kirundo.

Table 1. Summary of Key Indicators of the Sustainable Development Goals for Selected Collines in Cibitoke and Kirundo Provinces, Burundi, 2018

SDG		***Indicator***	***Result***
1	**No Poverty**	Proportion of population below the international poverty line of $1.25 per day	98.9%
		Proportion of population below the international poverty line per day of $1.90	99.5%
		Proportion of population living below the national poverty line of 1744 BIF per day	98.3%

		Proportion of population that is multi-dimensionally poor	28.72%
2	**Zero Hunger**	Proportion of Household with Food-consumption score poor diet, borderline diet and acceptable diet	31.9% (poor diet) 42.4% (borderline diet) 25.7% (acceptable diet)
		Proportion of households who experienced food shortages	66.7%
		Proportion of underweight children under 5 years	30.6%
		Proportion of stunted children under 5 years	61.6%
		Proportion of wasting children under 5 years	8.3%
3	**Good Health**	Under-five child-mortality rate	65 out of every 1000 live births
		Proportion of women deaths due to pregnancy-related causes	1.3%
4	**Quality Education**	Adult literacy rate	50.3%
		Gross primary-school enrollment rate	76%
		Gross secondary-school enrollment rate	6.26%
		Proportion of schools with access to education facilities	Preschool (one school surveyed with no access to safe drinking water but students did have access to toilets). Elementary schools (of eight schools surveyed, only one had access to safe drinking water, and six had access to toilet facilities). Secondary schools (none had access to safe drinking water and only two had toilets.
		Proportion of youth and adults with information and communications technology (ICT) skills	3.6%
6	**Clean Water and Sanitation**	Proportion of households with an unimproved water source and with	62.4%

		distance from water source being greater than thirty minutes	
		Proportion of households with an unimproved toilet source and households sharing toilet facilities with other households	47.9%
7	**Affordable and Clean Energy**	Proportion of population with access to electricity	4.9%
0.8	**Employment and decent work for all**	Unemployment rate	0.7%
		Child labor	9.0%
9	**Access to mobile phones**	Proportion of households with access to mobile phones	26.1%
10	**Reduced Inequalities**	Proportion of individuals living below median income	97.1%

Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

II. Burundi's Engagement in the 2030 Agenda Process

In the 2030 Agenda for Sustainable Development, the SDG known as "Transforming our World" are a set of seventeen goals, 169 targets, and over 300 indicators that go above and beyond the sixteen targets and forty-eight indicators of the Millennium Development Goals (hereafter, MDG) to create a sustainable world by 2030 (United Nations Development Program, 2015). By their universal and transformative nature, the SDG and their targets are a development plan to leave no person behind ("Leave No One Behind," 2015). Burundi is committed, like all United Nations members, to implementing the new International Development agenda.

The prioritization of SDG has been guided by the need to continue the implementation of MDG that have not yet been achieved or in which little progress has been made and, in particular, by the challenges of the moment that include (i) climate change, (ii) natural disasters, (iii) environment issues, (iv) poverty, (v) spiral of conflict, related terrorism and humanitarian crises and forced displacement of people, (vi) demographic and urbanization challenges, (vii) youth unemployment, (viii) threats to global health, (ix) deficits of governance and accountability, and (x) economy diversification and promotion of sustainable and inclusive growth.

The prioritization process, which was largely participatory and inclusive, established the national package of SDG at 17 goals, 111 targets and, 176 indicators, to which the goal of partnership with its targets and indicators was added.

III. Integrating SDG into the National Development Agenda

Burundi drew up the National Development Plan (hereafter, NDP) for 2018-2027 with the aim of engaging the country at a crucial stage for its social and economic development. The NDP is aligned with SDG and constitutes the framework for the operationalization of the "Burundi 2025" Vision at the national level and the Community Communal Development Plans (hereafter, PCDC) at the local level.

Indeed, key to the success and achievement of SDG is the empowerment of local actors. In terms of decentralization and local development; the main challenges are: (i) the transfer of powers to municipalities; (ii) the mobilization of funds to finance municipal investments; (iii) the coherence of central and local planning with SDG planning; (iv) strengthening the institutional framework for coordinating; programming, monitoring, and evaluating planning process ; (v) strengthening the accountability of elected representatives; (vi) increasing the economic viability of municipalities; and (vii) strengthening local capacity development and implementation of the PCDC). Finally, the availability of statistical data at local level is an indispensable tool in SDG implementation.

IV. Methodology

We measured progress on SDG targets in selected collines in the Provinces of Kirundo and Cibitoke using CBMS data collected in the year 2018. In the province of Cibitoke, data were collected from households in the collines of Rushimabarimyi, Rushiha, Gakerekwa, and Butaramuka in Mugina and Mabayi communes. In the Kirundo Province, data were collected from households in the collines of Gitwe and Gaturanda in the Bugabira commune. In total, 4,839 households and 21,501 individuals were covered.

Data were collected via a census that used three questionnaires: 1) a household questionnaire addressed to the heads of households or any adult member of the household (household member roster, education, employment, child's health, household characteristics, mosquito nets, food consumption, food security, and deaths); 2) an addendum questionnaire on a cash-transfer program and income-generating activities (beneficiaries of the Terintambwe program and the income-generating activities of those beneficiaries; and 3) a community questionnaire addressed to the chairperson of the colline (demographic characteristics of the colline, service institutions and infrastructure, including health and education facilities, service and agricultural facilities, input dealers, and public transport); road networks, water supply; credit institutions, registered businesses and non-agricultural activities; energy facilities; and Programs, Projects and Activities implemented in the preceding year. The questionnaires were programmed into the CBMS Scan forms installed in Android tablets. This was the first time that Android tablets were used in collecting household, individual, and geographic information (GPS coordinates) at the community level in Burundi. The data were sent to the CBMS Portal where they could be downloaded as a consolidated dataset.

In this paper, we measured the following indicators of SDG. The method and formula used to measure each indicator are shown below.

SDG 1: End poverty in all its forms everywhere

Indicator 1: Proportion of the Population who live below the international poverty lines of $1.25 and $1.90 and below the national poverty line[1]

Data for total income of the household were collected using a revenue approach. The rates of those who fell below the national and international poverty lines were computed with these formulae:

$$Income\ per\ person = \frac{Total\ household\ income}{Household\ size}$$

$$Poverty\ rate\ (threshold\ of\ international\ poverty\ line\ \$1.25) = \frac{Individuals\ with\ income\ below\ the\ poverty\ line\ of\ \$1.25\ per\ day}{Total\ individuals}$$

x 100

$$Poverty\ rate\ (threshold\ of\ international\ poverty\ line\ \$1.90) = \frac{Individuals\ with\ income\ below\ the\ poverty\ line\ of\ \$1.90\ per\ day}{Total\ individuals}$$

x 100

$$Poverty\ rate\ (threshold\ of\ national\ poverty\ line\ of\ 1744\ Burundi\ francs) = \frac{Individuals\ with\ income\ below\ the\ poverty\ line\ of\ 1744\ BIF\ per\ day}{Total\ individuals}$$

x 100

Indicator 2: Proportion of multi-dimensionally poor Households
We used the Multidimensional Poverty Index (hereafter, MPI) methodology developed by Alkire-Foster (Alkire & Foster, 2011) to measure multidimensional poverty among households in the selected sites. The dimensions and indicators used to calculate the MPI were the same as the global MPI and are shown in Table 2.

Table 1: Dimensions and Indicators Used to Measure the Multidimensional Poverty Index (MPI)

Dimension	**Indicator**	***Threshold of deprivation for each indicator***	***Weight***
Education	School attainment	*No household member had completed at least six years of schooling*	1/6
	School attendan	*A school-age child (up to grade 9) was not attending school*	1/6

[1] The exchange rate used was 1 USD = 1,800 Burundi Francs.

	ce		
Health	Nutrition	*A household member (for whom there was nutrition information) was malnourished, as measured, by the body mass index for adults and, by height-for-age z-score for children under age 5*	1/6
	Child mortality	*A child had died in the household within the five years prior to the survey*	1/6
Standard of living	Electricity	*Without Access to Electricity*	1/18
	Basic drinking water	*Without access to clean drinking water or with access to clean drinking water through a source located thirty minutes or more away on foot*	1/18
	Sanitation	*Without access to improved sanitation facilities or having access only to shared improved sanitation facilities*	1/18
	Cooking fuel	*Using "dirty" cooking fuel (dung, wood, or charcoal)*	1/18
	Dwelling	*Home has dirt, sand, or dung floor*	1/18
	Assets	*Without at least one asset related to access to information (radio, television, or telephone) or with at least one asset related to access to information but without at least one asset related to mobility (bike, motorbike, car, truck, animal cart, or motorboat) or at least one asset related to livelihood (refrigerator, arable land, or livestock)*	1/18

Source: Oxford Poverty and Human Development Initiative (2019).

A household was considered poor if that household was deprived in at least one third of the total weighted indicators. We calculated three indices of deprivation: poverty headcount (H), intensity of deprivation, (A) and the Multidimensional Poverty Index (MPI).

SDG 2: Zero hunger

Indicator 1: Proportion of Households with Food-Consumption Score of Poor, Limited, and Acceptable

This indicator was measured by the Food Consumption Score (hereafter, FCS), an index developed by the World Food Programme in 1996 (World Food Programme, 2015). The FCS uses household-level data on the diversity and frequency of food groups consumed over the preceding seven days. Food groups were weighted according to their relative nutritional value. For example, greater weight was given to nutritionally dense foods, such as animal products, compared to less nutritionally dense foods such as tubers. A score was generated based on which a household's food consumption can be further classified as poor, limited, or acceptable. The formula used to calculate FCS was:

$$FCS = a_{staple}x_{staple} + a_{pulse}x_{pulse} + a_{veg}x_{veg} + a_{fruit}x_{fruit} + a_{animal}x_{animal} + a_{sugar}x_{sugar} + a_{dairy}x_{dairy} + a_{oil}x_{oil}$$

where FCS is the Food Consumption Score; X_i is the Frequency of Food Consumption = number of days for which each food group was consumed (see list of food groups in Table 2) during the preceding seven days; and a_i is the weight of each food group (see weight of each food group in Table 2).

Table 2: Food Items, Food Groups and Weight Used to Calculate the FCS

Food items	**Food groups**	**Weight**
Maize, maize porridge, rice, sorghum, millet pasta, bread, and other cereals	Cereals and Tubers	2
Cassava, potatoes, and sweet potatoes		
Beans, peas, groundnuts, and cashew nuts	Pulses	3
Vegetables and leaves	Vegetables	1
Fruits	Fruit	1
Beef, goat, poultry, pork, eggs, and fish	Meat and fish	4
Milk yogurt and other diary	Milk	4
Sugar and sugar products	Sugar	0.5
Oils, fats, and butter	Oil	0.5
Condiments	Condiment	0

Source: World Food Programme (2015).

Once we had computed the FCS, we used the thresholds shown in Table 3 to determine whether the food consumption of the household was poor, borderline or acceptable. The minimum score was zero, and the maximum was 112.

Table 3: Threshold of FCS to Determine Poor, Borderline, and Acceptable Food Consumption

Threshold	**Profiles**
0 - 21	Poor food consumption
21.5 - 35	Borderline food consumption
>35.5	Acceptable food consumption

Source: World Food Programme (2015).

Indicator 2: Proportion of Households who experienced food shortages

The formula to calculate the indicator on food shortages is as follows:

$$\frac{Proportion\ of\ households\ faced\ with\ a\ situation\ of\ having\ not\ enough\ food\ in\ the\ last\ 12months}{Total\ number\ of\ households} \text{ x } 100$$

Indicator 3: Proportion of underweight, stunted, and wasted children

The three anthropometric measures—underweight (weight-for-age), stunting (height-for-age), and wasting (weight-for-height) were used only for children under five years. World Health Organization (WHO) standards were used: a child was considered underweight, stunted, or wasted if his/her measure was more than two standard deviations below the WHO Child Growth Standards median (source, year).

$$Proportion\ of\ underweight\ children = \frac{Number\ of\ underweight\ children\ under\ 5}{Total\ number\ of\ children\ under\ 5} \text{ x } 100$$

$$Proportion\ of\ stunted\ children = \frac{Number\ of\ stunted\ children\ under\ 5}{Total\ number\ of\ children\ under\ 5} \text{ x } 100$$

$$Proportion\ of\ wasted\ children = \frac{Number\ of\ wasted\ children\ under\ 5}{Total\ number\ of\ children\ under\ 5} \text{ x } 100$$

SDG 3: Ensure healthy lives and promote well-being for all at all ages

Indicator 1: Under-five mortality rate

The under-five mortality rate was the proportion of children who died between birth and exactly five years of age, expressed per 1000 live births.

$$Under-five\ mortality\ rate = \frac{Number\ of\ children\ born\ alive\ in\ the\ past\ 5\ years\ but\ who\ died\ before\ their\ 5th\ birthday * 1{,}000}{Total\ number\ of\ children\ born\ alive\ in\ the\ last\ 5\ years}$$

Indicator 2: Proportion of women's deaths due to pregnancy-related causes

Because of data limitations, the maternal mortality rate could not be calculated and a proxy was used: the total number of women who died in the preceding year due to pregnancy-related causes divided by the total number of children less than one year old plus the total number of women who died due to pregnancy-related causes.

SDG 4: Quality Education

Indicator 1: Adult literacy rate

The adult literacy rate was the percentage of persons aged 15 and over who could read and write.

Indicator 2: Gross primary/secondary enrollment rate

The gross primary/secondary enrollment rate was the number of children enrolled in a level (primary or secondary) regardless of age divided by the population of the age group that officially corresponds to the same level.

Indicator 3: Proportion of Schools with Access to Safe Drinking Water and sanitary toilets

We investigated the number of schools with access to safe drinking water and sanitary facilities. The survey was carried out in one pre-school, eight elementary schools, and three secondary schools.

SDG 6: Ensure access to water and sanitation for all

Indicator 1: Proportion of Households with an Unimproved Water Source or with Distance to Water Source Greater than Thirty Minutes away, by Foot

We computed the percentage of households with access to an unimproved water source using definitions of improved and non-improved water sources based on WHO standards:

Improved water sources: piped into dwelling, piped to yard/plot, piped to neighbor, public tab/standpipe, tube well or borehole, protected well, protected spring

Non-improved water sources: unprotected well, unprotected spring, rainwater, tanker truck, cart with small tank, surface water (river/dam/lake/pond/stream/canal/irrigation channel)

Distance to water source: the time required to go to the source, fetch water, and return (WHO standards).

Indicator 2: Proportion of Households with an Unimproved Toilet Source and Households that shared that Shared Toilet Facilities with other Households

We computed the percentage of households with access to an unimproved toilet source as defined by WHO standards:

Improved toilet sources: flush to piped sewer system, flush to septic tank, flush to pit latrine, flush to don't know where, ventilated improved pit latrine, pit latrine with slab, composting toilet

Non-improved toilet sources: flush to somewhere else, pit latrine without slab/open pit,

bucket toilet, hanging toilet/hanging latrine, no facility/bush/field

A toilet facility was considered shared if more than one household used that facility.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy

Indicator: Proportion of household with Access to Electricity

The formula to measure the proportion of household with access to electricity was:

$$\frac{\textit{Number of households with access to electricity}}{\textit{Total number of households}} \text{ x } 100$$

SDG 8: Promote sustained, inclusive, and sustainable economic growth, and full and productive employment and decent work for all

Indicator 1: Unemployment Rate

The unemployment rate was the number of unemployed individuals between 15 and 64 divided by the total labor force (unemployed + employed individuals aged between 15 and 64). The figure was expressed as a percentage.

Indicator 2: Child labor

Child labor was the percentage of children aged 5-14 who were part of the labor force.

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Indicator: Ownership of mobile phone, by household

The indicator was calculated by the percentage of households in which members owned at least one mobile phone.

SDG 10: Reduced Inequalities

Indicator: Percentage of individuals who live below the median income

The indicator was calculated as the percentage of individuals living below the median income divided by the total population. The median income in Burundi was calculated using data from the 2013-2014 Enquête sur les Conditions de Vie des Ménages survey (Survey on Household Living Conditions; Institut de Statistiques et d'Etudes Economiques du Burundi, 2014); the median income stood at BIF 501,363.70 per year.

For a more in-depth analysis, the above indicators were also disaggregated by characteristics of individuals (e.g., gender), households (e.g., household size, wealth

quintiles, etc.), and geography (e.g., province, commune, and colline).

V. Results

SDG 1: End poverty in all its forms everywhere

1.1 The Situation in Burundi

Burundi is home to over six million poor people, ranking among the poorest Sub-Saharan and Low-Income Countries. The 2013-2014 Enquête sur les Conditions de Vie des Ménages au Burundi (Institut de Statistiques et d'Etudes Economiques du Burundi, 2014), showed that 64.9% of the population (around 6.1 million people) lived below the national basic needs poverty line of BIF 41,054 per adult per month. About 3.6 million Burundians (38.7%) live in extreme poverty and cannot meet the minimum nutritional requirements of 2,200 kilocalories (Kcal) per adult equivalent per day (Figure ES.2). Using the international poverty line of USD $1.90 per capita per day (in 2011 Purchasing Power Parity exchange rate), Burundi's international poverty rate stands at 72.9%, around eight percentage points higher than the national poverty rate. This indicates that poverty is around thirty percentage points higher than the Low Income Countries (LIC) and sub-Saharan African (SSA) averages of 47.2% and 42.7%, respectively.

A large share of the non-poor population is clustered just above the poverty line and is highly vulnerable to poverty. Around 50% of the non-poor population stagnates at a consumption level right above the poverty line, within a range of around USD $0.50 per capita per day (in 2011 PPP). They are therefore prone to fall into poverty in the event of unexpected economic shocks. Any slight increase in the value of the poverty line would imply a significant rise in estimated poverty levels. However, while most of the non-poor are close to the poverty line and are vulnerable to economic downturns, the majority of the poor are far below the poverty line (with an average consumption level of about 75% of the poverty threshold) and would need substantial assistance and special care in development programs to help them enhance their livelihoods and productivity.

1.2 Assessment of Progress on SDG 1 by indicators in Kirundo and Cibitoke Provinces

Indicator 1: Proportion of the Population that lives below the international poverty lines of $1.25 and $1.90 and below the national poverty line

During recent decades, poverty has been stagnant in Kirundo and Cibitoke. Those two provinces are, in fact the poorest in Burundi, with almost all residents living in severe poverty. As shown in Table 1, given the poverty line of $1.25, 98.9% were poor in the selected study sites. Using the new international poverty line of $1.90, 99.5% of the population was poor. Among the collines, Gakerekwa registered the lowest poverty incidence while the highest was in Gaturanda (where 99.8% of the households were poor compared to both the $1.25 and $1.90 per-capita, per-day thresholds.

The 2013-2014 Enquêtes de Conditions de Ménages et de Vie au Burundi survey, published by the Institut de Statistiques et d'Etudes Economiques du Burundi (2014), estimated the monetary poverty line at 636,510 Burundian francs (BIF) at national level

per year, or at 1,744 BIF per day per person. This poverty line was measured using a basket of commodities consisting of both food and non-food items. According to the 2013-2014 "Enquêtes de Conditions de Ménages et de Vie au Burundi" report, poverty affected almost 2/3 of the population with a strong dominance in rural areas. The monetary poverty rate for 2014 stood at 64.6% of the total population of Burundi against 67.1% in 2006. In other words, close to two out of three Burundians were unable to meet their daily basic needs (food and non-food items). The situation was even worse in the sites we studied, in which 98.3% of population lived on less than the national poverty line (1,744 BIF per day). The data show that almost all the respondents of the study were poor using either international or national definitions of poverty. As expected, there were only slight variations when data were disaggregated by province, commune, colline, or and age group. The results are shown in Figures 1-4.

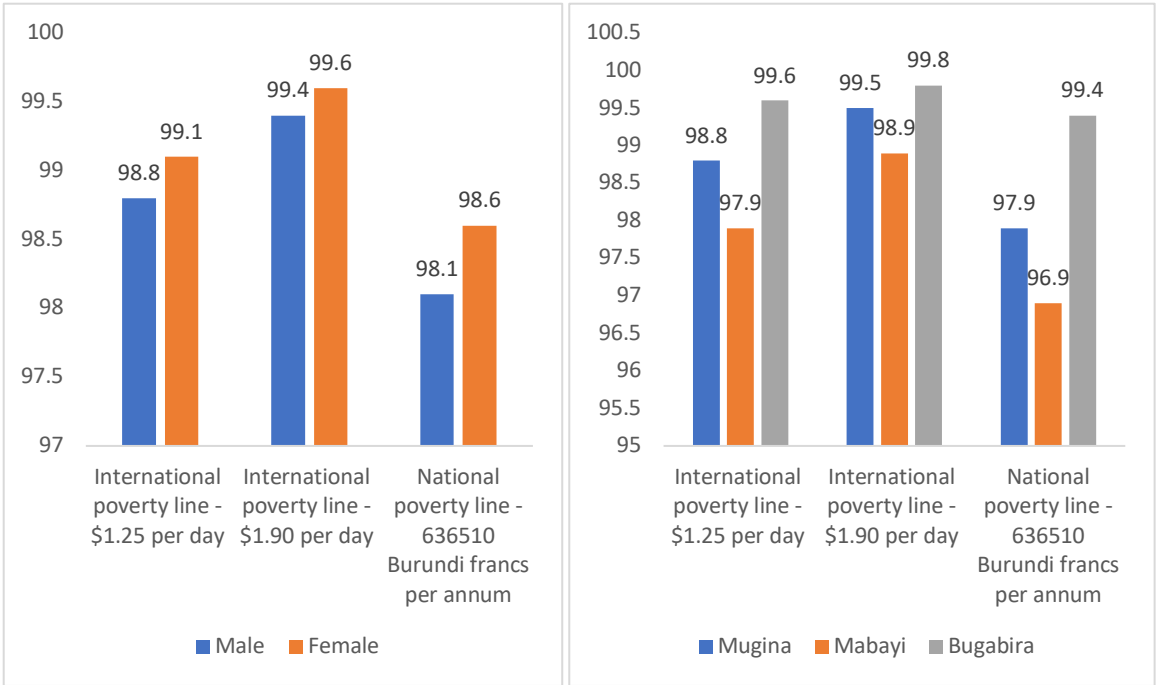
Table 4: Percentage of Poor People According to the International Poverty Lines of $1.25 and $1.90, and the National Poverty Line

Percentage of Poor People by Threshold of Poverty			
	All areas	***Selected Collines in Kirundo province***	***Selected Collines in Cibitoke province***
International poverty line - $1.25 per day	98.9%	99.6%	98.5%
International poverty line - $1.90 per day	99.5%	99.8%	99.3%
National poverty line—1,744 BIF per day	98.3%	99.4%	97.6%

Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

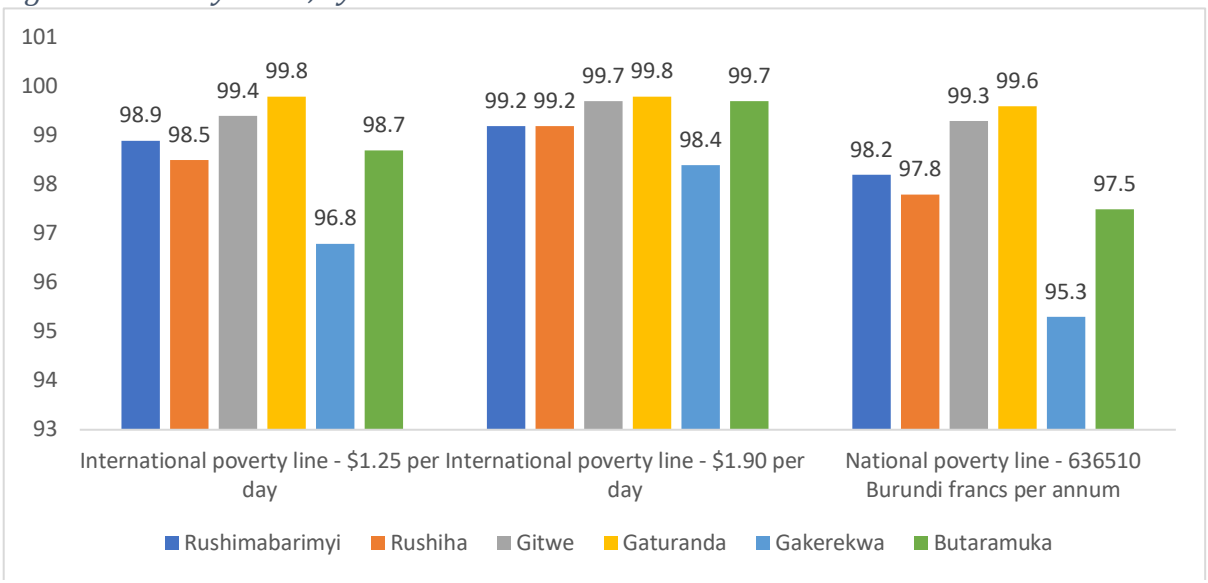
Figure 1: Poverty Rates, by Sex

Figure 2: Poverty Rates, by Commune



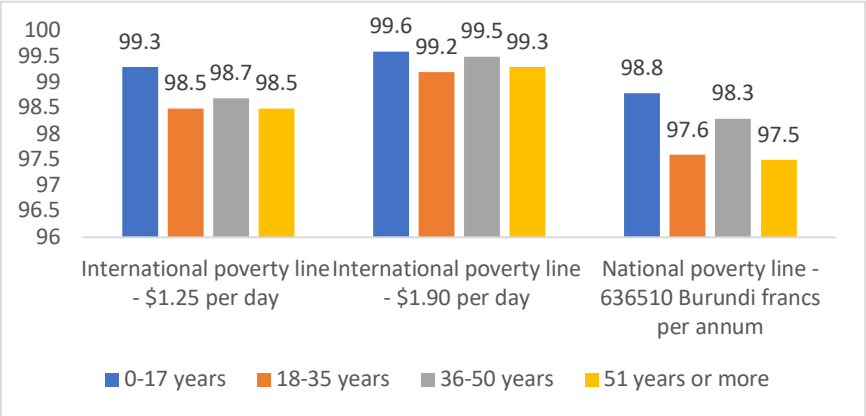
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 3: Poverty Rates, by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 4: Poverty Rates, by Age Group



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

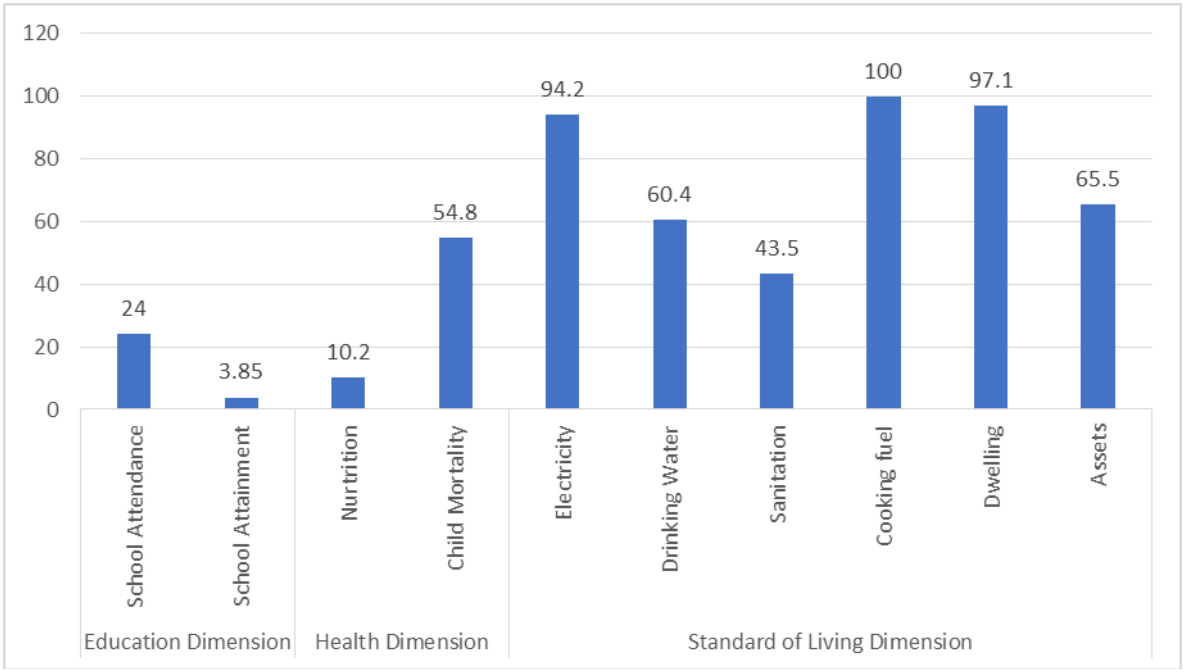
Indicator 2: Proportion of multi-dimensionally poor households

We used the Multidimensional Poverty Index (MPI) developed by the Oxford Poverty and Human Development Initiative (2019) to calculate the percentage of multi-dimensionally poor households in our study areas. On the three dimensions of well-being, we found that s*tandard of living* yielded the highest deprivation rates: 100% of the inhabitants use unimproved cooking fuel, 97.1% had an unimproved dwelling, 94.2% did not have electricity, 60.4% did not have access to basic drinking water, and 65.5% suffered from deprivation in assets (see Figure 5).

The deprivation in the *health* dimension was relatively lower but still problematic with 10.2% of households deprived in nutrition (at least one stunted child); 54.8% of households had experienced child mortality in the preceding five years.

With regard to the *education* dimension, we found that at least some school-age children did not attend schools in 6.6% of the households and that 3.9% of the households did not include a member who completed at least six years of schooling.

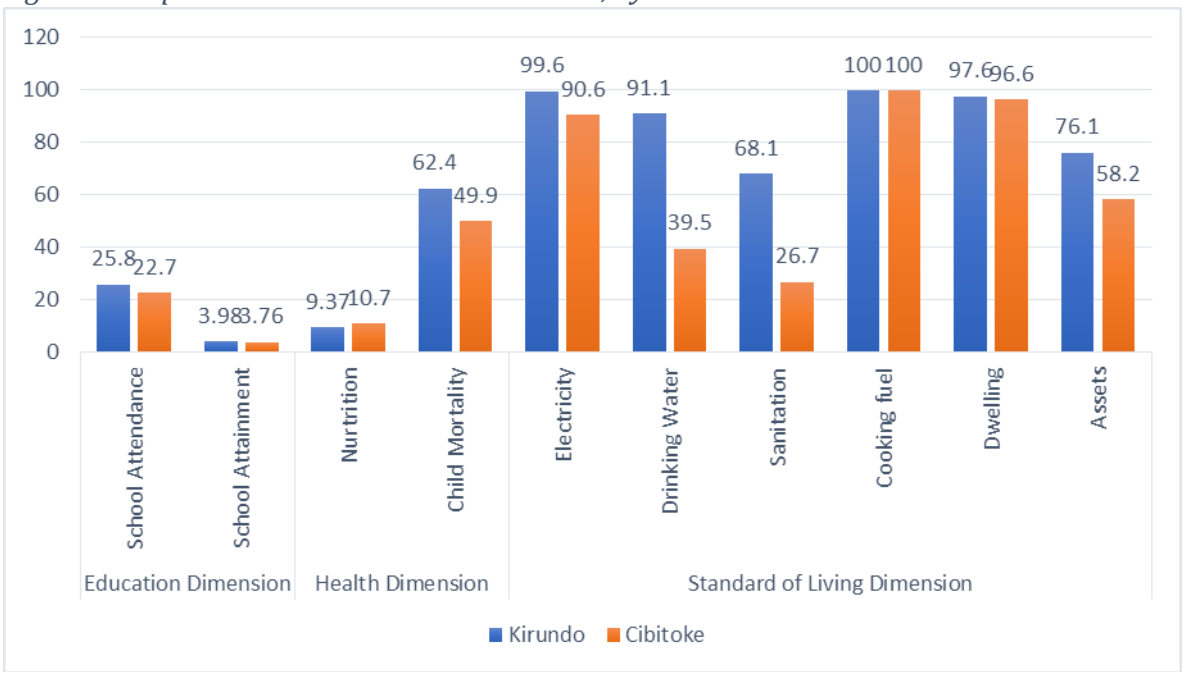
Figure 5: Deprivation Rates in MPI Indicators for Total Data



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

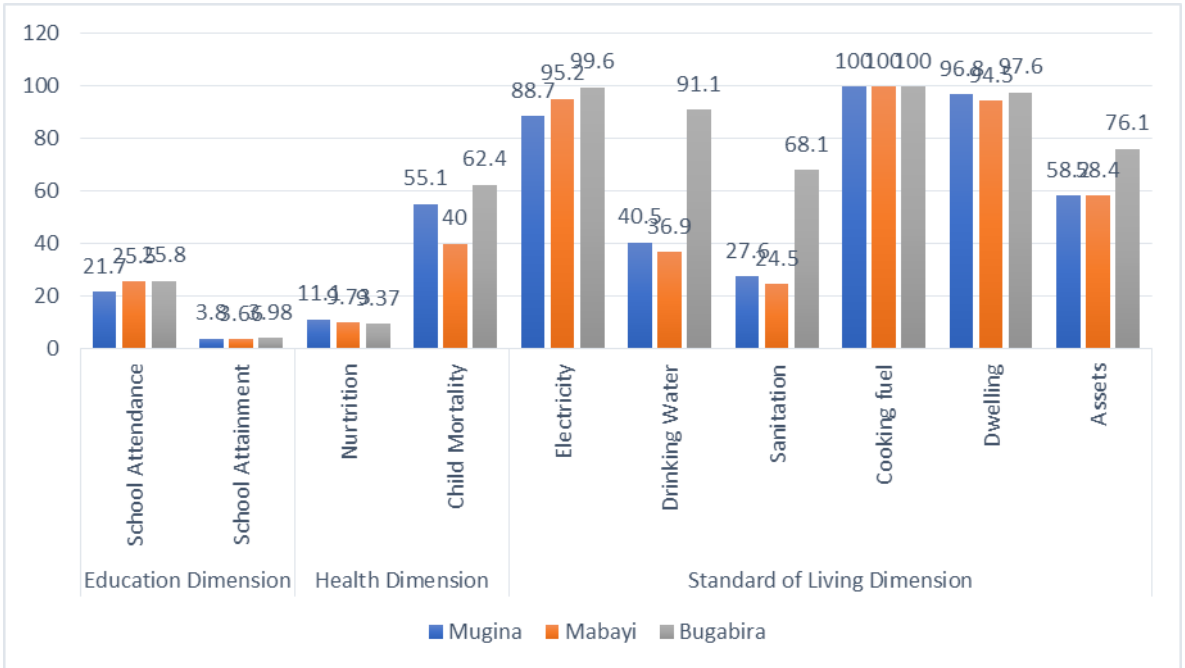
The disaggregation of deprivation rates by geographical location (see Figure 6) showed that the collines in the Kirundo Province experienced higher deprivation in all indicators with the exception of nutrition (collines in Cibitoke recorded the highest percentages of households with stunted children). A further disaggregation by commune showed that Bugabira was deprived in all indicators, once again with the exception of nutrition in which Mugina was most deprived (see Figure 7).

Figure 6: Deprivation Rates in MPI Indicators, by Province



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 7: Deprivation Rate in MPI Indicators, by Commune



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

For the total dataset, we found that 28.7% of the households were multi-dimensionally poor (measure of Target 1.2.1 of SDG 1; see Table 5). Those multi-dimensionally poor households were, on average, deprived in 39.1% of total indicators. In other words, the average intensity of deprivation among the poor was 39.1%. The MPI index, which was the multiplication of headcount and intensity, stood at 0.112.

On disaggregating MPI-poor households by province, we found that Kirundo was worse off than Cibitoke (40.2% vs. 20.9%, respectively). We observed that Bugabira Commune was the worst off with the highest percentage of MPI-poor households: 40.2% as compared to the communes of Mugina (21.5%) and Mabayi (19.3%). The most deprived collines was Gitwe where 42.3% of the households were multi-dimensionally poor.

As expected, households from the poorest wealth quintile had the highest proportion of multi-dimensionally poor households (36.6%). It was nonetheless intriguing to note that 15.7% of multi-dimensionally poor households occurred even in the "richest" quintile. Analysis of household size showed that 27.8%, 31.0%, and 25.1% of households with 1-3 members, 4-6 members, or 7 or more members were multidimensionally poor, respectively.

Table 5: MPI Headcount, Intensity, and Index, by Profiling Variables

		Percentage of MPI-Poor Households (Headcount - H)
Total dataset		28.7
Province	Kirundo	40.2
	Cibitoke	20.9
Commune	Mugina	21.5
	Mabayi	19.3
	Bugabira	40.2
Colline	Rushimabarimyi	27.0
	Rushiha	17.6
	Gitwe	42.3
	Gaturanda	36.4
	Gakerekwa	21.2
	Butaramuka	14.4
Wealth quintile	5th quintile (richest)	15.7
	4th quintile	27.2
	3rd quintile	29.9
	2nd quintile	34.2
	1st quintile (poorest)	36.6
Household size	7 or more members	25.1
	4-6 members	31.0
	1-3 members	27.8

Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

SDG 2: Zero hunger

2.1 The Situation in Burundi

According to the Food and Agricultural Organization's 2018 World Food Security Report, Burundi had the highest hunger score and was the ninth most serious food-security crisis in the world, similar to Somalia. The same report noted that climate shocks were one of the leading causes of food crises in 2017. Burundi was affected by droughts as well as by conflict. The country was described as even more fragile because it was one of the countries with high dependency on agriculture. The report also showed that 55.9% of children under five in Burundi were stunted, representing 1.1 million children. Anemia was noted in 26.7% of women, representing 0.7 million Burundian women in the reproductive

age of 15-49 years.

2.2 Assessment of Progress on SDG 2 by Indicators in Kirundo and Cibitoke Provinces

Indicator 1: Proportion of households with food-consumption score poor, limited, or acceptable

We calculated a food-consumption score, using an instrument developed by the World Food Programme, to determine the percentage of households with a poor, borderline, or acceptable diet. We found that 31.9% of the households under study had a poor diet, 42.4% had a borderline diet, and only around a quarter (25.7%) consumed an acceptable diet.

The disaggregation of results by geographical and household characteristics is shown in Figure 6-10. We found that 47.5% of the collines in the Kirundo Province had a poor diet in contrast to Cibitoke collines (20.3%; see Figure 6). We also noted that a higher proportion of combined households in Cibitoke collines (34%) consumed an acceptable diet as compared to Kirundo collines (14.5%). Further analysis showed that almost half of households in the commune of Bugabira consumed a poor diet (47.5%) in contrast to Mugina and Mabayi communes, where the percentages were 16.9% and 29.5%, respectively (see Figure 7). The smallest percentage of households that consumed an acceptable diet was also found in the commune of Bugabira (14.5%). The other two communes fared better, and around one-third of their households consumed acceptable diets (34.6% for Mugina and 32.5% for Mabayi).

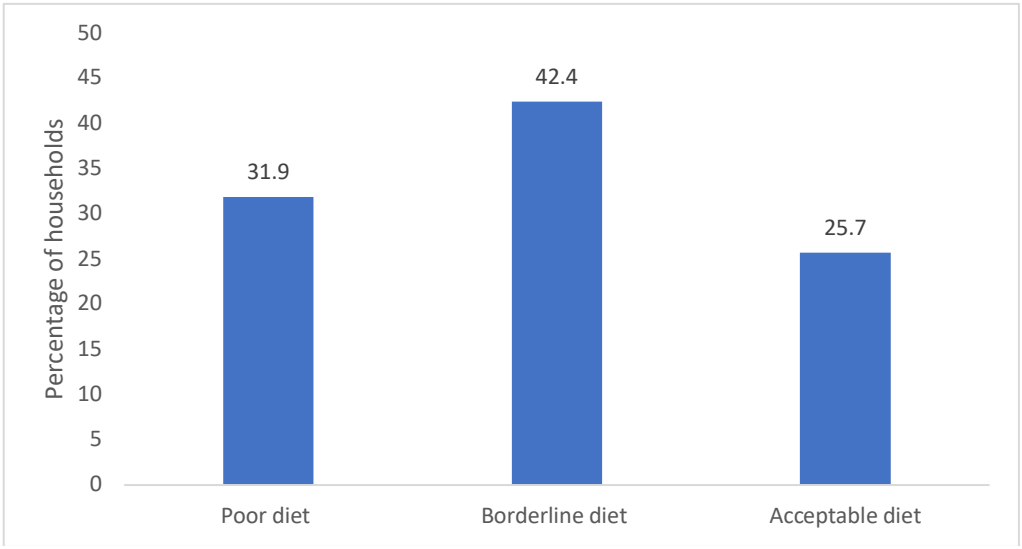
We further sub-disaggregated the results by colline (see Figure 8) and found that the highest proportion of households with poor diets were in Gitwe and Gaturanda collines (49.3% and 44.1%, respectively); similarly, those two collines also included the lowest proportion of households whose members consumed acceptable diets (12.8% and 17.6%, respectively).

Butaramuka, Rushimabarimyi, and Rushiha collines fared better: lower proportions of their households consumed a poor diet and a higher proportion consumed an acceptable diet. The majority of households in all three collines consumed borderline diets, however (45.8%, 50.2%, and 40.3%, respectively).

As expected, the majority of households in the poorest wealth quintile (43.1%) consumed poor diets (see Figure 9). As the level of wealth of the household increased, the percentage of households consuming acceptable diets increased. Large proportions of households (between 38% and 47%) in all quintiles consumed borderline diets. Despite being in the richest quintile, notably, 21% of households still consumed a poor diet. Given poverty rates of above 98%, this was probably because the households in the richest quintiles were also poor, or it may imply that they had some money but food was scarce in the region or that they choose to spend the money on things other than an acceptable diet.

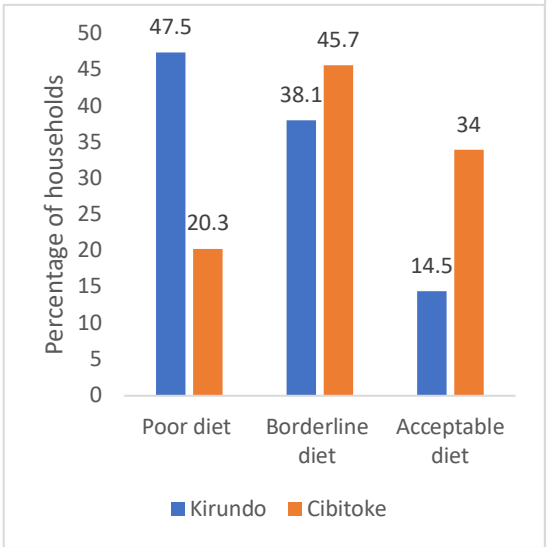
Surprisingly, we found that households with many members were doing better in food-consumption score than households with fewer members (see Figure 10). This could be because there were more household members who worked to provide food for the household.

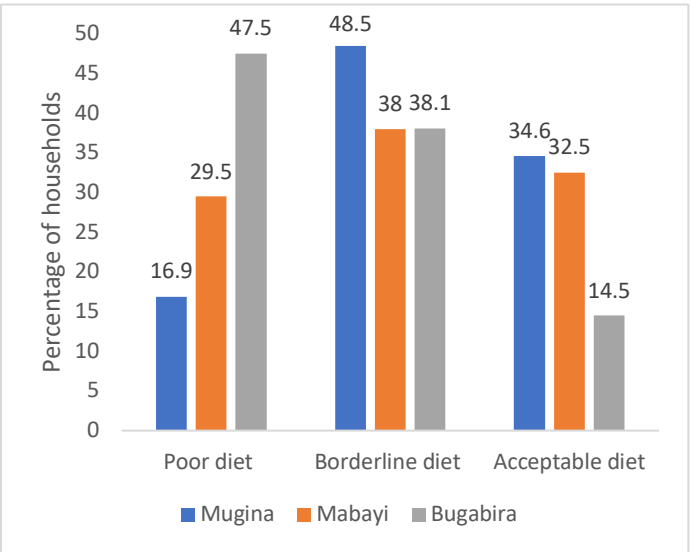
Figure 8: Percentage of Households with a Poor, Borderline, or Acceptable Food-Consumption Score



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

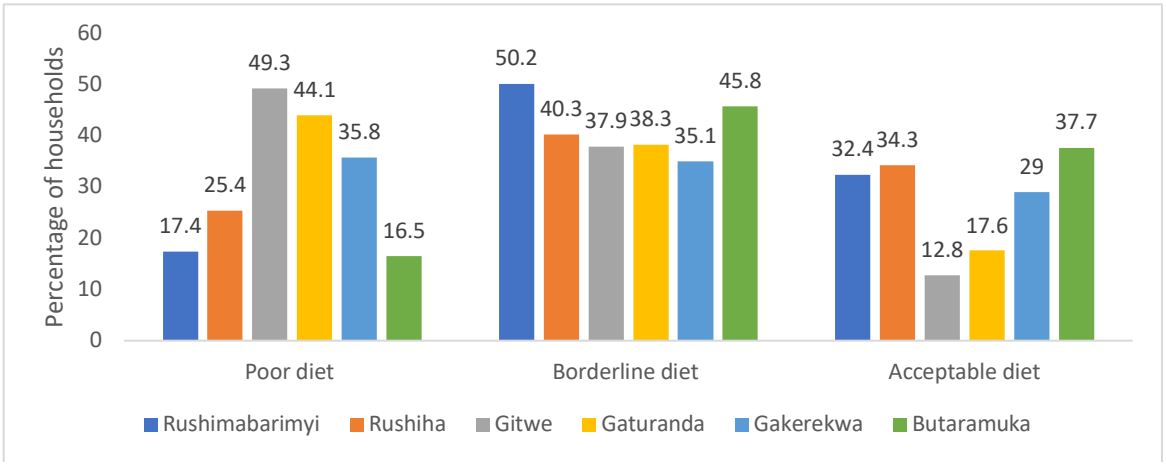
Figure 9: Food-Consumption Score, by Province
Figure 10: Food-Consumption Score, by Commune





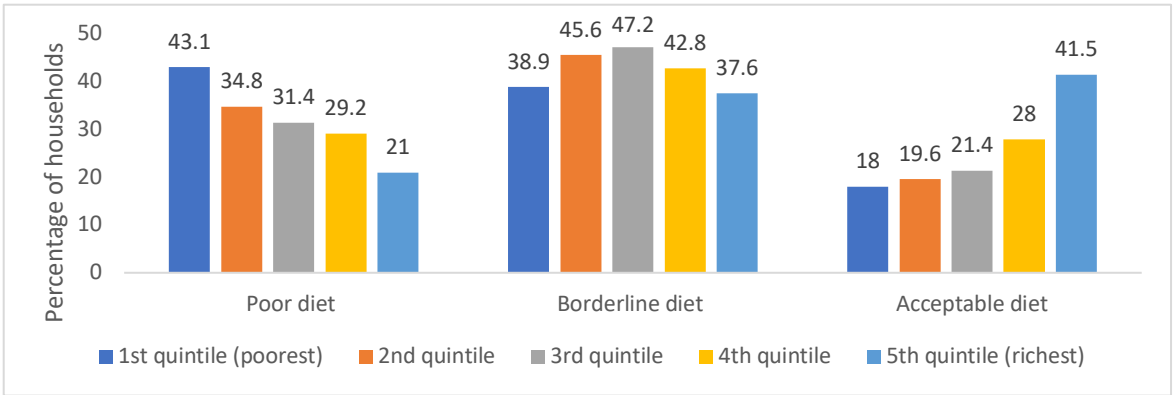
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 11: Food-Consumption Score, by Colline



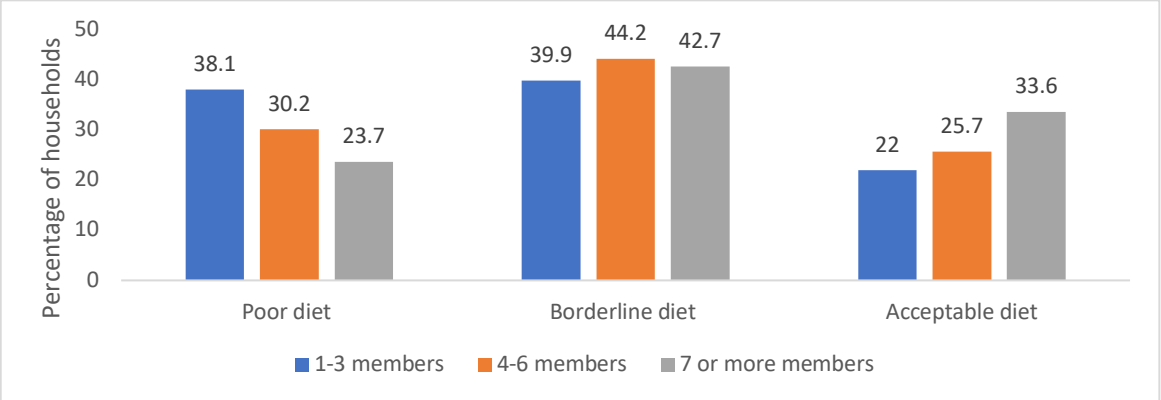
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 12: Food-Consumption Score, by Wealth Quintile



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 13: Food-Consumption Score, by Household Size



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Indicator 2: Proportion of households who experienced food shortages

In our census, we found that 66.8% of the households experienced food shortages. The disaggregation of the rate by province (see Figure 14) showed that a higher proportion of households suffered from food shortages in Kirundi as compared to Cibitoke (80% versus 56.8%). Bugabira Commune showed the highest percentage of households with food shortages (47.5% versus 29.5% in Mabayi and 16.9% in Mugina) (see Figure 15). The collines of Gaturanda (82.4%) and Gitwe (78.8%) had the highest proportion of households with food shortages while the Rushiha Colline had the lowest (51.1%) (see Figure 16).

After disaggregating the results by wealth quintiles, we found that the richer the quintile, the lower the percentage of households that experienced food shortages (see Figure 17). In the poorest wealth quintile, 77.1% of households suffered from food shortages and, in the richest quintile, 46.7% experienced food shortages. The higher the number of household members, the higher the proportion of households who experienced food shortages (see Figure 18), though the difference between the categories was very low (66.6% for households with 1-3 members, 68.8% for households with 4-6 members, and 69.7% for households with 7 or more members).

Figure 14: Food Shortages, by Province

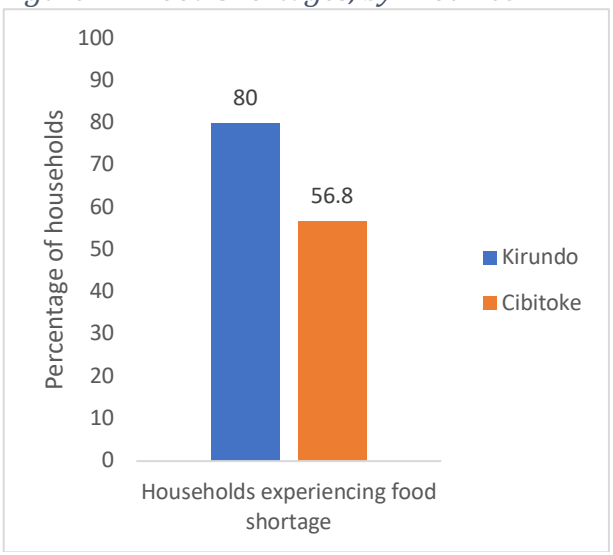
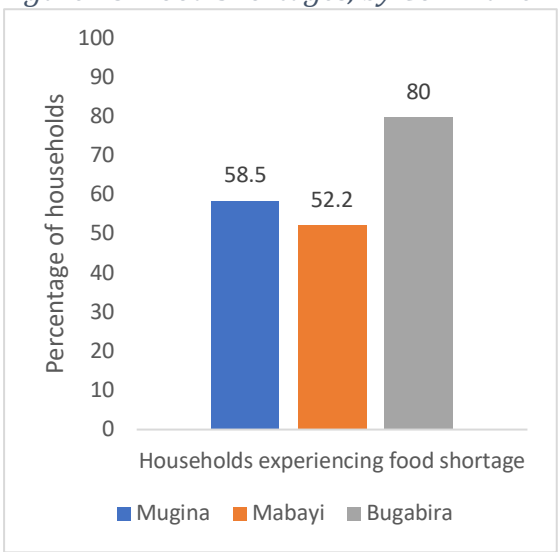
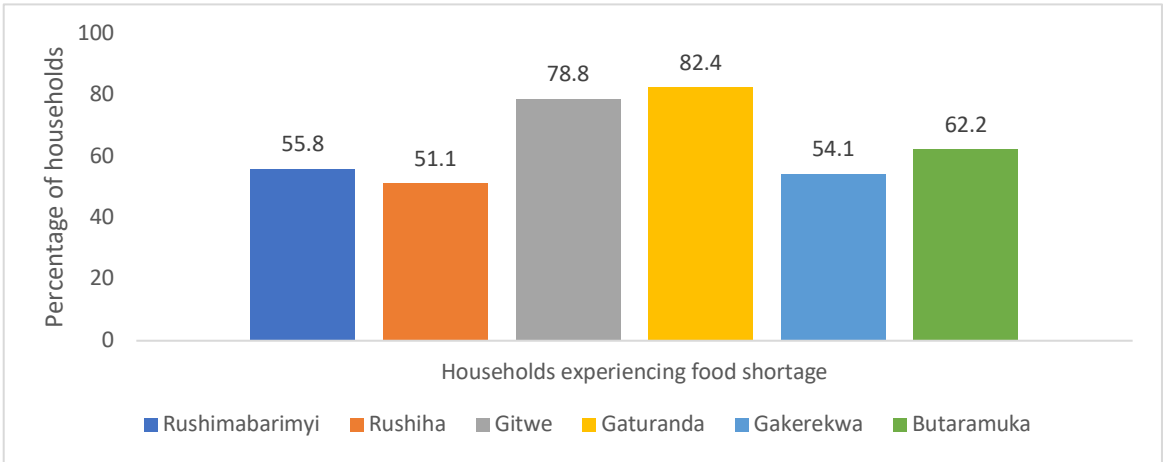


Figure 15: Food Shortages, by Commune



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 16: Food Shortages, by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 17: Food Shortages, by Wealth Quintile

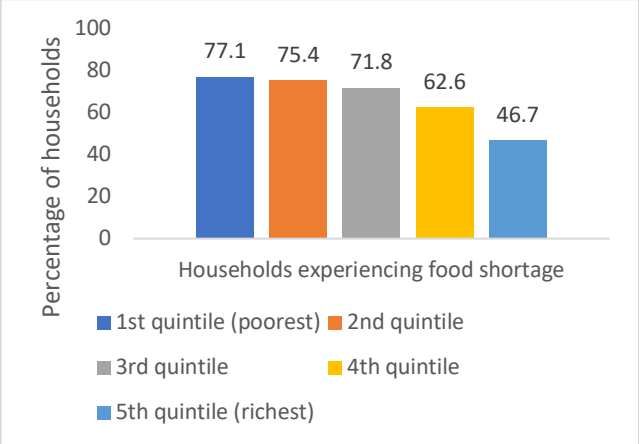


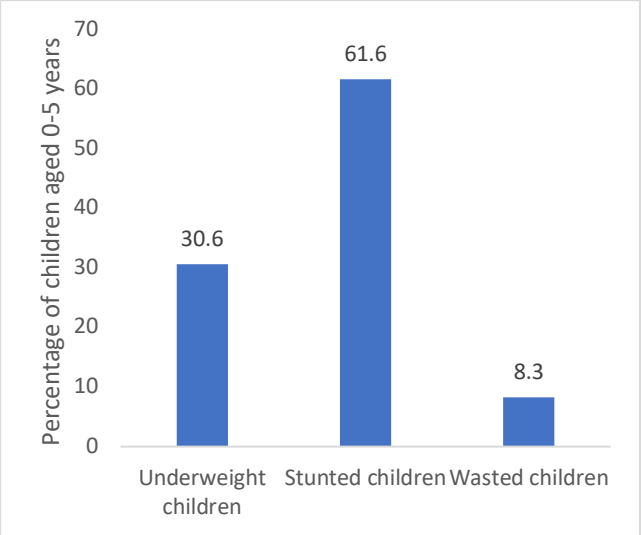
Figure 18: Food Shortages, by Household Size

Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Indicator 3: Proportion of underweight, stunted, and wasted children

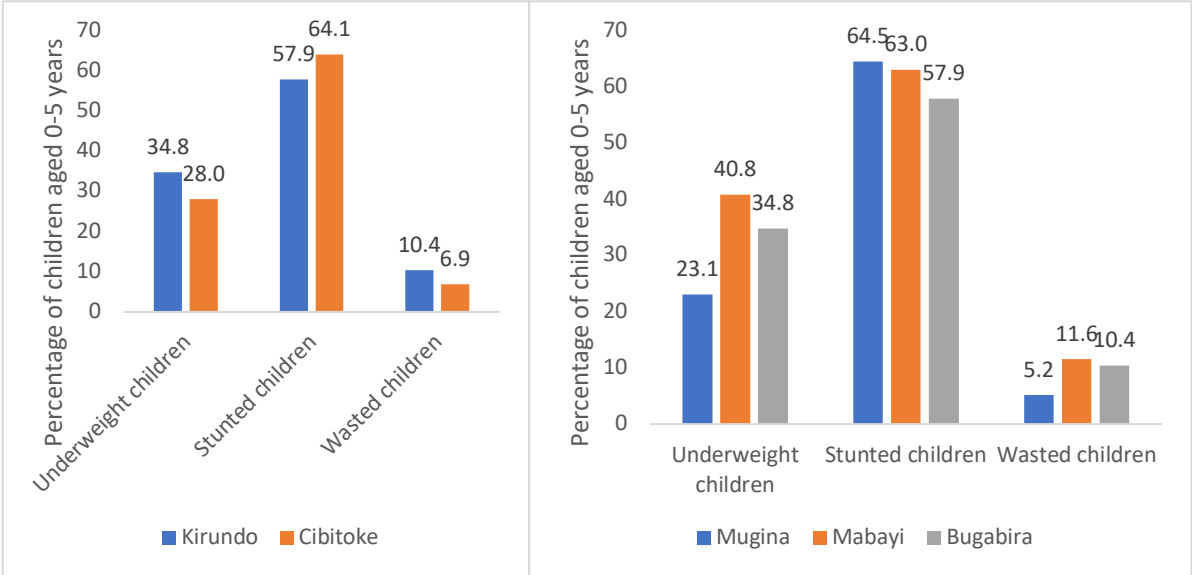
Anthropometrics variables are a good proxy to measure the situation of food security in any country. For this study, we collected data for children under five years old. As Figure 19 shows, 30.6% of children were underweight, 61.6% were stunted, and 8.3% were wasted. We disaggregated these rates by geographical location, wealth quintile, and household size, and the results appear in Figures 20-24. While the Kirundo Province had the highest percentage of underweight (34.8% versus 28.0%) and wasted (10.4% versus 6.9%) children, Cibitoke recorded the highest percentage of stunted children (64.1% versus 57.9%).

Figure 19: Underweight, stunted and wasted children in total dataset



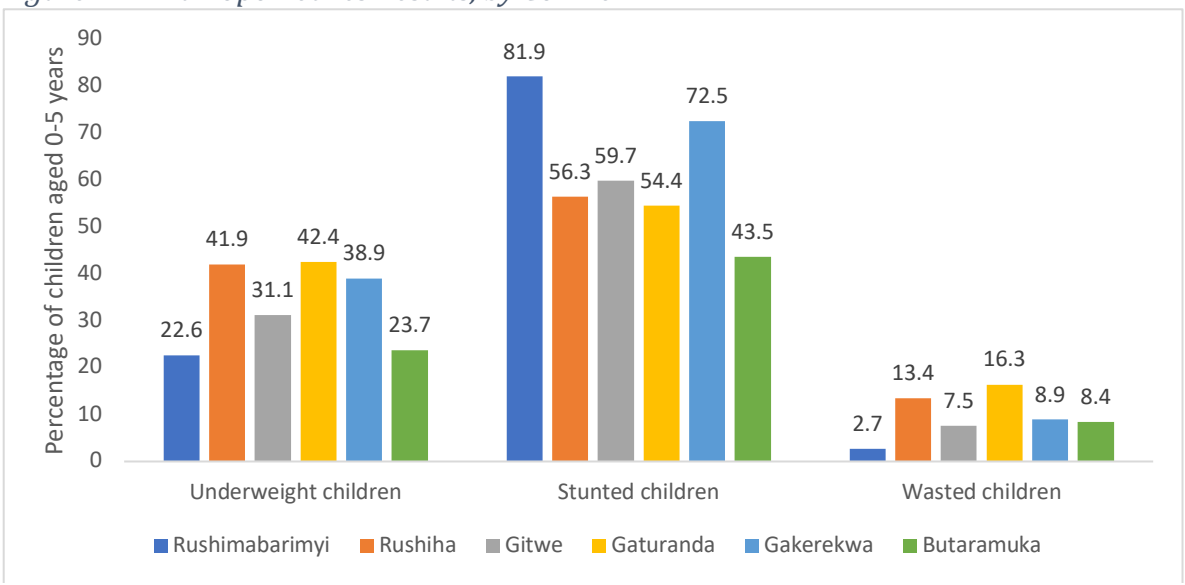
Mugina Commune had the highest percentage of stunted children (64.5%) while Mabayi had the highest percentage of underweight (40.8%) and wasted (11.6%) children. It was worrisome to note that a large majority of children in Rushimabarimyi (81.9%) and Gakerekwa (72.5%) were stunted. Gaturanda and Rushiha Collines had the highest proportion of underweight children (42.4% and 41.9%, respectively) of and wasted children (16.3% and 13.4%, respectively). Disaggregation by wealth quintile showed that the proportions of underweight, stunted, and wasted children were almost the same across the quintiles. There was a slightly lower proportion of underweight and stunted children in the "richest" quintile but the difference was very small. There was also little difference in anthropometrics results by household size.

Figure 20: Anthropometrics Results, by Province *Figure 21: Anthropometrics Results, by Commune*



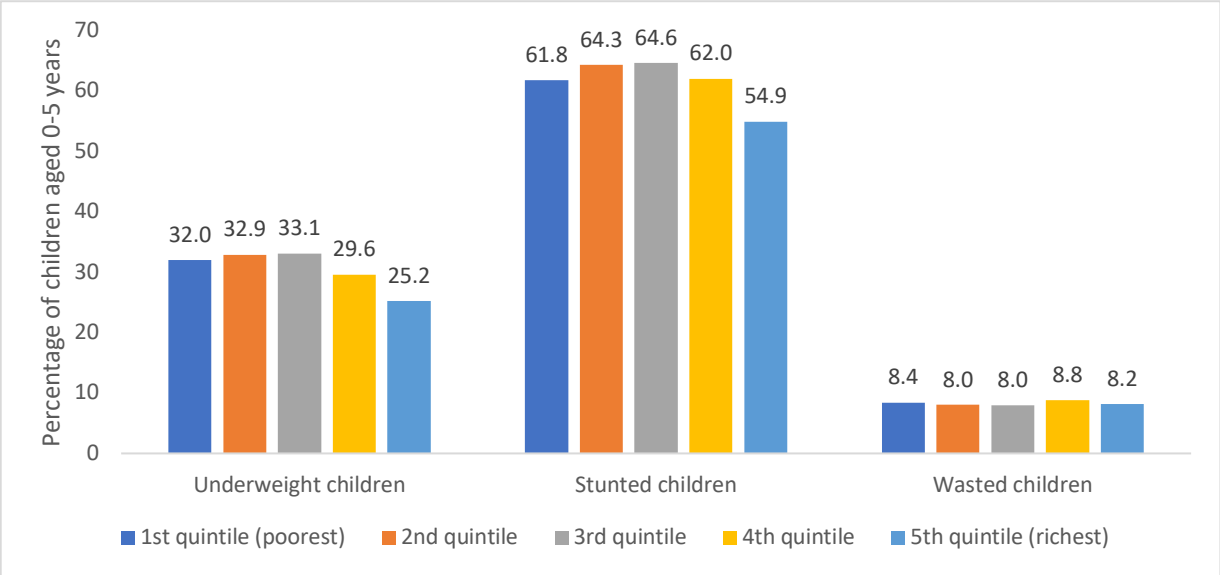
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 22: Anthropometrics Results, by Colline



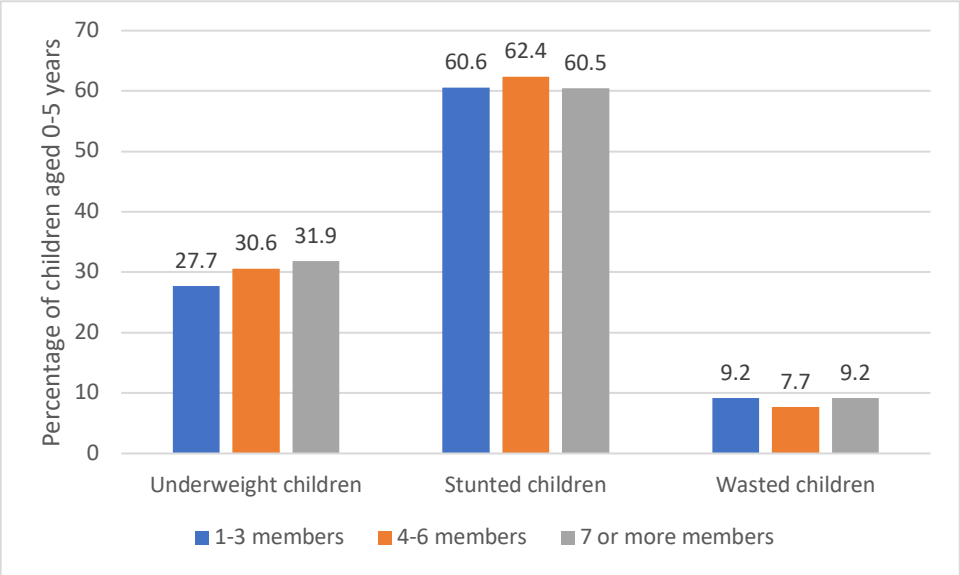
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 23: Anthropometrics Results, by Wealth Quintile



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 24: Anthropometrics Results, by Household Size



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

SDG 3: Ensure healthy lives and promote well-being for all at all ages

3.1 The Situation in Burundi

Goal 3 of the SDG relates to the health and well-being of the population. The health condition of the average Burundian is quite precarious because basic health care is not accessible to all, either because of the location of health facilities or because of exorbitant costs. Life expectancy is quite low in Burundi (58 years for men and 62 years for women).

As of 2017, the under-five mortality rate was 61 per 1,000 live births was 61. The death rate for individuals between 15 and 60 (per 1,000 individuals) was 320 for men and 260 for women (World Health Organisation, 2017). These figures seem to suggest that the government should increase healthcare spending. As of the latest data available (2014), per-capita spending on healthcare was $58, and total healthcare expenditure, as a percentage of GDP, was 7.5% (World Health Organisation, 2017).

3.2 Assessment of Progress on SDG 3 by indicators in Kirundo and Cibitoke Provinces

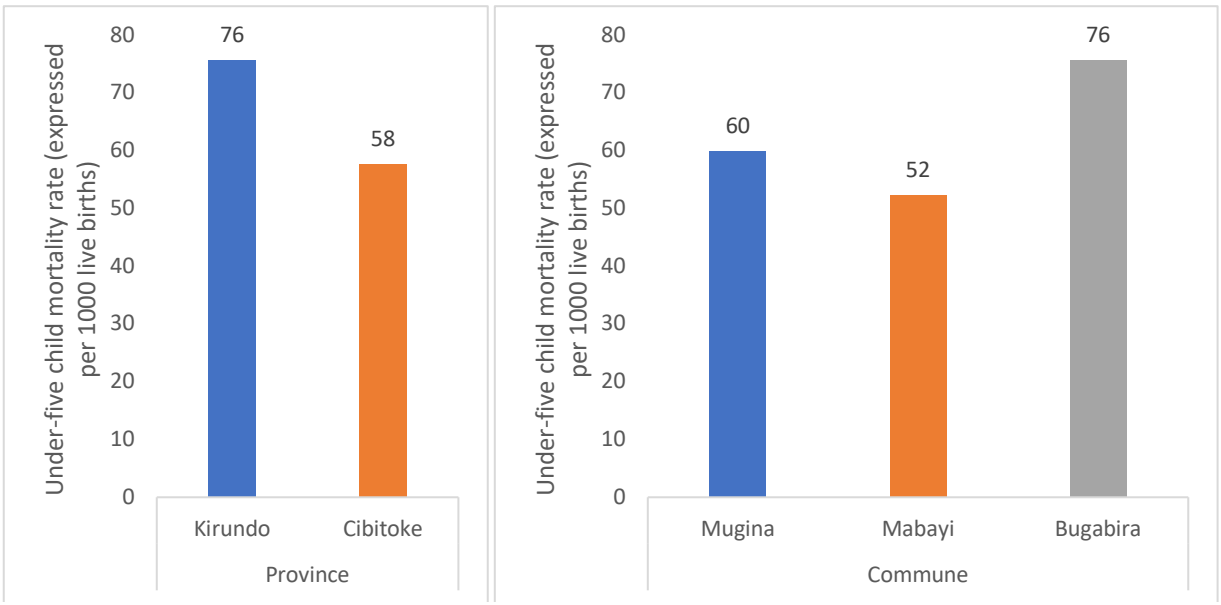
Indicator 1: Under-five mortality rate

We proxied the overall health situation in our study sites by under-five child mortality. We found that 65 out of every 1,000 live-born children died before their fifth birthdays. We disaggregated the results by province and found that the situation was even more problematic in Kirundo where the under-five mortality rate was 76/1,000 as compared to 58/1,000 in Cibitoke (see Figure 26). Out of the three communes analyzed, Bugabira had the highest rate of under-five mortality (76/1,000), Mugina had the second highest (60/1,000), and the lowest rate of 52/1,000 was observed in Mabayi.

Gitwe and Rushimabarimyi Collines had the highest under-five child-mortality rate (87/1,000 and 75/1,000, respectively. As expected, the population from the richest quintile had the lowest under-five child-mortality rate, though it was intriguing to note that the under-five child-mortality rate was highest in the fourth wealth quintile. In fact, not much difference was observed in child-mortality rates among the first four quintiles. Child mortality seemed to be a problem across all wealth quintiles in those two provinces, which are among the poorest in Burundi.

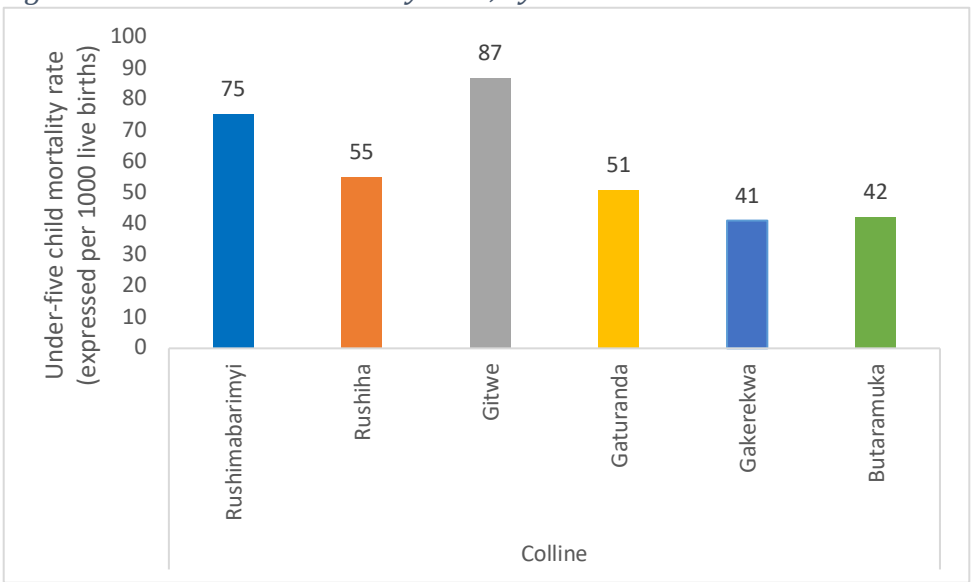
Under-five child mortality was very high, at 101/1,000, in households with only 1-3 members. In slightly larger households of 4-6 members, under-five child mortality stood at 66/1,000 while, in households of 7 or more, the rate was 45/1,000. More in-depth analysis needs to be carried out to understand why households with more members experienced a lower under-five child-mortality rate.

Figure 25: Under-Five Mortality Rate, by Province *Figure 26: Under-Five Mortality Rate, by Commune*



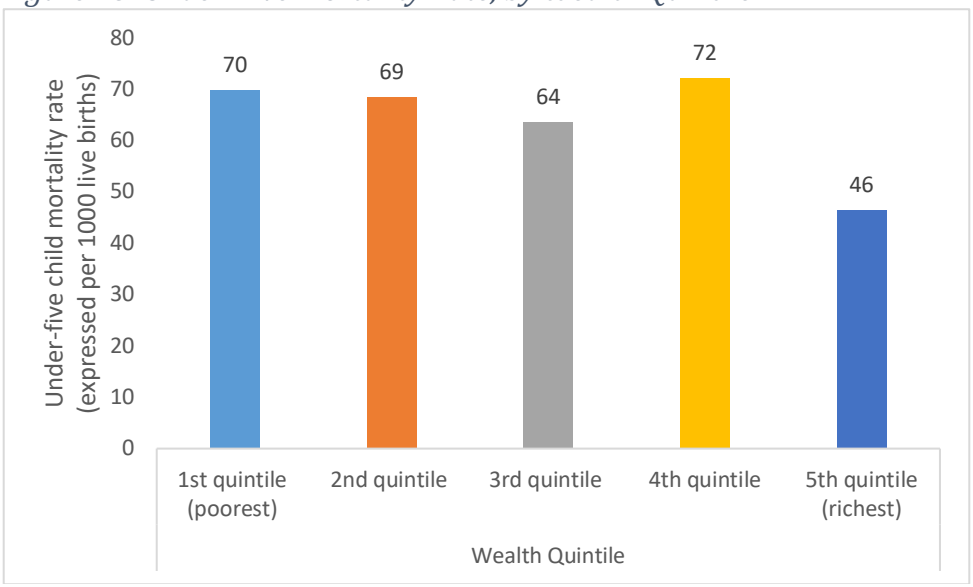
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 27: Under-Five Mortality Rate, by Colline



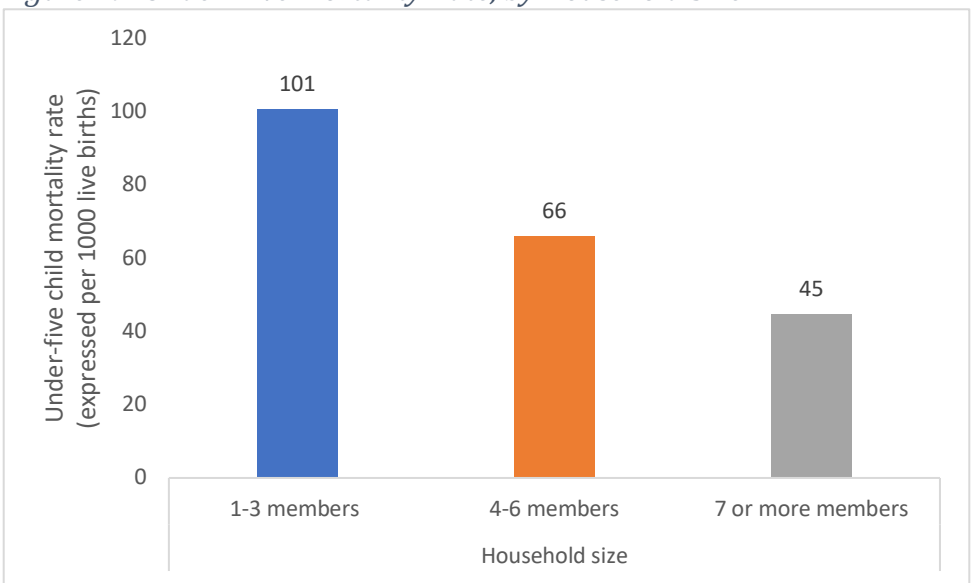
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 28: Under-Five Mortality Rate, by Wealth Quintile



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 29: Under-Five Mortality Rate, by Household Size

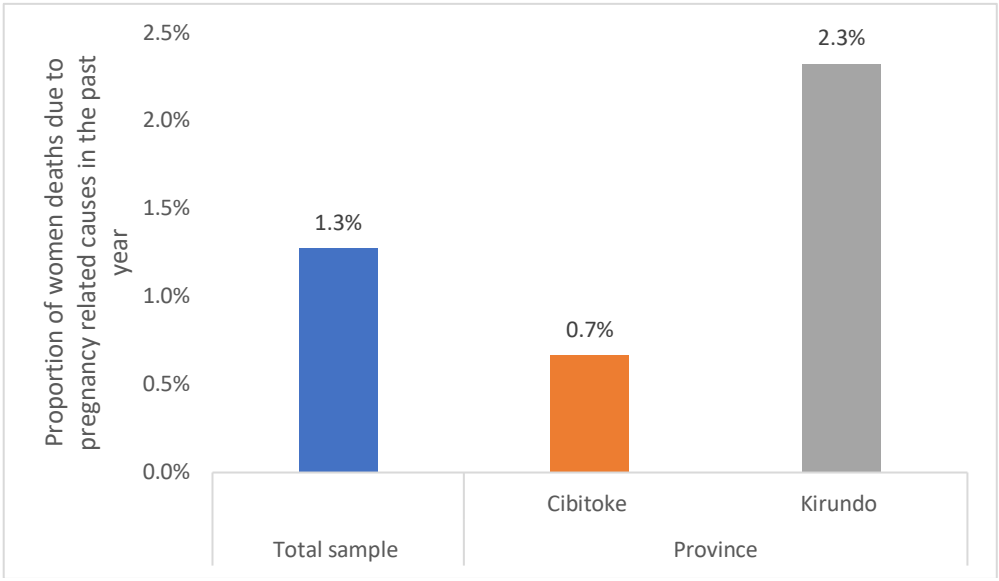


Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Indicator 2: Proportion of Women's Deaths from pregnancy-related causes

As shown in Figure 30, 1.3% of women died from pregnancy-related causes in the year prior to the survey. The disaggregation of results by province showed that a higher proportion of women died due to such causes in Kirundo (2.3%) as compared to Cibitoke (0.7%).

Figure 30: Proportion of Women's Deaths from Pregnancy-Related Causes in Total Dataset and by Province



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

SDG 4: Quality Education

4.1 The Situation in Burundi

Education is essential to poverty reduction, boosting of economic growth, increasing gender equality, and promoting peace. Currently, Burundi has a total of 2,401,000 pupils enrolled in primary and secondary education. Of these, about 83% are enrolled in primary education and 17% are in secondary education. Nearly 46% of young women of secondary-school age are out of school compared to 34% of male youth of the same age (Burundi Education Policy Data Center, 2018 According to *The Africa Report* (Sambira, 2012), the real problem in Burundi was school retention—keeping children in school. Overall, in Burundi, 50% of children drop out before they complete primary school, and another 50% of those in secondary school drop out before they finish. There was gender parity at intake, and even more girls than boys in some provinces, but, past at a certain age, girls drop out more frequently than do boys. Girls tend to drop out at puberty because of lack of separate sanitation facilities for boys and girls, early marriage, and teenage pregnancies. Other problems facing the Burundian education system were lack of qualified teachers, classrooms, desks, and books and overcrowding (which increases the pupil-to-teacher ratio).

4.2 Assessment of Progress on SDG 4 by indicators in Kirundo and Cibitoke Provinces

Indicator 1: Adult literacy rate

In the collines we studied, around half (50.3%) of the population was literate. Lower literacy was observed in the Kirundo Province (39.7%) as compared to Cibitoke (57.4%).

The highest literacy rates were observed at Mabayi Commune (60.5%) followed by Mugina Commune (56.1%), and the lowest rates were found for Bugabira Commune (39.7%). Disaggregation by colline showed that the highest literacy rates were in Rushiha Colline (63.6%) and the lowest in Gitwe Colline (39.2%). In the two provinces studied, a higher percentage of men were literate than women (58.0% versus 43.7%).

Figure 31: Literate Adults (%), by Province

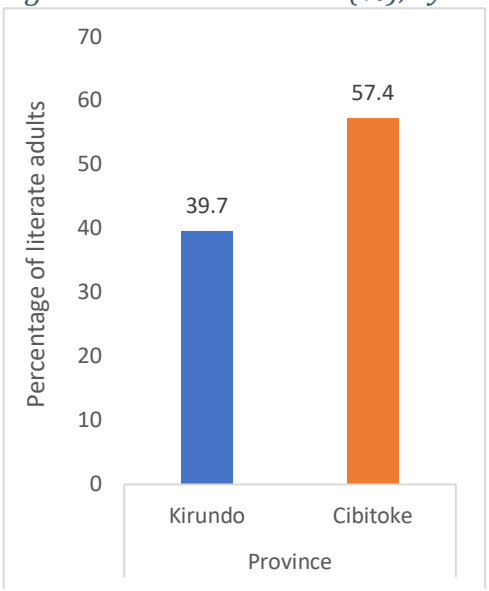
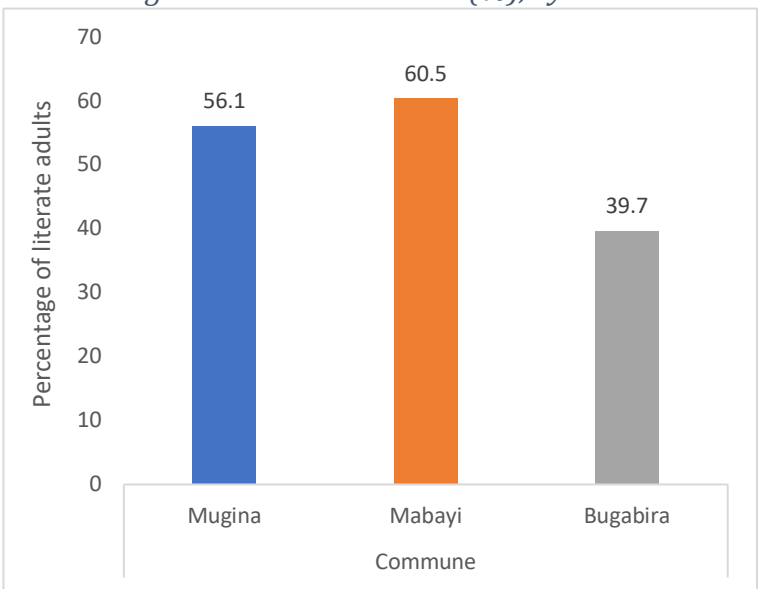
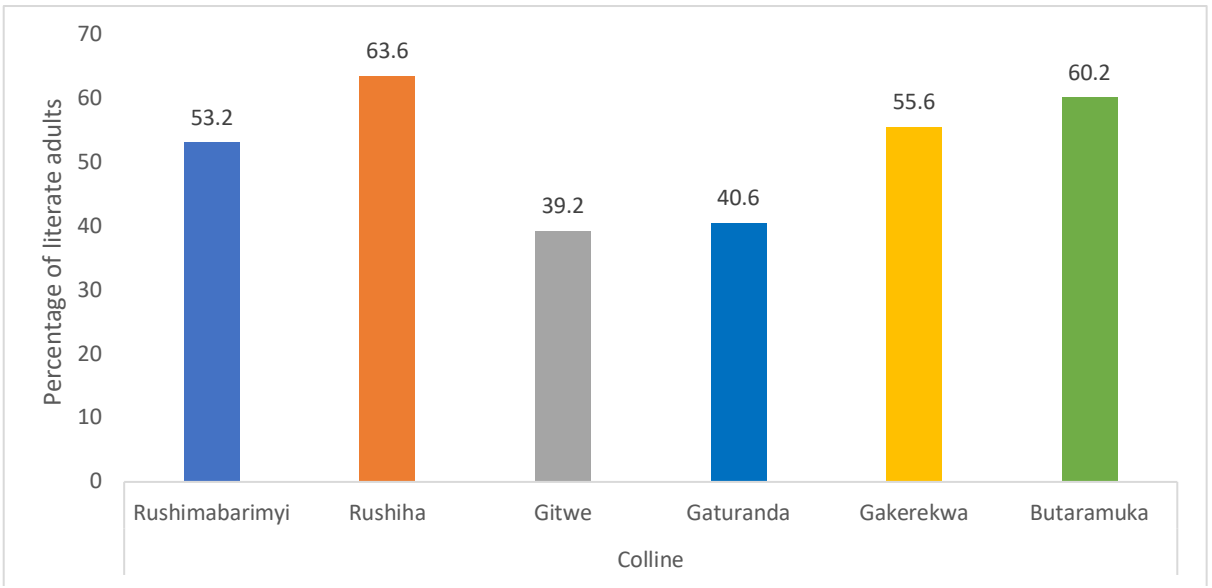


Figure 32: Literate Adults (%), by Commune



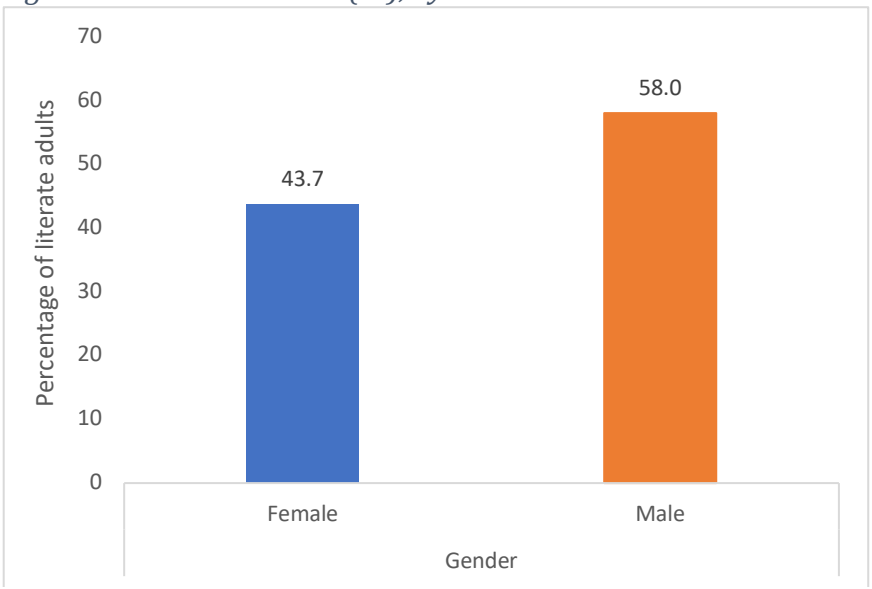
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 33: Literate Adults (%), by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 34: Literate Adults (%), by Gender



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

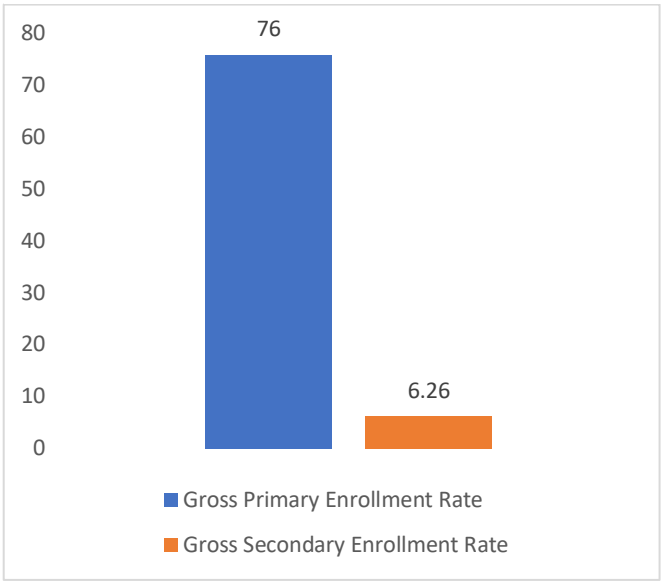
The maps that follow show the location of households with at least one member who is illiterate (red dots). Green dots represent households all of whose members were literate. The collines are also colored shades of blue. The darker the shade of blue, the better was that colline's literacy performance compared to other collines. Gitwe and Gaturanda registered the lowest literacy rate among the collines.

Map C.1: Adult Literacy Rate and Location of Households with at Least One Illiterate Member, Selected Collines (2018)

Indicator 2: Gross primary/secondary enrollment rate

Primary-school enrollment stood at 76% in the dataset and secondary-school enrollment was 6.26%. Primary-school enrollment was higher in Cibitoke than in Kirundo (77.3% versus 74.2%). Kirundo had a higher secondary-school enrollment rate (6.87%) than Cibitoke (5.83%). The commune of Mugina had the highest enrollment rates for primary school, and Bugabira Commune had the lowest (74.2%); Mabayi Commune had the lowest percentage of secondary-

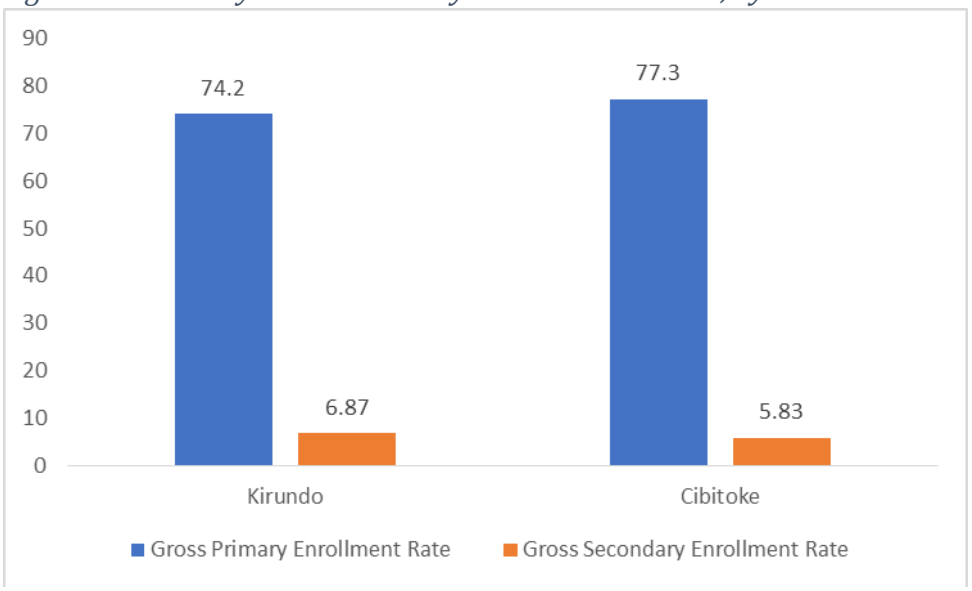
Figure 35: Primary and secondary school enrollment in total dataset



school enrollment (3.68%).

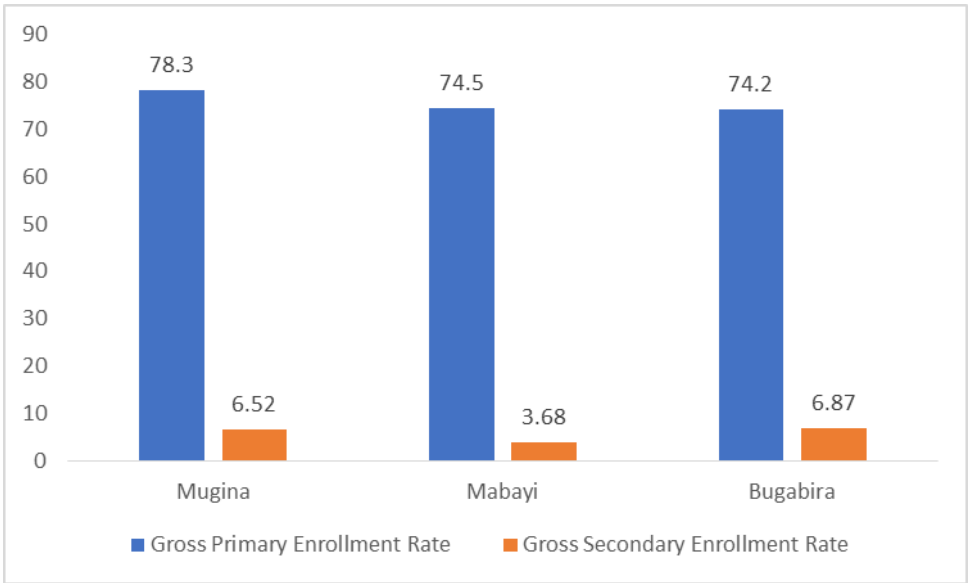
With respect to the collines, we observed that Butaramuka was doing the best with primary-school enrollment rates up to 81.7% and secondary-school enrollment rates at 6.76%. Gitwe had the highest secondary-school enrollment rate (9.7%). The worst performer among the collines was Gakerekwa, where only 67.2% of children were enrolled in primary schools and only 1.79% were enrolled in secondary schools. While primary-school enrollment was slightly higher among girls (77.3% versus 74.7%), secondary-school enrollment was twice as high among boys as girls (7.85% versus 4.55%).

Figure 36: Primary- and Secondary-School Enrollment, by Province



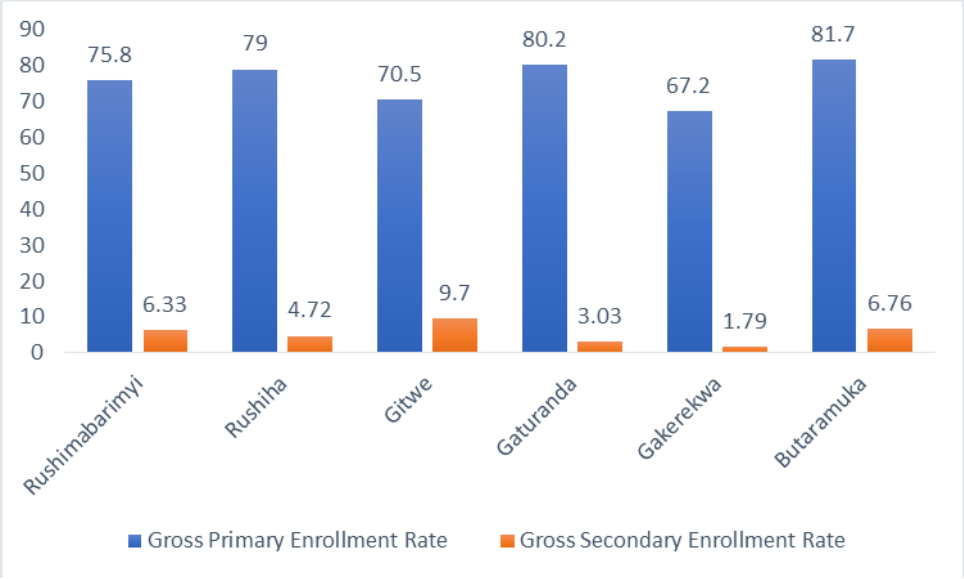
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 37: Primary and Secondary-School Enrollment, by Commune



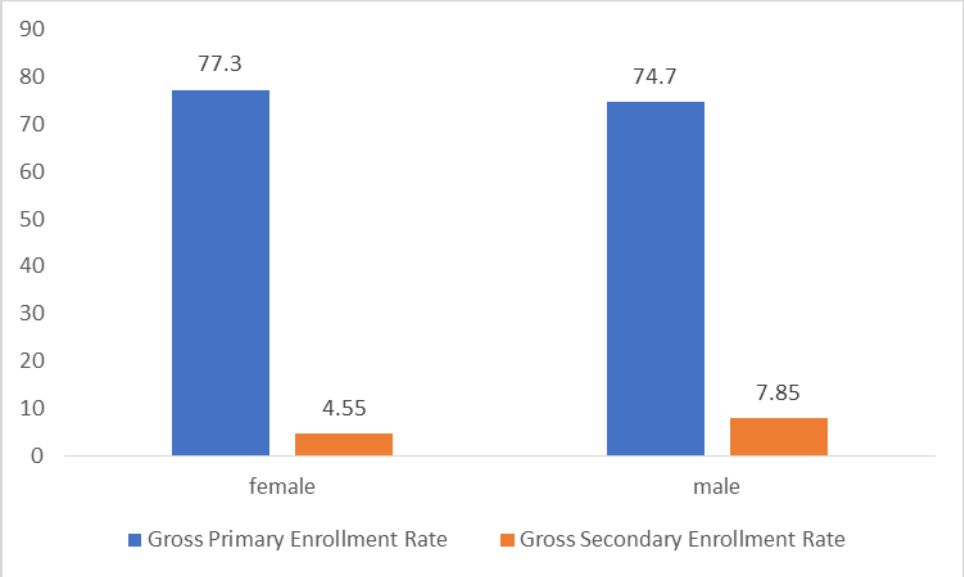
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 38: Primary and Secondary-School Enrollment, by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 39: Primary and Secondary-School Enrollment, by Gender



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Indicator 3: Proportion of Schools with Access to Safe Drinking Water and Sanitary Toilets

We investigated the quality of drinking water and sanitary toilets in three types of schools in our study sites: pre-schools, elementary schools, and secondary school. Only one pre-

school was surveyed, which had no access to safe drinking water but did had access to toilets. Of the eight elementary schools surveyed, only one had access to safe drinking water while six had access to toilet facilities. Of the three secondary schools, none had access to safe drinking water and only two hade toilets.

Indicator 4: Proportion of population with Information and Communication Technology (ICT) skills

ICT skills were very poor in the selected sites (only 3.6% of individuals had such skills). There was a higher percentage of the population with ICT skills in Cibitoke (4.8%) as compared to Kirundo (2.9%). In Mabayi and Bugabira Communes, 4.8% of the population had ICT skills; the lowest percentage was in Mugina Commune with only 2.1%.

The highest percentage of people with ICT skills was in Gakerekwa Colline (8.6%), and the lowest was in Rushimabarimyi (1.8%). Gender disparity was also observed: the percentage of men having with ICT skills was more than twice that of women (5.1% versus 2.0%).

Figure 40: Population with ICT Skills (%), by Province

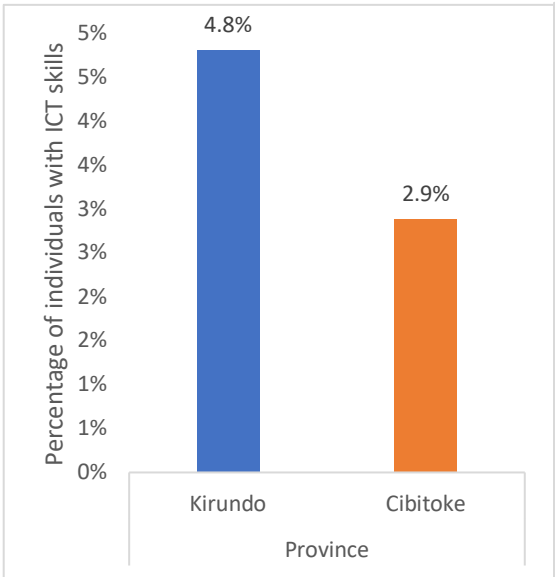
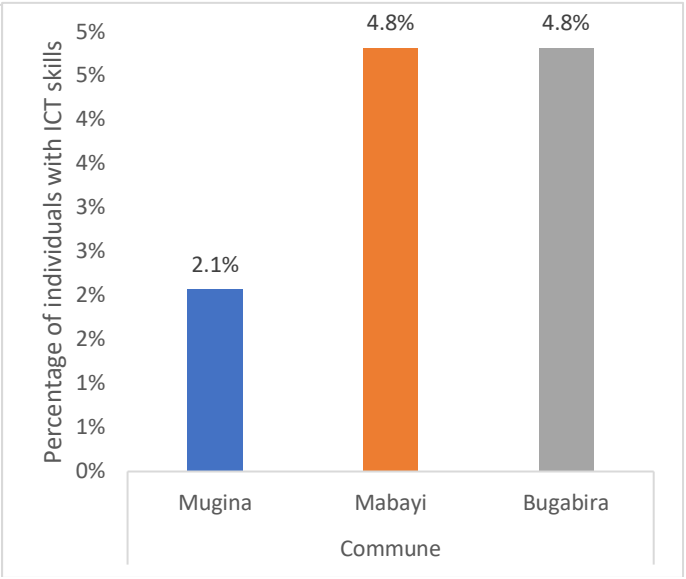
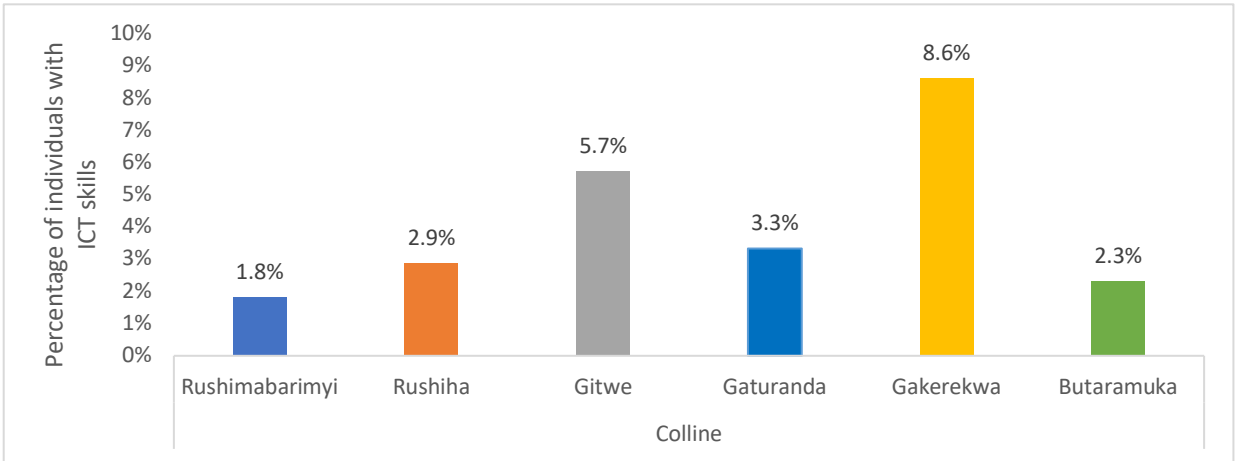


Figure 41: Population with ICT Skills (%), by Commune



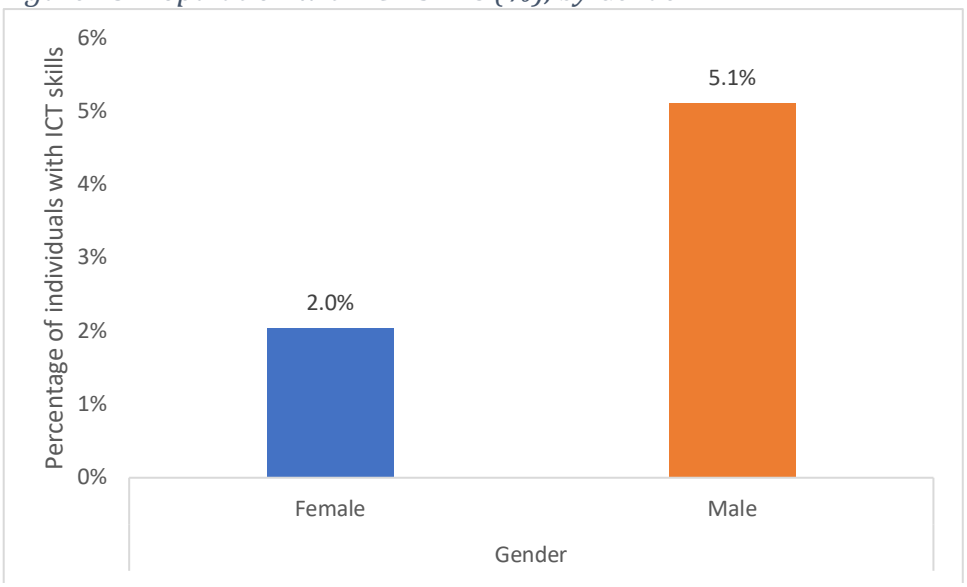
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 42: Population with ICT Skills (%), by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 43: Population with ICT Skills (%), by Gender



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

SDG 6: Ensure access to water and sanitation for all

The sixth SDG aims to address the challenges of clean water, sanitation, and hygiene, as well as the problems of aquatic ecosystems. In the absence of water resources and quality sanitation, progress in many other areas of sustainable development goals, including health, education and poverty reduction, will be delayed.

6.1.1 The Situation in Burundi

The World Health Organization adopted a standardized definition of clean water that we

also used in our CBMS questionnaire. Water was considered clean when it came from pipes installed inside or outside the dwelling, from public standpipes or taps, from wells or boreholes equipped with pumps, from wells dug and protected, or from protected sources.

According to the 2013-2014 report, Enquête sur les Conditions de Vie des Ménages au Burundi (Institut de Statistiques et d'Etudes Economiques du Burundi, 2014), 79% of Burundian households had access to clean water with an improved source of which 35% were boreholes and protected wells, 32% were standpipes, and 12% for taps (inside or outside the yard).

This proportion improved slightly between 2013-2014 and 2016/2017 as shown by the 2016/2017 Demographic and Health Survey report (Ministère à la Présidence Chargé de la Bonne Gouvernance et du Plan et al., 2017), which showed that more than four out of five households (83%) drank water from an improved source.

6.2.1 Assessment of Progress on SDG 6 by indicators in Kirundo and Cibitoke Provinces

Indicator 1: Proportion of Households with an Unimproved Water Source and with Distance to Water Source Greater than Thirty Minutes away, by Foot

The results of the survey show that 62.4% of households in Kirundo and Cibitoke provinces use water from an unimproved source or takes more than half an hour to go to fetch water and come back. However, these results show disparities when analyzed by province. Kirundo province had a high proportion of households deprived in this indicator (91.1%) while Cibitoke province was better off (41% of its households were).
We found that more than nine out of 10 households in Bugabira Commune in Kirundo Province were deprived (91.1%). The highest proportion of deprived households was in the collines of Gitwe Commune (93.7%). In the collines in Butaramuka and Gakerekwa Communes, conversely, more than eight out of ten households claimed to use water from an improved source within thirty minutes walking distance.

Figure 44: Proportion of Households with an Unimproved Water Source and with Distance to Water Source Greater than Thirty Minutes Away, by Foot

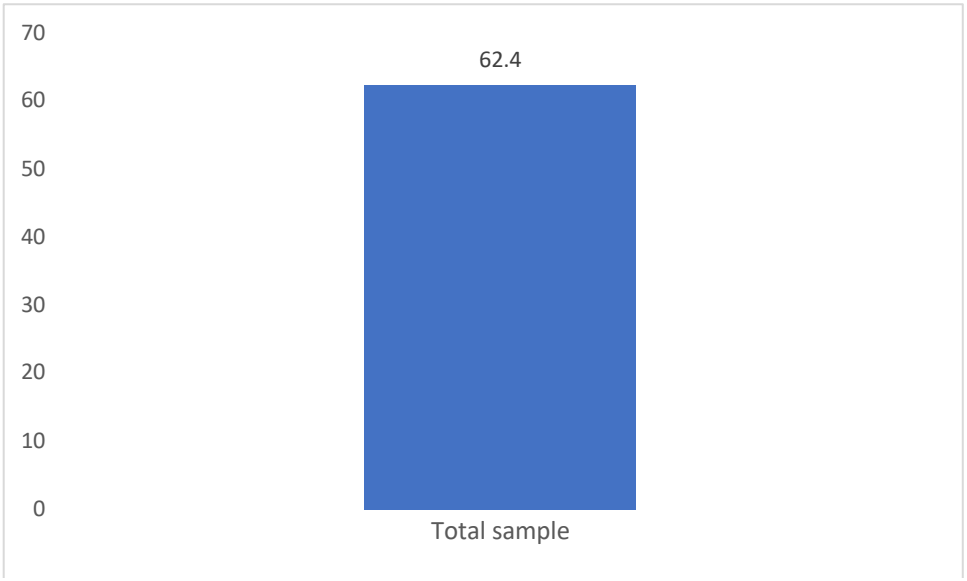
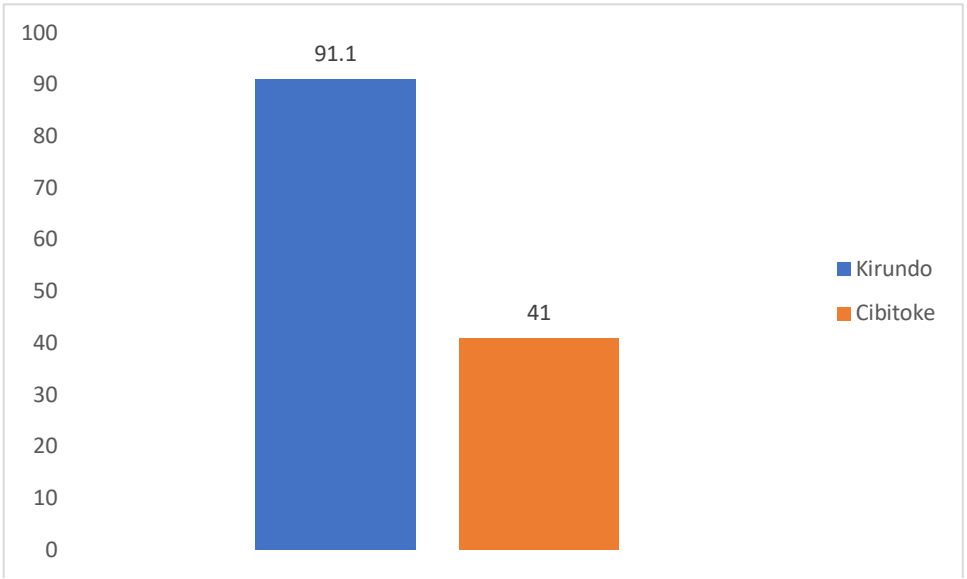
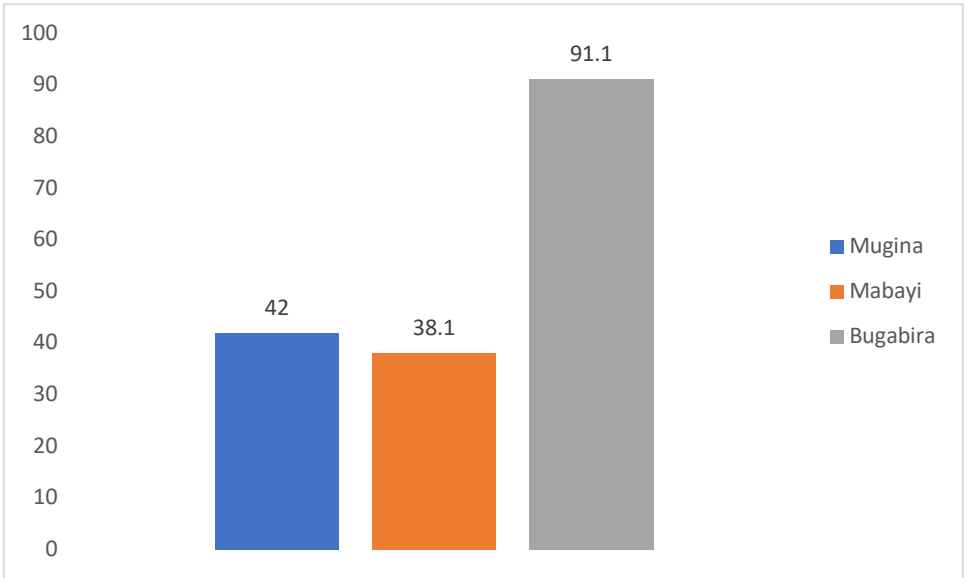


Figure 45: Proportion of Households with an Unimproved Water Source and with Distance to Water Source of Greater than Thirty Minutes on Foot, by Province



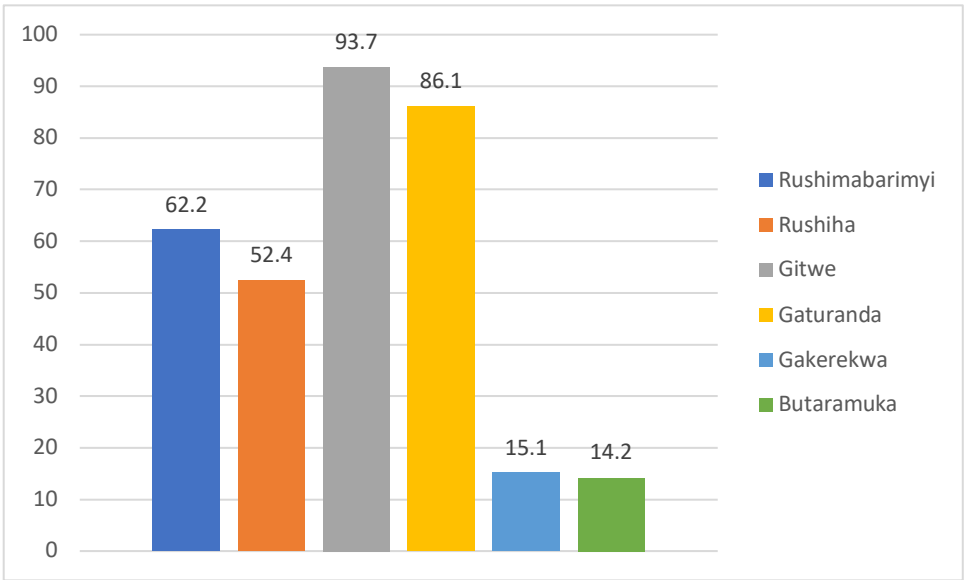
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 46: Proportion of Households with an Unimproved Water Source and with Distance to Water Source of Greater than Thirty Minutes on Foot, by Commune



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 47: Proportion of Households with an Unimproved Water Source and with Distance to Water Source Greater than Thirty Minutes away by Foot, by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Indicator 2: Proportion of Households with an Unimproved Toilet Source and Households that Shared Toilet Facilities with other Households

6.2.1 The Situation in Burundi

The sixth Sustainable Development Goal also addresses issues related to sanitation. Hygienic toilets and safe drinking water protect people from disease and enable societies to be economically productive. The main indicator of the sanitation target was "Proportion of population using safely managed sanitation services, including a handwashing facility with soap and water." Worldwide, six out of every ten people do not have safely managed sanitation services and 3 out of 10 people do not had safe water supply services.

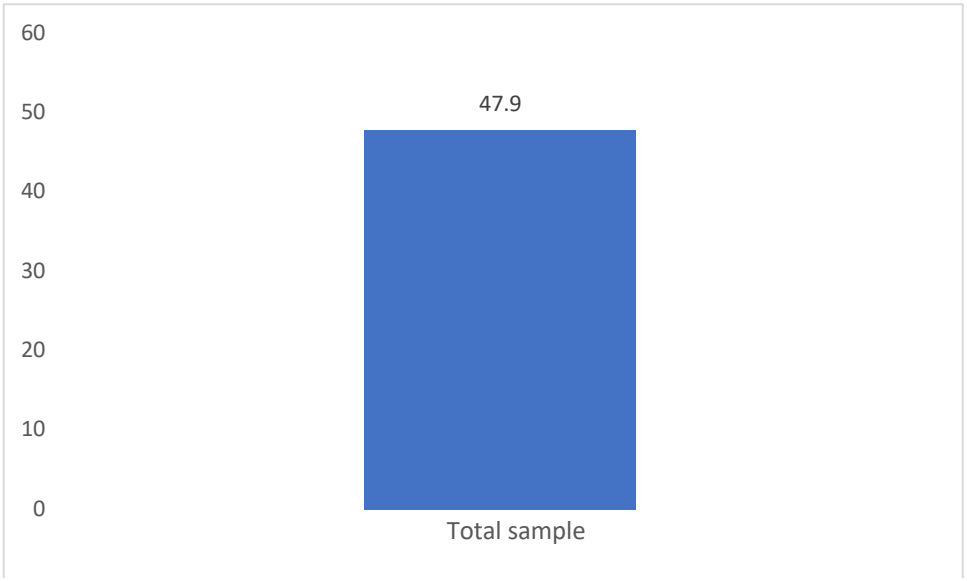
In Burundi, studies such as the 2016-2017 Demographic and Health Survey have shown that, overall, 39% of Burundian households used improved toilets vs. 47% that used unimproved toilets. One in ten households (10%) used shared toilets, and this proportion was six times higher among urban vs. rural households (42% versus 7%). Finally, in 3% of cases, households had no toilet, implying open defecation. The proportion of households that used unimproved toilets decreased from 61% to 47% between EDSB-II in 2010 and EDSB-III in 2016-2017.

6.2.2 Assessment of Progress on SDG 6 by Indicators in Kirundo and Cibitoke Provinces

We captured the sanitation component by asking whether households had toilets and whether or not they were shared. The fact that there was soap and water near the toilet was not investigated and open defecation was considered an unimproved toilet use.

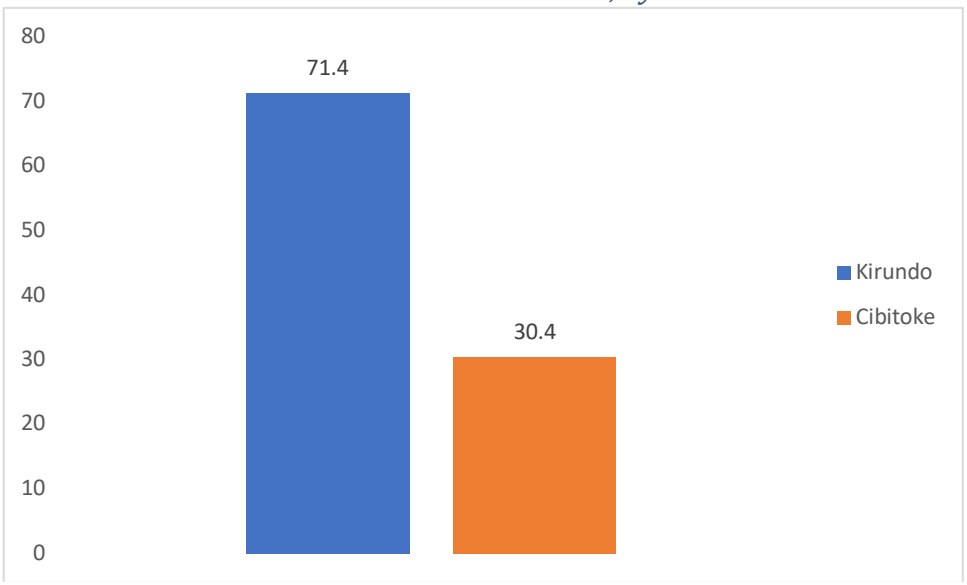
The results showed that the proportion of Kirundo and Cibitoke households that used unimproved toilets was 36.5%, and 20.8% shared toilets with other households. These proportions were significant in Kirundo compared to Cibitoke: 62.6% against 17% and 25% against 17.6%.

Figure 48: Proportion of Households with an Unimproved Toilet Source and Households that Shared Toilet Facilities with other Households



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 49: Proportion of Households with an Unimproved Toilet Source and Households that Shared Toilet Facilities with other Households, by Province



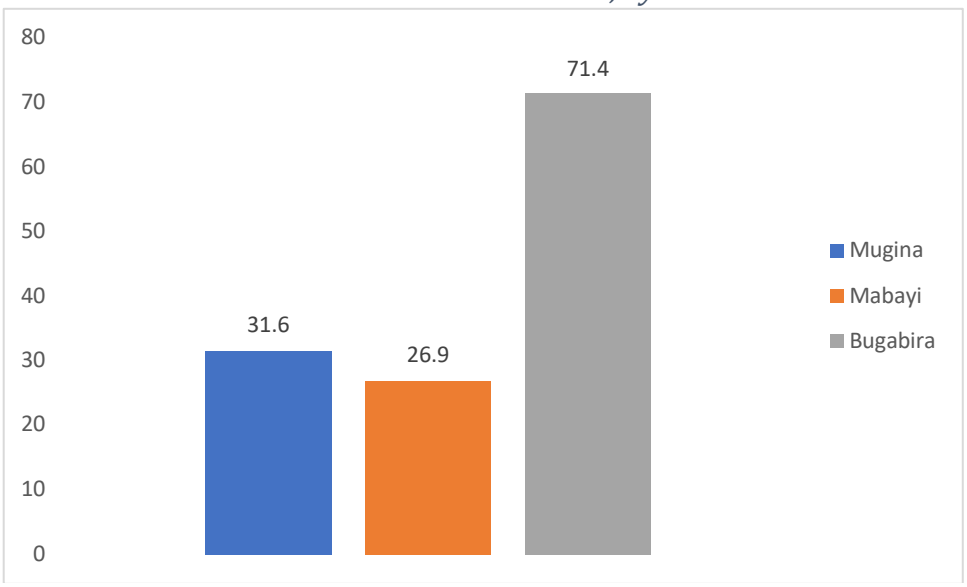
In Cibitoke, more households in Bugabira Commune used that used unimproved toilets (62.6%) or shared toilets with other households (25%).

In Kirundo, the Gitwe and Gaturanda Communes had the highest proportions of households that used unimproved toilets compared to the other communes in our survey (66.7% and 54.8%, respectively).

The proportion of households that shared toilets with others did not vary much

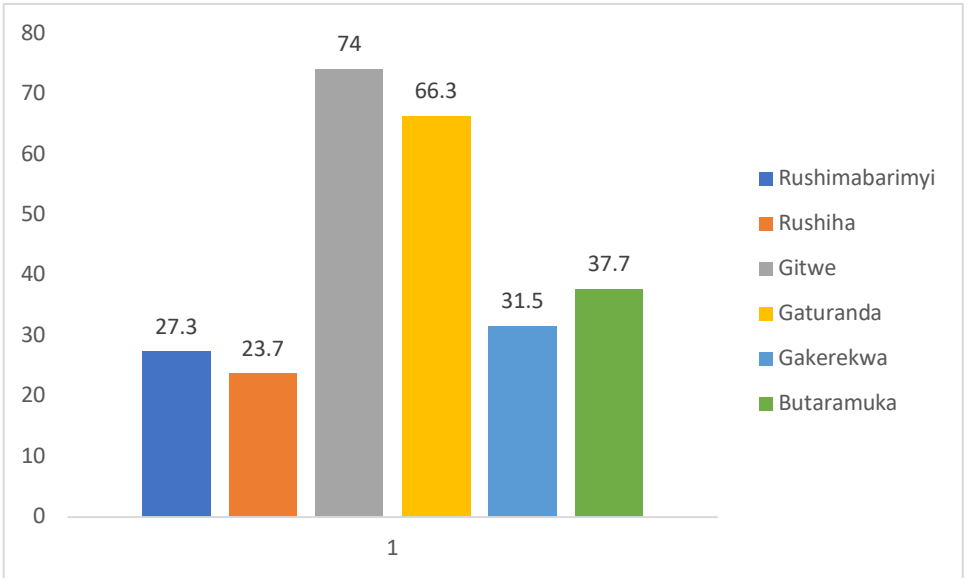
between the Kirundo communes surveyed; however Gaturanda, Gitwe, and Butaramuka Communes had the highest percentage of households that shared toilet facilities (25.3%, 24.9%, and 24.7%, respectively).

Figure 50: Proportion of Households with an Unimproved Toilet Source and Households that Shared Toilet Facilities with other Households, by Commune



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 51: Proportion of Households with an Unimproved Toilet Source and Households that Shared Toilet Facilities with other Households, by Colline



SDG 7: Ensure access to affordable, reliable, sustainable and modern energy

7.1 The Situation in Burundi

Access to affordable, reliable, sustainable and modern energy is problematic in Burundi, which ranks among the last in access to electricity. According to the "Tracking SDG 7: The Energy Progress Report" (International Energy Agency et al., 2019), only 9% of Burundi's population had access to electricity as of 2019. Compared to other countries in the region, Burundi lags severely behind. The same report also noted that no one had access to clean cooking fuel, meaning that 100% of the population used solid cooking fuels which are not only not environmental unfriendly but also devastating to the health of children and adults.

7.2 Assessment of Progress on SDG 7 by indicators in Kirundo and Cibitoke Provinces

Indicator: Proportion of Population with Access to Electricity

We found that only 4.9% of the households had access to electricity. The difference between the two provinces was huge. While 8.2% of households had access to electricity in Cibitoke, almost none of the households in Kirundo had access to electricity (0.4%).

The highest percentage of households with access to electricity was found in Mugina Commune (9.6%), followed by Mabayi (4.2%); the lowest rate was recorded in Bugabira (0.4%). Disaggregation by colline showed that Butaramuka had the highest percentage of households with access to electricity (14.1%) while Gitwe and Gaturanda had the lowest (0.4% for both collines).

Figure 44: Access to Electricity, by Province

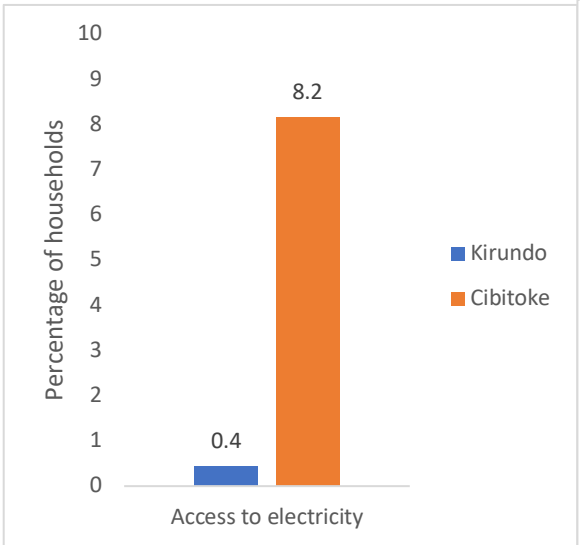
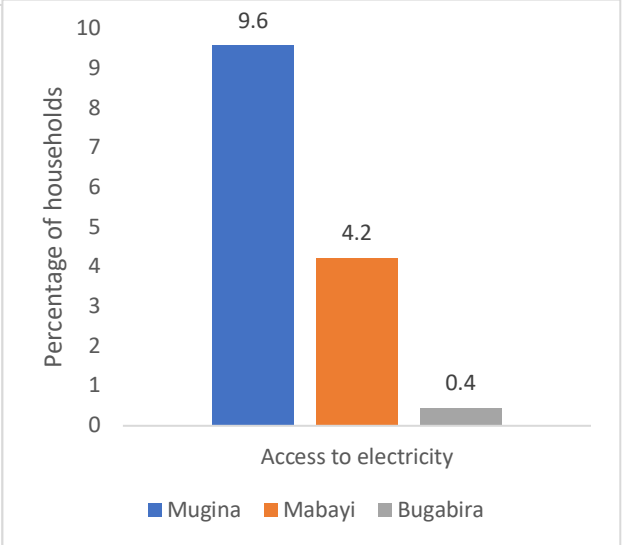
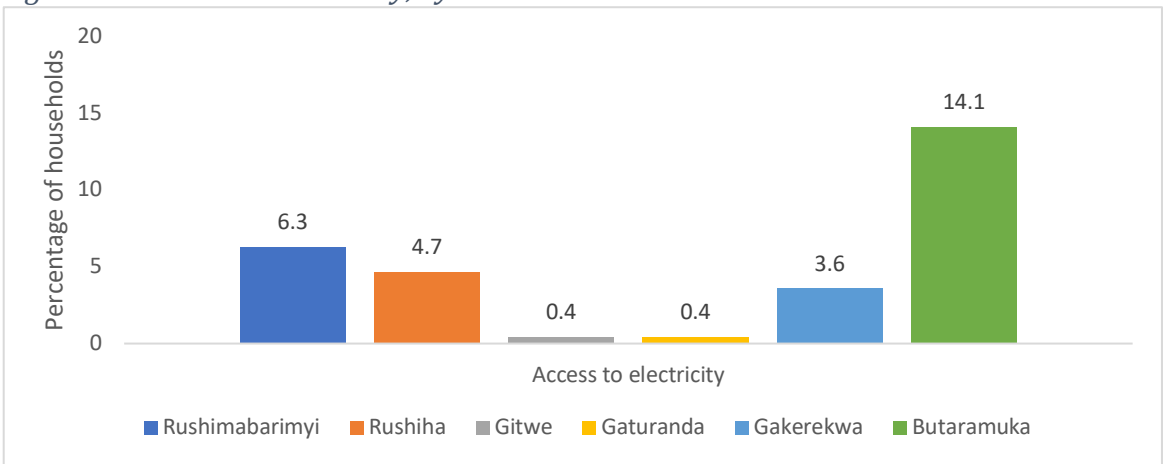


Figure 45: Access to Electricity, by Commune



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

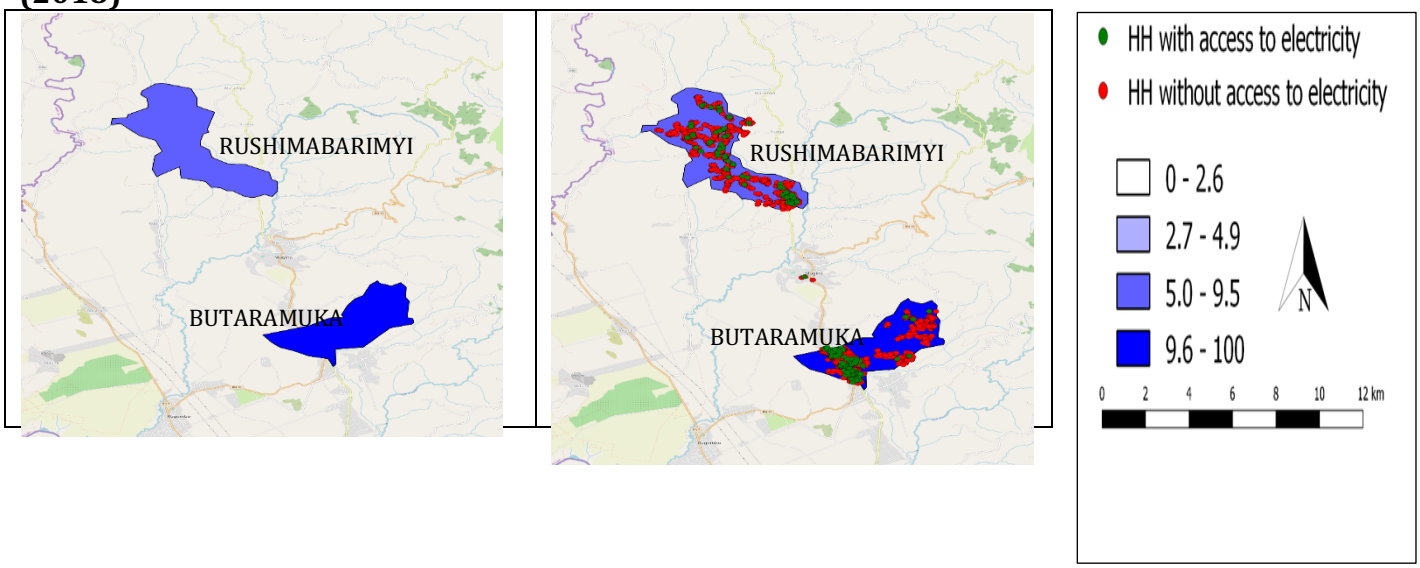
Figure 46: Access to Electricity, by Colline

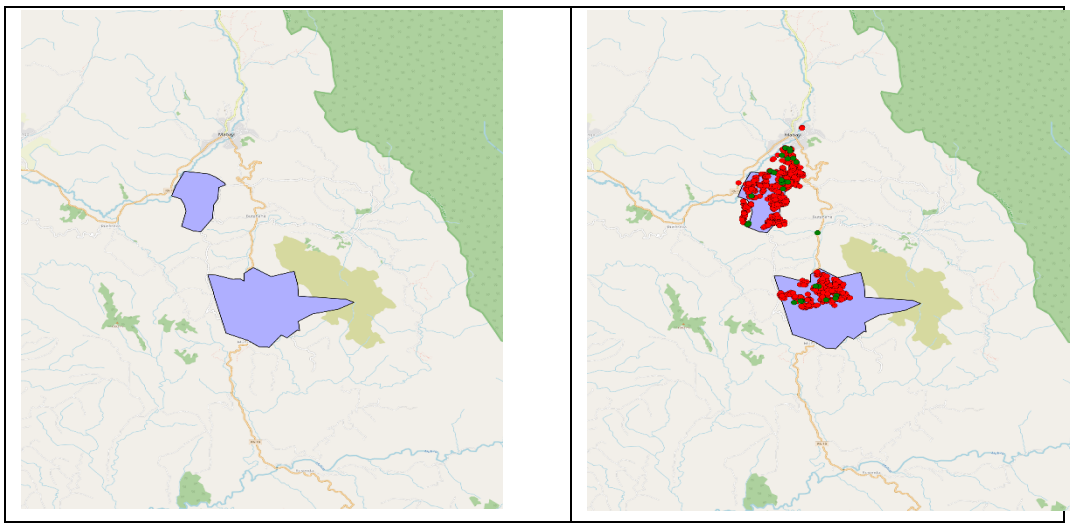


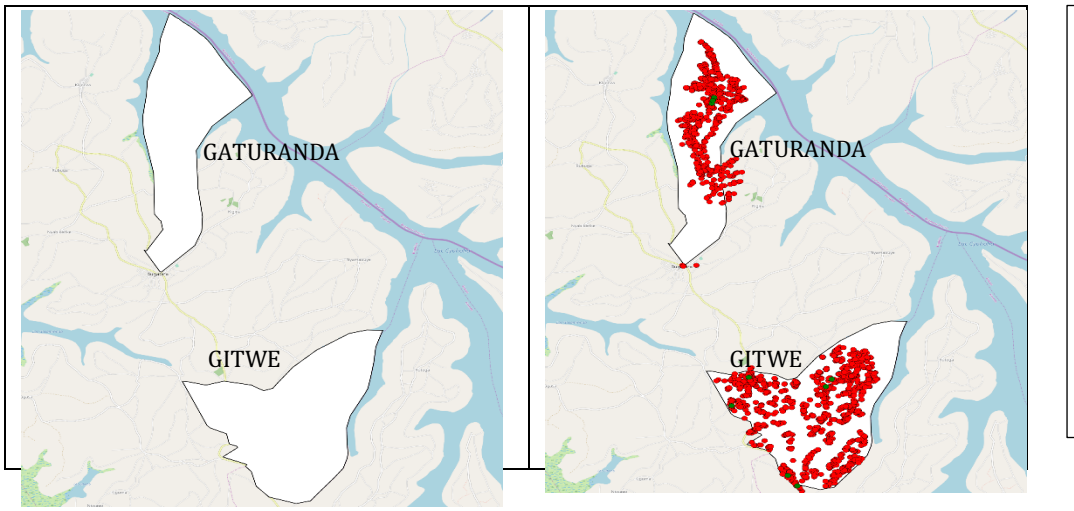
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

The green and red dots in the maps that follow show the location of households with and without electricity, respectively. Gitwe and Gaturanda Collines are colored white because they had the largest number of households without access to electricity.

Map C.2: Location of Households with and without Access to Electricity, by Colline (2018)







SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

8.1 The Situation in Burundi

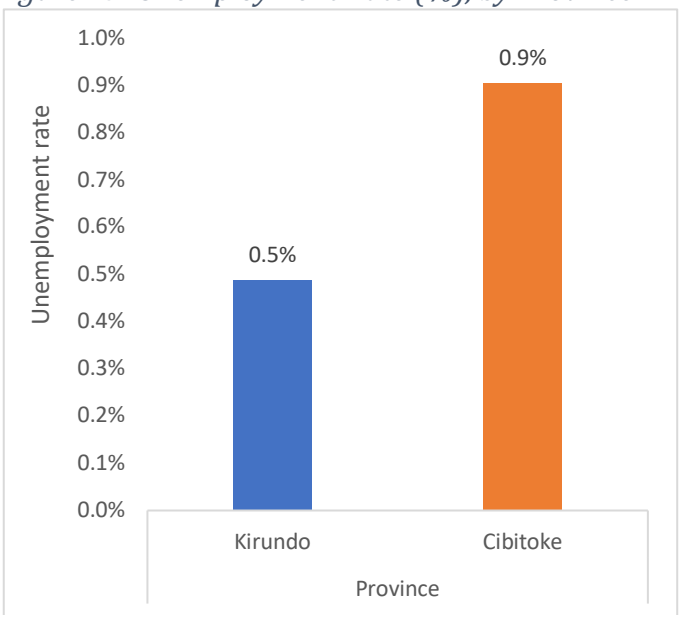
The unemployment rate remained stagnant at 1.50% in 2017 and 2018 (Trading Economics, 2019). This rate was much lower than Eastern Africa averages, and unemployed appears not to be a problem in Burundi. There was nonetheless evidence that underemployment was a serious issue and that workers worked mainly in the informal sector (Danish Trade Union Council for International Development and Cooperation, 2018). Child labor, on the other hand, was prevalent in Burundi, where 27.2% (633,126 children) of children aged 5 to 14 worked; 26% of children aged 7 to 14 combined work and school (Bureau of International Labor Affairs, 2017).

8.2 Assessment of Progress on SDG 8 by Indicators in Kirundo and Cibitoke Provinces

Indicator 1: Unemployment Rate

We found that 0.7% of individuals between 15 and 64 were unemployed. The province of Cibitoke Province had a higher unemployment rate (0.9%) than Kirundo (0.5%). Mabayi Commune had the highest unemployment rate of 1.5% as compared to Mugina (0.6%) and Bugabira (0.5%). While Rushiha and Gakerekwa Collines had the highest unemployment rate of 1.5%, Gaturanda had the lowest (0.1%). Disaggregation by gender showed a higher percentage of unemployed men (0.9%) than women (0.6%), and youth aged 15-35 were more likely to be unemployed (around 1%) than were older age groups (0.3%) (see Figure 59).

Figure 47: Unemployment Rate (%), by Province



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 48: Unemployment Rate (%), by Commune

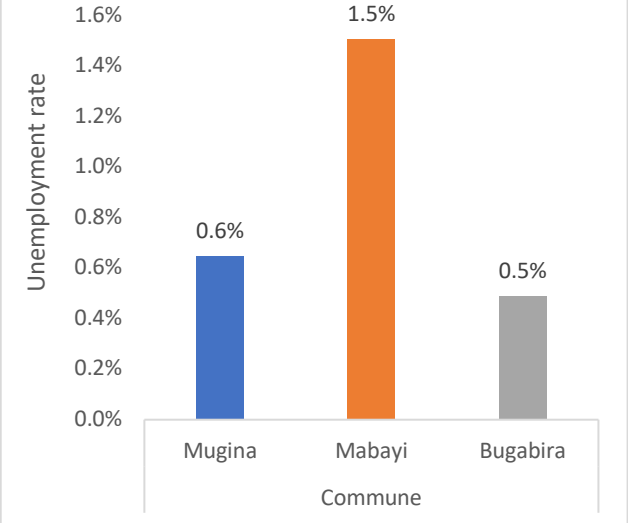
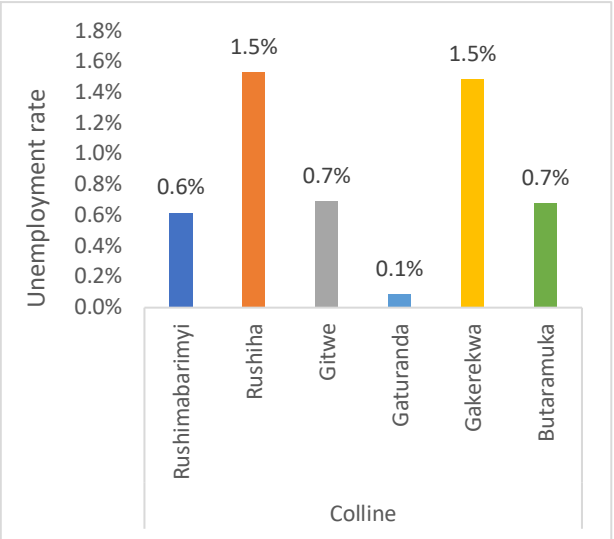


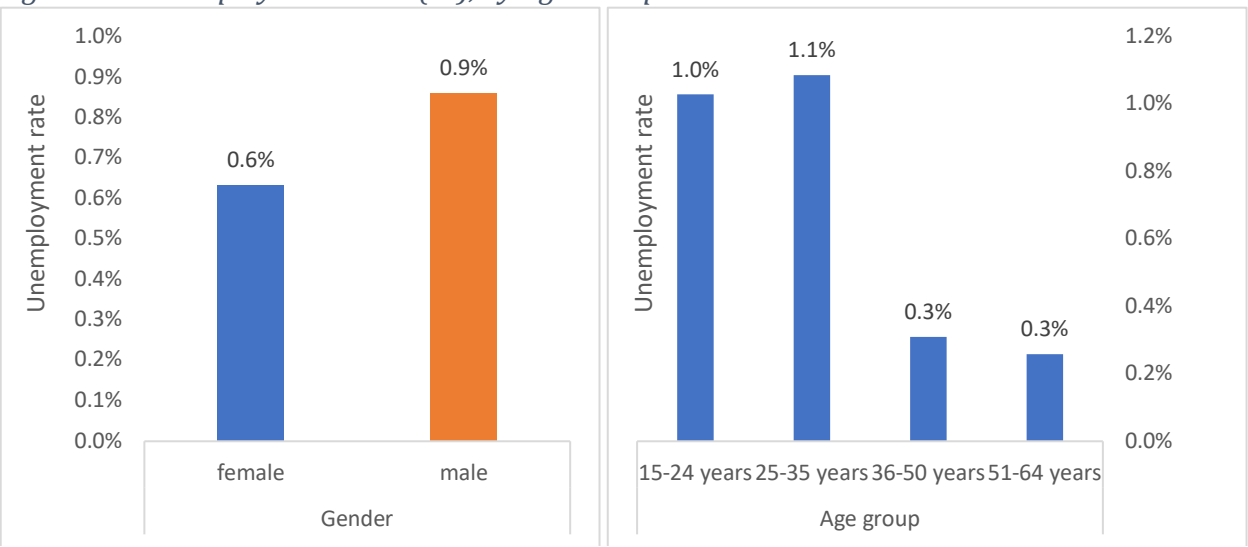
Figure 49: Unemployment Rate (%), by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 50: Unemployment Rate (%), by Gender

Figure 51: Unemployment Rate (%), by Age Group



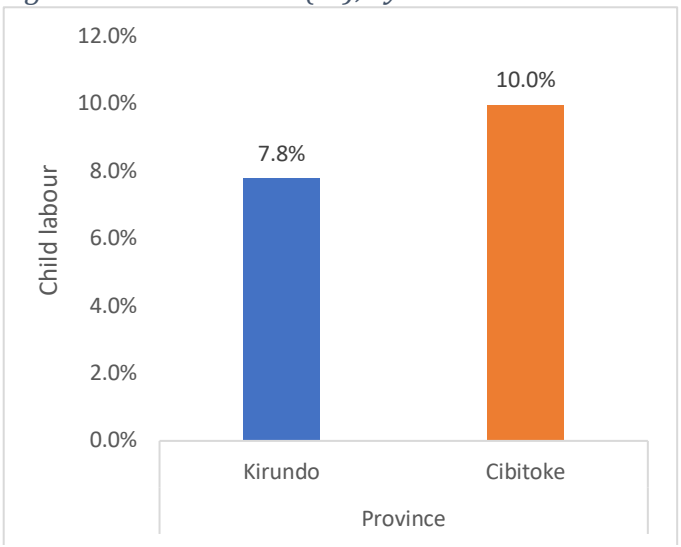
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Indicator 2: Child labor

Our findings showed that 9% of children between 5 and 14 were engaged in child labor. In Cibitoke Province, the child labor rate was 10% as compared to 7.8% in Kirundo. Disaggregation by commune showed that child labor was very high in Mabayi (19.1%), where nearly one in every five children aged 5-14 had a job. The percentage of child labor was much less in other communes (Bugabira—7.8% and Mugina—6.5%). Collines recording the highest percentage of child labor were Gakerekwa (22.3%) and Rushiha

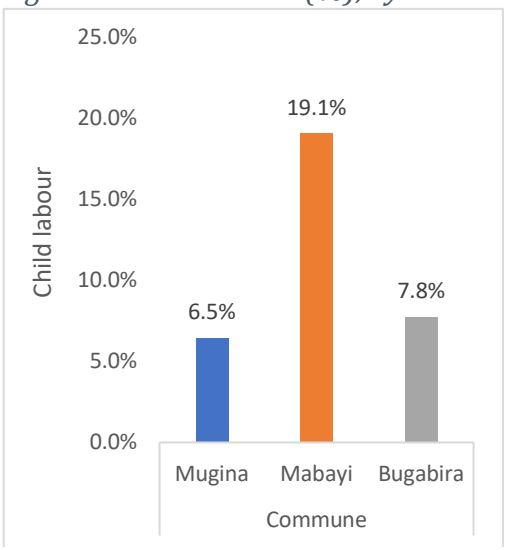
(17.3%). Girls were more likely to be engaged in child labor than were boys (9.3% versus 8.8%). Further, there was a higher percentage of older children whop worked as compared to younger ones (5-9 years—3.7% and 10-14 years—15.4%).

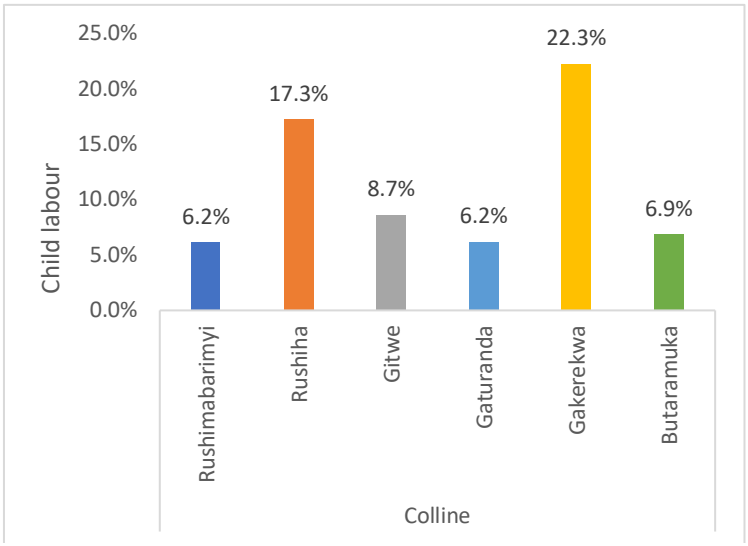
Figure 52: Child Labor (%), by Province



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

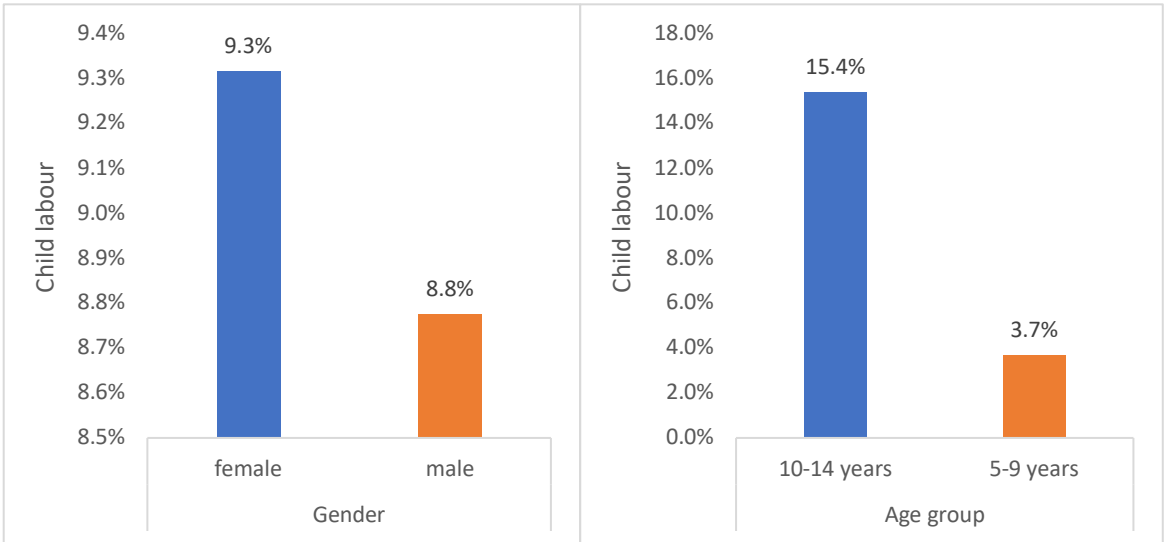
Figure 53: Child Labor (%), by Commune
Figure 54: Child Labor (%), by Colline





Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 55: Child Labor (%), by Gender *Figure 56: Child Labor (%), by Age Group*



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

9.1 The Situation in Burundi

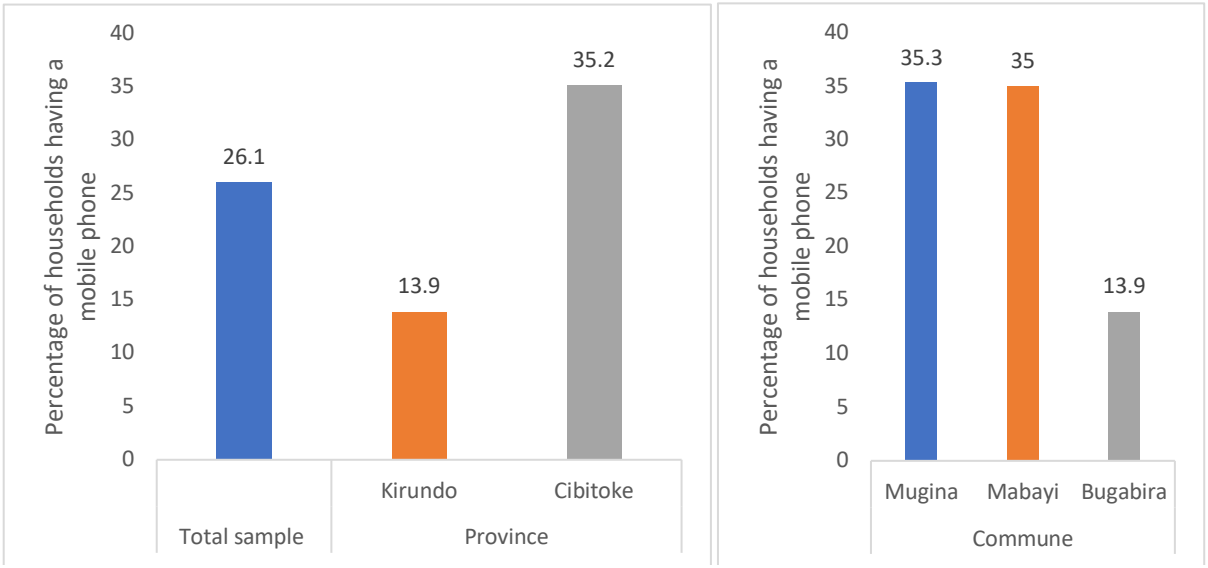
We used ownership of mobile phones by household as a proxy indicator to measure SDG 9. According to Statista (2019), significant improvements had been made in the number of mobile-cellular subscriptions in Burundi. In fact, the number of mobile cellular subscriptions per 100 inhabitants in Burundi increased from 0.26 in 2000 to 56.53 in 2018.

9.2 Assessment of Progress on SDG 9 by indicators in Kirundo and Cibitoke Provinces

Indicator: Ownership of mobile phone, by household

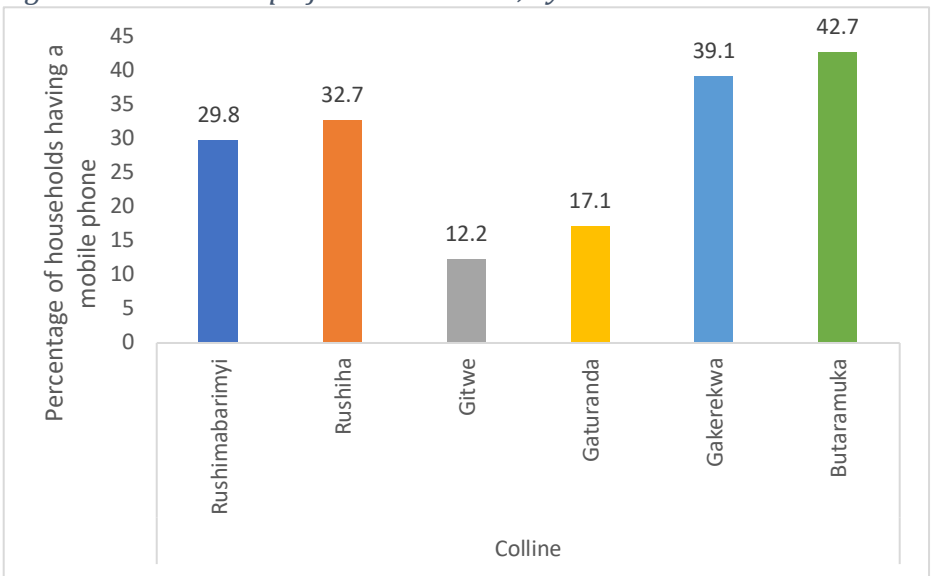
In our study, we found that 26.1% of the households had a mobile phone. At the province level, we found that 35.2% and 13.9% of households in Cibitoke and Kirundo, respectively, owned a mobile phone. Though the proportion of mobile-phone ownership was 35% in Mugina and Mabayi Communes, Bugabira had a much lower proportion (13.9%). The analysis by colline showed that Butaramuka had the highest percentage of households owning a mobile phone (42.5%) and Gitwe was worse-off with a percentage of only 12.2%.

Figure 57: Ownership of Mobile Phones, in Total Dataset and by Province
Figure 58: Ownership of Mobile Phones, by Commune



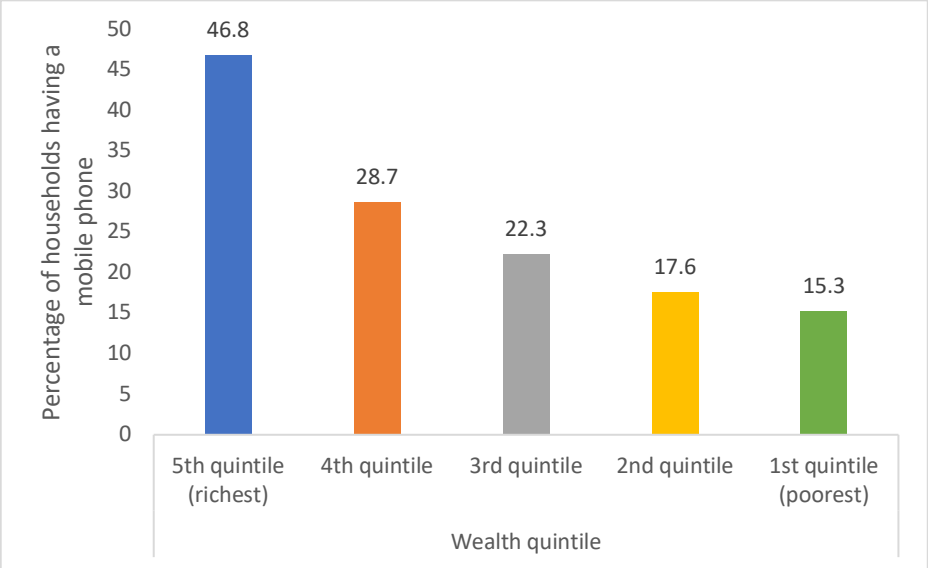
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 59: Ownership of Mobile Phones, by Colline



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 60: Ownership of Mobile Phones, by Wealth Quintile



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

SDG 10: Reduced Inequalities

10.1 The Situation in Burundi

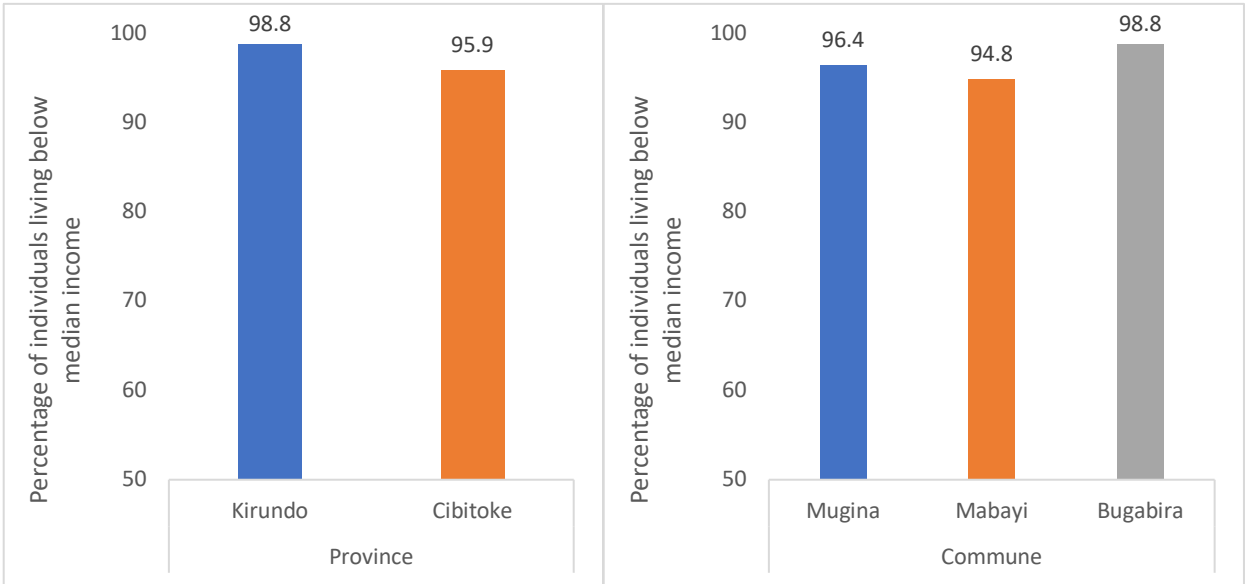
According to the World Bank (2016), the Gini coefficient of real per capita monthly consumption indicated that the overall level of inequality for Burundi was approximately 37.3, below the SSA average of 45.1. The same study also showed wide income inequalities between rural and urban areas, driven mainly by significant differences in households' endowments of livelihood assets and better access to services and infrastructure in urban areas (e.g., electricity, health, markets, roads, schools, and transportation). The study also reported that inequalities were higher among households in the West and South of Burundi as compared to the Center-East and North.

10.2 Assessment of Progress on SDG 10 in Kirundo and Cibitoke

Indicator: Proportion of individuals who live below the Median Income (BIF 501,363.70 per year)

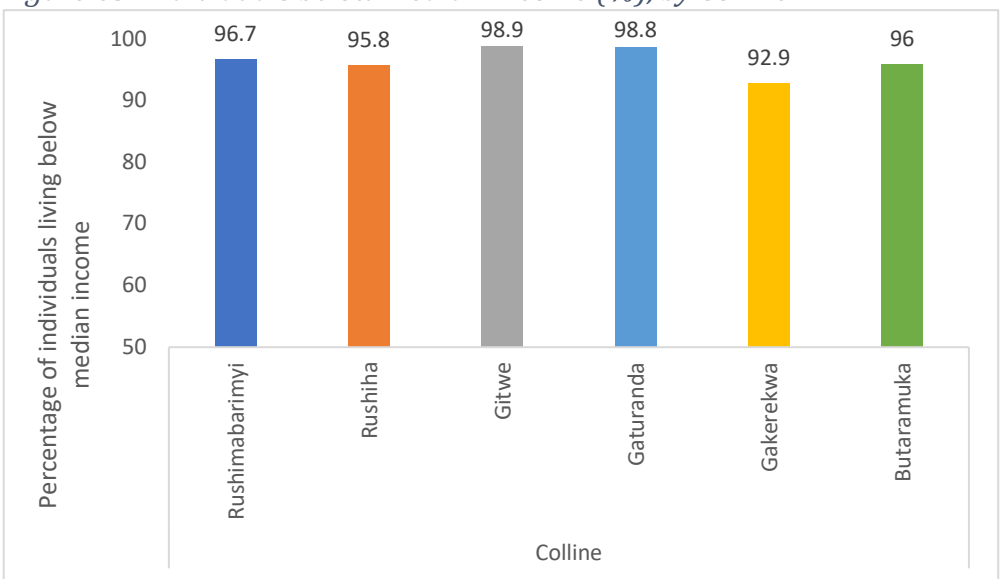
We found that the majority of the individuals surveyed (97.1%) lived below the median income. This implies that less than 3% of the population had higher than the median income. Given that the areas surveyed were the poorest parts of Burundi, these results were not surprising. The disaggregation of the results by province, commune, colline, gender, and age groups (see Figures 69-73) showed that the proportion of individuals living below median income was high for all the categories.

Figure 61: Individuals below Median Income (%), by Province
Figure 62: Individuals below Median Income (%), by Commune



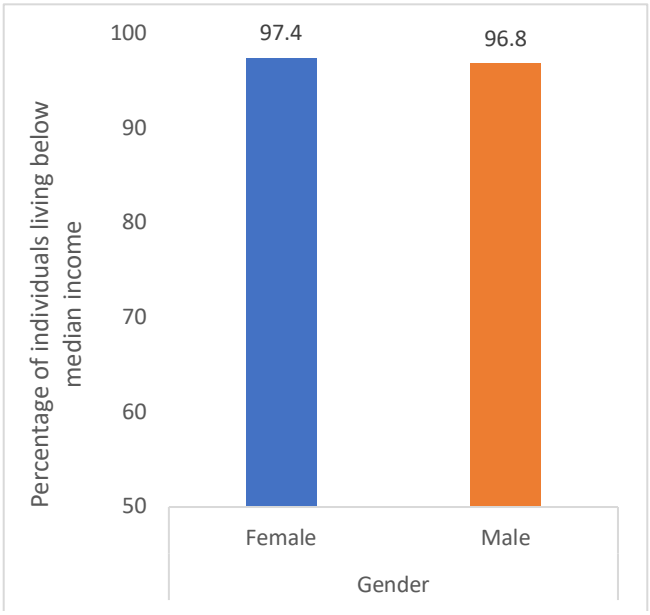
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 63: Individuals below Median Income (%), by Colline



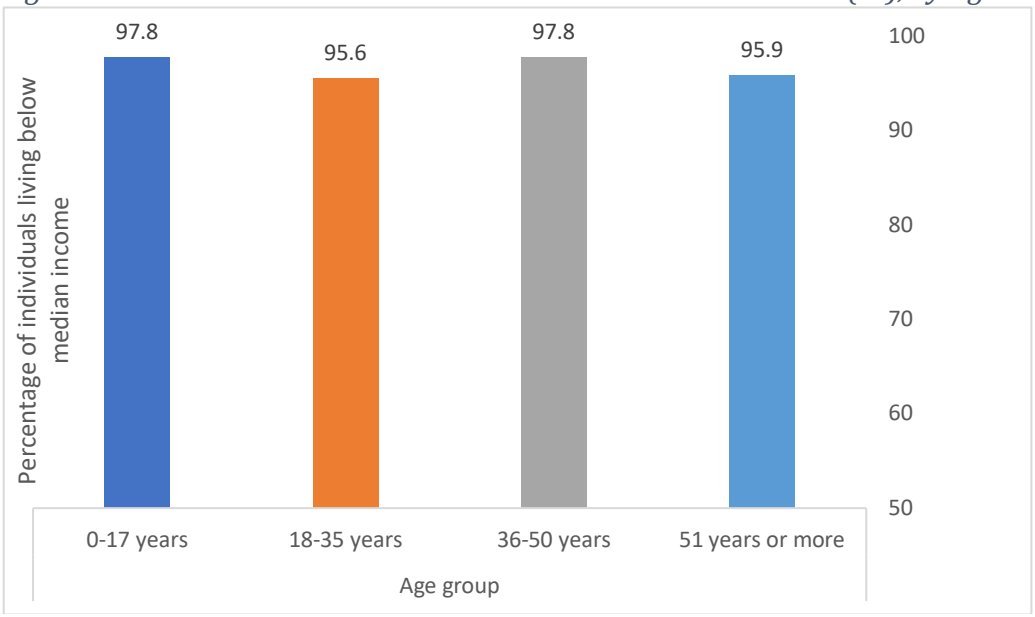
Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 64: Individuals Living below Median Income (%), by Gender



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

Figure 65: Individuals who Live below the Median Income Level (%), by Age Group



Source: Data from 2018 CBMS census of selected collines in Cibitoke and Kirundo Provinces, Burundi.

VI. Programs in Line with SDG in Our Study Sites

The third generation of plans being prepared by the municipalities contain a section dedicated to the implementation of SDG at the municipality level. We summarize the programs in line with SDG implemented in our two study communes. The preparation of municipal plans was led by the commune with the participation of collines.

Program 1 Development of agriculture and livestock

The development of this sector is a good way to fight food insecurity but also to develop the local economy through market production.

The program contributes to the achievement of SDG1: eradicate poverty in all its forms and everywhere in the world; SDG 2: eradicate hunger, ensure food security, improve nutrition, and promote sustainable agriculture; and SDG12: establish sustainable consumption and production patterns. The specific activities for this program are described in the table below.

Project	Target Outcome	Proposed Activities
Increase banana production	Increase the banana yield from 7 tons/hectare to 15 tons/hectare by 2023 of 220 progressive producers per year.	• Train producers on modern farming techniques through school fields (1 area of 100 m^2 per hill or 110 fields within 5 years with 3300 producers trained); • Intensify the cultivation of bananas at the rate of 20 suckers/household/hill/year in favor of 20 households per hill; • Organize banana producers into pre-cooperative groups; • Build a banana collection point for the cooperative of banana producers; • Raise awareness among members of cooperative groups on savings, credit and the development of partnerships with MFIs.
Increase maize productivity	Increase maize productivity from 0.9 tons/hectare to 4.5 tons/hectare.	• Train 4,400 producers on modern farming techniques through school fields (2 fields per hill and per year); • Organize a group order of corn seeds (a group order by municipality and by season) to facilitate access to quality seeds by producers; • Intensify large-scale corn cultivation: 20 households/hill/year for an area of 25 areas of 100 m^2 each per household; • Build 4 small processing units in selected hill.
Increase rice productivity	Rice productivity increases from 1.5 T/hectare to 4.5	• Train 600 rice farmers on SRI through 30 school fields,

	T/hectare, an increase in production of 1,188 tons of rice per year for an area of 396 hectares.	• Supervise rice farmers to scale up the use of IRS in rice marshes; • Train cooperatives on the promotion of rice by-products; • Build rice storage sheds for hills with high production.
Increase production of fruit	At least 45% of farm households invest in fruit production	• Intensify fruit production: Japanese plum trees (220,000 plants), maracoudja (220,000 plants), papaya tree (110,000 plants), and avocado trees (55,000 plants) for 5 years.

Source: Municipal Plan 2020-2023.

Program 2: Development of production support infrastructure and other growth promoting sectors

Program 2 targets the development of economic sectors that contain production support infrastructure (energy, water, transport, and ICT) and growth-promoting sectors such as hotels, tourism, crafts, industry, and trade. These sectors facilitate the development of economic activities, notably by intensifying agro-zoological production, processing, product conservation, the exchange of goods and services; and contributing to the achievement of **SDG1**: Eradicate poverty in all its forms and everywhere in the world; **SDG7**: ensure access to affordable, reliable, sustainable and modern energy services for all; **SDG8**: Promote sustained, shared and sustainable economic growth, full productive employment and decent work for all; and **SDG9**: Establish a resilient infrastructure, promote sustainable industrialization that benefits everyone and encourage innovation. This program would be implemented by Régie de Production et de Distribution d'Eau et d'Electricité for energy and communes for other support infrastructure. The central government had increased the subvention given to communes form 50 million BIF/ year to 570 million BIF in order to support local economic activities at community scale. The table below shows the specific activities in this program.

Project	**Target Outcome**	**Proposed Activities**
Increase Energy	By 2023, 200 jobs created through energy coverage	• Connect 2 secondary centers with electricity • Develop the use of solar energy with 10 solar plates.
Increase Transport	90% of the municipality's roads and tracks are in good conditions and trade is improved	• Rehabilitation of tracks • Construction of 27 culverts
Development of agro processing unit	Processing units contribute 6% of the jobs created per year and 5% in municipal revenues	• Build and equip 2 processing unit for maize • Build and equip 3 milk-collection areas •
Development	Tourism contributes 2% of	• Develop 2 tourist sites

of hotel and tourist activities	the municipal revenues	• Train young people on the management of tourist sites and hospitality services

Source: Municipal Plan 2020-2023.

Program 3: Promotion of human capital (education, health, drinking water, decent housing, hygiene, sanitation, and social protection) and control of population growth.

This program contributes to the achievement of **SDG3**: Empower people to live healthy lives and promote the well-being of all at all ages; **SDG 6**: Ensure access to water and sanitation services for all and ensure sustainable management of water services; and **SDG8**: Promote sustained, shared and sustainable economic growth, full productive employment and decent work for all. The table below shows some projects, outcomes, and associated activities for this program.

Project	Target Outcome	Proposed Activities
Improve success rate at primary and secondary school	Increase the transition rate from Ecole Fondamentale to post-primary school from 74.3% to 90% and the rate of admission to higher education from 57% to 70% by 2023	• Increase the teaching staff • Support schools with equipment and manuals Equip laboratories in schools with a scientific section Equip school libraries • • Equip schools with computer equipment
Improve the quality of technical education	Increase the success rate in technical education by 15% per year.	• Build and equip 2 technical schools; • Finalize the construction and equipment of the technical school; • Build and equip 2 trade schools;
Improve the performance of the health system	Decrease the target population per Centre de Santé from 17,057 to 13,000 habitants.	• Build 2 health centers • Equip all health centers with medical and non-medical equipment • Increase the number of nursing staff at the health center • Support the vulnerable in access to health-insurance cards (1000/year)
Reduction of stunting	Reduce stunting by 5% (2023)	• Set up center of learning and nutritional rehabilitation (Foyer d'Apprentissage et de Réhabilitation Nutritionnelle) (two/colline) • Develop kitchen gardens (three/household) • Organize malnutrition screening campaigns (one screening per year/per hill).
Job creation for unemployed youth	At least ten youth projects grouped into cooperatives are funded per year	• Identify unemployed young people on all the hills • Group unemployed young people in a

		cooperative according to profiles • Train the young unemployed grouped in cooperatives on selected themes in entrepreneurship • Support young people trained in the development of income-generating activities.

Source: Municipal Plan 2020-2023.

Program 4: Environmental protection and adaptation to climate change

This program contributes to the achievement of **SDG13**: Urgent measures to fight climate change and its repercussions; **SDG14**: Conserve and sustainably use the oceans, seas and marine resources for sustainable development; and **SDG 15**: Preserve and restore terrestrial ecosystems, fight against desertification. The table below lists selected projects for this program.

Project	Target Outcome	Proposed Activities
Adaptation to climate change	Increase irrigated area during the dry season from 800 hectares to 2,500 hectares and the production of vegetables by 30%	• Promote drought-tolerant crops: sweet potato, cassava, fruit trees • Promote short-cycle crops (market gardening) through small-scale irrigation
Protection of natural ecosystems and infrastructure against the effects of extreme climatic events.	By 2023, at least 40% of households use improved stoves and 60% of infrastructure incorporates climate-change-resilience measures.	• Plant trees along road • Plant trees around public infrastructure

Source: Municipal Plan 2020-2023.

Program 5: Improve quality of local governance, gender security and justice

This program contributes to the achievement of **SDG5**: Achieve gender equality and empower all women and girls; **SDG10**: Reduce inequalities between and within countries; and **SDG 16**: Promote the creation of peaceful and open societies for sustainable development, ensure access to justice for all and build effective, accountable and open institutions at all levels. The table below lists selected projects for this program.

Project	Target Outcome	Proposed Activities
Consolidation of good governance and fight against economic and financial corruption	70% of the population affirm the reduction of economic corruption	• Reinforce committees to fight corruption • Set up suggestion boxes in all decentralized services • Organize awareness meetings on the anti-corruption law and related offenses • Provide municipal staff with the necessary

		capacities to ensure municipal project management • Support local actors to promote decentralization policy and local governance • Strengthen collaboration between local civil society and municipal administration • Promote governance of local economic development
Improvement of the economy management system and statistical information from all sectors	Monitoring development indicators for the municipality is easy and the process is accessible to development actors in the municipality	• Establish a framework for collecting basic data for decentralized services • Train municipal staff on data collection and recording • Train the unit for processing data collected

Source: Municipal Plan 2020-2023.

VII. Key findings and Recommendations

The key findings of the study along with suggested policy recommendations are summarized below:

- Key finding 1: Income poverty is almost universal in the two provinces under study using the international poverty lines of $1.25, $1.90 and the national poverty line.

  Recommendation: given limited resources, it is recommended to study the characteristics of the poorest households in order to prioritize them. This is the advantage of having more disaggregated data and information from the CBMS data.

- Key finding 2: 72.8% of the households are multidimensionally poor—that is, deprived in at least 33% of total weighted indicators of well-being. Multidimensional poverty is mostly driven by the *standard of living* dimension with 100% of households using unimproved cooking fuel, 97% having unimproved floor materials, 94.2% having no access to electricity ,and so on.

  Recommendation: Monetary assistance will not be enough to cater to the multidimensional needs of the population. "Cash plus programs," which includes both cash and access to services and markets such as electricity, should be implemented. Subsidies should also be provided for cooking fuel, electricity, materials for building a dwelling, etc. Given

limited resources, it is understandable that, in the short term, the government may have difficulty affording subsidies in all the afore-mentioned goods and services. The government can start by providing subsidies on one or a few basic needs and, in the long run, add more subsidies as resources become available. Other examples of programs that could be effective include work-for-food programs through which the government can provide subsidies to beneficiaries.

- Key finding 3: Only 25% of households consume an acceptable diet, 66.7% experience food shortages, and 61.7% of children are stunted.

  Recommendation: Households should be given incentives to grow their own crops and rear animals for consumption because food prices can be exorbitant for poor households. As part of the Vision Umurenge Programme (VUP) in Rwanda, each poor family was given one cow as well as seeds for cultivating crops. The program proved to be very successful in Rwanda because households were able to derive an income from selling milk from the cow and both selling and consuming the vegetables they cultivated. Such programs could be implemented in Kirundo and. It is also recommended to build the capacity of households in the field of agriculture to help build more sustainable practices.

- Key finding 4: For every 1000 live births, 65 children below the age of 5 die.

  Recommendation: Child mortality is driven by many factors ranging from lack of adequate diet to absence of medical facilities. There should be intense vaccination campaigns in the provinces in our study area. Hospitals and health centers should be well-equipped to deliver services, especially to young children. The health center could also be a hub that provides a package of services, including food, vaccinations, clean water, and information to parents.

- Key finding 5: Education quality was very poor in the two provinces. Less than half, (43.4%) of adults were literate. Primary-school enrollment was relatively high (89%) while secondary-school enrollment was very low (22.5%). A lower proportion of girls were enrolled in both primary and secondary schools. Schools had very poor access to safe drinking water and sanitary facilities. Only 3.6% of the population had ICT skills.

  Recommendation: Given the immense opportunities that an educated population can bring in those two provinces, high investment in education is highly encouraged. In the immediate term, all schools should be equipped with safe drinking water and toilets. The presence of toilets will also increase the likelihood that girls will go to school. Secondary education should be made free in those provinces because nearly the entire population lives in poverty. Food packages could be

given to students to encourage school attendance.

- Key finding 6: Access to water and sanitation as well as to electricity is quite problematic in the two provinces: 44.7% of households do not have access to an improved water source, and it takes more than thirty minutes for 46.9% of the households to get water. On the other hand, 36.5% use an unimproved water source, and 20.8% share their toilet facility. Only 4.9% of households have access to electricity.

  Recommendation: Safe drinking water and sanitation facilities are essential to ensure a healthy population. Access to clean piped water should be made a priority. Households should be encouraged to build improved toilets, they could be provided with the materials and skills needed. Access to subsidized electricity or alternatives for electricity such as solar panels should be provided at a lower price to the inhabitants of Kirundo and Cibitoke.

- Key finding 7: None of the communes in the two provinces is doing well in SDG indicators. Nonetheless, Bugabira Commune in Kirundo Province is the poorest and most deprived of all almost consistently across the analysis.

  Recommendation: Social assistance should be provided to all the collines and communes under study. In the immediate term, urgent assistance is required for the inhabitants of Bugabira.

- Key finding 8: Not much difference was observed across wealth quintiles because almost everyone in the two provinces is poor. The "richest" quintile is doing comparatively better than the other four quintiles but not by a high percentage.

  Recommendation: Income-based social assistance alone will not be effective. We recommend that additional criteria such as assets be included or that the Multidimensional Poverty Index (MPI) be used to prioritize the beneficiaries of social assistance in light of limited resources.

- Key finding 9: Gender inequality is observed across such indicators as school enrollment, adult literacy rates, and ICT skills, in which men are more privileged than women.

  Recommendation: Girls and women should be more empowered in the regions under study. Girls should be encouraged to go to school. Women should be made aware of their rights. Information sessions among women can be organized in community centers to increase empowerment and encourage mothers to send their daughters to school. Adult classes can also be organized to promote literacy.

REFERENCES

Alkire, S. and Foster, J. (2011). Counting and Multidimensional Poverty Measurements. *Journal of Public Economics, 95*, 476-487.

Bureau of International Labor Affairs (2017). Burundi Minimal Advancement. Washington, DC. Available at https://www.refworld.org/pdfid/5bd05aaf16.pdf.

Burundi Education Policy Data Center (2018). Burundi National Education Profile 2018. Available at https://www.epdc.org/sites/default/files/.../EPDC%20NEP_Burundi.pdf.

Danish Trade Union Council for International Development and Cooperation (2018). Labour Market Profile 2018. Available at http://www.ulandssekretariatet.dk/sites/default/files/uploads/public/PDF/LMP/LMP2018/lmp_burundi_2018_final1.pdf.

Food and Agricultural Organization (FAO) (2018). The State of Food Security and Nutrition in the World. Building Climate Resilience for Food Security and Nutrition. Available at http://www.fao.org/3/i9553en/i9553en.pdf.

Institut de Statistiques et d'Etudes Economiques du Burundi (2014). Enquête sur les Conditions de Vie des Ménages au Burundi (ECVMB) 2013/2014. Bujumbura, Burundi: ISTEEBU.

International Energy Agency (IEA), International Renewable Energy Agency (IRENA), United Nations Statistics Division (UNSD), World Bank (WB), World Health Organisation (WHO) (2019), Tracking SDG 7: The Energy Progress Report 2019, Washington DC

Leave No One Behind from Goals To Implementation: June 2015 (2015). London, England: Christian Aid. Available at https://www.christianaid.org.uk/sites/default/files/2017-12/Leave-no-one-behind-case-studies-June-2015.pdf.

Ministère à la Présidence Chargé de la Bonne Gouvernance et du Plan [Burundi] (MPBGP), Ministère de la Santé Publique et de la Lutte contre le Sida [Burundi] (MSPLS), Institut de Statistiques et d'Études Économiques du Burundi (ISTEEBU), and ICF (2017). Third Report on the Demographic and Health Survey.

Oxford Poverty and Human Development Initiative (2019). Global Multidimensional Poverty Index. Available at https://ophi.org.uk/multidimensional-poverty-index.

Sambira, J. (2012). Universal Education in Burundi: Successes and Challenges. *The Africa Report.* Available at https://www.theafricareport.com/6542/universal-education-in-burundi-successes-and-challenges.

Statista (2019). Mobile-Cellular Subscriptions per 100 Inhabitants in Burundi 2000-2018. Available at https://www.statista.com/statistics/501965/mobile-cellular-subscriptions-per-100-inhabitants-in-burundi.

Trading Economics (2019). Burundi Unemployment Rate. Available at https://tradingeconomics.com/burundi/unemployment-rate.

UNESCO (2020a). Glossary on Adult Literacy Rate. Available at http://uis.unesco.org/en/glossary-term/adult-literacy-rate.

UNESCO (2020b). Glossary on Gross Enrolment Ratio. Available at http://uis.unesco.org/en/glossary-term/gross-enrolment-ratio.

United Nations (2012). Definitions, Rationale, Concepts and Sources on Under-five mortality rate. Available at http://mdgs.un.org/unsd/mi/wiki/4-1-Under-five-mortality-rate.ashx.
United Nations Development Program (2015). Human Development Report 2015. Available at http://hdr.undp.org/sites/default/files/hdr15_standalone_overview_en.pdf.
United Nations Development Program (2016). Human Development Report 2016. Available at http://hdr.undp.org/sites/default/files/2016_human_development_reprt.pdf.
United Nations Development Program (2015), The Sustainable Development Goals (SDGs) Agenda: Making the Twenty-First Century The Century of Humanity—What Has Been Achieved One Year Down the Road? Available at https://sustainabledevelopment.un.org/post2015/transformingourworld.
World Bank (2016). Burundi Poverty Assessment. Available at https://consultations.worldbank.org/Data/hub/files/consultation-template/public-consultations-inform-world-bank-systematic-country-diagnostic-economic-and-social-situation/related/burundi_poverty_assessment_2016-2017.pdf.
World Food Programme (WFP) (2015). Meta Data for the Food Consumption Score (FCS) Indicator. Available at https://www.wfp.org/publications/meta-data-food-consumption-score-fcs-indicator.
World Health Organisation (2010). Nutrition Landscape Information System (NLIS). Country Profile Indicators Interpretation Guide. Available at https://www.who.int/nutrition/nlis_interpretation_guide.pdf.
World Health Organisation (WHO) (2017). Burundi. Available at https://www.who.int/countries/bdi/en.
World Health Organisation (WHO) and UNICEF (2018). Drinking Water, Sanitation and Hygiene in Schools. Global Baseline report 2018. Available at https://www.unicef.org/media/47671/file/JMP-WASH-in-Schools-ENG.pdf.

Appendices

Appendix A: Data Requirement Matrix

SDG (Goal)	Indicator	Operational Definition	Disaggregation	Reference Period
No Poverty	Proportion of population below the international poverty line, by sex, age, and geographical location	Total number of households/individuals with income below the international poverty line ($1.25 and $1.90) over total number of households	sex, age, province, commune	preceding twelve months
No Poverty	Proportion of population living below the national poverty line, by sex and age	Total number of households/individuals with income below adjusted national poverty line (inflation adjustment) over the total number of households/individuals	sex, age, province, commune, colline	preceding twelve months
Zero Hunger	Proportion of households with food-consumption score of poor, limited, and acceptable	Total number of households with poor, limited, and acceptable food-consumption score over total number of households	province, commune, collines, household characteristics such as size, income	Past 7 days
	Proportion of households who experienced food shortages	Total number of households who experienced food shortages over total number of households	province, commune, colline, household characteristics such as size, income	past three months

SDG (Goal)	Indicator	Operational Definition	Disaggregation	Reference Period
	Child underweight	Moderate: weight for age < –2 standard deviations (SD) of the WHO Child Growth Standards median Severe: weight for age < –2 standard deviations (SD) of the WHO Child Growth Standards median. Source: World Health Organisation (2010).	province, commune, colline, household characteristics such as size, income	Current
	Child wasting	Wasting: weight for height < –2 SD of the WHO Child Growth Standards median. Source: World Health Organisation (2010).	province, commune, colline, household characteristics such as size, income	Current
	Child stunting	Stunting: height for age < –2 SD of the WHO Child Growth Standards median. Source: World Health Organisation (2010).	province, commune, colline, household characteristics such as size, income	Current
Good Health	Under-five child-mortality rate	Proxy: [Number of children born alive in the preceding five years but who died before their fifth birthday divided by the total number of children born alive in the preceding five years (both dead and currently alive)] * 1000. Source: United Nations (2012).	province, commune, colline	Last Five years
	Maternal mortality rate	Proxy: Total number of women who died in the preceding year due to pregnancy-related causes divided by the total number of children less than 1 year old plus the total number of women who died due to pregnancy-related causes.	province only because of few observations	Last 1 year

SDG (Goal)	Indicator	Operational Definition	Disaggregation	Reference Period
Quality Education	Adult literacy rate	Percentage of persons aged 15 and over who can read and write. Source: UNESCO (2020a).	province, commune, colline, sex	Current
	Gross primary/secondary-school enrollment rate	The number of children enrolled in a level (primary or secondary), regardless of age, divided by the population of the age group that officially corresponds to the same level. Note: The official age for primary and secondary school are, respectively, 6-12 and 13-18. Source: UNESCO (2020b).	province, commune, colline, sex	Current
	Proportion of schools with access to education facilities.	The number of schools with access to the following facilities: (1) drinking water and (2 sanitation. Source: World Health Organisation (2010) and World Health Organisation and UNICEF (2018).	provincial, communes, collines	Current
	Proportion of youth and adults with information and communications technology (ICT) skills, by type of skills	The number of people who have skills and use information-and-communications technology (computer, tablet or mobile phone, send email, browse the internet, make a video call) during the last 12 months source: https://www.griffith.ie/faculties/springboard/what-ict-skills	province, commune, colline, sex	Current for Q1 and Q2; preceding twelve months for Q3 and Q4

SDG (Goal)	Indicator	Operational Definition	Disaggregation	Reference Period
Clean Water and Sanitation	Water facility access	Proportion of households with an unimproved water source and with distance from water source greater than thirty minutes by foot. The definitions of improved and non-improved water sources were based on these WHO standards: ***Improved water sources***: piped into dwelling, piped to yard/plot, piped to neighbor, public tab/standpipe, tube well or borehole, protected well, protected spring ***Non-improved water sources***: unprotected well, unprotected spring, rainwater, tanker truck, cart with small tank, surface water (river/dam/lake/pond/stream/canal/irrigation channel)	province, commune, colline	Current
	Sanitation facility access	Proportion of households with an unimproved toilet source and households sharing toilet facilities with other households. The definitions of the improved and non-improved toilet sources were based on these WHO standards: ***Improved toilet sources***: flush to piped sewer system, flush to septic tank, flush to pit latrine, flush to don't know where, ventilated improved pit latrine, pit latrine with slab, composting toilet ***Non-improved toilet sources***: flush to somewhere else, pit latrine without slab/open pit, bucket toilet, hanging toilet/hanging latrine, no facility/bush/field.	province, commune, colline	Current
Affordable and Clean Energy	Proportion of population with access to electricity	The household would have access to electricity if it were connected to Régie de Production et de Distribution d'Eau et d'Electricité or using solar or wind energy	province, commune, colline	Current
Employment and decent work for all	Unemployment rate	Proportion of unemployed individuals aged 15-64 years divided by the labor force aged 15-64 years	province, commune, colline, gender, age group	Current

SDG (Goal)	Indicator	Operational Definition	Disaggregation	Reference Period
	Child labor	Proportion of children aged 5-14 years who were part of the labor force	province, commune, colline, gender, age group	Current
Access to mobile phones	Proportion of households with access to mobile phones	Proportion of households that own a mobile phone	province, commune, colline	Current
Reduced inequalities	Proportion of individuals living below median income	Proportion of individuals living below median income (BIF 501,363.70 per year.)	province, commune, colline, gender, age group	Current

Appendix B: Dimensions and Indicators Used to Measure Multidimensional Poverty Index (MPI)

Dimension	Indicator	*Threshold of deprivation for each indicator*	*Weight*
Education	School attainment	*No household member had completed a least six years of schooling*	1/6
	School attendance	*A school-age child (up to grade 8) was not attending school*	1/6
Health	Nutrition	*A household member (for whom there was nutrition information) was malnourished, as measured by the body mass index for adults and by height-for-age z-score for children under age 5*	1/6
	Child mortality	*A child had died in the household within the five years prior to the survey*	1/6
Standard of living	Electricity	*No access to electricity*	1/18
	Drinking water	*No access to clean drinking water or with access to clean drinking water through a source that was located thirty minutes or more away on foot*	1/18

	Sanitation	*No access to improved sanitation facilities or access only to shared improved sanitation facilities*	1/18
	Cooking fuel	*Use of "dirty" cooking fuel (dung, wood or charcoal)*	1/18
	Dwelling	*Home with dirt, sand or dung floor*	1/18
	Assets	*Without at least one asset related to access to information (radio, television, or telephone) or with at least one asset related to information but without at least one asset related to mobility (bike, motorbike, car, truck, animal cart or motorboat) or at least one asset related to livelihood (refrigerator, arable land, or livestock)*	1/18